ATTACHMENT DOCUMENT
FOR
COUNCIL MEETING

Tuesday 15 December 2020

Michael Urquhart
GENERAL MANAGER

AGENDA

1. *Walgett Shire Council's Portfolio report from Imperium Markets*

2. *Audited Primary Financial Statements for year ended 30 June 2020*

3. *Development Application 20/2018 – Burren Junction Solar Farm*
    a) *Development Assessment*
    b) *Statement of Environmental Effects*
    c) *Traffic for NSW Comments and the applicant response*
    d) *Essential Energy comments and background requests for additional information*
    e) *NSW Planning Industry & Environment - Biodiversity, Conservation & Science Directorate Comment*

Investment Report

01/11/2020 to 30/11/2020

Portfolio Valuation as at 30/11/2020

Issuer	Rating	Type	Alloc	Interest	Purchase	Maturity	Rate	Value	Accrued	Accrued MTD
BOQ	A-2	TD	GENERAL	At Maturity	02/07/2020	02/12/2020	0.9000	1,000,000.00	3,747.95	739.73
NAB	A-1+	TD	GENERAL	At Maturity	19/08/2020	16/12/2020	0.7000	1,000,000.00	1,994.52	575.34
AMP Bank	A-2	TD	GENERAL	At Maturity	07/10/2020	06/01/2021	0.4000	1,000,000.00	602.74	328.77
NAB	A-1+	TD	GENERAL	At Maturity	07/10/2020	13/01/2021	0.6000	1,000,000.00	904.11	493.15
BOQ	A-2	TD	GENERAL	At Maturity	14/10/2020	20/01/2021	0.0053	1,000,000.00	6.97	4.36
IMB Bank	A-2	FRTD	GENERAL	Quarterly	14/02/2018	11/02/2021	0.8200	500,000.00	168.49	168.49
BOQ	A-2	TD	GENERAL	At Maturity	02/09/2020	03/03/2021	0.7500	1,000,000.00	1,849.32	616.44
AMP Bank	A-2	TD	GENERAL	At Maturity	10/09/2020	10/03/2021	0.5500	1,000,000.00	1,235.62	452.05
BOQ	A-2	TD	GENERAL	At Maturity	16/09/2020	17/03/2021	0.7000	1,000,000.00	1,457.53	575.34
Commonwealth Bank	A-1+	FRTD	GENERAL	Quarterly	20/01/2018	20/04/2021	1.3100	500,000.00	753.70	538.36
AMP Bank	A-2	TD	GENERAL	At Maturity	30/11/2020	02/06/2021	0.7000	1,000,000.00	19.18	19.18
BOQ	A-2	TD	GENERAL	At Maturity	16/09/2020	16/06/2021	0.7000	1,000,000.00	1,457.53	575.34
AMP Bank	A-2	TD	GENERAL	At Maturity	26/08/2020	30/06/2021	0.8000	1,000,000.00	2,126.03	657.53
BOQ	A-2	TD	GENERAL	Annual	02/07/2018	07/07/2021	3.1500	1,000,000.00	13,117.81	2,589.04
BOQ	A-2	TD	GENERAL	At Maturity	11/11/2020	11/08/2021	0.5400	1,000,000.00	295.89	295.89
Commonwealth Bank	A-1+	FRTD	GENERAL	Quarterly	24/08/2016	23/08/2021	1.1200	500,000.00	107.40	107.40
Commonwealth Bank	A-1+	FRTD	GENERAL	Quarterly	31/08/2016	31/08/2021	1.0700	500,000.00	14.66	14.66
ING Direct	A-1	TD	GENERAL	Annual	14/09/2016	14/09/2021	3.1200	500,000.00	3,333.70	1,282.19

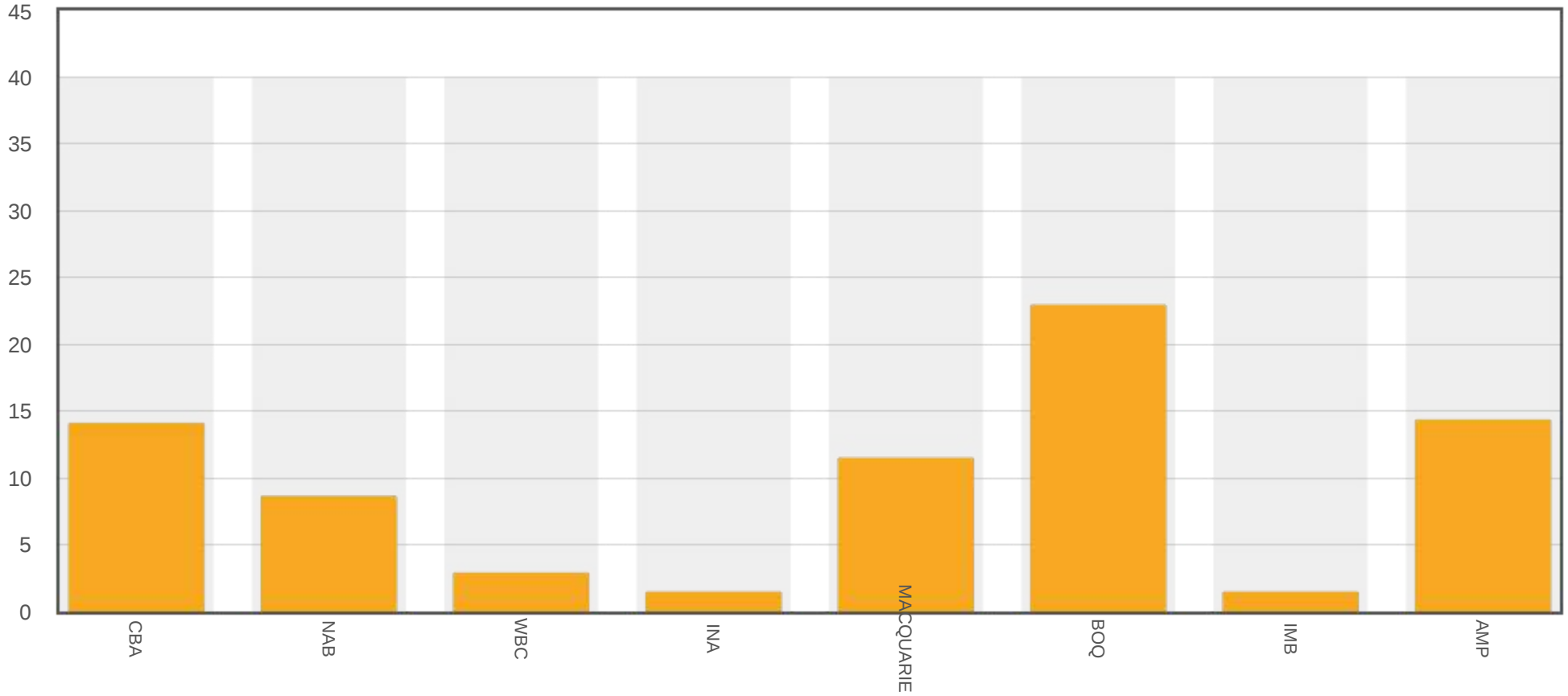
Issuer	Rating	Type	Alloc	Interest	Purchase	Maturity	Rate	Value	Accrued	Accrued MTD
AMP Bank	A-2	TD	GENERAL	At Maturity	25/11/2020	29/09/2021	0.7000	1,000,000.00	115.07	115.07
Westpac	A-1+	FRTD	GENERAL	Quarterly	16/11/2016	16/11/2021	1.2200	1,000,000.00	501.37	501.37
BOQ	A-2	TD	GENERAL	At Maturity	18/11/2020	17/11/2021	0.5500	1,000,000.00	195.89	195.89
NAB	A-1+	TD	GENERAL	Annual	21/11/2018	22/11/2021	3.0000	1,000,000.00	657.53	657.53
Newcastle Permanent	BBB	TD	GENERAL	Annual	11/02/2019	16/02/2022	3.0500	1,000,000.00	24,065.75	2,506.85
Newcastle Permanent	BBB	TD	GENERAL	Quarterly	10/04/2019	13/04/2022	2.7000	1,000,000.00	3,698.63	2,219.18
Members Equity Bank	BBB	TD	GENERAL	Annual	15/02/2017	11/05/2022	3.4700	1,000,000.00	27,379.73	2,852.05
BOQ	BBB+	TD	GENERAL	Annual	02/07/2018	06/07/2022	3.5000	1,000,000.00	14,575.34	2,876.71
AMP Bank	BBB	TD	GENERAL	Annual	01/02/2019	31/01/2024	3.1500	1,000,000.00	26,063.01	2,589.04
BOQ	BBB+	TD	GENERAL	Annual	12/06/2019	12/06/2024	2.5500	1,000,000.00	12,016.44	2,095.89
AMP Bank	BBB	TD	GENERAL	Annual	07/08/2019	07/08/2024	2.0000	1,000,000.10	6,356.17	1,643.84
BOQ	BBB+	TD	GENERAL	Annual	06/08/2020	06/08/2025	1.3000	1,000,000.00	4,167.12	1,068.49
Commonwealth Bank	A-1+	CASH	GENERAL	Monthly	30/11/2020	30/11/2020	0.0000	1,894,924.15	-	-
Macquarie Bank	A-1	CASH	GENERAL	Monthly	30/11/2020	30/11/2020	0.9000	1,000,000.00	739.73	739.73
Macquarie Bank	A-1	CASH	GENERAL	Monthly	30/11/2020	30/11/2020	0.9000	1,000,000.00	739.73	739.73
Macquarie Bank	A-1	CASH	GENERAL	Monthly	30/11/2020	30/11/2020	0.9000	1,000,000.00	665.75	665.75
Macquarie Bank	A-1	CASH	GENERAL	Monthly	30/11/2020	30/11/2020	0.5000	1,000,000.00	178.08	178.08
Commonwealth Bank	A-1+	CASH	GENERAL	Monthly	30/11/2020	30/11/2020	0.0350	1,515,911.43	43.60	43.60
TOTALS								**34,910,835.68**	**155,352.07**	**31,722.06**

Counterparty Compliance as at 30/11/2020

Short Term Investments

Compliant	Bank Group	Term	Rating	Invested	Invested (%)	Limit (%)	Limit ($)	Available
✔	Commonwealth Bank	Short	A-1+	4,910,835.58	14.07	40.00	-	9,053,498.69
✔	NAB	Short	A-1+	3,000,000.00	8.59	40.00	-	10,964,334.27
✔	Westpac	Short	A-1+	1,000,000.00	2.86	40.00	-	12,964,334.27
✔	ING Direct	Short	A-1	500,000.00	1.43	40.00	-	13,464,334.27
✔	Macquarie Bank	Short	A-1	4,000,000.00	11.46	40.00	-	9,964,334.27
✔	BOQ	Short	A-2	8,000,000.00	22.92	40.00	-	5,964,334.27
✔	IMB Bank	Short	A-2	500,000.00	1.43	40.00	-	13,464,334.27
✔	AMP Bank	Short	A-2	5,000,000.00	14.32	40.00	-	8,964,334.27
TOTALS				**26,910,835.58**	**77.08**			

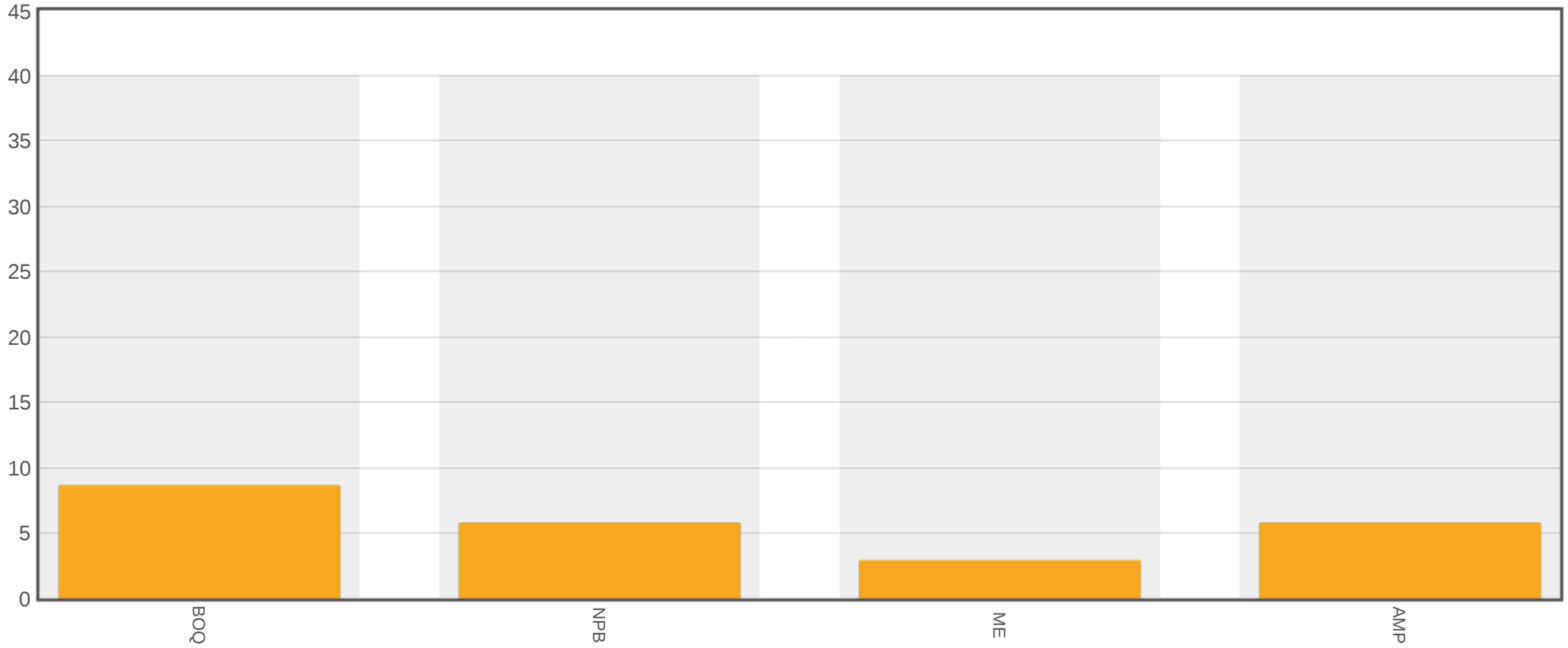
Counterparty Compliance - Short Term Investments



Long Term Investments

Compliant	Bank Group	Term	Rating	Invested	Invested (%)	Limit (%)	Limit ($)	Available
✔	BOQ	Long	BBB+	3,000,000.00	8.59	40.00	-	10,964,334.27
✔	Newcastle Permanent	Long	BBB	2,000,000.00	5.73	40.00	-	11,964,334.27
✔	Members Equity Bank	Long	BBB	1,000,000.00	2.86	40.00	-	12,964,334.27
✔	AMP Bank	Long	BBB	2,000,000.10	5.73	40.00	-	11,964,334.17
TOTALS				**8,000,000.10**	**22.91**			

Counterparty Compliance - Long Term Investments

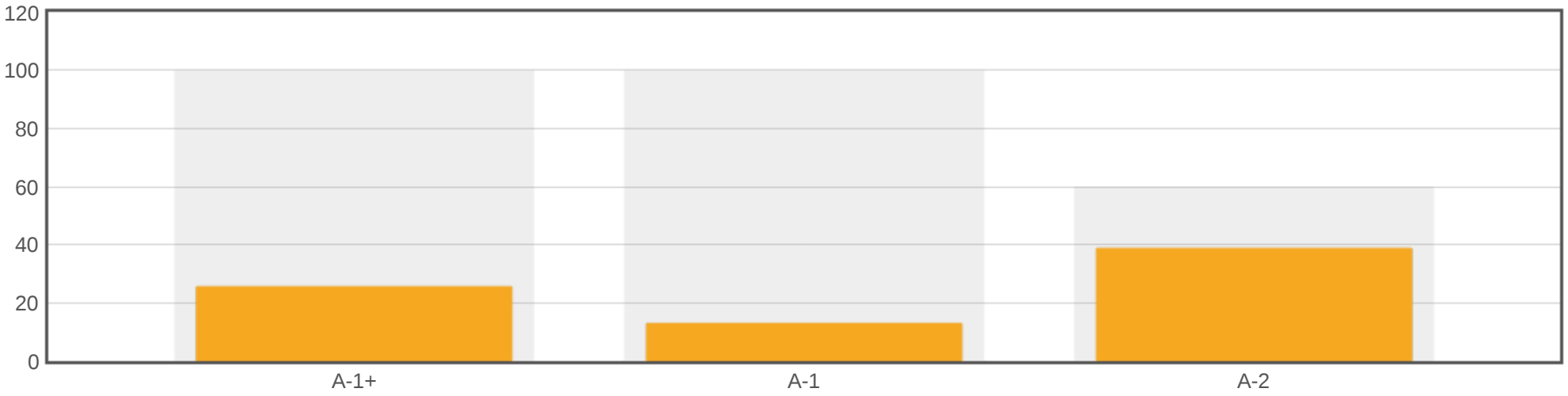


Credit Quality Compliance as at 30/11/2020

Short Term Investments

Compliant	Rating	Invested ($)	Invested (%)	Limit (%)	Available
✔	A-1+	8,910,835.58	25.52	100.00	26,000,000.10
✔	A-1	4,500,000.00	12.89	100.00	30,410,835.68
✔	A-2	13,500,000.00	38.67	60.00	7,446,501.41
TOTALS		**26,910,835.58**	**77.08**		

Credit Quality Compliance - Short Term Investments



Long Term Investments

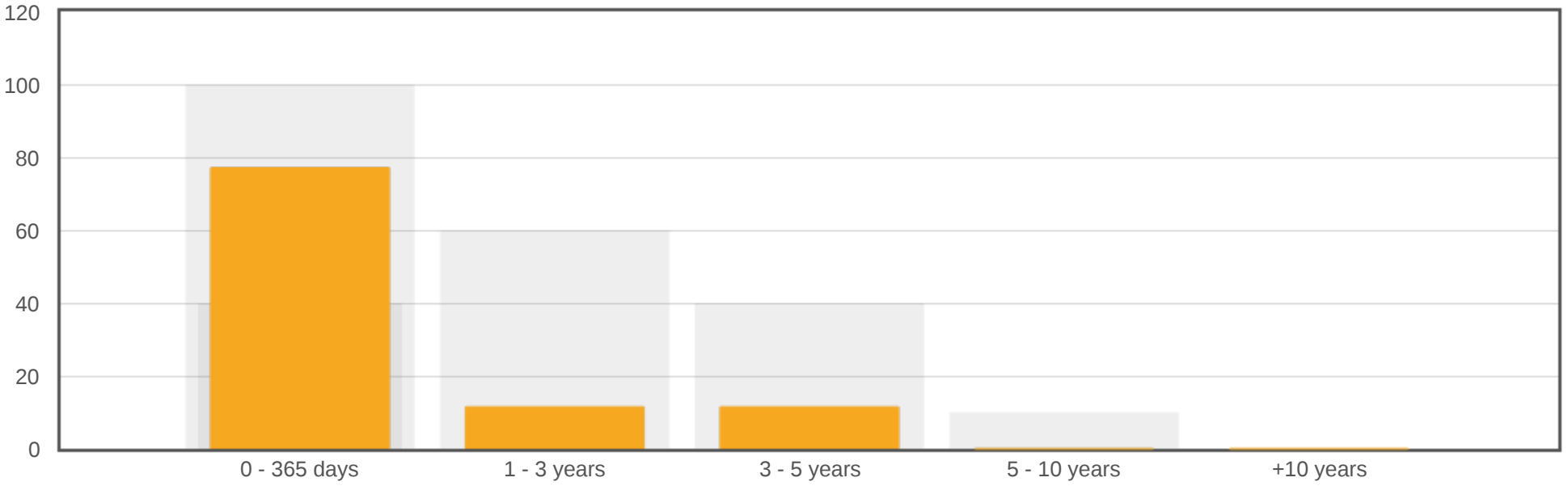
Compliant	Rating	Invested ($)	Invested (%)	Limit (%)	Available
✔	BBB	8,000,000.10	22.92	50.00	9,455,417.74
TOTALS		**8,000,000.10**	**22.92**		

Credit Quality Compliance - Long Term Investments

Maturity Compliance as at 30/11/2020

Compliant	Term	Invested	Invested (%)	Min Limit (%)	Max Limit (%)	Available
✔	0 - 365 days	26,910,835.58	77.08	40.00	100.00	8,000,000.10
✔	1 - 3 years	4,000,000.00	11.46	0.00	60.00	16,946,501.41
✔	3 - 5 years	4,000,000.10	11.46	0.00	40.00	9,964,334.17
✔	5 - 10 years	-	0.00	0.00	10.00	3,491,083.57
✔	+10 years	-	0.00	0.00	0.00	-
TOTALS		**34,910,835.68**	**100.00**			

Maturity Compliance



Portfolio Comparison

From: 31/10/2020 To: 30/11/2020

Issuer	Rating	Type	Rate	Purchase	Maturity	Interest	31/10/2020	30/11/2020	Difference
BOQ	A-2	TD	0.8500	02/07/2020	04/11/2020	At Maturity	1,000,000.00	-	-1,000,000.00
BOQ	A-2	TD	0.8500	02/07/2020	11/11/2020	At Maturity	1,000,000.00	-	-1,000,000.00
BOQ	A-2	TD	0.8800	02/07/2020	18/11/2020	At Maturity	1,000,000.00	-	-1,000,000.00
AMP Bank	A-2	TD	1.6500	27/05/2020	25/11/2020	At Maturity	1,000,000.00	-	-1,000,000.00
BOQ	A-2	TD	0.9000	02/07/2020	02/12/2020	At Maturity	1,000,000.00	1,000,000.00	-
NAB	A-1+	TD	0.7000	19/08/2020	16/12/2020	At Maturity	1,000,000.00	1,000,000.00	-
AMP Bank	A-2	TD	0.4000	07/10/2020	06/01/2021	At Maturity	1,000,000.00	1,000,000.00	-
NAB	A-1+	TD	0.6000	07/10/2020	13/01/2021	At Maturity	1,000,000.00	1,000,000.00	-
BOQ	A-2	TD	0.0053	14/10/2020	20/01/2021	At Maturity	1,000,000.00	1,000,000.00	-
IMB Bank	A-2	FRTD	0.9000	14/02/2018	11/02/2021	Quarterly	500,000.00	500,000.00	-
BOQ	A-2	TD	0.7500	02/09/2020	03/03/2021	At Maturity	1,000,000.00	1,000,000.00	-
AMP Bank	A-2	TD	0.5500	10/09/2020	10/03/2021	At Maturity	1,000,000.00	1,000,000.00	-
BOQ	A-2	TD	0.7000	16/09/2020	17/03/2021	At Maturity	1,000,000.00	1,000,000.00	-
Commonwealth Bank	A-1+	FRTD	1.3100	20/01/2018	20/04/2021	Quarterly	500,000.00	500,000.00	-
AMP Bank	A-2	TD	0.7000	30/11/2020	02/06/2021	At Maturity	-	1,000,000.00	1,000,000.00
BOQ	A-2	TD	0.7000	16/09/2020	16/06/2021	At Maturity	1,000,000.00	1,000,000.00	-
AMP Bank	A-2	TD	0.8000	26/08/2020	30/06/2021	At Maturity	1,000,000.00	1,000,000.00	-

Issuer	Rating	Type	Rate	Purchase	Maturity	Interest	31/10/2020	30/11/2020	Difference
BOQ	A-2	TD	3.1500	02/07/2018	07/07/2021	Annual	1,000,000.00	1,000,000.00	-
BOQ	A-2	TD	0.5400	11/11/2020	11/08/2021	At Maturity	-	1,000,000.00	1,000,000.00
Commonwealth Bank	A-1+	FRTD	1.2096	24/08/2016	23/08/2021	Quarterly	500,000.00	500,000.00	-
Commonwealth Bank	A-1+	FRTD	1.1400	31/08/2016	31/08/2021	Quarterly	500,000.00	500,000.00	-
ING Direct	A-1	TD	3.1200	14/09/2016	14/09/2021	Annual	500,000.00	500,000.00	-
AMP Bank	A-2	TD	0.7000	25/11/2020	29/09/2021	At Maturity	-	1,000,000.00	1,000,000.00
Westpac	A-1+	FRTD	1.3000	16/11/2016	16/11/2021	Quarterly	1,000,000.00	1,000,000.00	-
BOQ	A-2	TD	0.5500	18/11/2020	17/11/2021	At Maturity	-	1,000,000.00	1,000,000.00
NAB	A-1+	TD	3.0000	21/11/2018	22/11/2021	Annual	1,000,000.00	1,000,000.00	-
Newcastle Permanent	BBB	TD	3.0500	11/02/2019	16/02/2022	Annual	1,000,000.00	1,000,000.00	-
Newcastle Permanent	BBB	TD	2.7000	10/04/2019	13/04/2022	Quarterly	1,000,000.00	1,000,000.00	-
Members Equity Bank	BBB	TD	3.4700	15/02/2017	11/05/2022	Annual	1,000,000.00	1,000,000.00	-
BOQ	BBB+	TD	3.5000	02/07/2018	06/07/2022	Annual	1,000,000.00	1,000,000.00	-
AMP Bank	BBB	TD	3.1500	01/02/2019	31/01/2024	Annual	1,000,000.00	1,000,000.00	-
BOQ	BBB+	TD	2.5500	12/06/2019	12/06/2024	Annual	1,000,000.00	1,000,000.00	-
AMP Bank	BBB	TD	2.0000	07/08/2019	07/08/2024	Annual	1,000,000.10	1,000,000.10	-
BOQ	BBB+	TD	1.3000	06/08/2020	06/08/2025	Annual	1,000,000.00	1,000,000.00	-
Macquarie Bank	A-1	CASH	0.9000	31/10/2020	31/10/2020	Monthly	-	1,000,000.00	1,000,000.00
Macquarie Bank	A-1	CASH	0.9000	31/10/2020	31/10/2020	Monthly	1,000,000.00	1,000,000.00	-
Macquarie Bank	A-1	CASH	0.9000	31/10/2020	31/10/2020	Monthly	1,000,000.00	1,000,000.00	-

Issuer	Rating	Type	Rate	Purchase	Maturity	Interest	31/10/2020	30/11/2020	Difference
Macquarie Bank	A-1	CASH	0.5000	31/10/2020	31/10/2020	Monthly	-	1,000,000.00	1,000,000.00
Commonwealth Bank	A-1+	CASH	0.0350	31/10/2020	31/10/2020	Monthly	1,515,525.28	1,515,911.43	386.15
Commonwealth Bank	A-1+	CASH	0.0000	31/10/2020	31/10/2020	Monthly	921,989.06	1,894,924.15	972,935.09
TOTALS							**31,937,514.44**	**34,910,835.68**	**2,973,321.24**

Trades in Period

From: 01/11/2020 To: 30/11/2020

New Trades

Issuer	Rating	Type	Alloc	Interest	Purchase	Maturity	Rate	Value	Ref
BOQ	A-2	TD	GENERAL	At Maturity	11/11/2020	11/08/2021	0.5400	1,000,000.00	341/20
BOQ	A-2	TD	GENERAL	At Maturity	18/11/2020	17/11/2021	0.5500	1,000,000.00	340/20
AMP Bank	A-2	TD	GENERAL	At Maturity	25/11/2020	29/09/2021	0.7000	1,000,000.00	336/20
AMP Bank	A-2	TD	GENERAL	At Maturity	30/11/2020	02/06/2021	0.7000	1,000,000.00	349/21
TOTALS								**4,000,000.00**	

Sell Trades

Issuer	Rating	Type	Alloc	Interest	Purchase	Maturity	Sell	Rate	Value	Ref

No entries for this item

Matured Trades

Issuer	Rating	Type	Alloc	Interest	Purchase	Maturity	Rate	Value	Ref
BOQ	A-2	TD	GENERAL	At Maturity	02/07/2020	04/11/2020	0.8500	1,000,000.00	TD 342/20
BOQ	A-2	TD	GENERAL	At Maturity	02/07/2020	11/11/2020	0.8500	1,000,000.00	TD 341/20
BOQ	A-2	TD	GENERAL	At Maturity	02/07/2020	18/11/2020	0.8800	1,000,000.00	340/20
AMP Bank	A-2	TD	GENERAL	At Maturity	27/05/2020	25/11/2020	1.6500	1,000,000.00	336/20
TOTALS								**4,000,000.00**	

Interest Received in Period

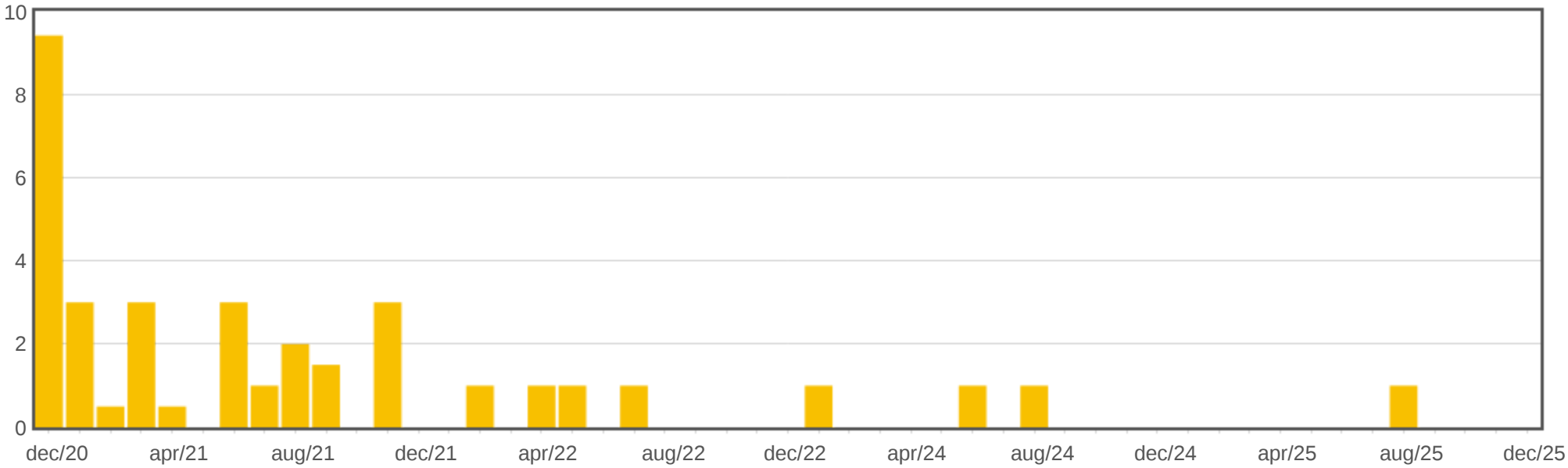
From: 01/11/2020 To: 30/11/2020

Periodic Interest

Issuer	Rating	Type	Alloc	Frequency	Value	Purchase	Maturity	Coupon Date	Type	Rate	Received
BOQ	A-2	TD	GENERAL	At Maturity	1,000,000.00	02/07/2020	04/11/2020	04/11/2020	Maturity	0.8500	2,910.96
BOQ	A-2	TD	GENERAL	At Maturity	1,000,000.00	02/07/2020	11/11/2020	11/11/2020	Maturity	0.8500	3,073.97
BOQ	A-2	TD	GENERAL	At Maturity	1,000,000.00	02/07/2020	18/11/2020	18/11/2020	Maturity	0.8800	3,351.23
AMP Bank	A-2	TD	GENERAL	At Maturity	1,000,000.00	27/05/2020	25/11/2020	25/11/2020	Maturity	1.6500	8,227.40
IMB Bank	A-2	FRTD	GENERAL	Quarterly	500,000.00	14/02/2018	11/02/2021	16/11/2020	Periodic	0.9000	1,158.90
Commonwealth Bank	A-1+	FRTD	GENERAL	Quarterly	500,000.00	24/08/2016	23/08/2021	24/11/2020	Periodic	1.2096	1,524.43
Commonwealth Bank	A-1+	FRTD	GENERAL	Quarterly	500,000.00	31/08/2016	31/08/2021	30/11/2020	Periodic	1.1400	1,467.95
Westpac	A-1+	FRTD	GENERAL	Quarterly	1,000,000.00	16/11/2016	16/11/2021	16/11/2020	Periodic	1.3000	3,241.10
NAB	A-1+	TD	GENERAL	Annual	1,000,000.00	21/11/2018	22/11/2021	23/11/2020	Periodic	3.0000	30,246.58
TOTALS					**7,500,000.00**						**55,202.51**

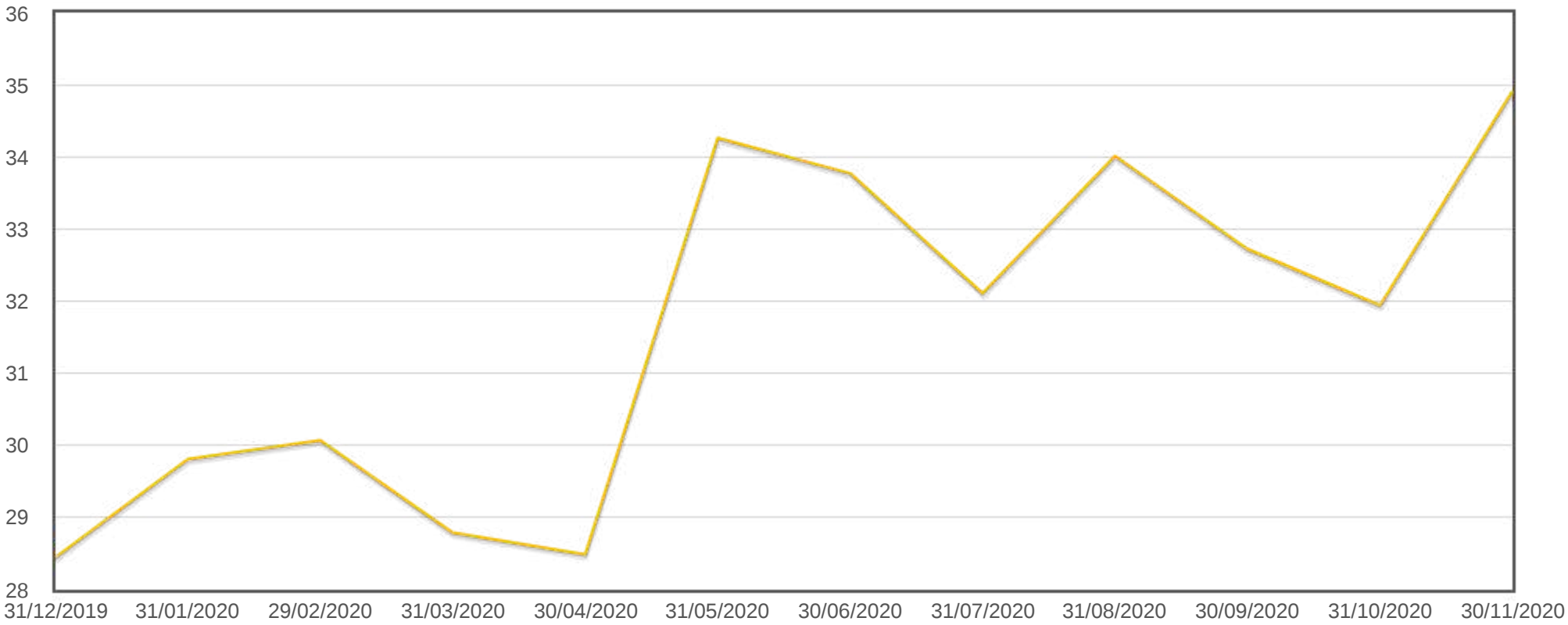
Maturity Cashflow as at 30/11/2020

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2020	-	-	-	-	-	-	-	-	-	-	-	9,410,835	9,410,835.58
2021	3,000,000	500,000	3,000,000	500,000	-	3,000,000	1,000,000	2,000,000	1,500,000	-	3,000,000	-	17,500,000.00
2022	-	1,000,000	-	1,000,000	1,000,000	-	1,000,000	-	-	-	-	-	4,000,000.00
2024	1,000,000	-	-	-	-	1,000,000	-	1,000,000	-	-	-	-	3,000,000.10
2025	-	-	-	-	-	-	-	1,000,000	-	-	-	-	1,000,000.00
TOTALS													**34,910,835.68**



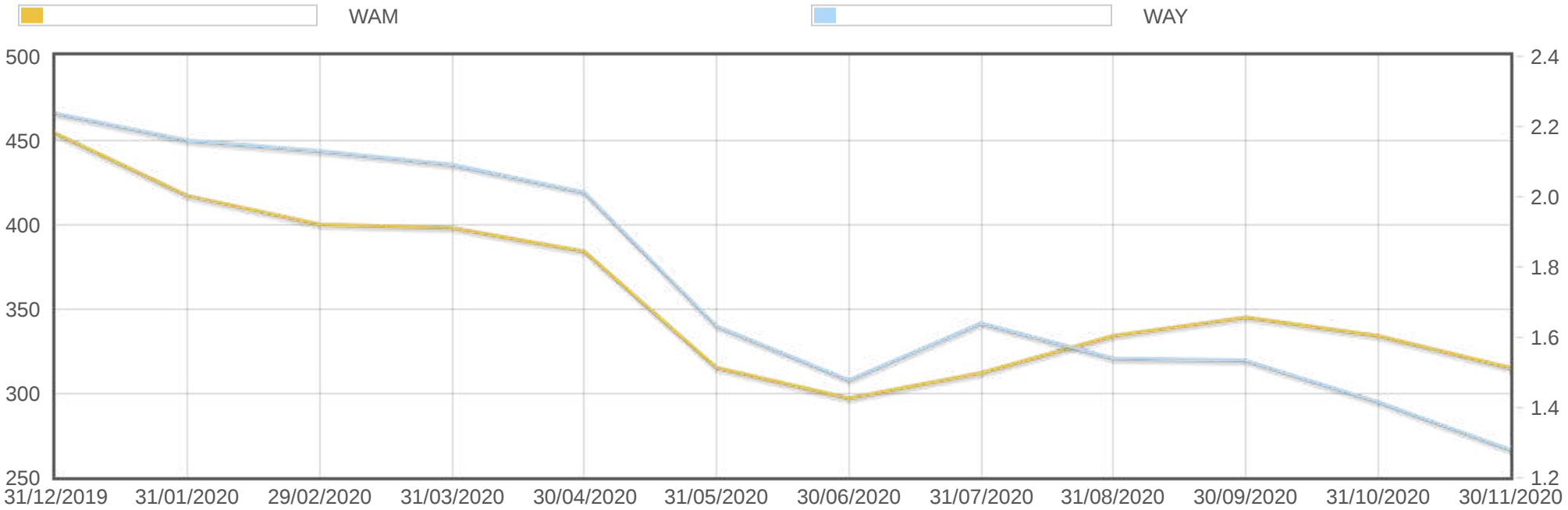
Historical Portfolio Balances (in MM) as at 30/11/2020

31/12/2019	31/01/2020	29/02/2020	31/03/2020	30/04/2020	31/05/2020	30/06/2020	31/07/2020	31/08/2020	30/09/2020	31/10/2020	30/11/2020
28.45	29.81	30.07	28.79	28.49	34.26	33.77	32.11	34.01	32.72	31.94	34.91



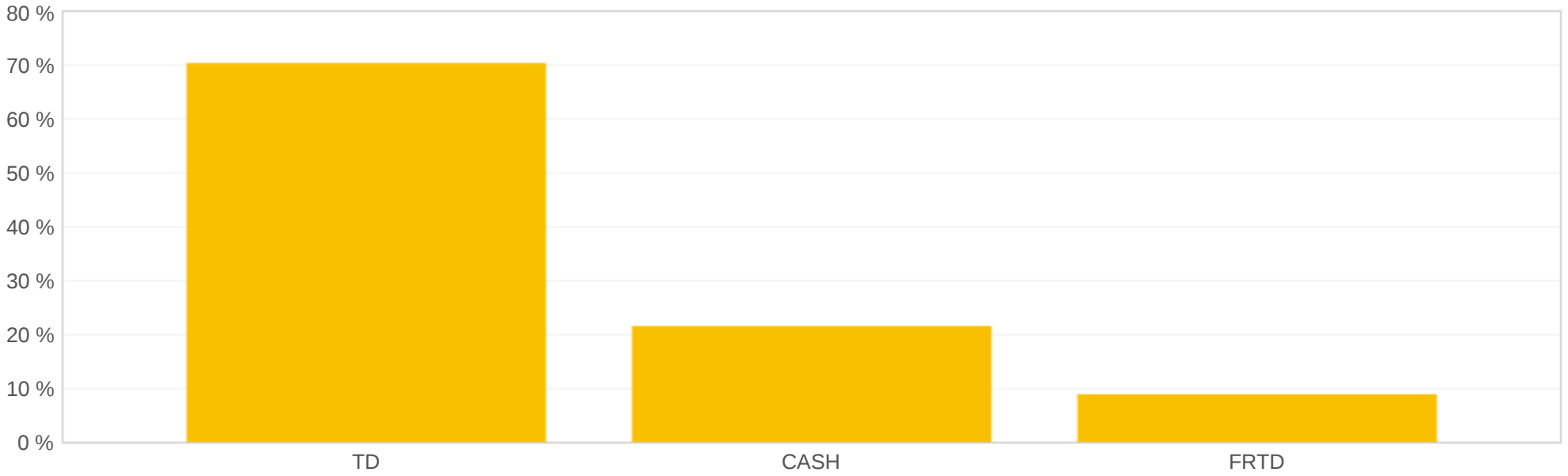
Historical Ratios as at 30/11/2020

	31/12/2019	31/01/2020	29/02/2020	31/03/2020	30/04/2020	31/05/2020	30/06/2020	31/07/2020	31/08/2020	30/09/2020	31/10/2020	30/11/2020
WAM	454	417	400	398	384	315	297	312	334	345	334	315
WAY	2.2361	2.1585	2.1290	2.0903	2.0115	1.6305	1.4775	1.6391	1.5389	1.5328	1.4152	1.2792



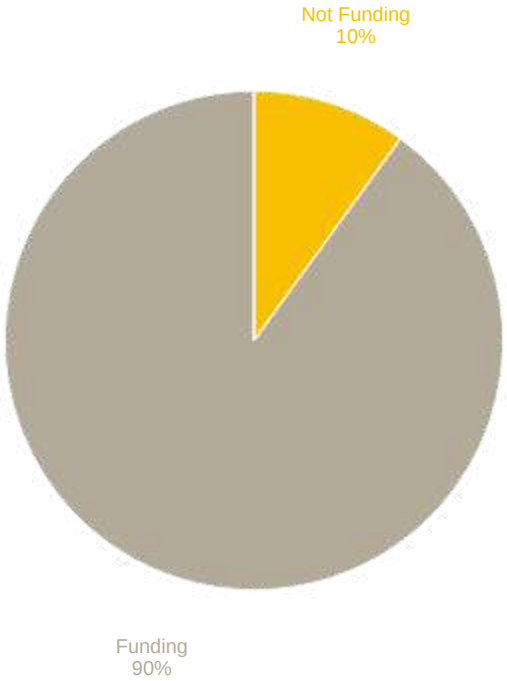
Asset Class as at 30/11/2020

Code	Number of Trades	Invested	Invested (%)
TD	25	24,500,000.10	70.18
CASH	17	7,410,835.58	21.23
FRTD	5	3,000,000.00	8.59
TOTALS	**36**	**34,910,835.68**	**100.0**



ADIs funding fossil fuels as at 30/11/2020

	Number of Trades	Invested	Invested (%)
Not funding fossil fuels	4	3,500,000.00	10.0
Funding fossil fuels	43	31,410,835.68	90.0



Income Statement

for the year ended 30 June 2020

Original unaudited budget 2020 $ '000		Notes	Actual 2020 $ '000	Actual 2019 $ '000
	Income from continuing operations			
9,114	Rates and annual charges	3a	9,277	8,979
6,762	User charges and fees	3b	3,405	3,819
2,339	Other revenues	3c	1,156	1,131
10,941	Grants and contributions provided for operating purposes	3d,3e	17,769	11,073
6,368	Grants and contributions provided for capital purposes	3d,3e	8,338	8,808
991	Interest and investment income	4	796	956
–	Rental income	12e	263	–
–	Net share of interests in joint ventures and associates using the equity method	17	–	3,733
36,515	**Total income from continuing operations**		41,004	38,499
	Expenses from continuing operations			
9,315	Employee benefits and on-costs	5a	8,068	7,908
132	Borrowing costs	5b	150	206
11,542	Materials and contracts	5c	13,349	7,780
7,637	Depreciation and amortisation	5d	7,298	7,032
3,228	Other expenses	5e	3,990	3,961
–	Net losses from the disposal of assets	6	597	276
–	Net share of interests in joint ventures and associates using the equity method	17	3,070	–
31,854	**Total expenses from continuing operations**		36,522	27,163
4,661	**Operating result from continuing operations**		4,482	11,336
4,661	Net operating result for the year		4,482	11,336
4,661	Net operating result attributable to council		4,482	11,336
(1,707)	**Net operating result for the year before grants and contributions provided for capital purposes**		(3,856)	2,528

The Council has not restated comparatives when initially applying AASB 1058 *Income of Not-for-Profit Entities*, AASB 15 *Revenue from Contracts with Customers* and AASB 16 *Leases*. The comparative information has been prepared under AASB 111 *Construction Contracts*, AASB 118 *Revenue*, AASB 1004 *Contributions*, AASB 117 *Leases* and related Accounting Interpretations.

The above Income Statement should be read in conjunction with the accompanying notes.

Statement of Comprehensive Income
for the year ended 30 June 2020

	Notes	2020 $ '000	2019 $ '000
Net operating result for the year (as per Income Statement)		**4,482**	**11,336**
Other comprehensive income:			
Gain (loss) on revaluation of IPP&E	6	23,821	3,467
Total items which will not be reclassified subsequently to the operating result		23,821	3,467
Total other comprehensive income for the year		23,821	3,467
Total comprehensive income for the year		28,303	14,803
Total comprehensive income attributable to Council		28,303	14,803

The Council has not restated comparatives when initially applying AASB 1058 *Income of Not-for-Profit Entities*, AASB 15 *Revenue from Contracts with Customers* and AASB 16 *Leases*. The comparative information has been prepared under AASB 111 *Construction Contracts*, AASB 118 *Revenue*, AASB 1004 *Contributions*, AASB 117 *Leases* and related Accounting Interpretations.

The above Statement of Comprehensive Income should be read in conjunction with the accompanying notes.

Statement of Financial Position
as at 30 June 2020

	Notes	2020 $ '000	2019 $ '000
ASSETS			
Current assets			
Cash and cash equivalents	7(a)	12,623	8,941
Investments	7(b)	9,500	11,000
Receivables	8	8,829	6,014
Inventories	9a	995	957
Other	9b	169	125
Total current assets		32,116	27,037
Non-current assets			
Investments	7(b)	11,500	14,000
Receivables	8	121	153
Infrastructure, property, plant and equipment	10(a)	312,475	284,297
Right of use assets	12a	66	–
Investments accounted for using the equity method	17	663	3,733
Total non-current assets		324,825	302,183
Total assets		356,941	329,220
LIABILITIES			
Current liabilities			
Payables	13	3,991	4,281
Contract liabilities	11	1,127	–
Lease liabilities	12b	62	–
Borrowings	13	742	707
Provisions	14	2,149	2,018
Total current liabilities		8,071	7,006
Non-current liabilities			
Lease liabilities	12b	5	–
Borrowings	13	1,864	2,606
Provisions	14	4,753	4,492
Total non-current liabilities		6,622	7,098
Total liabilities		14,693	14,104
Net assets		342,248	315,116
EQUITY			
Accumulated surplus	15	124,590	121,279
Revaluation reserves	15	217,658	193,837
Council equity interest		342,248	315,116
Total equity		342,248	315,116

The Council has not restated comparatives when initially applying AASB 1058 *Income of Not-for-Profit Entities*, AASB 15 *Revenue from Contracts with Customers* and AASB 16 *Leases*. The comparative information has been prepared under AASB 111 *Construction Contracts*, AASB 118 *Revenue*, AASB 1004 *Contributions*, AASB 117 *Leases* and related Accounting Interpretations.

The above Statement of Financial Position should be read in conjunction with the accompanying notes.

Walgett Shire Council

Statement of Changes in Equity
for the year ended 30 June 2020

	Notes	as at 30/06/20 Accumulated surplus $ '000	IPP&E revaluation reserve $ '000	Total equity $ '000	as at 30/06/19 Accumulated surplus $ '000	IPP&E revaluation reserve $ '000	Total equity $ '000
Opening balance		121,279	193,837	315,116	109,943	190,370	300,313
Changes due to AASB 1058 and AASB 15 adoption	15	(1,171)	–	(1,171)	–	–	–
Restated opening balance		120,108	193,837	313,945	109,943	190,370	300,313
Net operating result for the year		4,482	–	4,482	11,336	–	11,336
Restated net operating result for the period		4,482	–	4,482	11,336	–	11,336
Other comprehensive income							
– Gain (loss) on revaluation of IPP&E	10(a)	–	23,821	23,821	–	3,467	3,467
Other comprehensive income		–	23,821	23,821	–	3,467	3,467
Total comprehensive income		4,482	23,821	28,303	11,336	3,467	14,803
Equity – balance at end of the reporting period		124,590	217,658	342,248	121,279	193,837	315,116

The Council has not restated comparatives when initially applying AASB 1058 *Income of Not-for-Profit Entities*, AASB 15 *Revenue from Contracts with Customers* and AASB 16 *Leases*. The comparative information has been prepared under AASB 111 *Construction Contracts*, AASB 118 *Revenue*, AASB 1004 *Contributions*, AASB 117 *Leases* and related Accounting Interpretations.

The above Statement of Changes in Equity should be read in conjunction with the accompanying notes.

Statement of Cash Flows

for the year ended 30 June 2020

Original unaudited budget 2020 $ '000		Notes	Actual 2020 $ '000	Actual 2019 $ '000
	Cash flows from operating activities			
	Receipts:			
9,087	Rates and annual charges		9,029	9,148
6,718	User charges and fees		2,123	4,060
1,006	Investment and interest revenue received		830	816
17,779	Grants and contributions		25,175	16,818
–	Bonds, deposits and retention amounts received		103	19
2,366	Other		3,847	2,579
	Payments:			
(9,266)	Employee benefits and on-costs		(8,116)	(8,563)
(11,497)	Materials and contracts		(16,130)	(7,818)
(133)	Borrowing costs		(147)	(177)
–	Bonds, deposits and retention amounts refunded		(15)	(17)
(3,227)	Other		(4,044)	(4,062)
12,833	**Net cash provided (or used in) operating activities**	16b	12,655	12,803
	Cash flows from investing activities			
	Receipts:			
500	Sale of investment securities		27,000	71,500
437	Sale of infrastructure, property, plant and equipment		–	194
–	Deferred debtors receipts		30	30
	Payments:			
(250)	Purchase of investment securities		(23,000)	(81,500)
(13,423)	Purchase of infrastructure, property, plant and equipment		(12,219)	(12,845)
(12,736)	**Net cash provided (or used in) investing activities**		(8,189)	(22,621)
	Cash flows from financing activities			
	Receipts:			
450	Proceeds from borrowings and advances		–	–
	Payments:			
(707)	Repayment of borrowings and advances		(707)	(683)
–	Lease liabilities (principal repayments)		(77)	–
(257)	**Net cash flow provided (used in) financing activities**		(784)	(683)
(160)	**Net increase/(decrease) in cash and cash equivalents**		3,682	(10,501)
13,449	Plus: cash and cash equivalents – beginning of year	16a	8,941	19,442
13,289	Cash and cash equivalents – end of the year	16a	12,623	8,941
14,500	plus: Investments on hand – end of year	7(b)	21,000	25,000
27,789	Total cash, cash equivalents and investments		33,623	33,941

The Council has not restated comparatives when initially applying AASB 1058 *Income of Not-for-Profit Entities*, AASB 15 *Revenue from Contracts with Customers* and AASB 16 *Leases*. The comparative information has been prepared under AASB 111 *Construction Contracts*, AASB 118 *Revenue*, AASB 1004 *Contributions*, AASB 117 *Leases* and related Accounting Interpretations.

The above Statement of Cash Flows should be read in conjunction with the accompanying notes.

Cr Ian Woodcock
Mayor
Walgett Shire Council
PO Box 31
WALGETT NSW 2832

Contact: Manuel Moncada
Phone no: 02 9275 7333
Our ref: D2028053/1801

27 November 2020

Dear Mayor

Report on the Conduct of the Audit

for the year ended 30 June 2020

Walgett Shire Council

I have audited the general purpose financial statements (GPFS) of the Walgett Shire Council (the Council) for the year ended 30 June 2020 as required by section 415 of the *Local Government Act 1993* (the Act).

I expressed an unmodified opinion on the Council's GPFS.

This Report on the Conduct of the Audit (the Report) for the Council for the year ended 30 June 2020 is issued in accordance with section 417 of the Act. This Report should be read in conjunction with my audit opinion on the GPFS issued under section 417(2) of the Act.

INCOME STATEMENT

Operating result

	2020 $m	2019 $m	Variance %
Rates and annual charges revenue	9.3	9	3.3
Grants and contributions revenue	26.1	19.9	31
Operating result from continuing operations	4.5	11.3	60
Net operating result before capital grants and contributions	(3.9)	2.5	256

Council's operating result ($4.5 million including the effect of depreciation and amortisation expense of $7.3 million) was $6.8 million lower than the 2018–19 result. This was mainly due to the reduction in Council's share of the net assets of the Far North West Joint Organisation (FNWJO) amounting to $3.1 million, compared to an increase of $3.7 million during the previous year.

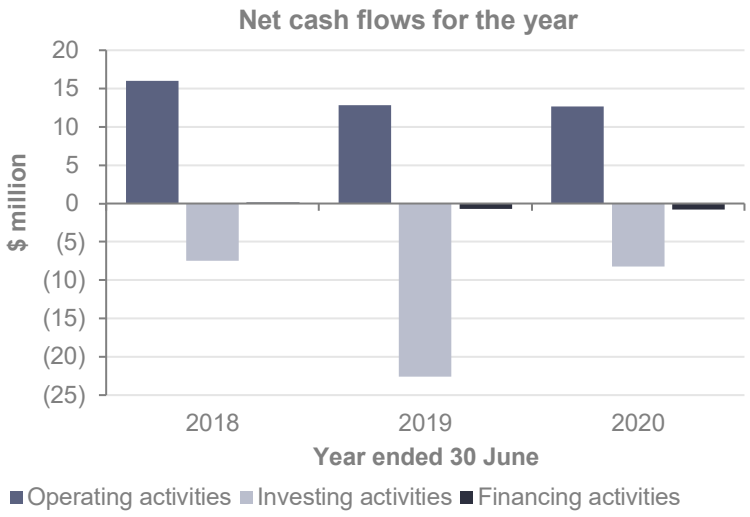
The net operating result before capital grants and contributions (deficit of $3.9 million) was $6.4 million lower than the 2018–19 result. This was mainly due to Council's involvement in the FNWJO noted above.

Rates and annual charges revenue ($9.3 million) increased by $0.3 million (3.3 per cent) in 2019–2020.

Grants and contributions revenue ($26.1 million) increased by $6.2 million (31.2 per cent) in 2019–2020 due to the receipt of additional funding for water supplies, road projects, and the Australian Opal Centre.

STATEMENT OF CASH FLOWS

- The Statement of Cash Flows illustrates the flow of cash and cash equivalents moving in and out of Council during the year and reveals that cash increased by $3.7 million to $12.6 million at the close of the year.
- the increase was mainly due to holding more funds in cash and cash equivalents rather than longer term deposits.



FINANCIAL POSITION

Cash and investments

Cash and investments	2020	2019	Commentary
	$m	$m	
External restrictions	16.2	15.4	• External restrictions include unspent specific purpose grants and contributions, and domestic waste management, water and sewerage charges, and unexpended loans.
Internal restrictions	14.3	12.7	• Balances are internally restricted due to Council policy or decisions for forward plans including works program.
Unrestricted	3.1	5.9	• Unrestricted balances provide liquidity for day-to-day operations.
Cash and investments	**33.6**	**34**	

Debt

After repaying principal and interest of $934,000 during the financial year, total debt as at 30 June 2020 was $2.7 million (2019: $3.3 million).

PERFORMANCE

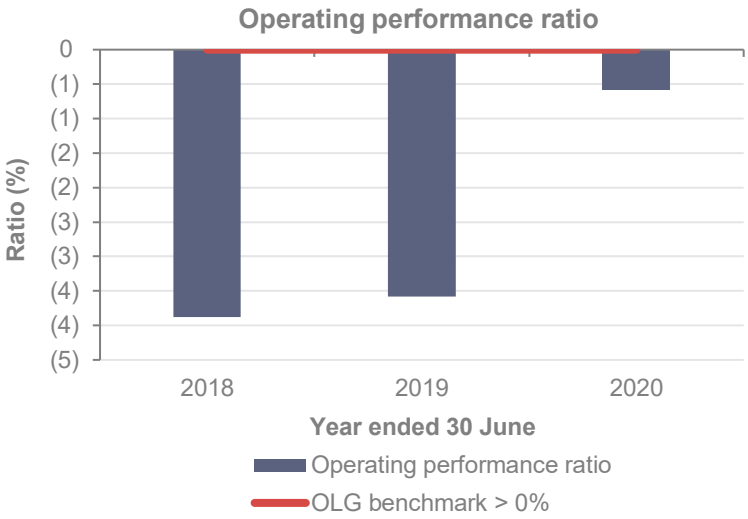
Performance measures

The following section provides an overview of the Council's performance against the performance measures and performance benchmarks set by the Office of Local Government (OLG) within the Department of Planning, Industry and Environment.

Operating performance ratio

The 'operating performance ratio' measures how well council contained operating expenditure within operating revenue (excluding capital grants and contributions, fair value adjustments, and reversal of revaluation decrements). The benchmark set by OLG is greater than zero per cent.

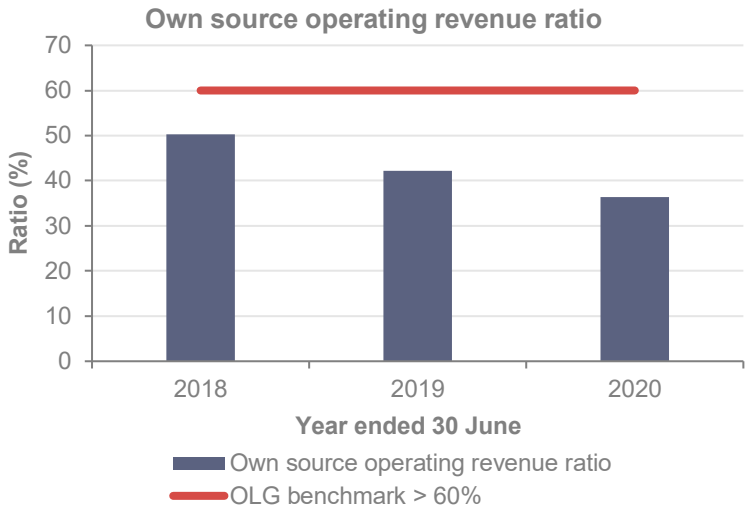
Whilst this ratio has improved from previous years, the Council did not meet the OLG benchmark for the current reporting period due to the underlying deficit result before capital items.



Own source operating revenue ratio

The 'own source operating revenue ratio' measures council's fiscal flexibility and the degree to which it relies on external funding sources such as operating grants and contributions. The benchmark set by OLG is greater than 60 per cent.

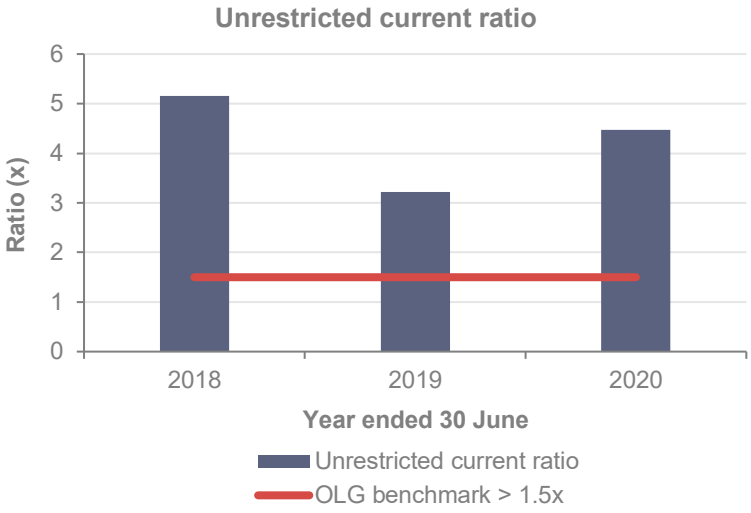
The Council did not meet the OLG benchmark for the current reporting period due to the increasing level of grant funding received.



Unrestricted current ratio

The 'unrestricted current ratio' is specific to local government and represents council's ability to meet its short-term obligations as they fall due. The benchmark set by OLG is greater than 1.5 times.

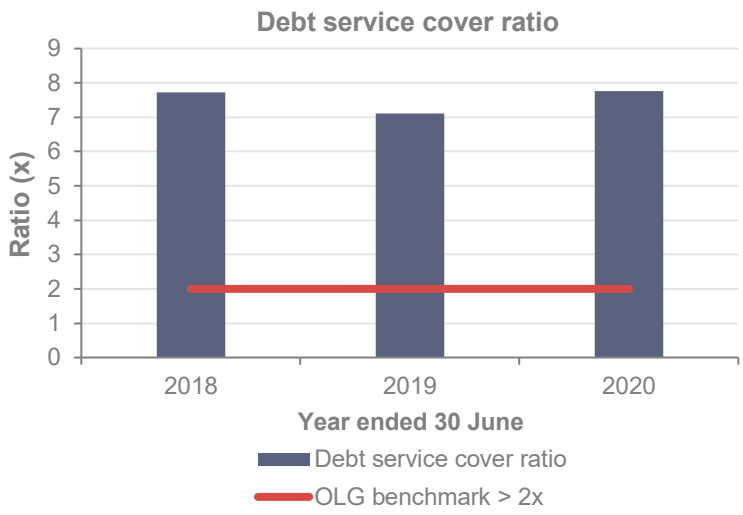
The Council exceeded the OLG benchmark for the current reporting period.



Debt service cover ratio

The 'debt service cover ratio' measures the operating cash to service debt including interest, principal and lease payments. The benchmark set by OLG is greater than two times.

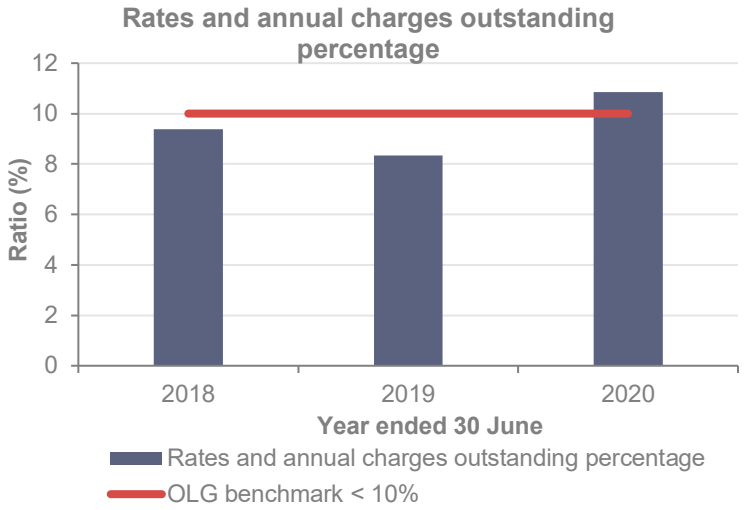
The Council exceeded the OLG benchmark for the current reporting period.



Rates and annual charges outstanding percentage

The 'rates and annual charges outstanding percentage' assesses the impact of uncollected rates and annual charges on council's liquidity and the adequacy of debt recovery efforts. The benchmark set by OLG is less than 10 per cent for regional and rural councils.

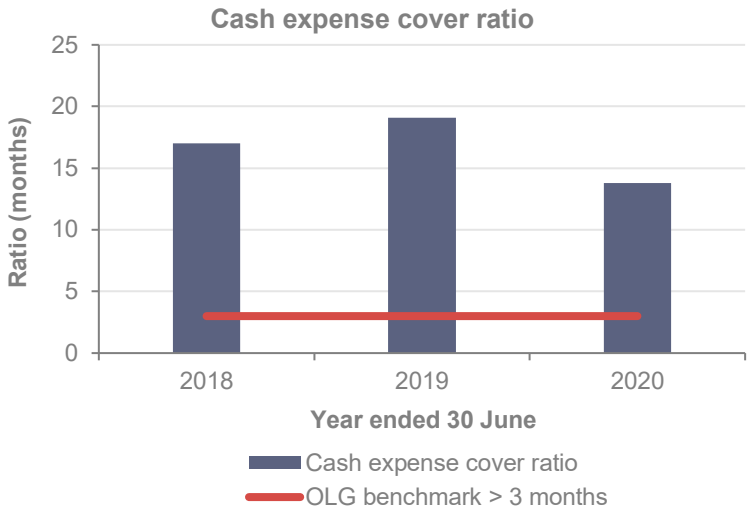
The Council did not meet the OLG benchmark for the current reporting period. The increase in the outstanding percentage can be attributed to the ongoing drought conditions and less collection activity.



Cash expense cover ratio

This liquidity ratio indicates the number of months the council can continue paying for its immediate expenses without additional cash inflow. The benchmark set by OLG is greater than three months.

The Council exceeded the OLG benchmark for the current reporting period.



Infrastructure, property, plant and equipment renewals

- Council's asset renewal additions for the year were $2.8 million compared $5.9 million for the prior year
- The level of asset renewals during the year represented 38 percent of the total depreciation expense ($7.2 million) for the year.

OTHER MATTERS

Impact of new accounting standards

AASB 15 'Revenue from Contracts with Customers' and AASB 1058 'Income for Not-for-Profit Entities'

The Council adopted the new accounting standards AASB 15 'Contracts with Customers' and AASB 1058 'Income of Not-for-Profit Entities' (collectively referred to as the Revenue Standards) for the first time in their 2019–20 financial statements.

AASB 15 introduces a new approach to recognising revenue based on the principle that revenue is recognised when control of a good or service transfers to a customer. AASB 15 impacts the timing and amount of revenue recorded in a councils' financial statements, particularly for grant revenue. AASB 15 also increases the amount of disclosures required.

AASB 1058 prescribes how not-for-profit entities account for transactions conducted on non-commercial terms and the receipt of volunteer services. AASB 1058 significantly impacts the timing and amount of income recorded in a councils' financial statements, particularly for grant income and rates which are paid before the commencement of the rating period.

The Council recognised a $1.2 million adjustment to opening accumulated surplus at 1 July 2019 on adoption of the new Revenue Standards.

The Council disclosed the impact of adopting the new Revenue Standards in Note 15.

AASB 16 'Leases'

The Council adopted the new accounting standard AASB 16 'Leases' for the first time in their 2019–20 financial statements.

AASB 16 changes the way lessees treat operating leases for financial reporting. With a few exceptions, operating leases will now be recorded in the Statement of Financial Position as a right-of-use asset, with a corresponding lease liability.

AASB 16 results in lessees recording more assets and liabilities in the Statement of Financial Position and changes the timing and pattern of expenses recorded in the Income Statement.

The Council recognised right-of-use assets of $144,000 and lease liabilities of $144,000 at 1 July 2019 on adoption of AASB 16.

The Council disclosed the impact of adopting AASB 16 in Note 15.

Legislative compliance

My audit procedures did not identify any instances of non-compliance with legislative requirements or a material deficiency in the Council's accounting records or financial statements. The Council's:

- accounting records were maintained in a manner and form to allow the GPFS to be prepared and effectively audited
- staff provided all accounting records and information relevant to the audit.

The Council's:

- accounting records were maintained in a manner and form that facilitated the preparation and the effective audit of the general purpose financial statements
- staff provided all accounting records and information relevant to the audit.

Manuel Moncada
Delegate of the Auditor-General for New South Wales

cc: Michael Urquhart, General Manager
Jim Betts, Secretary of the Department of Planning, Industry and Environment

INDEPENDENT AUDITOR'S REPORT

Report on the general purpose financial statements

Walgett Shire Council

To the Councillors of Walgett Shire Council

Opinion

I have audited the accompanying financial statements of Walgett Shire Council (the Council), which comprise the Statement by Councillors and Management, the Income Statement and Statement of Comprehensive Income for the year ended 30 June 2020, the Statement of Financial Position as at 30 June 2020, the Statement of Changes in Equity and Statement of Cash Flows for the year then ended and notes comprising a summary of significant accounting policies and other explanatory information.

In my opinion:

- the Council's accounting records have been kept in accordance with the requirements of the *Local Government Act 1993*, Chapter 13, Part 3, Division 2 (the Division)
- the financial statements:
  - have been prepared, in all material respects, in accordance with the requirements of this Division
  - are consistent with the Council's accounting records
  - present fairly, in all material respects, the financial position of the Council as at 30 June 2020, and of its financial performance and its cash flows for the year then ended in accordance with Australian Accounting Standards
- all information relevant to the conduct of the audit has been obtained
- no material deficiencies in the accounting records or financial statements have come to light during the audit.

My opinion should be read in conjunction with the rest of this report.

Basis for Opinion

I conducted my audit in accordance with Australian Auditing Standards. My responsibilities under the standards are described in the 'Auditor's Responsibilities for the Audit of the Financial Statements' section of my report.

I am independent of the Council in accordance with the requirements of the:

- Australian Auditing Standards
- Accounting Professional and Ethical Standards Board's APES 110 'Code of Ethics for Professional Accountants (including Independence Standards)' (APES 110).

I have fulfilled my other ethical responsibilities in accordance with APES 110.

Parliament promotes independence by ensuring the Auditor-General and the Audit Office of New South Wales are not compromised in their roles by:

- providing that only Parliament, and not the executive government, can remove an Auditor-General
- mandating the Auditor-General as auditor of councils
- precluding the Auditor-General from providing non-audit services.

I believe the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Other Information

The Council's annual report for the year ended 30 June 2020 includes other information in addition to the financial statements and my Independent Auditor's Report thereon. The Councillors are responsible for the other information. At the date of this Independent Auditor's Report, the other information I have received comprise the special purpose financial statements and Special Schedules (the Schedules).

My opinion on the financial statements does not cover the other information. Accordingly, I do not express any form of assurance conclusion on the other information. However, as required by the *Local Government Act 1993*, I have separately expressed an opinion on the special purpose financial statements and Special Schedule - Permissible income for general rates.

In connection with my audit of the financial statements, my responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or my knowledge obtained in the audit, or otherwise appears to be materially misstated.

If, based on the work I have performed, I conclude there is a material misstatement of the other information, I must report that fact.

I have nothing to report in this regard.

The Councillors' Responsibilities for the Financial Statements

The Councillors are responsible for the preparation and fair presentation of the financial statements in accordance with Australian Accounting Standards and the *Local Government Act 1993*, and for such internal control as the Councillors determine is necessary to enable the preparation and fair presentation of the financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Councillors are responsible for assessing the Council's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting.

Auditor's Responsibilities for the Audit of the Financial Statements

My objectives are to:

- obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error
- issue an Independent Auditor's Report including my opinion.

Reasonable assurance is a high level of assurance, but does not guarantee an audit conducted in accordance with Australian Auditing Standards will always detect material misstatements. Misstatements can arise from fraud or error. Misstatements are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions users take based on the financial statements.

A description of my responsibilities for the audit of the financial statements is located at the Auditing and Assurance Standards Board website at: www.auasb.gov.au/auditors_responsibilities/ar4.pdf. The description forms part of my auditor's report.

The scope of my audit does not include, nor provide assurance:

- that the Council carried out its activities effectively, efficiently and economically
- on the Original Budget information included in the Income Statement, Statement of Cash Flows, and Note 21 Material budget variations
- on the Special Schedules. A separate opinion has been provided on Special Schedule - Permissible income for general rates
- about the security and controls over the electronic publication of the audited financial statements on any website where they may be presented
- about any other information which may have been hyperlinked to/from the financial statements.

Manuel Moncada

Delegate of the Auditor-General for New South Wales

27 November 2020
SYDNEY

Development Assessment Report

DA Number:	DA2020/18	**Council:**	Walgett
Location:	Waterloo Street, Burren Junction		
Development Description:	5MV photovoltaic solar farm with battery storage and ancillary facilities		
Title Details:	Lot 13 DP753926, Lots 1 & 2 DP214271 & Lot 1 DP DP669068		

Proposal Overview

The development proposal includes the construction, operation, upgrading and potential future decommissioning of a 5 MWAC PV electricity generating works and associated infrastructure. The layout consists of farm infrastructure inclusive of modules, internal access road, control room, inverter stations, battery energy storage system and security fence.

The farm will consist of solar panels, steel racking and piled supports, two centralised inverter and transformer stations, containerised battery storage, switch gear and protection equipment, electrical cabling, telecommunications equipment, an operations and maintenance container and perimeter security fencing.

The farm will include a control room that will provide communications connections to the electricity market operator, Essential Energy and Enerparc's operations team. Staff will utilise this container during commissioning in order to advance the farm to its operational readiness.

Once the farm is operational staff will occasionally visit the site as needed to monitor the performance of the farm and to diagnose any faults. A waterless composting toilet will also be installed.

In addition to the above up to three standard 20 foot shipping containers will be provided on-site for storage, and security cameras will be placed strategically within the farm.

The Burren Junction Solar Farm (BJSF) will have a maximum capacity of 5 MWAC and once operational will generate approximately 14,500 megawatt hours (MWh) of carbon free electricity annually. The Australian Energy Regulator (AER) has reported that average annual household electricity usage in the climatic zone within which Burren Junction is located, for a three person household, is 8,497 kilowatt hours (kWh) (ACIL, 2017, updated June 2018).

Based on the above, the energy generated from the BJSF will be sufficient to service approximately 1,709 homes annually during the life of the farm. Census data from 2016 indicates Burren Junction had 127 private dwellings and an average household size of 2.4 persons.

The BJSF will generate electrical energy by converting solar radiation into electricity through the use of solar PV panels. The farm will operate year-round to generate electricity during daylight hours when electricity demand in NSW is at its peak. The farm will be monitored remotely with a limited on-site presence, apart from routine maintenance.

The solar panels will be similar to those used for domestic purposes and will operate as a single axis tracking system (SAT) which follows the sun during the course of the day to ensure optimal energy generation. The farm will consist of linear strings of mounted panels organised into blocks. Each block will connect to an

inverter station that will convert the direct current (DC) energy into grid compatible alternating current (AC) energy.

The generated electricity will be exported into the network through connection into and augmentation of the existing 22 kV overhead powerline located adjacent to the solar farm, feeding into the Essential Energy Burren Junction Zone Substation located approximately 500 m to the south of the proposed BJSF. The farm will have a generation capacity of 5 MWAC and fenced infrastructure will occupy

The land on which the BJSF will be located will be leased from the landowner for a period of 25 years. Notwithstanding that the lease period will be longer than five (5) years, pursuant to the NSW Land Registry Service's Registrar General's Guidelines, lease of a solar farm is treated as a lease of premises and does not require subdivision consent under s.23G *Conveyancing Act 1919*. Accordingly, the development does not require or propose any sub-division of land.

Connection will entail an overhead line from the solar farm connecting into the 22 kV line located immediately next to the farm. This line, feeding back to the substation would likely be upgraded with new conductors. Works at the substation would be restricted to installation of protection system upgrades and metering as per Essential Energy standards, within the existing substation compound.

Contingent on securing planning approval the next step in the BJSF project would be to progress to detailed design. As part of the detailed design a suite of very specific and targeted additional site investigations would be completed. These investigations are undertaken to 'lock-in' a final farm layout and inform the construction program.

To facilitate construction there will be a construction laydown area containing a temporary site office and amenities (lunch room and ablutions), vehicle parking and equipment laydown areas.

A security fence will be installed around the solar farm perimeter. This fence will be up to 2.1 m chain link with three barbs on top, for a total height of up to 2.4 m. Inside this fence a minimum 5 m wide asset protection zone (APZ) will be maintained to provide for bush fire control and tanker access.

Over the 4 month construction effort the demand for labour will vary depending on the site activities being undertaken. Installation and commissioning of modules is labour intensive and employment is expected to peak at approximately 25 on-site workers. This peak period is expected to extend over a 2 month period. Outside this peak the workforce is expected to drop to 10 or less. These jobs will include construction managers, electricians, fitters, various plant operators, mechanics and other skilled and semi-skilled labour, including general labourers.

The farm will also be monitored remotely from an off-site location and apart from a routine maintenance program, specialist operators will only visit the farm when responding to any performance issues (i.e. where actual output measured by the monitoring system deviates from generation forecasts and other key performance metrics).

Activities at the farm that will be part of a routine maintenance program will generally be limited to:

- Equipment, cabling, and communications system inspection, maintenance and testing, and repair and replacement as required.
- Fence, access and internal road, and control room maintenance and management.
- Vegetation (fuel load), weed and pest management.
- Possible solar PV module washing on an as-needed basis.

The design life of the PV modules will be at least 25 years. At the end of their useful life modules and electrical equipment will be either replaced and the farm re-commissioned, or the farm will be decommissioned and the site returned to agricultural land use. This will be a commercial decision based on the relative economics of solar PV generation compared to alternatives at the time. In all likelihood the economics will be favourable because the farm infrastructure, including network connection, underground cabling, foundations, and access track will continue to be serviceable and the cost of replacing modules and inverter stations favourable compared to competing generating technologies.

Decommissioning would include disconnecting the solar farm from the Essential Energy network. The farm's equipment would be removed and disposed of off-site, recycling materials wherever possible. Piles will be lifted out of the ground and all underground cables would be removed.

The ground would be then be worked, stabilised and returned to agricultural use. The primary objective of decommissioning would be to restore the land capability to its pre-existing agricultural value and use.

Property Details/History		
	Checked	**Comments**
File History	Yes ☒ No ☐	It is assumed this has been checked by Council administration staff at lodgement.
Title Plan	Yes ☒ No ☐	
Check Ownership	Yes ☒ No ☐	

Application Type

Is this application an Integrated Development Application?	Yes ☐ No ☒
Is this application a Designated Development Application?	Yes ☐ No ☒
Is this application for State Significant Development?	Yes ☐ No ☒
Is this application submitted by/on behalf of a Public Authority?	Yes ☐ No ☒
Is this application a staged Development?	Yes ☐ No ☒
Is this application a section 96 amendment?	Yes ☐ No ☒

Concurrence/Referral

Section 4.13 – EP & A Act

Does this application require concurrence referral?	Yes ☒ No ☐
Does this application require courtesy comment?	Yes ☒ No ☐

Department	Concurrence	Courtesy	Comments/Issues Raised
Essential Energy	☒	☐	See Attachment to this report for full written submission: *Strictly based on the documents submitted, Essential Energy has no comments to make as to potential* *safety risks arising from the proposed development.* *Essential Energy makes the following general comments:* *1. If the proposed development changes, there may be potential safety risks and it is recommended that Essential Energy is consulted for further comment.* *2. Any existing encumbrances in favour of Essential Energy (or its predecessors) noted on the title of the above property should be complied with.* *3. The proposal must remain outside the easement area/width of the existing 22kV overhead powerlines.* *4. The proposed access road must:* *a) meet the required clearances as per Essential Energy's design manual; and* *b) at all times, maintain a minimum of 10.0 metres clearance from any electrical structures.* *5. Satisfactory arrangements are to be made with Essential Energy with respect to the proposed solar farm which will form part of the development. It is the Applicant's responsibility to enter into the required Connections Agreement/s and any other requirements with Essential Energy for the development, which may include the payment of fees and contributions. Refer Essential Energy's Network Connections team for requirements via email networkconnections@essentialenergy.com.au.* *6. Satisfactory arrangements are to be made with Essential Energy for the provision of power with respect to the proposed development. It is the Applicant's responsibility to make the appropriate application with Essential Energy*

			for the supply of electricity to the development, which may include the payment of fees and contributions. Refer Essential Energy's Contestable Works team for requirements via email contestableworks@essentialenergy.com.au. 7. *In addition, Essential Energy's records indicate there is electricity infrastructure located within the property and within close proximity of the property. Any activities within these locations must be undertaken in accordance with the latest industry guideline currently known as ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure. Approval may be required from Essential Energy should activities within the property encroach on the electricity infrastructure.* 8. *Prior to carrying out any works, a "Dial Before You Dig" enquiry should be undertaken in accordance with the requirements of Part 5E (Protection of Underground Electricity Power Lines) of the Electricity Supply Act 1995 (NSW).* 9. *Given there is electricity infrastructure in the area, it is the responsibility of the person/s completing any works around powerlines to understand their safety responsibilities. SafeWork NSW (www.safework.nsw.gov.au) has publications that provide guidance when working close to electricity infrastructure. These include the Code of Practice – Work near Overhead Power Lines and Code of Practice – Work near Underground Assets.* All of the above can be conditioned.
NSW Planning, Industry & Environment - Biodiversity, Conservation & Science Directorate	☐	☒	See Attachment to this report for full written submission: *BCD has reviewed the Statement of Environmental Effects (SEE) and the appended Biodiversity Assessment Report (BAR). We note that the BAR states that the development footprint occurs on land that is described as "agricultural land, which does not support vegetation" and "does not provide significant habitat for any BC Act or EPBC Act threatened flora and/or fauna or any EPBC Act listed migratory species".* *BCS concurs with the conclusion that entry into the Biodiversity Offset Scheme (BOS) is not required.*
TfNSW	☐	☒	TfNSW requested they be given the opportunity to comment of the proposal. See Attachment to this report for full written submission: *TfNSW offers the following comments to Council for inclusion in any conditions of consent as part of a determination made with regard to this proposal:* • *The applicant has agreed not to exceed a maximum of 10 heavy vehicle loads per day (20 movements). Accordingly a suitable condition should be imposed on the applicant to adhere to this commitment and clearly specifying the heavy vehicle type to be used.* • *Noting the applicant has based carpooling uptake by potential employees on an assumption, a suitable condition should outline a commitment by the applicant to provide alternative means of transport and or carpooling incentives, including a quantifiable percentage or number of employees.*

			• *There are road safety benefits to all road users in the applicant providing a bus for staff to commute to and from site during construction. Driver fatigue is a relatively significant consideration that should be undertaken by the applicant in offering a duty of care to employees during construction. Car pooling and provision of a commuter bus also lessens the impact of increased vehicles within the township of Burren Junction during construction.*
			• *In noting the afore mentioned is lacking in some aspects of quantifiable and or measurable commitments by the applicant with regard to resulting traffic impacts, the warrants in accordance with Austroads Guide to Road Design for the intersection of the Kamilaroi Highway and Waterloo Road are not yet able to be determined.*
			• *Accordingly, the consent authority should be satisfied that the applicant has adequately mitigated by way of measurable commitments to ensuring all road users are not adversely impacted as a result of this proposal at the intersection of the Kamilaroi Highway and Waterloo Road.*
			• *Subsequently if the consent authority deem intersection works are required at the intersection of the Kamilaroi Highway and Waterloo Road, a referral to TfNSW in accordance with Section 138(2) of the Road Act, 1993 is required prior to any works commencing.*
			• *The consent holder shall install at its cost advance warning 'Trucks Turning' signs (W5-22 with distance plate W8-5 under) on the Kamilaroi Highway approaches to the Burren Junction intersection that will be used as the haulage route, prior to any construction works commencing. Please contact development.western@rms.nsw.gov.au to obtain concurrence prior to installation. These signs are to be removed following completion of construction.*
			• *Should additional works within HW29 become proposed or required, in accordance with the relevant legislation the developer shall:*
			  ○ *Enter into a Works Authorisation Deed (WAD) with TfNSW if modification of TfNSW assets such as road pavement are required,*
			  ○ *Obtain concurrence to the detailed design from TfNSW under Section 138 of the Roads Act 1993 prior to construction (for works not covered by a WAD),*
			  ○ *Obtain a Road Occupancy Licence (ROL) for works having potential to affect traffic operations on the State road.*
			• *Prior to the commencement of construction works a Traffic Management Plan (TMP) including Driver Code of Conduct is to be prepared and implemented. The preparation of the TMP will require consultation with TfNSW, Walgett Shire Council, principal contractor(s) and relevant stakeholders. The requirements of the TMP and Driver Code of Conduct are to cover the matters referred to within the TMP Annexure (attached).*
			• *The TMP is to be reviewed and updated in response to any changes in operating conditions. A copy of the TMP and Driver Code of Conduct is to be provided to contractors and employees as a part of the site induction.*
			• *The use of local roads for the purposes of heavy vehicle haulage will require consent from Walgett Shire Council. All routes specified by the proponent for these purposes*

			are to comply with the NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) map and or may be the subject of a Special Heavy Vehicle Permit via the National Heavy Vehicle Regulator (NHVR). • *Any Oversize/Overmass haulage required as part of this proposal will be subject to a special permit being obtained prior to haulage commencing via the National Heavy Vehicle Regulator (NHVR). The NHVR processes ALL Oversize/Overmass permit applications for travel within and between the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria via: https://www.service.nhvr.gov.au/* • *To negate future issues with access rights and servicing requirements, all lots that make up the site are required to be consolidated on one title, or appropriate easements for servicing and access are to be registered to the satisfaction of Council, before occupation or operation of the development.* *Please be advised that under the provisions of the Environmental Planning & Assessment Act 1979 it is the responsibility of the consent authority to assess the environmental implications, and notify potentially affected*  *persons, of any referral agency conditions.* In response to these issues the applicant has responded: *It is pleasing that TfNSW has not raised any objection or asked for intersection treatment works. We note specifically TfNSW's advice that this a matter for Council. To this end we make the following comments and commitments, noting that intersection works on the highway would compromise the viability of the project and, given the short duration and modest traffic movements involved, are not necessary.* *Access onto Waterloo Road off the Kamilaroi Highway will happen in a low speed environment (70 kmph) at a location where line of sight distances from either the east or west are in excess of 500 m.*  ***Left turn for east bound*** *The existing intersection geometry can comfortably accommodate the swept path of a heavy vehicle (refer below generated from Autodesk Vehicle Tracking).*

			 ***Right turn for west bound*** *At just 5 MW capacity, construction related traffic is modest and can be readily and safely managed via the existing access onto Waterloo Road.* *In terms of light vehicles the maximum number of workers on site would be only 25, and only for a two month period. We are confident that at the very least, carpooling would result in a maximum of 20 light vehicles travelling to and from the site daily over this two month peak. Similarly, there would only be a maximum of 10 heavy vehicles a day (20 movements).* *We also emphasise that it is our intention to award the solar farm construction contract to a company that, amongst other things, demonstrates a commitment to maximise local expenditure. We note accommodation opportunities within Burren Junction includes the 16 cabins and additional powered sites for caravans at the Junction City Hotel. The point being, it is more than likely that a relatively significant number of the 25 workers present for the 2 month construction peak will stay in Burren Junction and not travel to the site from either Walgett or Narrabri daily: further reducing movements at the intersection.* *Similarly, whilst the assessment assumes a worst case scenario of no workers staying in Burren Junction (which is unlikely), limited car pooling and no bus option, the reality is that these options will, in all likelihood, be actively pursued by the construction contractor because it provides for a more efficient and cost effective means of building the farm. To this end, the traffic travelling to the site, as assessed in the SEE, does effectively present a 'worst case' scenario that is highly unlikely to eventuate.* *To provide Council reassurance of our commitments, Enerparc confirms the following and would be happy to have a consent condition that caps daily movements to 40 light vehicles and 20 heavy vehicles.* *In addition to this, Enerparc also confirms that prior to commencement of construction we would:* • *Consistent with the request of TfNSW, install advance warning 'Trucks Turning' signs (W5-22 with distance plate W8-5 under) on the Kamilaroi Highway approaches to the Burren Junction intersection that will be used as the haulage route, prior to any construction works commencing.* • *Prior to the commencement of construction submit a Traffic Management Plan (TMP) including a Driver Code of Conduct to Walgett Shire Council for approval.*

			The TMP and Driver Code of Conduct would cover all matters referred to within the TfNSW Annexure to its submission. *Noting that it will be at this point in time, when a construction contract has been entered into, that Enerparc will be able to specify the locked in detail of exactly what will be happening with respect to options such as the numbers of construction staff planning to take up accommodation within Burren Junction during the build, the extent of car-pooling that will be adopted, or the bus option from either Walgett or Narrabri.* • *Notify the local community about project-related traffic.* *Through the above measures Enerparc is confident it can work collaboratively with Council to ensure that no road users are adversely impacted as a result of using the existing intersection of the Kamilaroi Highway and Waterloo Road, and that the amenity of residents within Burren Junction is not compromised.* Comments are addressed below.

Is there any other issue that requires notation? Yes ☐ No ☒

Does this application require referral for decision by Council? Yes ☒ No ☐

Local Environmental Plan

Section 4.15(1)(a)(i) and Section 4.15(a((ii) – EP & A Act

This land is zoned:	RU1 Primary Production
Development as per Standard Definitions:	This development is considered to be an ***electricity generating works*** which means a building or place used for the purpose of making or generating electricity, or electricity storage.

List the relevant clause/clauses applicable under the LEP

Clause	Compliance	Comment
Land Use Table	Yes ☒ No ☐	Prohibited Development but is given permissibility as RU1 is a prescribed zone under the Infrastructure SEPP.
6.1 Earthworks	Yes ☒ No ☐	It will be conditioned that a Soil Erosions & Sediment Control Plan is put in place for the entirety of the operations, not just the construction stage.
6.2 Flooding	Yes ☒ No ☐	A flood risk assessment was undertaken and it was concluded the BJSF would have no impact on flood levels.
6.6 Essential Services	Yes ☒ No ☐	The ability to connect with Electricity and the provisions of a suitable vehicular access are the only essential services. Both are provided.

Is there a draft LEP or draft LEP amendment which may affect this proposal? Yes ☐ No ☒

Do 'existing use' provisions (Sections 4.65-4.70 of the EP&A Act) apply to this development? Yes ☐ No ☒

Development Control Plan

Section 4.15(1)(a)(iii) & Section 4.15(3A) – EP & A Act

Is there a DCP which applies to this land/proposal? Yes ☒ No ☐

List the relevant clause/clauses under the applicable DCP			
Chapter	**Clause**	**Compliance**	**Comment**
3	3.2	Yes ☒ No ☐	**Flooding** - a flood risk assessment was undertaken and it was concluded the BJSF would have no impact on flood levels. Based on this assessment the proposed BJSF: • *will not increase the flood risk to life and property associated with the use of land;* • *is a development that is not incompatible with the land's flood hazard;* • *will not result in significant adverse impacts on flood behaviour and the environment* • *will not significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties;* • *will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of any river banks or watercourses; or* • *is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.* It will be conditioned that after the detailed design work has been undertaken all structures will be constructed to withstand the force of flowing flood waters, including debris and buoyancy forces.
6	6.1	Yes ☒ No ☐	**Environmental Effects** – This application identifies all potential environmental impacts of the development and demonstrates how they may be mitigated.
	6.2	Yes ☐ No ☒	**Soil & Erosion Control** - it will be conditioned that a Soil Erosion & Sediment Control Plan be put in place for the entirety of the operations not just the construction phase.
	6.3	Yes ☐ No ☒	**Vegetation** - no clearing is proposed.
	6.4	Yes ☐ No ☒	**Waste Management** - *Waste generation associated with the BJSF will be mainly restricted to the construction phase. Once operational the farm will not routinely generate any waste.* *Solid waste generated during construction would include packaging materials, metal off-cuts, cabling, excess building materials, general refuse and other non-putrescible general solid wastes.* *Enerparc expect a maximum of five (5) truck loads of waste will require disposal with the balance of construction generating recyclable materials.* *The landfill at Burren Junction is open to residents only for domestic waste. Waste generated from construction of the BJSF will not be disposed of at this landfill.* ***Decommissioning*** *Any future decommissioning would entail removing infrastructure. Opportunities for recycling this equipment will be investigated at the time, with off-site lawful disposal at an approved waste management facility the fall back option. Modules and the racking system would be removed and it could be expected that a significant amount of the support structure could be reused or recycled off-site. Piles will be lifted out of the*

			ground and recycled wherever possible. All underground cabling would be removed and recycled/reused. *Prior to construction activity commencing a Construction Environmental Management Plan (CEMP) would be prepared and submitted to Council. A key sub-plan within the CEMP will be a Waste Minimisation and Management Plan (WMMP). This WMMP will identify where waste will be disposed of - noting that Burren Junction landfill is not an option.* *During construction tracking of all waste leaving the site, identifying the waste classification, quantities and fate of materials to be recycled or disposed will be undertaken.* *No waste will be burnt or buried on the site.*
	6.5	Yes ☒ No ☐	**Noise** – During construction only. *The EPA's Noise Policy for Industry (NPfI) has identified that both the increase in noise level above background levels (that is, intrusiveness of a source), as well as the absolute level of noise are important factors in how a community will respond to noise from industrial sources.* *The intrusiveness noise level is intended to protect against significant changes in noise levels as a result of industrial development. To achieve this, the NPfI describes intrusive noise as noise that exceeds background noise levels (as defined by the Rating Background Level or RBL) by more than 5 dB.* This will be conditioned. **Construction Noise** *The construction of the BJSF is expected to take approximately 4 months with a number of different activities undertaken over that time.* *Construction would be primarily be restricted to what the EPA term 'normal construction hours': which are between 7 am and 6 pm Monday to Friday and 8 am to 1 pm Saturday, with no works on Sundays or Public Holidays.* *The construction related activity that has the potential to cause nuisance impact is primarily restricted to vehicle movements through Burren Junction along Waterloo Street.* **Solar Farm Operation** *Solar farms do not generate significant noise emissions and essentially operate during daytime hours.* *Sources of plant and equipment noise during operation of the BJSF will include tracker motors, inverter stations and the energy storage system.*
	6.6	Yes ☐ No ☒	**Geology** - *The Office of Environment and Heritage (OEH) Land and Soil Capability Mapping for NSW identifies the development site as containing land mapped as Class 3 (High Capability). There is no Biophysical Strategic Agricultural Land (BSAL) within or near the development site.* *The Commonwealth Scientific and Industrial Research Organization (CSIRO) Australian Soil Resource Information System online map indicates the development site has an extremely low probability of occurrence for acid sulfate soils,*

			and no Naturally Occurring Asbestos (NOA) is mapped at or near the development site. *There are no known mineral occurrences in the development site. Review of NSW Government MinView Map confirms there are is a Petroleum Exploration License (PEL 0428) covering the development site. This PEL covers an area of 6,018 square kilometres and is held by Comet Ridge.* *Enerparc has initiated consultation with Comet Ridge and to date no issues have been raised.*
	6.7	Yes ☐ No ☒	**Stormwater** - *Land use developments that require significant cut and fill earthworks and create large impermeable surfaces can change drainage patterns in terms of both flow paths and the volume of stormwater runoff generated in rainfall events. Increased volumes of runoff at higher velocities can cause adverse impacts within the site and lower in the catchment.* *The BJSF site is flat. Construction of the BJSF will not require extensive or significant earthworks and will not result in any fundamental changes to existing drainage patterns.* *The post development scenario involves the inclusion of minimal impervious area. The internal access road will be unsealed gravel and the inverter stations and containerised batteries will be raised above the ground and not impede overland flow. The proposed development will not generate greater volumes of runoff, at higher velocities, draining from the development site.*
	6.10	Yes ☐ No ☒	**Temporary Sewerage Management Facilities** - *Dry port-a-loos would be provided for amenities throughout construction negating the need for on-site domestic sewage treatment.*

Is there a draft DCP which may affect this proposal? Yes ☐ No ☒

Regional Environmental Plan

There is no REP applicable to this area.

State Environmental Planning Policy

Is this proposal affected by a SEPP? Yes ☒ No ☐

List all relevant SEPPs		
SEPP	**Applicability**	**Comment**
SEPP 19 — Bushland in Urban Areas	Not Applicable ☒ Applicable ☐	*The SEPP aims to protect and preserve bushland within the urban areas because of its value to the community as part of the natural heritage, its aesthetic value, and its value as a recreational, educational and scientific resource.*
SEPP 21 – Caravan Parks	Not Applicable ☒ Applicable ☐	*The SEPP ensures that where caravan parks or camping grounds are permitted under an environmental planning instrument, movable dwellings, as defined in the Local Government Act 1993, are also permitted.*
SEPP 33 — Hazardous and Offensive Development	Not Applicable ☐ Applicable ☒	*The SEPP provides considerations for consent for hazardous & offensive development.*
Complies	Yes ☒ No ☐ Comment Only ☐	*The Energy Storage System (ESS) proposed for the BJSF will utilize lithium ion batteries, which are listed in the Australian Dangerous Goods Code as a Class 9 dangerous good. Appendix 2 of Applying SEPP 33 Guidelines (DoP, 2011) provides a risk screening procedure to identify potentially hazardous development. Class 9 dangerous*

		goods are excluded from the SEPP 33 risk screening process. *The proposed development does not pose a significant risk to human health, life or property, or to the biophysical environment. It is not a potentially hazardous industry. Similarly, the BJSF would not emit a polluting discharge which would have a significant adverse impact in the locality or on the existing or likely future development on other land*
SEPP 36 – Manufactured Homes Estates	Not Applicable ☒ Applicable ☐	*The SEPP helps establish well-designed and properly serviced manufactured home estates in suitable locations.*
SEPP 44 — Koala Habitat Protection	Not Applicable ☐ Applicable ☒	*This SEPP applies to land across NSW that is greater than one (1) hectare and is not a National Park or Forestry Reserve. The SEPP encourages the conservation and management of natural vegetation areas that provide habitat for koalas to ensure permanent free-living populations will be maintained over their present range.*
Complies	Yes ☒ No ☐ Comment Only ☐	This policy applies to this Local Government Area as it is listed in Schedule 1 of this SEPP and the property is more than 1 ha in area. *There is no potential Koala habitat within the subject site.*
SEPP 47 – Moore Park Showground	Not Applicable ☒	*Applies to the land shown edged heavy black on the map marked "Moore Park Showground Amendment No 1."*
SEPP 50 Canal Development	Not Applicable ☒ Applicable ☐	*This SEPP bans new canal estates from the date of gazettal, to ensure coastal and aquatic environments are not affected by these developments.*
SEPP 55 — Remediation of Land	Not Applicable ☐ Applicable ☒	*This SEPP applies to land across NSW and states that land must not be developed if it is unsuitable for a proposed use because of contamination.*
Complies	Yes ☒ No ☐ Comment Only ☐	This SEPP requires consideration of whether there have been any activities carried out on land in the past that may have resulted in contamination. If contamination may be present, the proponent is required to undertake suitable investigation and, if necessary, remediation works. *A search of the NSW EPA List of NSW contaminated sites notified to EPA and the Contaminated Land Record did not identify contaminated sites at or near the site. Pursuant to Clause 7 of State Environmental Planning Policy No 55 – Remediation of Land there is no apparent reason to consider that land to be disturbed by the proposed development would be contaminated.*
SEPP 64 — Advertising and Signage	Not Applicable ☒ Applicable ☐	*The SEPP aims to ensure that outdoor advertising is compatible with the desired amenity and visual character of an area, provides effective communication in suitable locations and is of high-quality design and finish.*
SEPP 65 — Design Quality of Residential Flat Development	Not Applicable ☒ Applicable ☐	*The SEPP relates to residential flat development across the state through the application of a series of design principles. Provides for the establishment of Design Review Panels to provide independent expert advice to councils on the merit of residential flat development.*
SEPP 70 – Affordable Housing (Revised Schemes)	Not Applicable ☒ Applicable ☐	*This SEPP identifies that there is a need for affordable housing across the whole of the State and describes the kinds of households for which affordable housing may be provided and makes a requirement with respect to the imposition of conditions relating to the provision of affordable housing.*

Aboriginal Land 2019	Not Applicable ☒ Applicable ☐	*This SEPP provides for development delivery plans for areas of land owned by Local Aboriginal Land Councils to be considered when development applications are considered, and declares specified development carried out on land owned by Local Aboriginal Land Councils to be regionally significant development.*
Affordable Rental Housing 2009	Not Applicable ☒ Applicable ☐	*The SEPP provides for an increase in the supply and diversity of affordable rental and social housing in NSW.*
Building Sustainability Index: BASIX 2004	Not Applicable ☒ Applicable ☐	*The SEPP provides for the implementation of BASIX throughout the State.*
Coastal Management 2018	Not Applicable ☒ Applicable ☐	*This SEPP promotes an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the Coastal Management Act 2016, including the management objectives for each coastal management area.*
Concurrences 2018	Not Applicable ☒	*This SEPP allows the Planning Secretary to act as a concurrence authority.*
Educational Establishments and Child Care Facilities 2017	Not Applicable ☒ Applicable ☐	*This SEPP facilitates the effective delivery of educational establishments and early education and care facilities across the state.*
Exempt and Complying Development Codes 2008	Not Applicable ☒ Applicable ☐	*The SEPP provides exempt and complying development codes that have State-wide application, identifying, in the General Exempt Development Code, types of development that are of minimal environmental impact that may be carried out without the need for development consent; and, in the General Housing Code, types of complying development that may be carried out in accordance with a complying development certificate.*
Gosford City Centre 2018	Not Applicable ☒	*This SEPP applies to the Gosford City Centre.*
Housing for Seniors or People with a Disability 2004	Not Applicable ☒ Applicable ☐	*The SEPP aims to encourage provision of housing for seniors, including residential care facilities. The SEPP provides development standards.*
Infrastructure 2007	Not Applicable ☐ Applicable ☒	*The SEPP provides a consistent approach for infrastructure and the provision of services across NSW, and to support greater efficiency in the location of infrastructure and service facilities.*
Complies	Yes ☒ No ☐ Comment Only ☐	*Pursuant to clause 34 of the Infrastructure SEPP development for the purpose of electricity generating works may be carried out on any land in a prescribed rural zone by any person with consent. The development site, zoned RU1 – Primary Production under the Walgett Local Environmental Plan 2013 (LEP), is a prescribed rural zone, and the Walgett LEP expressly references State Environmental Planning Policy (Infrastructure) 2007.* *The BJSF is a permissible development subject to securing development consent.*
Kosciuszko National Park – Alpine Resorts 2007	Not Applicable ☒	*This SEPP applies to part of Kosciuszko national park, and to Kosciuszko Road and the Alpine Way. The part of Kosciuszko Park to which the policy applies is the land described as the ski resort area in Part 8A of Schedule 6 to the Act.*
Kurnell Peninsula 1989	Not Applicable ☒	*This SEPP applies to land within the Shire of Sutherland, known as Kurnell Peninsula, and adjacent waterways.*

Mining, Petroleum Production & Extractive Industries 2007	Not Applicable ☒ Applicable ☐	*The SEPP aims to provide proper management of mineral, petroleum and extractive material resources and ESD.*
Complies	Yes ☐ No ☐ Comment Only ☒	The land this proposed development is not classified as being Strategic Agricultural Land therefore this development does not fall under the provisions of this SEPP.
Miscellaneous Consent Provisions 2007	Not Applicable ☒ Applicable ☐	*This SEPP provides for the erection of temporary structures and the use of places of public entertainment while protecting public safety and local amenity.*
Penrith Lakes Scheme 1989	Not Applicable ☒	*This SEPP applies to the land shown edged heavy black on the structure plan relating to Penrith Lakes.*
Primary Production and Rural Development 2019	Not Applicable ☐ Applicable ☒	*This SEPP facilitates the orderly economic use and development of lands for primary production; reduce land use conflict and sterilisation of rural land.*
Complies	Yes ☒ No ☐ Comment Only ☐	The development would meet the aims of this SEPP particularly (b) in that the site is located where there will be minimal land use conflict or sterilisation of primary production land. *The site is not identified as being State significant agricultural land under this Policy.*
State and Regional Development 2011	Not Applicable ☒ Applicable ☐	*This SEPP identifies development that is State significant development or State significant infrastructure and critical State significant infrastructure and to confer functions on joint regional planning panels to determine development applications.*
Complies	Yes ☐ No ☐ Comment Only ☒	*The development is not regionally significant development because it is not an electricity generating works with a capital investment value of more than $5 million.*
State Significant Precincts 2005	Not Applicable ☒ Applicable ☐	*This SEPP facilitates the development, redevelopment or protection of important urban, coastal and regional sites of economic, environmental or social significance to the State so as to facilitate the orderly use, development or conservation of those State significant precincts for the benefit of the State, and facilitates service delivery outcomes for a range of public services and to provide for the development of major sites for a public purpose or redevelopment of major sites no longer appropriate or suitable for public purposes.*
Sydney Drinking Water Catchment 2011	Not Applicable ☐ Applicable ☐	*This SEPP provides for healthy water catchments that will deliver high quality water while permitting compatible development.*
Sydney Region Growth Centres 2006	Not Applicable ☒	*This SEPP co-ordinates the release of land for residential, employment and other urban development in the Orth West Growth Centre, the South West Growth Centre and the Wilton Growth Area.*
Three Ports 2013	Not Applicable ☒	*This SEPP provides a consistent planning regime for the development and delivery of infrastructure on land in Port Botany, Port Kembla and the Port of Newcastle*
Urban Renewal 2010	Not Applicable ☒ Applicable ☐	*This SEPP establishes the process for assessing and identifying sites as urban renewal precincts, and facilitates the orderly and economic development and redevelopment of sites in and around urban renewal precincts,*

Vegetation in Non-Rural Areas 2017	Not Applicable ☒ Applicable ☐	*This SEPP protects the biodiversity values of trees and other vegetation in non-rural areas of the State, and to preserves the amenity of non-rural areas of the State through the preservation of trees and other vegetation.*
Western Sydney Employment Area 2009	Not Applicable ☒	*This SEPP protects and enhances the land known as the Western Sydney Employment Area for employment purposes.*
Western Sydney Parklands 2009	Not Applicable ☒	*This SEPP puts in place planning controls that will enable the Western Sydney Parklands Trust to develop the Western Parklands into a multi-use urban parkland for the region of western Sydney.*

List all relevant Draft SEPPs		
SEPP	**Applicability**	**Comment**
SEPP 55 — Remediation of Land	Not Applicable ☐ Applicable ☒	*The proposed SEPP will provide a state–wide planning framework for the remediation of land; require consent authorities to consider the potential for land to be contaminated when determining development applications; clearly list the remediation works that require development consent; and introduce certification and operational requirements for remediation works that can be undertaken without development consent.*
Complies	Yes ☒ No ☐ Comment Only ☐	See Comment above.
SEPP - Environment	Not Applicable ☒ Applicable ☐	*This consolidated SEPP proposes to simplify the planning rules for a number of water catchments, waterways, urban bushland, and Willandra Lakes World Heritage Property. Changes proposed include consolidating the following seven existing SEPPs:* • *State Environmental Planning Policy No. 19 – Bushland in Urban Areas* • *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011* • *State Environmental Planning Policy No. 50 – Canal Estate Development* • *Greater Metropolitan Regional Environmental Plan No. 2 – Georges River Catchment* • *Sydney Regional Environmental Plan No. 20 – Hawkesbury-Nepean River (No.2-1997)* • *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005* • *Willandra Lakes Regional Environmental Plan No. 1 – World Heritage Property.*
SEPP – Housing Diversity	Not Applicable ☒ Applicable ☐	*This SEPP* ***aims to facilitate the delivery of diverse and affordable housing to meet the needs of the State's growing population and support the development of a build-to-rent sector. It*** *introduces new definitions for build-to-rent housing, student housing and co-living;* • *amends some state-level planning provisions, particularly for boarding house and seniors housing development;* • *amends some state-level planning provisions to support social housing developments undertaken by the NSW Land and Housing Corporation (LAHC) on government-owned land; and* • *consolidates three housing-related SEPPs*

		○ *State Environmental Planning Policy (Affordable Rental Housing) 2009* ○ *State Environmental Planning Policy (Housing for Seniors and People with a Disability) 2004* ○ *State Environmental Planning Policy No 70 – Affordable Housing (Revised Schemes).*
SEPP (State & Regional Development)	Not Applicable ☒ Applicable ☐	*The proposed changes will:* *Remove the $30 million capital investment value criteria for upgrades of water treatment facilities associated with an existing facility.* • *Fast-track the approval process so drought related water treatment facility upgrades can be delivered quicker.* • *Allow Sydney Water to respond to future drought conditions.* *The proposed changes will allow facilities unlikely to have a significant environmental impact on the environment to be assessed by water supply public authorities, instead of a longer State Significant Infrastructure assessment process.* *Any new water treatment facilities will still be assessed as State Significant infrastructure. The proposed changes won't apply to desalination plants, new water treatment facilities or water storage facilities.*
SEPP (Infrastructure)	Not Applicable ☒ Applicable ☐	*This amendment aims to clarify and streamline the planning assessment for the extension and maintenance of the Wild Dog Fence.* *The proposed amendment includes:* • ***Extension**: amend Clause 132 to allow an extension of the fence to be considered as State Significant Infrastructure (subject to a detailed assessment) replacing the need to seek multiple government approvals for different parts of the fence.* • ***Maintenance**: include provisions under Clause 132 that permit routine maintenance of the fence to be carried out as exempt development.*

Commonwealth Legislation

Is this proposal affected by a Commonwealth Act? Yes ☒ No ☐

List all relevant SEPPs		
SEPP		**Comment**
Environmental Protection Biodiversity Conservation Act 1999	Not Applicable ☐ Applicable ☒	*Referral to the Australian Government Minister for the Environment under the Commonwealth's Environment Protection Biodiversity Conservation Act 1999 is not required*
Renewable Energy Act 2000	Not Applicable ☐ Applicable ☒	*The Renewable Energy Act 2000 establishes solar as an eligible energy source under the Commonwealth's RET. Creating LGC's from the BJSF, which can then be sold to liable entities, is subject to the approval of the Clean Energy Regulator pursuant to the Renewable Energy Act 2000.*

Is there a draft Commonwealth legislation which may affect this proposal? Yes ☐ No ☒

Planning Agreement

Section 4.15(1)(a)(iiia) – EP & A Act

Is there a Planning Agreement in force under section 93F of the EP&A Act? Yes ☐ No ☒

Has a Planning Agreement been offered under this development? Yes ☐ No ☒

Local Strategic Planning Statement

Is there an item in the Local Strategic Planning Statement that requires notation? Yes ☒ No ☐

Planning Priority	Far West Regional Plan Alignment	Strategy	Action
Promote preferred locations for industrial growth and development.	Direction 4 - Diversity energy supply through renewable energy generation.	Support the development of renewable energy in appropriate areas.	Facilitate small-scale renewable energy projects using bioenergy, wind, small-scale hydro, geothermal or other innovative storage technologies through working with providers and ensure use is permissible in the LEP.
Comment	*As noted in Council's (draft) Local Strategic Planning Statement (May 2020) the village of Burren Junction contains a number of vacant lots and the Shire's Growth Management Strategy 2011 (which preceded the making of Council's Local Environmental Plan) sought to limit the expanse of village zones and align dwelling entitlements with the capacity of land to be serviced by effluent disposal. Expansion of the Burren Junction village to the north and encroachment towards the BJSF is unlikely.* *The Statement also identifies that:* *Making the most of Walgett Shire's solar potential requires identification of preferred locations based on minimal impact on productive agricultural land and proximity to existing and planned infrastructure.* *As noted, the existing Essential Energy Zone Substation at Burren Junction provides the opportunity to connect to existing infrastructure, and occupation of up to 20 hectares on land not mapped as Biophysical Strategic Agricultural Land (BSAL) would have a negligible impact on productive agricultural land in the Shire. Similarly, the Far West Regional Plan 2036 includes a direction for diversity of energy supply through renewable energy generation and support for the Far West to become a leader in renewable energy.* *A planning priority in the Statement is to promote preferred locations for industrial growth and development, and one of the identified strategies for achieving this is to support the development of renewable energy in appropriate areas. Actions to achieve this include:* *Facilitate small-scale renewable energy projects using bioenergy, wind, small-scale hydro, geothermal or other innovative storage technologies through working with providers and ensure use is permissible in the LEP.*		

Has the applicant submitted any supporting planning assessments? Yes ☒ No ☐

Comment: Statement of Environmental Effects – Premise – 26 August 2020

Subdivision

Is this application for subdivision? Yes ☐ No ☒

Comment: *The land on which the BJSF will be located will be leased from the landowner for a period of 25 years. Notwithstanding that the lease period will be longer than five (5) years, pursuant to the NSW Land Registry Service's Registrar General's Guidelines, lease of a solar farm is treated as a lease of premises and does not require subdivision consent under s.23G Conveyancing Act 1919. Accordingly, the development does not require or propose any sub-division of land.*

Environmental Impacts

Section 4.15(1)(b) – EP & A Act

Does this proposal have any potential impact on:

	Impact	Comment
Social	Yes ☐ No ☒	
Economical	Yes ☒ No ☐	*The project is expected to take 4 months to build with a peak of up to 25 workers on site.* *Construction will generate some short term employment opportunities and a demand for some services and resources that can be locally sourced. The roles required will vary from highly skilled electricians able to work with solar PV systems (both low and high voltage) to general labourers and contractors.* *There will be contracts let for the provision of raw materials (e.g. gravel, sand, concrete) and plant/operators (e.g. graders, piling rigs, mobile cranes, trenchers, loaders, rollers, water carts).* *During the build money will be spent within the Walgett Shire on accommodation, meals and support services.* *Post construction the BJSF will not require a permanent on-site presence. There will, however, be a demand for contracted support services as regular maintenance on infrastructure and land management (e.g. weed spraying) will be required on an ongoing basis.*
Electromagnetic Interference	Yes ☐ No ☒	*Electric and magnetic fields (EMF) are produced naturally as well as by human activity. The earth has both a magnetic field, produced in the earth's core, and an electric field produced by electrical activity like storms in the atmosphere. Electrical equipment of all sizes and voltages produces EMF. Both fields drop away rapidly with distance from the source or due to shielding by insulation or earth (in the case of buried installations).* *The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has issued Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields. The relevant authority in Australia is the Australian Radiation Protection and Nuclear Safety Agency (ARPNSA) and it refers to the ICNIRP guidelines.* *The ICNIRP EMF guidelines provide relevant limits for the general public for 50 Hz sources as follows:* • *Electrical Field Strength (E): 5 kilo Volts per metre (kV/m)* • *Magnetic Flux Density (B): 100 micro Teslas (µT)* *Enerparc will ensure that in detailed design and equipment procurement that the ICNIRP EMF guidelines will be complied with.* This will be conditioned.

Siting & Configuration/Setbacks	Yes ☐ No ☒	*Solar farm infrastructure will be located over 600m distant from the closest residence and be built within a flat, cleared landscape. Above ground electrical infrastructure, including overhead powerlines and the Burren Junction Zone Substation are existing features of the locale.*
Glare	Yes ☐ No ☒	*Glare is a continuous source of excessive brightness relative to ambient lighting (Ho, 2009). Solar PV panels are specifically designed to absorb not reflect solar energy. Reflected sunlight is lost energy and represents lost revenue. For this reason the glass used in solar PV systems can reflect just 2% of the light received (Spaven, 2012). In comparative terms this is significantly lower than the reflectivity of other materials.* *The potential for glare will be further minimised by the use of a single-axis tracking modules which track east to west with the sun. This means the angle of incident (AOI) sunlight onto the solar panel is generally perpendicular, resulting in more energy hitting the module and less reflection than a fixed-axis module which has a greater AOI as the sun moves.*
Lighting	Yes ☐ No ☒	*The only night lighting associated with the BJSF would be targeted security lighting. This will be for the control room, inverter stations and battery energy storage system.* *Lighting would be designed and operated to comply with Australian Standard AS4282 Control of Obtrusive Effects of Outdoor Lighting. In so doing there would be negligible light spill above the horizontal plane and no significant off-site impacts.* *Full perimeter security lighting is not proposed.* This will be conditioned.
Soil	Yes ☐ No ☒	*The Office of Environment and Heritage (OEH) Land and Soil Capability Mapping for NSW identifies the development site as containing land mapped as Class 3 (High Capability). There is no Biophysical Strategic Agricultural Land (BSAL) within or near the development site.* *The Commonwealth Scientific and Industrial Research Organization (CSIRO) Australian Soil Resource Information System online map indicates the development site has an extremely low probability of occurrence for acid sulfate soils, and no Naturally Occurring Asbestos (NOA) is mapped at or near the development site.*
Visual	Yes ☒ No ☐	*Visual impact is essentially a subjective judgement. What is intrusive or objectionable to some can be innocuous to others. For this reason conclusions as to the acceptability or significance of a visual impact is basically an opinion. A reasonable assumption however is that the existing landscape and views for those living locally is valued.* *The proposed solar farm will be visible (at distance) but it will not generate nuisance glare or light spill for any neighbour. Infrastructure will sit relatively low in the landscape (<3 m in height) and not significantly change or obstruct views for residents. Farm buildings and vegetation around the curtilage of residences to the south of the solar farm will minimise the magnitude of change to the landscape.*

		The BJSF will be highly visible, yet after public consultation, there were no submissions received. Therefore it is considered that this is not an issue for the immediate community.
Significant Views	Yes ☐ No ☒	
Amenity	Yes ☐ No ☒	
Water	Yes ☐ No ☒	*There are no registered groundwater bores within 500 m of the development site and a review of the Australian Government Bureau of Meteorology (BOM) Groundwater Dependent Ecosystem Atlas shows there are no terrestrial or aquatic groundwater dependent ecosystems (GDEs) within the development site.*
Air	Yes ☐ No ☒	***CONSTRUCTION IMPACTS*** *Potential adverse air quality impacts associated with the solar farm are restricted to the construction phase. Notwithstanding the minor earthworks that will be required, any activity that entails the use of plant and equipment on soil has the potential to generate localised dust emissions.* *These impacts can, however, be readily managed through the adoption of suitable mitigation measures during the construction effort. Such measures would include:* • *Restricting vehicle movements and ground disturbance to the minimum area that is safely practicable.* • *Undertaking dust suppression through strategic watering, as required.* • *If necessary, temporary cessation of some works during excessively dry and windy conditions.* ***OPERATIONAL IMPACTS*** *The change in land use from agricultural land to a solar farm will reduce the potential for localised particulate emissions. The principal source of dust is ground disturbance and wind exposure to an un- vegetated ground surface.* *With the financial return on the land asset driven principally by passive harvesting of solar energy above ground, rather than grazing and/or farming and the associated periodic ground disturbance and changes to groundcover, the retention of groundcover over the site will be comparatively easier to maintain.* *As a source of particulates and localised dust emissions the solar farm will, in comparative terms, be a land use that has the potential to improve local air quality.* *From a broader perspective the 5 MWAC BJSF will generate approximately 14,500 MWh of electricity annually. Indirect emissions of GHG are emissions generated in the wider economy as a consequence of an organisation's or individual's activities (particularly from its/their demand for goods and services), but which are physically produced by the activities of another organisation. The most important category of indirect emissions in Australia is from the consumption of electricity.* *To this end the Department of Environment and Energy's (DoEE) Australian National Greenhouse Accounts specifies indirect*

		emission factors to calculate GHG emissions from the generation of electricity purchased and consumed as kilograms of carbon dioxide equivalent (CO2e) per unit of electricity consumed (kgCO 2-e/kWh). For NSW the indirect emission factor for the consumption of purchased electricity from the grid is 0.82 kgCO2-e/kWh (DoEE, July 2018). *Generating 14,500 MWh/year of electricity equates to a savings of over 11,890 tonnes of GHG a year.*
Noise	Yes ☐ No ☒	*The EPA's Noise Policy for Industry (NPfI) has identified that both the increase in noise level above background levels (that is, intrusiveness of a source), as well as the absolute level of noise are important factors in how a community will respond to noise from industrial sources.* *The intrusiveness noise level is intended to protect against significant changes in noise levels as a result of industrial development. To achieve this, the NPfI describes intrusive noise as noise that exceeds background noise levels (as defined by the Rating Background Level or RBL) by more than 5 dB.* This will be conditioned. **Construction Noise** *The construction of the BJSF is expected to take approximately 4 months with a number of different activities undertaken over that time.* *Construction would be primarily be restricted to what the EPA term 'normal construction hours': which are between 7 am and 6 pm Monday to Friday and 8 am to 1 pm Saturday, with no works on Sundays or Public Holidays.* *The construction related activity that has the potential to cause nuisance impact is primarily restricted to vehicle movements through Burren Junction along Waterloo Street.* **Solar Farm Operation** *Solar farms do not generate significant noise emissions and essentially operate during daytime hours.* *Sources of plant and equipment noise during operation of the BJSF will include tracker motors, inverter stations and the energy storage system.*
Land Degradation	Yes ☐ No ☒	*Potential land use impacts associated with the construction, operation and (possible) future de- commissioning of the solar farm in 25 years include the following:* • *temporary loss of agricultural land;* • *creating land use conflicts through compromising the continued use of adjoining lands for primary production purposes by neighbours; and* • *restricting access to resources.* ***LOSS OF AGRICULTURAL LAND*** ***Extent and Capability*** *The development site is not mapped as Biophysical Strategic Agricultural Land (BSAL). BSAL is land with high quality soil and water resources capable of sustaining high levels of productivity. The site is not identified as being state significant agricultural land and the use of 16 ha of the development site for a solar farm*

		does not compromise or significantly diminish the availability of land for primary production purposes in the Burren Junction district. ***Restoration*** *At the end of the project life, if Enerparc determines that it will decommission the solar farm and the land reverted to agricultural use, then the land needs to be 'fit-for-purpose'. Decommissioning would entail the following:* • *Disconnection from the Essential Energy Zone substation.* • *Removal of inverter stations, modules, racking system and posts.* • *Removal of underground cabling.* • *Removal of the O&M, battery and system containers and foundations.* • *Removal of security fencing.* • *Rehabilitation of access track.* ***COMPATIBILITY*** *The proposed BJSF would not compromise the capacity for neighbours to continue existing or future primary production land uses. As an occupier of land in a rural environment, Enerparc as the owners of the BJSF will, like their neighbours, have responsibilities to manage the land appropriately. In particular this will include obligations to manage noxious weeds and to control fuel loads.* ***LOSS OF RESOURCES LAND*** *There are no known mineral occurrences in the development site. Review of NSW Government MinView Map confirms there are is a Petroleum Exploration License (PEL 0428) covering the development site. This PEL covers an area of 6,018 square kilometres and is held by Comet Ridge.* *Enerparc has initiated consultation with Comet Ridge and to date no issues have been raised.*
Tree Loss	Yes ☐ No ☒	There is no proposed clearing.
Flora	Yes ☒ No ☐	A biodiversity assessment was undertaken and it was found that: *Referral to the Australian Government Minister for the Environment under the Commonwealth's Environment Protection Biodiversity Conservation Act 1999 is not required* ***SIGNIFICANCE OF IMPACTS*** *The development site is mapped as non-native vegetation and does not provide significant habitat for any BC Act or EPBC Act threatened flora and/or fauna or any EPBC Act listed migratory species. No threatened species were recorded on the site. Minimal habitat features were recorded within the site. The cracking soils may provide habitat for some reptiles, however due to the high level of disturbance this is not likely. If impact mitigation measures are implemented, there will be no significant impact from the proposal on any threatened species.* *There is no potential Koala habitat within the subject site. The development does not impact on or occur within any Protected Riparian Habitat or Key Fish Habitat or threatened fish habitat, or impact Groundwater Dependent Ecosystems.*
Fauna	Yes ☒ No ☐	

		As no identified plant community types (PCTs) will be cleared in association with the proposed development (on a minimum lot size of 400 ha; therefore a clearing threshold of <1 ha) and no significant impact to threatened species will occur, it is not necessary to enter the Biodiversity Offset Scheme.

Has a Threatened Species Impact Assessment been prepared? Yes ☒ No ☐

Are there any species/communities listed under the TSC Act? Yes ☒ No ☐

Comment: The Biodiversity Assessment Report was prepared by OzArk Environmental & Heritage Management Pty Ltd.

The following summary of findings and conclusions are provided to assist with ongoing project planning.

- *The subject site is mapped as non-native vegetation and contains minimal vegetation, with the majority of the site bare soil that has undergone agricultural activities such as ploughing.*
- *The subject site does not provide significant habitat for any BC Act or EPBC Act threatened flora and/or fauna or any EPBC Act listed migratory species. No threatened species were recorded on the subject site. Minimal habitat features were recorded within the subject site. The cracking soils may provide habitat for some reptiles, however due to the high level of disturbance of the site this is not likely. If impact mitigation measures are implemented, there will be no significant impact from the proposal on any threatened species.*
- *There is no potential Koala habitat within the subject site. However, as the subject Lot is mapped as containing 'highly suitable Koala habitat' that is likely to be occupied by Koalas on the Koala Development Application Map, the Koala Habitat Protection SEPP has been considered. As the proposal is considered a Tier 1, 'low or no direct impacts' the preparation of a Koala Assessment Report is not required.*
- *The proposal does not impact on or occur within any Protected Riparian Habitat or Key Fish Habitat or threatened fish habitat.*
- *The proposal does not impact Groundwater Depended Ecosystems.*
- *As no identified plant community types (PCTs) will be cleared in association with the proposed development (on a minimum lot size of 400 ha; therefore a clearing threshold of <1 ha) and no significant impact to threatened species will occur, it is not necessary to enter the Biodiversity Offset Scheme.*

Does the proposed development require approval under the EPBC Act Yes ☐ No ☒

Heritage	Impact	Comment
European	Yes ☐ No ☒	*A review of the Walgett LEP, State Heritage Register and Australian Heritage Database confirms that there are no known items of heritage significance at or near the development site.*
Aboriginal	Yes ☐ No ☒	*An archaeological survey of the development site has been undertaken consistent with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales, with the field inspection following the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales.* *The inspection did not record any Aboriginal sites or sensitive archaeological landforms. Recommended mitigation measures to ensure protection to the area's potential Aboriginal cultural heritage values have been adopted and include:* • *All staff and contractors involved in the BJSF construction should be made aware of the legislative protection requirements for all Aboriginal sites and objects.*

		• *If Aboriginal artefacts or skeletal material are noted, work should cease and the procedures in the Unanticipated Finds Protocol should be followed.* • *Work crews should undergo cultural heritage induction to ensure they recognise Aboriginal artefacts and are aware of the legislative protection of Aboriginal objects under the National Parks and Wildlife Act 1974 and the contents of the Unanticipated Finds Protocol.*

Is this land classified as containing an item of environmental heritage? Yes ☐ No ☒

Is there an impact on and adjoining or in close vicinity to an item of environmental heritage? Yes ☐ No ☒

Is this proposal in a heritage conservation Zone? Yes ☐ No ☒

Is this proposal in an adjoining or in close vicinity to a conservation zone? Yes ☐ No ☒

Has a Heritage Impact Statement been prepared for this proposal? Yes ☐ No ☒

Has an Archaeological Survey been prepared for this proposal? Yes ☐ No ☒

Flooding

Section 4.15(1)(b) – EP & A Act

Is this property flood affected? Yes ☒ No ☐

Is there a flood study which includes this land? Yes ☐ No ☒

Has a Flood Impact Assessment been completed for this proposal? Yes ☒ No ☐

Comment: A flood risk assessment was undertaken and it was concluded the BJSF would have no impact on flood levels. Based on this assessment the proposed BJSF:

- *will not increase the flood risk to life and property associated with the use of land;*
- *is a development that is not incompatible with the land's flood hazard;*
- *will not result in significant adverse impacts on flood behaviour and the environment*
- *will not significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties;*
- *will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of any river banks or watercourses; or*
- *is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.*

It will be conditioned that after the detailed design work has been undertaken all structures will be constructed to withstand the force of flowing flood waters, including debris and buoyancy forces.

Bush Fire Prone Land

Section 4.15(1)(b) – EP & A Act

Is this property bush fire prone as per the Bush Fire Prone Map? Yes ☐ No ☒

Is this property bush fire prone as per any draft Bush Fire Prone Map? Yes ☒ No ☐

Category: Category1 ☐ Category2 ☐ Category 3 ☒ Buffer ☐

Has a Bush Fire Management Plan been Prepared? Yes ☒ No ☐

Has this plan been accepted by the NSW Rural Fire Service? Yes ☐ No ☒

Does this development comply with *Planning for Bushfire 2016*? Yes ☒ No ☐

Comment:

RISK

The development site does not contain mapped bushfire prone land. Notwithstanding, the landscape has the potential to carry grass fires.

The Rural Fires Act 1997 places a duty of care on all land managers/owners to prevent a fire spreading on or from their land. This duty of care for the BJSF will be addressed through solar farm design, construction and operation.

DESIGN

The design of the solar farm incorporates the following design features relevant to minimising bushfire risk.

ASSET PROTECTION ZONE

A security fence will be installed around the solar farm infrastructure. Inside this fence a minimum 5 m wide APZ will be maintained to provide for bush fire control and tanker access.

The APZ will be maintained consistent with the standards prescribed in the Rural Fire Service (RFS) Practice Note for Telecommunication Towers in Bush Fire Prone Areas (RFS, 2012). These standards are considered appropriate given that the development site is not located on land mapped as bush fire prone land and the RFS Practice Note is predicated on the assumption that telecommunications towers are critical infrastructure.

Compliance with these standards means the APZ must be free of surface fuel, noting that there will be no canopy providing any elevated fuel source. The APZ will provide the requisite defendable space around the solar farm infrastructure.

TANKER ACCESS

The layout of the solar farm will provide for appropriate emergency vehicle access across the entire site, with setbacks from the site boundary wide enough to permit required fire tanker manoeuvrability. The internal access track will provide a rapid access route to the inverter stations and battery storage.

BUFFERS TO ELECTRICAL INFRASTRUCTURE

Essential Energy electricity assets exist immediately adjacent to the development site. These include aboveground 22 kV powerlines and the Burren Junction zone substation.

The layout of the BJSF will be finalised by Enerparc in consultation with Essential Energy and in compliance with the ISSC 20 – Guideline for the Management of Activities within Electricity Easements and Close to Electricity Infrastructure (September 2012).

CONSTRUCTION

- *Prior to construction commencing contact will be made with the Local Brigade of the RFS and details about the construction schedule, contact numbers and site access arrangements will be shared.*
- *During bushfire season a mobile firefighting unit will be provided on-site.*
- *The fuel load over the site prior to and during construction will be monitored and reduction measures implemented as required. These measures will be restricted to mechanical slashing or stock crash grazing.*
- *The following specific procedures for minimising bushfire risk will be adopted during construction:*
  - *No burning of vegetation or any waste material would take place on the construction site;*
  - *Fire extinguishers will be available in all vehicles;*
  - *During the bushfire season the fire danger status would be monitored daily (through the RFS website http://www.rfs.nsw.gov.au) and communicated to personnel;*
  - *Total Fire Ban rules will be adhered to. That is, the EPC Contractor (and any of its contractors) will not:*
    - *(in any grass, crop or stubble land) drive or use any motorised machine unless the machine is constructed so that any heated areas will not come into contact with combustible matter;*
    - *carry out Hot Works (e.g. welding operations or use an angle grinder or any*

other implement that is likely to generate sparks), unless the necessary exemption from the RFS Commissioner has been obtained and work complies with all requirements specified in the exemption; and

- *It is not anticipated that any fuel or flammable liquid will be stored on-site. If any is, this material would be stored in a designated area and will be sign posted "Fuel Storage Area." A register will be maintained that confirms the quantities and location of any flammable material stored on-site.*

OPERATIONS

Unmanaged grasslands can create a bushfire risk hazard. The performance measure for managing the bushfire risk will be to operate the BJSF and maintain the site in a such a manner that no grass fire originates from within the BJSF site, and/or any approaching bushfire does not intensify as a consequence of entering the BJSF site because of excessive fuel loads. The fuel load over the BJSF will be monitored and fuel load reduction measures implemented as required. These measures will be either mechanical slashing or stock crash grazing.

Procedures for ensuring this outcome, including consultations with the local RFS brigade, will be specified in the OEMP.

Contaminated Land

Section 4.15(1)(b) – EP & A Act

Has this land been identified as being contaminated land by Council?	Yes ☐ No ☒
Does this land require remediation?	Yes ☐ No ☒
Has a Contaminated Land Site Investigation been completed?	Yes ☐ No ☒
Is a referral required to NSW Environment Protections Authority?	Yes ☐ No ☒
Has a Remediation Action Plan been completed for the land?	Yes ☐ No ☒
Is it a possibility this land may be contaminated?	Yes ☐ No ☒
Is this land in the close vicinity or adjoining a known contaminated site?	Yes ☐ No ☒

Comment: A review of the EPA Contaminated Land Record under s.58 of the *Contaminated Land Management Act 1997* and the List of NSW contaminated sites notified to EPA under s.60 of the Act does not identify any registered contaminated sites on or near the development site. The likelihood of contamination is considered low.

Infrastructure

Section 4.15(1)(b) – EP & A Act

Is an engineering assessment required?	Yes ☒ No ☐
Has an engineering assessment been completed?	Yes ☒ No ☐

Who completed the Engineering Assessment?

Engineering Department ☒ Assessing Officer ☐ Other ☐ Raju Ranjit – Director of Engineering & Technical Services

Comment: Email – 7.12.2020 – No Comment

Does this proposal have any potential impact on:

	Impact	Comment
Sewer	Yes ☐ No ☒	*Dry port-a-loos would be provided for amenities throughout construction negating the need for on-site domestic sewage treatment.*
Water	Yes ☐ No ☒	
Drainage	Yes ☒ No ☐	*Land use developments that require significant cut and fill earthworks and create large impermeable surfaces can change drainage patterns in terms of both flow paths and the*

		volume of stormwater runoff generated in rainfall events. Increased volumes of runoff at higher velocities can cause adverse impacts within the site and lower in the catchment. *The BJSF site is flat. Construction of the BJSF will not require extensive or significant earthworks and will not result in any fundamental changes to existing drainage patterns.* *The post development scenario involves the inclusion of minimal impervious area. The internal access road will be unsealed gravel and the inverter stations and containerised batteries will be raised above the ground and not impede overland flow. The proposed development will not generate greater volumes of runoff, at higher velocities, draining from the development site.*
Waste	Yes ☐ No ☒	*Waste generation associated with the BJSF will be mainly restricted to the construction phase. Once operational the farm will not routinely generate any waste.* *Solid waste generated during construction would include packaging materials, metal off-cuts, cabling, excess building materials, general refuse and other non-putrescible general solid wastes.* *Enerparc expect a maximum of five (5) truck loads of waste will require disposal with the balance of construction generating recyclable materials.* *The landfill at Burren Junction is open to residents only for domestic waste. Waste generated from construction of the BJSF will not be disposed of at this landfill.* ***Decommissioning*** *Any future decommissioning would entail removing infrastructure. Opportunities for recycling this equipment will be investigated at the time, with off-site lawful disposal at an approved waste management facility the fall back option. Modules and the racking system would be removed and it could be expected that a significant amount of the support structure could be reused or recycled off-site. Piles will be lifted out of the ground and recycled wherever possible. All underground cabling would be removed and recycled/reused.* *Prior to construction activity commencing a Construction Environmental Management Plan (CEMP) would be prepared and submitted to Council. A key sub-plan within the CEMP will be a Waste Minimisation and Management Plan (WMMP). This WMMP will identify where waste will be disposed of - noting that Burren Junction landfill is not an option.* *During construction tracking of all waste leaving the site, identifying the waste classification, quantities and fate of materials to be recycled or disposed will be undertaken.* *No waste will be burnt or buried on the site.*
Existing Easements	Yes ☐ No ☒	There are no known existing easements. An easement for access to Lot 13 DP753926 will need to be created over Lots 1 & 2 DP 214271and Lot 1 DP669068. Further an easement will need to be created over Lots 1 & 2 DP 214271and Lot 1 DP669068 for connection to the electricity grid. Alternatively, Lot 13 DP753926 Lots 1 & 2 DP214271and Lot 1 DP669068 needs to be consolidated so that the development is within a single lot.

		This will be conditioned.
Electricity	Yes ☐ No ☒	
Telecommunications	Yes ☐ No ☒	
Pedestrian Access	Yes ☐ No ☒	There will be no pedestrian access required.
Traffic		
Comment	*Once commissioned and operational the BJSF will generate negligible traffic. No staff will be permanently based on-site. Visitation will be limited to periodic maintenance and infrequent plant and equipment replacements. It will be during construction and any future decommissioning of the farm that traffic movements will be significant.* *Construction is expected to be completed over a four (4) month period with an expected peak period of 2 months during which a range of construction tasks will be undertaken concurrently. During this peak it is anticipated that up to 25 workers will be on-site daily, dropping to 10 workers or less for the shoulder periods.* *In terms of peak daily vehicle numbers,* • *the maximum number of heavy vehicles accessing the site daily, during the peak of the construction period, is not expected to exceed 10 (i.e. generating a total of 20 heavy vehicle movements in a day).* • *the maximum number of light vehicles accessing the site daily, during the peak of the construction period, is not expected to exceed 25 (i.e. generating a total of 50 light vehicle movements a day during the two month peak).* *For assessment purposes it is assumed only 30% of the 25 workers would participate in some form of carpooling; resulting in an estimated 20 private light vehicles travelling to and from the site daily for the 2 month peak.* • *In terms of peak hour vehicle numbers,* • *the maximum number of heavy vehicles accessing the site in an hour, during the peak of the construction period, is not expected to exceed three (3).* • *the maximum number of light vehicles accessing the site in an hour, during the peak of the construction period, is not expected to exceed 20 corresponding to daily start and end times.*	

Table 10.1 – Heavy Vehicle Numbers

Plant/Equipment	Description	Heavy Vehicles
Modules	17,248 modules (700 modules per 40' container) delivered on semi-trailers.	25
Mounting frames	4 x 40' container per MW, inclusive of piles and structural frames and materials.	25
Inverter Stations	2 x inverter stations; delivered 1 per semitrailer.	2
Concrete	Estimated 30 m^3 required inverter assembly foundations and security fence in 10 m^3 concrete trucks.	3
Gravel	Estimated 1,600 m^3 (~3,200 tonne) of gravel for internal access road and temporary hardstand lay down and construction compound area. Delivered in 42.5 tonne truck and dog trailers. Assumes access road and hardstand 100 mm.	76
Sand	Estimated 220 m^3 of sand (~320 tonne).	8
Miscellaneous	Provision for 4 miscellaneous deliveries (fencing, building materials, cable drums, water for dust suppression, etc) a week during construction period, dropping to an average of 2 trucks a week for the one month shoulder periods.	48
TOTAL		**~190**

	Measures to be implemented to protect traffic safety and minimize any disruption to local users of the road network, including • *Temporary traffic controls, including signage.* • *Notifying the local community about project-related traffic.* • *Scheduling of haulage vehicle movements to minimize convoy lengths or platoons.* • *Ensuring all vehicles are loaded and unloaded on site and enter and leave the site in a forward direction.* • *Ensuring there is sufficient parking on site for all vehicles and no parking occurs on the public road network in the vicinity of the site.* *Traffic impacts associated with the BJSF will be limited to the construction phase.*	
Access	Yes ☒ No ☐	The physical access will need to be upgraded. It will need to be have the appropriate drainage upgraded and a bitumen seal to the boundary line from the edge of the existing bitumen.
Kerb & Gutter	Yes ☐ No ☒	
Upgrade Existing Road	Yes ☐ No ☒	
Road Network	Yes ☐ No ☐	The Local Traffic Committee have reviewed the comments from TfNSW and the response to these comments from the applicant. It was felt that the commitments made above from the applicant adequately addressed the concerns raised by TfNSW, in that: • The traffic impact would only be during the construction period only • The intersection of Kamilaroi Highway and Waterloo Road does not need to be upgraded. • The applicant will install advance warning 'Trucks Turning' signs (W5-22 with distance plate W8-5 under) on the Kamilaroi Highway approaches to the Burren Junction intersection that will be used as the haulage route, prior to any construction works commencing. • Prior to the commencement of construction a Traffic Management Plan (TMP) including a Driver Code of Conduct will be submitted to Walgett Shire Council for approval. The TMP and Driver Code of Conduct would cover all matters referred to within the TfNSW Annexure to its submission. • Once a construction contract has been entered into, that Enerparc will be able to specify the locked in detail of exactly what will be happening with respect to options such as the numbers of construction staff planning to take up accommodation within Burren Junction during the build, the extent of car-pooling that will be adopted, or the bus option from either Walgett or Narrabri. • The applicant undertakes to notify the Burren Junction community about project-related traffic. This will be conditioned.

		Further conditions will be imposed addressing the TfNSW concerns of: • *The use of local roads for the purposes of heavy vehicle haulage will require consent from Walgett Shire Council. All routes specified by the proponent for these purposes are to comply with the NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) map and or may be the subject of a Special Heavy Vehicle Permit via the National Heavy Vehicle Regulator (NHVR).* • *Any Oversize/Overmass haulage required as part of this proposal will be subject to a special permit being obtained prior to haulage commencing via the National Heavy Vehicle Regulator (NHVR). The NHVR processes ALL Oversize/Overmass permit applications for travel within and between the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria via: https://www.service.nhvr.gov.au/*
Parking	Yes ☐ No ☒	There is adequate parking onsite.

Has an Erosion and Soil Control Plan been submitted? Yes ☐ No ☒

Comment:

Soil Management

- *Install erosion and sediment controls in line with Landcom's Managing Urban Stormwater, Soils & Construction Guidelines (The Blue Book. Landcom 2004) are required.*
- *Erosion and sedimentation controls are to be checked and maintained on a regular basis. This includes clearing of sediment from behind barriers and after heavy rainfall events.*
- *Erosion and sediment control measures are not to be removed until the works are complete and areas are stabilised.*
- *Stockpile topsoil (if any) removed to be redistributed across site at completion of construction*
- *Implement dust suppression activities.*

It will be conditioned that a Soil Erosions & Sediment Control Plan is put in place for the entirety of the operations, not just the construction stage.

Construction Assessment

Is a Construction Certificate Required? Yes ☒ No ☐

Is the Construction Certificate required for a subdivision? Yes ☐ No ☒

Was a construction certificate submitted with this application? Yes ☐ No ☒

Has a construction assessment been completed? Yes ☐ No ☒

Is an annual Fire Safety Measures certification required? Yes ☐ No ☒

Is a public defects liability agreement required? Yes ☐ No ☒

Section 68 Assessment

Is a section 68 assessment required? Yes ☐ No ☒

Developer Contributions

Does this proposal require any Developer Contribution? Yes ☐ No ☒

Signage

Does this proposal require signage? Yes ☐ No ☒

Comment: If signage is proposed, other than business identification signage, a separate application will be required. This will be conditioned.

Notification

Does this application require notification/advertising? Yes ☒ No ☐

Is this application an advertised development application under the EP & A Act? Yes ☐ No ☒

Was this application notified/advertised as per the provisions of? Yes ☒ No ☐

☐ EP& A Act ☐ LEP ☒ CCP

Was this application notified/advertised for public interest purposes only? Yes ☐ No ☒

Dates Notification Undertaken	Commenced	30.9.2020	Finished	13.10.2020

Were there any written submissions received? Yes ☐ No ☒

Section 88b Instrument

Does Council require a Section 88b instrument to be prepared? Yes ☐ No ☒

Public Interest

Does this proposal have any construction or safety issues? Yes ☐ No ☒

Is there any public health issues? Yes ☐ No ☒

Are there any other public interest issues? Yes ☐ No ☒

Comment: There were no submissions received from local residents in relation to the proposal.

Site Suitability

Section 4.15(1)(c) – EP & A Act

Is this a suitable site for this development? Yes ☒ No ☐

Assessing Officer General Comment

Comment: There are no outstanding issues that cannot be dealt with by the use of appropriate conditioning.

Recommendation

This development application be approved subject to the following conditions:

RELEVANT PRESCRIBED CONDITIONS
(under the Environmental Planning and Assessment Regulation 2000)

Compliance with Building Code of Australia & insurance requirements under the Home Building Act 1989

Please Note: *A reference to the Building Code of Australia is a reference to that Code as in force on the date the application is made for the relevant:*

a) development consent, in the case of a temporary structure that is an entertainment venue, or

b) construction certificate, in every other case.

1. The work must be carried out in accordance with the requirements of the Building Code of Australia.

Erection of signs

Please Note: *This does not apply in relation to:*

a) *Building work, subdivision work or demolition work that is carried out inside an existing building, which does not affect the external walls of the building development consent, in the case of a temporary structure that is an entertainment venue, or*

b) *Crown building work that is certified, in accordance with section 116G of the Act, to comply with the technical provisions of the State's building laws.*

c) *A complying development certificate issued before 1 July 2004 only if the building work, subdivision work or demolition work involved had not been commenced by that date.*

2. A sign must be erected in a prominent position on any site on which building work, subdivision work or demolition work is being carried out:

   a) showing the name, address and telephone number of the principal certifying authority for the work, and

   b) showing the name of the principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours, and

   c) stating that unauthorised entry to the site is prohibited.

3. Any such sign is to be maintained while the building work, subdivision work or demolition work is being carried out, but must be removed when the work has been completed.

Please Note: *Principal certifying authorities and principal contractors must also ensure that signs required by this clause are erected and maintained (see clause 227A which currently imposes a maximum penalty of $1,100).*

GENERAL CONDITIONS

4. The development shall be implemented in accordance with:

   (a) All documentation and correspondence submitted by the applicant, or their agents, in support of the Development Application,

   (b) the details set out on the plans approved and stamped by authorised officers of Council,

   except as amended by the conditions of this development consent.

   Note: Any proposal to modify the terms or conditions of this consent, whilst still maintaining substantially the same development to that approved, will require the submission of a formal application under Section 4.55 of the Environmental Planning and Assessment Act 1979 for Council's consideration. If amendments to the design result in the development not remaining substantially the same as that approved by this consent, a new development Application will have to be submitted to Council.

5. A copy of all stamped approved plans, specifications and documents must be kept on site at all times so as to be readily available for perusal by any officer of Council or the Principal Certifying Authority.

6. A separate development application is to be submitted for any signage other than business identification signage, as there was not enough detail submitted for an assessment as per Section 4.15 of the *Environmental Planning & Assessment Act 1979.*

7. All management recommendations contained within the Statement of Environmental Effects and its Annexures by Premise dated 26 August 2020 are to be complied with.

8. The following procedures and the risk management procedures for the demolition/decommissioning apply:

   a) Demolition will comply with the relevant requirements of WorkCover NSW, the Occupational Health and Safety Act and Australian Standard A.S.2601-20011 the "Demolition of Structures".

   b) All waste materials will be recycled where possible.

   c) All hazardous materials shall be removed from the site and disposed of at an approved waste disposal facility (Lightning Ridge Landfill) in accordance with the requirements of the relevant legislation, codes, standards and guidelines prior to demolition commencing. Details of compliance, namely the method of containment and control of emission of fibres to the air shall be submitted to Council prior to the removal of any hazardous material.

   d) Asbestos material will be removed in accordance with all relevant legislation, including the Department of Health "Code of Practice" for the Safe Removal of Asbestos 2nd Edition (NOHSC: 2002 (2005)) and the Code of Practice for the Management and Control of Asbestos in Workplaces (NOHSC:2018 (2005)).

9. The use and occupation of the site including that of construction plant and equipment being installed thereon, shall not give rise to any offensive noise or vibration within the meaning of the *Protection of the Environment Operations Act, 1997*.

10. The applicant must keep a legible record of all complaints made to the developer or any employee or agent of the developer in relation to any activity to which this development consent relates. The record must include details of the following:

    a) the date and time of the complaint;
    b) the method by which the complaint was made;
    c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
    d) the nature of the complaint;
    e) the action taken by the developer in relation to the complaint, including any follow-up contact with the complainant; and
    f) if no action was taken by the developer, the reasons why no action was taken.

    The record of a complaint must be kept for at least three (3) years after the complaint was made.

    Records of complaints must be produced on demand to authorised officers of Council or State Government authorities

11. These conditions are imposed at the request of Essential Energy:

    a) If the proposed development changes, there may be potential safety risks and it is recommended that Essential Energy is consulted for further comment.

    b) Any existing encumbrances in favour of Essential Energy (or its predecessors) noted on the title of the above property should be complied with.

    c) The proposal must remain outside the easement area/width of the existing 22kV overhead powerlines.

    d) The proposed access road must:

        i. meet the required clearances as per Essential Energy's design manual; and

        ii. at all times, maintain a minimum of 10.0 metres clearance from any electrical structures.

    e) Satisfactory arrangements are to be made with Essential Energy with respect to the proposed solar farm which will form part of the development. It is the Applicant's responsibility to enter into the required Connections Agreement/s and any other requirements with Essential Energy for the development, which may include the payment of fees and contributions. Refer Essential Energy's Network Connections team for requirements via email networkconnections@essentialenergy.com.au.

    f) Satisfactory arrangements are to be made with Essential Energy for the provision of power with respect to the proposed development. It is the Applicant's responsibility to make the appropriate application with Essential Energy for the supply of electricity to the development, which may include the payment of fees and contributions. Refer Essential Energy's Contestable Works team for requirements via email contestableworks@essentialenergy.com.au.

    g) In addition, Essential Energy's records indicate there is electricity infrastructure located within the property and within close proximity of the property. Any activities within these locations must be undertaken in accordance with the latest industry guideline currently known as ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure. Approval may be required from Essential Energy should activities within the property encroach on the electricity infrastructure.

    h) Prior to carrying out any works, a "Dial Before You Dig" enquiry should be undertaken in accordance with the requirements of Part 5E (Protection of Underground Electricity Power Lines) of the Electricity Supply Act 1995 (NSW).

    i) Given there is electricity infrastructure in the area, it is the responsibility of the person/s completing any works around powerlines to understand their safety responsibilities. SafeWork NSW (www.safework.nsw.gov.au) has publications that provide guidance when working close

to electricity infrastructure. These include the Code of Practice – Work near Overhead Power Lines and Code of Practice – Work near Underground Assets.

12. These conditions are imposed at the request of Traffic for NSW:

a) The consent holder shall install at its cost advance warning 'Trucks Turning' signs (W5-22 with distance plate W8-5 under) on the Kamilaroi Highway approaches to the Burren Junction intersection that will be used as the haulage route, prior to any construction works commencing. Please contact development.western@rms.nsw.gov.au to obtain concurrence prior to installation. These signs are to be removed following completion of construction.

b) Prior to the commencement of construction works a Traffic Management Plan (TMP) including Driver Code of Conduct is to be prepared and implemented. The preparation of the TMP will require consultation with TfNSW, Walgett Shire Council, principal contractor(s) and relevant stakeholders. The requirements of the TMP and Driver Code of Conduct are to cover the matters referred to within the TMP Annexure (attached).

c) The TMP is to be reviewed and updated in response to any changes in operating conditions. A copy of the TMP and Driver Code of Conduct is to be provided to contractors and employees as a part of the site induction.

d) The use of local roads for the purposes of heavy vehicle haulage will require consent from Walgett Shire Council. All routes specified by the proponent for these purposes are to comply with the NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) map and or may be the subject of a Special Heavy Vehicle Permit via the National Heavy Vehicle Regulator (NHVR).

e) Any Oversize/Overmass haulage required as part of this proposal will be subject to a special permit being obtained prior to haulage commencing via the National Heavy Vehicle Regulator (NHVR). The NHVR processes ALL Oversize/Overmass permit applications for travel within and between the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria via: https://www.service.nhvr.gov.au/

f) To negate future issues with access rights and servicing requirements, all lots that make up the site are required to be consolidated on one title, or appropriate easements for servicing and access are to be registered to the satisfaction of Council, before occupation or operation of the development.

13. The Waterloo Street access is to be upgraded by the developer to a standard approved by Council's Director of Engineering and Technical Services. This work is to include the upgrading of the existing drainage and bitumen sealing from the edge of the existing bitumen to the property boundary.

14. Prior to the release of a Construction Certificate the following is to be submitted to Council:

a) Certification by a suitably qualified engineer that all structures are able to withstand flood flows as stated within the flood risk assessment,

b) certification by a suitably qualified consultant is to be submitted to Council in that the detailed design and equipment procurement electric & magnetic field production complies with *The International Commission on Non-Ionizing Radiation Protection,*

c) Emergency Management Plan,

d) A Soil Erosion and Sediment Control Plan for all construction works, and for the duration of operation of the solar farm,

e) Traffic Generation Communication Plan to undertake notification the local Burren Junction community of all traffic generation before and during construction. The method of communication is to be approved by Council prior to the release of a construction certificate,

f) Construction Management Plan,

g) Environmental Management Strategy,

h) Traffic Management Plan,

i) Decommissioning Plan, and

j) Written confirmation from Essential Energy that all satisfactory arrangements have been made with Essential Energy.

CONDITIONS TO BE COMPLETED PRIOR TO CONSTRUCTION COMMENCING

15. A Construction Certificate must be obtained, in accordance with cl.146 of the *Environmental Planning and Assessment Regulation 2000*, before work commences.

16. Council is to be given written notice of the intention to commence works and the appointment of a Principal Certifying Authority (if the PCA is not Council) at least two days before the proposed date of commencement, in accordance with cl 103 and 104 of the Environmental Planning and Assessment Regulation 2000. Such notice is given using the form enclosed with this consent.

    Should Council be appointed the Principal Certifying Authority, the applicant must give at least 2 days' notice to enable inspections to be undertaken.

17. Before construction commences on the site and throughout the construction phase of the development, erosion control measures are to be installed to prevent soil erosion, water pollution or the discharge of loose sediment on surrounding land, as follows:

    - divert uncontaminated run-off around cleared or disturbed areas,
    - erect a silt fence to prevent debris escaping into drainage systems or waterways,
    - prevent tracking of sediment by vehicles onto roads,
    - stock pile topsoil, excavated material, construction and landscaping supplies and debris within the site.

Please Note: *Failure to take effective action may render the developer liable to prosecution under the NSW Protection of the Environment Operations Act 1997.*

18. A hoarding or fence must be erected between the work site and any public place if the work is likely to cause traffic (pedestrian or vehicular) in a public place to be obstructed or otherwise inconvenience. The erected hoarding is to be sufficient to prevent any substance from or in connection with the work falling into the public place. The work site must be kept lit between sunset and sunrise if it is likely to be hazardous to persons in the public place. The hoarding, fence or awning is to be removed once the work has been completed.

19. Approval to carry out work on Waterloo Road must be obtained, in accordance with section 138 of the *Roads Act 1993,* before works commence.

CONDITIONS TO BE COMPLETED DURING CONSTRUCTION

20. The owner of the property is to ensure that any building is constructed:
    (a) to meet the setback requirements of the approved plans,
    (b) to be located within the confines of the lot, and;
    (c) so that it does not interfere with any easements or covenants upon the land.

21. Any building work must be carried out between 7.00am and 5.00pm Monday to Friday and 8.00am to 1.00pm Saturdays, excluding Sundays and public holidays. No audible construction is to take place outside these hours, to maintain the amenity of the locality.

22. A garbage receptacle must be provided at the work site before works begin and must be maintained until works are completed. The garbage receptacle must have a tight fitting lid and be suitable for the reception of food scraps and papers.

23. Waste materials (including excavation, demolition and construction waste materials) must be managed on the site (and must not be burned on site) and then disposed of at a waste management facility, to protect the amenity of the area and avoid the potential of air pollution.

24. Effective dust control measures are to be maintained during construction to maintain public safety/amenity. Construction activities are to be undertaken so as not to inconvenience the adjoining land owners and are to be restricted solely to the subject site.

25. Any run-off and erosion control measures required must be maintained within their operating capacity until the completion of the works to prevent debris escaping from the site into drainage systems, waterways, adjoining properties and roads.

26. No material or equipment associated with the development is to be placed on public land without the written consent of the Council, and any activity located in close proximity to public areas is to be fenced to prevent damage to persons or property.

27. Any earthworks (including any structural support or other related structure for the purposes of the development):
    a) must not cause a danger to life or property or damage to any adjoining building or structure on the lot or to any building or structure on any adjoining lot, and
    b) must not redirect the flow of any surface or ground water or cause sediment to be transported onto an adjoining property, and

c) that is fill brought to the site—must contain only virgin excavated natural material (VENM) as defined in Part 3 of Schedule 1 to the *Protection of the Environment Operations Act 1997*, and

d) that is excavated soil to be removed from the site—must be disposed of in accordance with any requirements under the *Protection of the Environment Operations (Waste) Regulation 2005*.

Any excavation must be carried out in accordance with *Excavation Work: Code of Practice* (ISBN 978-0-642-785442*)*, published in July 2012 by Safe Work Australia.

28. If, during the course of any activities conducted under this consent, the Applicant becomes aware of any heritage or archaeological sites not previously identified, all work likely to affect the site shall cease immediately. The Applicant shall then consult with relevant authorities and decide on an appropriate course of action prior to recommencement of work. The relevant authorities may include NSW Environment, Climate Change & Water and the relevant local Aboriginal community. Any necessary permits or consents shall be obtained and complied with prior to recommencement of work.

CONDITIONS TO BE COMPLETED PRIOR TO OCCUPATION/USE COMMENCING

29. Occupancy of the site is not to take place until the Principal Certifying Authority (PCA) has carried out a final inspection and an Occupation Certificate issued. All required trade certifications are to be available to the PCA before the final inspection will be carried out.

Please Note: *Failure to obtain an Occupation Certificate is an offence under the legislation. Penalty advice for buildings (penalties do not apply to uses detailed in sections 109M and 109N; i.e. Crown projects, Class 1a and 10 buildings or as detailed for places of public entertainment).*

30. At the completion of the construction work the site must be left clear of waste and debris.

31. All external lightning is to be positioned and directed so as to prevent the intrusion of light to the adjoining premises. Compliance is to be shown to *Australian Standard AS4282 Control of Obtrusive Effects of Outdoor Lighting*.

32. An easement for access to Lot 13 DP753926 is to be created over Lots 1 & 2 DP 214271 and Lot 1 DP669068. Further an easement if to be created over Lots 1 & 2 DP 214271and Lot 1 DP669068 for connection to the electricity grid. Alternatively, Lot 13 DP753926 Lots 1 & 2 DP214271 and Lot 1 DP669068 are to be consolidated so that the development is within a single lot.

CONDITIONS RELATING TO ONGOING OPERATIONS

33. A further application is to be made for any change, enlargement or intensification of the premises or land use, including the display / erection of any new structure such as signage, partition walls or building fit-out (unless the proposed work is exempt from the need for consent under *State Environmental Planning Policy (Codes SEPP) 2008)*.

34. As per the Environment Protection Authority's *Noise Policy for Industry* the solar farm is to operate no more than 5dBa above background the existing noise level.

COUNCIL ADVICE ONLY

35. Covenant/s: The applicant / owner has the responsibility of being aware of any covenant which may affect the proposal.

36. Dial Before You Dig: Underground assets may exist in the area that is subject to your application. In the interests of health and safety and in order to protect damage to third party assets please contact Dial Before You Dig at www.1100.com.au or telephone on 1100 before excavating or erecting structures (This is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contacting the Dial Before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial Before You Dig service in advance of any construction or planning activities.

37. Telecommunications Act 1997 (Commonwealth); Telstra (and its authorized contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility or installation owned by Telstra is committing an offence under the Criminal Code Act 1995 (Cth) and is liable for prosecution. Furthermore, damage to Telstra's infrastructure may result in interruption to the provision of essential services and significant costs. If you are aware

of any works or proposed works which may affect or impact on Telstra's assets in any way, you are required to contact: Telstra's Network Integrity Team on phone number 1800 810 443.

Reasons For Conditions

1. To confirm and clarify the terms of Council's approval.
2. To comply with all relevant legislation.
3. So that the impacts of any increase in the scale or duration of operations may be assessed and appropriately controlled. Section 19 (1) (b) of the *Environmental Planning and Assessment Regulation 2000*, as amended.
4. To prevent and/or minimise the likelihood of environmental harm and public nuisance.
5. To ensure the rehabilitation of the site.
6. To minimise the potential for adverse impacts on the environment or public as a result of the development.
7. To ensure waste is disposed of in an appropriate manner.
8. To ensure that public infrastructure is maintained.
9. To minimise the potential for detrimental impacts to buildings or neighbouring properties.
10. To ensure that any National Construction Code issues are resolved prior to Construction Certificate assessment, including the peer review by an independent Accredited Certifier for alternate or performance solutions.

Conclusion

I confirm that I am familiar with the relevant heads of consideration under the Environmental Planning & Assessment Act and Local Government Act (if applicable) and have considered them in the assessment of this application.

I certify that I have no pecuniary or non-pecuniary interest in this application.

Additional Notes Attached Yes ☐ No ☒

Signed: …….

Elizabeth Cumming, Consultant Planner

Date:8 December 2020

Signed: …….

Bob Harris, Acting Director Environmental Services

Date: 8 December 2020

Premise

ENERPARC AUSTRALIA

Statement of Environmental Effects

BURREN JUNCTION SOLAR FARM

Report No: 219367_SEE_001A

26 August 2020

STATEMENT OF ENVIRONMENTAL EFFECTS

BURREN JUNCTION SOLAR FARM

PREPARED FOR:

ENERPARC AUSTRALIA

AUGUST 2020

Premise

POSTAL ADDRESS PO BOX 1963 ORANGE NSW 2800
LOCATION 154 PEISLEY STREET ORANGE NSW 2800
TELEPHONE 02 6393 5000 **FACSIMILE** 02 6393 5050
EMAIL ORANGE@PREMISE.COM.AU **WEB SITE** WWW.PREMISE.COM.AU

Report Title:	*Statement of Environmental Effects*
Project:	*Burren Junction Solar Farm*
Client:	*Enerparc Australia*
Report Ref.:	*219367_SEE_001A.docx*
Status:	*Final*
Issued:	*26 August 2020*

Premise Pty Ltd and the authors responsible for the preparation and compilation of this report declare that we do not have, nor expect to have a beneficial interest in the study area of this project and will not benefit from any of the recommendations outlined in this report.

The preparation of this report has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the sources and under the conditions outlined in the report.

All maps, plans, and cadastral information contained within this report are prepared for the exclusive use of Enerparc Australia to accompany this report for the land described herein and are not to be used for any other purpose or by any other person or entity. No reliance should be placed on the information contained in this report for any purposes apart from those stated therein.

Premise Pty Ltd accepts no responsibility for any loss, damage suffered or inconveniences arising from, any person or entity using the plans or information in this study for purposes other than those stated above.

TABLE OF CONTENTS

DRAWINGS

FIGURES

TABLES

PLATES

APPENDICES

ABBREVIATIONS

Acronyms

AC	Alternating Current
AER	Australian Energy Regulator
AHIP	Aboriginal Heritage Impact Permit
ANL	Acceptable Noise Levels
ARENA	Australian Renewable Energy Agency
ARPNSA	Australian Radiation Protection and Nuclear Safety Agency
APZ	Asset Protection Zone
BA	Biodiversity Assessment
BOM	Bureau of Meteorology
BSAL	Biophysical Strategic Agricultural Land
CEMP	Construction Environmental Management Plan
CO_2e	Carbon Dioxide Equivalent
CRTN	Calculation of Road Traffic Noise
BJSF	Burren Junction Solar Farm
DA	Development Application
DC	Direct Current
DCP	Development Control Plan
DMP	Decommissioning Management Plan
DoE	Department of Environment
DPE	NSW Department of Planning and Environment
DPI	NSW Department of Primary Industries
EEC	Endangered Ecological Community
EMF	Electric and Magnetic Field
EPA	Environment Protection Authority
EPC	Engineering Procurement Construction
ESD	Ecologically Sustainable Development
FTE	Full Time Equivalent
GDE	Groundwater Dependent Ecosystem
GHG	Greenhouse Gas
HV	High Voltage
ICNG	Interim Construction Noise Guideline
INP	Industrial Noise Policy
LEP	Local Environmental Plan
LGA	Local Government Area
LGC	Large Generation Certificates
LLS	Local Land Service
LV	Low Voltage
NEM	National Electricity Market
NERR	National Energy Retail Rules
NHBJSF	National Health and Medical Research Council
OEH	Office Environment and Heritage
OEMP	Operations Environmental Management Plan
OHTL	Overhead Transmission Line
PCT	Plant Community Type
PV	Photovoltaic
REAP	Renewable Energy Action Plan
RET	Renewable Energy Target
RFS	Rural Fire Service
RMS	Roads and Maritime Service
RNP	Road Noise Policy
SAT	Single-Axis Tracking System
SEPP	State Environmental Planning Policy
WAL	Water Access Licence
WBZ	Water Bearing Zone
WSC	Walgett Shire Council
WSP	Water Sharing Plan

Units of measure

dB(A)	A-weighted decibel
GW	Gigawatt
GWh	Gigawatt Hour
Ha	Hectare
Km	Kilometre
kV	Kilovolt
kV/m	kilo Volts per metre
kW	Kilowatt
kWh	Kilowatt hour
m	Metre
mAHD	Metres Australian Height Datum
m/s	Metres per second
ML	Megalitre
MW	Megawatt
MWh	Megawatt Hour
MWp	Megawatt Peak
µT	micro Teslas

Introduction

1.1 BACKGROUND

Enerparc Australia Pty Ltd (Enerparc) develops, builds and operates solar farms. In the Central West of NSW Enerparc is currently commissioning the recently constructed Peak Hill (5MW) and Trundle (5MW) Solar Farms. Enerparc is the development proponent of the Burren Junction Solar Farm (BJSF).

1.2 DEVELOPMENT OVERVIEW

The BJSF will generate electrical energy by converting solar radiation into electricity through the use of solar PV panels. The farm will operate year-round to generate electricity during daylight hours when electricity demand in NSW is at its peak. The farm will be monitored remotely with a limited on-site presence, apart from routine maintenance.

The farm will consist of solar panels, steel racking and piled supports, two centralised inverter and transformer stations, containerised battery storage, switch gear and protection equipment, electrical cabling, telecommunications equipment, an operations and maintenance container and perimeter security fencing.

The solar panels will be similar to those used for domestic purposes and will operate as a single axis tracking system (SAT) which follows the sun during the course of the day to ensure optimal energy generation. The farm will consist of linear strings of mounted panels organised into blocks. Each block will connect to an inverter station that will convert the direct current (DC) energy into grid compatible alternating current (AC) energy.

The generated electricity will be exported into the network through connection into and augmentation of the existing 22 kV overhead powerline located adjacent to the solar farm, feeding into the Essential Energy Burren Junction Zone Substation located approximately 500 m to the south of the proposed BJSF.

The farm will have a generation capacity of 5 MW_{AC} and fenced infrastructure will occupy a footprint of approximately 16 ha that will be leased from the landowner for a period of 25 years.

1.3 DEVELOPMENT LOCATION

The development site is located approximately 600m north of Burren Junction (refer **Drawing 01** and **02**).

1.4 STATEMENT PURPOSE

The construction and operation of the BJSF requires development approval under NSW planning legislation. This Statement of Environmental Effects (SEE) has been prepared to support a Development Application (DA) lodged with Walgett Shire Council (WSC).

1.5 STATEMENT SCOPE

1.5.1 SOLAR FARM

This SEE identifies and assesses the environmental impacts associated with the construction, operation, upgrading and any future decommissioning of the proposed BJSF.

1.5.2 SUB-DIVISION

The land on which the BJSF will be located will be leased from the landowner for a period of 25 years. Notwithstanding that the lease period will be longer than five (5) years, pursuant to the NSW Land Registry Service's Registrar General's Guidelines, lease of a solar farm is treated as a lease of premises and does not require subdivision consent under s.23G *Conveyancing Act 1919*. Accordingly, the development does not require or propose any sub-division of land.

1.5.3 GRID CONNECTION

This SEE does not identify or assess impacts associated with any grid connection upgrades and/or zone substation augmentation works. The reason for this is because these assets will be owned by Essential Energy.

Essential Energy's policy is that works associated with their assets must be subject to assessment under Part 5 of the *Environmental Planning and Assessment Act 1979*. Essential Energy's position is that as the BJSF is a development going through a local assessment process under Part 4 (ie. non-state significant development), Enerparc is unable to include the grid connection works in the DA as Part 4 and Part 5 are mutually exclusive.

Notwithstanding, in order to provide WSC with sufficient information to understand all potential impacts associated with the proposed BJSF the following overview is provided. Connection will entail an overhead line from the solar farm connecting into the 22 kV line located immediately next to the farm. This line, feeding back to the substation would likely be upgraded with new conductors. Works at the substation would be restricted to installation of protection system upgrades and metering as per Essential Energy standards, within the existing substation compound.

Subject to securing approval for the solar farm detailed investigations will be finalised with Essential Energy, with respect to the grid connection.

1.6 STATEMENT STRUCTURE

This SEE has been structured to address those matters for consideration that a consent authority is to take into consideration general in determining a DA pursuant to s.4.15 of the *Environmental Planning and Assessment Act 1979*.

Section 2 describes the proposed development, including a description of associated infrastructure, and the solar farm's construction and operation.

Section 3 identifies the statutory planning context.

Section 4 identifies the process of identifying environmental issues associated with the solar farm.

Sections 5 – 16 identifies the receiving environment and assesses potential impacts associated with the solar farm's construction and operation.

Section 17 collates all environmental safeguards and mitigation measures that form part of the development proposal and the proponent's statements of commitment.

Section Error! Reference source not found. provides a development justification.

Section 18 provides a checklist of s.4.15 matters for consideration.

Appendix A –Aboriginal Cultural Heritage Assessment.

Appendix B – provides a Biodiversity Assessment Report.

Appendix C –Flood Risk Assessment.

The Development

2.1 DEVELOPMENT OBJECTIVE

The objective of the BJSF is to use solar PV panels to convert sunlight into carbon free electricity which will be sold in the National Electricity Market (NEM), create Large Generation Certificates (LGC) which will be sold to liable entities under the *Renewable Energy Act 2000* and produce electricity that will contribute to the Federal Government's Renewable Energy Target (RET).

2.2 DEVELOPMENT PROPOSAL

The development proposal includes the construction, operation, upgrading and potential future decommissioning of a 5 MW_{AC} PV electricity generating works and associated infrastructure.

2.3 FARM CAPACITY

The BJSF will have a maximum capacity of 5 MW_{AC} and once operational will generate approximately 14,500 megawatt hours (MWh) of carbon free electricity annually.

The Australian Energy Regulator (AER) has reported that average annual household electricity usage in the climatic zone within which Burren Junction is located, for a three person household, is 8,497 kilowatt hours (kWh) (ACIL, 2017, updated June 2018).

Based on the above, the energy generated from the BJSF will be sufficient to service approximately 1,709 homes annually during the life of the farm. Census data from 2016 indicates Burren Junction had 127 private dwellings and an average household size of 2.4 persons.

2.4 FARM DESIGN

2.4.1 CONCEPT DESIGN PRINCIPLES

The development footprint of the BJSF has been refined through consideration of the results of site investigations, including consideration of potential constraints and opportunities identified during the environmental impact assessment process.

Through this process an approximate 16 ha buildable development footprint has been identified. This development footprint would accommodate all electricity generating infrastructure and facilities associated with the development.

The farm layout (refer **Drawing EV02**) identifies the BJSF concept layout, showing farm infrastructure inclusive of modules, internal access road, control room, inverter stations, battery energy storage system and security fence.

The layout as shown is indicative and may be subject to minor changes following detailed design. Notwithstanding the location, form and extent of the infrastructure footprint is accurate.

2.4.2 DETAILED DESIGN PROCESS

Contingent on securing planning approval the next step in the BJSF project would be to progress to detailed design. As part of the detailed design a suite of very specific and targeted additional site investigations would be completed. These investigations are undertaken to 'lock-in' a final farm layout and inform the construction program.

Development consent is a standard and logical 'hold-point' on projects before progressing to detailed design. It not only defers some project expenditure until there is greater project certainty, it also ensures all relevant consent conditions can be incorporated into the detailed design process.

The need to secure a Construction Certificate and approval on a Construction Environmental Management Plan (CEMP) before works can commence provides the regulatory check and mechanism for ensuring that what is built, and how, is consistent with the development consent and complies with all consent conditions.

2.5 FARM LAYOUT

2.5.1 ELECTRICAL GENERATION EQUIPMENT

The solar PV panel technology will be crystalline silicone. The panel modules will be connected together via a DC collection system consisting of cables mounted on the module support structure. The racking system will be Single Axis Tracking (SAT).

Fixed tilt systems hold the modules in a fixed orientation in relation to the sun and have no moving parts. A SAT system tracks the daily movement of the sun and motorised linkages rotate the modules from the east in the morning to the west in the afternoon; constantly aligning towards the sun to maximise energy output performance.

The modules will be laid out in rows or strings, approximately 7 m apart. The relative flatness of the BJSF site will lead to optimal spacing without output being affected by shading of adjacent strings. The racking system will be supported by steel piles. These are either hollow or C-sections or I beams which are either driven into the ground, screw piled or pre-drilled and driven into place.

Inverters convert the DC current to AC current and medium voltage transformers increase the voltage to the collection system rating. The BJSF will have two (2) inverter stations positioned centrally within the module arrays.

The site will be monitored remotely via a security system.

2.5.2 GRID CONNECTION

Essential Energy's Burren Junction Zone substation is located approximately 500 m to the south of the proposed solar farm. Grid compliant energy from the BJSF will be delivered into this substation.

As noted in **Section 1.5.3** grid connection works, and any associated augmentation of the Essential Energy Zone substation will entail installation of assets that will be owned by Essential Energy and, consistent with Essential Energy policy, be subject to assessment and approval under Part 5 of the *Environmental Planning and Assessment Act 1979*.

2.5.3 ENERGY STORAGE SYSTEM

Provision will also be made for inclusion of an Energy Storage System (ESS) as part of the solar farm. The ESS will be skid mounted and located centrally within the farm. The ESS will be modular, in which one system container houses inverters and is combined with two battery containers equipped with batteries most likely utilising lithium-ion technology. Battery storage improves the security and reliability of the National Electricity Market and allows renewable energy generation to be stored for use at peak times, which can place further downward pressure on electricity prices and network demands. As proposed, the BJSF ESS will provide a power rating of 5 MW and energy capacity of 10 MWhr.

2.5.4 ANCILLARY INFRASTRUCTURE

The farm will include a control room that will provide communications connections to the electricity market operator, Essential Energy and Enerparc's operations team. Staff will utilise this container during commissioning in order to advance the farm to its operational readiness.

Once the farm is operational staff will occasionally visit the site as needed to monitor the performance of the farm and to diagnose any faults. A waterless composting toilet will also be installed.

In addition to the above up to three standard 20 foot shipping containers will be provided on-site for storage, and security cameras will be placed strategically within the farm.

2.5.5 SECURITY FENCE

A security fence will be installed around the solar farm perimeter. This fence will be up to 2.1 m chain link with three barbs on top, for a total height of up to 2.4 m. Inside this fence a minimum 5 m wide asset protection zone (APZ) will be maintained to provide for bush fire control and tanker access.

2.6 FARM CONSTRUCTION

2.6.1 DEVELOPMENT PROGRAM

Construction is estimated to take up to four (4) months with an indicative scheduled program of activities provided below.

CONSTRUCTION SCHEDULE				
ACTIVITY	MONTH			
	1	2	3	4
Site Establishment and Fencing				
Internal Road Preparation				
Pile Driving				
Tracker and Module Installation				
Installation of Inverter Stations				
Cabling				
Grid Connection Activity				
Solar Farm Commissioning				
Grid Connection Testing				
Clean-up and Demobilisation				

Figure 1: Construction Schedule

2.6.2 SITE PREPARATION

Site facilities and a construction laydown area will be established within the development footprint and construction equipment will then be mobilised to the site. The internal road will then be formed and the security fenced erected. No bulk earthworks will be required.

2.6.3 SOLAR PV MODULES

Following site preparation the supporting structures and the solar modules will be installed. The site will be surveyed and locations of all the major equipment will be pegged or marked on the ground. The hollow sections or flanged sectioned steel piles which support the racking system will be driven into the ground pneumatically or alternatively, holes will be screwed or bored and the piles will be driven into position.

The solar PV modules will then be installed on the racking and secured in position to withstand wind loading. Once the modules have been installed the DC collection cables will be laid on the structure and terminated to the modules.

This phase will require the use of equipment including all-terrain plant like telehandlers, pile drivers, augers, forklifts, trenchers, excavator, pickup trucks, water trucks, flatbed trucks and cranes.

2.6.4 INVERTER STATIONS AND ELECTRICAL COLLECTION SYSTEM

Once the PV modules have been installed, or in parallel with the post installation, cable trenches will be excavated and AC and DC cables will be laid. Trenches will be backfilled with excavated material or imported thermal fill and cables will be terminated to the modules. Trench details are determined by *Australian Standards* and voltage specifications.

The medium voltage cables will be terminated to the inverter stations. Testing and quality assurance will be carried out as connections are made.

2.6.5 COMMISSIONING

Once all the inverter stations and electrical collection system has been installed, and the grid connection is complete, commissioning of equipment will be undertaken. Commissioning will include terminations, testing, calibration and troubleshooting. The inverters, transformers, collection system, solar PV array including SAT will be tested prior to commencement of commercial operations to ensure any system issues are rectified. Upon completion of successful pre-energisation testing the solar farm will be connected to the Essential Energy substation, with final checks before being ready to export electricity.

2.6.6 CONSTRUCTION COMPOUND

To facilitate construction there will be a construction laydown area containing a temporary site office and amenities (lunch room and ablutions), vehicle parking and equipment laydown areas.

2.6.7 CONSTRUCTION WORKFORCE

Over the 4 month construction effort the demand for labour will vary depending on the site activities being undertaken. Installation and commissioning of modules is labour intensive and employment is expected to peak at approximately 25 on-site workers. This peak period is expected to extend over a 2 month period. Outside this peak the workforce is expected to drop to 10 or less. These jobs will include construction managers, electricians, fitters, various plant operators, mechanics and other skilled and semi-skilled labour, including general labourers.

2.6.8 MATERIALS AND RESOURCES

2.6.8.1 Water

Water demand during construction will be limited to that required for dust mitigation and/or moisture conditioning of material, as well as a potable supply for construction staff. The former will be sourced from a legal supply and trucked to the site in a bulk tanker. Legal sources include those that either have a Water Access Licence that permits use of water for this purpose, or on-farm dams that hold water and the landowner is amenable to making this water available under a commercial arrangement. Ultimately, restricted access to a supply source could dictate a hold, or staging of construction activities in excessively dry and windy conditions to match supply availability.

The potable supply will be provided through bottled water. Dry port-a-loos will be provided for amenities throughout construction negating the need for on-site domestic sewage treatment.

2.6.8.2 Sand and Gravel

The establishment of internal access roads and compacted hardstand areas around the construction compound will require gravel or road base. Sand will be required for the bedding of cabling in the trenches before backfilling. These materials will be sourced from regional suppliers.

2.6.9 HOURS OF WORK

Construction activity is proposed to be undertaken in accordance with the Environment Protection Authority's (EPA) recommended standard hours for construction; these being:

- 7 am to 6 pm Monday to Friday
- 8 am to 1 pm on Saturday
- No works on Sunday's or Public Holidays.

2.7 FARM OPERATION

2.7.1 MAINTENANCE ACTIVITIES

Following commissioning the BJSF will begin operating with the production of electricity fed into the electricity grid. The solar modules will operate during daylight hours, seven days per week, 365 days a year.

The farm will also be monitored remotely from an off-site location and apart from a routine maintenance program, specialist operators will only visit the farm when responding to any performance issues (i.e. where actual output measured by the monitoring system deviates from generation forecasts and other key performance metrics).

Activities at the farm that will be part of a routine maintenance program will generally be limited to:

- Equipment, cabling, and communications system inspection, maintenance and testing, and repair and replacement as required.
- Fence, access and internal road, and control room maintenance and management.
- Vegetation (fuel load), weed and pest management.
- Possible solar PV module washing on an as-needed basis.

2.7.2 SOLAR PV MODULE WASHING

Water use for regular washing of modules is not expected to be required. In the event of an abnormal soiling event (e.g. due to a particularly severe dust storm) water would be trucked to the site and the modules cleaned with a portable pressure washer without the use of any detergent or cleaning agent.

2.7.3 FUEL MANAGEMENT

Fuel management will be an ongoing maintenance activity targeting bushfire risk prevention. Groundcover within the solar farm will be proactively managed to avoid excessive fuel loads (which would also compromise the solar farm's performance) and prevent the proliferation of any noxious weeds.

2.8 FARM UPGRADING

Any upgrading of the farm would include the augmentation and/or replacement of solar panels and ancillary infrastructure within the development footprint.

2.9 FARM DECOMMISSIONING

The design life of the PV modules will be at least 25 years. At the end of their useful life modules and electrical equipment will be either replaced and the farm re-commissioned, or the farm will be decommissioned and the site returned to agricultural land use. This will be a commercial decision based on the relative economics of solar PV generation compared to alternatives at the time. In all likelihood the economics will be favourable because the farm infrastructure, including network connection, underground cabling, foundations, and access track will continue to be serviceable and the cost of replacing modules and inverter stations favourable compared to competing generating technologies.

Decommissioning would include disconnecting the solar farm from the Essential Energy network. The farm's equipment would be removed and disposed of off-site, recycling materials wherever possible. Piles will be lifted out of the ground and all underground cables would be removed.

The ground would be then be worked, stabilised and returned to agricultural use. The primary objective of decommissioning would be to restore the land capability to its pre-existing agricultural value and use.

Statutory Planning

3.1 DEVELOPMENT SITE

Infrastructure associated with the solar farm will be located on lands as described in **Table 3.1**.

Table 3.1 – Development Site

Component	Lot/Deposited Plan
Solar Farm	Lot 13 DP 753926
Site Access	Lot 1 DP 669068 Lot 1 DP 214271 Lot 2 DP 214271 Road Reserve
Grid Connection	Lot 1 DP 669068 Lot 1 DP 214271 Lot 2 DP 214271

3.2 PERMISSIBILITY

Pursuant to *State Environmental Planning Policy (Infrastructure) 2007:*

- ***electricity generating works*** means a building or place used for the purpose of making or generating electricity, or electricity storage.

The BJSF is therefore an electricity generating works.

Pursuant to clause 34 of the Infrastructure SEPP development for the purpose of electricity generating works may be carried out on any land in a prescribed rural zone by any person with consent. The development site, zoned RU1 – Primary Production under the *Walgett Local Environmental Plan 2013* (LEP), is a prescribed rural zone, and the Walgett LEP expressly references *State Environmental Planning Policy (Infrastructure) 2007*.

The BJSF is a permissible development subject to securing development consent.

3.3 LOCAL DEVELOPMENT

The BJSF is an electricity generating works with a capital investment value <$5 million and pursuant to Schedule 4A of the *Environmental Planning and Assessment Act 1979* is neither a Regional Significant Development (RSD) or a State Significant Development (SSD).

As such, the consent authority for determining the Development Application is Walgett Shire Council.

3.4 INTEGRATED DEVELOPMENT

The BJSF is not integrated development, pursuant to s.4.46 of the *Environmental Planning and Assessment Act 1979,* on the basis that no other approvals or consents are required to facilitate the development.

It is noted that works to establish access to the solar farm off Waterloo Street will require consent under s.138 of the *Roads Act 1993* from Walgett Shire Council. However, the application is not integrated on the basis that WSC is both the consent authority and the roads authority (pursuant to s 4.46(3) of the Act).

3.5 STATE PLANNING POLICIES

3.5.1 SEPP – STATE & REGIONAL DEVELOPMENT

The development is not regionally significant development because it is not an electricity generating works with a capital investment value of more than $5 million.

3.5.2 SEPP 55 - REMEDIATION OF LAND

A search of the NSW EPA *List of NSW contaminated sites notified to EPA* and the *Contaminated Land Record* did not identify contaminated sites at or near the site. Pursuant to Clause 7 of *State Environmental Planning Policy No 55 – Remediation of Land* there is no apparent reason to consider that land to be disturbed by the proposed development would be contaminated.

3.5.3 SEPP – PRIMARY PRODUCTION & RURAL DEVELOPMENT

The relevant aims of this Policy are as follows—

> *(a) to facilitate the orderly economic use and development of lands for primary production,*
>
> *(b) to reduce land use conflict and sterilisation of rural land by balancing primary production, residential development and the protection of native vegetation, biodiversity and water resources,*
>
> *(c) to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations,*

The site is not identified as being State significant agricultural land under this Policy.

3.5.4 SEPP - MINING, PETROLEUM PRODUCTION AND EXTRACTIVE INDUSTRIES

The development site is not mapped as Biophysical Strategic Agricultural Land (BSAL) within the *Strategic Agricultural Land Map(s)* in this Policy.

3.5.5 SEPP 33 – HAZARDOUS AND OFFENSIVE DEVELOPMENT

The Energy Storage System (ESS) proposed for the BJSF will utilize lithium ion batteries, which are listed in the Australian Dangerous Goods Code as a Class 9 dangerous good. Appendix 2 of *Applying SEPP 33 Guidelines* (DoP, 2011) provides a risk screening procedure to identify potentially hazardous development. Class 9 dangerous goods are excluded from the SEPP 33 risk screening process.

The proposed development does not pose a significant risk to human health, life or property, or to the biophysical environment. It is not a potentially hazardous industry. Similarly, the BJSF would not emit a polluting discharge which would have a significant adverse impact in the locality or on the existing or likely future development on other land.

3.6 COMMONWEALTH LEGISLATION

3.6.1 ENVIRONMENT PROTECTION BIODIVERSITY CONSERVATION ACT

Referral to the Australian Government Minister for the Environment under the Commonwealth's *Environment Protection Biodiversity Conservation Act 1999* is not required (refer **Appendix B**).

3.6.2 RENEWABLE ENERGY ACT 2000

The *Renewable Energy Act 2000* establishes solar as an eligible energy source under the Commonwealth's RET. Creating LGC's from the BJSF, which can then be sold to liable entities, is subject to the approval of the Clean Energy Regulator pursuant to the *Renewable Energy Act 2000.*

Environmental Issues

4.1 IDENTIFYING POTENTIAL CONSTRAINTS

The process of identifying key potential environmental issues associated with the construction and operation of the BJSF commenced with a preliminary desktop risk assessment that identified the likely planning and environmental issues associated with the development and discussions with Walgett Shire Council.

Site inspections and specialist surveys were then completed to ground truth the biophysical data sourced from the desktop assessment and inspect the features in and around the development site.

Enerparc has also instigated consultations with Essential Energy and the holder of a Petroleum Exploration License (PEL 0428) that covers 6,018 square kilometres: inclusive of the development site.

The objective has been to accurately identify and map features of the development site and its surrounds that could represent a design constraint and to inform the impact assessment methodologies.

4.2 ENVIRONMENTAL ISSUES

The following have been identified as the key potential environmental issues associated with the BJSF:

- Aboriginal Heritage
- Flooding
- Biodiversity

Other environmental issues include:

- Amenity values for neighbours (visual and noise impacts)
- Water quality
- Traffic
- Air quality
- Waste management
- Electromagnetic Interference

Land Use

5.1 ZONE OBJECTIVES

The development site and surrounding land is zoned RU1 – Primary Production. Under the provisions of the *Walgett Local Environmental Plan 2013* the objectives of this zoning are:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*
- *To enable small-scale rural tourism uses associated with primary production and environmental conservation.*

The proposed BJSF is not antipathetic to the realisation of any of these land use objectives. A solar farm will not diminish or degrade the natural resource base, fragment or alienate resource lands or create conflict between existing land uses.

Land approximately 450 m to the south is zoned RU5 – Village. The objectives of this zoning are:

- *To provide for a range of land uses, services and facilities that are associated with a rural village.*
- *To enable development of a scale that is compatible with the general residential character of village areas and that will not prejudice the viability of established shopping and commercial centres.*

As noted in Council's (draft) *Local Strategic Planning Statement* (May 2020) the village of Burren Junction contains a number of vacant lots and the Shire's *Growth Management Strategy* 2011 (which preceded the making of Council's Local Environmental Plan) sought to limit the expanse of village zones and align dwelling entitlements with the capacity of land to be serviced by effluent disposal. Expansion of the Burren Junction village to the north and encroachment towards the BJSF is unlikely.

The *Statement* also identifies that:

> *Making the most of Walgett Shire's solar potential requires identification of preferred locations based on minimal impact on productive agricultural land and proximity to existing and planned infrastructure.*

As noted, the existing Essential Energy Zone Substation at Burren Junction provides the opportunity to connect to existing infrastructure, and occupation of up to 20 hectares on land not mapped as Biophysical Strategic Agricultural Land (BSAL) would have a negligible impact on productive agricultural land in the Shire. Similarly, the *Far West Regional Plan 2036* includes a direction for diversity of energy supply through renewable energy generation and support for the Far West to become a leader in renewable energy.

A planning priority in the *Statement* is to promote preferred locations for industrial growth and development, and one of the identified strategies for achieving this is to support the development of renewable energy in appropriate areas. Actions to achieve this include:

- *Facilitate small-scale renewable energy projects using bioenergy, wind, small-scale hydro, geothermal or other innovative storage technologies through working with providers and ensure use is permissible in the LEP.*

5.2 POTENTIAL IMPACTS

Potential land use impacts associated with the construction, operation and (possible) future de-commissioning of the solar farm in 25 years include the following:

- temporary loss of agricultural land;
- creating land use conflicts through compromising the continued use of adjoining lands for primary production purposes by neighbours; and
- restricting access to resources.

Each of these potential impacts is discussed below.

5.2.1 LOSS OF AGRICULTURAL LAND

5.2.1.1 Extent and Capability

The development site is not mapped as Biophysical Strategic Agricultural Land (BSAL). BSAL is land with high quality soil and water resources capable of sustaining high levels of productivity. The site is not identified as being state significant agricultural land and the use of 16 ha of the development site for a solar farm does not compromise or significantly diminish the availability of land for primary production purposes in the Burren Junction district.

5.2.1.2 Restoration

At the end of the project life, if Enerparc determines that it will decommission the solar farm and the land reverted to agricultural use, then the land needs to be 'fit-for-purpose'. Decommissioning would entail the following:

- Disconnection from the Essential Energy Zone substation.
- Removal of inverter stations, modules, racking system and posts.
- Removal of underground cabling.
- Removal of the O&M, battery and system containers and foundations.
- Removal of security fencing.
- Rehabilitation of access track.

5.2.2 COMPATIBILITY

The proposed BJSF would not compromise the capacity for neighbours to continue existing or future primary production land uses. As an occupier of land in a rural environment, Enerparc as the owners of the BJSF will, like their neighbours, have responsibilities to manage the land appropriately. In particular this will include obligations to manage noxious weeds and to control fuel loads.

5.2.3 LOSS OF RESOURCES LAND

There are no known mineral occurrences in the development site. Review of NSW Government MinView Map confirms there are is a Petroleum Exploration License (PEL 0428) covering the development site. This PEL covers an area of 6,018 square kilometres and is held by Comet Ridge.

Enerparc has initiated consultation with Comet Ridge and to date no issues have been raised.

Heritage

6.1 ABORIGINAL HERITAGE

An archaeological survey of the development site has been undertaken consistent with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*, with the field inspection following the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales*. A full copy of this specialist assessment is provided in **Appendix A**.

The inspection did not record any Aboriginal sites or sensitive archaeological landforms. Recommended mitigation measures to ensure protection to the area's potential Aboriginal cultural heritage values have been adopted and include:

- All staff and contractors involved in the BJSF construction should be made aware of the legislative protection requirements for all Aboriginal sites and objects.
- If Aboriginal artefacts or skeletal material are noted, work should cease and the procedures in the Unanticipated Finds Protocol should be followed.
- Work crews should undergo cultural heritage induction to ensure they recognise Aboriginal artefacts and are aware of the legislative protection of Aboriginal objects under *the National Parks and Wildlife Act 1974* and the contents of the Unanticipated Finds Protocol.

6.2 HISTORIC HERITAGE

A review of the Walgett LEP, State Heritage Register and Australian Heritage Database confirms that there are no known items of heritage significance at or near the development site.

Biodiversity

7.1 BIODIVERSITY ASSESSMENT REPORT

A Biodiversity Assessment Report (BAR) has been prepared to:

- Assess impacts of the development on native vegetation at the site and any identified or potential threatened species, populations and ecological communities and their habitat.
- Identify the requirements relevant to the development under the following legislation:
  - *Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act);*
  - *NSW Biodiversity Conservation Act 2016 (BC Act);*
  - *NSW Fisheries Management Act 1994 (FM Act);*
  - *NSW Biosecurity Act 2015.*
  - *Walgett Local Environment Plan (LEP)*
- Provide recommendations to avoid, minimise and/or mitigate impacts of the development on biodiversity.

A full copy of this assessment is provided in **Appendix B**. Provided below is a summary of the key findings.

7.2 SIGNIFICANCE OF IMPACTS

The development site is mapped as non-native vegetation and does not provide significant habitat for any BC Act or EPBC Act threatened flora and/or fauna or any EPBC Act listed migratory species. No threatened species were recorded on the site. Minimal habitat features were recorded within the site. The cracking soils may provide habitat for some reptiles, however due to the high level of disturbance this is not likely. If impact mitigation measures are implemented, there will be no significant impact from the proposal on any threatened species.

There is no potential Koala habitat within the subject site. The development does not impact on or occur within any Protected Riparian Habitat or Key Fish Habitat or threatened fish habitat, or impact Groundwater Dependent Ecosystems.

As no identified plant community types (PCTs) will be cleared in association with the proposed development (on a minimum lot size of 400 ha; therefore a clearing threshold of <1 ha) and no significant impact to threatened species will occur, it is not necessary to enter the Biodiversity Offset Scheme.

7.3 MITIGATION MEASURES

General

- All personnel would be inducted to be aware that any impacts to threatened species have legislative consequences if deliberately or accidentally impacted without development approval under the EP&A Act.
- Evidence of all personnel receiving an induction would be kept on file (signed induction sheets etc.). 2. Any change in design outside the assessed impact footprint within the study area will require further ecological survey.

Clearing

All personnel would be inducted to be aware that any stand of native vegetation outside the subject site has legislative consequences if deliberately or accidentally impacted without approval. Evidence of all personnel receiving an induction would be kept on file (signed induction sheets etc).

Threatened Species

- Provide identification resources for personnel to enable identification of threatened species that might occur on the work site.
- Keep records of any threatened species recorded on site during works.
- Construction work to occur only during daylight hours to avoid indirect impacts on threatened fauna such as vehicle strikes.
- If unexpected threatened fauna or flora species are discovered, stop works immediately and contact a suitably qualified ecologist for advice.
- If any threatened flora species are found within the subject site during construction, construction is to stop in the immediate area and contact a qualified ecologist for advice and management guidance.

Soil Management

- Install erosion and sediment controls in line with Landcom's Managing Urban Stormwater, Soils & Construction Guidelines (The Blue Book. Landcom 2004) are required.
- Erosion and sedimentation controls are to be checked and maintained on a regular basis. This includes clearing of sediment from behind barriers and after heavy rainfall events.
- Erosion and sediment control measures are not to be removed until the works are complete and areas are stabilised.
- Stockpile topsoil (if any) removed to be redistributed across site at completion of construction
- Implement dust suppression activities.

Weed and Pathogen Control

- Construction crew should be briefed on the identification of priority weeds that occur on site during inductions.
- If declared priority weeds are identified during construction they would be managed according to the requirements of the *Biosecurity Act 2016*.
- Construction machinery (bulldozers, excavators, trucks, loaders and graders) would be cleaned before entering and exiting work sites.
- Machinery will be inspected by designated personnel to ensure no soil, mud, vegetative material present. Records of inspections to be maintained.
- All pesticides would be used in accordance with the requirements on the label. Any person carrying out pesticide (including herbicide) application would be trained to do so and have the proper certificate of completion/competency or statement of attainment issued by a registered training organisation.
- Keep records of any weed control activities that take place.

Invasive Fauna

- All food scraps and rubbish are to be appropriately disposed of in sealed receptacles to prevent providing forage habitats for foxes, rats, dogs and cats.

Catchment Impacts

8.1 EXISTING ENVIRONMENT

8.1.1 SURFACE WATERS

The development site is flat terrain and drains in a north westerly direction. The closest named watercourses to Burren Junction is Pain Creek 4 km to the north and the Cubbaroo Warrambool approximately 4.5 km to the south. Man-made drainage channels do traverse the site and the proposed solar farm layout has been sited to ensure no interference or impact on these constructed channels.

8.1.2 FLOODING

8.1.2.1 Background

A significant amount of land within the Walgett Shire (about 85%) consists of a flood plain landform and is potentially flood prone. The Walgett *Development Control Plan 2016* (DCP) notes that anecdotal evidence indicates the urban area of Burren Junction has never been inundated by floodwater. The village has been surrounded by water due to localised flooding from heavy rainfall in the past, but dates and duration are unknown. The village itself is identified as not flood prone.

A Flood Risk Assessment has been prepared for the proposed development and is included in **Appendix C**. This assessment included an analysis of pre-development site conditions to establish the base runoff characteristics, and quantification of the potential impacts associated with the proposed solar farm.

8.1.2.2 Hydrologic Assessment

To determine the inflow boundaries for modelling, gauge data was utilised due to the extensive catchment that is outside the bounds of normal design hydrology standards. Due to the topography of the area the gauge used was Naomi River at Mollee (Gauge Number 419039). A flood frequency analysis (FFA) for this gauge was obtained from the Bureau of Meteorology Water Data Online. The 1% AEP discharge from the FFA is 5410.6m^3/s.

To determine the flows from the local catchment that drains through the site, Australian Rainfall and Runoff's Regional Flood Frequency Estimation (RFFE) Model was utilised. The local catchments were defined utilising the lidar data and detailed site survey and a RFFE was produced for each of the catchments and peak flows determined.

8.1.2.3 Hydraulic Assessment

A hydraulic assessment was then undertaken to determine the flood extent levels over the site to ensure the solar farm has suitable flood immunity. The assessment was undertaken utilising TUFLOW, a two dimensional fully dynamic hydraulic modelling package. Pre and post development scenarios were considered, with 1% AEP flood maps showing peak water surface levels, depth and flow velocity for each.

8.1.2.4 Impact

The flood risk assessment concluded the proposed BJSF would have no impact on flood levels.

Based on this assessment and pursuant to Clause 6.2 of WSC's LEP, the proposed BJSF:

- will not increase the flood risk to life and property associated with the use of land;
- is a development that is not incompatible with the land's flood hazard;
- will not result in significant adverse impacts on flood behaviour and the environment;

- will not significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties;
- will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of any river banks or watercourses; or
- is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.

Detailed design, including geotechnical investigations to be undertaken (subject to securing development consent) will ensure structures can withstand the force of flowing floodwaters, including debris and buoyancy forces as appropriate.

8.1.3 GROUNDWATER

There are no registered groundwater bores within 500 m of the development site and a review of the Australian Government Bureau of Meteorology (BOM) *Groundwater Dependent Ecosystem Atlas* shows there are no terrestrial or aquatic groundwater dependent ecosystems (GDEs) within the development site.

8.1.4 SOILS

The Office of Environment and Heritage (OEH) Land and Soil Capability Mapping for NSW identifies the development site as containing land mapped as Class 3 (High Capability). There is no Biophysical Strategic Agricultural Land (BSAL) within or near the development site.

A review of the EPA Contaminated Land Record under s.58 of the *Contaminated Land Management Act 1997* and the List of NSW contaminated sites notified to EPA under s.60 of the Act does not identify any registered contaminated sites on or near the development site. The likelihood of contamination is considered low.

The Commonwealth Scientific and Industrial Research Organization (CSIRO) *Australian Soil Resource Information System* online map indicates the development site has an extremely low probability of occurrence for acid sulfate soils, and no Naturally Occurring Asbestos (NOA) is mapped at or near the development site.

8.2 WATER QUALITY

8.2.1 SURFACE WATERS

Potential impacts to water quality are essentially restricted to the construction phase and can be readily managed through installation and maintenance of standard erosion and sedimentation control measures. Extensive earthworks and deep excavation are not proposed nor required.

Post-construction, as a land use, a solar farm presents less potential risk to water quality than conventional primary production. With returns driven by passive harvesting of sunlight as opposed to primary production, ground disturbance will be significantly less, there will not be a need for fertiliser inputs, there will be less grazing pressure, an improved capacity to retain groundcover, and less herbicide/pesticide applications.

8.2.2 GROUNDWATER

Subsurface works would be limited to shallow trenching, excavations (for foundation and hardstand for the inverter stations/containerised batteries), and driving array posts into the ground to support panels. The prospect of interfering with any groundwater resource through inflow or seepage is remote. The closest groundwater bores indicate a standing water level of between 25- 30 m depth. The development does not involve any aquifer interference activity pursuant to the *NSW Aquifer Interference Policy*. The BJSF will not require works that would penetrate an aquifer, interfere with water in an aquifer, obstruct the flow of water in an aquifer or take water from an aquifer. Groundwater Dependent Ecosystems will not be impacted.

8.3 HYDROLOGY

Land use developments that require significant cut and fill earthworks and create large impermeable surfaces can change drainage patterns in terms of both flow paths and the volume of stormwater runoff generated in rainfall events. Increased volumes of runoff at higher velocities can cause adverse impacts within the site and lower in the catchment.

The BJSF site is flat. Construction of the BJSF will not require extensive or significant earthworks and will not result in any fundamental changes to existing drainage patterns.

The post development scenario involves the inclusion of minimal impervious area. The internal access road will be unsealed gravel and the inverter stations and containerised batteries will be raised above the ground and not impede overland flow. The proposed development will not generate greater volumes of runoff, at higher velocities, draining from the development site.

The long term performance measure for operating the solar farm will be to establish a healthy, self-sustaining, noxious weed free groundcover over the solar farm that does not create a fuel hazard. How this can best be achieved, and maintained, through a combination of mechanical slashing and/or periodic crash grazing will require monitoring and implementation of adaptive management principles. Specifically, this will entail adapting the frequency, duration and intensity of any grazing and the timing of any mechanical slashing to suit and accommodate the prevailing seasonal conditions.

8.4 MITIGATION MEASURES

8.4.1 CONSTRUCTION

Four principle measures will be adhered to during construction.

- At all times, in all locations, the area of ground disturbance will be limited to that which is the smallest possible footprint that is practicably possible.
- Erosion and sediment controls will be suitably maintained, including regular monitoring to ensure the measures and controls in place are effective.
- Immediate stabilisation of worked sections complemented by progressive rehabilitation.
- Erosion and sediment control measures only to be removed once the area is stable.

8.4.2 OPERATIONS

Operation of the solar farm will include adaptive management to retain groundcover to protect the soil resource and water quality, balanced with requirement to manage fuel loads for minimising bushfire risk.

Visual Impact

9.1 FARM INFRASTRUCTURE

Above ground infrastructure associated with the solar farm will include a perimeter security fence, modules (including the supporting piles and tracking mounts), a control room, two inverter stations, a battery energy storage system and containers for storage.

Modules

The solar PV panel technology will be crystalline silicone. The panel modules will be connected together via a DC collection system consisting of cables mounted on the module support structure. The racking system will be SAT, which tracks the daily movement of the sun and motorised linkages rotate the modules from the east in the morning to the west in the afternoon. The maximum height of the module infrastructure at maximum 52 degree tilt will be approximately 2.65 m above ground level.

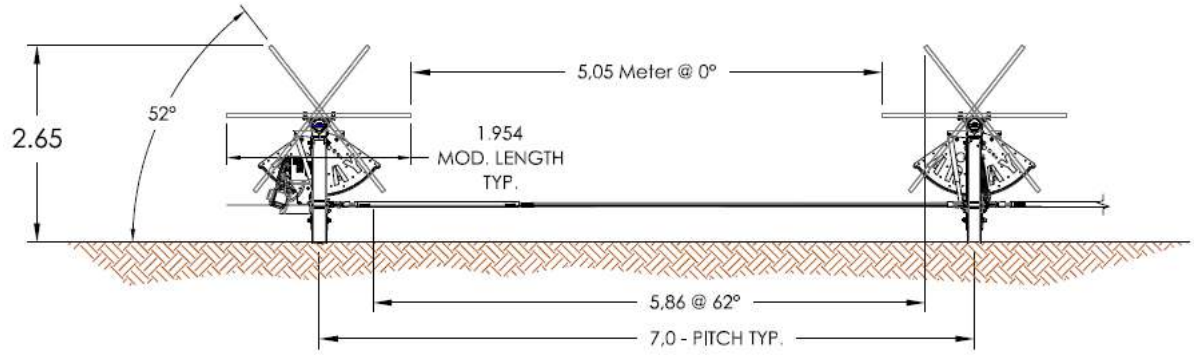


Figure 2: Proposed Tacker/Module Configuration

The modules will be laid out in rows and the racking system will be supported by steel piles.

Inverter Stations

The BJSF will have two (2) SMA 3000-EV inverter stations. Dimensions are typically 2.59 m high, 6.05 m long and 2.43 m wide. These inverter stations will be positioned centrally within the farm and are self-contained units.

Plate 1: Typical Skid Type Inverter Station (Source SMA)

Energy Storage System

Provision will also be made for inclusion of an Energy Storage System (ESS) as part of the solar farm.

Specifically, a designated ESS area will be provided centrally within the solar farm. The ESS will include one system container that houses inverters and two containers fully equipped with batteries.

The size and dimensions of these containers is detailed below and **Plate 3** shows what they look like.

Table 9.1 – Energy Storage System

Unit	~Dimensions [L x W x H] (m)
System Container	6.5 x 2.5 x 3
Battery Container	13 x 2.5 x 3

Control Room

The control room will be a pre-fabricated unit to be installed centrally within the farm and be approximately 6 m (L) x 3 m (W) x 2.5 m (H).

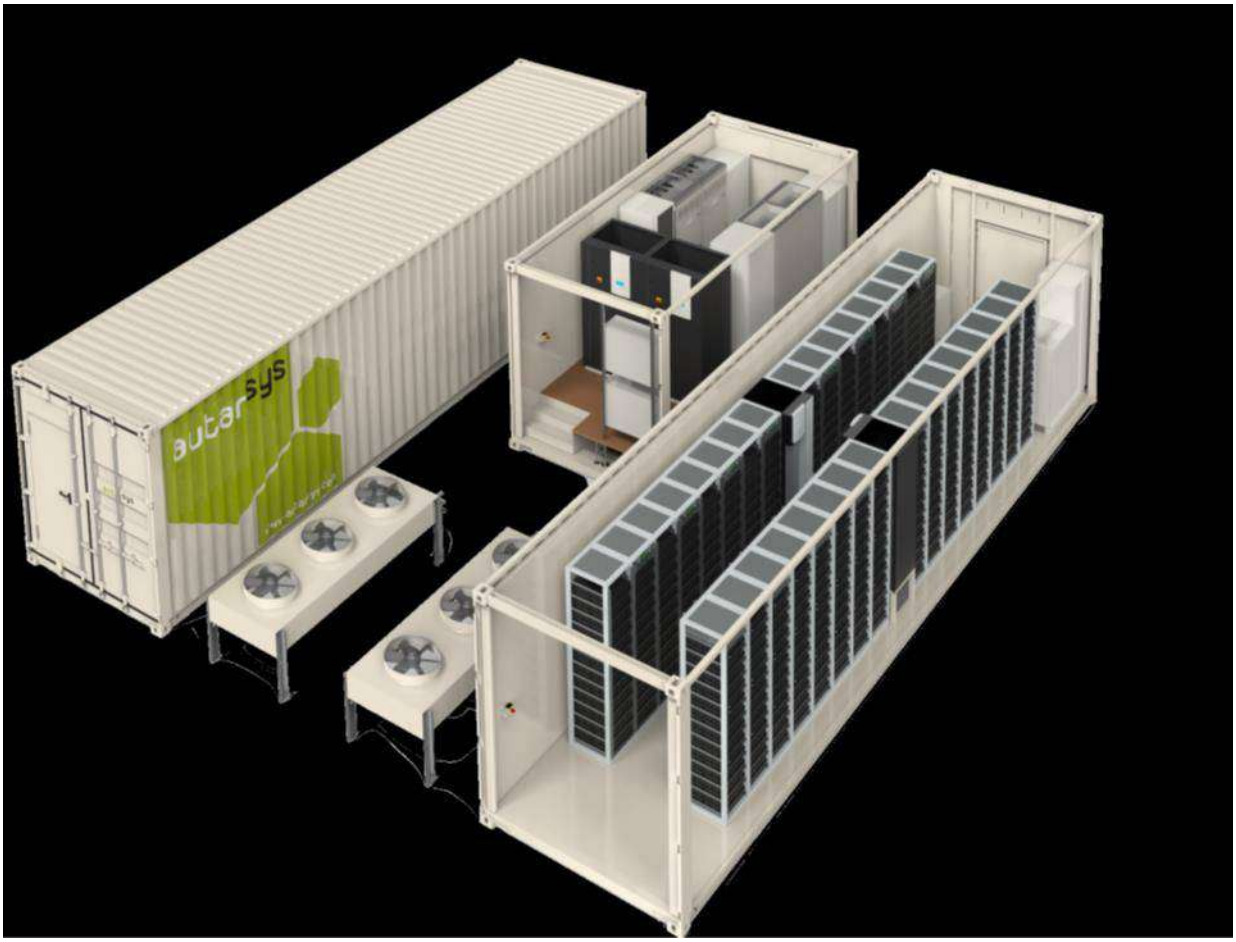


Plate 2: Energy Storage System (Source: Autarsys)

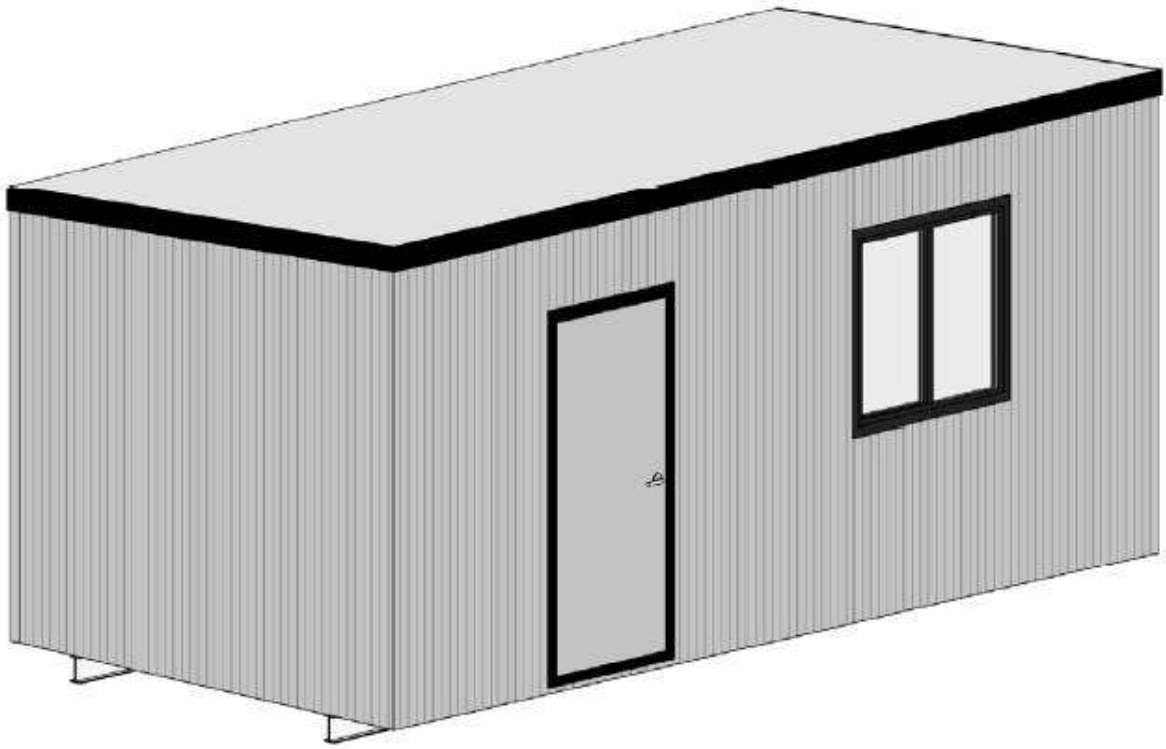


Figure 3: Control Room

Security Fence

A security fence will be installed around the solar farm perimeter. This fence will be up to 2.1 m chain link with three barbs on top, for a total height of up to 2.4 m.

9.2 IMPACTS

9.2.1 LANDSCAPE

Solar farm infrastructure will be located over 600m distant from the closest residence and be built within a a flat, cleared landscape. Above ground electrical infrastructure, including overhead powerlines and the Burren Junction Zone Substation are existing features of the locale.

9.2.2 GLARE

Glare is a continuous source of excessive brightness relative to ambient lighting (Ho, 2009). Solar PV panels are specifically designed to absorb not reflect solar energy. Reflected sunlight is lost energy and represents lost revenue. For this reason the glass used in solar PV systems can reflect just 2% of the light received (Spaven, 2012). In comparative terms this is significantly lower than the reflectivity of other materials.

The potential for glare will be further minimised by the use of a single-axis tracking modules which track east to west with the sun. This means the angle of incident (AOI) sunlight onto the solar panel is generally perpendicular, resulting in more energy hitting the module and less reflection than a fixed-axis module which has a greater AOI as the sun moves.

9.2.3 LIGHTING

The only night lighting associated with the BJSF would be targeted security lighting. This will be for the control room, inverter stations and battery energy storage system.

Lighting would be designed and operated to comply with *Australian Standard AS4282 Control of Obtrusive Effects of Outdoor Lighting*. In so doing there would be negligible light spill above the horizontal plane and no significant off-site impacts.

Full perimeter security lighting is not proposed.

9.3 CONCLUSION

Visual impact is essentially a subjective judgement. What is intrusive or objectionable to some can be innocuous to others. For this reason conclusions as to the acceptability or significance of a visual impact is basically an opinion. A reasonable assumption however is that the existing landscape and views for those living locally is valued.

The proposed solar farm will be visible (at distance) but it will not generate nuisance glare or light spill for any neighbour. Infrastructure will sit relatively low in the landscape (<3 m in height) and not significantly change or obstruct views for residents. Farm buildings and vegetation around the curtilage of residences to the south of the solar farm will minimise the magnitude of change to the landscape.

Traffic

10.1 INTRODUCTION

Once commissioned and operational the BJSF will generate negligible traffic. No staff will be permanently based on-site. Visitation will be limited to periodic maintenance and infrequent plant and equipment replacements. It will be during construction and any future decommissioning of the farm that traffic movements will be significant.

10.2 TRAFFIC GENERATION

10.2.1 TOTAL VEHICLE MOVEMENTS

Construction is expected to be completed over a four (4) month period with an expected peak period of 2 months during which a range of construction tasks will be undertaken concurrently. During this peak it is anticipated that up to 25 workers will be on-site daily, dropping to 10 workers or less for the shoulder periods.

For assessment purposes it is assumed only 30% of the 25 workers would participate in some form of carpooling; resulting in an estimated 20 private light vehicles travelling to and from the site daily for the 2 month peak.

Enerparc's estimates of total heavy vehicle movements associated with the delivery of farm infrastructure and associated materials and resources to build the BJSF are provided in **Table 10.1.**

Table 10.1 – Heavy Vehicle Numbers

Plant/Equipment	Description	Heavy Vehicles
Modules	17,248 modules (700 modules per 40' container) delivered on semi-trailers.	25
Mounting frames	4 x 40' container per MW, inclusive of piles and structural frames and materials.	25
Inverter Stations	2 x inverter stations; delivered 1 per semitrailer.	2
Concrete	Estimated 30 m^3 required inverter assembly foundations and security fence in 10 m^3 concrete trucks.	3
Gravel	Estimated 1,600 m^3 (~3,200 tonne) of gravel for internal access road and temporary hardstand lay down and construction compound area. Delivered in 42.5 tonne truck and dog trailers. Assumes access road and hardstand 100 mm.	76
Sand	Estimated 220 m^3 of sand (~320 tonne).	8
Miscellaneous	Provision for 4 miscellaneous deliveries (fencing, building materials, cable drums, water for dust suppression, etc) a week during construction period, dropping to an average of 2 trucks a week for the one month shoulder periods.	48
TOTAL		**~190**

10.2.2 PEAK DAILY VEHICLE MOVEMENTS

In terms of peak daily vehicle numbers,

- the maximum number of heavy vehicles accessing the site daily, during the peak of the construction period, is not expected to exceed 10 (i.e. generating a total of 20 heavy vehicle movements in a day).
- the maximum number of light vehicles accessing the site daily, during the peak of the construction period, is not expected to exceed 25 (i.e. generating a total of 50 light vehicle movements a day during the two month peak).

10.2.3 PEAK HOUR VEHICLE MOVEMENTS

In terms of peak hour vehicle numbers,

- the maximum number of heavy vehicles accessing the site in an hour, during the peak of the construction period, is not expected to exceed three (3).
- the maximum number of light vehicles accessing the site in an hour, during the peak of the construction period, is not expected to exceed 20 corresponding to daily start and end times.

10.3 SITE ACCESS

The development site will be accessed via Waterloo Street with a new section of road to be constructed in what is an unformed road reserve under the care and control of Council.

10.4 MITIGATION MEASURES

10.4.1 SITE ACCESS

Prior to commencement of construction the access road will be built to Council standards.

10.4.2 TRAFFIC MANAGEMENT

Measures to be implemented to protect traffic safety and minimize any disruption to local users of the road network, including

- Temporary traffic controls, including signage.
- Notifying the local community about project-related traffic.
- Scheduling of haulage vehicle movements to minimize convoy lengths or platoons.
- Ensuring all vehicles are loaded and unloaded on site and enter and leave the site in a forward direction.
- Ensuring there is sufficient parking on site for all vehicles and no parking occurs on the public road network in the vicinity of the site.

10.5 IMPACT

Traffic impacts associated with the BJSF will be limited to the construction phase. These impacts will be temporary, manageable and monitored.

Noise

11.1 SENSITIVE RECEPTORS

The development site is located outside the built-up residential area of Burren Junction. The closest receptors are 600 m distant from the proposed solar farm.

11.2 CONSTRUCTION NOISE

11.2.1 DURATION

The construction of the BJSF is expected to take approximately 4 months with a number of different activities undertaken over that time.

Table 11.1 presents an overview of each of the construction tasks along with their expected duration. It is noted that some of these tasks are likely to occur concurrently. Activities such as civil works, trenching, piling and installation may occur concurrently, and grid connection preparation and construction likely to be undertaken at the same time as installation of the solar PV modules and cabling.

Table 11.1 – Construction Phases and Expected Duration

Construction Phase	Duration
Site clearing and preparation	0.5 months
Piling – installation of module mounting structures	1.5 months
Installation of solar PV modules & inverter assemblies	1.5 months
Commissioning	0.5 months

11.2.2 HOURS

Construction would be primarily be restricted to what the EPA term ‘normal construction hours’: which are between 7 am and 6 pm Monday to Friday and 8 am to 1 pm Saturday, with no works on Sundays or Public Holidays.

11.2.3 NOISE SOURCES

The table below presents a summary of the plant and equipment likely to be required to complete the on-site construction works. The sound power levels presented have been sourced from published noise emission datasets and the library of source noise levels.

Table 11.2 – Construction Phases and Expected Duration

Construction Phase	Plant Item	Number Assume	Sound Power Level, dB(A)	Acoustical Usage Factor, %
Site preparation	Truck and Dog Compactor Bulldozer Water Cart (as required) Vibratory Roller	2 2 1 1 2	110 103 109 103 103	40 20 40 40 20
Installation of solar PV modules & inverter assemblies	Piling Drill Rig [f)] Franna Crane Trencher Loader Generator Trucks	1 2 1 2 1 3	112-124 107 97 107 73 108	20 16 40 40 50 40

Table 11.2 – Construction Phases and Expected Duration

Construction Phase	Plant Item	Number Assume	Sound Power Level, dB(A)	Acoustical Usage Factor, %

a) Construction plant used intermittently as required. Continuous use not expected.
b) Truck movements associated with deliveries assumed to move through site at 10 km per hour as a moving point source.
c) Grader required for construction of access tracks, maintenance building, construction offices car park, minor earthworks and grading around the solar array area as required to meet structural tolerances for the tracker equipment.
d) Deliveries to site only to occur during standard construction hours.
e) The 'Acoustical Usage Factor' represents the percentage of time that a particular item of equipment is assumed to be running at full power while working on site.
f) Includes a correction for tonality

11.2.4 IMPACTS

The construction related activity that has the potential to cause nuisance impact is primarily restricted to vehicle movements through Burren Junction along Waterloo Street.

In terms of peak daily vehicle numbers,

- the maximum number of heavy vehicles accessing the site daily, during the peak of the construction period, is not expected to exceed 10 (i.e. generating a total of 20 heavy vehicle movements in a day).
- the maximum number of light vehicles accessing the site daily, during the peak of the construction period, is not expected to exceed 25 (i.e. generating a total of 50 light vehicle movements a day during the two month peak).

11.2.5 MITIGATION

The most effective means of minimising short term construction traffic noise impacts will be through

- Notifying the local community about project-related traffic and the construction schedule in advance.
- Adherence to a procedure for receiving, investigating and taking appropriate measures to avoid recurrence if a complaint is received.

11.3 OPERATIONS

11.3.1 NOISE SOURCES

Solar farms do not generate significant noise emissions and essentially operate during daytime hours.

Sources of plant and equipment noise during operation of the BJSF will include tracker motors, inverter stations and the energy storage system.

Table 11.3 – Operational Noise Sources

Source/Supplier	Number	Sound Power Levels dB(A)	Operating Hours
Tracker motors (ATI DuraTrack)	8	81 (each)	Daytime
Inverter stations[(a)] (SMA (3000-EV)	2	92 (each)	Daytime)
Energy Storage System (Autarsys Nucleons comprising: 1 x Systems Container and 2 x Battery Containers)	1	69 (each)	0500-1900 hours
Light vehicle	1	88	Daytime

a) Based on previous experience with similar sources there is potential for tonal influences associated with this source. Therefore, in accordance with the INP, a +5 dB penalty has been applied to this source.

11.3.2 CRITERIA

The EPA's *Noise Policy for Industry* (NPfl) has identified that both the increase in noise level above background levels (that is, intrusiveness of a source), as well as the absolute level of noise are important factors in how a community will respond to noise from industrial sources.

The intrusiveness noise level is intended to protect against significant changes in noise levels as a result of industrial development. To achieve this, the NPfI describes intrusive noise as noise that exceeds background noise levels (as defined by the Rating Background Level or RBL) by more than 5 dB.

The impact assessment has assumed baseline noise levels equivalent to the minimum background noise levels provided in the NPfI. This approach provides the most conservative basis for assessment.

Table 11.4 – Derived Intrusiveness Noise Criteria

Receptor	Intrusiveness $L_{Aeq,15\text{-}minute}$ Criteria		
	Day	Evening	Night
All nearby residential receptors [a)]	40 [b)]	35 [b)]	35 [b)]

a) Receptor noise limit applies at a location 30 m from the dwelling façade.
b) Minimum background noise level established by the NPfl 2017.

11.3.3 IMPACTS

The significant buffer (greater than 600 m) to the nearest receptors provides adequate distance for attenuation of noise for the solar farm to operate without degrading acoustic amenity values for the closest neighbours.

Bushfire

12.1 RISK

The development site does not contain mapped bushfire prone land. Notwithstanding, the landscape has the potential to carry grass fires.

The *Rural Fires Act 1997* places a duty of care on all land managers/owners to prevent a fire spreading on or from their land. This duty of care for the BJSF will be addressed through solar farm design, construction and operation.

12.2 DESIGN

The design of the solar farm incorporates the following design features relevant to minimising bushfire risk.

12.2.1 ASSET PROTECTION ZONE

A security fence will be installed around the solar farm infrastructure. Inside this fence a minimum 5 m wide APZ will be maintained to provide for bush fire control and tanker access.

The APZ will be maintained consistent with the standards prescribed in the Rural Fire Service (RFS) *Practice Note for Telecommunication Towers in Bush Fire Prone Areas* (RFS, 2012). These standards are considered appropriate given that the development site is not located on land mapped as bush fire prone land and the RFS Practice Note is predicated on the assumption that telecommunications towers are critical infrastructure.

Compliance with these standards means the APZ must be free of surface fuel, noting that there will be no canopy providing any elevated fuel source. The APZ will provide the requisite defendable space around the solar farm infrastructure.

12.2.2 TANKER ACCESS

The layout of the solar farm will provide for appropriate emergency vehicle access across the entire site, with setbacks from the site boundary wide enough to permit required fire tanker manoeuvrability. The internal access track will provide a rapid access route to the inverter stations and battery storage.

12.2.3 BUFFERS TO ELECTRICAL INFRASTRUCTURE

Essential Energy electricity assets exist immediately adjacent to the development site. These include aboveground 22 kV powerlines and the Burren Junction zone substation.

The layout of the BJSF will be finalised by Enerparc in consultation with Essential Energy and in compliance with the *ISSC 20 – Guideline for the Management of Activities within Electricity Easements and Close to Electricity Infrastructure* (September 2012).

12.3 CONSTRUCTION

- Prior to construction commencing contact will be made with the Local Brigade of the RFS and details about the construction schedule, contact numbers and site access arrangements will be shared.
- During bushfire season a mobile firefighting unit will be provided on-site.
- The fuel load over the site prior to and during construction will be monitored and reduction measures implemented as required. These measures will be restricted to mechanical slashing or stock crash grazing.
- The following specific procedures for minimising bushfire risk will be adopted during construction:
  - No burning of vegetation or any waste material would take place on the construction site;
  - Fire extinguishers will be available in all vehicles;
  - During the bushfire season the fire danger status would be monitored daily (through the RFS website *http://www.rfs.nsw.gov.au*) and communicated to personnel;
  - Total Fire Ban rules will be adhered to. That is, the EPC Contractor (and any of its contractors) will not:
    - (in any grass, crop or stubble land) drive or use any motorised machine unless the machine is constructed so that any heated areas will not come into contact with combustible matter;
    - carry out Hot Works (e.g. welding operations or use an angle grinder or any other implement that is likely to generate sparks), unless the necessary exemption from the RFS Commissioner has been obtained and work complies with all requirements specified in the exemption; and
- It is not anticipated that any fuel or flammable liquid will be stored on-site. If any is, this material would be stored in a designated area and will be sign posted “Fuel Storage Area.” A register will be maintained that confirms the quantities and location of any flammable material stored on-site.

12.4 OPERATIONS

Unmanaged grasslands can create a bushfire risk hazard. The performance measure for managing the bushfire risk will be to operate the BJSF and maintain the site in a such a manner that no grass fire originates from within the BJSF site, and/or any approaching bushfire does not intensify as a consequence of entering the BJSF site because of excessive fuel loads. The fuel load over the BJSF will be monitored and fuel load reduction measures implemented as required. These measures will be either mechanical slashing or stock crash grazing.

Procedures for ensuring this outcome, including consultations with the local RFS brigade, will be specified in the OEMP.

Air Quality

13.1 CONSTRUCTION IMPACTS

Potential adverse air quality impacts associated with the solar farm are restricted to the construction phase. Notwithstanding the minor earthworks that will be required, any activity that entails the use of plant and equipment on soil has the potential to generate localised dust emissions.

These impacts can, however, be readily managed through the adoption of suitable mitigation measures during the construction effort. Such measures would include:

- Restricting vehicle movements and ground disturbance to the minimum area that is safely practicable.
- Undertaking dust suppression through strategic watering, as required.
- If necessary, temporary cessation of some works during excessively dry and windy conditions.

13.2 OPERATIONAL IMPACTS

The change in land use from agricultural land to a solar farm will reduce the potential for localised particulate emissions. The principal source of dust is ground disturbance and wind exposure to an un-vegetated ground surface.

With the financial return on the land asset driven principally by passive harvesting of solar energy above ground, rather than grazing and/or farming and the associated periodic ground disturbance and changes to groundcover, the retention of groundcover over the site will be comparatively easier to maintain.

As a source of particulates and localised dust emissions the solar farm will, in comparative terms, be a land use that has the potential to improve local air quality.

From a broader perspective the 5 MW_{AC} BJSF will generate approximately 14,500 MWh of electricity annually. Indirect emissions of GHG are emissions generated in the wider economy as a consequence of an organisation's or individual's activities (particularly from its/their demand for goods and services), but which are physically produced by the activities of another organisation. The most important category of indirect emissions in Australia is from the consumption of electricity.

To this end the Department of Environment and Energy's (DoEE) Australian National Greenhouse Accounts specifies indirect emission factors to calculate GHG emissions from the generation of electricity purchased and consumed as kilograms of carbon dioxide equivalent (CO_2e) per unit of electricity consumed ($kgCO_{2\text{-}e}/kWh$). For NSW the indirect emission factor for the consumption of purchased electricity from the grid is 0.82 $kgCO_{2\text{-}e}/kWh$ (DoEE, July 2018).

Generating 14,500 MWh/year of electricity equates to a savings of over 11,890 tonnes of GHG a year.

Waste Management

14.1 INTRODUCTION

Waste generation associated with the BJSF will be mainly restricted to the construction phase. Once operational the farm will not routinely generate any waste.

14.2 CONSTRUCTION

Solid waste generated during construction would include packaging materials, metal off-cuts, cabling, excess building materials, general refuse and other non-putrescible general solid wastes.

Enerparc expect a maximum of five (5) truck loads of waste will require disposal with the balance of construction generating recyclable materials.

General refuse would be stored in secure covered skips.

Dry port-a-loos would be provided for amenities throughout construction negating the need for on-site domestic sewage treatment.

The landfill at Burren Junction is open to residents only for domestic waste. Waste generated from construction of the BJSF will not be disposed of at this landfill.

14.3 OPERATIONS

The farm will also be monitored remotely from an off-site location and apart from a routine maintenance program, specialist operators will only visit the farm when responding to any performance issues.

Waste generated during operation is anticipated to be minor and would not be stored or disposed of on-site.

14.4 DECOMMISSIONING

Any future decommissioning would entail removing infrastructure. Opportunities for recycling this equipment will be investigated at the time, with off-site lawful disposal at an approved waste management facility the fall back option. Modules and the racking system would be removed and it could be expected that a significant amount of the support structure could be reused or recycled off-site. Piles will be lifted out of the ground and recycled wherever possible. All underground cabling would be removed and recycled/reused.

14.5 MITIGATION MEASURES

Prior to construction activity commencing a Construction Environmental Management Plan (CEMP) would be prepared and submitted to Council. A key sub-plan within the CEMP will be a Waste Minimisation and Management Plan (WMMP). This WMMP will identify where waste will be disposed of - noting that Burren Junction landfill is not an option.

During construction tracking of all waste leaving the site, identifying the waste classification, quantities and fate of materials to be recycled or disposed will be undertaken.

No waste will be burnt or buried on the site.

Electromagnetic Interference

Electric and magnetic fields (EMF) are produced naturally as well as by human activity. The earth has both a magnetic field, produced in the earth's core, and an electric field produced by electrical activity like storms in the atmosphere. Electrical equipment of all sizes and voltages produces EMF. Both fields drop away rapidly with distance from the source or due to shielding by insulation or earth (in the case of buried installations).

The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has issued *Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields*. The relevant authority in Australia is the Australian Radiation Protection and Nuclear Safety Agency (ARPNSA) and it refers to the ICNIRP guidelines.

The ICNIRP EMF guidelines provide relevant limits for the general public for 50 Hz sources as follows:

- Electrical Field Strength (E): 5 kilo Volts per metre (kV/m)
- Magnetic Flux Density (B): 100 micro Teslas (µT)

Enerparc will ensure that in detailed design and equipment procurement that the ICNIRP EMF guidelines will be complied with.

Economic Impacts

16.1 OPPORTUNITIES

The project is expected to take 4 months to build with a peak of up to 25 workers on site.

Construction will generate some short term employment opportunities and a demand for some services and resources that can be locally sourced. The roles required will vary from highly skilled electricians able to work with solar PV systems (both low and high voltage) to general labourers and contractors.

There will be contracts let for the provision of raw materials (e.g. gravel, sand, concrete) and plant/operators (e.g. graders, piling rigs, mobile cranes, trenchers, loaders, rollers, water carts).

During the build money will be spent within the Walgett Shire on accommodation, meals and support services.

Post construction the BJSF will not require a permanent on-site presence. There will, however, be a demand for contracted support services as regular maintenance on infrastructure and land management (e.g. weed spraying) will be required on an ongoing basis.

16.2 COSTS

The BJSF is not a development that will increase demand on public facilities and services.

Mitigation Measures

17.1 INTRODUCTION

This section of the SEE provides a consolidated summary of all proposed safeguards and environmental mitigation measures that form part of the proposed development.

17.2 ENVIRONMENTAL MANAGEMENT STRATEGY

Potential environmental impacts will be avoided, minimised and managed through adoption of mitigation measures incorporated into all phases of the project, including:

- Detailed design;
- Construction;
- Operations;
- Upgrading; and
- Decommissioning.

The strategy for ensuring these commitments are acted upon will be to prepare and submit for Council approval a number of management plans at relevant stages of the development. These will include:

- Construction Environmental Management Plan;
- Operations Environmental Management Plan;
- Revised layout plans; and
- Decommissioning Management Plan.

These management plans will include, but may not be restricted to, inclusion of all relevant safeguards and environmental mitigation measures identified in this SEE and any associated conditions of consent.

The timing and scope of these management plans is detailed below.

17.3 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Prior to construction commencing a CEMP will be prepared and submitted to WSC for approval. The CEMP will document the environmental procedures and controls that would be implemented throughout construction, including detail on how the community would be kept informed about the construction program and how any complaint would be received, resolved and reported.

The CEMP would describe the role, responsibility, authority and accountability of key personnel involved in construction.

The CEMP would comprise various sub-plans detailing the specific mitigation measures that would be implemented to avoid and manage potential environmental impacts. These would include plans covering traffic management, biodiversity, Aboriginal heritage, soil and water protection, dust, noise and vibration, waste management and bushfire prevention.

Mitigation measures relevant to these issues, as identified in this SEE, are detailed below.

17.3.1 LANDOWNER CONSULTATION

- Early, regular and honest consultations with the community will be a core commitment.
- A procedure will be prepared for receiving, investigation and reporting any complaint received.

17.3.2 NOISE AND VIBRATION

The most effective means of minimising short term construction traffic noise impacts will be through

- Notifying the local community about project-related traffic and the construction schedule in advance.
- Adherence to a procedure for receiving, investigating and taking appropriate measures to avoid recurrence if a complaint is received.

17.3.3 TRAFFIC MANAGEMENT

- Temporary traffic controls, including signage.
- Notifying the local community about project-related traffic.
- Scheduling of haulage vehicle movements to minimise convoy lengths or platoons.
- Ensuring all vehicles are loaded and unloaded on site and enter and leave the site in a forward direction.
- Ensuring there is sufficient parking on site for all vehicles and no parking occurs on the public road network in the vicinity of the site.

17.3.4 ABORIGINAL HERITAGE

17.3.4.1 General

- All staff and contractors involved in the BJSF construction should be made aware of the legislative protection requirements for all Aboriginal sites and objects.
- If Aboriginal artefacts or skeletal material are noted, work would cease and the procedures in the Unanticipated Finds Protocol should be followed.
- Work crews should undergo cultural heritage induction to ensure they recognise Aboriginal artefacts and are aware of the legislative protection of Aboriginal objects under *the National Parks and Wildlife Act 1974* and the contents of the Unanticipated Finds Protocol.

17.3.4.2 Unanticipated Finds Protocol

Protocol to be followed in the event that previously unrecorded or unanticipated Aboriginal object(s) are encountered:

1. If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking the proposed development activities, the proponent must:

    a. Not further harm the object;
    b. Immediately cease all work at the particular location;
    c. Secure the area so as to avoid further harm to the Aboriginal object;
    d. Notify Biodiversity and Conservation Division (BCD) as soon as practical on 131 555, providing any details of the Aboriginal object and its location; and
    e. Not recommence any work at the particular location unless authorised in writing by BCD.

2. In the event that Aboriginal burials are unexpectedly encountered during the activity, work must stop immediately, the area secured to prevent unauthorised access and NSW Police and BCD contacted.

3. Cooperate with the appropriate authorities and relevant Aboriginal community representatives to facilitate:

a. The recording and assessment of the find(s);
b. The fulfilment of any legal constraints arising from the find(s), including complying with BCD directions; and
c. The development and implementation of appropriate management strategies, including consultation with stakeholders and the assessment of the significance of the find(s).

4. Where the find(s) are determined to be Aboriginal object(s), recommencement of work in the area of the find(s) can only occur in accordance with any consequential legal requirements and after gaining written approval from BCD (normally an Aboriginal Heritage Impact Permit).

17.3.5 BIODIVERSITY

General

- All personnel would be inducted to be aware that any impacts to threatened species have legislative consequences if deliberately or accidentally impacted without development approval under the EP&A Act.
- Evidence of all personnel receiving an induction would be kept on file (signed induction sheets etc.). 2. Any change in design outside the assessed impact footprint within the study area will require further ecological survey.

Clearing

All personnel would be inducted to be aware that any stand of native vegetation outside the subject site has legislative consequences if deliberately or accidentally impacted without approval. Evidence of all personnel receiving an induction would be kept on file (signed induction sheets etc).

Threatened Species

- Provide identification resources for personnel to enable identification of threatened species that might occur on the work site.
- Keep records of any threatened species recorded on site during works.
- Construction work to occur only during daylight hours to avoid indirect impacts on threatened fauna such as vehicle strikes.
- If unexpected threatened fauna or flora species are discovered, stop works immediately and contact a suitably qualified ecologist for advice.
- If any threatened flora species are found within the subject site during construction, construction is to stop in the immediate area and contact a qualified ecologist for advice and management guidance.

Soil Management

- Install erosion and sediment controls in line with Landcom's Managing Urban Stormwater, Soils & Construction Guidelines (The Blue Book. Landcom 2004) are required.
- Erosion and sedimentation controls are to be checked and maintained on a regular basis. This includes clearing of sediment from behind barriers and after heavy rainfall events.
- Erosion and sediment control measures are not to be removed until the works are complete and areas are stabilised.
- Stockpile topsoil (if any) removed to be redistributed across site at completion of construction

- Implement dust suppression activities.

Weed and Pathogen Control

- Construction crew should be briefed on the identification of priority weeds that occur on site during inductions.
- If declared priority weeds are identified during construction they would be managed according to the requirements of the *Biosecurity Act 2016*.
- Construction machinery (bulldozers, excavators, trucks, loaders and graders) would be cleaned before entering and exiting work sites.
- Machinery will be inspected by designated personnel to ensure no soil, mud, vegetative material present. Records of inspections to be maintained.
- All pesticides would be used in accordance with the requirements on the label. Any person carrying out pesticide (including herbicide) application would be trained to do so and have the proper certificate of completion/competency or statement of attainment issued by a registered training organisation.
- Keep records of any weed control activities that take place.

Invasive Fauna

- All food scraps and rubbish are to be appropriately disposed of in sealed receptacles to prevent providing forage habitats for foxes, rats, dogs and cats.

17.3.6 SOIL AND WATER MANAGEMENT

Four principle measures will be adhered to during construction.

- At all times, in all locations, the area of ground disturbance will be limited to that which is the smallest possible footprint that is practicably possible.
- Erosion and sediment controls will be suitably maintained, including regular monitoring to ensure the measures and controls in place are effective.
- Immediate stabilisation of worked sections complemented by progressive rehabilitation.
- Erosion and sediment control measures only to be removed once the area is successfully rehabilitated.

17.3.7 BUSHFIRE PREVENTION

- Prior to construction commencing contact will be made with the Local Brigade of the RFS and details about the construction schedule, contact numbers and site access arrangements will be shared.
- The fuel load over the site prior to and during construction will be monitored and reduction measures implemented as required.
- No burning of vegetation or any waste material would take place on the construction site.
- Fire extinguishers will be available in all vehicles.
- During the bushfire season (the fire danger status would be monitored daily (through the RFS website *http://www.rfs.nsw.gov.au*) and communicated to personnel.
- Total Fire Ban rules will be adhered to. That is, the EPC Contractor will not:
  - (in any grass, crop or stubble land) drive or use any motorised machine unless the machine is constructed so that any heated areas will not come into contact with combustible matter;

  - carry out Hot Works (e.g. welding operations or use an angle grinder or any other implement that is likely to generate sparks), unless the necessary exemption from the NSW RFS Commissioner has been obtained and work complies with all requirements specified in the exemption; and

- Any fuel or flammable liquid be stored on-site will be in a designated area and will be sign posted A register will be maintained that confirms the quantities and location of any flammable material stored on-site.

17.3.8 AIR QUALITY

Implementation of the following mitigation measures during construction will minimise potential impacts to air quality:

- Limit the area of soil disturbance at any one time.
- Maintain all disturbed areas, stockpiles and handling areas in a manner that minimises dust emissions (including windblown, traffic-generated or equipment generated emissions).
- Where required undertake strategic watering to achieve dust suppression.
- Where required, minimise vehicle movement and speed.
- Avoid dust generating activities during windy and dry conditions.
- Ensure all construction plant and equipment are operated and maintained to manufacturer's specifications in order to minimise exhaust emissions.
- Restricting vehicle movements and ground disturbance to the minimum area that is safely practicable.
- If necessary, temporary cessation of some works during excessively dry and windy conditions.

17.3.9 WASTE MINIMISATION AND MANAGEMENT

- The work site will be kept free of rubbish and cleaned up at the end of each working day.
- All waste that cannot be recycled will be disposed at a legally operating waste facility; noting that use of the Burren Junction landfill is not an option.
- No waste will be burnt or buried on-site.
- All opportunities for recycling will be implemented.
- All waste would be classified in accordance with the EPA's *Waste Classification Guidelines* and stored and handled in accordance with its classification.
- All wastes removed from the site will be recorded. Details will include the quantity of material removed, the contractor transporting it off-site, its fate (ie. disposal or recycling) and its classification.

17.3.10 FUEL AND CHEMICAL STORAGE AND MANAGEMENT

- Storage, handling and use of any potentially hazardous materials will be in accordance with the WorkCover NSW *Storage and Handling of Dangerous Goods – Code of Practice* (2005).

17.3.11 INCIDENT MANAGEMENT

- Adequate procedures will be established including notification requirements for any incident that causes or has the potential to cause material harm to the environment.

17.3.12 INDUCTION

- All contractors undertaking any works on-site will, before commencing works, be inducted on the requirements of the CEMP and their specific responsibilities.

17.4 OPERATIONS ENVIRONMENT MANAGEMENT PLAN

An OEMP will be prepared prior to the BJSF commencing operation. The BJSF will be operational after commissioning and equipment trials and electricity is being distributed into the transmission network.

The OEMP will include procedures, reporting, and the allocation of responsibilities designed to minimise environmental impacts. The OEMP will document the environmental procedures and controls that would be implemented to operate the solar farm as a responsible rural land owner.

The OEMP would comprise various sub-plans detailing the specific mitigation measures that would be implemented to avoid and manage potential environmental impacts and minimise risks. These would include plans covering land management (specifically relating to fuel loads and noxious weeds) and emergency preparedness. Mitigation measures relevant to these issues, as identified in this SEE, are detailed below.

17.4.1 NEIGHBOUR ENGAGEMENT

- A procedure will be established for receiving, investigating and reporting any complaint received.

17.4.2 INCIDENT MANAGEMENT

- Adequate procedures would be established including notification requirements for any incident that causes or has the potential to cause material harm to the environment.

17.4.3 GROUNDCOVER, FUEL LOAD AND WEED MANAGEMENT

The long term performance measure is to establish a healthy, self-sustaining, noxious weed free groundcover over the solar farm that does not create a fuel hazard.

How this can best be achieved, and maintained, through a combination of mechanical slashing and/or periodic crash grazing will require monitoring and implementation of adaptive management principles.

Specifically, this will entail adapting the frequency, duration and intensity of crash grazing, and the timing of any mechanical slashing to suit and accommodate the prevailing seasonal conditions.

17.4.4 EMERGENCY MANAGEMENT PLAN

- Prior to the commencement of operations an Emergency Response Plan will be prepared in consultation with the local RFS Brigade. This plan will identify the procedures that would be implemented if there is a fire on site or in the vicinity of the site.

17.5 FARM UPGRADING

Over time the Enerparc may upgrade the farm. Upgrading of the farm would include the augmentation and/or replacement of solar panels and ancillary infrastructure within the development footprint. Prior to carrying out any such upgrades, Enerparc will provide revised layout plans to WSC incorporating the proposed upgrades.

17.6 DECOMMISSIONING

The objective of the DMP would be to restore the land capability to its pre-existing agricultural use.

The design life of the PV modules will be at least 25 years. At the end of their useful life modules and electrical equipment will be either replaced and the farm re-commissioned, or the farm will be decommissioned and the site returned to agricultural land use. This will be a commercial decision based on the relative economics of solar PV generation compared to alternatives at the time. In all likelihood the economics will be favourable because the farm infrastructure, including network connection, underground cabling, foundations, and access tracks will continue to be serviceable and the cost of replacing modules and inverter stations favourable compared to competing generating technologies. Further, the technology available in 25 years' time is likely to have much higher efficiency factors than today's modules.

Decommissioning would include initially disconnecting the solar farm from the Essential Energy network. The farm's substation equipment would be removed and disposed of off-site, reusing and recycling wherever possible. Foundations would be broken up and removed off site. Modules and the racking system would be removed and it could be expected that a significant amount of the support structure could be reused or recycled off-site. Piles will be lifted out of the ground and recycled wherever possible. All underground cabling would be removed.

The ground would be then be worked, stabilised and returned to agricultural use.

Matters for Consideration

18.1 SECTION 4.15

An assessment of matters for consideration pursuant to s.4.15 *Environmental Planning and Assessment Act 1979* follows.

(a)(i) the provisions of any environmental planning instrument,

All relevant environmental planning instruments are addressed in **Section 3.2**.

(a)(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and

There are no proposed environmental planning instruments that have been publicly exhibited and applicable to the proposed development or the development site.

(a)(iii) the provisions of any development control plan, and

Walgett Development Control Plan applies to the development site and is addressed in Error! Reference source not found..

(a)(iiia) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4, and

The development is not subject to any known planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4.

(a)(iv) the provisions of the regulations (to the extent that they prescribe matters for the purposes of this paragraph),

Section 4.64 of the EPA Act provides a summary of those broad matters for which regulations may be made in relation to Part 4 applications. Of relevance to this DA is Schedule 1 of the EPA Regs, which prescribes those matters to be provided in support of a development application. Those matters outlined in Schedule 1 that are of relevance to the project are discussed throughout this SEE.

(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,

Likely impacts of the proposed development are addressed in **Section 4 – 16**.

(c) the suitability of the site for the development,

The development site provides a 600m plus buffer to the closest receptor, is located adjacent to electrical infrastructure that will facilitate efficient grid connection, and is located on land that is clear of constraints, including native vegetation and aboriginal heritage.

(d) any submissions made in accordance with this Act or the regulations,

To be determined following advertising of the DA.

(e) the public interest.

The proposed development does not compromise the public interest.

References

ACIL Allen Consulting, October 2017. (updated June 2018) *Report to Australian Energy Regulator: Energy Consumption Benchmarks Electricity and Gas or Residential Customers*

Australian Bureau of Statistics (ABS), (2016). *Data by Region – Burren Junction (C) (LGA) (NSW).*

Bureau of Meteorology (BOM), 2018. *Groundwater Dependent Ecosystems Atlas*. [ONLINE]

CSIRO, n.d. *Atlas of Australian Acid Sulphate Soils*. [ONLINE]

Department of Environment and Energy, July 2018. *National Greenhouse Accounts Factors – Australian National Greenhouse Accounts*

Ho, C.K. & Simms, C.A., 2013. *Hazard Analysis of Glint and Glare from Concentrating Solar Power Plants*

Landcom, 2004. *Managing Urban Stormwater: Soils and Construction*. [ONLINE]

NSW Department of Planning and Environment *Far West Regional Plan 2036*

NSW Department of Environment & Climate Change (DECC), 2008a. *Managing Urban Stormwater: Soils and Construction Volume 2A Installation of Services.*

NSW Department of Environment & Climate Change (DECC), 2008b. *Managing Urban Stormwater: Soils and Construction Volume 2C Unsealed Roads.*

NSW DPI, n.d. *Appendix F: Stream Order and Waterway Classification System.* [ONLINE]

NSW EPA, n.d. *Contaminated Land Record.* [ONLINE]

NSW EPA, n.d. *List of NSW contaminated sites notified to EPA.* [ONLINE]

NSW Government, 2016. *NSW Renewable Energy Action Plan*

NSW Office of Water (NOW), n.d. *All Groundwater Map*. [ONLINE]

NSW Government, n.d. *SEED Portal*. [ONLINE] Available at: https://www.seed.nsw.gov.au/

NSW Government, November 2016. *Climate Change Policy Framework*

NSW Government, November 2016. *Climate Change Fund: Draft Strategic Plan 2017 – 2022*

Rural Fire Service, 2006. *Planning for Bush Fire Protection*

Rural Fire Service, 2012. *Practice Note for Telecommunication Towers in Bush Fire Prone Areas*

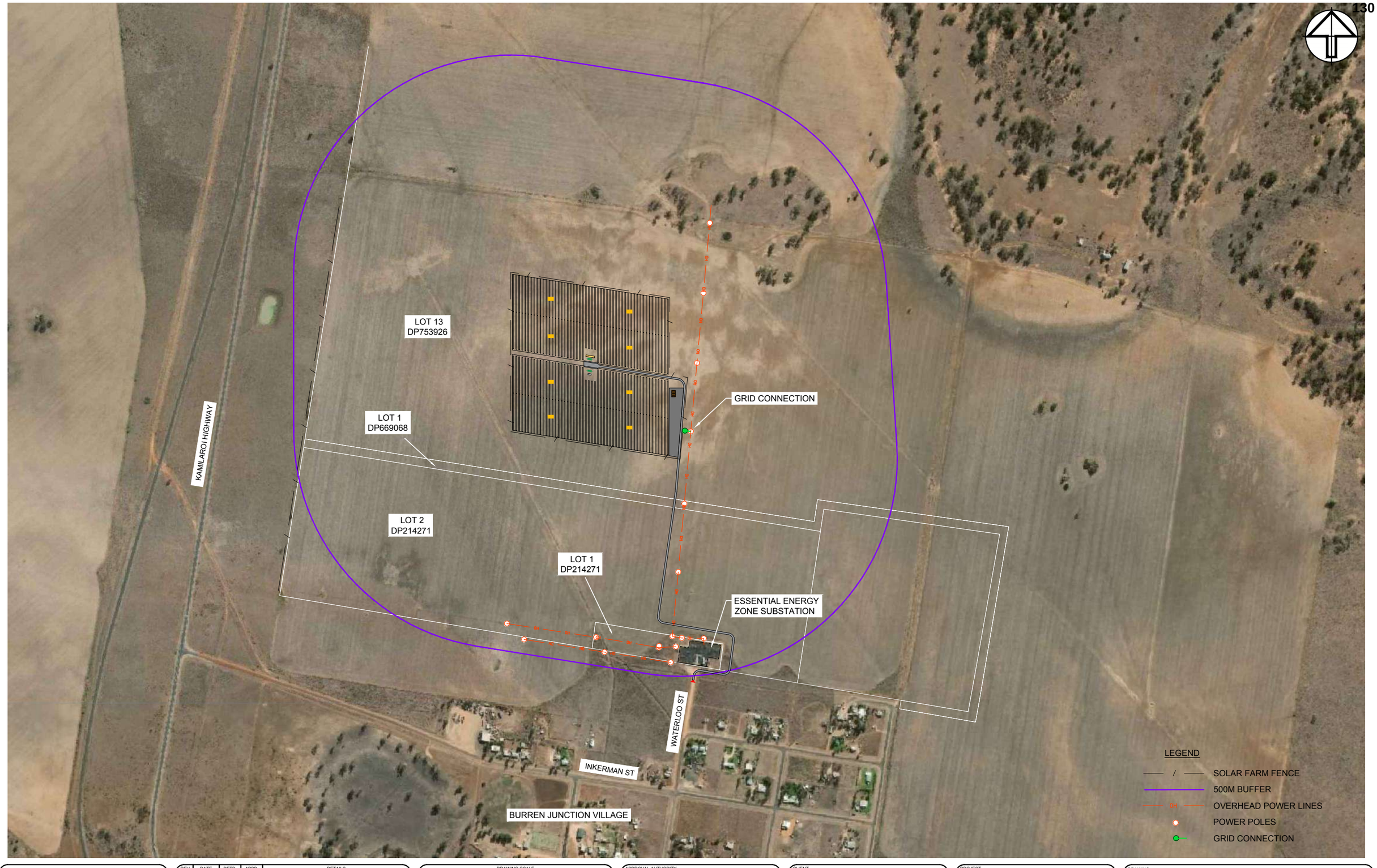
Walgett Shire Council (May 2020) *Draft - Local Strategic Planning Statement*

Walgett Shire Council *Walgett Shire Heritage Study 2011*

Walgett Shire Council *Walgett Development Control Plan 2016*

Walgett Shire Council *Walgett Shire Council Community Strategic Plan 2017-2027*

Drawings



STRUCTURAL, CIVIL, PLANNING, SURVEYING,
ARCHITECTURE & ENVIRONMENTAL

154 PEISLEY STREET
P.O. BOX 1963
ORANGE, NSW 2800
Ph. (02) 6393 5000
Fx. (02) 6393 5050
www.premise.com.au

REV.	DATE	DFTD.	APPD.	DETAILS
A	12/06/20	GT	AB	FOR INFORMATION
B	26/06/20	GT	AB	FOR INFORMATION
C	01/07/20	GT	AB	FOR INFORMATION
D	07/07/20	GT	AB	FOR INFORMATION-ACCESS ROAD AMENDED
E	26/08/20	GT	AB	ISSUED FOR DEVELOPMENT APPLICATION

DRAWING SCALE

SCALE 1:4000 (A1)

0 100 200 300 400

0 100 200 300 400

SCALE 1:8000 (A3)

DO NOT SCALE FROM THESE DRAWINGS. ALL MEASUREMENTS SHALL BE CONFIRMED ON SITE AND WITH GEOLYSE PTY. LTD. PRIOR TO CONSTRUCTION

APPROVAL AUTHORITY

CLIENT

PROJECT

BURREN JUNCTION SOLAR FARM

DRAWING

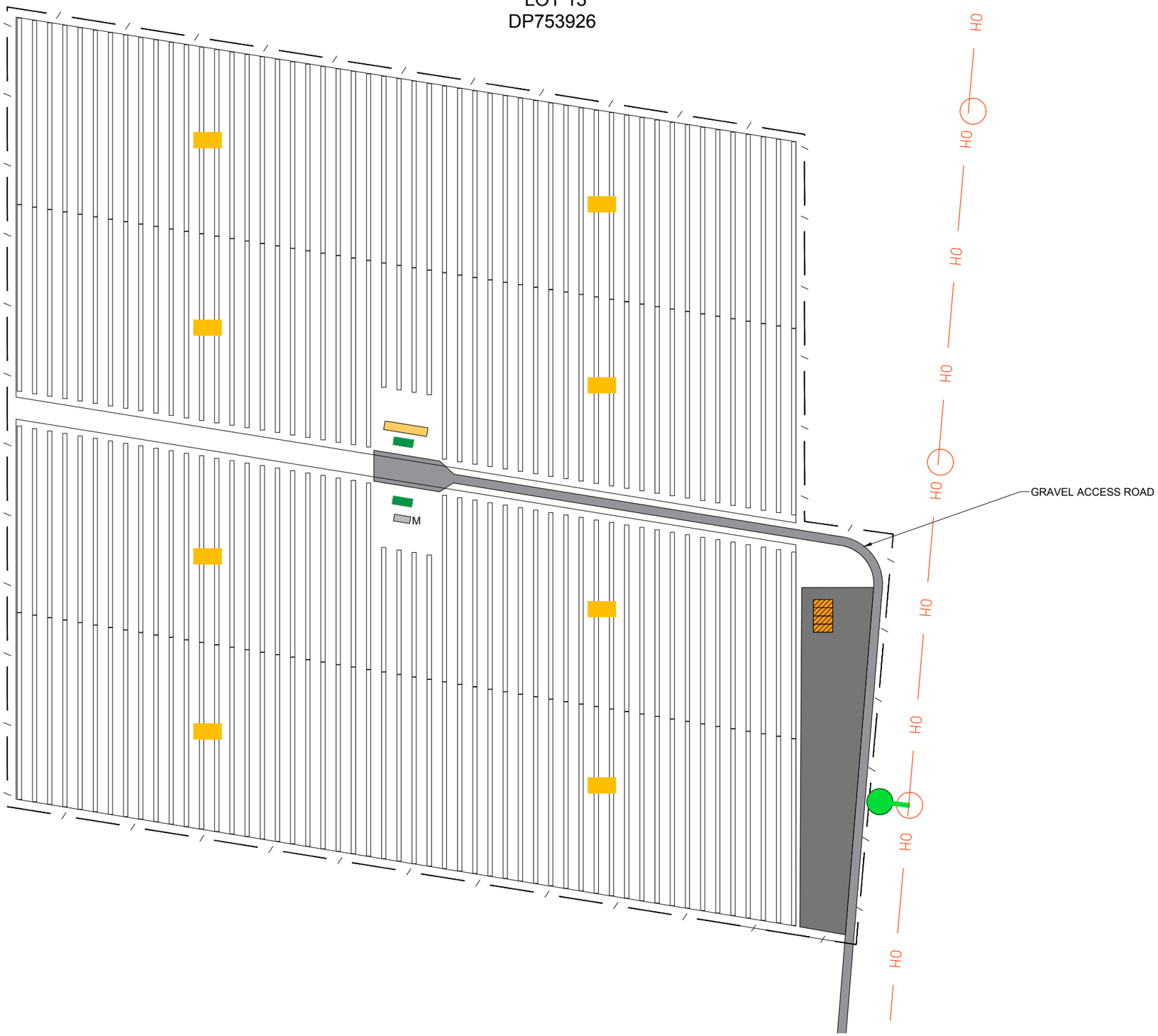
DEVELOPMENT SITE

PROJECT NUMBER 219367	DRAWING FILE 219367_02E-EV01-EV02.dwg	ORIGINAL A1
DATA SOURCE -		
IMAGE SOURCE -		SET 02E
STATUS FOR APPROVAL	SHEET EV01 OF EV02	

LEGEND

- SOLAR FARM FENCE
- OH — OVERHEAD POWER LINES
- POWER POLES
- GRID CONNECTION
- INVERTER STATIONS
- BATTERY ENERGY STORAGE SYSTEM
- M — CONTROL ROOM
- TRACKER MOTOR
- STORAGE CONTAINERS
- CONSTRUCTION LAYDOWN

LOT 13
DP753926



LOT 1
DP669068

STRUCTURAL, CIVIL, PLANNING, SURVEYING, ARCHITECTURE & ENVIRONMENTAL

154 PEISLEY STREET
P.O. BOX 1963
ORANGE, NSW 2800
Ph. (02) 6393 5000
Fx. (02) 6393 5050
www.premise.com.au

REV.	DATE	DFTD.	APPD.	DETAILS
A	12/06/20	GT	AB	FOR INFORMATION
B	26/06/20	GT	AB	FOR INFORMATION
C	01/07/20	GT	AB	FOR INFORMATION
D	07/07/20	GT	AB	FOR INFORMATION-ACCESS ROAD AMENDED
E	26/08/20	GT	AB	ISSUED FOR DEVELOPMENT APPLICATION

DRAWING SCALE

SCALE 1:4000 (A1)

0 100 200 300 400

0 100 200 300 400

SCALE 1:8000 (A3)

DO NOT SCALE FROM THESE DRAWINGS. ALL MEASUREMENTS SHALL BE CONFIRMED ON SITE AND WITH GEOLYSE PTY. LTD. PRIOR TO CONSTRUCTION

APPROVAL AUTHORITY

CLIENT

PROJECT

BURREN JUNCTION SOLAR FARM

DRAWING

FARM LAYOUT

PROJECT NUMBER 219367	DRAWING FILE 219367_02E-EV01-EV02.dwg	ORIGINAL A1
DATA SOURCE -		
IMAGE SOURCE -		SET 02E
STATUS FOR APPROVAL	SHEET EV02 OF EV02	

Appendix A

ABORIGINAL DUE DILIGENCE ASSESSMENT

View south across the study area toward Burren Junction.

ABORIGINAL DUE DILIGENCE ASSESSMENT REPORT

BURREN JUNCTION SOLAR FARM

BURREN JUNCTION, NEW SOUTH WALES

JANUARY 2020

Report prepared by

OzArk Environment & Heritage

for Premise

OzArk
Environment & Heritage
145 Wingewarra St
(PO Box 2069)
Dubbo NSW 2830
Phone: (02) 6882 0118
Fax: (02) 6882 0630
enquiry@ozarkehm.com.au
www.ozarkehm.com.au

This page has intentionally been left blank.

DOCUMENT CONTROLS

Proponent	Enerparc
Client	Premise
Document Description	*Aboriginal Due Diligence Assessment Report: Burren Junction Solar Farm*
File Location	OzArk Job No.
S:\OzArk EHM Data\Clients\Premise (Orange, Geolyse)\Burren Junction Solar Farm Oct2019\Heritage\Report	2494

Document Status **V3.0 Final**	Date 27 May 2020
Draft V1.0 Author to editor OzArk 1st internal (Series V1 = OzArk internal edits)	V1.0 KW author 18/12/19 V1.1 BC edit 15/1/20
Draft V2.0 Report Draft for release to client (Series V2 = OzArk and client edits)	V2.0 OZARK to client 18/01/2020
FINAL V3.0 = Final report	V2.0 OZARK to client 27/05/2020
Prepared For	Prepared By
Andrew Brownlow General Manager – Central West NSW Premise - Orange 154 Peisley Street Orange NSW 2800	Kirwan Williams Archaeologist OzArk Environment & Heritage 145 Wingewarra Street (PO Box 2069) Dubbo NSW 2830 P: 02 6882 0118 F: 02 6882 6030 kirwan@ozarkehm.com.au

Acknowledgement

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

EXECUTIVE SUMMARY

Enerparc (the proponent) are exploring the feasibility of developing a solar farm at Lot 1 DP669068, Lots 1 & 2 DP214271, and Lot 13 DP753926, Burren Junction (the proposal). The study area comprises a 50 hectare (ha) site, which has been predominantly cleared and ploughed, containing little vegetation. The impact footprint will be approximately 15 ha. The proposal is in the Walgett Local Government Area (LGA).

OzArk Environment & Heritage (OzArk) has been engaged by Premise (the client), on behalf of the proponent to complete an Aboriginal Due Diligence heritage assessment for the proposal.

The visual inspection of the study area was undertaken by OzArk Archaeologist Kirwan Williams on Wednesday 20 November 2019. The visual inspection identified that the majority of the study area has been subject to extensive modification including vegetation clearance, ploughing and cultivation of crops.

The inspection of the study area resulted in the following conclusion being reached:

> *Aboriginal Heritage Impact Permit application (AHIP) not necessary. Proceed with caution. If any Aboriginal objects are found, stop work and notify the Division of Biodiversity and Conservation (BCD), Department of Planning, Industry and Environment. If human remains are found, stop work, secure the site and notify NSW Police and BCD.*

The following recommendations are made with regards to the proposal within the study area:

1) The proposed work may proceed without further archaeological investigation under the following conditions:

a) All land and ground disturbance activities must be confined to within the study area assessed boundaries. Should the parameters of the proposal extend beyond the assessed areas, then further archaeological assessment may be required
b) All staff and contractors involved in the proposed work should be made aware of the legislative protection requirements for all Aboriginal sites and objects.

2) This assessment has concluded that there is a low likelihood that the proposal will adversely harm Aboriginal cultural heritage items or sites. However, during works, if Aboriginal artefacts or skeletal material are noted, all work should cease and the procedures in the Unanticipated Finds Protocol (**Appendix 2**) should be followed.

3) Work crews should undergo cultural heritage induction to ensure they recognise Aboriginal cultural heritage artefacts (see **Appendix 3**) and are aware of the legislative protection of Aboriginal objects under the *National Parks and Wildlife Act 1974* and the contents of the Unanticipated Finds Protocol.

4) The information presented here meets the requirements of the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales. It should be retained as shelf documentation for five years as it may be used to support a defence against prosecution in the event of unanticipated harm to Aboriginal objects.

CONTENTS

FIGURES

TABLES

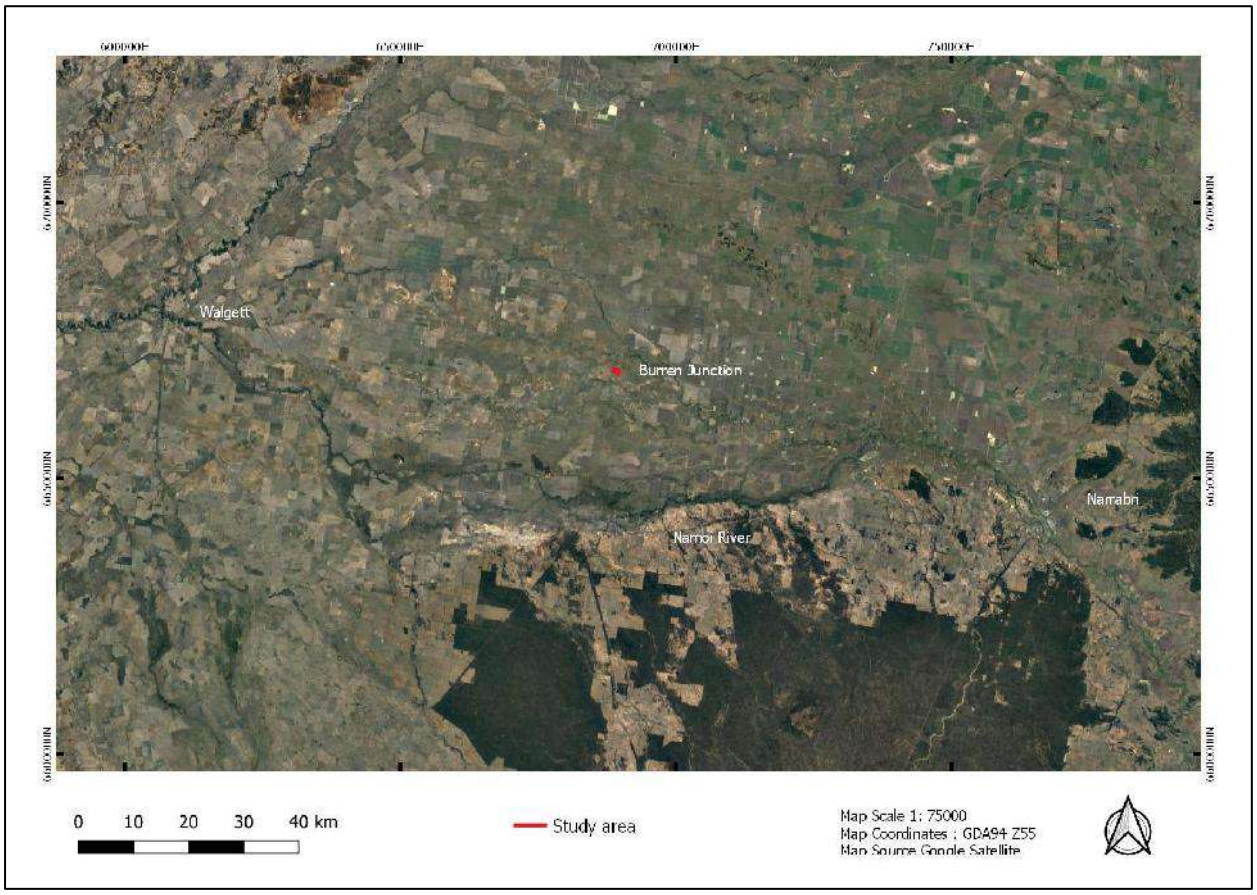
PLATES

1 INTRODUCTION

1.1 BRIEF DESCRIPTION OF THE PROPOSAL

OzArk Environment & Heritage (OzArk) has been engaged by Premise (the client), on behalf of Enerparc (the proponent) to complete an Aboriginal Due Diligence heritage assessment for the Burren Junction Solar Farm (the proposal). The proposal is in the Walgett Local Government Area (LGA) (**Figure 1-1**).

Figure 1-1. Map showing the location of the proposal.



1.2 BACKGROUND

The proponent is exploring the feasibility of developing a solar farm at Lot 1 DP669068, Lots 1 & 2 DP214271, and Lot 13 DP753926, Burren Junction.

1.3 STUDY AREA

The study area comprises a 50 hectare (ha) site, which has been predominantly cleared and ploughed, containing little vegetation. The impact footprint will be approximately 15 ha. The study area is within a flat plain landform immediately to the north of Waterloo Street, Burren Junction, and east of the Kamilaroi Highway.

The study area is shown on **Figure 1-2**.

1.4 ASSESSMENT APPROACH

The desktop and visual inspection component for the study area follows the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Due Diligence; DECCW 2010). The field inspection followed the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011).

Figure 1-2: Aerial showing the study area.

2 ABORIGINAL DUE DILIGENCE ASSESSMENT

2.1 INTRODUCTION

The National Parks and Wildlife Regulation 2009 (NPW Regulation) made under the *National Parks and Wildlife Act 1974* (NPW Act) advocates a Due Diligence process to determining likely impacts on Aboriginal objects. Carrying out Due Diligence provides a defence to the offence of harming Aboriginal objects and is an important step in satisfying Aboriginal heritage obligations in NSW.

2.2 DEFENCES UNDER THE NPW REGULATION 2009

2.2.1 Low impact activities

The first step before application of the Due Diligence process itself is to determine whether the proposed activity is a "low impact activity" for which there is a defence in the NPW Regulation. The exemptions are listed in Section 80B (1) of the NPW Regulation (DECCW 2010: 6).

The activities of the proponent is not considered a 'low impact activity' and the Due Diligence process must be applied.

2.2.2 Disturbed lands

Relevant to this process is the assessed levels of previous land-use disturbance.

The NPW Regulation Section 80B (4) (DECCW 2010: 18) define disturbed land as follows:

> *Land is disturbed if it has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable.*
>
> *Examples include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure) and construction of earthworks.*

The study area is entirely within previously cleared landforms, however, apart from the cultivation of crops, stock grazing and the construction of fences, the bulk of the study area has not been modified in a clear and observable manner and the Due Diligence process must be applied.

In summary, it is determined that the proposal must be assessed under the Due Diligence Code. The reasoning for this determination is set out in **Table 2-1**.

Table 2-1: Determination of whether Due Diligence Code applies.

Item	Reasoning	Answer
Is the activity a Part 3A project declared under section 75B of the EP&A Act?	The proposal is assessed under Part 5 of the EP&A Act.	No
Is the activity exempt from the NPW Act or NPW Regulation?	The proposal is not exempt under this Act or Regulation.	No
Do either or both of these apply: Is the activity in an Aboriginal place? Have previous investigations that meet the requirements of this Code identified Aboriginal objects?	The activity will not occur in an Aboriginal place. No previous investigations have been conducted.	No
Is the activity a low impact one for which there is a defence in the NPW Regulation?	The proposal is not a low impact activity for which there is a defence in the NPW Regulation.	No
Is the activity occurring entirely within areas that are assessed as 'disturbed lands'?	The proposal is not entirely within areas of high modification.	No
Due Diligence Code of Practice assessment is required		

2.3 APPLICATION OF THE DUE DILIGENCE CODE OF PRACTICE TO THE PROPOSAL

To follow the generic Due Diligence process, a series of steps in a question/answer flowchart format (DECCW 2010: 10) are applied to the proposed impacts and the study area, and the responses documented.

2.3.1 Step 1

Will the activity disturb the ground surface or any culturally modified trees?

Yes, the proposal will impact the ground surface but will not impact any culturally modified trees.

The proposal will require vehicular access to the area for the emplacement, construction and maintenance of solar farming infrastructure. These factors will require ground disturbance. All vegetation has been cleared; therefore, there is no potential for impact to culturally modified trees.

2.3.2 Step 2a

Are there any relevant confirmed site records or other associated landscape feature information on AHIMS?

No, there are no previously recorded sites within the study area.

A search of the Aboriginal Heritage Information Management System (AHIMS) register on the 13th November 2019 identified 112 previously recorded Aboriginal sites in a 60 km by 60 km area (659000–719000E to 6639000–6699000N) and centred on the study area.

Figure 2-1 shows all previously recorded sites in relation to the study area and **Table 2-2** shows the types of sites that are close to the study area.

Table 2-2: Site types and frequencies of AHIMS sites near the study area.

Site Type	Number	% Frequency
Modified Tree (MT)	73	65.2
Open Camp (OC)	20	17.8
Artefact Scatter (AS)	10	8.9
Isolated Find (IF)	2	1.8
Aboriginal Ceremony and Dreaming (ACD)	2	1.8
Burial (B)	1	0.9
MT/ B	1	0.9
MT/ AS	1	0.9
ACD/ MT	1	0.9
ACD/ B	1	0.9
	112	**100**

There are no recorded sites within the study area with the closest site being # 19-1-0009, a burial ground located approximately 8.3 km away. The lack of previous site recordings in the area may reflect the low number of surveys undertaken in the vicinity of the study area and may not indicate an absence of Aboriginal sites.

The distribution of recorded sites in the region suggests:

- Artefact sites may occur anywhere in the landscape. However, they are more common and display a greater assemblage diversity in association with permanent water that supported larger and more permanent camps. Permanent water (such as that found in 4th order or greater channels) would have supported larger populations for longer periods, whereas ephemeral water sources such as 1st through to 3rd order channels may only have supported transient habitation. Artefact sites associated with ephemeral water sources would have limited assemblage diversity. Seasonal water availability also affects the presence of prey and floral species and this would also have affected the use of the area by Aboriginal people It noted that watercourses do alter their positions over time particularly in alluvial plain landforms. It is possible for artefact sites to exist within the study area but if present are likely to be small reflecting localised transient use.

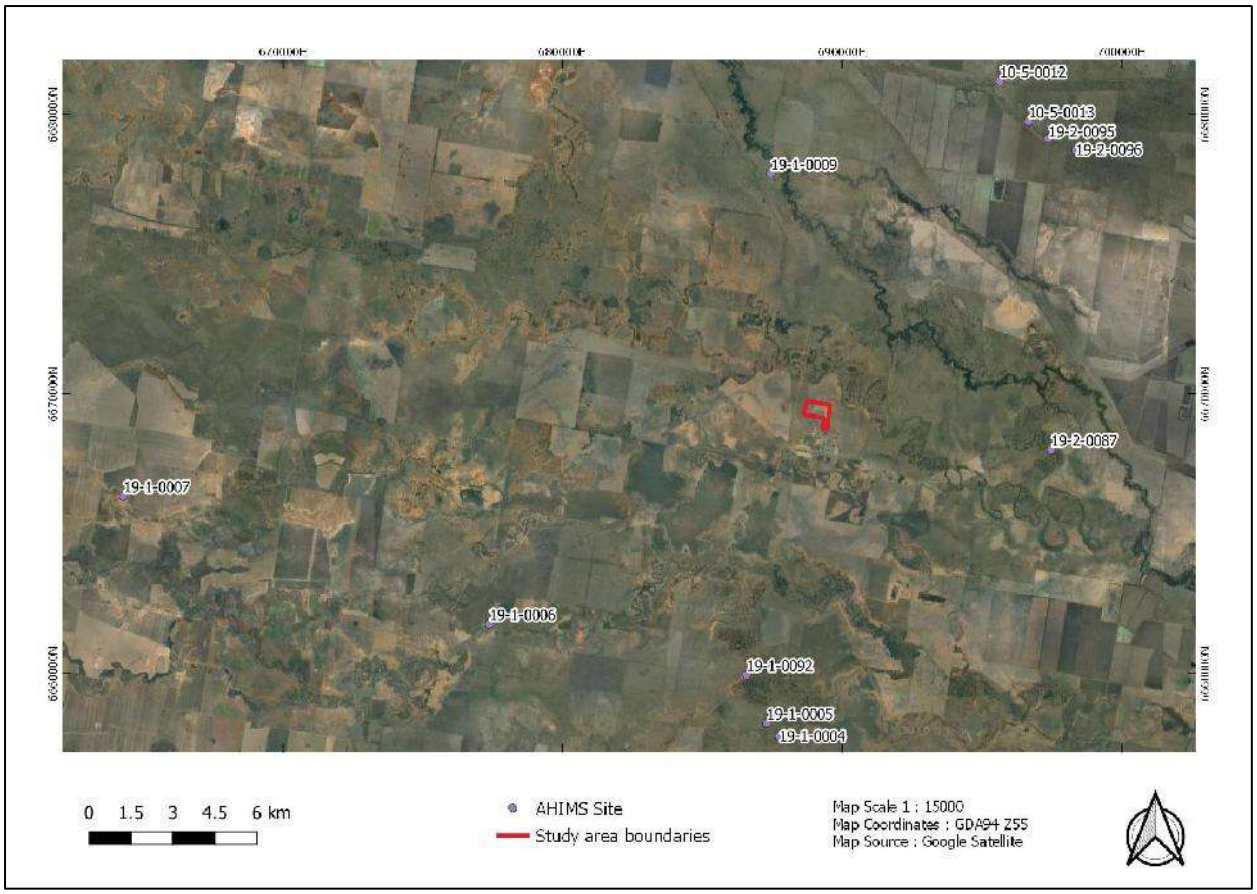
- Culturally Modified Trees can only occur anywhere where trees displaying the right level of maturity continue to exist but once again will occur more frequently in association with larger camps and water resources As there are no mature trees within the study area there is no potential for this site type to exist.

- Burials are generally found in soft sediments such as aeolian sand, alluvial silts and rock shelter deposits. In valley floor and plains contexts, burials may occur in locally elevated topographies rather than poorly drained sedimentary contexts. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them

- Less commonly encountered site types such as Aboriginal Ceremony and Dreaming and Aboriginal Resource and Gathering are varieties of landscape features and natural

sacred sites that are regarded as highly sacred to Aboriginal people. Such features may include mountains, waterholes, caves, and rock formations. Additionally, the flora and fauna that inhabit these landscapes also carry Aboriginal cultural significance particularly where these items were used both economically and medicinally.

Figure 2-1: Previously recorded sites in relation to the study area.



2.3.3 Step 2b

Are there any other sources of information of which a person is already aware?

No, there are no other sources of information that would indicate the presence of Aboriginal objects in the study area.

The study area has not been previously assessed and information detailed in **Section 2.3.2** presents the only available information that specifically relates to the study area: an AHIMS search. There are no known cultural values or Aboriginal sites pertaining directly to the location of the proposed work. No Aboriginal community members accompanied the current visual inspection.

Prior to 1980 little or no systematic archaeological studies had been undertaken in the central west region (Haglund 1984). In the interim, a number of archaeological studies have been conducted in the past, providing baseline data which is still relevant for placing past Aboriginal sites within a regional landscape context (e.g. Balme 1986; Pearson 1981; Purcell 2000).

Pearson (1981) worked primarily in the Upper Macquarie region; nevertheless, his predictive model for site distribution still holds for the region of the study area. governing site distribution in the area. Pearson divided the recorded archaeological sites into two main categories: occupation sites and non-occupation sites (including grinding grooves, scarred or carved trees, ceremonial and burial sites). Analysis of site locations produced a site prediction model with occupation occurring in areas with: access to water, good drainage, level ground, adequate fuel and appropriate localised weather patterns for summer or winter occupation. Occupation sites were most frequently located on low ridge tops, creek banks, gently undulating hills and river flats and usually in open woodland vegetation (Pearson 1981: 101). The location of non-occupation sites was dependent upon a variety of factors relating to site function. For instance, grinding grooves were found where appropriate outcropping sandstone occurred close to occupation sites. The location of scarred trees displayed no obvious patterning, other than proximity to watercourses. Pearson suggested that these patterns would differ on the drier plains to the west, towards Dubbo and beyond, where dependence upon larger, more permanent water supplies was greater.

The North-Central Rivers study undertaken by Balme (1986) examined site location in terms of site preservation. Balme (1986: 182) found that, other than historic impacts, site distribution was most affected by geomorphic processes affecting site preservation and leading to site exposure. There was little scope for the assessment of site chronologies as few datable contexts had been located. Balme concluded that sites recorded on AHIMS from ethnographic accounts were unlikely to be located in the current landscape. Balme (1986) reported that, of the 200 carved trees reported in the area, only five remained *in situ* at the time of the study; 50 are known to be in museum and private collections, and the whereabouts of the remainder are unknown, with many suspected to be in private collections.

In an assessment of the nearby Pilliga and Goonoo State Forests, Purcell (2000, 2002) recorded 47 and 106 Aboriginal sites respectively. Purcell (2000: 31) found that sites were more frequently located within alluvium landforms including creeks, swamps and chains of ponds surrounded by floodplains and terraces, and that 91.5 per cent of sites were recorded within 200 to 300 metres (m) of water.

OzArk (2016) was engaged by the Central West Local Land Services (CWLLS) to formulate and test a predictive model for Aboriginal site location within Travelling Stock Reserves (TSRs) across the CWLLS area. In formulating a predictive model for site location, Mitchell (2002) landscapes were used to understand the underlying landform type. The resolution of the Mitchell landscape units was too fine to be of use and OzArk (2016) used a higher-level classification within the Mitchell landscape units to describe the landscapes within the CWLLS area. Landscapes were divided into the following types:

- Channels and floodplains

- Alluvial plains
- Slopes
- Uplands
- Downs.

Previously recorded AHIMS sites were plotted against these landscape types and the following observations made:

- A high number of sites (n=876) were located on slopes. This result could be due to the fact that Dubbo is located within a slopes landscape and the highest number of sites in the CWLLS area is recorded in and around Dubbo
- The highest density of sites is within channels and floodplains landscapes (number (n)=927)
- Alluvial plains landscapes have the third highest density of sites (n=770)
- Relatively small numbers of sites are recorded in uplands (n=5) and plateau (n=34) landscapes
- A moderate number of sites are recorded in downs landscapes (n=255). Three or four clusters of sites exist in downs landscapes, which may have skewed the data. If the veracity of all site recordings in this category could be verified, it is suspected that the actual number of sites in downs landscapes would be lower.

OzArk (2016) divided the CWLLS area into two stream orders—major watercourses (normally named rivers) and minor watercourses (normally named creeks and their larger tributaries)—and buffers were established for each watercourse type as follows:

- Drainage 1 buffer: 200 m either side of a major watercourse
- Drainage 2 buffer: 100 m either side of a minor watercourse.

As such, the OzArk (2016) CWLLS predictive model made predictions based on the landscape type and distance to watercourses. The predictive model was tested by assessing 32 TSRs within the CWLLS area located in a variety of landscape types with variable distances to water. As a result of the assessment, 59 sites were recorded. 26 (44%) of the recorded sites were modified trees, 22 (37%) were artefact scatters and 11 (19%) were isolated finds. The majority of recorded sites were located in channels and floodplains landscapes (35 sites or 59% of all sites), followed by 10 in slopes landscapes, four in alluvial plains landscapes and one in a downs landscape. No sites were recorded in uplands or plateau landscapes.

Table 2-3 demonstrates that the most archaeologically sensitive landscape in the CWLLS area is channels and floodplains, followed by slopes landscapes. Other landscape types have a low representation but demonstrate that low densities of sites exist in other landscape types.

Table 2-3: Association of all recorded sites to landscape units (OzArk 2016).

Landscape unit	Number of sites	Percentage of total (n=59)
Channels and floodplains	36	61
Alluvial plains	6	10
Slopes	14	23
Downs	1	2
Uplands	2	4
Plateau	0	0

Site types associated with the landscapes most-frequently recording sites (channels and floodplains and slopes) show that channels and floodplains landscapes are more likely to contain modified trees and that slopes landscapes are more likely to contain artefact scatters and isolated finds (**Table 2-4**).

Table 2-4: Frequency of site types in association with landscape types (OzArk 2016).

Site type	Channels and floodplains	Slopes	Alluvial Plains
Artefact scatter	11 (30.5%)	7 (50%)	3 (50%)
Isolated finds	4 (11%)	3 (21%)	3 (50%)
Modified trees	21 (58.5%)	4 (29%)	0 (0%)

In terms of drainage buffers, OzArk (2016) found that 27 sites (or 46% of all sites) were recorded with the Drainage 1 buffer and 10 sites (or 17% of all sites) were recorded within the Drainage 2 buffer. Therefore, more than 63% of all sites were recorded within the two drainage buffers, with a clear bias toward Drainage 1 buffers.

Implications for the current study area

The study area is located in the Darling/ Riverine Plains Bioregion within an alluvial plains landscape type (Namoi Alluvial Plains: Mitchell 2002: 35). The study area is located 500 m south of an overflow channel of Pian Creek. Therefore, the study area is outside of any drainage buffer and this fact lowers the likelihood of the study area recording sites. The CWLLS predictive model asserts that alluvial plains landscapes are likely to contain a low density of sites. Of these, artefact sites (including isolated finds and artefact scatters) are the most likely site types to be encountered. The likelihood of recording scarred trees is much lower as these landform types have been often cultivated/farmed (as is the case of the current study area); however, there is still potential for such sites to be present if trees of the right maturity remain.

2.3.4 Step 2c

Are there any landscape features that are likely to indicate presence of Aboriginal objects?

No, the study area does not contain landforms with identified archaeological sensitivity.

The study area is located in the Darling/ Riverine Plains Bioregion Mitchell (2002: 30). The soils of this bioregion are predominantly dark yellow-brown to brown silty clay with patches of sand and carbonate nodules deposited from suspended sediments in floodwater with some slightly elevated areas with red-brown texture-contrast soils. Prior to being cleared the vegetation would have consisted of open grasslands with scattered Eucalyptus microtheca (coolabah), Eucalyptus largiflorens (black box), Acacia stenophylla (river cooba), Eucalyptus populnea (bimble box) and Casuarina cristata (belah). Duma florulenta (lignum), saltbush (Atriplex sp.), Apophyllum anomalum (warrior bush) and Acacia pendula (myall) would have comprised the understorey.

Sensitive landscape as defined by (OEH:2010) include:

- within 200 m of waters, or
- located within a sand dune system, or
- located on a ridge top, ridge line or headland, or
- located within 200 m below or above a cliff face, or
- within 20 m of or in a cave, rock shelter, or a cave mouth

The study area lies some distance from identified AHIMS sites and whilst there are several oxbow lakes (probably former channels left by creeks as they migrated across the plain) in the vicinity there is some distance between the study area and the nearest sources of reliable drinking water. These oxbows are ephemeral and would only fill with water during rain events. The study area lies 4.8 km south of the first order channel of Pian Creek; an overflow channel of the Namoi River which would only carry water seasonally. The study area also lies 4.8 km north of the drainage channel known as Cubbaroo Warrambool, another overflow channel of the Namoi which also joins the river further upstream. The Namoi River itself is located at its closest is 22 km south of the study area. Whilst modified trees may occur anywhere in the landscape, many of the other site types have a close association with water and it is expected that the majority of sites will occur in proximity to the Namoi River.

In conclusion, the study area is not located in any of the landforms identified in the Due Diligence guidelines as having archaeological potential.

2.3.5 Step 3

Can harm to Aboriginal objects listed on AHIMS or identified by other sources of information and/or can the carrying out of the activity at the relevant landscape features be avoided?

Yes. There are no known sites or landforms of archaeological sensitivity within the study area.

All landforms within the study area have already been heavily modified through historic vegetation clearance, cultivation and erosion occurring as a result of the removal of all vegetation.

The proponent, however, has elected to apply the precautionary principle and proceed to a visual inspection to confirm the findings of the desktop assessment.

2.3.6 Step 4

Does a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely?

There are no Aboriginal objects within the study area.

The visual inspection of the study area was undertaken by OzArk Archaeologist Kirwan Williams on Wednesday 20 November 2019.

Standard archaeological field survey and recording methods were employed (Burke and Smith 2004). The visual inspection identified that the majority of the study area has been subject to extensive modification including vegetation clearance, ploughing and cultivation of crops.

The inspection included the area to the south adjoining the electrical substation which is proposed for access to the solar farm (**Plate 1**).

Overall, the ground surface exposure (GSE) was approximately 95% across the study area. Soils across the study area were all visibly disturbed, consisting of red silty sand throughout. (**Plates 2** and **3**). The study area is comprised of a flat cleared paddock with obvious signs of tillage (**Plate 4**). Very little stone material was visible and none of the type associated with the manufacture of stone artefacts was noted. The only extant vegetation at the time of the inspection were weeds with a few small shrubs along the western boundary (**Plate 5**).

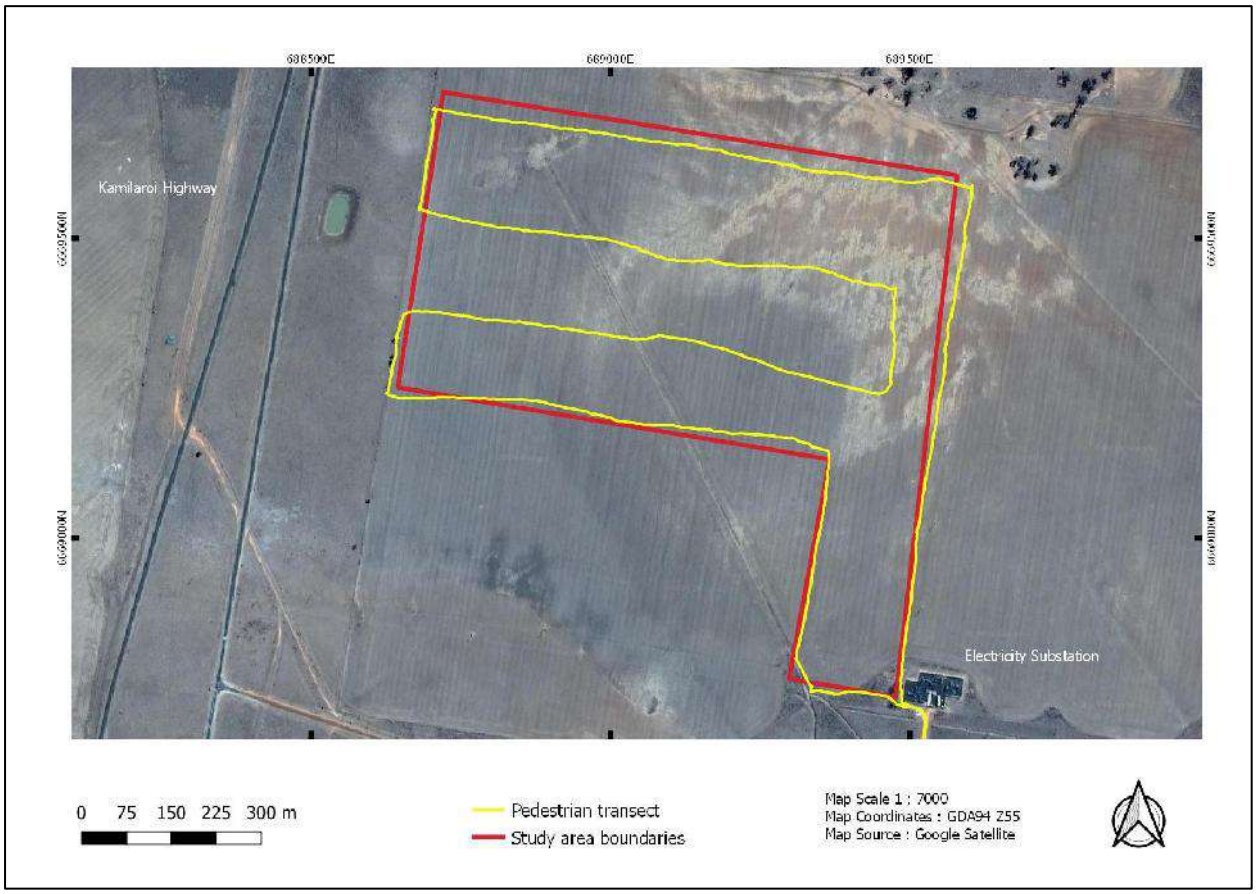
Disturbances in the study area therefore include: extensive landform clearing and the cultivation of crops and associated practices such as ploughing (**Plate 6**).

2.4 DISCUSSION

Given the extensive ground disturbance, it is considered that the study area is unlikely to retain any archaeological signature. The study area has very little to offer in the way of water with more favourable locations to be found in proximity to the Namoi River to the south of the study area. As no previously recorded Aboriginal sites occur within the study area it is considered to have low cultural sensitivity with regards to Aboriginal cultural heritage.

The desktop section of this report has found that lack of registered sites in the vicinity and the level of historic disturbance caused by earthworks associated with agricultural practices such as ploughing has caused clear and visible disturbance throughout the study area.

Figure 2-2: Survey coverage within the study area.



2.5 CONCLUSION

The Due Diligence process has resulted in the outcome that an Aboriginal Heritage Impact Permit (AHIP) is not required (DECCW 2010: 10). The reasoning behind this determination is set out in **Table 2-5**.

Table 2-5: Due Diligence Process application.

Item	Reasoning	Answer
Will the activity disturb either of the following: • the ground surface where archaeological deposits are likely • mature, native trees that may be culturally modified.	The proposed works would disturb the ground surface through excavation and construction. The ground surface was assessed as having clear and observable evidence of previous human disturbance. The proposal will not impact mature, native vegetation.	No
Are there any relevant records of Aboriginal heritage on site (AHIMS or from other sources), or landscape features that are likely to indicate presence of Aboriginal objects?	AHIMS indicated no Aboriginal sites within the study area. No undisturbed landscape features in the study area indicate the likely presence of Aboriginal objects.	No
Will the activity impact Aboriginal objects or landforms with archaeological potential?	There are no known items of Aboriginal significance present in the study area, and no undisturbed landforms with identified archaeological sensitivity are present.	No
Does the desktop and/or visual assessment confirm that Aboriginal objects will be harmed?	Visual inspection recorded no known items of Aboriginal heritage in the study area. It is assessed that there is a low likelihood of there being subsurface archaeological deposits within the study area.	No
AHIP not necessary. Proceed with caution.		

3 MANAGEMENT RECOMMENDATIONS

The undertaking of the Due Diligence process resulted in the conclusion that the proposed works will have an impact on the ground surface, however, no Aboriginal objects or intact archaeological deposits will be harmed by the proposal. This moves the proposal to the following outcome:

> *AHIP application not necessary. Proceed with caution. If any Aboriginal objects are found, stop work and notify the Division of Biodiversity and Conservation (BCD), Department of Planning, Industry and Environment. If human remains are found, stop work, secure the site and notify NSW Police and BCD.*

To ensure the greatest possible protection to the area's Aboriginal cultural heritage values, the following recommendations are made:

1) The proposed work may proceed at within the study area without further archaeological investigation under the following conditions:
    a) All land and ground disturbance activities must be confined to within the study area, as this will eliminate the risk of harm to Aboriginal objects in adjacent landforms. Should the parameters of the proposal extend beyond the assessed areas, then further archaeological assessment may be required.
    b) All staff and contractors involved in the proposed work should be made aware of the legislative protection requirements for all Aboriginal sites and objects.
2) This assessment has concluded that there is a low likelihood that the proposed work will adversely harm Aboriginal cultural heritage items or sites. However, during works, if Aboriginal artefacts or skeletal material are noted, all work should cease and the procedures in the *Unanticipated Finds Protocol* (**Appendix 2**) should be followed;
3) Work crews should undergo cultural heritage induction to ensure they recognise Aboriginal artefacts (see **Appendix 3**) and are aware of the legislative protection of Aboriginal objects under the NPW Act and the contents of the *Unanticipated Finds Protocol.*
4) The information presented here meets the requirements of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*. It should be retained as shelf documentation for five years as it may be used to support a defence against prosecution in the event of unanticipated harm to Aboriginal objects.

REFERENCES

Balme 1986 — Balme, J. 1986. *North Central Rivers Archaeological Project*. Report to: National Parks and Wildlife Service, NSW.

Burke and Smith 2004 — Burke, H. and Smith, C. 2004. The Archaeologist's Field Handbook. Blackwell, Oxford.

DECCW 2010 — DECCW. 2010. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*. Department of Environment, Climate Change and Water, Sydney.

Haglund 1984 — Haglund, Laila 1984. Report on Archaeological Survey; Tyreel Weir and Regulator and Gwydir Channel Improving Project. Report to: Water Resources Commission NSW.

OEH 2011 — Office of Environment and Heritage. 2011. *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales.* Department of Environment, Climate Change and Water, Sydney.

OzArk 2016 — OzArk Environmental & Heritage Management 2016. *Central West Local Land Services Travelling Stock Reserves Study*. Report to: Central West Local Lands Service.

Pearson 1981 — Pearson, M. 1981. *Seen through Different Eyes: Changing Land Use and Settlement Patterns in the Upper Macquarie River Region of NSW from Prehistoric Times to 1860*. [PhD thesis] Submitted to the Department of Prehistory and Anthropology, The Australian National University.

Purcell 2000 — Purcell, P. 2000. *Aboriginal Cultural Heritage Assessment: Brigalow Belt South, Stage 1*. Report to: Resource and Conservation Assessment Council.

Purcell 2002 — Purcell, P. 2002. *Aboriginal Cultural Heritage Assessment: Brigalow Belt South Bioregion, Stage 2*. Report to: Resource and Conservation Assessment Council.

PLATES

Plate 1: View north from the access point to the study area.

Plate 2: View south from the northeast corner of the study area Note the vegetation of dense compact weeds

Plate 3: Typical ground surface within the study area.

Plate 4: View south, from the north-western corner of the study area.

Plate 5: View south along the western boundary showing occasional shrubs.

Plate 6: View east from the southwest corner of the study area

APPENDIX 1: AHIMS SEARCH RESULTS

Office of Environment & Heritage NSW

AHIMS Web Services (AWS)
Extensive search - Site list report

Your Ref/PO Number : 30k
Client Service ID : 464120

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
19-2-0025	MN-ST-3 (Merah North)	AGD	55	705500	6651900	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
19-2-0037	Mowley Lea	AGD	55	696616	6639566	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	janine koppel					Permits		
19-1-0038	'Burilbone' via Pilliga	AGD	55	672851	6650629	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Benjamin Banks					Permits		
10-4-0032	Summerfield_8	AGD	55	658900	6683800	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Ted Fields					Permits		
10-4-0029	Summerfield_9	AGD	55	659100	6684100	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Ted Fields					Permits		
19-2-0022	Sandy Ck_1	AGD	55	694650	6648050	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-2-0023	Talluba Ck_1	AGD	55	698150	6648200	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Colin Roberts					Permits		
19-2-0024	Cuttabri Reserve	AGD	55	712000	6644000	Open site	Valid	Aboriginal Ceremony and Dreaming : -		
	Contact	Recorders	F Rundle					Permits		
19-1-0004	WH8;Narrabri;	AGD	55	687636	6657554	Open site	Valid	Artefact : -	Open Camp Site	84
	Contact	Recorders	Rex Silcox					Permits		
19-1-0005	WH7;Narrabri;	AGD	55	687196	6659027	Open site	Valid	Artefact : -	Open Camp Site	84
	Contact	Recorders	Rex Silcox					Permits		
19-1-0006	WH6 Burren Junction	AGD	55	677261	6661577	Open site	Valid	Artefact : -	Open Camp Site	84,92
	Contact	Recorders	Rex Silcox					Permits		
19-1-0007	WH5 Narrabri	AGD	55	664153	6666151	Open site	Valid	Artefact : -	Open Camp Site	84,92
	Contact	Recorders	Rex Silcox					Permits		
19-1-0010	Pilliga BB1	AGD	55	675275	6649301	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	827
	Contact	Recorders	Margrit Koettig					Permits		

Report generated by AHIMS Web Service on 13/11/2019 for Kirwan Williams for the following area at Datum :GDA, Zone : 55, Eastings : 659000 - 719000, Northings : 6639000 - 6699000 with a Buffer of 0 meters. Additional Info : To inform Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 112

This information is not guaranteed to be free from error or omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 1 of 10

Office of Environment & Heritage NSW

AHIMS Web Services (AWS)
Extensive search - Site list report

Your Ref/PO Number : 30k
Client Service ID : 464120

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
19-1-0011	Pilliga BB2	AGD	55	675275	6649501	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	827
	Contact	Recorders	Margrit Koettig					Permits		
19-1-0012	Pilliga BB3	AGD	55	675275	6649501	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	827
	Contact	Recorders	Margrit Koettig					Permits		
19-1-0014	Pilliga BB5	AGD	55	675288	6649667	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	827
	Contact	Recorders	Margrit Koettig					Permits		
19-1-0015	Pilliga BB6	AGD	55	675011	6649585	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	827
	Contact	Recorders	Margrit Koettig					Permits		
19-1-0017	Dubbo Creek Campsite,Etoo Creek;	AGD	55	685500	6639700	Open site	Valid	Artefact : -	Open Camp Site	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0018	Dubbo Creek ST 1;Etoo Creek;	AGD	55	685700	6639700	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0019	Dubbo Creek ST 2;Pilliga;	AGD	55	685710	6639650	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0020	Dubbo Creek ST 3;Pilliga;	AGD	55	685720	6639650	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0021	Dubbo Creek ST 4;Pilliga;	AGD	55	685730	6639650	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0022	Dubbo Creek ST 5;Pilliga;	AGD	55	685740	6639650	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		

Report generated by AHIMS Web Service on 13/11/2019 for Kirwan Williams for the following area at Datum :GDA, Zone : 55, Eastings : 659000 - 719000, Northings : 6639000 - 6699000 with a Buffer of 0 meters. Additional Info : To inform Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 112

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 2 of 10

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 30k
Client Service ID : 464120

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
19-1-0023	Dubbo Creek ST 5;Etoo Creek Pilliga;	AGD	55	685750	6639650	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0024	Dubbo Creek ST 6;Pilliga;	AGD	55	685760	6639650	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0025	Dubbo Creek ST 8;Pilliga;	AGD	55	685500	6639650	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0026	Dubbo Creek ST 9;Pilliga;	AGD	55	685500	6639660	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0027	Dubbo Creek ST 10;Pilliga;	AGD	55	685500	6639670	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0028	Dubbo Creek ST 11;Pilliga;	AGD	55	685500	6639680	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0029	Dubbo Creek ST 12;Pilliga;	AGD	55	685500	6639690	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0030	Dubbo Creek ST 13;Pilliga;	AGD	55	685500	6639810	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0031	Dubbo Creek ST 14;Pilliga;	AGD	55	685500	6639810	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		
19-1-0032	Dubbo Creek ST 15;Pilliga;	AGD	55	685500	6639810	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1931
	Contact	Recorders	Katrina Geering,Colin Roberts					Permits		

Report generated by AHIMS Web Service on 13/11/2019 for Kirwan Williams for the following area at Datum :GDA, Zone : 55, Eastings : 659000 - 719000, Northings : 6639000 - 6699000 with a Buffer of 0 meters. Additional Info : To Inform Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 112

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 3 of 10

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 30k
Client Service ID : 464120

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
19-1-0033	CD / IF 1,2,3;	AGD	55	674900	6646700	Open site	Valid	Artefact : -	Isolated Find	
	Contact	Recorders	Mr.Neville Baker					Permits		
19-1-0034	CB1, CB2 CB3;	AGD	55	674900	6646750	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	99333
	Contact	Recorders	Mr.Neville Baker					Permits		
19-2-0001	WN9;Narrabri;	AGD	55	698071	6650535	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	84
	Contact	Recorders	Rex Silcox					Permits		
19-2-0002	WN10;Narrabri;	AGD	55	698818	6650956	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	84
	Contact	Recorders	Rex Silcox					Permits		
19-2-0003	WN11;Narrabri;	AGD	55	696066	6650936	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	84
	Contact	Recorders	Rex Silcox					Permits		
19-2-0004	WN12;Narrabri;	AGD	55	697465	6650989	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	84
	Contact	Recorders	Rex Silcox					Permits	66	
19-2-0005	WN13;Narrabri;	AGD	55	701047	6651412	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	84
	Contact	Recorders	Rex Silcox					Permits	66	
19-2-0006	WN14;Narrabri;	AGD	55	702026	6650646	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	84
	Contact	Recorders	Rex Silcox					Permits		
19-2-0007	WN15;Narrabri;	AGD	55	706433	6645917	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	84
	Contact	Recorders	Rex Silcox					Permits		
19-6-0019	Cuttabri Reserve Cemetery	AGD	55	713250	6642300	Open site	Valid	Aboriginal Ceremony and Dreaming : -, Burial : -		
	Contact	Recorders	Katrina Geering,Colin Roberts,Jean Hamilton,Les McMillan,Bill Reed					Permits		

Report generated by AHIMS Web Service on 13/11/2019 for Kirwan Williams for the following area at Datum :GDA, Zone : 55, Eastings : 659000 - 719000, Northings : 6639000 - 6699000 with a Buffer of 0 meters. Additional Info : To Inform Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 112

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 4 of 10

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 30k
Client Service ID : 464120

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
19-6-0320	Cuttabri Scarred Tree;	AGD	55	713150	6641400	Open site	Valid	Aboriginal Ceremony and Dreaming : -, Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Katrina Geering					Permits		
19-6-0321	Cuttabri Reserve;	AGD	55	713600	6643500	Open site	Valid	Aboriginal Ceremony and Dreaming : -		
	Contact	Recorders	Katrina Geering					Permits		
10-4-0309	gerian scatter 1;	AGD	55	673600	6689300	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0310	LL8;	AGD	55	671100	6689400	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0311	KK1;	AGD	55	671100	6689380	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0312	KK2;	AGD	55	671150	6688890	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0313	KK5;	AGD	55	670900	6689250	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0314	WOOLSHED 1;	AGD	55	670650	6689300	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0315	LL 7;	AGD	55	671300	6689250	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0316	LL 6;	AGD	55	671409	6689000	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0317	LL 2;	AGD	55	671950	6688900	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0318	LL 1;	AGD	55	671950	6688850	Open site	Valid	Artefact :	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0319	AIRSTRIP ..;	AGD	55	672520	6689150	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0320	FISH SITE;	AGD	55	672600	6689200	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Tom Knight					Permits		
10-4-0321	Summerfield_1;	AGD	55	658900	6683900	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	

Report generated by AHIMS Web Service on 13/11/2019 for Kirwan Williams for the following area at Datum :GDA, Zone : 55, Eastings : 659000 - 719000, Northings : 6639000 - 6699000 with a Buffer of 0 meters. Additional Info : To inform Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 112

This information is not guaranteed to be free from error/omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 5 of 10

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 30k
Client Service ID : 464120

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Ted Fields					Permits	654	
10-4-0023	Summerfield_3;	AGD	55	658900	6683740	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Ted Fields					Permits		
10-4-0026	Summerfield_8;	AGD	55	658890	6683630	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Ted Fields					Permits		
19-1-0039	BES; Pilliga LALC; Pilliga Lagoon 6	AGD	55	678842	6639417	Open site	Valid	Artefact : 2		99067
	Contact	Recorders	Leila McAdam,Pilliga LALC					Permits		
19-1-0040	BES; Pilliga LALC; Pilliga Lagoon 5	AGD	55	679231	6640404	Open site	Valid	Artefact : 10		99067
	Contact	Recorders	Leila McAdam,Pilliga LALC					Permits		
19-1-0041	BES; Pilliga LALC; Namoi River ST 4	AGD	55	674740	6649279	Open site	Valid	Modified Tree (Carved or Scarred) : 1		99067
	Contact	Recorders	Leila McAdam,Pilliga LALC					Permits		
19-1-0042	BES; Pilliga LALC; Namoi River ST 5	AGD	55	674983	6649265	Open site	Valid	Modified Tree (Carved or Scarred) : 1		99067
	Contact	Recorders	Leila McAdam,Pilliga LALC					Permits		
19-1-0043	BES; Pilliga LALC; Turragulla Ck ST 1	AGD	55	675758	6646552	Open site	Valid	Modified Tree (Carved or Scarred) : 1		99067
	Contact	Recorders	Leila McAdam,Pilliga LALC					Permits		
19-1-0044	BES; Pilliga LALC; Turragulla Ck ST2	AGD	55	675769	6646536	Open site	Valid	Modified Tree (Carved or Scarred) : 1		99067
	Contact	Recorders	Leila McAdam,Pilliga LALC					Permits		
19-1-0045	BES; Pilliga LALC; Fairfield private property ST 1 & Reburial	AGD	55	679303	6642157	Open site	Valid	Modified Tree (Carved or Scarred) : 1, Burial : 1		99067
	Contact	Recorders	Leila McAdam,Pilliga LALC					Permits		
19-1-0058	BES; Pilliga LALC; Oakey Ck ST 6	AGD	55	682680	6640686	Open site	Valid	Modified Tree (Carved or Scarred) : 1		99067
	Contact	Recorders	Phil Purcell,Pilliga LALC					Permits		
19-2-0091	BES; Pilliga LALC; Talliaka Ck	AGD	55	690800	6639990	Open site	Valid	Artefact : 12		99067
	Contact	Recorders	Phil Purcell,Pilliga LALC					Permits		

Report generated by AHIMS Web Service on 13/11/2019 for Kirwan Williams for the following area at Datum :GDA, Zone : 55, Eastings : 659000 - 719000, Northings : 6639000 - 6699000 with a Buffer of 0 meters. Additional Info : To inform Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 112

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW), and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission

Page 6 of 10

Office of Environment & Heritage NSW

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 30k
Client Service ID : 464120

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Leila McAdam,Filliga LALC					Permits		
19-2-0020	BSS; Filliga LALC; Tallusa Ck 2	AGD	55	698507	6640160	Open site	Valid	Artefact : 30		99067
	Contact	Recorders	Leila McAdam,Filliga LALC					Permits		
19-1-0057	BSS; Filliga LALC; Oakey Ck 5	AGD	55	682831	6640149	Open site	Valid	Artefact : 19		
	Contact	Recorders	Leila McAdam,Filliga LALC					Permits		
19-1-0013	Filliga BB4	AGD	55	675238	6649667	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	827
	Contact	Recorders	Margrit Koettig					Permits	94	
19-1-0062	Oaky Creek Scar Tree 1	AGD	55	683116	6640088	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0063	Oaky Creek Scar Tree 2	AGD	55	683093	6640397	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0064	Oaky Creek Scar Tree 3	AGD	55	683067	6640337	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0065	Oaky Creek Scar Tree 5	AGD	55	682994	6640371	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0066	Oaky Creek Scar Tree 4	AGD	55	683016	6640327	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0067	Oaky Creek Scar Tree 6	AGD	55	682902	6640400	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0068	Oaky Creek Scar Tree 7	AGD	55	682919	6640429	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0069	Oaky Creek Scar Tree 8	AGD	55	682922	6640440	Open site	Valid	Modified Tree (Carved or Scarred) : 1		

Report generated by AHIMS Web Service on 13/11/2019 for Kirwan Williams for the following area at Datum :GDA, Zone : 55, Eastings : 659000 - 719000, Northings : 6639000 - 6699000 with a Buffer of 0 meters. Additional Info : To Inform Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 112

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 8 of 10

Office of Environment & Heritage NSW

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 30k
Client Service ID : 464120

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Leila McAdam,Filliga LALC					Permits		
19-2-0020	BSS; Filliga LALC; Tallusa Ck 2	AGD	55	698507	6640160	Open site	Valid	Artefact : 30		99067
	Contact	Recorders	Leila McAdam,Filliga LALC					Permits		
19-1-0057	BSS; Filliga LALC; Oakey Ck 5	AGD	55	682831	6640149	Open site	Valid	Artefact : 19		
	Contact	Recorders	Leila McAdam,Filliga LALC					Permits		
19-1-0013	Filliga BB4	AGD	55	675238	6649667	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	827
	Contact	Recorders	Margrit Koettig					Permits	94	
19-1-0062	Oaky Creek Scar Tree 1	AGD	55	683116	6640088	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0063	Oaky Creek Scar Tree 2	AGD	55	683093	6640397	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0064	Oaky Creek Scar Tree 3	AGD	55	683067	6640337	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0065	Oaky Creek Scar Tree 5	AGD	55	682994	6640371	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0066	Oaky Creek Scar Tree 4	AGD	55	683016	6640327	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0067	Oaky Creek Scar Tree 6	AGD	55	682902	6640400	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0068	Oaky Creek Scar Tree 7	AGD	55	682919	6640429	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0069	Oaky Creek Scar Tree 8	AGD	55	682922	6640440	Open site	Valid	Modified Tree (Carved or Scarred) : 1		

Report generated by AHIMS Web Service on 13/11/2019 for Kirwan Williams for the following area at Datum :GDA, Zone : 55, Eastings : 659000 - 719000, Northings : 6639000 - 6699000 with a Buffer of 0 meters. Additional Info : To Inform Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 112

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 8 of 10

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 30k
Client Service ID : 464120

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0070	Oaky Creek Scar Tree 9	AGD	55	682886	6640431	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0071	Oaky Creek Scar Tree 10	AGD	55	682732	6640570	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
10-5-0012	Brummell-Burren ST1	GDA	55	695647	6681180	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Phillip CAMERON,AREA Environmental Consultants and Communication					Permits		
10-5-0013	Brummell - Burren 2T2	GDA	55	696674	6679743	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Phillip CAMERON,AREA Environmental Consultants and Communication					Permits		
19-2-0095	Brummell-Burren ST3	GDA	55	697394	6679131	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Phillip CAMERON,AREA Environmental Consultants and Communication					Permits		
19-2-0096	Brummell-Burren ST4	GDA	55	698364	6678725	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Phillip CAMERON,AREA Environmental Consultants and Communication					Permits		
19-1-0092	Modified Tree Dagilbone Road	GDA	55	696504	6659943	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	SMK Consultants Pty Ltd - Moree,Ms.Natasha Livingstone					Permits		
19-1-0009	Kigwigil Burial Ground	AGD	55	687336	6677686	Open site	Valid	Burial : -	Burial/s	
	Contact	Recorders	Sabu Dunn					Permits		
19-2-0087	Canoe Tree - Burren Junction - Kamilaroi Hwy	AGD	55	697370	6667811	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact Sear.e	Recorders	Mr.B Trindal					Permits		
19-1-0072	Oaky Creek Scar Tree 11	AGD	55	682696	6640690	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		

Report generated by AHIMS Web Service on 13/11/2019 for Kirwan Williams for the following area at Datum :GDA, Zone : 55, Eastings : 659000 - 719000, Northings : 6639000 - 6699000 with a Buffer of 0 meters. Additional Info : To Inform Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 112

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 9 of 10

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 30k
Client Service ID : 464120

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
19-1-0073	Oaky Creek Scar Tree 12	AGD	55	682652	6640687	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0074	Oaky Creek Scar Tree 13	AGD	55	682512	6640671	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0075	Oaky Creek Scar Tree 14	AGD	55	682468	6640682	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0076	Oaky Creek Scar Tree 15	AGD	55	682453	6640722	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0077	Oaky Creek Scar Tree 16	AGD	55	682379	6640905	Open site	Valid	Modified Tree (Carved or Scarred) : 1, Artefact : 3		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0078	Oaky Creek Scar Tree 17	AGD	55	682250	6640784	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0079	Oaky Creek Scar Tree 18	AGD	55	682132	6640948	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0080	Oaky Creek Scar Tree 19	AGD	55	682009	6640923	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0081	Oaky Creek Scar Tree 20	AGD	55	682056	6640863	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		
19-1-0082	Oaky Creek Scar Tree 21	AGD	55	682000	6640768	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Mervyn Sutherland					Permits		

Report generated by AHIMS Web Service on 13/11/2019 for Kirwan Williams for the following area at Datum :GDA, Zone : 55, Eastings : 659000 - 719000, Northings : 6639000 - 6699000 with a Buffer of 0 meters. Additional Info : To Inform Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 112

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 10 of 10

APPENDIX 2: ABORIGINAL HERITAGE: UNANTICIPATED FINDS PROTOCOL

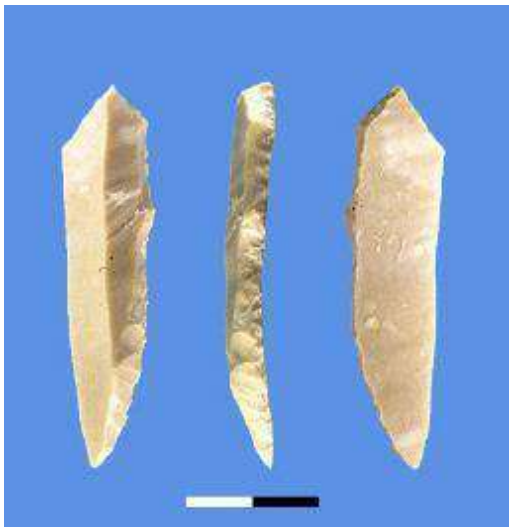
An Aboriginal artefact is anything which is the result of past Aboriginal activity. This includes stone (artefacts, rock engravings etc.), plant (culturally scarred trees) and animal (if showing signs of modification; i.e. smoothing, use). Human bone (skeletal) remains may also be uncovered while onsite.

Cultural heritage significance is assessed by the Aboriginal community and is typically based on traditional and contemporary lore, spiritual values, and oral history, and may also take into account scientific and educational value.

Protocol to be followed in the event that previously unrecorded or unanticipated Aboriginal object(s) are encountered:

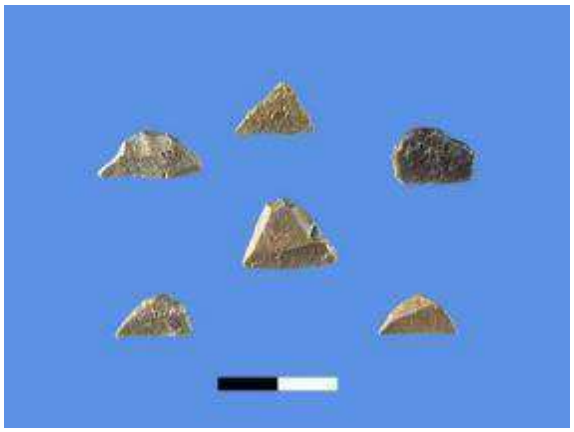
1. If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking the proposed development activities, the proponent must:
    a. Not further harm the object;
    b. Immediately cease all work at the particular location;
    c. Secure the area so as to avoid further harm to the Aboriginal object;
    d. Notify Biodiversity and Conservation Division (BCD) as soon as practical on 131 555, providing any details of the Aboriginal object and its location; and
    e. Not recommence any work at the particular location unless authorised in writing by BCD.
2. In the event that Aboriginal burials are unexpectedly encountered during the activity, work must stop immediately, the area secured to prevent unauthorised access and NSW Police and BCD contacted.
3. Cooperate with the appropriate authorities and relevant Aboriginal community representatives to facilitate:
    a. The recording and assessment of the find(s);
    b. The fulfilment of any legal constraints arising from the find(s), including complying with BCD directions; and
    c. The development and implementation of appropriate management strategies, including consultation with stakeholders and the assessment of the significance of the find(s).
4. Where the find(s) are determined to be Aboriginal object(s), recommencement of work in the area of the find(s) can only occur in accordance with any consequential legal requirements and after gaining written approval from BCD (normally an Aboriginal Heritage Impact Permit).

APPENDIX 3: ABORIGINAL HERITAGE: ARTEFACT IDENTIFICATION



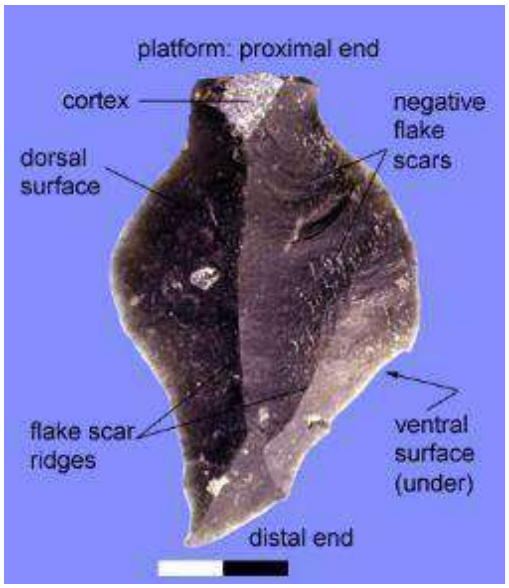
Retouched blades (scale = 1cm)

Flakes

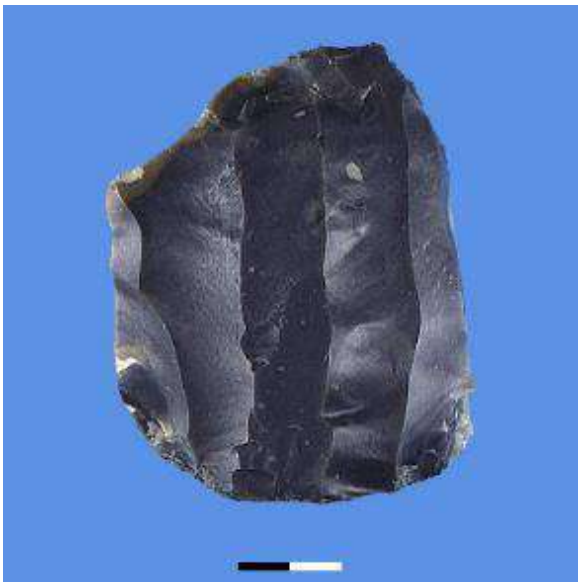


Microliths (scale = 1cm)

Scraper (scale = 1cm)



Flake characteristics (scale = 1cm)



Core from which flakes have been removed (scale = 1cm)

OzArk Environment & Heritage ABN 59 104 582 354
Dubbo
Queanbeyan
Newcastle
T: 02 6882 0118
enquiry@ozarkehm.com.au
www.ozarkehm.com.au
145 Wingewarra St
PO Box 2069
DUBBO NSW 2830

22 October 2019

Enerparc Australia
C/O Andrew Brownlow
General Manager – Central West NSW
Premise - Orange
154 Peisley Street
Orange NSW 2800
E: andrew.brownlow@premise.com.au

ADDENDUM LETTER TO ABORIGINAL HERITAGE DUE DILIGENCE ASSESSMENT, BURREN JUNCTION SOLAR PROJECT, NSW

OzArk Environment & Heritage (OzArk) were engaged by Premise (the client) in December 2019 to complete a heritage assessment for a proposed Solar Farm project near Burren Junction, NSW (the proposal) under the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Due Diligence; DECCW 2010). The study area was a 50-hectare (ha) site that has previously been cleared and ploughed.

The visual inspection of the study area was undertaken by OzArk Archaeologist Kirwan Williams on Wednesday 20 November 2019. The visual inspection identified that the majority of the study area had been subject to extensive modification including vegetation clearance, ploughing and cultivation of crops. The original study area and pedestrian coverage of the visual inspection are shown in **Figure 1**.

The OzArk Due Diligence Assessment (OzArk 2020) concluded that there was a low likelihood of the proposal adversely harming Aboriginal cultural heritage items or sites, resulting in the outcome that an Aboriginal Heritage Impact Permit (AHIP) was not necessary.

Since finalisation of the report, OzArk understands that the proposed access road has been rerouted north and east of the Essential Energy substation over an area not assessed as part of the original proposal (**Figure 2**).

This additional area is consistent with the alluvial plains landform of the original study area that was inspected during the Due Diligence assessment. A representative view of the landform is shown in **Figure 3**.

OzArk 2020 determined that there were no previously recorded Aboriginal heritage sites in the study area and the visual survey recorded no new Aboriginal sites. There were no identified geographic or topographic features (such as waterways or other resources) that would suggest the landform of the study area had archaeological sensitivity. Review of previous archaeological studies in the local area further suggested that the likelihood of Aboriginal archaeological sites being present in the study area was low.

After desktop review of the new access road, it is apparent that the recommendations of OzArk 2020 can be extrapolated to cover this additional area. All available evidence suggests that there is a low likelihood of Aboriginal objects being harmed as a result of the altered access route. Under the Due Diligence code of practice, the following outcome has been reached:

AHIP application not necessary. Proceed with caution. If any Aboriginal objects are found, stop work and notify the Division of Biodiversity and Conservation (BCD), Department of Planning, Industry and Environment. If human remains are found, stop work, secure the site and notify NSW Police and BCD.

Figure 1: Study area and pedestrian coverage (Ozark 2020)

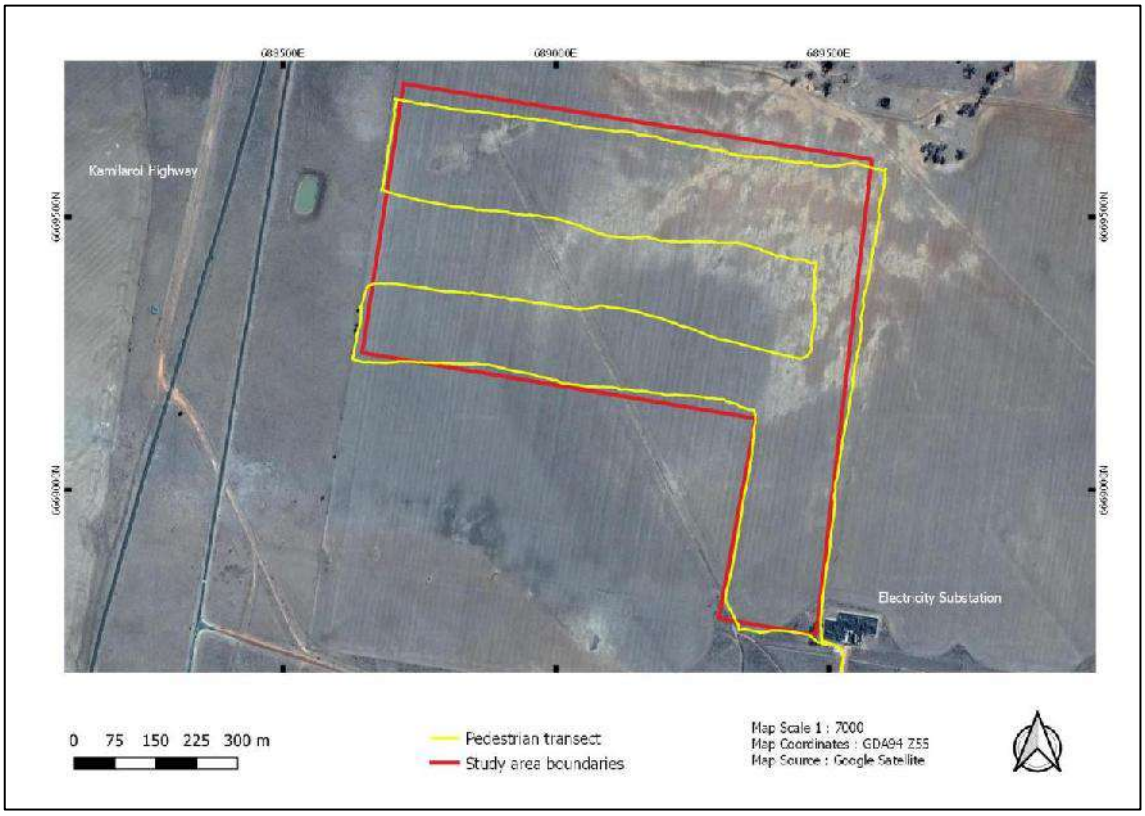


Figure 2: Updated study area with detail insert of additional area.

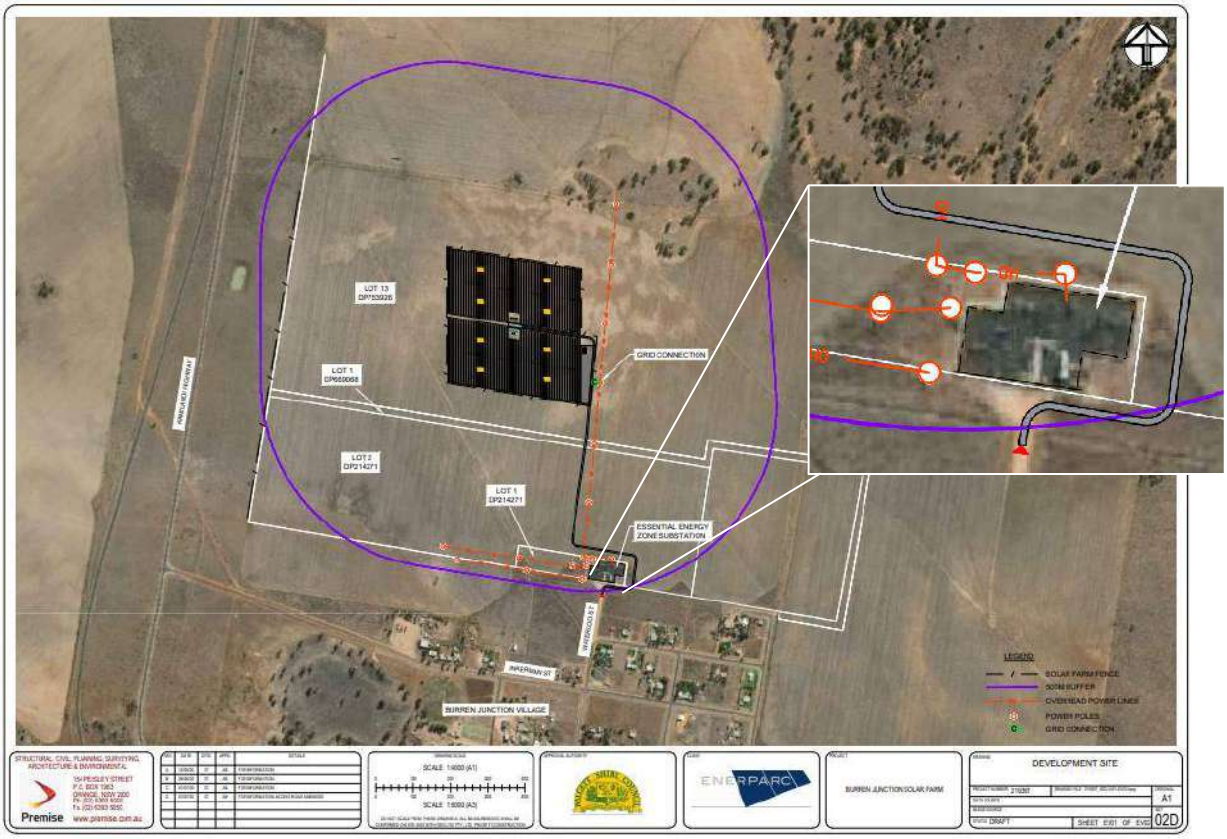


Figure 3: View north along western edge of the substation showing disturbances and landform features.

REFERENCES

DECCW 2010 — DECCW. 2010. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*. Department of Environment, Climate Change and Water, Sydney.

OzArk 2020 — OzArk Environment and Heritage Management. 2010. *Aboriginal Due Diligence Assessment Report: Burren Junction Solar Farm*. Report to Premise on behalf of Enerparc Australia.

Appendix B

BIODIVERSITY ASSESSMENT

Burren Junction Solar Farm

Biodiversity Assessment Report

Enerparc Australia

July 2020

OzArk Environmental & Heritage Management Pty Limited

Dubbo | Queanbeyan | Brisbane
HEAD OFFICE: 145 Wingewarra St/PO Box 2069 DUBBO NSW 2830
02 6882 0118 | enquiry@ozarkehm.com.au | www.ozarkehm.com.au

OzArk and staff acknowledge Traditional Owners and Custodians of the country on which we work

DOCUMENT CONTROLS

Proponent	Geolyse Pty Ltd on behalf of Enerparc		
Purchase order number			
Document description	Biodiversity impact assessment: Burren Junction Solar Farm		
	Name	**Signed**	**Date**
Clients reviewing officer			
Clients representative managing this document		**OzArk representative managing this document**	
Andrew Brownlow (AB)		Coral Pearce (CP) Emma Gray (EG)	
Location		**OzArk job number**	
S:\OzArk EHM Data\Clients\Premise (Orange, Geolyse)\Burren Junction Solar Farm Oct2019\Ecology		#2709	

Document status: Final	**Version**	**Date**	**Action**
Internal Draft series V1.X	V1.1	06/07/2020	CP to EG
First Draft for Client Review	V2.0	06/07/2020	CP to AB
Reviewed by OzArk	V2.2	07/07/2020	AB to CP
Final report for	V3.0	20/07/2020	CP to AB

Prepared for	**Prepared by**
Andrew Brownlow Manager - Environmental / Director (CEnvP) Geolyse Pty Ltd 154 Peisley St PO Box 1963 Orange NSW 2800 Ph: 02 6393 5000 Fx: 02 6393 5050 Mob: 0417 210 253 Email: abrownlow@geolyse.com Web: www.geolyse.com	Coral Pearce, Ecologist OzArk Environmental & Heritage Management Pty Ltd 145 Wingewarra Street (PO Box 2069) Dubbo NSW 2830 T: 02 6882 0118 E: coral@ozarkehm.com.au

EXECUTIVE SUMMARY

Enerparc (the proponent) is preparing a development application for a solar farm within Lot 13 DP753926 with access via Lot 1 DP669068, Lots 1 & 2 DP214271, Burren Junction. Currently, the lot is zoned for Primary Production (RU1). The solar farm will impact approximately 14.34 ha of agricultural land, which does not support vegetation.

A Biodiversity Assessment Report (BAR) is required to:

- Assess impacts of the proposal on native vegetation at the site and identify any potential threatened species, populations and ecological communities and their habitat.
- Identify the requirements relevant to the proposal under the following legislation:
  - Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
  - NSW *Biodiversity Conservation Act 2016* (BC Act);
  - NSW *Fisheries Management Act 1994* (FM Act);
  - NSW *Biosecurity Act 2015*.
  - Walgett Shire Council Local Environment Plan (LEP)
- Provide recommendations to avoid, minimise and/or mitigate impacts of the proposal on biodiversity, including entry into the Biodiversity Offset Scheme (BOS) if required.

The BAR was completed in two stages:

1. A desktop review of available resources to provide landscape context for the subject site and inform aspects of the field survey, and

2. A field survey, including vegetation survey according to the Biodiversity Assessment Methods (BAM) to identify native vegetation communities and any threatened species, populations and ecological communities and their habitat, which have potential to occur.

At the time of survey, the subject site showed evidence of recent ploughing, with some regrowth vegetation occurring sporadically. The regrowth vegetation contained both native and non-native species at low densities with the majority of the subject site not vegetated. The area is currently mapped by the State Vegetation Type Map (SVTM) as non-native.

Review of the Threatened Species Profiles database found 76 BC Act and EPBC Act listed threatened fauna species, and 19 threated flora species, are predicted or known to occur in the Darling Riverine Plains Bioregion, Castlereagh-Barwon subregion. Three fauna species and four flora species were found to potentially occur within the subject site.

An EPBC Act protected matters search for the 10 km search area identified two listed flora species, 11 listed threatened fauna, eight migratory species and 14 marine species that are predicted or known to occur within 10 km of the subject.

The subject site does not provide significant habitat for any BC Act or EPBC Act threatened flora and/or fauna or any EPBC Act listed migratory species. The proposal does not impact on or occur within any protected riparian area or key fish habitat or threatened fish habitat.

As no Plant Community Types (PCTs) were identified as occurring within the subject site, and therefore will not be cleared in associated with the proposal, it is not necessary to enter the Biodiversity Offset Scheme (BOS). However, any change to project design may require further assessment against BOS entry thresholds.

TABLE OF CONTENTS

FIGURES

TABLES

1 Introduction

1.1 Objectives

The objectives of the biodiversity assessment are as follows:

- Assess impacts of the proposal on native vegetation at the site and any occurring or potential occurring threatened species, populations or ecological communities and their habitats.
- Identify the requirements relevant to the proposal under the following legislation:
  - Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
  - NSW *Biodiversity Conservation Act 2016* (BC Act);
  - NSW *Fisheries Management Act 1994* (FM Act);
  - NSW *Biosecurity Act 2015*.
- Provide recommendations to avoid, minimise and/or mitigate impacts of the proposal on biodiversity, including entry into the Biodiversity Offset Scheme (BOS) if required.

1.2 Proposal location

The proposal is located within Lot 13 DP753926 in the Walgett Local Government Area (LGA) and is currently zoned for Primary Production (RU1). The land has been historically cleared and recently ploughed, currently consists of non-vegetated areas and some regrowth of native and non-native species.

This report uses the following terms to describe and contextualise the development location:

10 km search area – the area within a 10 km radius of the subject site. This 10 km buffer has been used to search information sources to establish the landscape context of the subject site.

Study area – the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account (OEH 2018). We define this as the area within a 1,500 m radius of the subject site. Native vegetation has been mapped within this 1,500 m buffer to provide some context regarding the connectivity and cover of native vegetation in the area affected by the proposal, and to inform the impact assessment of the proposal.

Subject site – the footprint of the proposal and the area directly affected by the development activities. The locations of the 10 km search area, study area and subject site are shown in **Figure 1-1**.

1.3 The proposal

Enerparc is preparing a development application for a solar farm within Lot 13 DP753926, adjacent to Kamilaroi Highway, Burren Junction. The minimum lot size is 400 ha, although the impact footprint for the development is approximately 14.34 ha. This includes the construction

of the solar farm, and grid connection to Burren Junction's substation, located to the south, along Waterloo Street Road (see Figure **1-1** and **1-2**).

A Biodiversity Assessment Report is required to adequately consider impacts, if any, to protected flora, fauna and habitat, in accordance with the requirements of relevant environmental legislation, associated policies and any specific clauses under the Council LEP.

1.4 Legislative context

This report addresses requirements under the following legislation.

- *NSW Environment Planning and Assessment Act 1979* (EP&A Act).
- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
- *Biodiversity Conservation Act 2016* (BC Act).
- *Biodiversity Conservation Regulation 2017.*
- *Fisheries Management Act 1994*
- *Water Management Act 2000*
- *Biosecurity Act 2015*

The proposal will be assessed under Part 4 (Local Development) of the EP&A Act. The BC Act requires all local developments to be assessed in relation to the new Biodiversity Offsets Scheme (BOS), if entry is triggered by the location and/or size of the development. The *Biodiversity Conservation Regulation 2017* sets out the thresholds for entry into the BOS, which are as follows.

- If the amount of native vegetation proposed to be cleared exceeds the threshold area for the lot size for the LEP zone[1];
- When the development is located on land identified in the Biodiversity value map (https://www.lmbc.nsw.gov.au/Maps/), as defined by clause 7.3 of the Regulation.
- If, in the absence of the above thresholds, the proposal is likely to be a significant impact to threatened species, ecological communities or their habitat[2].

[1] The area threshold applies to all proposed native vegetation clearing (and other biodiversity impacts associated with a proposal), regardless of whether this clearing is across multiple lots. In the case of a subdivision, the proposed clearing must include all future clearing likely to be required for the intended use of the land after it is subdivided. This includes all areas for buildings, landscaping, access roads, asset protection zones and any infrastructure and fences.

[2] Based on the 'test of significance' in section 7.3 of the BC Act. Proponents are only required to carry out the 'test of significance' for local development proposals when the first two thresholds are not exceeded. The Biodiversity Offsets Scheme does not apply to exempt or complying development.

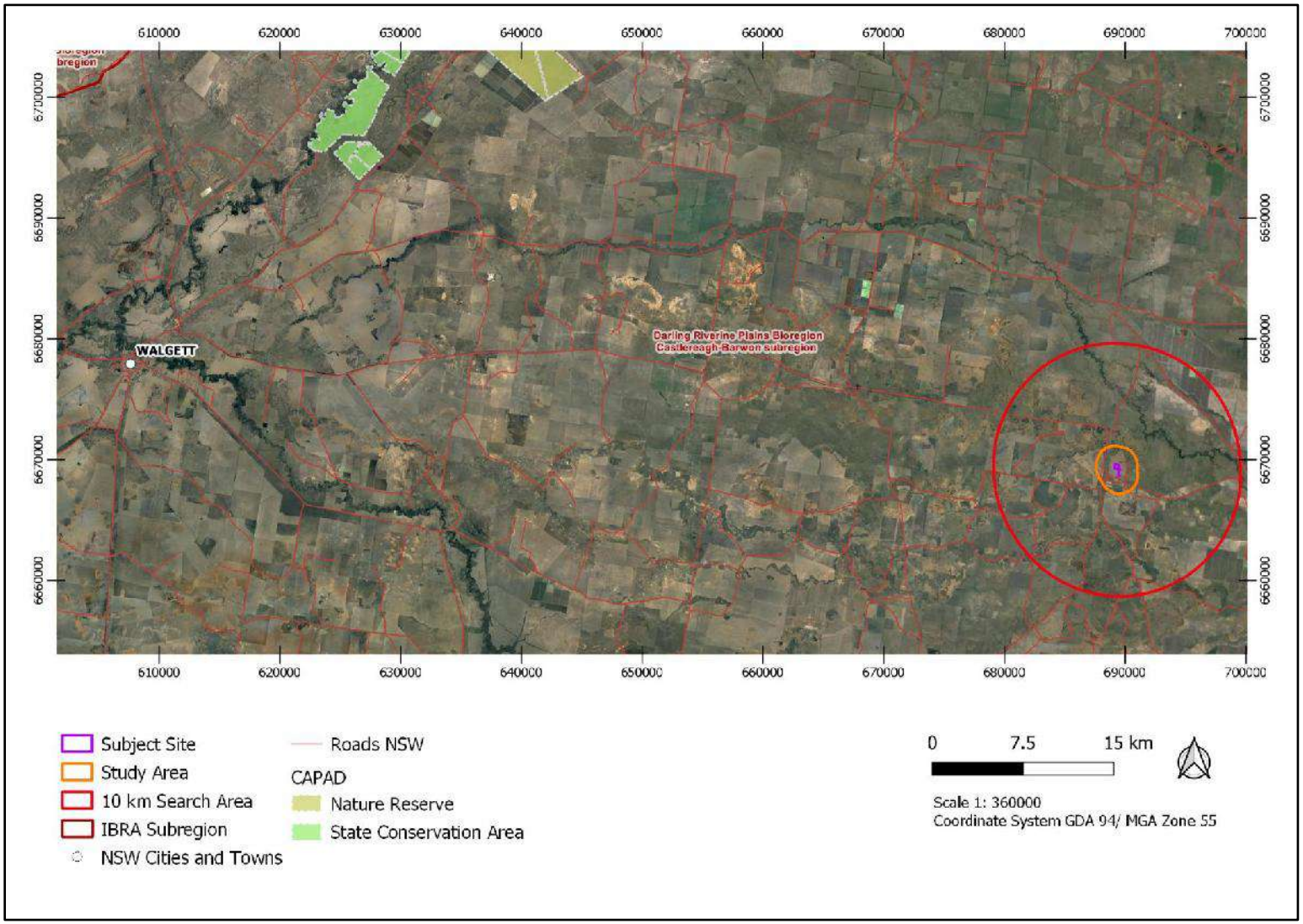


Figure 1-1 Regional Context of the proposal

Figure 1-2 Location of the proposal

2 Methods

The ecological assessment was carried out in three stages:

1. Desktop searches and review of ecological databases and information to identify threatened species, populations or ecological communities listed in the NSW Biodiversity Conservation Act 2016, Fisheries Management Act 1994 or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 that have the potential to occur in the study area.
2. Field survey of the subject site to collate species lists for the purposes of identifying the vegetation communities present and target predicted threatened species and ecological communities. Where a threatened species or community or habitat feature is identified, document the nature and extent of the protected matter and describe its 'viable local population' or occurrence.
3. Preparation of a written Biodiversity Assessment Report (BAR) that describes the impacts of the proposed activity on native vegetation and threatened species, populations and ecological communities, and provides recommendations to avoid, minimise and mitigate these impacts.

2.1 Personnel

OzArk Environmental and Heritage Management Pty Ltd (OzArk) operates under NSW Scientific Research License 101908, and NSW Department of Primary Industries (DPI) Accreditation of a corporation as an animal research establishment Ref No. AW2017/012.

The field survey was completed by Ecologist Coral Pearce. Reporting components were completed by Coral Pearce with quality control provided by Ecologist Dr Emma Gray. Key details of personnel are provided in provided in Table 3-1.

Table 2-1. Summary of OzArk personnel qualifications.

Name	Position	CV Details
Coral Pearce	Ecologist	• Doctor of Philosophy (in prep) • Master of Science – Ecology – Queensland University of Technology • Bachelor of Applied Science – Ecology – Queensland University of Technology • 4WD Training • WH&S Induction Training for Construction Work
Emma Gray	Ecologist	• Doctor of Philosophy • Bachelor of Applied Science – Ecology – Queensland University of Technology • 4WD Training • WH&S Induction Training for Construction Work

2.2 Background research

Preliminary assessments drew on local experience, previous reporting and information held on government databases and archives. Results of database searches were used to assist in identifying distributions, suitable habitats and known records of threatened species to increase the effectiveness of field investigations. Information sources reviewed included the following.

- NSW Government online aerial imagery (www.maps.six.nsw.gov.au).
- NSW Government Biodiversity Values Map which identifies land with high biodiversity value, as defined by the *Biodiversity Conservation Regulation 2017* (https://www.lmbc.nsw.gov.au).
- Flora and fauna records and profiles contained in the NSW Threatened Species Database, EPBC Protected Matters Search Tool and DPI threatened fish distribution maps.
- BioNet (www.bionet.nsw.gov.au) Wildlife Atlas and Plant Community Type (VIS) databases.
- Flora of NSW (Harden 1991-2002) and Flora NSW Online (www.plantnet.rbgsyd.nsw.gov.au).
- Property report for Lot 13 DP753926 generated from NSW Planning Portal website (www.planningportal.nsw.gov.au)
- *Regional Scale State Vegetation Map: Border Rivers-Gwydir - Namoi V2.0* (OEH, 2016)
- Field survey undertaken by OzArk, November 2019

2.3 Desktop review

Database searches were undertaken before the field assessment to determine the predicted species and those previously recorded within 10 km of the subject site. The results of these searches led to the identification of key species for field survey effort and targeted searches. Results of the database searches are provided in **Appendix A.**

2.4 Field survey

2.4.1 Survey objectives

The objectives of the field survey were to:

- Identify native species and vegetation communities present.
- Describe the quality and value of the vegetation and the flora and fauna habitat at the development site.
- Determine if species, populations or ecological communities listed as threatened under the BC Act or EPBC Act are/may be present.
- Determine the significance of impact to any threatened entities present or likely to be present.

2.4.2 Vegetation survey methodology

The vegetation survey was as follows:

- Four vegetation plots were surveyed according to the Biodiversity Assessment Method (BAM) as follows:
  - Each survey plot consisted of nested 20m x 50m and 20m x 20m plots
  - Species composition and structure (species and percent cover) data collected from within 20m x 20m plot
  - Vegetation function data (size and number of trees, presence of hollow-bearing trees and woody debris) collected from within 20m x 50m plot
  - Percent of litter cover data collected within five 1m x 1m squares positioned at 5m, 15m, 25m, 35m and 45m points of 50m transect.
  - Plots were positioned within the subject site and their GPS locations recorded (GDA 94 / MGA Zone 55).
- Plot locations were randomly selected whilst ensuring adequate survey effort within each vegetation zone (**Table 3-2**).

All survey locations were recorded with a GPS device using GDA 94 / MGA Zone 55 coordinate system. The location of each BAM plot is shown in **Figure 2-4**.

Table 2-2. Minimum number of plots and transects required per zone area (OEH, 2017).

Vegetation zone area (ha)	Minimum number of plots/transects
<2	1 plot/transect
>2 – 5	2 plots/transects
>5 – 20	3 plots/transects
>20 – 50	4 plots/transects
>50 – 100	5 plots/transects
>100 – 250	6 plots/transects
>250 – 1000	7 plots/transects; more plots may be needed if the condition of the vegetation is variable across the zone
>1000	8 plots/transects; more plots may be needed if the condition of the vegetation is variable across the zone

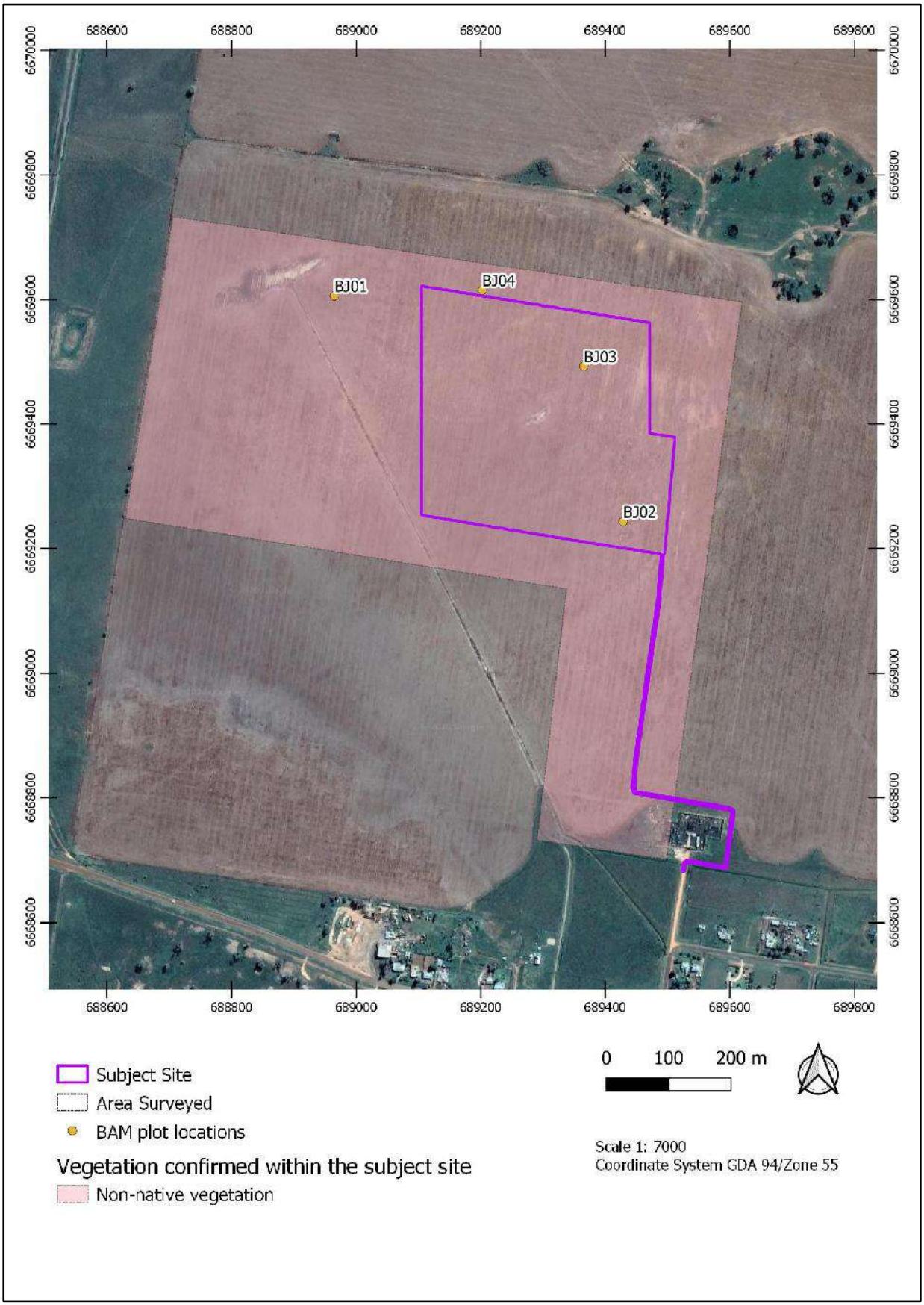


Figure 2.4 Location of BAM plots

2.4.3 Incidental fauna survey methodology

Incidental flora and fauna sightings were recorded while undertaking the BAM plots and searching the subject site for hollow-bearing habitat trees and other potential habitat features. Avian species were recorded incidentally, if recorded as occurring on-site, or as flying over if not seen directly using the subject site. Potential habitat such as rock outcrops, loose bark and course woody debris was recorded. Evidence of fauna presence on the subject site, such as tracks, scats, feathers and sloughed skins were also recorded. No formal frog surveys, trapping, nocturnal searches or acoustic bat surveys were conducted.

2.5 Native vegetation classification

Vegetation communities were identified in accordance with the online *NSW Master Plant Community Type Classification* (OEH, 2018a), which is the current state-wide vegetation classification system for Plant Community Types (PCT). This classification system is used for vegetation mapping, development assessment and site planning purposes. It describes over 1,500 PCTs across the state, and groups the vegetation communities into vegetation Class and Formation / Sub-formation as per Keith (2004).

In this study PCTs were identified based on the following inputs:

- *Regional Scale State Vegetation Map: Border Rivers Gwyer/Namoi Region V2.0* (OEH, 2016), which provides predictive mapping of PCTs in and around the subject site. This mapping is indicative only. It is not necessarily accurate at a fine scale for the purposes of the current study.
- Professional ecological knowledge about locally occurring vegetation types and landscape, soil and topographic patterns, including transitions from one community to another and potential for intergrades between plant communities.
- Field survey results confirming the flora species present, vegetation structure, landscape position and soil type at the subject site and the extent and condition of native vegetation.
- The BioNet Vegetation Classification database was used to identify the candidate vegetation communities likely to be present based on the site conditions (flora species present, vegetation structure, bioregion, and landscape position and soil type) and the relevant published PCT descriptions.

If any of the PCTs were identified as having potential to be part of a Threatened Ecological Community (TEC), the relevant identification guidelines (NSW Scientific Committee listing criteria and Commonwealth identification guides) were consulted to determine the status of the vegetation community present on the subject site. These guidelines provide the identification criteria used to positively identify the community as being part of the TEC. The criteria include location, species present, overstorey species, weed cover, number and type of native species including whether certain ‘important’ native species are present. The TEC decision process is documented in the results section of this report where required.

Plant identification followed nomenclature in the Royal Botanic Gardens PlantNet online database (Royal Botantic Gardens and Domain Trust, 2018).

2.6 Threatened species

The proposal site was assessed for its potential to provide habitat for threatened flora and fauna known or predicted to occur in the study area. Habitat requirements of species were reviewed using a combination of ecological knowledge and the online threatened species profiles published by the NSW Department of Planning, Industry and Environment (DPIE). Features such as rocky outcrops, overhangs and caves, waterbodies, dense understorey vegetation and habitat trees were recorded, if present.

Any evidence of fauna (e.g. scats, tracks, calls, fur, feathers and sloughed skins) was recorded, if observed. Attention was given to identifying tree hollows with signs of breeding activity or the presence of nests which may indicate use of the site by threatened fauna species. Where habitat assessments indicate a threatened species potentially occurs on the subject site, it has been assumed as present if absence can't be established based on field survey effort.

2.7 Habitat assessment

The results of the desktop review and the field assessment were collated and reviewed in the context of local ecological knowledge to determine the likelihood of occurrence of threatened species and ecological communities, and potential impacts of the proposal (**Appendix D** & **F**). For instance, some threatened species may be predicted to occur locally but, on assessment of the site, key habitat elements or conditions are not present, in which case the species is assessed as not being present or impacted.

The likelihood of occurrence of threatened species, populations or ecological communities was categorised as follows:

- 'Yes' – the species was observed or has been previously recorded on the site.
- 'Likely' – a medium to high probability that a species uses the site, based on nearby records and suitable habitat being present.
- 'Potential' – suitable habitat for a species occurs on the site, but the species has not been observed or previously recorded at the site.
- 'Unlikely' – a very low likelihood that the species uses the site, based on lack of the preferred type and size of habitat.
- 'No' – habitat on-site and in the vicinity is unsuitable for the species.

The species confirmed to be present or considered likely or with potential to be present at the site, were then considered as to whether the extent and type of development would be likely to impact on them.

Tests of significance were completed for these species and ecological communities in accordance with the BC Act (**Appendix E**) and/or the assessment of significance under the EPBC Act (**Appendix G**), and the relevant guidelines for these assessments.

2.8 Limitations

This study is based upon the species data available at the time of the study, and the environmental conditions, season, and time constraints imposed by the project for the field survey. Specific limitations on this study include the following:

- The field survey was completed over one day in November 2019 and was not the ideal time to identify and detect many grass and forb species.
- An extended period of below average rainfall (i.e. drought conditions) is likely to have caused species to be temporarily absent or difficult to detect.
- Fauna trapping, frog surveys and nocturnal spotlighting were not undertaken for the current assessment. Microbat ultrasonic call capture and analysis was not undertaken.
- The field survey was conducted during a period of drought and high temperature records on the day (41.2°C), meaning that potentially present species may not have been detectable. However, it was the appropriate survey time for candidate threatened species of the area such as the Slender Darling Pea, *Swainsona murrayana*, which flowers in spring to early summer and Small Purple-pea, *Swainsona recta,* flowering throughout spring until November.
- The field survey was undertaken in or near the subject site and plant community type extents outside of the subject site were not confirmed.

To overcome some of these limitations, a 'precautionary approach' for species presence has been adopted where required. If suitable habitat for a particular threatened species is present on the site or known to occur in the study area, then the species is assumed to also be present and the impact assessment is completed on that basis. The above-mentioned constraints were also considered when preparing the recommendations of avoiding, minimising and mitigating potential impacts.

3 Results

3.1 Landscape context

3.1.1 Bioregion

The study area is situated in the Castlereagh-Barwon subregion of the Darling Riverine Plains bioregion as per the Interim Biogeographic Regionalisation of Australia (IBRA) (Thackway & Cresswell, 1995). The Castlereagh-Barwon subregion is characterised by geology, landforms, soil types and vegetation as described in **Table 3-1.**

Table 3-1. Description of the Darling Riverine Plains, Castlereagh-Barwon subregion (OEH, 2018b).

Bioregion	Subregion	Geology	Landform	Soils	Vegetation
Darling Riverine Plains	Castlereagh-Barwon	Extensive plains on overlapping low angle alluvial fans of several rivers. Sediment derived from Jurassic sandstones on the Castlereagh fan and from basalts on the Namoi fan. Same structure as Bogan-Macquarie.	Channels, floodplains, crevasse splays, levees, source bordering dunes and through flow swamps of past and present river systems.	Grey and brown clays on the plains and depressions. Brown loamy sands, pale yellow or red sands, and texture contrast soils on the low rises of former levees and channels.	River red gum on larger streams. Coolabah with occasional myall, river cooba, whitewood belah and clumps of river paperbark. Mitchell grass with few trees on clay plains. Poplar box with wilga, whitewood, belah, white cypress pine, silver-leaf ironbark and occasional brigalow on higher red soils.

3.1.2 Mitchell Landscapes

The landscapes of NSW, termed Mitchell Landscapes, were mapped in 2002 to provide a framework for reporting reserve establishment and for determining over-cleared landscapes. These landscapes broadly describe areas of similar topography, geology, soils and vegetation.

The subject site occurs within the Namoi Alluvial Plains Mitchell Landscape, while the Namoi Channels and Floodplains occurs within the study area (**Figure 3-1**). The characteristics of these landscapes are described below.

Table 3-2. Mitchell Landscapes of the study area (Mitchell, 2002).

Mitchell Landscape	Geology, soils and landforms	Vegetation
Namoi Alluvial Plains	Holocene fluvial sediments of backplain and channelised backplain facies on the Namoi River and its effluent streams, relief 1 to 5m. Dark yellow-brown to brown silty clay with patches of sand and carbonate nodules deposited from suspended sediments in floodwater, often with gilgai. Slightly elevated areas with red-brown texture-contrast soils.	Open grasslands with scattered Coolibah (*Eucalyptus microtheca*), Black Box (*Eucalyptus largiflorens*), River Cooba (*Acacia stenophylla),* Bimble Box (*Eucalyptus populnea*), Belah (*Casuarina cristata*), Lignum (*Muehlenbeckia cunninghamii*), chenopods, Warrior Bush (*Apophyllum anomalum*) and Weeping Myall (*Acacia pendula*). Extensively cleared, cropped and grazed.
Namoi Channels and Floodplains	Channels, floodplains and terraces of the Mooki and Namoi Rivers on the Liverpool Plains Ecosystem in Quaternary fluvial sediments. General elevation 275 to 350m, local relief 20m. Brown clays and recent alluvium.	River Red Gum (*Eucalyptus camaldulensis*), River Oak (*Casuarina cunninghamiana*), Rough-barked Apple (*Angophora floribunda*) with Plains Grass (*Austrostipa aristiglumis*) and Couch Grass (*Sporobolus mitchelli*).

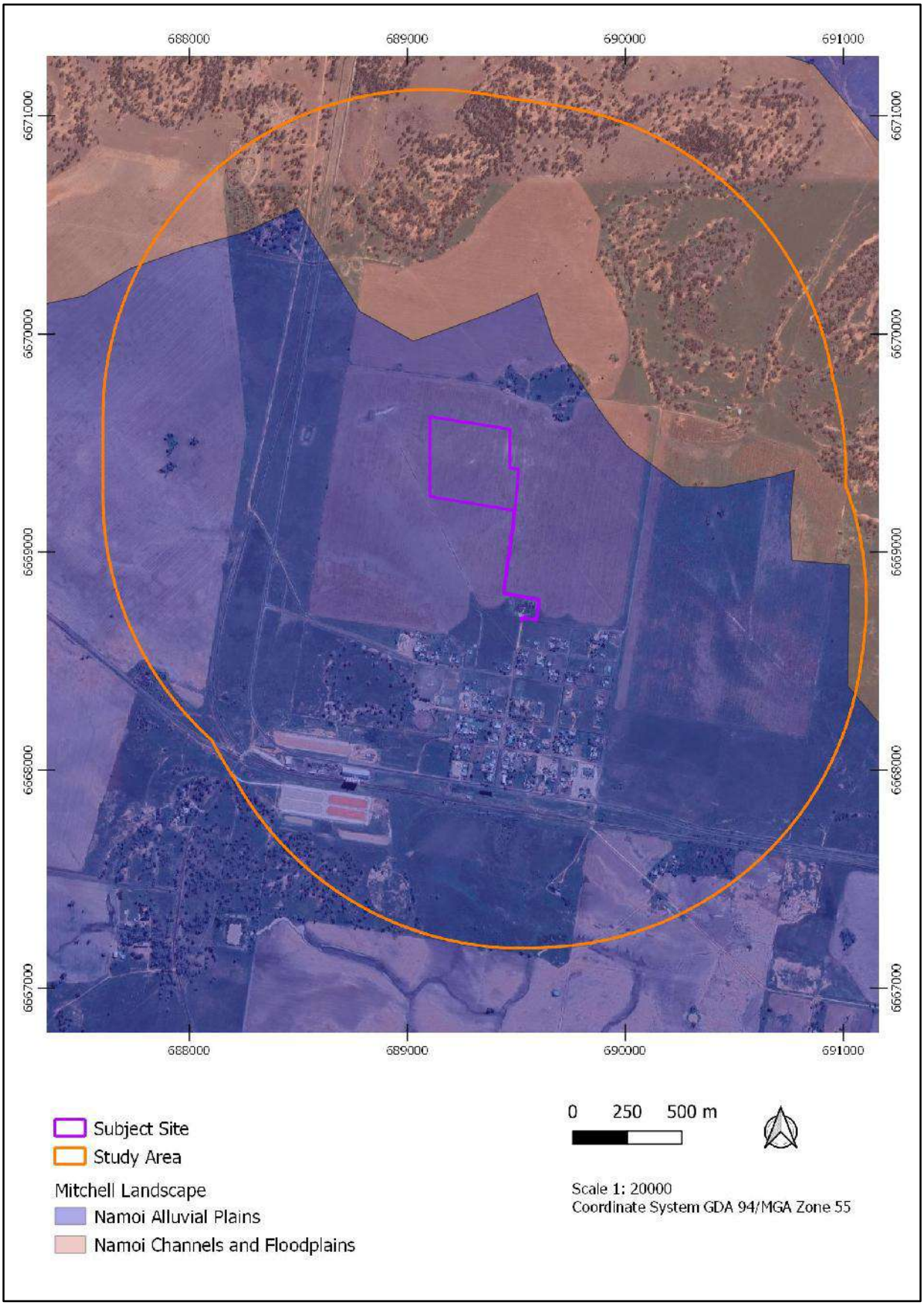


Figure 3-1 Mitchell Landscapes of the study area.

3.1.3 Climate

The study area experiences warm to hot summers, with the highest mean maximum temperature of 41.2 ^{O}C experienced in January. Winters are cool, with temperatures in the coolest month (August) ranging from a minimum of 3.8 ^{O}C to a mean maximum of 22.6 ^{O}C(Bureau of Meteorology, 2020). Temperature records were taken from Collarenebri Station.

A mean of 541 mm of rainfall is recorded annually at Pilliga (Lowana) Station (Bureau of Meteorology, 2020). Although most rain on average is recorded roughly over the summer period (October to January), BOM statistics show that minimal rainfall has been recorded over these months in 2019. The years 2019 and 2018 are considerably below the mean rainfall stated above.

The mean climate statistics recorded at Pilliga (Lowana) and Collarenebri Stations (052074 and 048031 respectively) are presented in **Figure 3-2**.

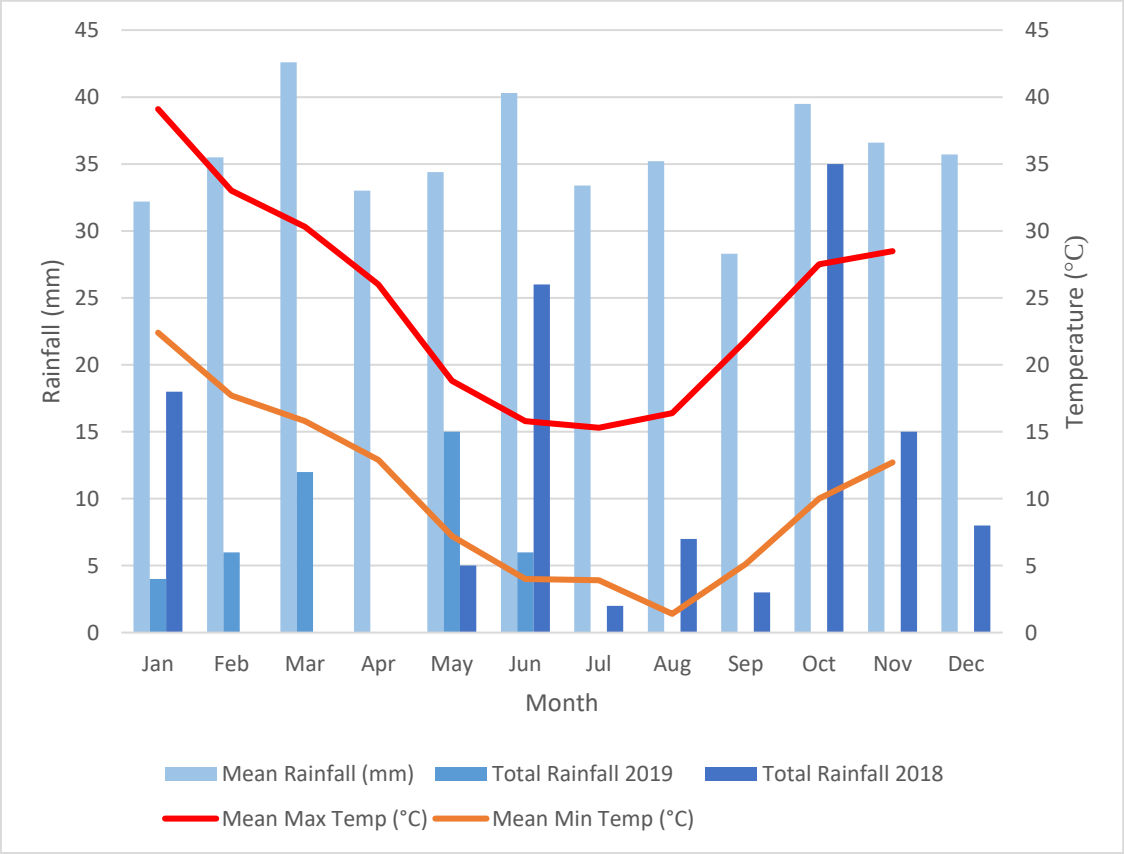


Figure 3-2 Climate data for Burren Junction, showing mean minimum and maximum temperatures and rainfall (Bureau of Meteorology, 2018).

Weather during the field survey was hot and in direct sun, reaching a high of 41.2 ^{O}C. No rainfall had been recorded for the previous 15 days and the area had received below the mean rainfall in the preceding months (**Figure 3.2)**.

3.1.4 Environmentally sensitive areas

The presence and/or proximity of environmentally sensitive areas relative to the subject site is summarised in **Table 3-3.**

Table 3-3. Presence and/or proximity of environmentally sensitive areas.

Environmental Considerations	In the study area?
Land identified on the Biodiversity Values Map under the *NSW BC Act 2016*	No
Area of Outstanding Biodiversity Value (AOBV) under the *NSW BC Act 2016*	No
Critical habitat nationally?	No
An area reserved or dedicated under the *National Parks and Wildlife Act 1974*?	No
Is the proposal located within land reserved or dedicated within the meaning of the *Crown Lands Act 1989* for preservation of other environmental protection purposes?	No
A World Heritage Area?	No
Environmental Protection Zones in environmental planning instruments?	No
Lands protected under SEPP (Koala Habitat Protection) 2019?	Yes
Lands protected under SEPP Sydney Drinking Water Catchment?	No
Land identified as wilderness under the *Wilderness Act 1987* or declared as wilderness under the *National Parks and Wildlife Act 1974*?	No
Aquatic reserves dedicated under the *Fisheries Management Act 1994*?	No
Aquatic Threatened Ecological Community?	No
Wetland areas dedicated under the Ramsar Wetlands Convention?	No
Land subject to a conservation agreement under the *National Parks and Wildlife Act 1974*?	No
Land identified as State Forest under the *Forestry Act 1916*?	No
Acid sulphate area?	No
Protected riparian habitat?	No
Mapped Key Fish Habitat?	No

3.1.5 Watercourses

No watercourses occur within the subject site (based on DPI mapping), however four occur within the study area. Three of the watercourses are listed as Strahler 1st order and one is listed as a Strahler 2nd order watercourse. All four are unnamed, non-perennial, minor and type 2.

Two of the watercourses (to the east and south of the subject site) are mapped as Key Fish Habitat (KFH) by the Department of Primary Industries (Fisheries) (DPI Fisheries) (**Figure 3-4**). However, the works associated with the proposal will not impact these.

3.1.6 Groundwater dependant ecosystems

Groundwater plays an important ecological role in directly and indirectly supporting terrestrial and aquatic ecosystems. Groundwater sustains terrestrial and aquatic ecosystems by supporting vegetation and providing discharge to channels, lacustrine and palustrine wetlands, and both the estuarine and marine environment. Aquifer ecosystems are inherently groundwater dependent (QLD Department of Environment and Heritage Protection, 2017).

The Bureau of Meteorology (BoM) Atlas of Groundwater Dependant Ecosystems (Bureau of Meteorology, 2017) has not identified any terrestrial or aquatic groundwater dependant ecosystems as occurring within the subject site, though moderate potential GDE does occur within the wider study area (**Figure 3-4**). The proposal does not include extraction of ground water or any other works expected to impact the GDE mapped.

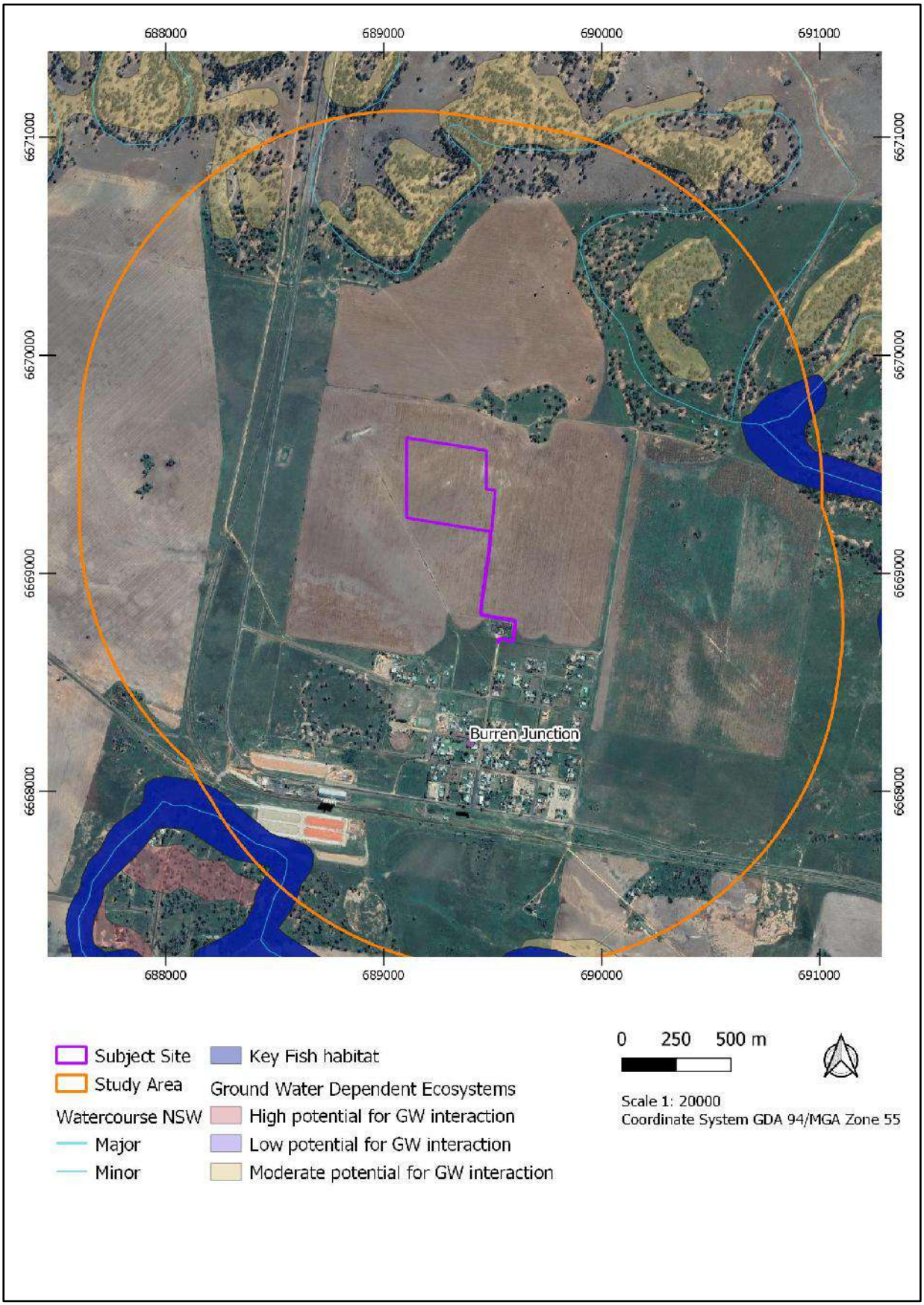


Figure 3-3 Watercourses and groundwater dependant ecosystems of the study area.

3.2 Native vegetation

3.2.1 Vegetation survey plots

Vegetation survey plots were distributed across the study area according to the BAM. A considerable area of the subject site was unvegetated, with evidence of recent cropping. The vegetated area of the study area comprised of native and non-native vegetation which has regrown since ploughing, see **Table 3-4** for a complete flora list. However, the level of regeneration of native vegetation was not sufficient for this area to qualify as a listed Plant Community Type (PCT). Four BAM plots were conducted and the area of unvegetated land mapped (**Figure 2-4**).

The locations of these plots, accompanying photographs and data sheets completed in the field are provided in **Appendix B**.

3.2.2 Flora species observed

Prevailing dry conditions at the time of the survey meant that many species that might be present under more favourable conditions may not have been detected.

Nine species were recorded during the field survey (**Table 3-4**). Of these, four were native. African Boxthorn, *Lycium ferocissimum*, the listed High Threat Weed was recorded at numerous locations across the site. The shrub species Wilga, *Geijera parviflora*, was recorded in the study area; however, only along the fence margin and is unlikely to be impacted by the development. No threatened flora species were recorded.

Table 3-4 Flora recorded during field investigation.

Growth Form*	Species Name	Common Name	Exotic+	High Threat Weed
SG	*Salsola australis*	Roly-poly	N	-
FG	*Sigesbeckia australiensis*		N	-
SG	*Chamaesyce prostrata*	Caustic weed	E	-
GG	*Atriplex spp.*	Saltbush	N	-
SG	*Lycium ferocissimum**	African boxthorn	E	P
FG	*Verbena bonariensis*	Verbena	E	-
GG	*Silybum marianum*	Milkthistle	E	-
FG	*Cucumis myriocarpus**	Gooseberry gourd	E	-
GG	*Geijera parviflora**	Wilga	N	-

FG = Forb, GG = Grass and Grass-like, SG = Shrub, TG = Tree

+N = Native, P = Priority Weed, W = Introduced

Four of the flora species recorded were non-native, and one naturalised species (**Appendix C**). These were African Boxthorn, *Lycium ferocissimum,* Verbena, *Verbena bonariensis*, Milkthistle, *Silybum marianum*, Caustic weed, *Chamaesyce prostrata* and Gooseberry Gourde, *Cucumis myriocarpus*. Though all species, as with the native species, occurred at very low abundance.

One species listed under the *Biosecurity Act 2015* as a Priority Weed for all of NSW was recorded – *Lycium Ferocissimum* (African Boxthorn). This shrub was recorded along the fenceline and was sporadically dispersed throughout the subject site.

Under the above legislation, the proponent has a General Biosecurity Duty to prevent, eliminate or minimise any biosecurity risk African Boxthorn may pose, including preventing its spread to new areas.

The proponent is also required to mitigate the risk of new weeds being introduced to their land and prevent spread to new areas.

3.2.3 Vegetation communities

The study site was listed as non-native vegetation with evidence of recent cropping, with deep fallows present within the clay soil.

Within the study area surrounding the subject site the following vegetation communities are present;

- Candidate Native Grasslands
- Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plaisn region
- Coolibah open woodland wetland with chenopod/grassy ground cover on grey and brown clay floodplains
- Poplar Bax – Belah woodland on clay-loam soils on alluvial plains of north-central NSW
- Poplar Box – Coolibah floodplain woodland on light clay soil mainly in the Darling Riverine Plains Bioregion
- Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion

The vegetation mapping was correct, with the cropped agricultural land containing recently regenerated native and non-native forb species. The fenced edges had some Wilga (*Geijera parviflora*) and African Box thorn (*Lycium ferocissimum*).

3.3 Fauna

3.3.1 Fauna species observed

Few fauna species were recorded during the site visit, with the exception of two common avian species (listed in **Table 3-5**). This result is likely impacted by the high heat recorded on the day of field investigation as well as the preceding dry conditions.

Table 3-5 Fauna species recorded during field investigation

Species Name	Common Name	Detection Method
Aves		
	Artamidae	
Cracticus tibicen	Australian Magpie	Observed
	Corvidae	
Corvus coronoides	Australian Raven	Observed

3.3.2 Important habitat attributes

No rock outcrops, caves and overhangs or wetlands occur within the subject site, nor do watercourses. No habitat trees are present, with no wooded vegetation occurring within the subject site. The lack of wooded vegetation as well as other habitat features, indicates that the subject site is unlikely to be utilised by threatened fauna such as hollow using microbats and avian species. The lack of ground cover vegetation indicates that the subject is unlikely to provide suitable foraging habitat for threatened fauna.

The deep cracking soils recorded within the subject is a habitat requirement of the BC Act listed Endangered Five-clawed Worm-skink (*Anomalopus mackayi*). There is one historic recorded of the species within the study area from 1961 (see **Appendix E** for full assessment of potential impacts).

3.4 Threatened biodiversity

3.4.1 Aquatic ecological communities

Endangered aquatic ecological communities are determined by the NSW Fisheries Scientific Committee and listed on under the FM Act as aquatic systems that have undergone a very large reduction in ecological function, geographic distribution or genetic diversity, and continue to be affected by a threatening process (NSW Department of Primary Industries, 2016).

The proposal does not have the capacity to affect any watercourse identified as Key Fish Habitat or mapped as part of any threatened fish's distribution. It does not require a permit from or approval from DPI Fisheries or DPI water to affect or modify.

3.4.2 Threatened ecological communities

There are no Threatened Ecological Communities (TECs) identified as occurring within the subject site.

3.4.3 Threatened flora

Review of the Threatened Species Profiles database has found that 19 threatened flora species listed under the BC Act and EPBC Act are predicted or are known to occur in the Darling Riverine Plains Bioregion, Castlereagh-Barwon subregion (**Appendix A**). No threatened flora has been recorded from within 10 km of the subject site. Based on proximity of past records, habitat requirements and the results of the field survey (**Appendix D** & **F**), four species were assessed as having potential to occur on the subject site. These are listed in **Table 3-6.**

Table 3-6. Threatened plant species with potential to be impacted by the proposal

Species Name	Common Name	NSW Status*	Comm. Status.+	Records within 10 km	Nature of Occurrence
Swainsona murrayana	Slender Darling Pea	V,P	V	No	Potential
Commersonia procumbens		V	V	No	Potential
Sida rohlenae	Shrub Sida	VE1		No	Potential

Digitaria porrecta	Finger Panic Grass	E1		No	Potential

***Listed under the BC Act, where E1 = Endangered, P = Protected and V = Vulnerable**

⁺Listed under the EPBC Act, where V = Vulnerable

The field survey of the site did not detect any of the predicted threatened flora species. It is unlikely that any threatened flora species occurs on the subject site due to the recent agricultural use of the subject site, including ploughing.

3.4.4 Threatened fauna

Review of the Threatened Species Profiles database found 76 BC Act and EPBC Act listed listed threatened fauna species are predicted or known to occur in the Darling Riverine Plains Bioregion, Castlereagh-Barwon subregion (**Appendix A**). Four have been recorded from within 10 km of the subject site.

An EPBC Act protected matters search for the 10 km search area identified 11 EPBC listed threatened fauna, eight migratory species and 14 marine species that are predicted or known to occur within 10 km of the subject

The likelihood of the occurrence and impact to all BC Act and EBPC Act listed threatened and migratory fauna species was assessed according to methods described in Section 2.7.

No threatened fauna species were recorded during the field surveys. However, two species were assessed as potentially occurring based on habitat requirements. These species are listed in **Table 3-7.**

Table 3-7. BC Act and EPBC Act listed threatened species assessed as potentially occurring on the subject site.

Scientific Name	Common Name	NSW status	Comm. status	Record within 10 km	Likelihood of Occurrence
Anomalopus mackayi	Five-clawed Worm-skink	E1,P	E	Yes	Potential
Lophochroa leadbeateri	Major Mitchell's Cockatoo	V, P, 2		No	Potential

***Listed under the BC Act, where E1 = Endangered, P = Protected and V = Vulnerable**

⁺Listed under the EPBC Act, where V = Vulnerable, CE = Critically Endangered, J = JAMBA, K = ROKAMBA

4 Impact Assessment

4.1 Aquatic habitat

No watercourses run though the subject site. The proposal is unlikely to impact the four watercourses that occur within the wider study area. The closest of which is approximately 796 m to the north west of the subject site.

4.2 Koala Habitat Protection SEPP

State Environmental Planning Policy Koala Habitat Protection has been released as of 1st March 2020. The Koala Habitat Protection SEPP encourages the conservation and management of koala habitat to ensure populations remain in their present range and the trend of population decline is reversed. The SEPP is made under the EP&A Act and replaces the previous State and Environmental Planning Policy No 44 – Koala Habitat Protection (SEPP 44).

The SEPP (Koala Habitat Protection) aims to encourage the 'proper conservation and management of areas of natural vegetation that provide habitat for Koalas to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline'.

The SEPP only applies to developments under Part 4 of the EP&A Act, specifically excluding Part 5 activities. Therefore, the SEPP can be applied to the proposal.

Under the SEPP the subject site is assessed to determine if the land meets the definition of 'core koala habitat', which means:

a) An area of land where Koalas are present, or
b) An area of land
    i. Which has been assessed by a suitably qualified and experienced person in accordance with the guidelines as being highly suitable Koala habitat, and
    ii. Where Koalas have been recorded as being present in the previous 18 years

The subject site occurs within Walgett LGA, which is listed under schedule 1 of the SEPP. The wooded habitat within Lot 13 DP753926, outside of the subject site or the survey area, is identified on the Koala Development Application Map as 'highly suitable Koala habitat' that is likely to be occupied by Koalas. As the field investigation was conducted prior to the release of the SEPP, the wooded vegetation to the north of the Lot was not investigated to determine if it contained Koala feed tree species listed under schedule 2 of the SEPP. There are four records of Koalas within 10 km of the subject site, however these are all from 2004, and therefore not considered recent. However, they are within the 18 years, and therefore are considered in this assessment (as 18 years equates three generations).

As the development does not trigger the BOS and will not require clearing of native vegetation, especially Koala feed tree species, nor will it prevent the movement of Koalas across the landscape as it is not causing the fragmentation or isolation of woodland patches, the development falls under Tier 1 of the Koala Habitat Protection SEPP and is considered to have 'low or no impact'. Current mitigation measures associated with Tier 1 assessments are not applicable to this development, as the development will not impede Koala movement across the landscape nor contribute to the introduction of disease to a potential population. Therefore, the

preparation of a Koala Assessment Report (KAR), in conjunction with the prepared BAR is not required.

4.3 Walgett Shire Council LEP

Walgett LGA does not have a Local Environment Plan Biodiversity Values Map available. No watercourses will be impacted during the proposed works, nor will clearing of native vegetation or native tress. Therefore, the predicted impacts to endemic biodiversity is considered negligible.

The proposal will not conflict with the aims of the Walgett LGA LEP which are as follows;

I. This Plan aims to make local environmental planning provisions for land in Walgett in accordance with the relevant standard environmental planning instrument under section 3.20 of the Act.

II. The particular aims of this Plan are as follows-

A. to encourage the proper management of the natural and human-made resources of Walgett by protecting, enhancing and conserving the following-

III. productive agricultural land,

IV. timber, minerals, soils, water and other natural resources,

V. areas of significance for nature conservation,

VI. areas of high scenic or recreational value,

VII. places and buildings of archaeological or heritage significance,

A. to manage the urban areas of Walgett by strengthening retail hierarchies and employment opportunities, promoting appropriate tourism development and guiding affordable urban form,

B. to minimise land use conflict,

C. to ensure that development is appropriate to the capability of the land,

D. to provide a choice of living opportunities,

E. to ensure that the efficiency of arterial roads is not adversely affected by development on adjacent land,

F. to ensure that development has proper regard to the environmental constraints of the land and minimises impacts on biodiversity, water resources and natural landforms.

4.4 Native vegetation

The subject site is mapped as non-native vegetation. This was confirmed by the field assessment. Subsequently, there is no significant impact to native vegetation associated with the proposal.

4.5 Threatened ecological communities

There are no Threatened Ecological Communities on the subject site. Therefore, none will be impacted by the proposal.

4.6 Threatened species

The BC Act tests of significance and EPBC Act test of significance have been completed for all threatened flora and fauna species listed as occurring within 10 km. The results of these tests are set out in full in **Appendix E** and **G**. The study finds that, based on the lack of vegetation within the subject site, the habitat requirements of potentially occurring threatened species and survey results, no significant impact (i.e. serious or irreversible) is expected.

4.7 Indirect impacts

The main impacts of the proposal are expected to be contained within the subject site, provided there is adequate demarcation of the construction area and identification of all non-construction areas.

The site is situated within the peri-urban and industrial outskirts of the town of Burren Junction and surrounded by land used for primary production. It is situated on land currently used as agricultural land and will not result in any fragmentation or isolation of habitat remnants (as the habitat remnants are already highly fragmented and isolated by surrounding agricultural land and roads).

Disturbance from machinery and construction activities will occur, such as noise and dust.

4.8 Key threatening processes

Key Threatening Processes (KTP's) at the NSW State and Federal level will be exacerbated by the proposal. A summary of the proposed impacts relating to the relevant key threatening processes is given in **Table 4-2**. **Appendix H** lists all KTPs and includes explanations as to why many have been assessed as not being present in the study area or exacerbated by the proposal.

Threats exacerbated by poor biosecurity controls will be potentially exacerbated by the proposal. However, implementing the measures for preventing the introduction and spread of weeds described in Section 5.3, this potential is removed.

Table 4-1. Key Threatening Processes exacerbated by the proposal.

Name	NSW status	Comm. status	KTP Present in Study Area?	Exacerbated by Proposal?
Anthropogenic Climate Change	KTP	KTP	YES	**NEGLIGIBLE** Some unavoidable emissions that contribute to climate change will occur from construction machinery
Infection of native plants by *Phytophthora cinnamomi*	KTP	KTP	POTENTIAL	**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks
Invasion and establishment of exotic vines and scramblers	KTP		POTENTIAL	**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks

Name	NSW status	Comm. status	KTP Present in Study Area?	Exacerbated by Proposal?
Invasion and establishment of Scotch Broom (*Cytisus scoparius*)	KTP		POTENTIAL	**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks
Invasion of native plant communities by African Olive *Olea europaea* subsp. *cuspidata*	KTP		POTENTIAL	**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks.
Invasion of native plant communities by *Chrysanthemoides monilifera*	KTP		POTENTIAL	**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks

4.9 Matters of National Environmental Significance

Under the environmental assessment provisions of the EPBC Act, Matters of National Environmental Significance (MNES) and impacts on Commonwealth land are required to be considered to assist in determining whether the proposal should be referred to the Australian Government DoEE.

The EPBC Act protected matters search has identified three wetlands of international importance, four TECs, 13 threatened species, eight migratory species and 14 marine species that could possibly occur in the study area (**Appendix A**). A summary of these matters and whether the proposal is likely to impact them is provided in **Table 4-3.** It is concluded that no MNES will be impacted by the proposal and therefore no referral will be required.

Table 4-2. Impacts to matters of national environmental significance.

Factor	Potential impact
Any impact on a World Heritage property?	NIL
Any impact on a National Heritage place?	NIL
Any impact on a wetland of international importance?	NIL
Any impact on a listed threatened species or communities?	NIL (**Appendix F**).
Any impacts on listed migratory species?	NIL (**Appendix F**)
Any impact on a Commonwealth marine area?	NIL
Does the proposal involve a nuclear action (including uranium mining)?	NIL
Additionally, any impact (direct or indirect) on Commonwealth land?	NIL
Any impact on a water resource, in relation to coal seam gas development and large coal mining development?	NIL

5 Impact mitigation

The following recommendations have been proposed to inform the design of the project and further survey of the study area.

5.1 Avoid impact

The proposal avoids impacts to biodiversity by occurring largely within a site used for intensive agriculture, containing minimal vegetation. The proposal does not include the removal of wooded vegetation.

The proposal design has been considered to ensure that any impact to biodiversity is minimised. An initial 54.58 ha survey area was investigated before finalisation of the 14.34 ha subject site.

The following impact avoidance methods are also recommended to be implemented:

- To avoid impacts associated with weed introduction and spread, vehicles will arrive and leave clean.

5.2 Minimise impact

Proposed impact minimisation measures:

- The construction works and vehicle access to the construction site is to be constrained to the minimum area practical and will use as few entry/exit points as possible.
- Material stockpiles, equipment and machinery storage and laydown areas will be consolidated within a defined impact area to minimise the overall impact footprint.
- The impact footprint will be minimised by restricting access across the site to the defined development footprint, including avoiding unnecessary vehicle and personnel movements across unused land.

5.3 Mitigate and offset

The proposal does not involve clearing of native vegetation communities and will not have any significant (i.e. serious and irreversible) impact on threatened species or communities. The proponent is therefore not required to enter into the Biodiversity Offset Scheme (BOS).

However, impact on biodiversity from the proposal can never be zero. Therefore, measures, or environmental safeguards, should be implemented to mitigate these impacts. These measures are detailed in **Table 5-1.** In addition, any change to project design may require further assessment against BOS entry thresholds.

Table 5-1. Summary of impact mitigation measures and environmental safeguards.

Impact	Environmental safeguards	Responsibility	Timing
General	1. All personnel would be inducted to be aware that any impacts to threatened species have legislative consequences if deliberately or accidentally impacted without development approval under the EP&A Act. Evidence of all personnel receiving an induction would be kept on file (signed induction sheets etc.). 2. Any change in design outside the assessed impact footprint within the study area will require further ecological survey.	Proponent	Pre-construction, construction, operation
Clearing and prevention of over-clearing	3. All personnel would be inducted to be aware that any stand of native vegetation outside the subject site has legislative consequences if deliberately or accidentally impacted without approval under Part 4 or 5 of the EP&A Act. Evidence of all personnel receiving an induction would be kept on file (signed induction sheets etc).	Constructor	Pre-construction and construction
Threatened Species	4. Provide identification resources for personnel to enable identification of threatened species that might occur on the work site, i.e. those flora species listed in Sections 3.4.3. 5. Keep records of any threatened species recorded on site during works. 6. Construction work to occur only during daylight hours to avoid indirect impacts on threatened fauna such as vehicle strikes. 7. If unexpected threatened fauna or flora species are discovered, stop works immediately and contact a suitably qualified ecologist for advice. 8. If any of the threatened flora species listed in section 3.4.3 are found within the subject site during construction, construction is to stop in the immediate area and contact a qualified ecologist for advice and management guidance.	Constructor	Pre-construction and construction
Soil Management	9. Install erosion and sediment controls in line with Landcom's Managing Urban Stormwater, Soils & Construction Guidelines (The Blue Book. Landcom 2004) are required. 10. Erosion and sedimentation controls are to be checked and maintained on a regular basis. This includes clearing of sediment from behind barriers and after heavy rainfall events. 11. Erosion and sediment control measures are not to be removed until the works are complete and areas are stabilised. 12. Stockpile topsoil (if any) removed to be redistributed across site at completion of construction 13. Implement dust suppression activities.	Constructor	Pre-construction and construction
Introduction and spread of priority weeds and pathogens	14. Construction crew should be briefed on the identification of priority weeds that occur on site during inductions (see Section 3.2). 15. If declared priority weeds are identified during construction they would be managed according to the requirements of the *Biosecurity Act 2016*. 16. Construction machinery (bulldozers, excavators, trucks, loaders and graders) would	Constructor	Construction

	be cleaned before entering and exiting work sites. 17. Machinery will be inspected by designated personnel to ensure no soil, mud, vegetative material present. Records of inspections to be maintained. 18. All pesticides would be used in accordance with the requirements on the label. Any person carrying out pesticide (including herbicide) application would be trained to do so and have the proper certificate of completion/competency or statement of attainment issued by a registered training organisation. 19. Keep records of any weed control activities that take place.		
Increased risk of fire	20. Where possible, avoid 'hot work' during days of extreme fire danger.	Constructor	Construction
Introduction of invasive fauna	21. All food scraps and rubbish are to be appropriately disposed of in sealed receptacles to prevent providing forage habitats for foxes, rats, dogs and cats.	Constructor	Construction

6 Summary and conclusions

The following summary of findings and conclusions are provided to assist with ongoing project planning.

- The subject site is mapped as non-native vegetation and contains minimal vegetation, with the majority of the site bare soil that has undergone agricultural activities such as ploughing.
- The subject site does not provide significant habitat for any BC Act or EPBC Act threatened flora and/or fauna or any EPBC Act listed migratory species. No threatened species were recorded on the subject site. Minimal habitat features were recorded within the subject site. The cracking soils may provide habitat for some reptiles, however due to the high level of disturbance of the site this is not likely. If impact mitigation measures are implemented, there will be no significant impact from the proposal on any threatened species.
- There is no potential Koala habitat within the subject site. However, as the subject Lot is mapped as containing 'highly suitable Koala habitat' that is likely to be occupied by Koalas on the Koala Development Application Map, the Koala Habitat Protection SEPP has been considered. As the proposal is considered a Tier 1, 'low or no direct impacts' the preparation of a Koala Assessment Report is not required.
- The proposal does not impact on or occur within any Protected Riparian Habitat or Key Fish Habitat or threatened fish habitat.
- The proposal does not impact Groundwater Depended Ecosystems.
- As no identified plant community types (PCTs) will be cleared in association with the proposed development (on a minimum lot size of 400 ha; therefore a clearing threshold of <1 ha) and no significant impact to threatened species will occur, it is not necessary to enter the Biodiversity Offset Scheme.

7 References

Australian Government Department of Sustainability, Environment, Water, Population and Communities. (2012). Interim Biogeographic Regionalisation for Australia (IBRA), Version 7 (Subregions). Canberra.

Australian Government Department of the Environment and Energy. (2018, August 1). *Species Profile and Threats Database - Natural Grasslands of the Murray Valley Plains*. Retrieved from Australian Government Department of the Environment and Energy: http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=117

Birdlife Australia. (2018). *Black-eared Cuckoo*. Retrieved from Bird Profiles, Birdlife Australia: http://www.birdlife.org.au/bird-profile/black-eared-cuckoo

Birdlife Australia. (2019). *Gull-billed Tern*. Retrieved from Bird Profile, Birdlife Australia: http://www.birdlife.org.au/bird-profile/gull-billed-tern

Bureau of Meteorology. (2017, November). *Atlas of Groundwater Dependent Ecosystems*. Retrieved from Australian Government Bureau of Meteorology: http://www.bom.gov.au/water/groundwater/gde/map.shtml

Bureau of Meteorology. (2019). *Climate Statistics for Australian Locations: Dubbo Airport Station.* Retrieved from Australian Government Bureau of Meteorology: http://www.bom.gov.au/climate/data/?ref=ftr

Department of the Environment . (2018a). *Euphrasia arguta*. Retrieved from Species Profile and Threats Database, Department of the Environment, Canberra: http://www.environment.gov.au/sprat

Department of the Environment. (2015). *Draft referral guidelines for 14 birds listed as migratory spceies under the EPBC Act.* Commonwealth of Australia.

Department of the Environment. (2018b). *Philotheca ericifolia*. Retrieved from Species Profile and Threata Database, Department of the Environment, Canberra: http://www.environment.gov.au/sprat

Department of the Environment. (2018c). *Swainsona recta*. Retrieved from Species Profile and Threats Database, Department of the Environment, Canberra: http://www.environment.gov.au/sprat

Department of the Environment. (2018d). *Ardea ibis*. Retrieved from Species Profile and Threats Database, Department of the Environment, Canberra: http://www.environment.gov.au/sprat

Department of the environment. (2018e). *Ardea alba*. Retrieved from Species Profile and Threats Database, Department of the Environment, Canberra: http://www.environment.gov.au/spra

Keith, D. (2004). *Ocean Shores to Desert Dunes: the Vegetation of New South Wales and the ACT.* Department of Environment and Conservation NSW.

Mitchell. (2002). *Descriptions for NSW (Mitchell) Landscapes.* NSW: Department of Envrionment and Climate Change.

Morgan, G., & Terrey, J. (1992). *Nature conservation in western New South Wales .* Sydney: National Parks Association.

New South Wales Government. (2018). *Dubbo Regional Local Environmental Plan 2011.* Retrieved from NSW Legislation: https://www.legislation.nsw.gov.au/#/view/EPI/2011/580/maps

NSW Department of Environment, Climate Change and Water. (2010). *Mitchell Landscapes NSW OEH v3 2011.* Biregional Assessment Source Dataset.

NSW Department of Primary Industries. (2016, August 12). *Listed threatened species, populations and ecological communities*. Retrieved from NSW Government Department of Primary Industries: http://www.dpi.nsw.gov.au/fishing/species-protection/conservation/what-current

NSW Office of Environment & Heritage. (2016). *Brigalow Belt South - landform*. Retrieved February 28, 2017, from http://www.environment.nsw.gov.au/bioregions/BrigalowBeltSouth-Landform.htm

NSW Office of Environment & Heritage. (2017, June 30). *Threatened ecological communities*. Retrieved from NSW Government Office of Environment & Heritage: http://www.environment.nsw.gov.au/threatenedspecies/hometec.htm

OEH. (2016). *Regional Scale State Vegetation Map: Border Rivers Gwydir/Namoi Region 2.0.* Sydney: NSW Office of Environment and Heritage OEH. (2016a).

OEH. (2017). *Biodiversity Assessment Method.* Sydney: Office of Environment and Heritage for the NSW Government.

OEH. (2018b). *NSW Vegetation Information System: Classification*. Retrieved from NSW Office of Environment & Heritage: http://www.environment.nsw.gov.au/NSWVCA20PRapp/default.aspx

OEH. (2018c, September 3). *Bioregions of NSW*. Retrieved from Office of Environment and Heritage: https://www.environment.nsw.gov.au/bioregions/SouthEasternHighlands-Subregions.htm

QLD Department of Environment and Heritage Protection. (2017). *Groundwater dependent ecosystems*. Retrieved from Queensland Government Department of Environment and Heritage Protection: https://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/aquatic-ecosystems-natural/groundwater-dependent/

Royal Botantic Gardens and Domain Trust. (2019). *PlantNET*. (Royal Botanic Gardens and Domain Trust) Retrieved 2015, from PlantNET - The Plant Information Network System of The Royal Botanic Gardens and Domain Trust: http://plantnet.rbgsyd.nsw.gov.au

Thackway, R., & Cresswell, I. (1995). *An interim biogeographic regionalisation for Australia: a framework for setting priorities in the National Reserves System Cooperative Program.* Canberra: Australian Nature Conservation Agency.

Appendix A: Database search results

EPBC Protected matters report

Australian Government
Department of the Environment and Energy

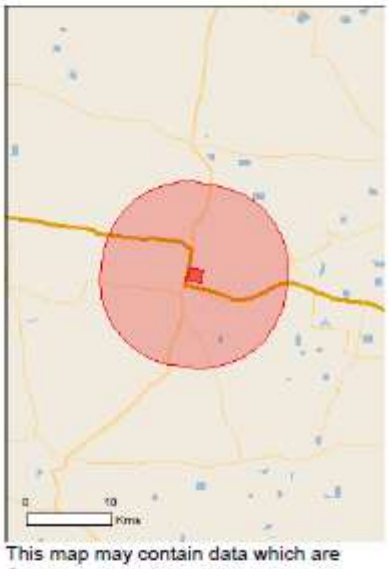
EPBC Act Protected Matters Report

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.

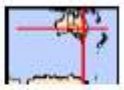
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 03/12/19 14:45:46



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates
Buffer: 10.0Km



Summary

Matters of National Environmental 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.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	13
Listed Migratory Species:	8

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.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	14
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	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:	None
Regional Forest Agreements:	None
Invasive Species:	19
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Banrock station wetland complex	900 - 1000km upstream
Riverland	800 - 900km upstream
The coorong, and lakes alexandrina and albert wetland	1000 - 1100km

Listed 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
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community likely to occur within area
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community likely to occur within area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Nyctophilus corbeni		
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Plants		
Dichanthium setosum		
bluegrass [14159]	Vulnerable	Species or species habitat may occur within area
Swainsona murrayana		
Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Anomalopus mackayi		
Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat known to occur within area

Listed 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		
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [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 - Australian Telecommunications Commission

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		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
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 within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		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

Extra Information

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, 2001.

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		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
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
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
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		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		
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		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 obligations 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.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

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.

Coordinates

-30.085487 148.957416,-30.087789 148.973681,-30.098594 148.971664,-30.096589 148.954969,-30.08545 148.957416,-30.085487 148.957416

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
-Department of Land and Resource Management, Northern Territory
-Department of Environmental 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, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-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.

BioNET Atlas search – threatened species predicted to occur within the Darling Riverine Plains, Castlereagh-Barwon subregion

***NSW Status: P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.**

⁺Comm. Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable.

⁻Number of Records: P = predicted to occur.

Class	Scientific Name	Common Name	NSW status	Comm. status	Records
Amphibia	*Crinia sloanei*	Sloane's Froglet	V,P	E	1
Reptilia	*Anomalopus mackayi*	Five-clawed Worm-skink	E1,P	V	4
Reptilia	*Aspidites ramsayi*	Woma	V,P		P
Reptilia	*Furina dunmalli*	Dunmall's Snake	P	V	P
Reptilia	*Hoplocephalus bitorquatus*	Pale-headed Snake	V,P		11
Aves	*Anseranas semipalmata*	Magpie Goose	V,P		68
Aves	*Oxyura australis*	Blue-billed Duck	V,P		6
Aves	*Stictonetta naevosa*	Freckled Duck	V,P		16
Aves	*Geophaps scripta scripta*	Squatter Pigeon (southern subspecies)	E4A,P	V	P
Aves	*Phaps histrionica*	Flock Bronzewing	E1,P		1
Aves	*Apus pacificus*	Fork-tailed Swift	P	C,J,K	9
Aves	*Hirundapus caudacutus*	White-throated Needletail	P	C,J,K	12
Aves	*Ephippiorhynchus asiaticus*	Black-necked Stork	E1,P		55
Aves	*Ardea ibis*	Cattle Egret	P	C,J	73
Aves	*Botaurus poiciloptilus*	Australasian Bittern	E1,P	E	5
Aves	*Plegadis falcinellus*	Glossy Ibis	P	C	222
Aves	*Circus assimilis*	Spotted Harrier	V,P		20
Aves	*^^Erythrotriorchis radiatus*	Red Goshawk	E4A,P,2	V	1
Aves	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V,P	C	73
Aves	*Hamirostra melanosternon*	Black-breasted Buzzard	V,P,3		2
Aves	*Hieraaetus morphnoides*	Little Eagle	V,P		22
Aves	*Lophoictinia isura*	Square-tailed Kite	V,P,3		8
Aves	*^^Falco hypoleucos*	Grey Falcon	E1,P,2		4
Aves	*Falco subniger*	Black Falcon	V,P		19
Aves	*Grus rubicunda*	Brolga	V,P		125
Aves	*Ardeotis australis*	Australian Bustard	E1,P		22
Aves	*Burhinus grallarius*	Bush Stone-curlew	E1,P		25

Aves	*Rostratula australis*	Australian Painted Snipe	E1,P	E	9
Aves	*Actitis hypoleucos*	Common Sandpiper	P	C,J,K	1
Aves	*Calidris acuminata*	Sharp-tailed Sandpiper	P	C,J,K	41
Aves	*Gallinago hardwickii*	Latham's Snipe	P	C,J,K	77
Aves	*Limosa limosa*	Black-tailed Godwit	V,P	C,J,K	2
Aves	*Tringa nebularia*	Common Greenshank	P	C,J,K	16
Aves	*Tringa stagnatilis*	Marsh Sandpiper	P	C,J,K	33
Aves	*Glareola maldivarum*	Oriental Pratincole	P	C,J,K	1
Aves	*Gelochelidon nilotica*	Gull-billed Tern	P	C	15
Aves	*Hydroprogne caspia*	Caspian Tern	P	C,J	10
Aves	*^^Calyptorhynchus banksii samueli*	Red-tailed Black-Cockatoo (inland subspecies)	V,P,2		44
Aves	*^^Calyptorhynchus lathami*	Glossy Black-Cockatoo	V,P,2		73
Aves	*^^Lophochroa leadbeateri*	Major Mitchell's Cockatoo	V,P,2		6
Aves	*Neophema pulchella*	Turquoise Parrot	V,P,3		4
Aves	*Polytelis swainsonii*	Superb Parrot	V,P,3	V	78
Aves	*Ninox connivens*	Barking Owl	V,P,3		47
Aves	*Tyto longimembris*	Eastern Grass Owl	V,P,3		6
Aves	*Tyto novaehollandiae*	Masked Owl	V,P,3		1
Aves	*Merops ornatus*	Rainbow Bee-eater	P	J	155
Aves	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	V,P		94
Aves	*^^Amytornis modestus inexpectatus*	Thick-billed Grasswren (central NSW subspecies)	E4A,P,2		P
Aves	*Chthonicola sagittata*	Speckled Warbler	V,P		4
Aves	*Certhionyx variegatus*	Pied Honeyeater	V,P		K
Aves	*Epthianura albifrons*	White-fronted Chat	V,P		5
Aves	*Grantiella picta*	Painted Honeyeater	V,P	V	54
Aves	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	V,P		20
Aves	*Pomatostomus halli*	Hall's Babbler	V,P		P
Aves	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	V,P		259
Aves	*Daphoenositta chrysoptera*	Varied Sittella	V,P		10
Aves	*Pachycephala inornata*	Gilbert's Whistler	V,P		P
Aves	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	V,P		26
Aves	*Melanodryas cucullata cucullata*	Hooded Robin (south-eastern form)	V,P		42
Aves	*Petroica boodang*	Scarlet Robin	V,P		2
Aves	*Petroica phoenicea*	Flame Robin	V,P		P
Aves	*Stagonopleura guttata*	Diamond Firetail	V,P		37
Mammalia	*Antechinomys laniger*	Kultarr	E1,P		P

Mammalia	*Dasyurus maculatus*	Spotted-tailed Quoll	V,P	E	6
Mammalia	*Sminthopsis macroura*	Stripe-faced Dunnart	V,P		6
Mammalia	*Phascolarctos cinereus*	Koala	V,P	V	67
Mammalia	*Bettongia lesueur graii*	Boodie, Burrowing Bettong (mainland)	E4,P	X	1
Mammalia	*Lagorchestes leporides*	Eastern Hare-wallaby	E4,P	X	2
Mammalia	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V,P		40
Mammalia	*Ozimops lumsdenae*	Northern Free-tailed Bat	V,P		2
Mammalia	*Setirostris eleryi*	Bristle-faced Free-tailed Bat	E1,P		P
Mammalia	*Chalinolobus picatus*	Little Pied Bat	V,P		31
Mammalia	*Nyctophilus corbeni*	Corben's Long-eared Bat	V,P	V	P
Mammalia	*Vespadelus baverstocki*	Inland Forest Bat	V,P		1
Mammalia	*Rattus villosissimus*	Long-haired Rat	V,P		2
Insecta	*^^Jalmenus eubulus*	Pale Imperial Hairstreak	E4A,2		P
Flora	*Tylophora linearis*		V	E	P
Flora	*Lepidium monoplocoides*	Winged Peppercress	E1	E	1
Flora	*Stenopetalum velutinum*	Velvet Thread-petal	E4		2
Flora	*Atriplex infrequens*	A saltbush	V	V	P
Flora	*Convolvulus tedmoorei*	Bindweed	E1		P
Flora	*Cyperus conicus*		E1		1
Flora	*Desmodium campylocaulon*	Creeping Tick-trefoil	E1		17
Flora	*Swainsona murrayana*	Slender Darling Pea	V	V	8
Flora	*Swainsona recta*	Small Purple-pea	E1	E	2
Flora	*Acacia jucunda*	Yetman Wattle	E1		P
Flora	*^^Myriophyllum implicatum*		E4A,2		P
Flora	*Commersonia procumbens*		V	V	2
Flora	*Sida rohlenae*	Shrub Sida	E1		7
Flora	*Phyllanthus maderaspatensis*		E1		35
Flora	*Platyzoma microphyllum*	Braid Fern	E1,3		P
Flora	*Digitaria porrecta*	Finger Panic Grass	E1		6
Flora	*Homopholis belsonii*	Belson's Panic	E1	V	P
Flora	*Polygala linariifolia*	Native Milkwort	E1		P
Flora	*Philotheca ericifolia*		P	V	2

BioNET Atlas search – threatened ecological communities predicted to occur within the Darling Riverine Plains, Castlereagh-Barwon subregion

***NSW Status: P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.**

+Comm. Status: CE=Critically endangered, E=Endangered, V=Vulnerable.

Kingdom	Scientific Name	NSW status	Comm. status	Records
Community	Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions	E3	E	K
Community	Brigalow-Gidgee woodland/shrubland in the Mulga Lands and Darling Riverine Plains Bioregions	E3	E	P
Community	Carbeen Open Forest Community in the Darling Riverine Plains and Brigalow Belt South Bioregions	E3		K
Community	Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands Bioregions	E3	E	K
Community	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	E3		K
Community	Marsh Club-rush sedgeland in the Darling Riverine Plains Bioregion	E4B		K
Community	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	E3	E	K

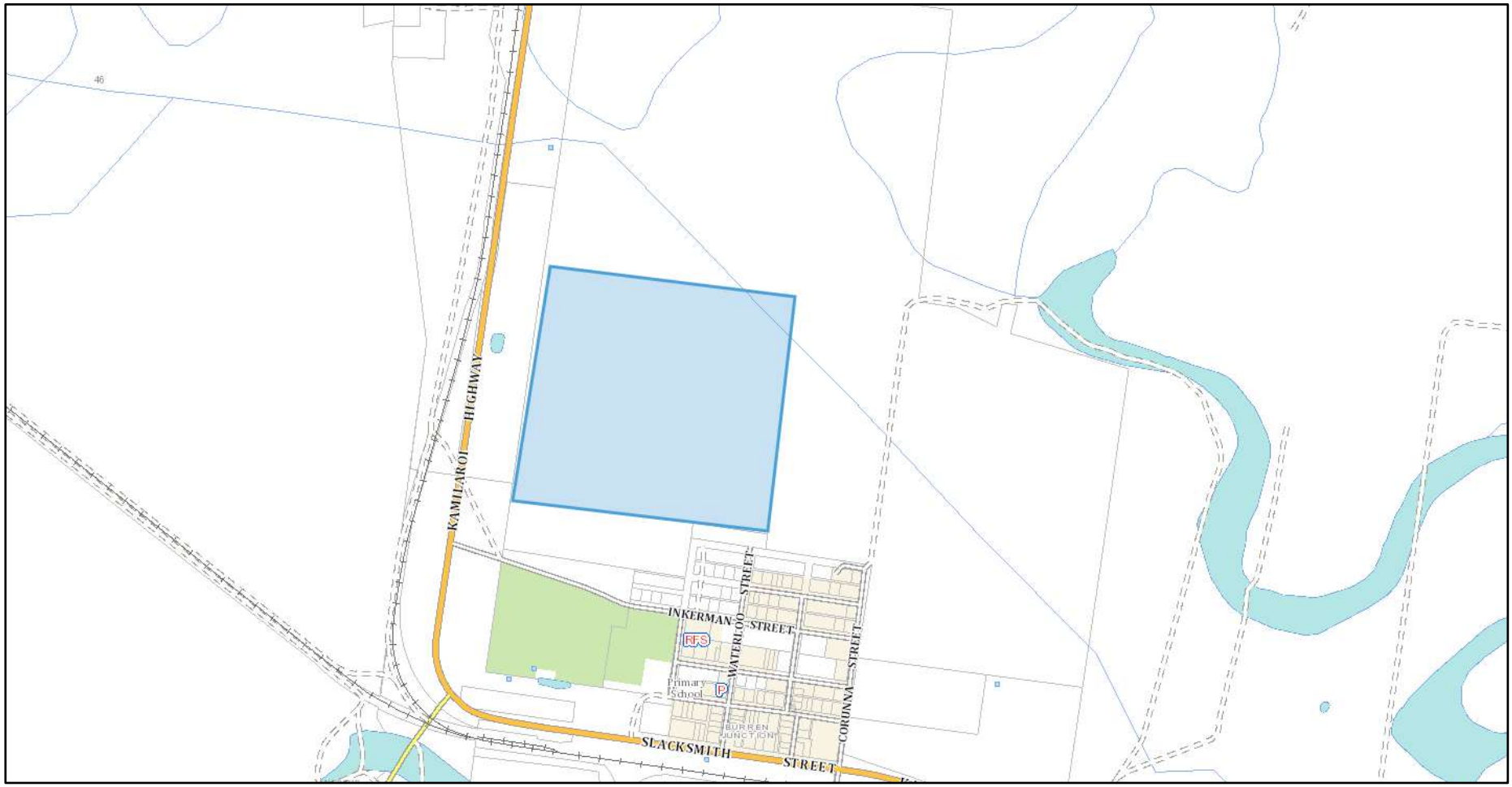
BioNET Atlas search – key threatening processes predicted to occur within the Darling Riverine Plains, Castlereagh-Barwon subregion

Kingdom	Scientific Name	NSW status	Comm. status	Records
Threat	Alteration of habitat following subsidence due to longwall mining	KTP		P
Threat	Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		P
Threat	Anthropogenic Climate Change	KTP	KTP	P
Threat	Bushrock removal	KTP		P
Threat	Clearing of native vegetation	KTP	KTP	P
Threat	Competition and grazing by the feral European Rabbit, Oryctolagus cuniculus (L.)	KTP	KTP	P
Threat	Competition and habitat degradation by Feral Goats, Capra hircus Linnaeus 1758	KTP	KTP	P
Threat	Competition from feral honey bees, Apis mellifera L.	KTP		P
Threat	Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP		P
Threat	Herbivory and environmental degradation caused by feral deer	KTP		P
Threat	High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		P
Threat	Importation of Red Imported Fire Ants Solenopsis invicta Buren 1972	KTP	KTP	P
Threat	Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	P
Threat	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	P
Threat	Infection of native plants by Phytophthora cinnamomi	KTP	KTP	P
Threat	Introduction of the Large Earth Bumblebee Bombus terrestris (L.)	KTP		P
Threat	Invasion and establishment of exotic vines and scramblers	KTP		P
Threat	Invasion and establishment of Scotch Broom (Cytisus scoparius)	KTP		P
Threat	Invasion and establishment of the Cane Toad (Bufo marinus)	KTP	KTP	P
Threat	Invasion of native plant communities by African Olive Olea europaea subsp. cuspidata (Wall. ex G. Don) Cif.	KTP		P
Threat	Invasion of native plant communities by Chrysanthemoides monilifera	KTP		P
Threat	Invasion of native plant communities by exotic perennial grasses	KTP		P
Threat	Invasion of the Yellow Crazy Ant, Anoplolepis gracilipes (Fr. Smith) into NSW	KTP		P
Threat	Invasion, establishment and spread of Lantana (Lantana camara L. sens. Lat)	KTP		P
Threat	Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	P
Threat	Loss of Hollow-bearing Trees	KTP		P
Threat	Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		P
Threat	Predation and hybridisation by Feral Dogs, Canis lupus familiaris	KTP		P
Threat	Predation by Gambusia holbrooki Girard, 1859 (Plague Minnow or Mosquito Fish)	KTP		P
Threat	Predation by the European Red Fox Vulpes Vulpes (Linnaeus, 1758)	KTP	KTP	P
Threat	Predation by the Feral Cat Felis catus (Linnaeus, 1758)	KTP	KTP	P

Threat	Predation, habitat degradation, competition and disease transmission by Feral Pigs, Sus scrofa Linnaeus 1758	KTP	KTP	P
Threat	Removal of dead wood and dead trees	KTP		P

Biodiversity Values Map.

Areas marked as orange are areas of high biodiversity value (note there are no highlighted areas of high biodiversity). The blue polygon indicates the subject site.



Appendix B: Vegetation plot data

Plot Name	Easting (MGA Zone 55)	Northing (MGA Zone 55)	Photographs	
BJ01	-30.0901	148.9608		

BJ02	-30.0933	148.9657		
BJ03	-30.0910	148.9650		

BJ04	-30.0900	148.9632		

Site photo 1.

Areas of no vegetation were not sampled by BAM plot, however the majority of the site contained no vegetative cover (**Site photo 1**).

Appendix C: Field survey results

Flora species list

These species were identified on the subject site during the November 2019 field survey. Species names with an asterisk were identified outside of the survey BAM plots conducted (BJ01 – BJ04) but were retained to provide detailed data for the survey area.

*FG = Forb, GG = Grass and Grass-like, SG = Shrub, TG = Tree

+N = Native, P = Priority Weed, W = Introduced

Growth Form*	Species Name	Common Name	Exotic+	High Threat Weed
SG	*Salsola australis*	Roly-poly	N	-
FG	*Sigesbeckia australiensis*		N	-
SG	*Chamaesyce prostrata*	Caustic weed	E	-
GG	*Atriplex spp.*	Saltbush	N	-
SG	*Lycium ferocissimum**	African boxthorn	E	P
FG	*Verbena bonariensis*	Verbena	E	-
GG	*Silybum marianum*	Milkthistle	E	-
FG	*Cucumis myriocarpus**	Gooseberry gourd	E	-
GG	*Geijera parviflora**	Wilga	N	-

Fauna species list.

Minumal fauna species were observed on the field site during the site visit 20th November 2019.

Species Name	Common Name	Detection Method
Aves		
	Artamidae	
Cracticus tibicen	Australian Magpie	Observed
	Corvidae	
Corvus coronoides	Australian Raven	Observed

Appendix D: Habitat Assessment for threatened species and communities predicted to occur

Habitat assessment table for BC Act listed threatened species and migratory species within the Lower Slopes IBRA subregion, NSW Bionet records and incorporating sightings of species within 10 km. Unless otherwise indicated, habitat information has been taken from OEH Threatened Biodiversity Profiles, available at https://www.environment.nsw.gov.au/threatenedSpeciesApp/ as well as the Species Profile and Threat Database, SPRAT Profile, available at https://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl. Likelihood of occurrence has been determined based on professional judgement, observations made during field surveys and information available in species profiles and other sources.

NSW Status: P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.

Commonwealth Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable.

THREATENED FLORA						
Species Name	**Common Name**	**NSW Status**	**Comm. Status**	**Record within 10 km**	**Likelihood of Occurrence**	**Potential Impact**

THREATENED FLORA						
Tylophora linearis		V	E	No	Majority of *T. linearis* records occur in the central western region. Records from Goonoo, Pillaga West, Pillaga East, Bibblewindi, Cumbil and Eura State Forests, Coolbaggie NR, Goobang NP and Beni SCA. Also has been recorded Hiawatha State Forest near West Wyalong in the south and there are old records as far north as Crow Mountain near Barraba and near Glenmorgan in the western Darling Downs. Grows in dry scrub and open forest. Recorded from low-altitude sedimentary flats in dry woodlands of *Eucalyptus fibrosa, Eucalyptus sideroxylon, Eucalyptus albens, Callitris endlicheri, Callitris glaucophylla* and *Allocasuarina luehmannii*. Also grows in association with *Acacia hakeoides, Acacia lineata, Melaleuca uncinata, Myoporum species* and *Casuarina species*. **Low - Subject site within predicted distribution. Not associated with disturbance or chenopod vegetation. No records within 10 km.**	**Unlikely**

THREATENED FLORA						
Lepidium monoplocoides	Winged Peppercress	E1	E	No	Widespread in the semi-arid western plains regions of NSW. Collected from widely scattered localities, with large numbers of historical records but few recent collections. There is a single collection from Broken Hill and only two collections since 1915, the most recent being 1950. Occurs on seasonally moist to waterlogged sites, on heavy fertile soils, with a mean annual rainfall of around 300-500 mm. Predominant vegetation is usually an open woodland dominated by *Allocasuarina luehmannii* (Bulloak) and/or eucalypts, particularly *Eucalyptus largiflorens* (Black Box) or *Eucalyptus populnea* (Poplar Box). The field layer of the surrounding woodland is dominated by tussock grasses. Recorded in a wetland-grassland community comprising *Eragrostis australasicus, Agrostis avenacea, Austrodanthonia duttoniana, Homopholis proluta, Myriophyllum crispatum, Utricularia dichotoma* and *Pycnosorus globosus*, on waterlogged grey-brown clay. Also recorded from a *Maireana pyramidata* shrubland. **Low - Subject site within predicted distribution. Species not associated with disturbance. No records within 10 km.**	**Unlikely**
Stenopetalum velutinum	Velvet Thread-petal	E4		No	*Stenopetalum velutinum* is currently distributed in Queensland, Western Australia, South Australia, and the Northern Territory. It is presumed extinct in NSW. **Low – Species is assumed extinct in NSW. No records within 10 km.**	**Unlikely**

THREATENED FLORA						
Atriplex infrequens	A saltbush	V	V	No	Confined to the NSW far western plains. North western records recorded from east of Tibooburra, south east of Brewarrina and near Wilcannia with isolated collections from the Pooncarie area in the south. *Atriplex infrequens* is associated with broad drainage tracts, clay flats and possibly occasionally inundated habitats. Very little ecological information is available for this species so its critical habitat components can only be speculated as relatively undisturbed and ungrazed drainage lines and flats. **Low - Subject site within predicted distribution. Minimal ecological information available, though one *Atriplex* species was recorded during field investigation. No records within 10 km.**	**Unlikely**
Convolvulus tedmoorei	Bindweed	E1		No	This species has been recorded from northern inland areas of South Australia, south-western Queensland and western NSW. There are few known records from NSW: two areas on the Murrumbidgee and Darling River floodplains in central-western NSW. Grows in self-mulching grey clay soils on the floodplains of the Darling and Murrumbidgee Rivers. Disturbance regimes are not known, although the species may require periodic flooding of its habitat to maintain the wet conditions suitable for seed set and germination. **Low - Subject site within predicted distribution. No records within 10 km.**	**Unlikely**

THREATENED FLORA						
Cyperus conicus		E1		No	Occurs rarely in the Pilliga area of NSW and is also found across the tropics. Grows in open woodland on sandy soil. Habitats include floodplains, creek beds and banks, swamps, run-on areas and various watercourses, near or in dams and bores, and in vegetation communities such as *Melaleuca* swamps, open Box woodland and sedgelands. Soils are usually sandy or silty and damp to wet. **Low - Subject site within predicted distribution. Associated vegetation communities not present. No records within 10 km.**	**Unlikely**
Desmodium campylocaulon	Creeping Tick-trefoil	E1		No	Occurs chiefly in the Collarenebri and Moree districts in the north-western plains of NSW. In NSW Desmodium campylocaulon grows on cracking black soils in the Narrabri, Moree and Walgett local government areas. Associated species include *Acacia harpophylla, Astrebla pectinata* and *Sorghum, Dichanthium* and *Panicum* species. **Low - Subject site within known distribution. Associated vegetation communities not present. Though the associated soil type is present. No records within 10 km.**	**Unlikely**

THREATENED FLORA						
Swainsona murrayana	Slender Darling Pea	V	V	No	Found throughout NSW, it has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill and in various localities between Dubbo and Moree. The species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. Grows in a variety of vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with *Maireana* species. Plants have been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated. **Moderate - Subject site within known distribution. The species is associated with clay-based soils. No records within 10 km.**	**Potential**
Swainsona recta	Small Purple-pea	E1	E	No	Populations still exist in the Queanbeyan and Wellington-Mudgee areas. Over 80% of the southern population grows on a railway easement. Before European settlement Small Purple-pea occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum *Eucalyptus blakelyi,* Yellow Box *E. melliodora,* Candlebark Gum *E. rubida* and Long-leaf Box *E. goniocalyx.* Grows in association with understorey dominants that include Kangaroo Grass *Themeda australis*, poa tussocks *Poa spp.* and spear-grasses *Austrostipa spp.* **Low – Subject site within known distribution. Not associated with the vegetation communities present. No records within 10 km.**	**Unlikely**

THREATENED FLORA						
Acacia jucunda	Yetman Wattle	E1		No	Yetman Wattle is found in the Yetman district near the Queensland border on the North West Slopes of NSW. Mainly restricted to dry eucalypt woodland communities on sandy to sandy-loam soils. In Queensland, the species is found in dry ranges on loams or clay-loams in eucalypt communities. Associated species at the NSW sites include *Acacia polybotrya* and *Callitris endlicheri.* **Low - Subject site within predicted distribution. Associated vegetation communities not present. No records within 10 km.**	**Unlikely**
^^*Myriophyllum implicatum*		E4A,2		No	This species was previously thought to be extinct in NSW; however, the plant was recently discovered in the Pilliga National Park, south of Narrabri. Occurs in moist situations, extending away from fresh water. Recent population found in a large open partly inundated gilgai depression on cracking clay soil. **Low - Subject site within predicted distribution. Associated vegetation communities not present. No records within 10 km.**	**Unlikely**

THREATENED FLORA						
Commersonia procumbens		V	V	No	Endemic to NSW, mainly confined to the Dubbo-Mendooran-Gilgandra region, but also in the Pilliga and Nymagee areas. Grows in sandy sites, often along roadsides. Recorded in *Eucalyptus dealbata* and *Eucalyptus sideroxylon* communities, *Melaleuca uncinata* scrub, under mallee eucalypts with a *Calytrix tetragona* understorey, and in a recently burnt Ironbark and Callitris area. Also, in *Eucalyptus fibrosa subsp. nubila, Eucalyptus dealbata, Eucalyptus albens* and *Callitris glaucophylla* woodlands north of Dubbo. The species is often found as a pioneer species of disturbed habitats. It has been recorded colonising disturbed areas such as roadsides, the edges of quarries and gravel stockpiles and a recently cleared easement under power lines. **Moderate - Subject site within predicted distribution. Associated vegetation communities not present however is associated with disturbance. No records within 10 km.**	**Potential**
Sida rohlenae	Shrub Sida	E1		No	In NSW it has been recorded south of Enngonia, south of Bourke and north-west of Coonamble. Shrub Sida grows on flood-out areas, creek banks and at the base of rocky hills. NSW specimens have been found along roadsides in hard red loam to sandy-loam soils. The species can become locally abundant and is often more common in disturbed sites. **Moderate - Subject site within known distribution. Not associated with chenopod communities but is associated with disturbance. No records within 10 km.**	**Potential**

THREATENED FLORA						
Phyllanthus maderaspatensis		E1		No	Recorded for the Brewarrina and Collarenebri districts in the north-western plains of NSW. Grows in floodplain areas on heavy soils and may rely on appropriate and intermittent rainfall and flooding events for its survival. The species is described as being a summer-growing annual and is thus dependent on seasonal conditions. Often associated with open grasslands and eucalypt woodlands in or near creek beds, and grassy flats and levees near watercourses. **Low - Subject site within known distribution. Not associated with chenopod communities or disturbance. No records within 10 km.**	**Unlikely**
Platyzoma microphyllum	Braid Fern	E1, 3		No	Recorded in NSW only in the Yetman district at Bruxner Highway growing as one localised patch in deep sandy soil, with *Leptospermum* species, *Brachyloma daphnoides* and *Lomandra* species. Grows in sandy or swampy soils, or in clay soils adjacent to streams and lagoons and subject to periodic flooding. **Low- Subject site within predicted distribution. Not associated with chenopod communities or disturbance. No records within 10 km.**	**Unlikely**

THREATENED FLORA						
Digitaria porrecta	Finger Panic Grass	E1		No	In NSW it is found on the North West Slopes and Plains, from near Moree south to Tambar Springs and from Tamworth to Coonabarabran. Most frequently recorded associated tree species are *Eucalyptus albens* and *Acacia pendula.* Common associated grasses and forbs in NSW sites include *Austrostipa aristiglumis, Enteropogon acicularis, Cyperus bifax, Hibiscus trionum* and *Neptunia gracilis.* Native grassland, woodlands or open forest with a grassy understorey, on richer soils. Fire, livestock grazing and trampling, and physical disturbance of habitat by road and farm machinery are types of disturbances known to occur in *Digitaria porrecta* sites. **Moderate - Subject site within known distribution. The species is associated with disturbed sites. No records within 10 km.**	**Potential**
Homopholis belsonii	Belson's Panic	E1	V	No	It occurs on the northwest slopes and plains of NSW, mostly between Wee Waa, Goondiwindi and Glen Innes. Grows in dry woodland (e.g. Belah) often on poor soils, although sometimes found in basalt-enriched sites north of Warialda and in alluvial clay soils. Habitat and ecology appear to be poorly known. **Low – Subject site within predicted distribution. Not associated with disturbance. No records within 10 km.**	**Unlikely**

THREATENED FLORA						
Polygala linariifolia	Native Milkwort	E1		No	Found on the NSW north coast near Casino and Kyogle, and there is an isolated population in far western NSW near Weebah Gate, west of Hungerford. In the Pilliga area, this species has been recorded in Fuzzy Box woodland, White Cypress Pine-Bulloak - Ironbark woodland, Rough-barked Apple riparian forb-grass open forest, and Ironbark - Brown Bloodwood shrubby woodland. Other associated species include *Eucalyptus trachyphloia, Eucalyptus sphaerocarpa, Angophora floribunda, Angophora leiocarpa, Tristania suaveolens, Allocasuarina torulosa* and *Wahlenbergia* species in the understorey. **Low - Subject site within predicted distribution. Not associated with disturbance. No records within 10 km.**	**Unlikely**

THREATENED FLORA						
Philotheca ericifolia		P	V	No	Known only from the upper Hunter Valley and Pilliga to Peak Hill districts of NSW. The records are scattered over a range of over 400 km between West Wyalong and the Pilliga Scrub. Site localities include Pilliga East State Forest, Goonoo State Forest, Hervey Range, Wingen Maid Nature Reserve, Toongi, Denman, Rylestone district and Kandos Weir. Grows chiefly in dry sclerophyll forest and heath on damp sandy flats and gullies. It has been collected from a variety of habitats including heath, open woodland, dry sandy creek beds, and rocky ridge and cliff tops. Associated species include *Melaleuca uncinata, Eucalyptus crebra, E. rossii, E. punctata, Corymbia trachyphloia, Acacia triptera, A. burrowii, Beyeria viscosa, Philotheca australis, Leucopogon muticus* and *Calytrix tetragona.* **Low - Subject site within known distribution. Not associated with disturbance. No records within 10 km.**	**Unlikely**

THREATENED FAUNA						
Species Name	**Common Name**	**NSW Status**	**Comm. Status**	**Record within 10km**	**Likelihood of Occurrence**	**Potential Impact**

THREATENED FAUNA						
Crinia sloanei	Sloane's Froglet	V,P	E	No	Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats. Can be associated with highly disturbed areas with no or limited native vegetation including road verges, table drains, road embankments, ploughed paddocks etc. **Low – Subject site within known distribution. Species is associated with disturbance however the subject site is not zoned as flood prone and therefore unlikely to be come inundated. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Anomalopus mackayi	Five-clawed Worm-skink	E1,P	V	Yes	The species have a patchy distribution on the North West Slopes and Plains of north-east NSW and south-east Queensland, from the Ashford area west to Mungindi and Walgett in NSW and north to Dalby in Queensland. Close to or on the lower slopes of slight rises in grassy White Box woodland on moist black soils, and River Red Gum-Coolibah-Bimble Box woodland on deep cracking loose clay soils. May also occur in grassland areas and open paddocks with scattered trees. Live in permanent deep tunnel-like burrows and deep soil cracks, coming close to the surface under fallen timber and litter, especially partially buried logs. **Moderate – Subject site within known distribution. Not associated with disturbance. One historic record from 1961 within the study area.**	Potential
Aspidites ramsayi	Woma	V,P		No	The Woma occurs in north-western NSW, east to about Louth and Bourke. Its range and abundance in south-eastern Australia are considered to be undergoing serious decline. Terrestrial, inhabiting subtropical to temperate deserts and sandy plains, as well as dunefields and deep cracking black soil plains in semi-arid areas. Occurs in hummock grasslands, shrublands or woodlands and shelters in animal burrows, hollow logs or under grass hummocks. **Low – Subject site within predicted distribution. Species is associated is associated with disturbance. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Furina dunmalli	Dunmall's Snake	P	V	No	The species is thought to potentially extend into inland north-eastern NSW from the south-east interior of QLD. Preferred habitat is Brigalow forest and woodland with fallen timber and ground litter, growing on cracking clay soils and clay loam soils. Also occurs in eucalypt and Callitris woodland with fallen timber and ground litter. **Low – Subject site within predicted distribution. Species is associated with disturbance. No records within 10 km.**	Unlikely
Hoplocephalus bitorquatus	Pale-headed Snake	V, P		No	In NSW it has historically been recorded from as far west as Mungindi and Quambone on the Darling Riverine Plains, across the north west slopes, and from the north coast from Queensland to Sydney. Found mainly in dry eucalypt forests and woodlands, cypress forest and occasionally in rainforest or moist eucalypt forest. Is feeding and refuge in trees. Is also associated with waterbodies, rivers, lakes, streams however not wetlands. **Low – Subject site within known distribution. Species is associated with disturbance. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Anseranas semipalmata	Magpie Goose	V, P		No	The Magpie Goose is still relatively common in the Australian northern tropics but had disappeared from south-east Australia by 1920 due to drainage and overgrazing of reed swamps used for breeding. Since the 1980s there have been an increasing number of records in central and northern NSW. Vagrants can follow food sources to south-eastern NSW. Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. Equally at home in aquatic or terrestrial habitats; often seen walking and grazing on land; feeds on grasses, bulbs and rhizomes. Activities are centred on wetlands, mainly those on floodplains of rivers and large shallow wetlands formed by run-off; breeding can occur in both summer and winter dominated rainfall areas and is strongly influenced by water level; most breeding now occurs in monsoonal areas; nests are formed in trees over deep water; breeding is unlikely in south-eastern NSW. **Low – Subject site within known distribution. Species is associated with disturbance. The site does not contain waterbodies as is required by the species. No records within 10 km.**	Unlikely/\

THREATENED FAUNA						
Oxyura australis	Blue-billed Duck	V, P		No	It is widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas. Species is associated with water bodies, rivers, lakes, streams (not wetlands) and floodplain related vegetation communities. **Low – Subject site within known distribution. Species is not associated with disturbance. The site does not contain waterbodies as is required by the species. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Stictonetta naevosa	Freckled Duck	V, P		No	The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and Victoria during such times. Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. **Low – Subject site within known distribution. Species is not associated with disturbance. The site does not contain waterbodies as is required by the species. No records within 10 km.**	Unlikely
Geophaps scripta scripta	Squatter Pigeon (southern subspecies)	E4A, P	V	No	Found from north Queensland to the North West Slopes of NSW and extending down to the Liverpool Plains and Dubbo. Today they are very rare in the southern parts of their range. Grassy woodlands and plains, preferring sandy areas and usually close to water. **Low – Subject site within predicted distribution. Species is not associated with disturbance. The site does not contain waterbodies as is required by the species. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Phaps histrionica	Flock Bronzewing	E1, P		No	Patchily distributed and rarely observed in NSW. It is likely to occur north of Broken Hill and west of Cobar when conditions are right. The extensive Mitchell grasslands around Brewarrina and Goodooga should also provide suitable habitat. Observed in a variety of vegetation types, including grassy plains, saltbush, spinifex and open mulga. Its preferred habitat is tussock grassland, particularly Mitchell grassland. They need to drink daily and may be seen adjacent to water, e.g. at stock tanks, bore drains and pools in water courses. **Low – Subject site within known distribution. Species is not associated with disturbance. The site does not contain waterbodies as is required by the species. No records within 10 km.**	Unlikely
Apus pacificus	Fork-tailed Swift	P	C, J, K	No	The Fork-tailed Swift is a non-breeding visitor to all states and territories of Australia. In NSW, the Fork-tailed Swift is recorded in all regions. Many records occur east of the Great Divide; however, a few populations have been found west of the Great Divide. These are widespread but scattered further west of the line joining Bourke and Dareton. Sightings have been recorded at Milparinka, the Bulloo River and Thurloo Downs. **Low – Subject site within predicted distribution. Species predominantly aerial. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Hirundapus caudacutus	White-throated Needletail	P	C, J, K	No	The White-throated Needletail is generally gregarious when in Australia, sometimes occurring in large flocks, comprising hundreds or thousands of birds, though they are occasionally seen singly, and occasionally occur in mixed flocks with other aerial insectivores. In eastern Australia, it is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. **Low – Subject site within predicted distribution. Species predominantly aerial. No records within 10 km.**	Unlikely
Ephippiorhynchus asiaticus	Black-necked Stork	E1, P		No	n Australia, Black-necked Storks are widespread in coastal and subcoastal northern and eastern Australia, as far south as central NSW (although vagrants may occur further south or inland, well away from breeding areas). In NSW, the species becomes increasingly uncommon south of the Clarence Valley, and rarely occurs south of Sydney. Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries. **Low – Subject site within known distribution. The site does not contain waterbodies as is required by the species. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Ardea ibis	Cattle Egret	P	C, J	No	The Cattle Egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands. It has occasionally been seen in arid and semi-arid regions however this is extremely rare. High numbers have been observed in moist, low-lying poorly drained pastures with an abundance of high grass; it avoids low grass pastures. It has been recorded on earthen dam walls and ploughed fields. The Cattle Egret is known to follow earth-moving machinery and has been located at rubbish tips. It uses predominately shallow, open and fresh wetlands including meadows and swamps with low emergent vegetation and abundant aquatic flora. **Low – Subject site within known distribution. The site does not contain waterbodies as is required by the species. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Botaurus poiciloptilus	Australasian Bittern	E1, P	E	No	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha spp*.) and spikerushes (*Eleocharis spp*.). The species hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. Feeding platforms may be constructed over deeper water from reeds trampled by the bird; platforms are often littered with prey remains. **Low – Subject site within known distribution. The site does not contain waterbodies as is required by the species. No records within 10 km.**	Unlikely
Plegadis falcinellus	Glossy Ibis	P	C	No	Glossy ibises feed in very shallow water and nest in freshwater or brackish wetlands with tall dense stands of emergent vegetation such as reeds, papyrus or rushes) and low trees or bushes. They show a preference for marshes at the margins of lakes and rivers but can also be found at lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, paddies and irrigated farmland. **Low – Subject site within known distribution. The site does not contain waterbodies as is required by the species. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Circus assimilis	Spotted Harrier	V, P		No	Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. **Low – Subject site within known distribution. Species is associated with agricultural land. No records within 10 km.**	Unlikely
^^*Erythrotriorchis radiatus*	Red Goshawk	E4A,P,2	V	No	The species is very rare in NSW, extending south to about 30°S, with most records north of this, in the Clarence River Catchment, and a few around the lower Richmond and Tweed Rivers. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers. **Low – Subject site not within known or predicted distribution. No records within 10 km.**	Absent
Haliaeetus leucogaster	White-bellied Sea-Eagle	V, P	C	No	The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). **Low – Subject site within known distribution. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Hamirostra melanosternon	Black-breasted Buzzard	V,P,3		No	The Black-breasted Buzzard is found sparsely in areas of less than 500mm rainfall, from north-western NSW and north-eastern South Australia to the east coast at about Rockhampton, then across northern Australia south almost to Perth, avoiding only the Western Australian deserts. Lives in a range of inland habitats, especially along timbered watercourses which is the preferred breeding habitat. **Low – Subject site within predicted distribution. No records within 10 km.**	Unlikely
Hieraaetus morphnoides	Little Eagle	V, P		No	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. **Low – Subject site within known distribution. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Lophoictinia isura	Square-tailed Kite	V,P,3		No	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. **Low – Subject site within known distribution. No records within 10 km.**	Unlikely
^^*Falco hypoleucos*	Grey Falcon	E1,P,2		No	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. There are possibly less than 5000 individuals left. Population trends are unclear, though it is believed to be extinct in areas with more than 500mm rainfall in NSW. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. **Low – Subject site within known distribution. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Falco subniger	Black Falcon	V, P		No	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New South Wales are likely to be referable to the Brown Falcon. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres. The Black Falcon occurs as solitary individuals, in pairs, or in family groups of parents and offspring. **Low – Subject site within known distribution. No records within 10 km.**	Unlikely
Grus rubicunda	Brolga	V, P		No	The Brolga was formerly found across Australia, except for the south-east corner, Tasmania and the south-western third of the country. It is still abundant in the northern tropics, but very sparse across the southern part of its range. Though Brolgas often feed in dry grassland or ploughed paddocks or even desert claypans, they are dependent on wetlands too, especially shallow swamps, where they will forage with their head entirely submerged. They feed using their heavy straight bill as a 'crowbar' to probe the ground or turn it over, primarily on sedge roots and tubers. They will also take large insects, crustaceans, molluscs and frogs. **Low – Subject site within known distribution. Associated with waterbodies and highly disturbed areas. However, no preferred habitat (wetlands) within the subject site or greater study area. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Ardeotis australis	Australian Bustard	E1,P		No	The Australian Bustard mainly occurs in inland Australia and is now scarce or absent from southern and south-eastern Australia. In NSW, they are mainly found in the north-west corner and less often recorded in the lower western and central west plains regions. Occasional vagrants are still seen as far east as the western slopes and Riverine plain. Breeding now only occurs in the north-west region of NSW. Mainly inhabits tussock and hummock grasslands, though prefers tussock grasses to hummock grasses; also occurs in low shrublands and low open grassy woodlands; occasionally seen in pastoral and cropping country, golf courses and near dams. Breeds on bare ground on low sandy ridges or stony rises in ecotones between grassland and protective shrubland cover; roosts on ground among shrubs and long grasses or under trees. **Low - Subject site within known distribution. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Burhinus grallarius	Bush Stone-curlew	E1, P		No	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east, it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Feed on insects and small vertebrates, such as frogs, lizards and snakes. Nest on the ground in a scrape or small bare patch. Two eggs are laid in spring and early summer. **Low - Subject site within known distribution. No appropriate forested habitat occurs on the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Rostratula australis	Australian Painted Snipe	E1,P	E	No	The Australian Painted Snipe is restricted to Australia. In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Other important locations with recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. The nest consists of a scrape in the ground, lined with grasses and leaves. Breeding is often in response to local conditions; generally, occurs from September to December. Incubation and care of young is all undertaken by the male only. Forages nocturnally on mudflats and in shallow water. Feeds on worms, molluscs, insects and some plant-matter. **Low - Subject site within known distribution. No appropriate wetland habitat occurs on the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Actitis hypoleucos	Common Sandpiper	P	C,J,K	No	The Common Sandpiper breeds in Europe and Asia. In Australasia it visits New Guinea and Australia, mainly in the north and west. It is less often seen in New Zealand. In Australia, the Common Sandpiper is found in coastal or inland wetlands, both saline or fresh. It is found mainly on muddy edges or rocky shores. During the breeding season in the northern hemisphere, it prefers freshwater lakes and shallow rivers. **Low - Subject site within known distribution. No appropriate wetland habitat occurs on the subject site. No records within 10 km.**	Unlikely
Calidris acuminata	Sharp-tailed Sandpiper	P	C,J,K	No	The Sharp-tailed Sandpiper is a summer migrant from Arctic Siberia, being found on wetlands throughout Australia. It is also found in Indonesia, Papua New Guinea, the Solomon Islands, New Caledonia and New Zealand. It is a vagrant to India, Europe, western North America, Fiji and other parts of the central Pacific region. The Sharp-tailed Sandpiper prefers the grassy edges of shallow inland freshwater wetlands. It is also found around sewage farms, flooded fields, mudflats, mangroves, rocky shores and beaches. Its breeding habitat in Siberia is the peat-hummock and lichen tundra of the high Arctic. **Low - Subject site within known distribution. No appropriate wetland habitat occurs on the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Gallinago hardwickii	Latham's Snipe	P	C,J,K	No	Latham's Snipe breed in Japan and far eastern Russia during the northern hemisphere summer. They migrate south after the breeding season, travelling across Papua New Guinea to winter in eastern Australia. They're range extends throughout Queensland and west of the Great Dividing Range in NSW and Tasmania. Within Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity. Latham's Snipe does not breed within Australian jurisdiction. The breeding range is confined to Japan and far eastern Russia. **Low - The subject site is within the species range, though it is unlikely to utilise this area due to the lack of wetlands. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Limosa limosa	Black-tailed Godwit	V, P	C,J,K	No	The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. The species has been recorded within the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state. Primarily a coastal species. Usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. Further inland, it can also be found on mudflats and in water less than 10 cm deep, around muddy lakes and swamps. Individuals have been recorded in wet fields and sewerage treatment works. Forages for insects, crustaceans, molluscs, worms, larvae, spiders, fish eggs, frog eggs and tadpoles in soft mud or shallow water. **Low - Subject site within known distribution, though it is unlikely to utilise this area due to the lack of wetlands. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Tringa nebularia	Common Greenshank	P	C,J,K	No	The Common Greenshank does not breed in Australia; however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia. The species has been recorded in most coastal regions. It is widespread west of the Great Dividing Range, especially between the Lachlan and Murray Rivers and the Darling River drainage basin, including the Macquarie Marshes, and north-west regions. The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass. Habitats include embayment's, harbours, river estuaries, deltas and lagoons and are recorded less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats. The species forages at wetland edges among sparse vegetation and is known to roost in similar habitat. **Low - Subject site outside the known and predicted distribution, though it is unlikely to utilise this area due to the lack of wetlands. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Tringa stagnatilis	Marsh Sandpiper	P	C,J,K	No	The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and regularly at sewage farms and saltworks. They are recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes. In north Australia they prefer intertidal mudflats. The Marsh Sandpiper is found on coastal and inland wetlands throughout Australia. The species is widespread in coastal Queensland, but few records exist north of Cooktown. It is recorded in all regions of NSW but especially the central and south coasts and (inland) on the western slopes of Great Divide and western plains, however records are constrained by wetlands. **Low - Subject site outside the known and predicted distribution, though it is unlikely to utilise this area due to the lack of wetlands. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Glareola maldivarum	Oriental Pratincole	P	C,J,K	No	Within Australia the Oriental Pratincole is widespread in northern areas, especially along the coasts of the Pilbara Region and the Kimberley Division in Western Australia, the Top End of the Northern Territory, and parts of the Gulf of Carpentaria. It is also widespread but scattered inland, mostly north of 20° S. There are occasional records in southern Australia, at sparsely scattered sites, with records in all states, including an unconfirmed report in Tasmania. The species breeds overseas, spending its non-breeding season within Australia and occasionally New Zealand. **Low - Subject site outside the known and predicted distribution, as the species is typically recorded from northern Australia though isolated populations occur in southern regions. No records within 10 km.**	Unlikely
Gelochelidon nilotica	Gull-billed Tern	P	C	No	Gull-billed Terns are found in freshwater swamps, brackish and salt lakes, beaches and estuarine mudflats, floodwaters, sewage farms, irrigated croplands and grasslands. They are only rarely found over the ocean. The species occurs on all continents except Antarctica. **Low – There is no available distribution map for this Taxon. There is no suitable habitat for the species within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Hydroprogne caspia	Caspian Tern	P	C, J	No	Within NSW the species is widespread east of the Great Divide, mainly in coastal regions, and also in the Riverina and Lower and Upper Western Regions, with occasional records elsewhere. Breeding is recorded from the Menindee Lakes. The Caspian Tern is mostly found in sheltered coastal embayments (harbours, lagoons, inlets, bays, estuaries and river deltas) and those with sandy or muddy margins are preferred. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers and creeks. They also use artificial wetlands, including reservoirs, sewage ponds and saltworks. In offshore areas the species prefers sheltered situations, particularly near islands, and is rarely seen beyond reefs. **Low - Subject site outside of the known and predicted distribution. There is no suitable wetland habitat for the species within the subject site. No records within 10km.**	Unlikely

THREATENED FAUNA						
^^*Calyptorhynchus banksii samueli*	Red-tailed Black-Cockatoo (inland subspecies)	V, P, 2		No	The Red-tailed Black-Cockatoo is the most widespread of the Black-Cockatoos, ranging broadly across much of northern and western Australia as well as western Victoria. In NSW, two subspecies occur, one in north-eastern NSW and an inland subspecies. The Red-tailed Black-Cockatoo (inland subspecies) is known to occur around watercourses and overflows of the Darling, Paroo, Bogan, Macquarie and Barwon Rivers extending in an arc along the Darling River from Wentworth (though rare south of Menindee) in the south to Bourke and thence through to Brewarrina in the north. It extends east to Walgett and perhaps Boggabilla on the Barwon and south through to the Macquarie Marshes. Red-tailed Black-Cockatoos are found in a wide variety of habitats. Prefer *Eucalyptus* forest and woodlands, particularly river red gum and coolabah lined water courses. In the arid zone usually occur mainly near eucalypts along larger watercourses and associated Acacia and Casuarina woodlands nearby. Also utilise grasslands, scrublands, wetlands and vegetation on floodplains. **Low - Subject site is within known distribution. There is no forested habitat within the subject site, nor floodplains. No records within 10km.**	Unlikely

THREATENED FAUNA						
^^*Calyptorhynchus lathami*	Glossy Black-Cockatoo	V, P, 2		No	The Glossy Black-Cockatoo is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. An isolated population exists on Kangaroo Island, South Australia. Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of she-oak occur. Black She-oak (*Allocasuarina littoralis*) and Forest She-oak (*A. torulosa*) are important foods. Inland populations feed on a wide range of she-oaks, including Drooping She-oak, *Allocasuarina diminuta*, and *A. gymnathera*. Belah is also utilised and may be a critical food source for some populations. In the Riverina, birds are associated with hills and rocky rises supporting Drooping She-oak, but also recorded in open woodlands dominated by Belah (*Casuarina cristata*). Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May. **Low - Subject site is within known distribution. There is no forested habitat within the subject site, nor were feed tree species recorded. No records within 10km.**	Unlikely

THREATENED FAUNA						
^^*Lophochroa leadbeateri*	Major Mitchell's Cockatoo	V, P, 2		No	Found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the south-west Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines. Normally found in pairs or small groups, though flocks of hundreds may be found where food is abundant. Nesting, in tree hollows, occurs throughout the second half of the year; nests are at least 1 km apart, with no more than one pair every 30 square kilometres. **Moderate - Subject site is within known distribution. Potential foraging habitat is present due to exotic melons (*Cucumis myriocarpus*) recorded and the proximity to the watercourse to the north of the subject site. No records within 10km.**	Potential

THREATENED FAUNA						
Neophema pulchella	Turquoise Parrot	V,P,3		No	The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Usually seen in pairs or small, possibly family, groups and have also been reported in flocks of up to thirty individuals. Prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants or browsing on vegetable matter. Forages quietly and may be quite tolerant of disturbance. However, if flushed it will fly to a nearby tree and then return to the ground to browse as soon as the danger has passed. Nests in tree hollows, logs or posts, from August to December. It lays four or five white, rounded eggs on a nest of decayed wood dust. **Low - Subject site within known distribution. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Polytelis swainsonii	Superb Parrot	V,P,3	V	No	The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. This species inhabits Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. May forage up to 10 km from nesting sites, and feed in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants. **Low - Subject site within known distribution. No suitable forested habitat occurs within the subject site. No records within 10 km.**	Unlikely

Ninox connivens	Barking Owl	V,P,3		No	The Barking Owl is found throughout continental Australia except for the central arid regions. Although still common in parts of northern Australia, the species has declined greatly in southern Australia and now occurs in a wide but sparse distribution in NSW. Core populations exist on the western slopes and plains and in some northeast coastal and escarpment forests. Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey found on these fertile riparian soils. Roosting in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as Acacia and Casuarina species. During nesting season, the male perches in a nearby tree overlooking the hollow entrance. Preferentially hunts small arboreal mammals such as Squirrel Gliders and Common Ringtail Possums, but when loss of tree hollows decreases these prey populations the owl becomes more reliant on birds, invertebrates and terrestrial mammals such as rodents and rabbits. Can catch bats and moths on the wing, but typically hunts by sallying from a tall perch. Requires very large permanent territories in most habitats due to sparse prey densities. Monogamous pairs hunt over as much as 6000 hectares, with 2000 hectares being more typical in NSW habitats. Two or three eggs are laid in hollows of large, old trees. Living eucalypts are preferred though dead trees are also used. Nest sites are used repeatedly over years by a pair, but they may switch sites if disturbed by predators (e.g. goannas).	Unlikely

THREATENED FAUNA						
					Low - Subject site within known distribution. No suitable forested habitat occurs within the subject site. No records within 10 km.	
Tyto longimembris	Eastern Grass Owl	V,P,3		No	Eastern Grass Owls have been recorded occasionally in all mainland states of Australia but are most common in northern and north-eastern Australia. In NSW they are more likely to be resident in the north-east. Eastern Grass Owl numbers can fluctuate greatly, increasing especially during rodent plagues. Eastern Grass Owls are found in areas of tall grass, including grass tussocks, in swampy areas, grassy plains, swampy heath, and in cane grass or sedges on flood plains. **Low - Subject site within known distribution. No suitable forested habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Tyto novaehollandiae	Masked Owl	V,P,3		No	Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. The typical diet consists of tree-dwelling and ground mammals, especially rats. Pairs have a large home-range of 500 to 1000 hectares. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting. **Low - Subject site within known distribution. No suitable forested habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Merops ornatus	Rainbow Bee-eater	P	J	No	The Rainbow Bee-eater is distributed across much of mainland Australia and occurs on several near-shore islands. The extent of occurrence of the Rainbow Bee-eater in Australia has not been estimated. Trends in the extent of occurrence have not been quantified, but records indicate that the distribution of the species. The Rainbow Bee-eater occurs mainly in open forests and woodlands, shrublands, and in various cleared or semi-cleared habitats, including farmland and areas of human habitation. It usually occurs in open, cleared or lightly timbered areas that are often, but not always, located in close proximity to permanent water. The species nest is located in an enlarged chamber at the end of long burrow or tunnel that is excavated in flat or sloping ground, in the banks of rivers, creeks or dams, in roadside cuttings, in the walls of gravel pits or quarries, in mounds of gravel, or in cliff-faces. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V, P		No	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. The eastern subspecies lives in eastern NSW in eucalypt woodlands through central NSW and in coastal areas with drier open woodlands such as the Snowy River Valley, Cumberland Plains, Hunter Valley and parts of the Richmond and Clarence Valleys. The population density of this subspecies has been greatly reduced over much of its range, with major declines recorded in central NSW and the northern and southern tablelands. Declines have occurred in remnant vegetation fragments smaller than 300 hectares, that have been isolated or fragmented for more than 50 years. Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains. Sedentary, considered to be resident in many locations throughout its range; present in all seasons or year-round at many sites; territorial year-round, though some birds may disperse locally after breeding. Hollows in standing dead or live trees and tree stumps are essential for nesting.	Unlikely

THREATENED FAUNA						
					Low - Subject site outside of the known and predicted distribution. No suitable forested habitat occurs within the subject site. No records within 10 km.	
^^*Amytornis modestus inexpectatus*	Thick-billed Grasswren (central NSW subspecies)	E4A,P,2		No	Formerly occurred in central and western NSW, from the lower reaches of the Namoi River, south to Mossgiel. Considered extinct. Habitats occupied by this long extinct population have not been confidently determined but were probably chenopod or Nitrebush Nitraria billardierei shrublands or low shrublands. Information from other subspecies indicates the grasswren is sedentary, usually inhabiting dense, low saltbush, cottonbush, bluebush and nitre-bush areas on sandy plains or depressions in gibber; also occurs along watercourses in clumps of Canegrass; when disturbed, individuals take refuge in any available cover, including piles of old flood debris along dry sandy watercourses and down rabbit burrows. **Low - Subject site within predicted distribution. Species presumed extinct. No records within 10 km.**	Unlikely

Chthonicola sagittata	Speckled Warbler	V, P		No	The Speckled Warbler has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. There has been a decline in population density throughout its range, with the decline exceeding 40% where no vegetation remnants larger than 100ha survive. The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area. The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and trees. Pairs are sedentary and occupy a breeding territory of about ten hectares, with a slightly larger home-range when not breeding. The rounded, domed, roughly built nest of dry grass and strips of bark is located in a slight hollow in the ground or the base of a low dense plant, often among fallen branches and other litter. A side entrance allows the bird to walk directly inside. A clutch of 3-4 eggs is laid, between August and January, and both parents feed the nestlings. The eggs are a glossy red-brown, giving rise to the unusual folk names 'Blood Tit' and 'Chocolatebird'. Some cooperative breeding occurs. The species may act as host to the Black-eared Cuckoo. Speckled Warblers often join mixed species feeding flocks in winter, with other species such as Yellow-rumped, Buff-rumped, Brown and Striated Thornbills.	Unlikely

THREATENED FAUNA						
					According to BioNet Atlas, 'Paddock trees can be important for this species as they can link remnant foraging habitat'. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	
Certhionyx variegatus	Pied Honeyeater	V, P		No	The species is widespread throughout acacia, mallee and spinifex scrubs of arid and semi-arid Australia. Occasionally occurs further east, on the slopes and plains and the Hunter Valley, typically during periods of drought. Inhabits wattle shrub, primarily Mulga (*Acacia aneura*), mallee, spinifex and eucalypt woodlands, usually when shrubs are flowering; feeds on nectar, predominantly from various species of emu-bushes (*Eremophila* spp.); also from mistletoes and various other shrubs (e.g. *Grevillea* spp.); also eats saltbush fruit, berries, seed, flowers and insects. Highly nomadic, following the erratic flowering of shrubs; can be locally common at times. Constructs a relatively large cup-shaped nest, usually robust, although occasionally loose, constructed of grasses and fine twigs, bound with spider webs, in the fork of a shrub or tree up to 5 m above the ground. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Epthianura albifrons	White-fronted Chat	V, P		No	The White-fronted Chat is found across the southern half of Australia, from southernmost Queensland to southern Tasmania, and across to Western Australia as far north as Carnarvon. Found mostly in temperate to arid climates and very rarely sub-tropical areas, it occupies foothills and lowlands up to 1000 m above sea level. In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas. The gregarious species is usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground. Have been observed breeding from late July through to early March, with 'open-cup' nests built in low vegetation. Nests in the Sydney region have also been seen in low isolated mangroves. Nests are usually built about 23 cm above the ground (but have been found up to 2.5 m above the ground). Two to three eggs are laid in each clutch, and the complete nesting cycle from nest-building to independent young is approximately 50 days. Birds can breed at one year of age and are estimated to live for five years. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Grantiella picta	Painted Honeyeater	V, P	V	No	The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema.* **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V, P		No	The Black-chinned Honeyeater has two subspecies, with only the nominate (gularis) occurring in NSW. The eastern subspecies extends south from central Queensland, through NSW, Victoria into south eastern South Australia, though it is very rare in the last state. In NSW it is widespread, with records from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (*Eucalyptus sideroxylon*), White Box (*E. albens*), Inland Grey Box (*E. microcarpa*), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*) and Forest Red Gum (*E. tereticornis*). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees. A gregarious species usually seen in pairs and small groups of up to 12 birds. Feeding territories are large making the species locally nomadic. Recent studies have found that the Black-chinned Honeyeater tends to occur in the largest woodland patches in the landscape as birds forage over large home ranges of at least 5 hectares. Moves quickly from tree to tree, foraging rapidly along outer twigs, underside of branches and trunks, probing for insects. Nectar is taken from flowers, and honeydew is gleaned from foliage. Breeds solitarily or co-operatively, with up to five or six adults, from June to December. The nest is placed high in the crown of a tree, in the uppermost lateral branches, hidden by foliage. It is a compact, suspended, cup-shaped nest.	Unlikely

THREATENED FAUNA						
					Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.	
Pomatostomus halli	Hall's Babbler	V, P		No	It occurs in central-eastern Australia, from Cobar north into south-western Queensland, particularly along or west of the Warrego Rive. These birds have been recorded from the White Cliffs area through to the Culgoa River, Nocoleche Nature Reserve, Sturt National Park and Mutawintji National Park. Recently recorded in Mulga groves near Ledknapper Creek (1993) and near Mt Gunderbooka (1994). Inhabits dry Acacia scrub, mainly Mulga, with a grassy understorey including spinifex, on ridges and plains with either sandy or stony soils. Occasionally occurs in open dry *Eucalyptus* (Bimblebox) woodland, and mulga- or eucalypt-lined watercourses. **Low - Subject site within predicted distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V, P		Yes	The eastern subspecies (temporalis) occurs from Cape York south through Queensland, NSW and Victoria and formerly to the south east of South Australia. This subspecies also occurs in the Trans-Fly Region in southern New Guinea. In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. It may be extinct in the southern, central and New England tablelands. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. Lives in family groups that consist of a breeding pair and young from previous breeding seasons. A group may consist of up to fifteen individuals. Feed on invertebrates and nests in several conspicuous, dome-shaped stick structures that are about the size of a football. A nest is used as a dormitory for roosting each night. Nests are maintained year-round, and old nests are often dismantled to build new ones. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. Two records within 10 km, both from 1997.**	Unlikely

THREATENED FAUNA						
Daphoenositta chrysoptera	Varied Sittella	V, P		No	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. The Varied Sittella's population size in NSW is uncertain but is believed to have undergone a moderate reduction over the past several decades. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy. Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years. Generation length is estimated to be 5 years. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

Pachycephala inornata	Gilbert's Whistler	V, P		No	The Gilbert's Whistler is sparsely distributed over much of the arid and semi-arid zone of inland southern Australia, from the western slopes of NSW to the Western Australian wheatbelt. The species was probably once distributed almost continuously across the woodlands and mallee of southern NSW, but this range has been greatly reduced, chiefly by clearance of habitat. The eastern population extends from the central NSW mallee (Yathong, Nombinnie and Round Hill NRs), south and east through the Cocoparra Range to Pomingalama Reserve (near Wagga Wagga) then north through the South West Slopes east as far as Cowra and Burrendong Dam, to the Goonoo reserves (with scattered records as far north as Pilliga). The Gilbert's Whistler occurs in a range of habitats within NSW, though the shared feature appears to be a dense shrub layer. It is widely recorded in mallee shrublands, but also occurs in box-ironbark woodlands, Cypress Pine and Belah woodlands and River Red Gum forests, though at this stage it is only known to use this habitat along the Murray, Edwards and Wakool Rivers. Within the mallee the species is often found in association with an understorey of spinifex and low shrubs including wattles, hakeas, sennas and hop-bushes. In woodland habitats, the understorey comprises dense patches of shrubs, particularly thickets of regrowth Callitris pine. The Gilbert's Whistler forages on or near the ground in shrub thickets and in tops of small trees. Its food consists mainly of spiders and insects such as caterpillars, beetles and ants, and occasionally, seeds and fruits are eaten. Breeding takes place between August and November. Nests are usually built below about two and a half metres (but up to six metres) above the ground in the fork of dense foliage of plants such as wattles or cypress pines.	Unlikely

THREATENED FAUNA						
					Low - Subject site within predicted distribution. No suitable habitat occurs within the subject site. No records within 10 km.	

Artamus cyanopterus cyanopterus	Dusky Woodswallow	V, P		No	Dusky Woodswallows are widespread in eastern, southern and south western Australia. The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland. Primarily eats invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Also frequently hovers, sallies and pounces under the canopy, primarily over leaf litter and dead timber. Also occasionally take nectar, fruit and seed. Depending on location and local climatic conditions (primarily temperature and rainfall), the dusky woodswallow can be resident year round or migratory. In NSW, after breeding, birds migrate to the north of the state and to southeastern Queensland, while Tasmanian birds migrate to southeastern NSW after breeding. Migrants generally depart between March and May, heading south to breed again in spring. There is some evidence of site fidelity for breeding. Although dusky woodswallows generally breed as solitary pairs or occasionally in small flocks, large flocks may form around abundant food sources in winter. Large flocks may also form before migration, which is often undertaken with other species. Nest is an open, cup-shape, made of twigs, grass, fibrous rootlets and occasionally casuarina needles, and may be lined with grass, rootlets or infrequently horsehair, occasionally unlined. Nest sites vary greatly, but generally occur in shrubs or low trees,	Unlikely

THREATENED FAUNA						
					living or dead, horizontal or upright forks in branches, spouts, hollow stumps or logs, behind loose bark or in a hollow in the top of a wooden fence post. Nest sites may be exposed or well concealed by foliage. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	

Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V, P		No	The Hooded Robin is widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. However, it is common in few places, and rarely found on the coast. It is considered a sedentary species, but local seasonal movements are possible. The south-eastern form (subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies picata. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. Often perches on low dead stumps and fallen timber or on low-hanging branches, using a perch-and-pounce method of hunting insect prey. Territories range from around 10 ha during the breeding season, to 30 ha in the non-breeding season. May breed any time between July and November, often rearing several broods. The nest is a small, neat cup of bark and grasses bound with webs, in a tree fork or crevice, from less than 1 m to 5 m above the ground. The nest is defended by both sexes with displays of injury-feigning, tumbling across the ground. A clutch of two to three is laid and incubated for fourteen days by the female. Two females often cooperate in brooding. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

Petroica boodang	Scarlet Robin	V, P		No	The Scarlet Robin is found from south east Queensland to south east South Australia and also in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. The Scarlet Robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude. The Scarlet Robin is primarily a resident in forests and woodlands, but some adults and young birds disperse to more open habitats after breeding. In autumn and winter many Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees. The Scarlet Robin is a quiet and unobtrusive species which is often quite tame and easily approached. Birds forage from low perches, fenceposts or on the ground, from where they pounce on small insects and other invertebrates which are taken from the ground, or off tree trunks and logs; they sometimes forage in the shrub or canopy layer.	Unlikely

THREATENED FAUNA						
					Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.	
Petroica phoenicea	Flame Robin	V, P		No	The Flame Robin is endemic to south eastern Australia, and ranges from near the Queensland border to south east South Australia and also in Tasmania. In NSW, it breeds in upland areas and in winter, many birds move to the inland slopes and plains. It is likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. Prefers clearings or areas with open understoreys. In winter, birds migrate to drier more open habitats in the lowlands (i.e. valleys below the ranges, and to the western slopes and plains), in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees. **Low - Subject site within the predicted distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Stagonopleura guttata	Diamond Firetail	V, P		No	The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum *Eucalyptus pauciflora* Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Antechinomys laniger	Kultarr	E1, P		No	Widespread across arid and semi-arid NSW but present in very low numbers. Records typically derive from captures by domestic cats or are collected after falling into steep-sided holes. Recent records have come primarily from the Cobar and Brewarrina region. A terrestrial insectivore that inhabits open country, especially claypans among Acacia woodlands. Nocturnal, sheltering by day in hollow logs or tree-stumps, beneath saltbush and spinifex tussocks, in deep cracks in the soil and in the burrows of other animals. Populations appear to fluctuate seasonally in response to environmental stresses, including declines following periods of drought and intensive flooding. **Low - Subject site within the predicted distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

Dasyurus maculatus	Spotted-tailed Quoll	V, P		No	The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania. Only in Tasmania is it still considered relatively common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. Mostly nocturnal, although will hunt during the day; spends most of the time on the ground, although also an excellent climber and will hunt possums and gliders in tree hollows and prey on roosting birds. Use communal 'latrine sites', often on flat rocks among boulder fields, rocky cliff-faces or along rocky stream beds or banks. Such sites may be visited by multiple individuals and can be recognised by the accumulation of the sometimes characteristic 'twisty-shaped' faeces deposited by animals. A generalist predator with a preference for medium-sized (500g-5kg) mammals. Consumes a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits, reptiles and insects. Also eats carrion and takes domestic fowl. Females occupy home ranges of 200-500 hectares, while males occupy very large home ranges from 500 to over 4000 hectares. Are known to traverse their home ranges along densely vegetated creek lines. Average litter size is five; both sexes mature at about one year of age. Life expectancy in the wild is about 3-4 years. According to Bionet Atlas 'the species has been shown to use small patches and highly fragmented landscapes. Paddock trees can be used for denning in cleared landscape, as can other habitat (e.g. windrows). Ecology of the quoll is reasonably well documented but its response to management is less well known. Species regularly uses hollows for denning and is dependent on	Unlikely

THREATENED FAUNA						
					hollow-dependent prey in many parts of NSW. Males will disperse long distances, however females remain close to maternal home range and are unlikely to disperse more than 10km'. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	
Sminthopsis macroura	Stripe-faced Dunnart	V, P		No	Throughout much of inland central and northern Australia, extending into central and northern NSW, western Queensland, Northern Territory, South Australia and Western Australia. They are rare on the NSW Central West Slopes and North West Slopes with the most easterly records of recent times located around Dubbo, Coonabarabran, Warialda and Ashford. Native dry grasslands and low dry shrublands, often along drainage lines where food and shelter resources tend to be better. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Phascolarctos cinereus	Koala	V, P	V	Yes	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range. Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Inactive for most of the day, feeding and moving mostly at night. Spend most of their time in trees but will descend and traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size. Generally solitary, but have complex social hierarchies based on a dominant male with a territory overlapping several females and sub-ordinate males on the periphery. Females breed at two years of age and produce one young per year. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. Three records within 10 km, all records from 2004.**	Unlikely

THREATENED FAUNA						
Bettongia lesueur graii	Boodie, Burrowing Bettong (mainland)	E4,P	X	No	The Burrowing Bettong was once common over a range that encompassed nearly half of Australia, including most of Western Australia (with the exception of the north Kimberley), South Australia, Queensland, western New South Wales and the Victorian mallee. Old Boodie warrens are still readily observed in central Australia, particularly in calcareous country where excavated stones and gravels form humps or mounds around the entrance of long abandoned warrens. The Boodie once lived in a range of dry subtropical and tropical habitats, from open Eucalyptus and Acacia woodlands to arid spinifex grasslands. In its current range on the islands, it seems to prefer open Triodia (spinifex) and dune habitats but will burrow anywhere except places with rocky substrate. **Extinct – mainland population is considered extinct.**	Unlikely
Lagorchestes leporides	Eastern Hare-wallaby	E4,P	X	No	This species once inhabited the interior of New South Wales, Victoria and the Murray River region of South Australia. It was common in the level country between the Murray and Darling rivers, as well as the Liverpool Plains. The Eastern Hare-wallaby preferred habitat that consisted of open plains and grasslands. It was a strictly nocturnal animal which led a solitary lifestyle. During the day it sat still in a well-formed 'seat', usually in the shelter of a saltbush or a tussock. If approached too closely, it would bound off at great speed. **Extinct – population is considered extinct.**	Unlikely

THREATENED FAUNA						
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V, P		Yes	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range – most of Victoria, south-western NSW and adjacent South Australia – it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and North West Slopes. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. **Low - Subject site within known distribution. Ground is unlikely roosting habitat due to recent disturbance. One record within 10 km, from 2008.**	Unlikely

THREATENED FAUNA						
Ozimops lumsdenae	Northern Free-tailed Bat	V, P		No	Widely distributed across northern Australia from Western Australia to Queensland, extending south to the north-east corner of NSW. The only confirmed record in NSW is of a colony found in the roof of a house in Murwillumbah, however, calls have been detected from a few other locations in the far north east of the State. The species utilised a range of vegetation types in northern Australia, from rainforests to open forests and woodlands, and are often recorded along watercourses. They can also occur in towns and cities. Roost mainly in tree hollows but relatively large colonies have been found under house roofs in urban areas in Queensland. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Setirostris eleryi	Bristle-faced Free-tailed Bat	E1, P		No	Distributed from the southern half of the Northern Territory to central Queensland and north-western NSW. In NSW, the species has been recently recorded from only three disjunct locations: thirteen individuals from Gundabooka National Park, south of Bourke; one individual from Dhinnia Dthinawan Nature Reserve (formerly Bebo State Forest), north of Warialda two individuals near Bonshaw. Knowledge of the ecology of the Hairy-nosed Freetail Bat is limited, however evidence suggests that the species depends on hollows and tree fissures for roosting sites. All other Australian species from the same family generally roost in tree hollows and fissures. Appears to be extremely rare throughout its range. Nationally, it has been recorded from only 15 locations. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Chalinolobus picatus	Little Pied Bat	V, P		No	The Little-Pied Bat is found in inland Queensland and NSW (including Western Plains and slopes) extending slightly into South Australia and Victoria. Occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimbil box woodlands. Roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings. Can tolerate high temperatures and dryness but need access to nearby open water. Feeds on moths and possibly other flying invertebrates. **Low - Subject site within known distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Nyctophilus corbeni	Corben's Long-eared Bat	V, P	V	No	Overall, the distribution of the south eastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. Inhabits a variety of vegetation types, including mallee, bulloke *Allocasuarina leuhmanni* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark.scrub region Slow flying agile bat, utilising the understorey to hunt non-flying prey - especially caterpillars and beetles - and will even hunt on the ground. Mating takes place in autumn with one or two young born in late spring to early summer. **Low - Subject site within the predicted distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Vespadelus baverstocki	Inland Forest Bat	V, P		No	Because of the difficulty of identification, the distribution of this species, particularly in NSW, is very poorly known. Believed to occur widely in all the mainland states, generally in areas with annual rainfall less than 400 millimetres. In Victoria it is confined to the extreme north west. In NSW it has been most regularly captured in the far south west, north from the Murray River to Menindee, and at least as far east as the Balranald-Ivanhoe Road. There is some evidence to suggest that this species also occurs in the central NSW mallee, centred on Nombinnie Nature Reserve, although there has been very little recent survey in this part of the state. There are also records just south of the Queensland border around the Culgoa River, though whether this connects with other NSW populations, or is the southern extent of a northern population is unknown. There are records further east in NSW but the identification of these records have not been confirmed. There are relatively few records of any Vespadelus species in the north west of NSW and so whether this species does occur here is unknown. Some of the gaps in knowledge on the distribution of this and other bat species in western NSW probably reflects the lack of survey effort in most of this region. Roosts in tree hollows and abandoned buildings. Known to roost in very small hollows in stunted trees only a few metres high. **Low - Subject site outside of the known and predicted distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

THREATENED FAUNA						
Rattus villosissimus	Long-haired Rat	V, P		No	The species has been recorded over vast areas of western NSW. Strongholds are north-west of NSW, with plagues spreading south and east along river channels. Otherwise, the species is found in scattered localities in low numbers. Following extended periods of above average rainfall or flood this species can breed rapidly. Resulting populations disperse widely, then die away abruptly as food is depleted and water evaporates. Predators rely on these rat plagues for their own rapid reproduction. **Low - Subject site outside of the known and predicted distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely
^^*Jalmenus eubulus*	Pale Imperial Hairstreak	E4A,2		No	Jalmenus eubulus is found in Queensland and NSW. In Queensland it is restricted to the seasonally sub-humid central and southern areas of the state. In NSW it is found only in brigalow-dominated open forests and woodlands in northern areas of the state. Only known to breed in old-growth forest or woodland and does not appear to colonise regowth habitats following clearing or other major disturbance. Suitable habitat is dominated by brigalow, Acacia harpophylla and Buloke, Casuarina cristata on clay soils on flat to gently undulating plains, usually with scattered emergent euclypts such as Poplar Box, Eucalyptus populnea and low trees of Wilga, Geijera parviflora. **Low - Subject site within the predicted distribution. No suitable habitat occurs within the subject site. No records within 10 km.**	Unlikely

Threatened Ecological Community

Community	NSW Status	Comm. Status	Likelihood of Occurance	Potential Impact
Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions	E3	E	No - does not occur within the subject site.	No impact
Brigalow-Gidgee woodland/shrubland in the Mulga Lands and Darling Riverine Plains Bioregions	E3	E	No - does not occur within the subject site.	No impact
Carbeen Open Forest Community in the Darling Riverine Plains and Brigalow Belt South Bioregions	E3		No - does not occur within the subject site.	No impact
Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands Bioregions	E3	E	No - does not occur within the subject site.	No impact
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	E3		No - does not occur within the subject site.	No impact
Marsh Club-rush sedgeland in the Darling Riverine Plains Bioregion	E4B		No - does not occur within the subject site.	No impact
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	E3	E	No - does not occur within the subject site.	No impact

Appendix E: BC Act 5 part test of significance

Biodiversity Conservation Act 2016 Test of significance

The threatened species 'test of significance' (or '5-part test') is used to determine if a development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. The test of significance is set out in s.7.3 of the *Biodiversity Conservation Act 2016*, and is completed in accordance with the questions set out below:

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

a. in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

b. in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

   i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

   ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

c. in relation to the habitat of a threatened species or ecological community:

   i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

   ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

   iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

d. whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

e. whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

BC Act Test of Significance						
Name	**a.**	**b.**	**c.**	**d.**	**e.**	**Impact Significance**
Slender Darling Pea	The proposal will impact approximately 14.34 ha of agricultural land. Numerous other instances of grazing and cropping areas are present within the study area as the subject site occurs within a highly fragmented agricultural landscape. Therefore, the area that would be removed represents small amount of the local occurrence. As the whole study area was not assessed as part of this proposal, this percentage is based on State Vegetation Type Mapping and aerial imagery and therefore is to be used as a guide only. The species is often found in depressions, on level plains and in conjunction with *Maireana* species. It is also known to occur in paddocks and cultivated soils. The subject site is not part of a Priority Management Area for this species. However, if present, the species likely extends beyond the subject site within connected and suitable habitat. Therefore, the proposal is unlikely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.	N/A	The proposal will remove 14.34 ha of potential habitat for this species. The proposal is unlikely remove, modify, fragment or isolate a significant amount of vegetation such that the long-term survival of Slender Darling Pea within the local area is significantly impacted.	N/A	See Appendix G for a full list of KTPs affected by the proposal.	Non-significant impact
Commersonia procumbens	The proposal will impact approximately 14.34 ha of agricultural land. Numerous other instances of grazing and cropping areas are present within the study area as the subject site occurs within a highly fragmented agricultural	N/A	The proposal will remove 14.34 ha of potential habitat for this species.	N/A	Yes. The proposal will result in:	Non-significant impact

BC Act Test of Significance						
	landscape. Therefore, the area that would be removed represents small amount of the local occurrence. As the whole study area was not assessed as part of this proposal, this percentage is based on State Vegetation Type Mapping and aerial imagery and therefore is to be used as a guide only. The species is often a pioneer species of disturbed habitats. The subject site is not part of a Priority Management Area for this species. However, if present, the species likely extends beyond the subject site within connected and suitable habitat. Therefore, the proposal is unlikely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.		The proposal is unlikely remove, modify, fragment or isolate a significant amount of vegetation such that the long-term survival of *Commersonia procumbens* within the local area is significantly impacted.		• Clearing of native vegetation See Appendix G for a full list of KTPs affected by the proposal.	
Shrub Sida	The proposal will impact approximately 14.34 ha of agricultural land. Numerous other instances of grazing and cropping areas are present within the study area as the subject site occurs within a highly fragmented agricultural landscape. Therefore, the area that would be removed represents small amount of the local occurrence. As the whole study area was not assessed as part of this proposal, this percentage is based on State Vegetation Type Mapping and aerial imagery and therefore is to be used as a guide only. Shrub Sida grows on flood-out areas, creek banks and at the base of rocky hills. NSW specimens have been found along roadsides in hard red loam to sandy-loam soils. The species can become locally abundant and is often more common in	N/A	The proposal will remove 14.34 ha of potential habitat for this species. The proposal is unlikely remove, modify, fragment or isolate a significant amount of vegetation such that the long-term survival of Shrub Sida within the local area is significantly impacted.	N/A	Yes. The proposal will result in: • Clearing of native vegetation See Appendix G for a full list of KTPs affected by the proposal.	Non-significant impact

BC Act Test of Significance						
	disturbed sites. The subject site is not part of a Priority Management Area for this species. However, if present, the species likely extends beyond the subject site within connected and suitable habitat. Therefore, the proposal is unlikely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.					
Finger Panic Grass	The proposal will impact approximately 14.34 ha of agricultural land. Numerous other instances of grazing and cropping areas are present within the study area as the subject site occurs within a highly fragmented agricultural landscape. Therefore, the area that would be removed represents small amount of the local occurrence. As the whole study area was not assessed as part of this proposal, this percentage is based on State Vegetation Type Mapping and aerial imagery and therefore is to be used as a guide only. The species is found in native grassland, woodlands or open forest with a grassy understorey, on richer soils. Often found along roadsides and travelling stock routes where there is light grazing and occasional fire. The subject site is not part of a Priority Management Area for this species. However, if present, the species likely extends beyond the subject site within connected and suitable habitat. Therefore, the proposal is unlikely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.	N/A	The proposal will remove 14.34 ha of potential habitat for this species. The proposal is unlikely remove, modify, fragment or isolate a significant amount of vegetation such that the long-term survival of Finger Panic Grass within the local area is significantly impacted.	N/A	See Appendix G for a full list of KTPs affected by the proposal.	Non-significant impact

BC Act Test of Significance						
Five-clawed Worm-skink	The proposal will impact approximately 14.34 ha of agricultural land. Numerous other instances of grazing and cropping areas are present within the study area as the subject site occurs within a highly fragmented agricultural landscape. Therefore, the area that would be removed represents small amount of the local occurrence. As the whole study area was not assessed as part of this proposal, this percentage is based on State Vegetation Type Mapping and aerial imagery and therefore is to be used as a guide only. Five-clawed Worm-skink is generally associated with gullies of wooded areas, though also occurs in grassland areas and open paddocks with scattered trees. The species utilised deep cracking clay soils to burrow. Therefore suitable burrowing habitat is present within the subject site. The subject site is not part of a Priority Management Area for this species. However, if present, the species likely extends beyond the subject site within connected and suitable habitat. Therefore, the proposal is unlikely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.	N/A	The proposal will remove 14.34 ha of potential habitat for this species. The proposal is unlikely remove, modify, fragment or isolate a significant amount of vegetation such that the long-term survival of Five-clawed Worm-skink within the local area is significantly impacted.	N/A	Yes. The proposal will result in: • Clearing of native vegetation See Appendix G for a full list of KTPs affected by the proposal.	Non-significant impact
Major Mitchell's Cockatoo	The proposal will impact approximately 14.34 ha of agricultural land. Numerous other instances of grazing and cropping areas are present within the study area as the subject site occurs within a highly fragmented agricultural landscape. Therefore, the area that would be removed represents small amount of the local occurrence. As the	N/A	The proposal will remove 14.34 ha of potential habitat for this species. The proposal is unlikely remove, modify, fragment or isolate a significant amount of vegetation such that the long-term survival of Major	N/A	Yes. The proposal will result in: • Clearing of native vegetation	Non-significant impact

BC Act Test of Significance						
	whole study area was not assessed as part of this proposal, this percentage is based on State Vegetation Type Mapping and aerial imagery and therefore is to be used as a guide only. The subject site contains suitable foraging habitat for the species. The subject site is not part of a Priority Management Area for this species. However, if present, the species likely extends beyond the subject site within connected and suitable habitat. Therefore, the proposal is unlikely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.		Mitchell's Cockatoo within the local area is significantly impacted.		See Appendix G for a full list of KTPs affected by the proposal.	

Appendix F: EPBC Act Habitat Assessment

Habitat assessment table for EPBC Act listed threatened species and EPBC Act migratory species within the Lower Slopes IBRA subregion, NSW Bionet records and incorporating sightings of species within 10 km. Unless otherwise indicated, habitat information has been taken from OEH Threatened Biodiversity Profiles, available at https://www.environment.nsw.gov.au/threatenedSpeciesApp/. Likelihood of occurrence has been determined based on professional judgement, observations made during field surveys and information available in species profiles and other sources.

NSW Status: P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.

Commonwealth Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable.

Wetlands of International Importance			
Name	**Proximity**	**Assessment**	**Assessment of significance required (Yes / No)**
Banrock Station wetland complex	900-1000km	The proposal is not within close proximity of Banrock Station wetland complex.	No
Riverland	800-900km	The proposal is not within close proximity of Riverland	No
the coorong and lakes alexandrina and albert wetland	1000-1100km	The proposal is not within close proximity of the Coorong and Lakes Alexandrina and Albert Wetland	No

Threatened Ecological Communities			
Name	**Status**	**Significance of Impact**	**Assessment of significance required (Yes / No)**
Coolibah – Black Box Woodlands of the Darling riverine Plains and the Brigalow Belt South Bioregions	Endangered	The community does not occur on the subject site.	No

Threatened Ecological Communities			
Natural grasslands on basalt and fine-texted alluvial plains of northern NSW and southern QLD	Critically Endangered	The community does not occur on the subject site.	No
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	The community does not occur on the subject site.	No
Weeping Myall Woodlands	Endangered	The community does not occur on the subject site.	No

Threatened Fauna CE = Critically Endangered, E = Endangered, V = Vulnerable				
Species Name	**Common Name**	**Status**	**Habitat assessment**	**Assessment of significance required (Yes / No)**
Botaurus poiciloptilus	Australasian Bittern	E	Low - Unlikely habitat on the subject site for this species (Appendix D)	**No**

Threatened Fauna CE = Critically Endangered, E = Endangered, V = Vulnerable				
Calidris ferruginea	Curlew Sandpiper	CE	In Australia, Curlew Sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states during the non-breeding period, and also during the breeding season when many non-breeding one-year old birds remain in Australia rather than migrating north. In NSW, they are widespread east of the Great Divide, especially in coastal regions. They are occasionally recorded in the Tablelands and are widespread in the Riverina and south-west NSW, with scattered records elsewhere. Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters. Not suitable – The subject site is outside of the species known and predicted range.	**No**
Grantiella picta	Painted Honeyeater	V	Low - Unlikely habitat on the subject site for this species (Appendix D)	**No**
Leipoa ocellata	Malleefowl	V	Predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300 - 450 mm mean annual rainfall) areas. Utilises mallee with a spinifex understorey, but usually at lower densities than in areas with a shrub understorey. Less frequently found in other eucalypt woodlands, such as Inland Grey Box, Ironbark or Bimble Box Woodlands with thick understorey, or in other woodlands such dominated by Mulga or native Cypress Pine species. Not suitable – The subject site is outside of the species known and predicted range.	**No**

Threatened Fauna CE = Critically Endangered, E = Endangered, V = Vulnerable				
Pedionomus torquatus	Plains-wanderer	CE	Plains-wanderers live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. These grasslands support a high diversity of plant species, including a number of state and nationally threatened species. The Plains-wanderer has declined greatly since European settlement. Areas where the species was formerly common and is now so reduced in numbers that it is effectively extinct include eastern NSW, south-western Victoria, and south-eastern South Australia. Its current stronghold is the western Riverina of southern NSW. Areas of secondary importance include north-central Victoria and central-western Queensland. The bird was formerly fairly common until about 1920 on the Slopes and Tablelands, and there are two earlier records of birds near Sydney. The main reason for the decline in the numbers and distribution of Plains-wanderers in all eastern States has been the conversion of native grasslands to dense introduced pasture or croplands. If native grasslands are not overgrazed or cultivated then Plains-wanderers are largely sedentary, though there is some recent evidence to suggest that birds may not remain sedentary during prolonged drought conditions. Not suitable – The subject site is outside of the species known and predicted range.	**No**
Rostratula australis	Australian Painted Snipe	E	Low - Unlikely habitat on the subject site for this species (Appendix D)	**No**

Threatened Fauna CE = Critically Endangered, E = Endangered, V = Vulnerable				
Maccullochella peelii	Murray Cod	V	Murray Cod, also referred to as cod or codfish, were once abundant throughout the Murray-Darling river system, but overfishing and environmental changes have drastically reduced its numbers. The species has been selectively stocked in other river systems in NSW, Victoria and Western Australia, but has generally failed to establish itself in those areas. Murray Cod generally prefer slow flowing, turbid water in streams and rivers, favouring deeper water around boulders, undercut banks, overhanging vegetation and logs. Small numbers are still present in the Nepean River and Yarra River. **Low - Subject site outside of known distribution as it is not part of the Murray River. No records within 10 km.**	**No**
Chalinolobus dwyeri	Large-eared Pied bat	V	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies. The relatively short, broad wing combined with the low weight per unit area of wing indicates manoeuvrable flight. This species probably forages for small, flying insects below the forest canopy. Likely to hibernate through the coolest months. It is uncertain whether mating occurs early in winter or in spring. Not suitable – The subject site is outside of the species known and predicted range.	**No**
Dasyurus maculatus	Spotted-tail Quoll (SE mainland population)	E	Low - Unlikely habitat on the subject site for this species (Appendix D)	**No**

Threatened Fauna CE = Critically Endangered, E = Endangered, V = Vulnerable				
Nyctophilus corbeni	Corben's Long-eared Bat	V	Overall, the distribution of the south eastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. Inhabits a variety of vegetation types, including mallee, bulloke Allocasuarina leuhmanni and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark. Low – within the species predicted range. No suitable roosting habitat. No records within 10 km.	**No**
Phascolarctos cinereus	Koala (populations of QLD, NSW and ACT)	V	Low - Unlikely habitat on the subject site for this species (Appendix D)	**No**
Anomalopus mackayi	Five-clawed worm-skink	V	Moderate - **Subject site within known distribution. Not associated with chenopod communities or disturbance. Is recorded as occurring within the Study Site, though the record is from 1961 (**Appendix D)	**Yes**

Threatened Flora CE = Critically Endangered, E = Endangered, V = Vulnerable				
Species Name	**Common Name**	**Status**	**Habitat assessment**	**Assessment of significance required (Yes / No)**
Dichanthium setocum	Bluegrass	V	Low – Subject site is outside of the species range. No suitable habitat	**No**
Swainsona murrayana	Slender Darling-pea, Slender Swainson, Murray Swainson-pea	V	**Moderate - Subject site within known distribution. The species is associated with clay-based soils. No records within 10 km.**	**Yes**

Migratory, Wetland and Marine Species			
Species Name	**Common Name**	**Habitat assessment**	**Assessment of significance required (Yes / No)**
Apus pacificus	Fork-tailed Swift	Low - Unlikely habitat on the subject site for this species (Appendix D)	**No**
Motacilla flava	Yellow Wagtail	Minimal ecological information is available regarding the species. The species utilises continental Europe and Asia as residence and breeding and is a non-breeding visitor to Africa, using parts of northern Africa as passage between these areas. It is considered migrator to Australia with minimal information available as to its use of the continent. Low - Unlikely habitat on the subject site. No records within 10 km.	**No**
Myiagra cyanoleuca	Satin Flycatcher	The Satin Flycatcher is widespread in eastern Australia and vagrant to New Zealand. In NSW, they are widespread on and east of the Great Divide and sparsely scattered on the western slopes, with very occasional records on the western plains. Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests. Satin Flycatchers mainly inhabit eucalypt forests, often near wetlands or watercourses. They also occur in eucalypt woodlands with open understorey and grass ground cover and are generally absent from rainforest. Satin Flycatchers prefer to nest in a fork of outer branches of trees, such as paperbarks, eucalypts, and banksias. Satin Flycatchers usually nest in a high, exposed position in a slender fork on an outer branch, also on dead horizontal branches and once on a branch which curved upwards in a shallow bow, with the nest at the highest part of the curve. They nest in the same locality each year, and sometimes in the same tree. Low - Unlikely habitat on the subject site. No records within 10 km.	**No**
Actitis hypoleucos	Common Sandpiper	Low - Unlikely habitat within subject site (Appendix D)	**No**

Migratory, Wetland and Marine Species			
Calidris acuminata	Sharp-tailed Sandpiper	Low - Unlikely habitat within subject site (Appendix D)	**No**
Calidris ferruginea	Curlew Sandpiper	In Australia, Curlew Sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states during the non-breeding period, and also during the breeding season when many non-breeding one-year old birds remain in Australia rather than migrating north. In NSW, they are widespread east of the Great Divide, especially in coastal regions. They are occasionally recorded in the Tablelands and are widespread in the Riverina and south-west NSW, with scattered records elsewhere. Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters. Not suitable – The subject site is outside of the species known and predicted range.	**No**
Calidris melanotos	Pectoral Sandpiper	The Pectoral Sandpiper breeds in northern Russia and North America. Within Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. In New South Wales (NSW), the Pectoral Sandpiper is widespread, but scattered. Records exist east of the Great Divide, from Casino and Ballina, south to Ulladulla. West of the Great Divide, the species is widespread in the Riverina and Lower Western regions. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands. Low - Unlikely habitat on the subject site. No records within 10 km.	**No**

Migratory, Wetland and Marine Species			
Gallinago hardwickii	Latham's Snipe	Latham's Snipe breed in Japan and far eastern Russia during the northern hemisphere summer. They migrate south after the breeding season, travelling across Papua New Guinea to winter in eastern Australia. They're range extends throughout Queensland and west of the Great Dividing Range in NSW and Tasmania. Within Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity. Latham's Snipe does not breed within Australian jurisdiction. The breeding range is confined to Japan and far eastern Russia. Low - The species is unlikely to utilise this area due to the lack of wetlands. No records within 10 km.	**No**

Migratory, Wetland and Marine Species			
Ardea alba	Great Egret	Great Egrets occur throughout most of the world. They are common throughout Australia, with the exception of the most arid areas (BirdLife Australia). Great Egrets are widespread in Australia. They occur in all states/territories of mainland Australia and in Tasmania. The Great Egret has been reported in a wide range of wetland habitats (for example inland and coastal, freshwater and saline, permanent and ephemeral, open and vegetated, large and small, natural and artificial). These include swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt pans and salt lakes. Great Egrets may retreat to permanent wetlands or coastal areas when other wetlands are dry. The species usually nests in colonies. Breeding sites are located in wooded and shrubby swamps including mangrove forests (the main habitat of the species in the Top End), Melaleuca swamps (on the eastern coast of Australia and south-western Western Australia) and mixed eucalypt/acacia/lignum swamps (in the Channel Country and Murray-Darling Basin). Great Egrets exhibit a diverse array of complex foraging behaviours. They mostly forage by wading through shallow to moderately deep water, by standing in water and capturing prey that wanders nearby, or by walking over shore or dry ground. Low – Unlikely habitat for the species as the subject site is not mapped as flood prone land and does not occur within a riparian zone. There is a watercourse within the study area however the proposal will not impact land associated with it. No records within 10 km.	**No**

Migratory, Wetland and Marine Species			
Area ibis	Cattle Egret	The Cattle Egret is widespread and common according to migration movements and breeding localities surveys. Two major distributions have been located; from north-east Western Australia to the Top End of the Northern Territory and around south-east Australia. The Cattle Egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands. It has occasionally been seen in arid and semi-arid regions however this is extremely rare. High numbers have been observed in moist, low-lying poorly drained pastures with an abundance of high grass; it avoids low grass pastures. It has been recorded on earthen dam walls and ploughed fields. The Cattle Egret roosts in trees, or amongst ground vegetation in or near lakes and swamps. It has also been recorded roosting near human settlement and industrial areas. Low – the species is unlikely to utilise the subject site due to the lack of wetland habitat. The subject site is unlikely to become inundated as it is not mapped as flood prone land.	**No**
Chrysococcyx osculans	Black-eared Cuckoo	The Black-eared Cuckoo is found in drier country where species such as mulga and mallee form open woodlands and shrublands. It is often found in vegetation along creek beds (Birdlife Australia, 2019a). **Low - Subject site within predicted distribution. Unlikely habitat for this species on the subject site as the site is not a mulga / mallee woodland.**	**No**

Migratory, Wetland and Marine Species			
Haliaeetus leucogaster	White-bellied Sea-Eagle	The White-bellied Sea-Eagle is distributed along the coastline (including offshore islands) of mainland Australia and Tasmania. It also extends inland along some of the larger waterways, especially in eastern Australia. The habitats occupied by the sea-eagle are characterised by the presence of large areas of open water (larger rivers, swamps, lakes, the sea and sewage ponds). Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest (including rainforest) and even urban areas. Breeding territories are located close to water, and mainly in tall open forest or woodland, although nests are sometimes located in other habitats such as dense forest (including rainforest), closed scrub or in remnant trees on cleared land. Low – Though the species is known to utilise remnant trees within cleared land in addition to more wooded habitat, no trees were recorded within the subject site. No records within 10 km.	**No**
Merops ornatus	Rainbow Bee-eater	Low - Unlikely habitat on the subject site for this species (Appendix D	**No**
Rostratula benghalensis (sensu lato)	Painted Snipe	Low - Unlikely habitat on the subject site for this species (Appendix D)	**No**

Appendix G: Matters of National Environmental Significance

The EPBC Act protects nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance. The EPBC Act policy *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (DoE, 2013) forms the basis of determining if impact to protected matters is significant.

A Protected Matters Search identified four Endangered Ecological Communities, 24 threatened species, 11 migratory species and 18 marine species as potentially occurring within 10 km of the subject site.

The following tables give an overview of the assessments of these threatened entities and shows that the Proposed activity:

1. Is not likely to have a significant impact on a matter of national environmental significance. The matters of national environmental significance are:
    i. World heritage properties.
    ii. National heritage places.
    iii. Wetlands of international importance.
    iv. Threatened species and ecological communities.
    v. Migratory species.
    vi. Commonwealth marine areas.
    vii. The Great Barrier Reef Marine Park. And;
    viii. Nuclear actions (including uranium mines).
    ix. A water resource, in relation to coal seam gas development and large coal mining development.
2. Is not likely to have a significant impact on the environment in general (for actions by Commonwealth agencies or actions on Commonwealth land) or the environment on Commonwealth land (for actions outside Commonwealth land).

Notes:

Important Population as determined by the *Environment Protection and Biodiversity Conservation Act 1999*, is one that for a vulnerable species:

a) is likely to be key source populations either for breeding or dispersal
b) is likely to be necessary for maintaining genetic diversity
c) is at or near the limit of the species range.

A ‘significant impact’ is an impact which is important, notable, or of consequence, having regard to its context or intensity (DoE, 2013).

EPBC listed Vulnerable Species

Five-clawed worm-skink	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact approximately 14.34 ha of agricultural land. Numerous other instances of grazing and cropping areas are present within the study area as the subject site occurs within a highly fragmented agricultural landscape. Therefore, the area that would be removed represents small amount of the local occurrence. This is unlikely to lead to a long-term decrease in the size of the Population. The area is not listed as a Priority Management Area.
Reduce the area of occupancy of an important population	The proposed development will decrease the area of occupancy of the species by approximately 14.34 ha of agricultural land. However agricultural land extends into the wider study area and more suitable habitat is likely to also occur.
Fragment an existing important population into two or more populations	No the proposal will not fragment any important populations.
Adversely affect habitat critical to the survival of a species	The subject site is not listed as critical habitat for the species and is unlikely to act as such, therefore the proposal is unlikely to adversely affect critical habitat for the species.
Disrupt the breeding cycle of an important population	Due to the potential reduced occupancy of this species associated with the development, the proposal may have some adverse effect on the life cycle of the species. However, this is unlikely to impact this breeding cycle of the species at a regional population scale.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove however it will not isolate or fragment habitat for the species as discussed in previous sections. However, this is unlikely to impact the species so as it is likely to decline at a regional population scale.

Five-clawed worm-skink	
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	No. The community is in an area that is currently subject to a high-level disturbance from agricultural activity. Activities associated with the proposal will exacerbate this however not as to impact the population of the species at a regional scale. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 5).
Introduce disease that may cause the species to decline, or	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 5).
Interfere with the recovery of the species.	There is no listed Recovery Plan for the species. The listed threats for the species such as disturbance of soil structure through cropping; and clearing and fragmentation of habitat for agriculture and development have already occurred at this site. Therefore, the proposal is unlikely to impact the species beyond what has already occurred.
Conclusion	**No significant impact**

Slender Darling-pea	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact approximately 14.34 ha of agricultural land. Numerous other instances of grazing and cropping areas are present within the study area as the subject site occurs within a highly fragmented agricultural landscape. Therefore, the area that would be removed represents small amount of the local occurrence. This is unlikely to lead to a long-term decrease in the size of the Population. The area is not listed as a Priority Management Area.

Slender Darling-pea	
Reduce the area of occupancy of an important population	The proposed development will decrease the area of occupancy of the species by approximately 14.34 ha of agricultural land. However agricultural land extends into the wider study area and more suitable habitat is likely to also occur.
Fragment an existing important population into two or more populations	No the proposal will not fragment any important populations.
Adversely affect habitat critical to the survival of a species	The subject site is not listed as critical habitat for the species and is unlikely to act as such, therefore the proposal is unlikely to adversely affect critical habitat for the species.
Disrupt the breeding cycle of an important population	Due to the potential reduced occupancy of this species associated with the development, the proposal may have an adverse effect on the life cycle of the species. However, this is unlikely to impact this breeding cycle of the species at a regional population scale.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove however it will not isolate or fragment habitat for the species as discussed in previous sections. However, this is unlikely to impact the species so as it is likely to decline at a regional population scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	No. The community is in an area that is currently subject to a high-level disturbance from agricultural activity. Activities associated with the proposal will exacerbate this however not as to impact the population of the species at a regional scale. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 5).
Introduce disease that may cause the species to decline, or	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 5).

Slender Darling-pea	
Interfere with the recovery of the species.	There is no listed Recovery Plan for the species. The listed threats for the species such as loss of grassland habitat to cultivation, either for pasture improvement or crops, particularly rice crops; and invasion of grassland habitat by weeds due to ploughing or heavy grazing of paddocks have already occurred at this site. Therefore, the proposal is unlikely to impact the species beyond what has already occurred
Conclusion	**No significant impact**

Appendix H: Key Threatening Processes

Key Threatening Processes (KTP) predicted as acting on the study area that may be exacerbated by the proposal.

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal
Threat	Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners *Manorina melanocephala.*	KTP	KTP	**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT
Threat	Alteration of habitat due to subsidence caused by longwall mining	KTP		**NO** Mining is not part of the proposal.	NO IMPACT
Threat	Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		**NO** Impact on the flow regimes of nearby rivers / streams is not expected.	NO IMPACT
Threat	Anthropogenic Climate Change	KTP	KTP	**YES** Some, though minimal, unavoidable emissions will occur from construction machinery.	NEGLIGIBLE IMPACT
Threat	Bushrock removal	KTP		**No** No bushrock was recorded at the field site.	NO IMPACT

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal
Threat	Clearing of native vegetation	KTP	KTP	**NO** No native vegetation will be cleared in association with this proposal.	NO IMPACT
Threat	Competition and grazing by the feral European Rabbit, *Oryctolagus cuniculus*	KTP	KTP	**NO** The subject site is likely already impacted by rabbits, though no evidence was observed. Proposed works will not increase the likelihood of this threat occurring.	NO IMPACT
Threat	Competition and habitat degradation by Feral Goats, *Capra hircus* Linnaeus 1758	KTP	KTP	**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT
Threat	Competition from feral honey bees, *Apis mellifera*	KTP		**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT
Threat	Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP		**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT
Threat	Herbivory and environmental degradation caused by feral deer	KTP		**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal
Threat	High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		**NO** Fire frequency will not increase due to activities undertaken as part of the proposal.	NO IMPACT
Threat	Importation of Red Fire Ants *Solenopsis invicta*	KTP	KTP	**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks.	POTENTIAL
Threat	Infection by *Psittacine Circoviral* (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT
Threat	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks.	POTENTIAL
Threat	Infection of native plants by *Phytophthora cinnamomi*	KTP	KTP	**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks.	POTENTIAL
Threat	Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae	KTP		**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks.	POTENTIAL
Threat	Introduction of the Large Earth Bumblebee *Bombus terrestris*	KTP		**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal
Threat	Invasion and establishment of exotic vines and scramblers	KTP		**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks.	POTENTIAL
Threat	Invasion and establishment of Scotch Broom (*Cytisus scoparius*)	KTP		**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks.	POTENTIAL
Threat	Invasion and establishment of the Cane Toad (*Rhinella marina*)	KTP	KTP	**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT
Threat	Invasion, establishment and spread of Lantana (*Lantana camara*)	KTP		**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks.	POTENTIAL
Threat	Invasion of native plant communities by African Olive *Olea europaea* subsp. *cuspidata*	KTP		**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks.	POTENTIAL
Threat	Invasion of native plant communities by *Chrysanthemoides monilifera*	KTP		**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks.	POTENTIAL
Threat	Invasion of native plant communities by exotic perennial grasses	KTP		**POTENTIAL** Exotic perennial grasses are already established at the site.	POTENTIAL

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal
Threat	Invasion of the Yellow Crazy Ant, *Anoplolepis gracilipes* (Fr. Smith) into NSW	KTP		**POTENTIAL** Machinery used on site can potentially act as a transport for biosecurity risks.	POTENTIAL
Threat	Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT
Threat	Loss of Hollow-bearing Trees	KTP		**No** No hollow-bearing trees would be removed by the proposal.	NO MPACT
Threat	Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		**NO** No sites present.	NO IMPACT
Threat	Predation and hybridisation by Feral Dogs, *Canis lupus familiaris*	KTP		**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT
Threat	Predation by *Gambusia holbrooki* Girard, 1859 (Plague Minnow or Mosquito Fish)	KTP		**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT
Threat	Predation by the European Red Fox (*Vulpes vulpes)*	KTP	KTP	**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal
Threat	Predation by the Feral Cat *Felis catus*	KTP	KTP	**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT
Threat	Predation, habitat degradation, competition and disease transmission by Feral Pigs	KTP	KTP	**NO** The proposal does not include any activities that would exacerbate this threat.	NO IMPACT
Threat	Removal of dead wood and dead trees	KTP		**NO** No dead wood was recorded as occurring in the subject site.	NO IMPACT

Appendix I: Terms and abbreviations

Terms and abbreviations used in this report

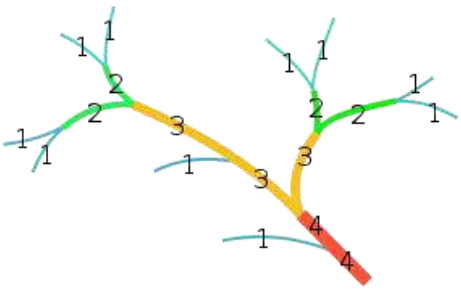
Abbreviation	Terminology	Description
BC Act	*Biodiversity Conservation Act 2016* (NSW)	The purpose of this Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. This Act contains schedules relating to the listing of threatened species, populations and communities in NSW. It also outlines the framework regulating development impact assessments in relation to biodiversity.
	Biosecurity Act 2015 (NSW)	The broad objectives for biosecurity in NSW are to manage biosecurity risks from animal and plant pests and diseases, weeds and contaminants by • Preventing their entry into NSW • Quickly finding, containing and eradicating any new entries • Effectively minimising the impacts of those pests, diseases, weeds and contaminants that cannot be eradicated through robust management arrangements. The *Biosecurity Act 2015* provides a statutory framework to help achieve these objectives.
CAMBA	China-Australia Migratory Bird Agreement	A bilateral migratory bird agreement with China entered into in 1986. It provides an important mechanism for pursuing conservation outcomes for migratory birds, including migratory waterbirds.
	Cumulative impacts	Impacts, when considered together, lead to a stronger impact than any impact in isolation.
	Direct impacts	Directly affect the habitat and individuals. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat. When applying each factor, consideration must be given to all of the likely direct impacts of the proposed activity or development.
DoEE	Australian Government Department of Environment and Energy	The Department of the Environment designs and implements the Australian Government's policies and programmes to protect and conserve the environment, water and heritage and promote climate action.
DP	Deposited Plan	A plan of land deposited in Land and Property Information (part of the Land Management Authority) and used for legal identification purposes. They most commonly depict a subdivision of a parcel of land.
EEC	Endangered Ecological Community	An ecological community identified by relevant legislation likely to become extinct or is in immediate danger of extinction.
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW).	Provides the legislative framework for land use planning and development assessment in NSW.
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth).	Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
FM Act	*Fisheries Management Act 1994* (NSW)	The objects of this Act are to conserve, develop and share the fishery resources of the State for the benefit of present and future generations. This Act protects aquatic habitats and species which are not protected under the BC Act.
IBRA	Interim Biogeographic	The Interim Biogeographic Regionalisation for Australia (IBRA) is a biogeographic regionalisation of Australia developed by the Australian Government's Department of the Environment. Each region is a land area

Abbreviation	Terminology	Description
	Regionalisation of Australia	made up of a group of interacting ecosystems repeated in similar form across the landscape.
	Indirect impacts	Occur when project-related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas. As with direct impacts, consideration must be given, when applying each factor, to all of the likely indirect impacts of the proposed activity or development.
JAMBA	Japan-Australia Migratory Bird Agreement	A bilateral migratory bird agreement with Japan entered into in 1974. It provides an important mechanism for pursuing conservation outcomes for migratory birds, including migratory waterbirds.
Key Fish Habitat (KFH) and associated sensitivity classification (Fairfull, 2013)		**Type 1** **Highly Sensitive KFH** • *Posidonia australis* (strapweed) • *Zostera, Heterozostera, Halophila* and *Rupia* species of seagrass beds >5m^2 • Coastal saltmarsh >5m^2 • Coral communities • Coastal lakes and lagoons that have a natural opening and closing regime • Marine Park, an aquatic reserve or intertidal protected area • SEPP 14 coastal wetlands, wetlands recognised under international agreements, wetlands listed in the Directory of Important Wetlands of Australia • Freshwater habitats that contain in-steam gravel beds, rocks greater than 500 mm in two dimensions, snags greater than 300 mm in diameter or 3 m in length, or native aquatic plants • Any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the Fisheries Management Act Mound springs **Type 2** **Moderately Sensitive KFH** • *Zostera, Heterozostera, Halophila* and *Rupia* species of seagrass beds >5m^2 • Coastal saltmarsh <5m^2 • Mangroves • Marine macroalgae • Esturine and marine rocky reefs • Coastal lakes and lagoon that are permanently open or subject to artificial opening via agreed management arrangements • Aquatic habitat within 100 m of a marine park, an aquatic reserve or intertidal protected area • Stable intertidal sand/mud flats, coastal and esturine sandy beaches with large populations of in-fauna • Freshwater habitats and brackish wetlands, lakes, lagoons other than those defined in Type 1 Weir pools and dams up to full supply level where the weir or dam is across a natural waterway **Type 3** **Minimally sensitive KFH** • Unstable or unvegetated sand or mud substrate, coastal and esturine sandy beaches with minimal in-fauna • Coastal and freshwater habitats not included in Types 1 or 2 • Ephemeral aquatic habitat not supporting native aquatic or wetland vegetation

Abbreviation	Terminology	Description
Key Fish Habitat (KFH) and associated classification of waterways for fish passage (Fairfull, 2013)		**Class 1** **Major KFH** • Marine or esturine waterway or permanently flowing or flooded freshwater waterway (e.g. river or major creek), habitat of a threatened or protected fish species or 'critical habitat'. **Class 2** **Moderate KFH** • Non-permanently flowing (intermittent) stream, creek or waterway (generally named) with clearly defined bed and banks with semi-permanent to permanent waters in pools or in connected wetland areas. Freshwater aquatic vegetation is present. Type 1 and 2 habitats present. **Class 3** **Minimal KFH** • Named or unnamed waterway with intermittent flow and sporadic refuge, breeding or feeding areas for aquatic fauna (e.g. fish, yabbies). Semi-permanent pools form within the waterway or adjacent wetlands after a rain event. Otherwise, any minor waterway that interconnects with wetlands or other Class 1, 2 or 3 fish habitat. **Class 4** **Unlikely KFH** • Waterway (generally unnamed) with intermittent flow following rain events only, little or no defined drainage channel, little or no flow or free standing water or pools post rain events (e.g. dry gullies or shallow floodplain depressions with no aquatic flora present).
KTP	Key Threatening Process	A key threatening process is defined as a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities. A requirement of their listing on the TSC Act is that the process adversely affects two or more threatened species, populations or ecological communities, or may cause species, populations or ecological communities not threatened to become threatened.
	Local population (species)	A local population of a threatened plant species comprises those individuals occurring in a defined area or a cluster of individuals extend into habitat adjoining and contiguous with the study area where the individuals could reasonably be expected to cross-pollinate. A local population of fauna species comprises those individuals known or likely to occur in in a defined area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area. The local population of migratory or nomadic fauna species comprises those individuals likely to occur in the study area from time to time.
	Local occurrence (EEC)	The ecological community present within the study area. However, the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of the ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.

Abbreviation	Terminology	Description
	Low condition (vegetation)	Vegetation in low condition means: a) woody native vegetation with native over-storey percent foliage cover less than 50% of the lower value of the over-storey percent foliage cover benchmark for that vegetation type, and where either: – less than 50% of ground cover vegetation is indigenous species, or – greater than 90% of ground cover vegetation is cleared OR b) native grassland, wetland or herbfield where either: – less than 50% of ground cover vegetation is indigenous species, or – more than 90% of ground cover vegetation is cleared If native vegetation is not in low condition, it is in moderate to good condition. The percentages for the ground cover calculations must be made in a season when the proportion of native ground cover vegetation compared to non-native ground cover vegetation in the area is likely to be at its maximum. NOTE: Clearing the habitat of threatened species, populations or communities for the purposes of reducing its condition prior to assessment under the methodology may be a breach of environmental legislation, including sections 118A and 118D of the *National Parks and Wildlife Act 1974* (NPW Act), the *Native Vegetation Act 2003* (NV Act) and/or the *Environmental Planning and Assessment Act 1979* (EP&A Act).
MNES	Matters of national environmental significance	Refers to the seven matters of national environmental significance outlined under the EPBC Act.
NPW Act	*National Parks and Wildlife Act 1974* (NSW)	The objects of this Act are as follows: • The conservation of nature, including, but not limited to, the conservation of: • habitat, ecosystems and ecosystem processes, and • biological diversity at the community, species and genetic levels, and • landforms of significance, including geological features and processes, and • landscapes and natural features of significance including wilderness and wild rivers, The conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to: • places, objects and features of significance to Aboriginal people, and • places of social value to the people of New South Wales, and • places of historic, architectural or scientific significance, • Fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation, • Providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation. The objects of this Act are to be achieved by applying the principles of ecologically sustainable development.
OEH	Office of Environment and Heritage	The Office of Environment and Heritage (OEH) is a separate agency within the Planning and Environment cluster. OEH was formed on 4 April 2011 and works to protect and conserve the NSW environment, including the natural environment, Aboriginal country, culture and heritage and our built heritage, and manages NSW national parks and reserves.
PoEO Act	*Protection of the Environment Operations Act 1997*	The objects of this Act are as follows: • to protect, restore and enhance the quality of the environment in New South Wales, having regard to the need to maintain ecologically sustainable development, • to provide increased opportunities for public involvement and participation in environment protection, • to ensure the community has access to relevant and meaningful information about pollution,

Abbreviation	Terminology	Description
		• to reduce risks to human health and prevent the degradation of the environment by the use of mechanisms promoting: • pollution prevention and cleaner production, • the reduction to harmless levels of the discharge of substances likely to cause harm to the environment, • the elimination of harmful wastes, • the reduction in the use of materials and the re-use, recovery or recycling of materials, • the making of progressive environmental improvements, including the reduction of pollution at source, • the monitoring and reporting of environmental quality on a regular basis, • to rationalise, simplify and strengthen the regulatory framework for environment protection, • to improve the efficiency of administration of the environment protection legislation, • to assist in the achievement of the objectives of the *Waste Avoidance and Resource Recovery Act 2001*.
RAMSAR	Convention on Wetlands of International Importance	The Ramsar Convention's broad aims are to halt the worldwide loss of wetlands and to conserve, through wise use and management, those remaining. This requires international cooperation, policy making, capacity building and technology transfer.
	Risk of extinction	The likelihood that the local population will become extinct either in the short-term or in the long-term as a result of direct or indirect impacts on the viability of that population.
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement	A bilateral migratory bird agreement with the Republic of Korea entered into in 2007. It provides an important mechanism for pursuing conservation outcomes for migratory birds, including migratory waterbirds.
RF Act	*Rural Fires Act 1997*	The objects of this Act are to provide: • for the prevention, mitigation and suppression of bush and other fires in local government areas (or parts of areas) and other parts of the State constituted as rural fire districts, and • for the co-ordination of bush firefighting and bush fire prevention throughout the State, and • for the protection of persons from injury or death, and property from damage, arising from fires, and • for the protection of infrastructure and environmental, economic, cultural, agricultural and community assets from damage arising from fires, and • for the protection of the environment by requiring certain activities referred to in paragraphs (a)-(c1) to be carried out having regard to the principles of ecologically sustainable development described in section 6 (2) of the *Protection of the Environment Administration Act 1991*.
SEPP 44	State Environmental Planning Policy No.44 – Koala Habitat	This Policy aims to encourage the proper conservation and management of areas of natural vegetation with habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline: • by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and • by encouraging the identification of areas of core koala habitat, and • by encouraging the inclusion of areas of core koala habitat in environment protection zones.
Koala Habitat Assessment SEPP	State Environmental Planning Policy (Koala Habitat Protection) 2019	A State Environmental Planning Policy (SEPP) Koala Habitat Protection now replaces SEPP 44 – Koala Habitat Protection (SEPP 44). The policy intent of SEPP 44 has been retained in the Koala Habitat Protection SEPP which was repealed and replaced on 1 March 2020.

Abbreviation	Terminology	Description
		The Koala Habitat Protection SEPP includes a new definition for 'core koala habitat', two maps to help protect koalas across NSW, and the most up-to-date tree species data. The SEPP (Koala Habitat Protection) aims to encourage the 'proper conservation and management of areas of natural vegetation that provide habitat for Koalas to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline'.
Significant impact		A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity.
SIS	Species Impact Statement	A document included with an Environmental Impact Statement which details a full description of the action proposed, including its nature, extent, location, timing and layout and, to the fullest extent reasonably practicable, the information referred to in this section. The requirements as to the contents of an SIS for different categories of protected species are given in section 110 of the TSC Act.
Strahler stream order		Strahler stream order and are used to define stream size based on a hierarchy of tributaries. 

Appendix C

FLOOD RISK ASSESSMENT

Premise

WATER

FLOOD RISK ASSESSMENT REPORT

FOR PROPOSED SOLAR FARM AT BURREN JUCTION

ENERPARC AUSTRALIA PTY LTY

Report No: GEO-0043
Document No: 1903213
REV: 01
Date: October 2019

Table of Contents

Figures

Tables

Appendices

DOCUMENT AUTHORISATION					
Revision	**Rev. Date**	**Author**	**Reviewer**	**Report Details**	**Authorised By**
					Signature
1	10/10/2019	K. Clayfield	K. Clayfield	FINAL	KTC

Transmission Register

Controlled copies of this document are issued to the persons/companies listed below. Any copy of this report held by persons not listed in this register is deemed uncontrolled. Updated versions of this report if issued will be released to all parties listed below via the email address listed.

Name	Email Address
Andrew Brownlow	Andrew.Brownlow@premise.com.au
Marta Tomaszewski	Marta.Tomaszewski@premise.com.au

1 INTRODUCTION

Premise Australia Pty Ltd (here within referred to as "Premise") has been commissioned by Enerparc Australia Pty Ltd to undertake a Flood Risk Assessment for the proposed solar farm at Burren Junciton, NSW. The proposed development consists of construction of solar arrays across existing cleared agricultural paddocks and grid connection works to the existing essential substation immediately to the south.

This Flood Risk Assessment includes an analysis of pre-development site conditions to establish the base runoff characteristics, and quantification of the potential impacts associated with the proposed development.

Refer to **Figure 1** below for a Road Map Image of the site and its locality.

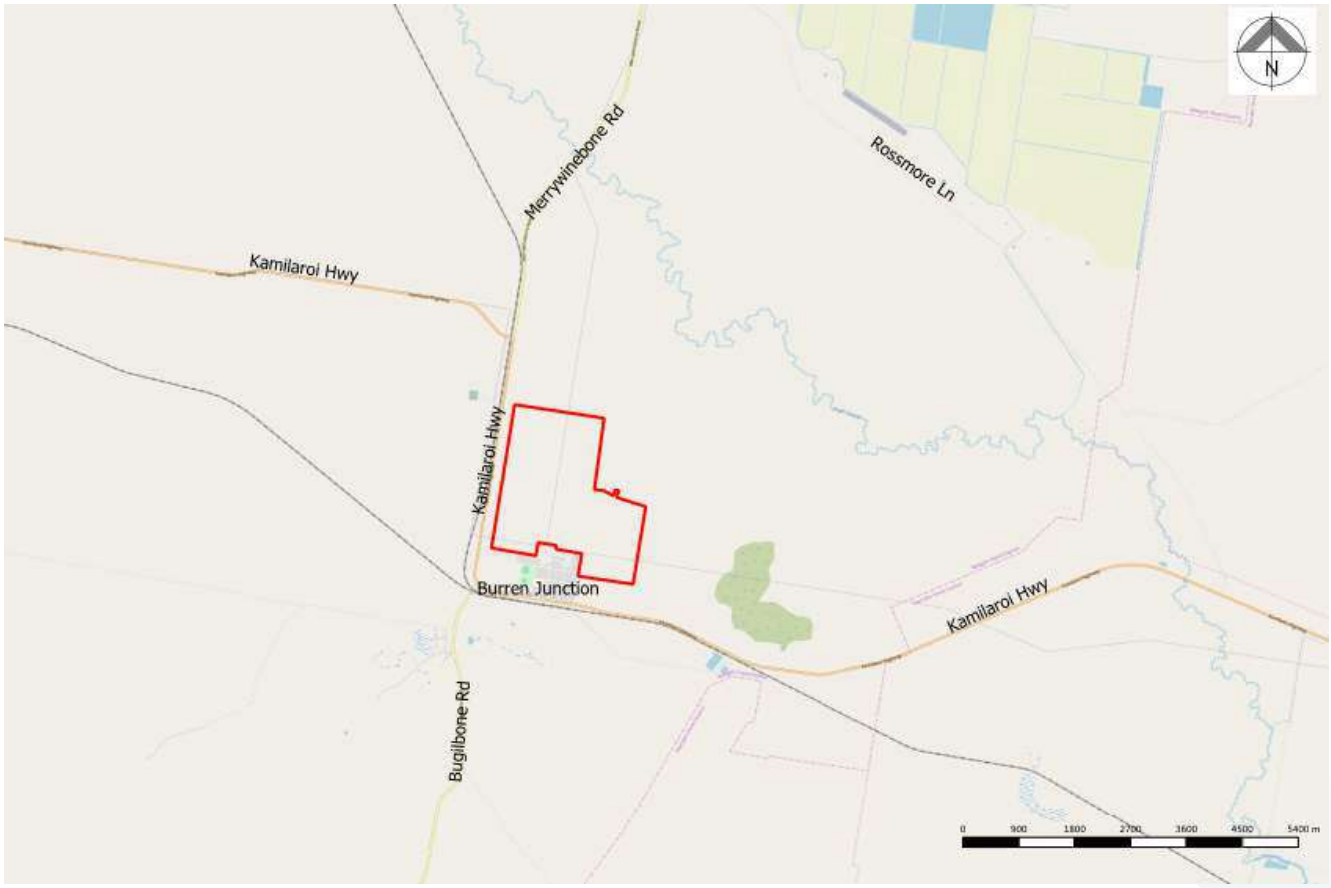


Figure 1 – Road Map (Source: Open Street Map website)

2 SITE CHARACTERISTICS

2.1 Site location

The subject site is located at Sebastopol Street, Burren Junction. The site is formally known as Lot 13 on DP753926, Lot 202 on DP593298, Lot 101 on DP811752, Lot 6 on DP753926, Lot 1 on DP669068, Lot 42 on DP753926 and Lot 2 DP214271. The total area of the development site is approximately 438 hectares (provided by Six Maps NSW) whilst the solar farm footprint is approximately 15ha.

The site is located within the *Primary Production* zone set by Walgett Shire Council. The subject site is bound by Burren Junction town to the south, primary production lots to the north and east and Kamilaroi Highway to the east and west. The site is currently cleared agricultural paddocks.

Figure 2 shows an aerial view of the existing land for site locality details.

Figure 2 – Aerial Image of Site Location (Source: Google)

2.2 Topography

Based off the topography, drainage of the subject site is generally as follows:

- Topography ranges from 162 mAHD to 164 mAHD;
- The site has a small ridge that traverse the site from east to north-west;
- The site generally drains in a westerly direction to Kamilaroi Highway with a portion draining to a water course that meanders along the east and northern bounds of the site; and
- The town centre drains through the south-western corner of the site to the highway.

3 PROPOSED DEVELOPMENT

It is proposed to install a number of solar arrays and associated sub-stations across the existing cleared agricultural property. The proposed development layout is shown below and is only conceptual in shape and location. The precise location is yet to be determined and could be influenced by other constraints yet to be assessed. The location we have modelled is based on the worst-case impact scenario.

Figure 3 – Proposed Development Layout

4 DATA

Data in the preparation of this report, information about the site was gathered from the following sources:

- Detailed Survey supplied by Premise NSW;
- Aerial LiDAR sourced from Geosciences Australia;
- Proposed Site Layout provided by Enerparc Australia Pty Ltd;
- River gauge data by the Australian Bureau of Meteorology; and
- Aerial Imagery by Google (Accessed on 13/08/2019).

5 FLOOD RISK ASSESSMENT

5.1 Hydrologic Assessment

To determine the inflow boundaries for the TUFOW model, gauge data was utilised due to the extensive catchment that is outside the bounds of normal design hydrology standards. Due to the topography of the area, the gauge used was Naomi River at Mollee (Gauge Number 419039). A flood frequency analysis (FFA) for this gauge was obtained from the Bureau of Meteorology Water Data Online. Refer **Appendix A** for a copy of the FFA. The 1%AEP discharge from the FFA is *5410.6m³/s*.

To determine the flows from the local catchment that drains through the site, Australian Rainfall and Runoff's Regional Flood Frequency Estimation Model (RFFE, https://rffe.arr-software.org/) was utilised. The local catchments were defined utilising the lidar data and detailed site survey (refer **Appendix B** for catchment plan). An RFFE was produced for each of the catchments and the peak flows are show in **Table 5.1** below.

Table 5.1 – Predicted Peak Flows Discharging from the Local Catchments

Catchment ID	Area (km²)	1%AEP Lower Confidence Limit (5%) Discharge (m³/s)	Adopted Discharge (m³/s)	1%AEP Upper Confidence Limit (95%) Discharge (m³/s)
A1	17.12	28.5	71.7	183
B1	6.14	21.3	52.6	131
C1	4.17	17.1	41.6	102
D1	30.65	72	107	278

5.2 Hydraulic Assessment

A hydraulic assessment was undertaken to determine the flood extent levels over the Site to ensure the solar farm has suitable flood immunity. The assessment was undertaken utilising TUFLOW, a two dimensional (2D) fully dynamic hydraulic modelling package (version 2018-03-AB).

The following scenarios have been considered:

- **Pre-development Case** – assume catchment and site are in an existing condition; and
- **Post-development case –** includes the proposed solar farm.

The following sections detail the TUFLOW model parameters adopted and results.

5.2.1 Model Setup

The following model parameters were adopted:

- The existing case model topography was constructed utilising LiDAR data and detailed site survey;
- The following Manning's roughness 'n' were adopted:
  - Agricultural land =0.035
  - Residential houses = 0.3
  - Water bodies and creek = 0.03
  - Road = 0.14
  - Medium vegetation =0.045
  - Residential = 0.08
  - Dense vegetated creek = 0.1
  - Dense vegetation = 0.065
  - Medium vegetated creek = 0.08

  Refer **Appendix C** for roughness map.
- Discharge inflows from RFFE and flood frequency, detailed in **Section 5.1** above.
- A normal-depth rating curve was adopted for the downstream boundary condition.
- The model included the structures at the Kamilaroi Highway and the adjacent railway and are detailed in **Appendix A**.

5.2.2 Hydraulic Results

The results from the modelling are in the following Appendices:

- **Appendix D** – Pre-development 1% AEP Flood Maps
  (Peak water surface levels, depth, velocity, hazard);
- **Appendix E** – Post-development 1% AEP Flood Maps
  (Peak water surface levels, depth, velocity, hazard);
- **Appendix F** – 1% AEP Flood Impact Map

The predicted peak water surface levels, depth and velocity results from the hydraulic assessment for specific reporting points are presented in Table 5.2, 5.3 and 5.4 below. Refer **Appendix C** for the reporting point locations.

Table 5.2 – Predicted Peak Water Surface Level – 1%AEP Event

Location	Description	Water Surface Level (mAHD)		
		Pre	Post	Impact
Point 1	Upstream of Site	163.16	163.16	0.00
Point 2	Upstream of Site	164.03	164.03	0.00
Point 3	Within Site Boundary	163.46	163.46	0.00
Point 4	Within Site Boundary	162.68	162.69	0.01
Point 5	Within Site Boundary	162.48	162.48	0.00
Point 6	Immediately downstream of Site	162.19	162.19	0.00
Point 7	Downstream of Site	161.66	161.66	0.00

Table 5.3 – Predicted Peak Depth

Location	Description	Depth (m)		
		Pre	Post	Impact
Point 1	Upstream of Site	0.99	0.99	0.00
Point 2	Upstream of Site	0.45	0.45	0.00
Point 3	Within Site Boundary	0.39	0.39	0.00
Point 4	Within Site Boundary	0.44	0.45	0.01
Point 5	Within Site Boundary	0.78	0.78	0.00
Point 6	Immediately downstream of Site	0.66	0.66	0.00
Point 7	Downstream of Site	0.56	0.56	0.00

Table 5.4 – Predicted Peak Velocity

Location	Description	Velocity (m/s)		
		Pre	Post	Impact
Point 1	Upstream of Site	0.65	0.65	0.00
Point 2	Upstream of Site	0.23	0.23	0.00
Point 3	Within Site Boundary	0.20	0.20	0.00
Point 4	Within Site Boundary	0.32	0.32	0.00
Point 5	Within Site Boundary	0.08	0.08	0.00
Point 6	Immediately downstream of Site	0.26	0.25	-0.01
Point 7	Downstream of Site	0.35	0.35	0.00

The results show that the proposed solar farm is predicted to not cause external impacts.

6 CONCLUSION

This Flood Risk Assessment has been prepared to provide the impact of the prosed solar farm at Burren Junction on flood levels. The assessment included hydrologic assessment to determine inflows to the hydraulic model. The hydraulic modelling showed that there are no external impacts to the site.

The hydraulic assessment did not consider change in flow from existing to post-development case due to increase in impervious area. No assessment of the impact on hydrologic flows was deemed necessary due to the relatively small development footprint in comparison to the overall regional catchment. It is expected that only a very minor increase in peak flow rates from the site for the local catchment due to the development and the associated increase in impervious areas.

Based on the other solar projects completed by Premise no mitigation measures have been required.

7 QUALIFICATIONS

Our analysis and overall approach have been specifically catered for the requirements of Enerpark Australia Pty Ltd, and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from Premise.

Premise has relied on the following information as outlined in the Data Section of this Report**.**

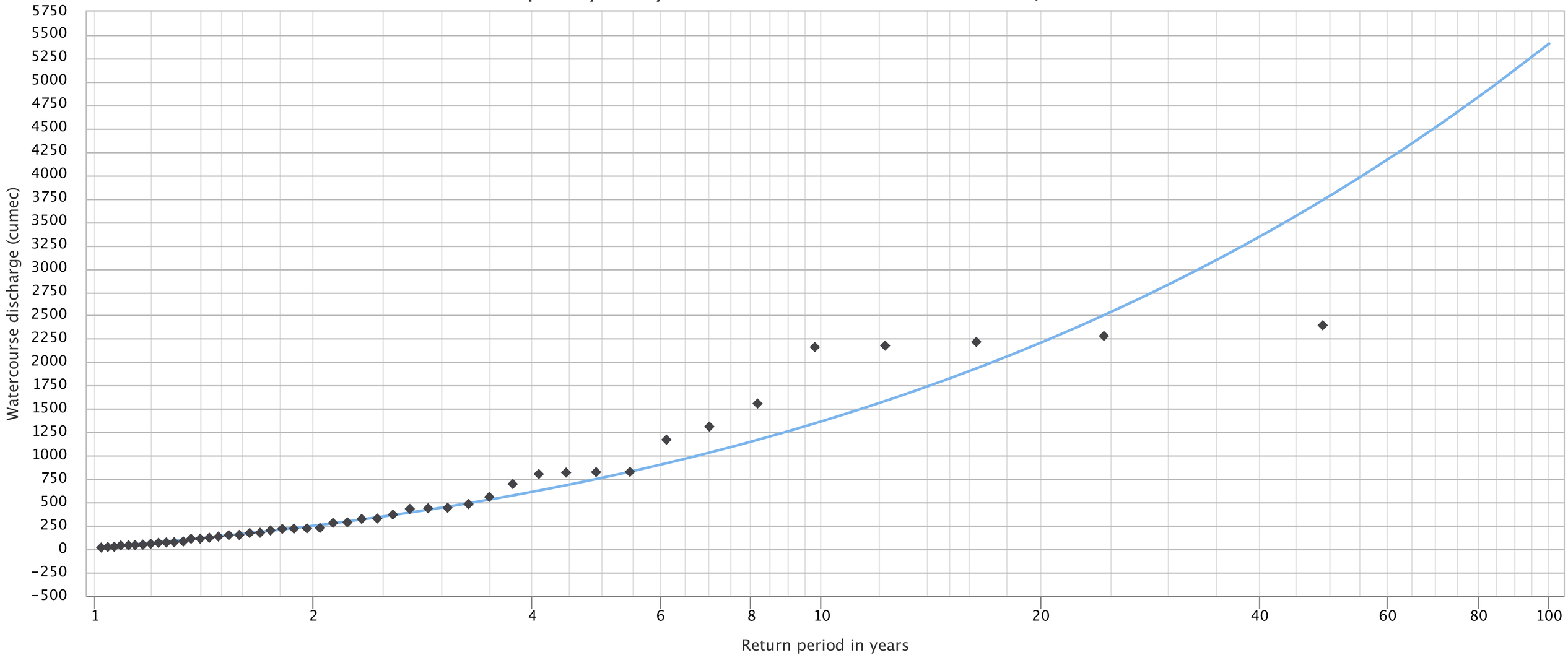
While Premise's report accurately assesses peak flows from design storms in accordance with current industry standards and guidelines and the use of regional flood gauge, future observed flows may vary from that predicted. Enerparc will need to advise at detailed design stage the freeboard levels.

8 REFERENCES

1. Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia (Geoscience Australia), 2016, Canberra.
2. Bureau of Meteorology, *2016 IFDs – Rainfall Data.* Available at: http://www.bom.gov.au/water/designRainfalls/revised-ifd/?year=2016
3. Cook, L. M. and R. H. McCuen. 2013. "Hydrologic Response of Solar Farms." *Journal of Hydrologic Engineering* 18:536–41

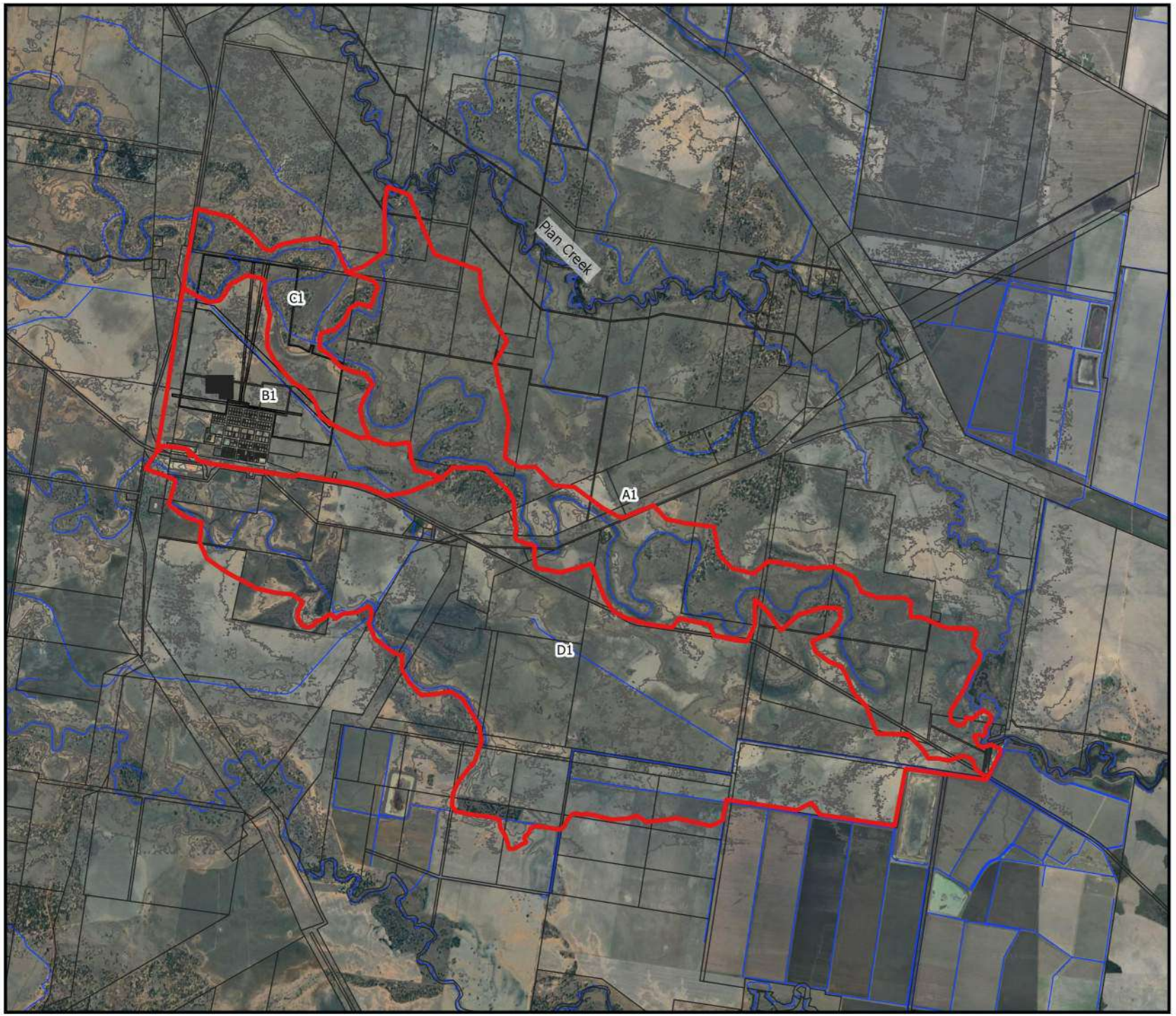
APPENDIX A FLOOD FREQUENCY ANALYSIS

Flood frequency analysis for NAMOI RIVER AT MOLLEE / 419039



APPENDIX B CATCHMENT PLAN AND RFFE SUMMARY CALCULATIONS

Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.COM.AU



0 100 200 300 400 500 600 700 m

1:80,000 (A4)

Coordinate System: GDA 2020/MGA Zone 55

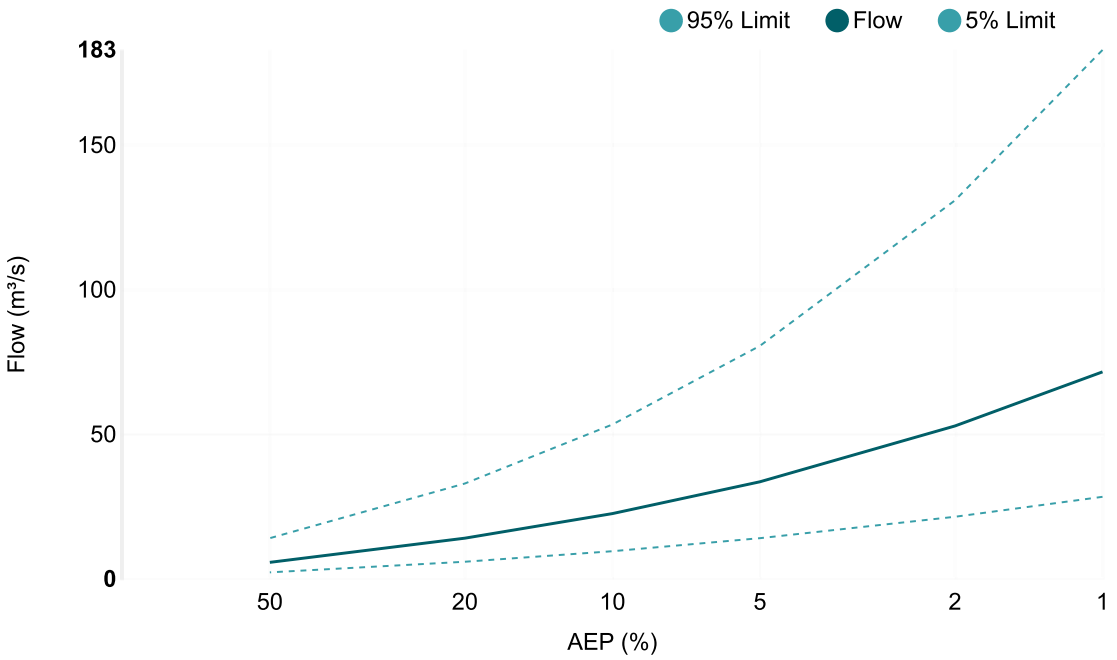
Legend

- Catchment Boundaries
- Watercourses
- Contours (0.5m Intervals)
- Cadastre

Project: Burren Junction Solar Farm
Client: Geolyse Pty Ltd
Date: 18 September 2019

Appendix B
Catchment Plan

Results | Regional Flood Frequency Estimation Model



*The catchment has unusual shape. Results have lower accuracy and may not be directly applicable in practice.

AEP (%)	Discharge (m^3/s)	Lower Confidence Limit (5%) (m^3/s)	Upper Confidence Limit (95%) (m^3/s)
50	5.84	2.38	14.2
20	14.2	6.05	33.1
10	22.7	9.69	53.5
5	33.7	14.2	80.7
2	53.0	21.6	131
1	71.7	28.5	183

Statistics

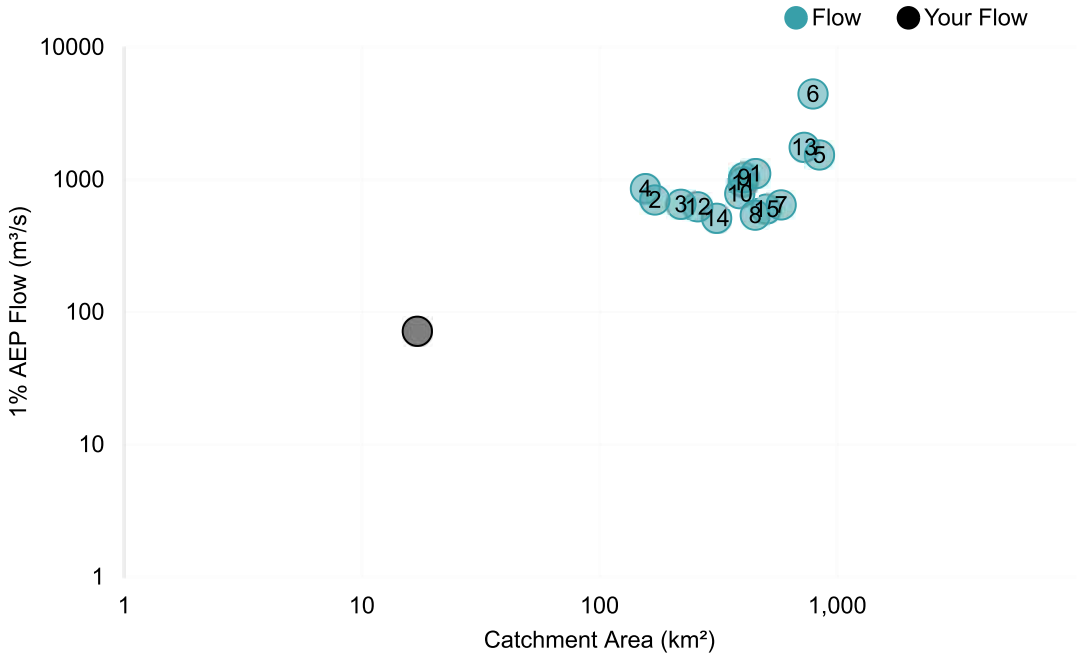
Variable	Value	Standard Dev
Mean	1.701	0.574
Standard Dev	1.035	0.164
Skew	0.108	0.028

Note: These statistics come from the nearest gauged catchment. Details.

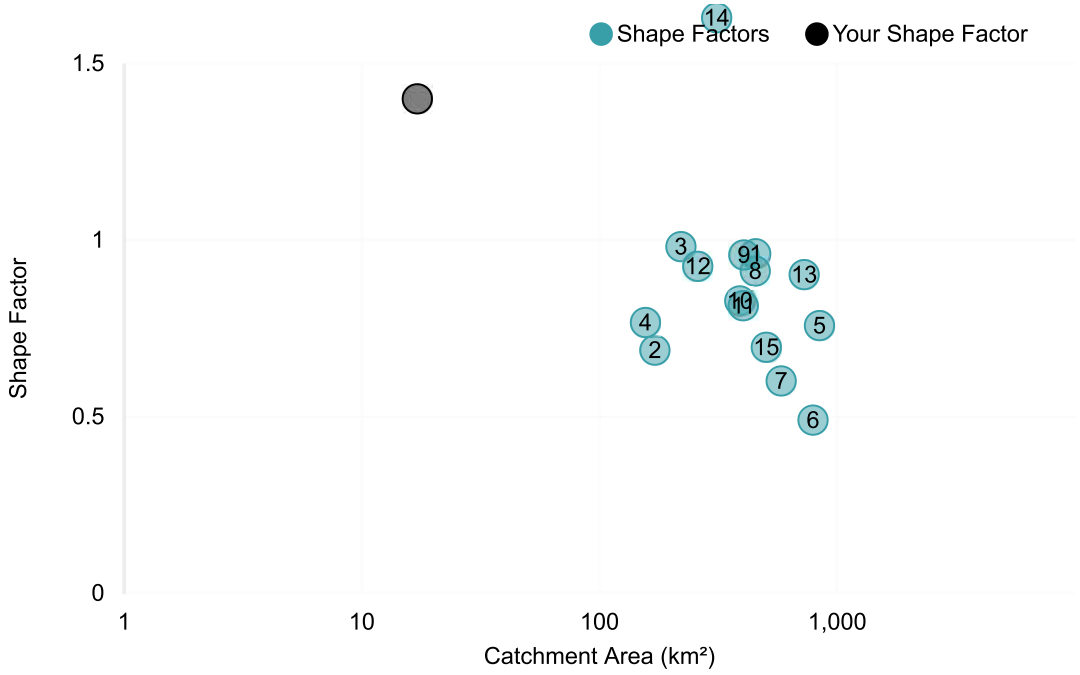
Correlation			370
1.000			
-0.330	1.000		
0.170	-0.280	1.000	

Note: These statistics are common to each region. Details.

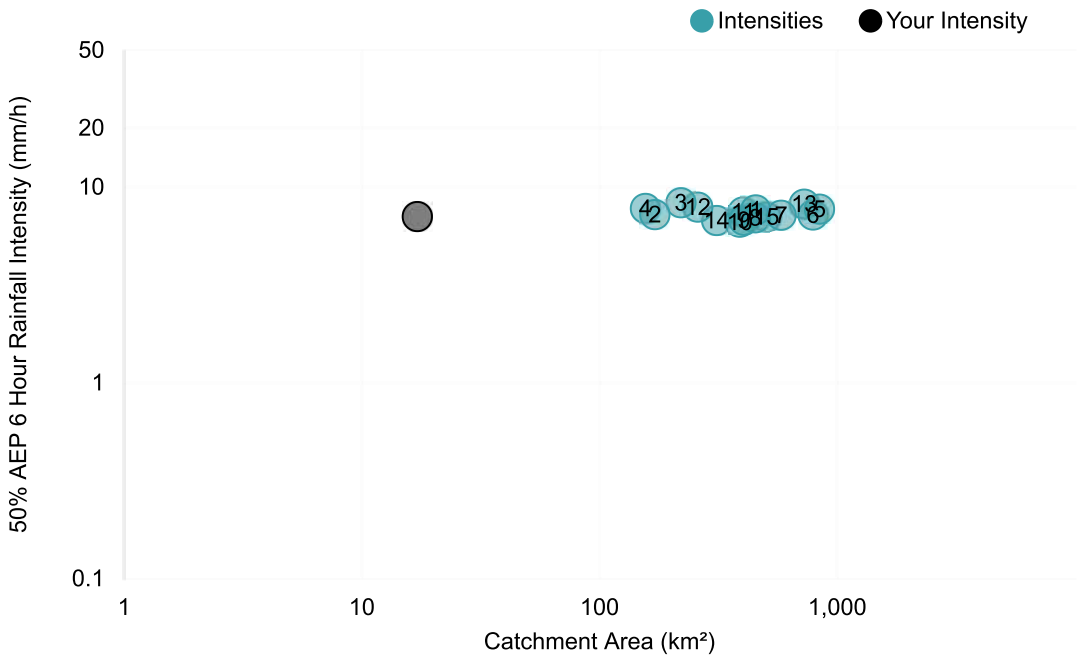
1% AEP Flow vs Catchment Area



Shape Factor vs Catchment Area

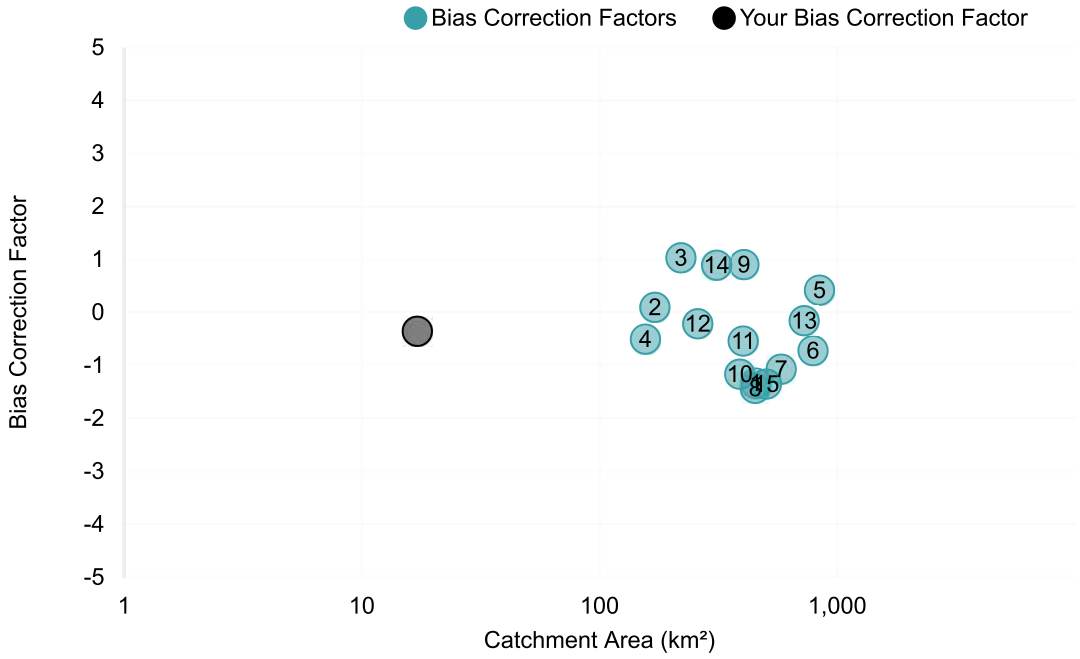


Intensity vs Catchment Area



Bias Correction Factor vs Catchment Area

372



Download

TXT Nearby JSON

Input Data

Date/Time	2019-09-17 14:19
Catchment Name	A1
Latitude (Outlet)	-30.0682
Longitude (Outlet)	148.99018
Latitude (Centroid)	-30.11
Longitude (Centroid)	149.0263
Catchment Area (km^2)	17.118
Distance to Nearest Gauged Catchment (km)	115.13
50% AEP 6 Hour Rainfall Intensity (mm/h)	7.071127
2% AEP 6 Hour Rainfall Intensity (mm/h)	16.217678
Rainfall Intensity Source (User/Auto)	Auto
Region	East Coast

Input Data 373

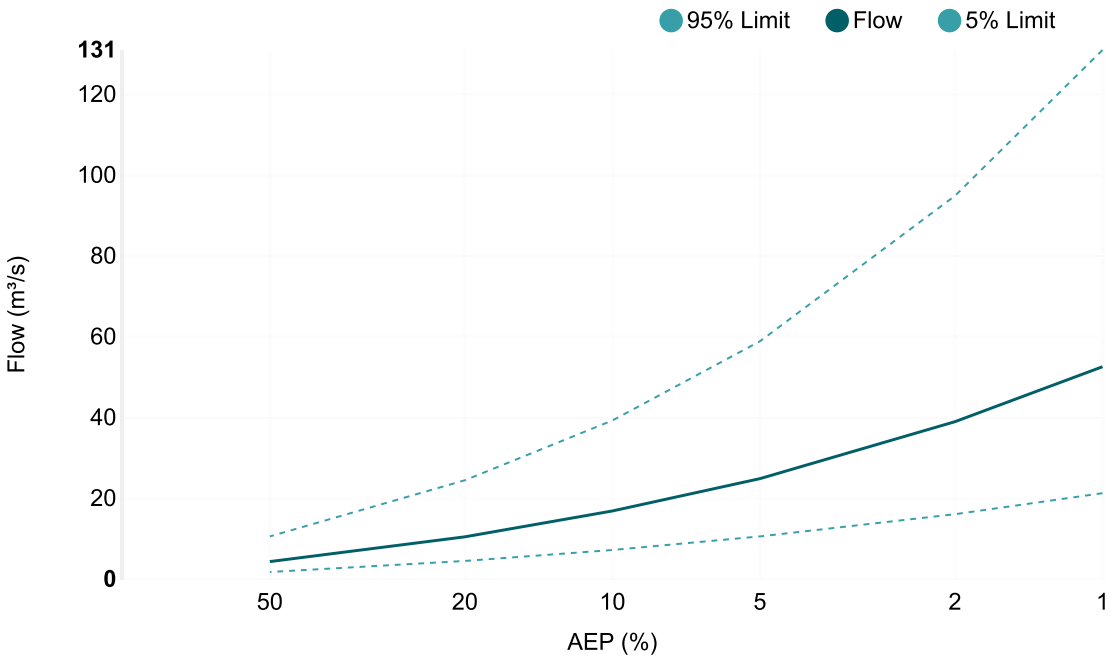
Region Version	RFFE Model 2016 v1
Region Source (User/Auto)	Auto
Shape Factor	1.4*
Interpolation Method	Natural Neighbour
Bias Correction Value	-0.356

Method by Dr Ataur Rahman and Dr Khaled Haddad from Western Sydney University for the Australian Rainfall and Runoff Project. Full description of the project can be found at the project page (http://arr.ga.gov.au/revision-projects/project-list/projects/project-5) on the ARR website. Send any questions regarding the method or project here (mailto:admin@arr-software.org).

ENGINEERS AUSTRALIA (http://www.engineersaustralia.org.au)

WESTERN SYDNEY UNIVERSITY (http://www.uws.edu.au)

Results | Regional Flood Frequency Estimation Model



AEP (%)	Discharge (m^3/s)	Lower Confidence Limit (5%) (m^3/s)	Upper Confidence Limit (95%) (m^3/s)
50	4.37	1.79	10.6
20	10.5	4.53	24.5
10	16.9	7.24	39.3
5	24.9	10.6	58.9
2	39.0	16.1	94.9
1	52.6	21.3	131

Statistics

Variable	Value	Standard Dev
Mean	1.209	0.574
Standard Dev	1.035	0.164
Skew	0.108	0.028

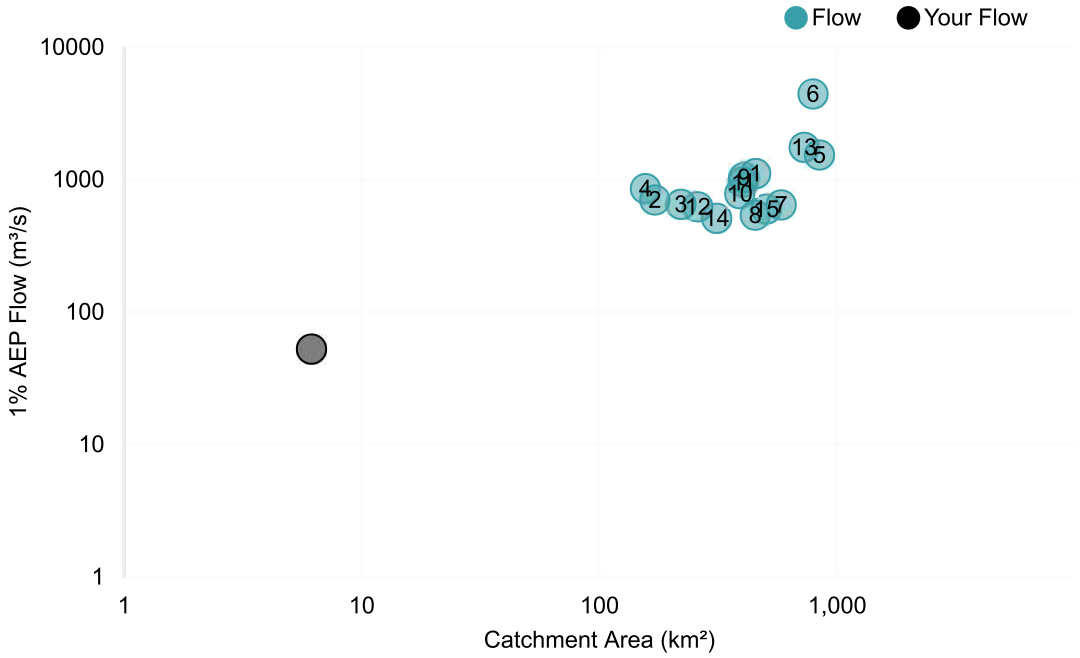
Note: These statistics come from the nearest gauged catchment. Details.

Correlation

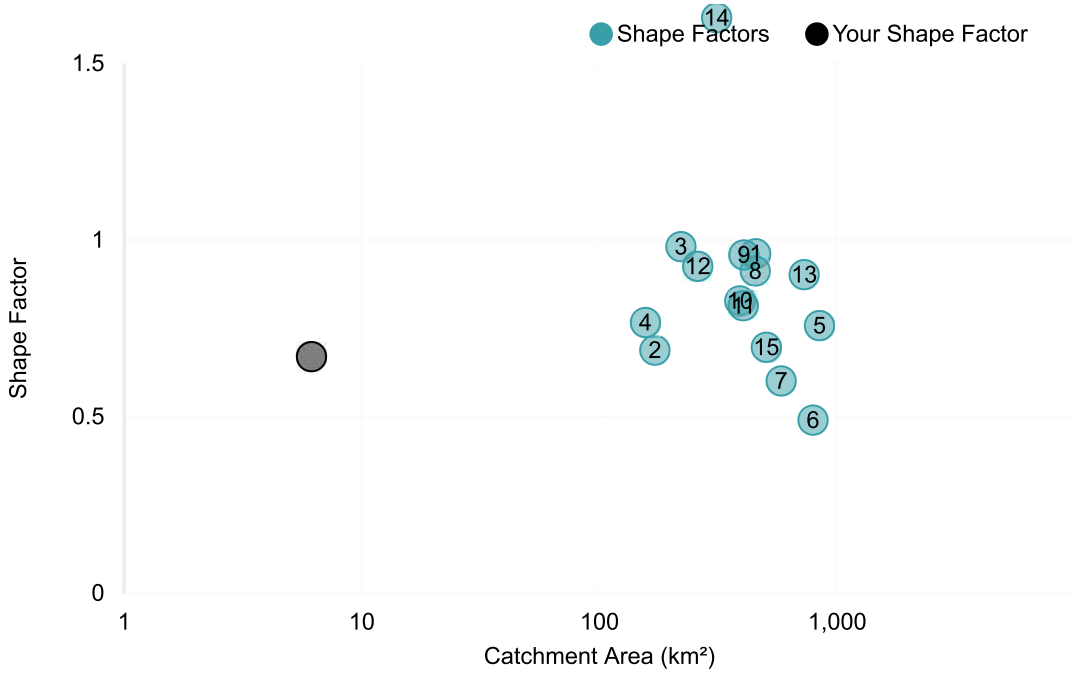
Correlation			375
1.000			
-0.330	1.000		
0.170	-0.280	1.000	

Note: These statistics are common to each region. Details.

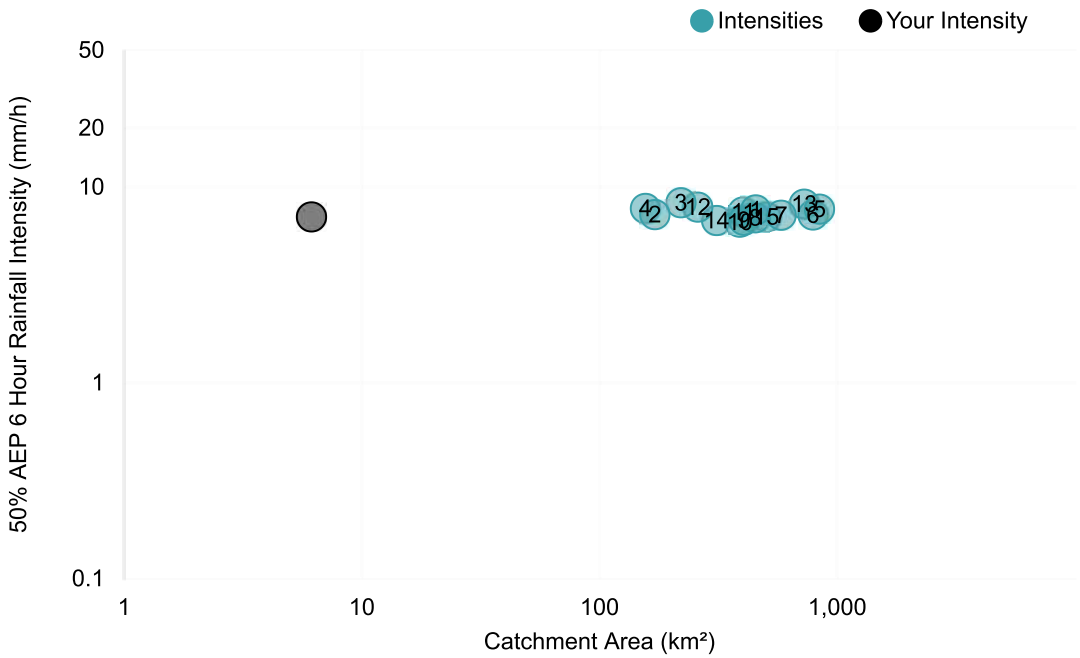
1% AEP Flow vs Catchment Area



Shape Factor vs Catchment Area

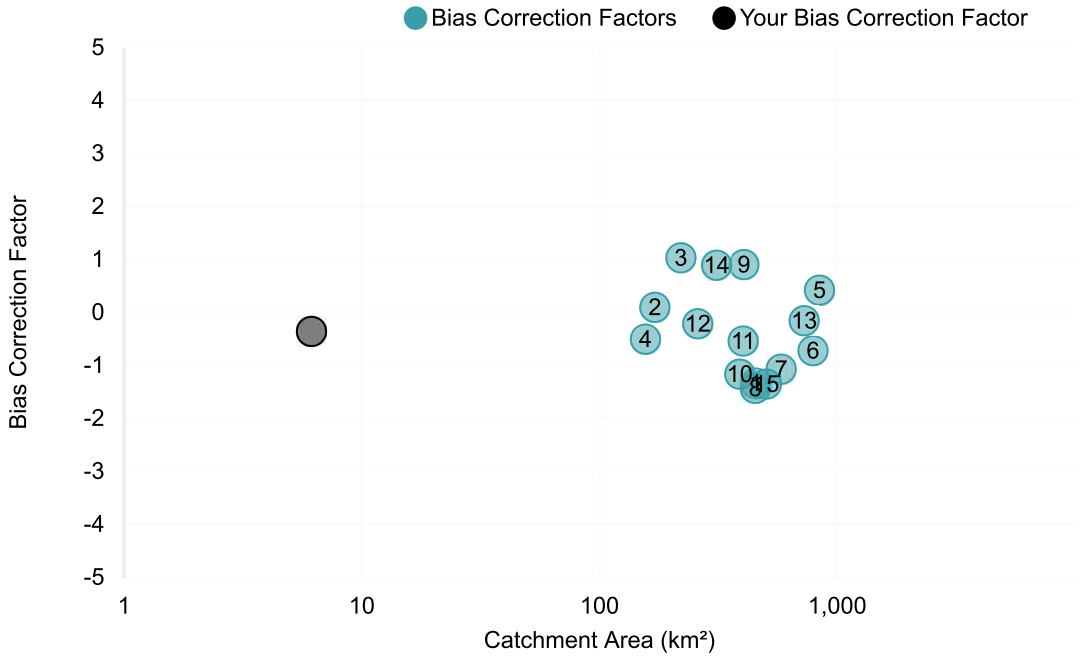


Intensity vs Catchment Area



Bias Correction Factor vs Catchment Area

377



Download

TXT Nearby JSON

Input Data

Date/Time	2019-09-17 14:28
Catchment Name	B1
Latitude (Outlet)	-30.0882
Longitude (Outlet)	148.9561
Latitude (Centroid)	-30.0974
Longitude (Centroid)	148.9697
Catchment Area (km^2)	6.1411
Distance to Nearest Gauged Catchment (km)	117.22
50% AEP 6 Hour Rainfall Intensity (mm/h)	7.042408
2% AEP 6 Hour Rainfall Intensity (mm/h)	16.220096
Rainfall Intensity Source (User/Auto)	Auto
Region	East Coast

Input Data 378

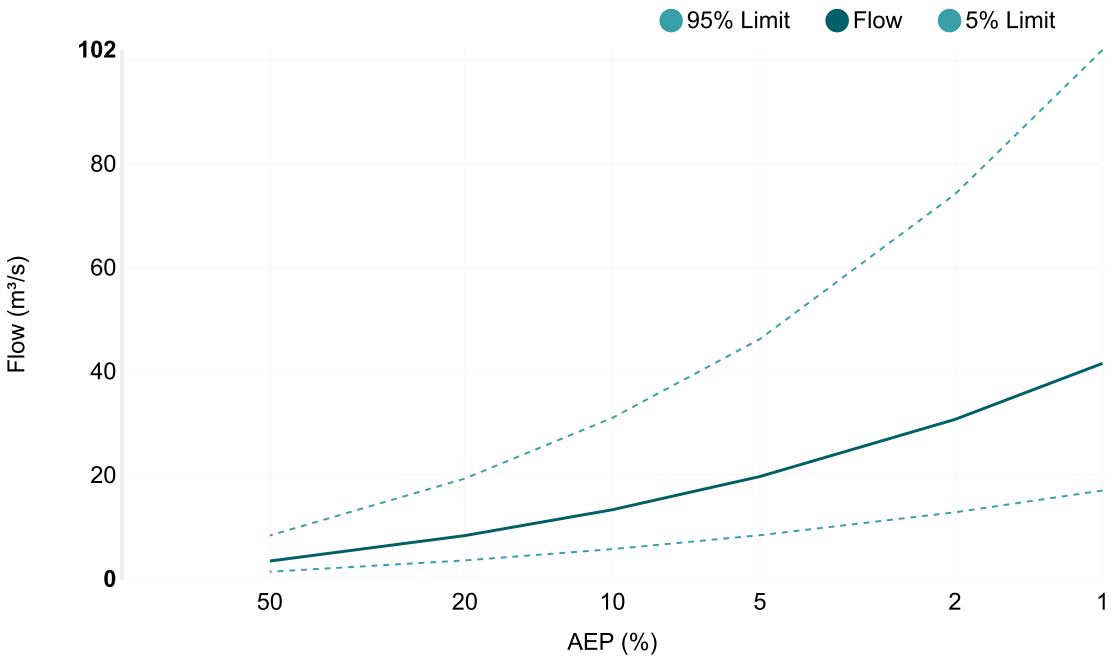
Region Version	RFFE Model 2016 v1
Region Source (User/Auto)	Auto
Shape Factor	0.67
Interpolation Method	Natural Neighbour
Bias Correction Value	-0.359

Method by Dr Ataur Rahman and Dr Khaled Haddad from Western Sydney University for the Australian Rainfall and Runoff Project. Full description of the project can be found at the project page (http://arr.ga.gov.au/revision-projects/project-list/projects/project-5) on the ARR website. Send any questions regarding the method or project here (mailto:admin@arr-software.org).

ENGINEERS AUSTRALIA (http://www.engineersaustralia.org.au)

WESTERN SYDNEY UNIVERSITY (http://www.uws.edu.au)

Results | Regional Flood Frequency Estimation Model



AEP (%)	Discharge (m^3/s)	Lower Confidence Limit (5%) (m^3/s)	Upper Confidence Limit (95%) (m^3/s)
50	3.51	1.44	8.43
20	8.41	3.63	19.4
10	13.4	5.80	31.1
5	19.8	8.49	46.3
2	30.8	12.9	74.2
1	41.6	17.1	102

Statistics

Variable	Value	Standard Dev
Mean	0.751	0.574
Standard Dev	1.035	0.164
Skew	0.108	0.028

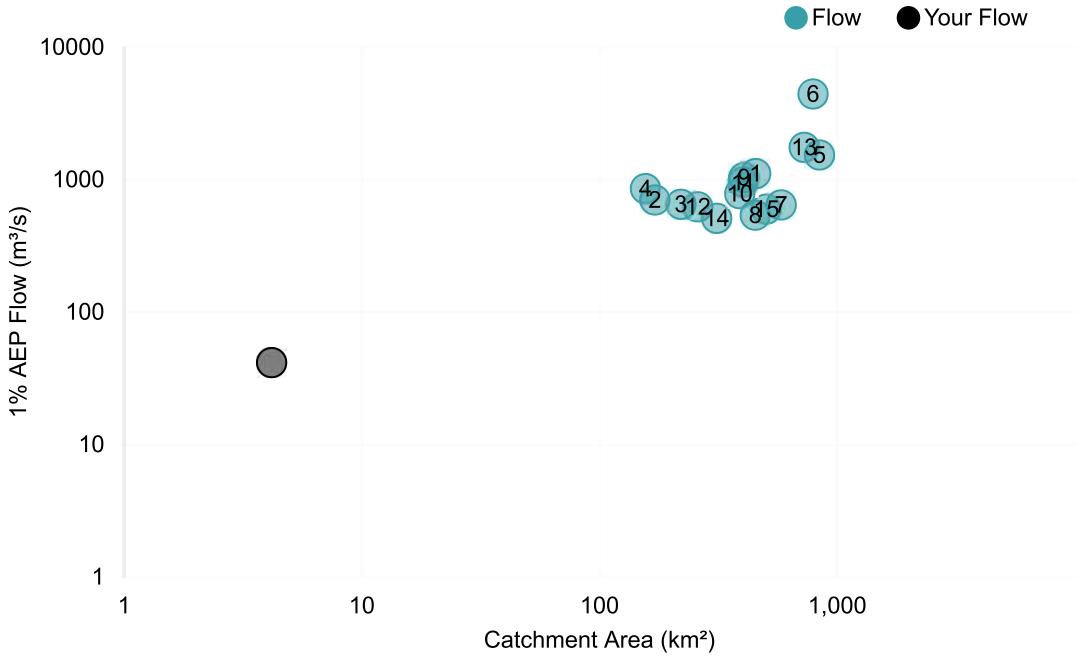
Note: These statistics come from the nearest gauged catchment. Details.

Correlation

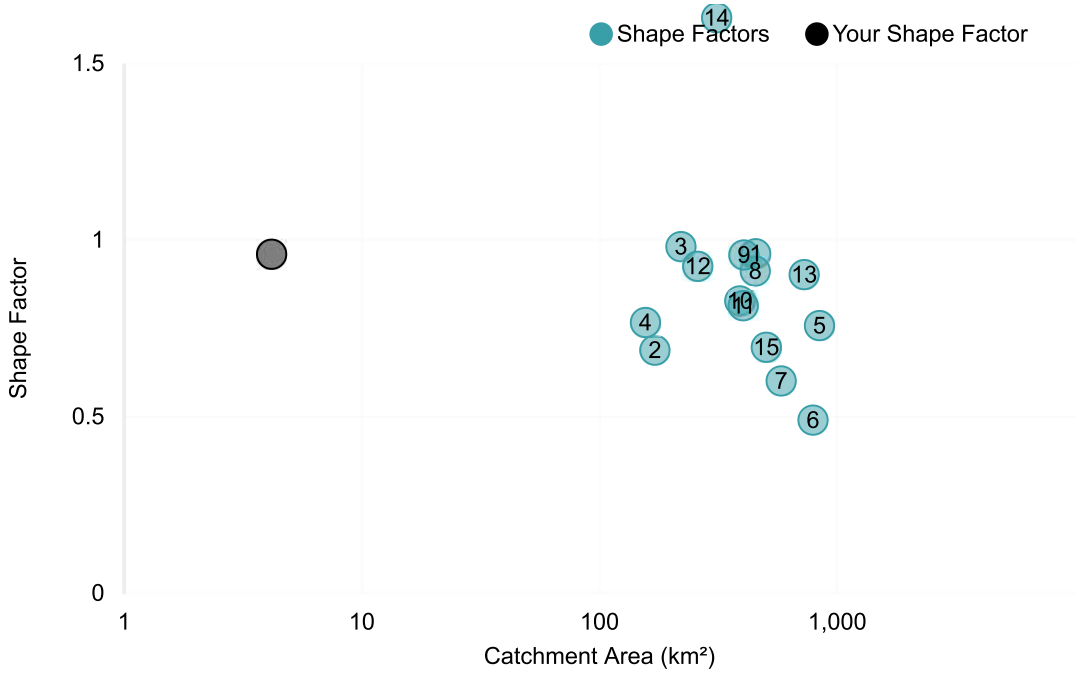
Correlation			380
1.000			
-0.330	1.000		
0.170	-0.280	1.000	

Note: These statistics are common to each region. Details.

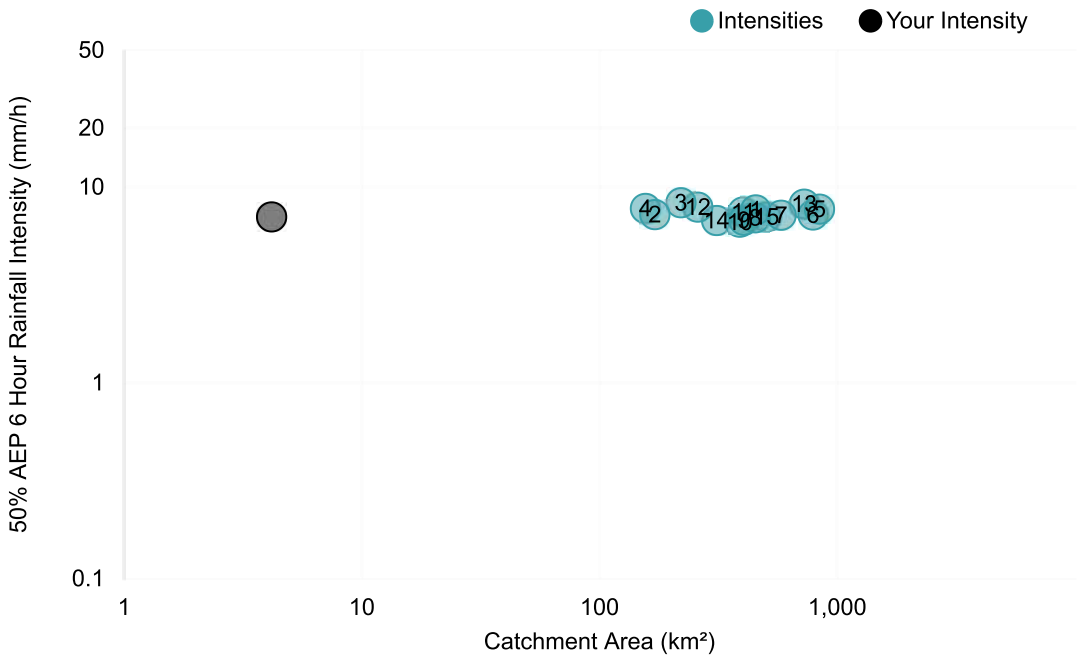
1% AEP Flow vs Catchment Area



Shape Factor vs Catchment Area

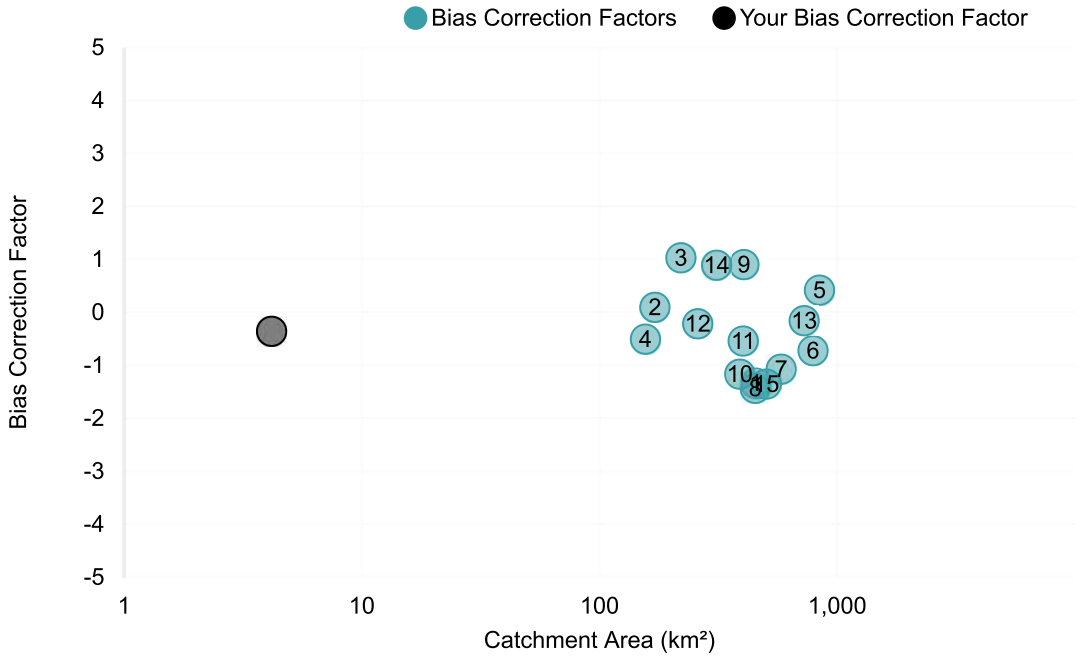


Intensity vs Catchment Area



Bias Correction Factor vs Catchment Area

382



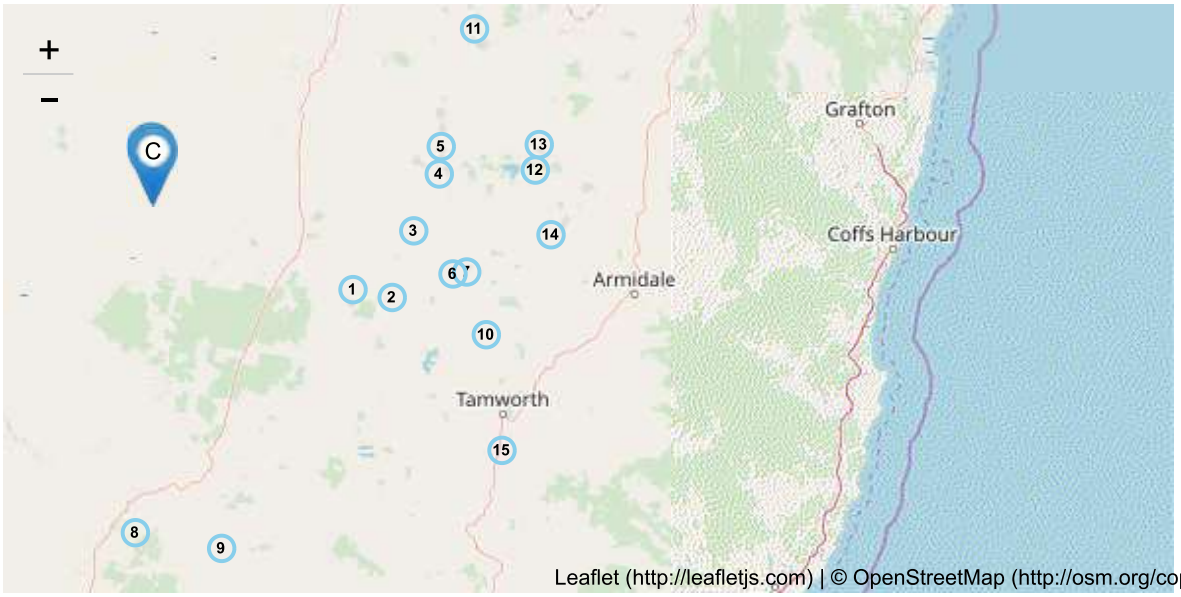
Download

TXT Nearby JSON

Input Data

Date/Time	2019-09-17 14:31
Catchment Name	C1
Latitude (Outlet)	-30.0718
Longitude (Outlet)	148.9592
Latitude (Centroid)	-30.0841
Longitude (Centroid)	148.9738
Catchment Area (km^2)	4.174
Distance to Nearest Gauged Catchment (km)	117.68
50% AEP 6 Hour Rainfall Intensity (mm/h)	7.042408
2% AEP 6 Hour Rainfall Intensity (mm/h)	16.220096
Rainfall Intensity Source (User/Auto)	Auto
Region	East Coast

Input Data	383
Region Version	RFFE Model 2016 v1
Region Source (User/Auto)	Auto
Shape Factor	0.96
Interpolation Method	Natural Neighbour
Bias Correction Value	-0.357



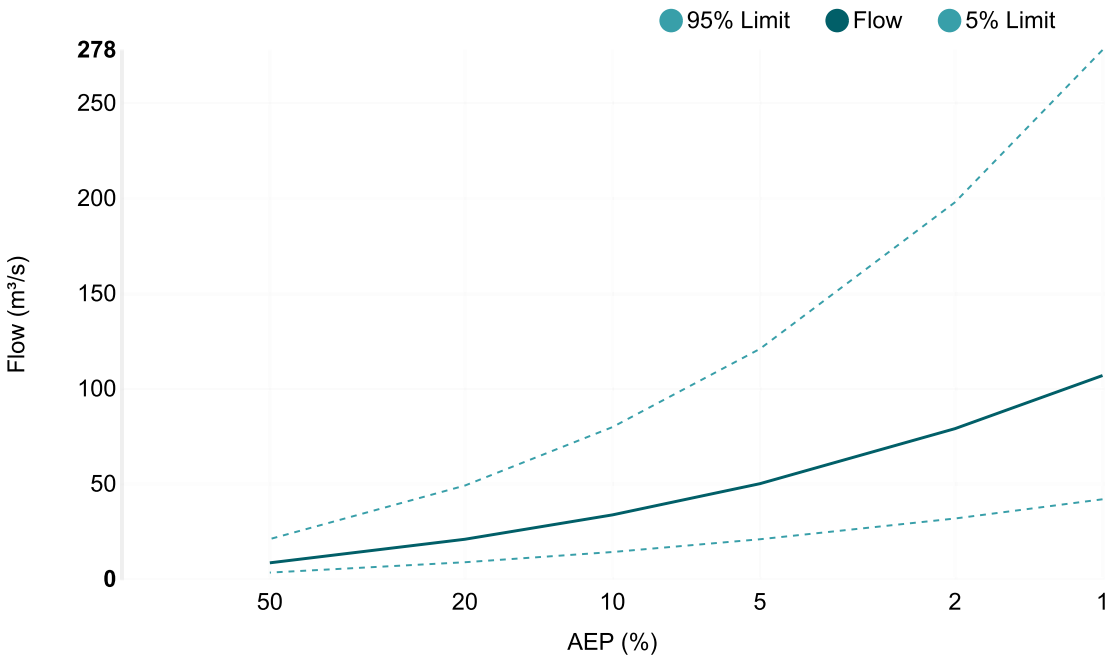
Method by Dr Ataur Rahman and Dr Khaled Haddad from Western Sydney University for the Australian Rainfall and Runoff Project. Full description of the project can be found at the project page (http://arr.ga.gov.au/revision-projects/project-list/projects/project-5) on the ARR website. Send any questions regarding the method or project here (mailto:admin@arr-software.org).

ENGINEERS AUSTRALIA (http://www.engineersaustralia.org.au)

WESTERN SYDNEY UNIVERSITY (http://www.uws.edu.au)

384

Results | Regional Flood Frequency Estimation Model



*The catchment has unusual shape. Results have lower accuracy and may not be directly applicable in practice.

AEP (%)	Discharge (m^3/s)	Lower Confidence Limit (5%) (m^3/s)	Upper Confidence Limit (95%) (m^3/s)
50	8.62	3.50	21.1
20	21.0	8.93	49.2
10	33.8	14.3	79.9
5	50.2	21.0	121
2	79.1	31.9	198
1	107	42.0	278

Statistics

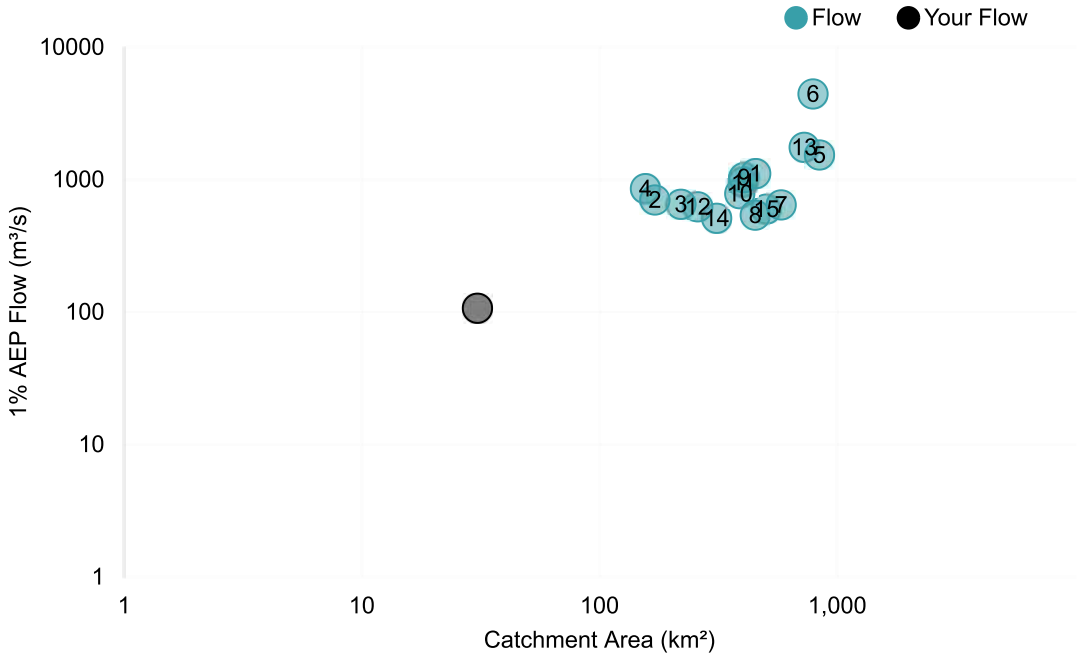
Variable	Value	Standard Dev
Mean	2.207	0.574
Standard Dev	1.035	0.164
Skew	0.108	0.028

Note: These statistics come from the nearest gauged catchment. Details.

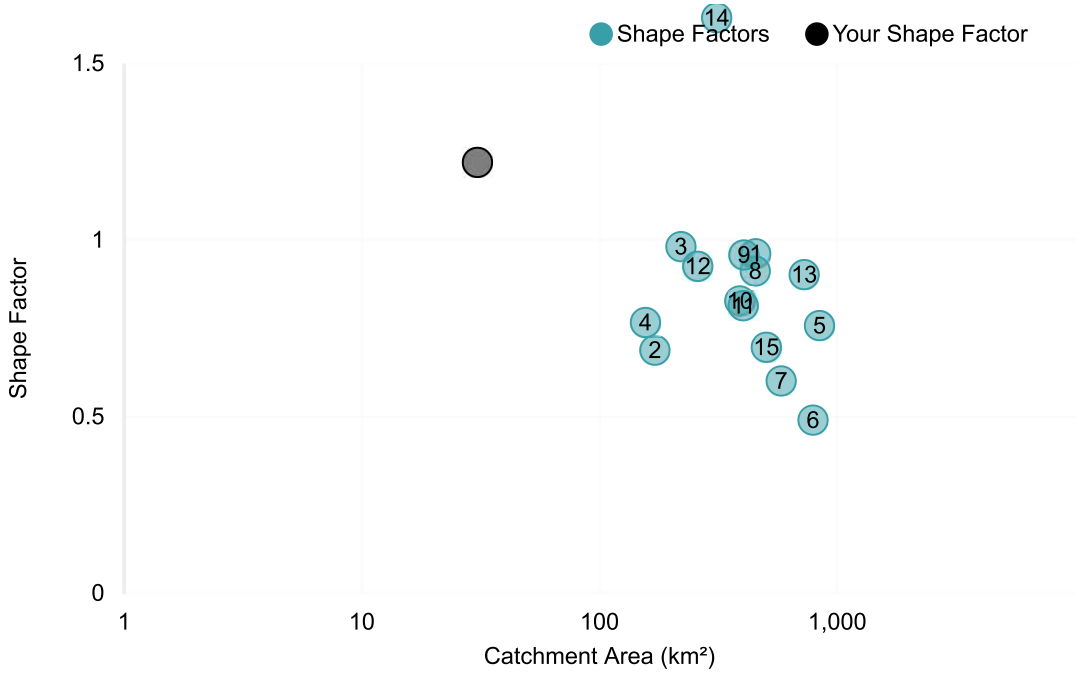
Correlation			385
1.000			
-0.330	1.000		
0.170	-0.280	1.000	

Note: These statistics are common to each region. Details.

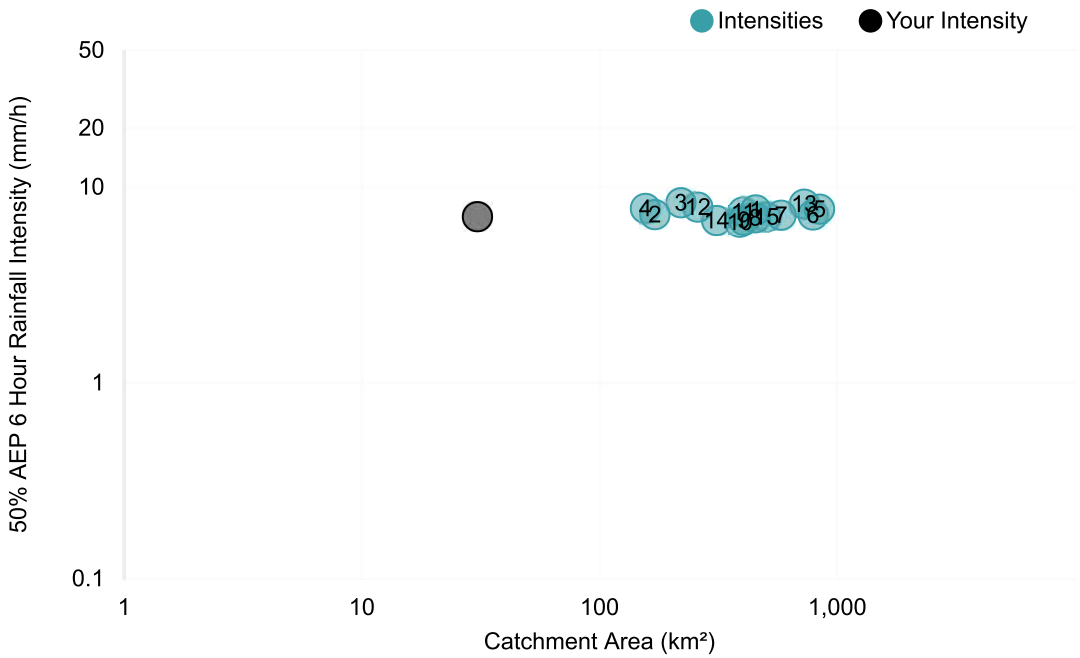
1% AEP Flow vs Catchment Area



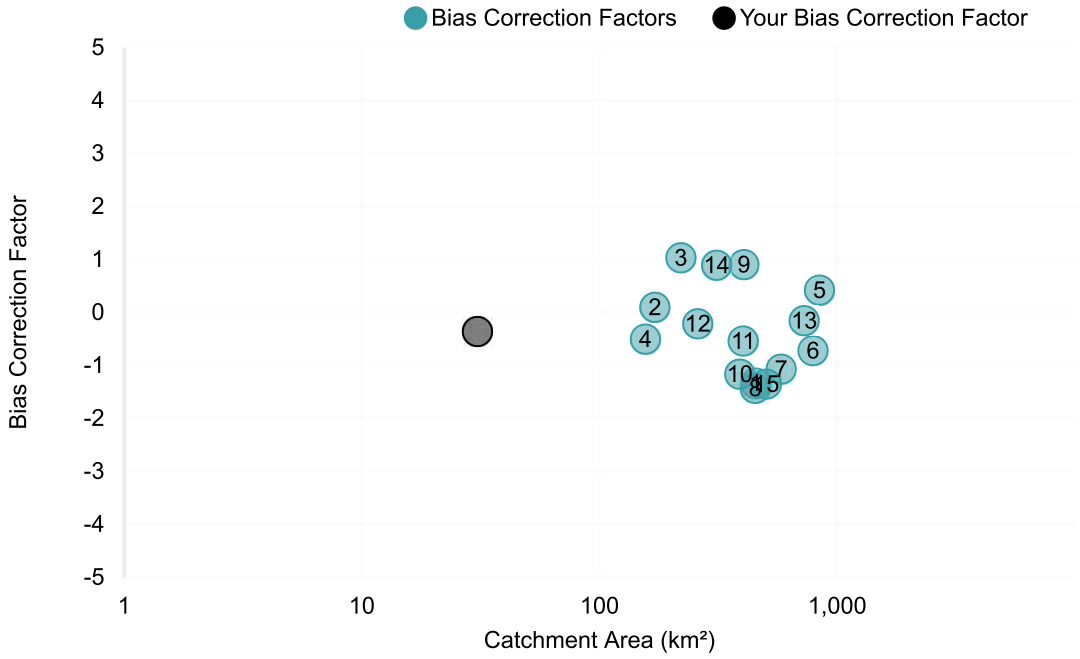
Shape Factor vs Catchment Area



Intensity vs Catchment Area



Bias Correction Factor vs Catchment Area



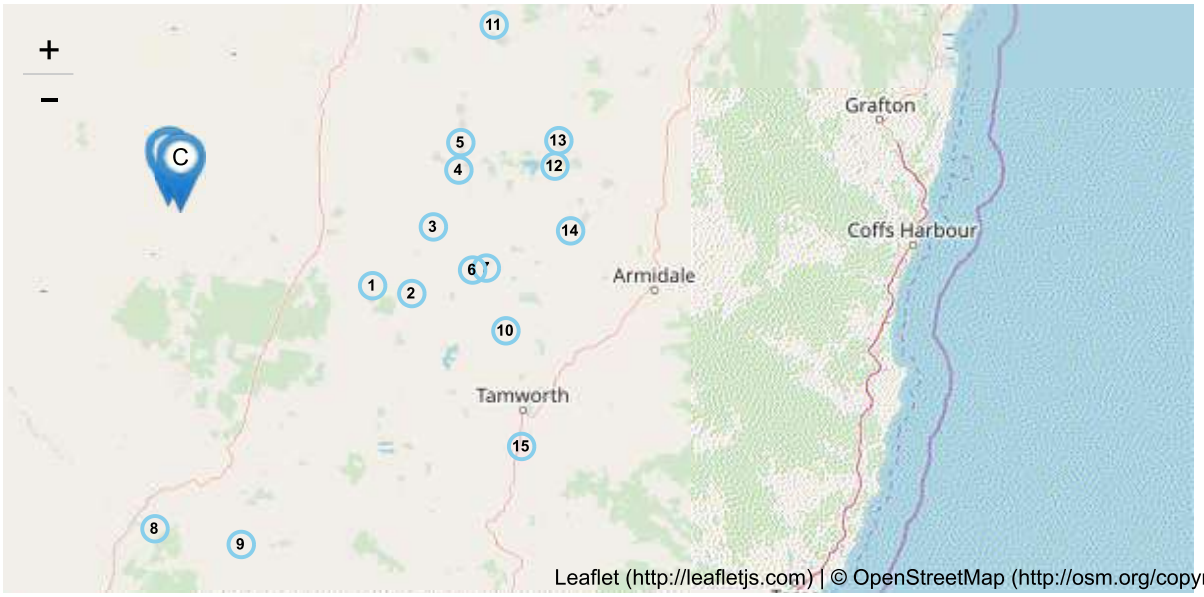
Download

TXT Nearby JSON

Input Data

Date/Time	2019-09-17 14:34
Catchment Name	D1
Latitude (Outlet)	-30.1055
Longitude (Outlet)	148.953
Latitude (Centroid)	-30.1313
Longitude (Centroid)	149.0165
Catchment Area (km^2)	30.6462
Distance to Nearest Gauged Catchment (km)	116.75
50% AEP 6 Hour Rainfall Intensity (mm/h)	7.059368
2% AEP 6 Hour Rainfall Intensity (mm/h)	16.164624
Rainfall Intensity Source (User/Auto)	Auto
Region	East Coast

Input Data	388
Region Version	RFFE Model 2016 v1
Region Source (User/Auto)	Auto
Shape Factor	1.22*
Interpolation Method	Natural Neighbour
Bias Correction Value	-0.361



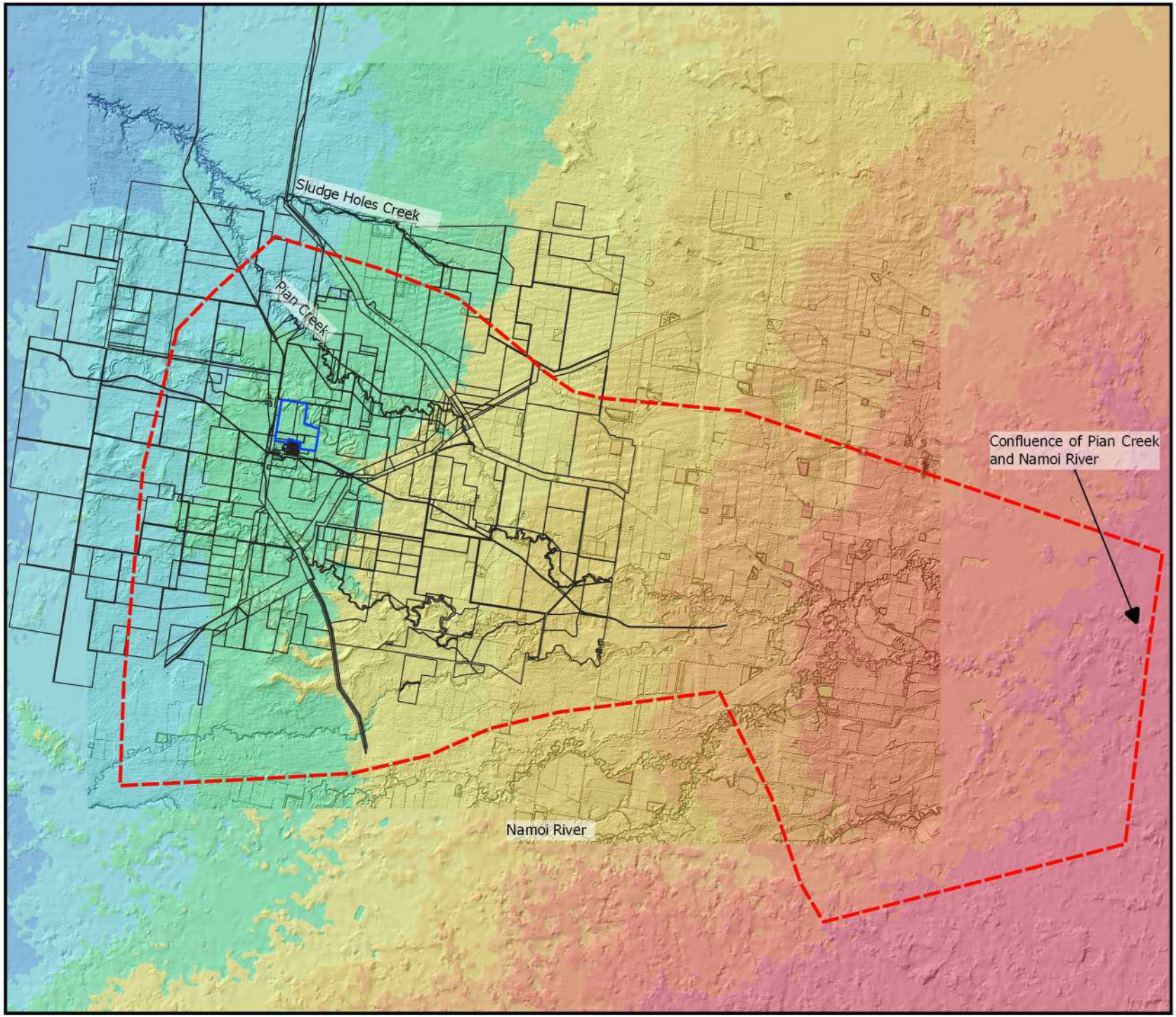
Method by Dr Ataur Rahman and Dr Khaled Haddad from Western Sydney University for the Australian Rainfall and Runoff Project. Full description of the project can be found at the project page (http://arr.ga.gov.au/revision-projects/project-list/projects/project-5) on the ARR website. Send any questions regarding the method or project here (mailto:admin@arr-software.org).

ENGINEERS AUSTRALIA (http://www.engineersaustralia.org.au)

WESTERN SYDNEY UNIVERSITY (http://www.uws.edu.au)

APPENDIX C HYDRAULIC MODEL PLANS (TUFLOW)

Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.COM.AU



N

0 100 200 300 400 500 600 700 m

1:300,000 (A4)

Coordinate System: GDA 2020/MGA Zone 55

Legend

- Tuflow Model Extent
- Site Boundary

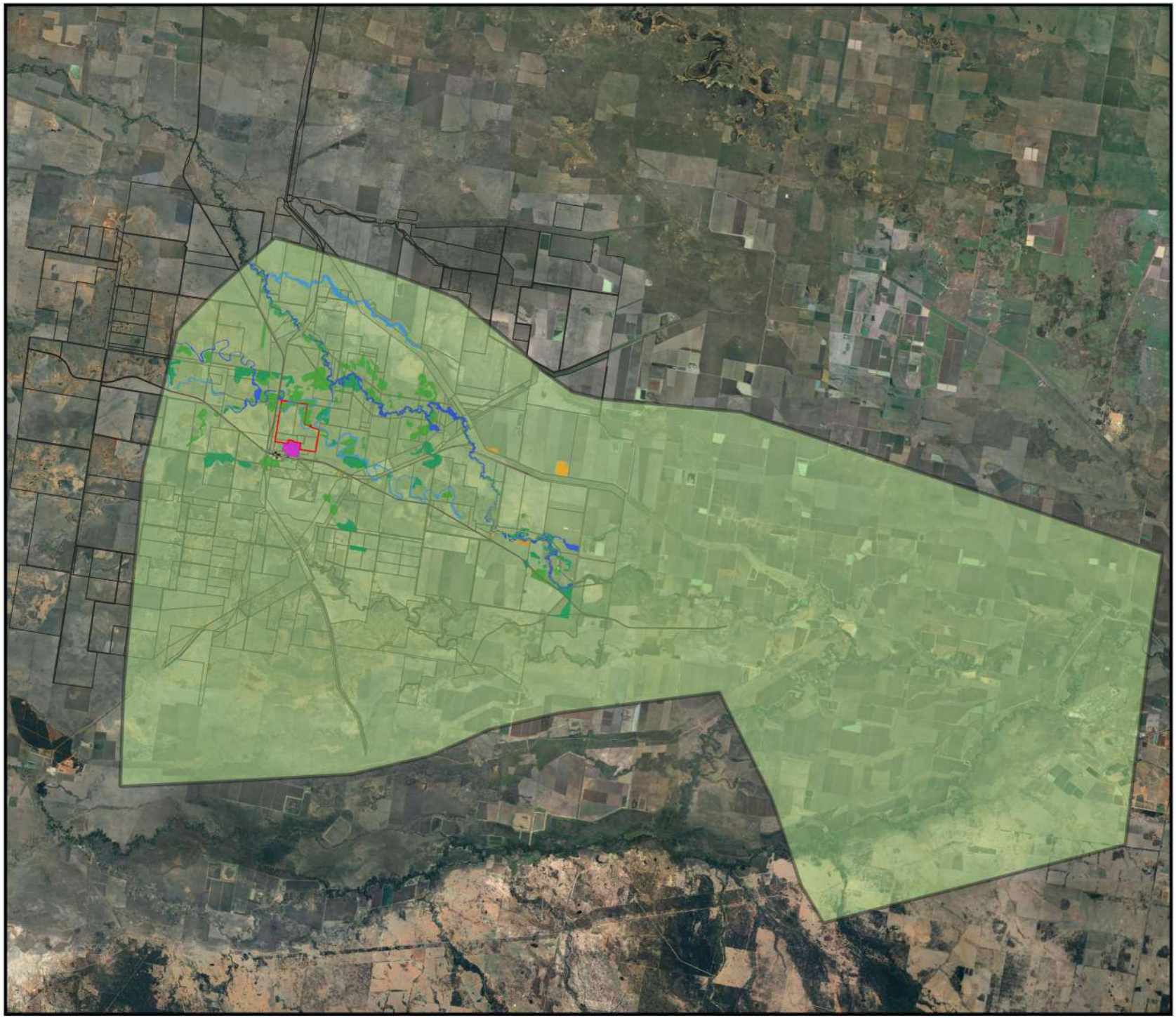
Topography (mAHD)

- <= 150
- 150 - 155
- 155 - 160
- 160 - 165
- 165 - 170
- 170 - 175
- 175 - 180
- 180 - 185
- 185 - 190
- 190 - 300

Project: Burren Junction Solar Farm
Client: Enerparc Australia Pty Ltd
Date: October 2019

Appendix C1
Tuflow Model Extent and Topography

Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.COM.AU



N

0 100 200 300 400 500 600 700 m

1:300,000 (A4)

Coordinate System: GDA 2020/MGA Zone 55

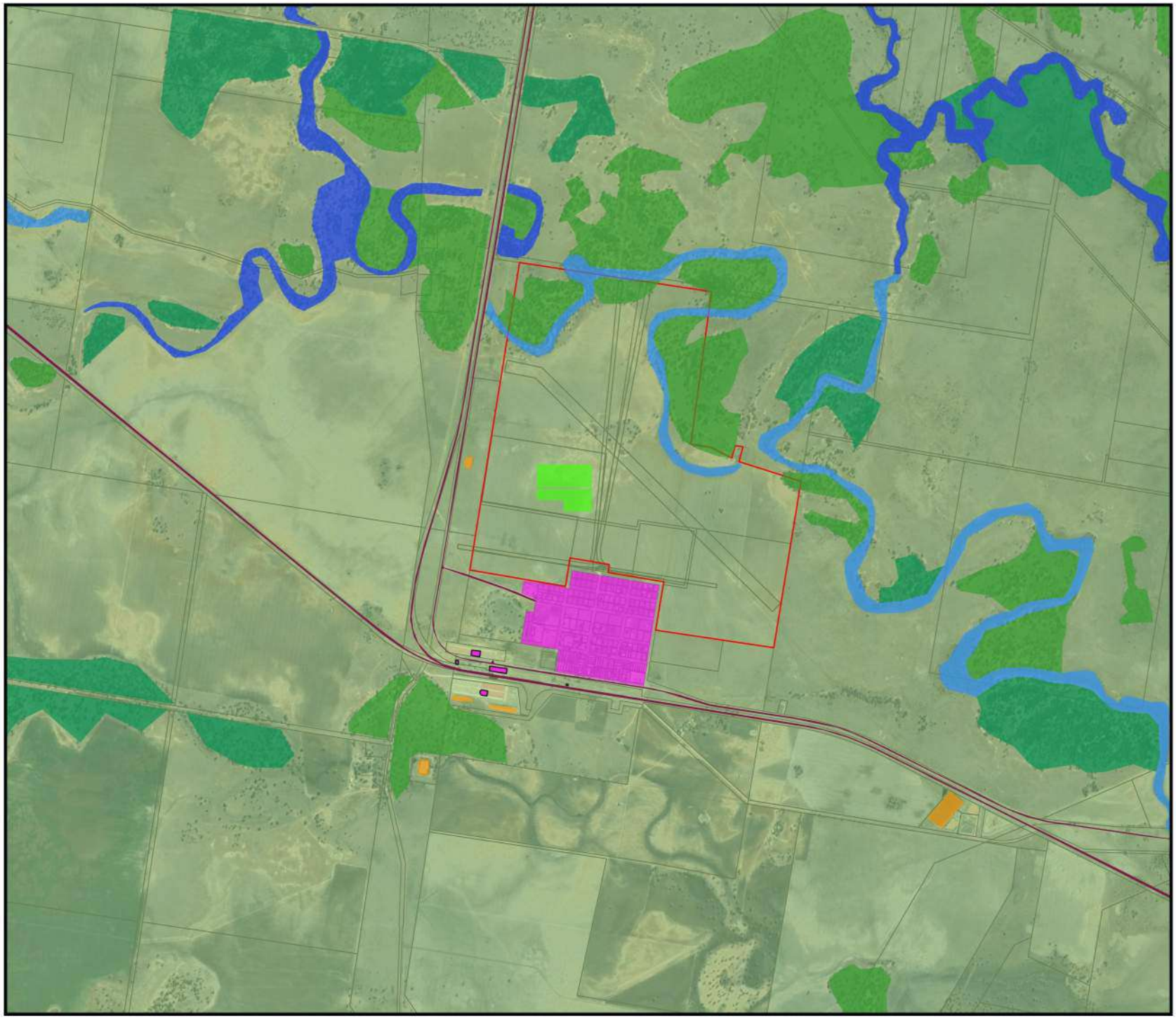
Legend

- Agricultural Land (n=0.035)
- Medium Vegetation (n=0.045)
- Dense Vegetation (n=0.065)
- Concrete Road (n=0.014)
- Pond (n=0.03)
- Creek (n=0.03)
- Medium Vegetated Creek (n=0.08)
- Dense Vegetated Creek (n=0.1)
- House (n=0.3)
- Residential (n=0.08)

Project: Burren Junction Solar Farm
Client: Geolyse Pty Ltd
Date: 18 September 2019

Appendix C2
Pre-development Roughness Mapping

Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.COM.AU



N

0 100 200 300 400 500 600 700 m

1:40,000 (A4)

Coordinate System: GDA 2020/MGA Zone 55

Legend

- Agricultural Land (n=0.035)
- Medium Vegetation (n=0.045)
- Dense Vegetation (n=0.065)
- Concrete Road (n=0.014)
- Pond (n=0.03)
- Creek (n=0.03)
- Medium Vegetated Creek (n=0.08)
- Dense Vegetated Creek (n=0.1)
- House (n=0.3)
- Residential (n=0.08)
- Proposed Solar Panel (n=0.049)

Project: Burren Junction Solar Farm
Client: Enerparc Australia Pty Ltd
Date: October 2019

Appendix C3
Post-development Roughness Mapping

Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.COM.AU

N

0 100 200 300 400 500 600 700 m

1:40,000 (A4)

Coordinate System: GDA 2020/MGA Zone 55

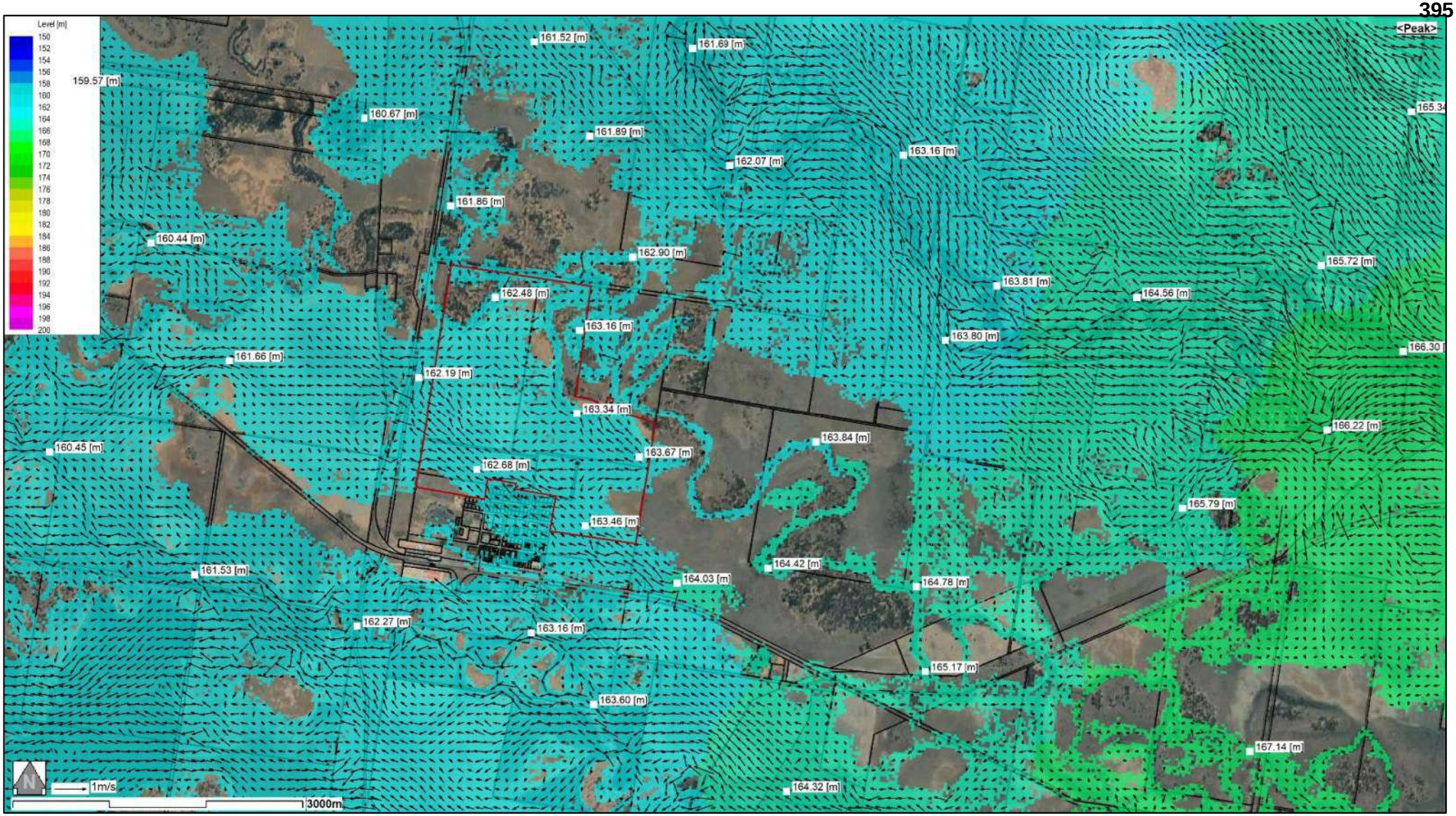
Legend

- Site Boundary
- Reporting Points

Project: Burren Junction Solar Farm
Client: Enerparc Australia Pty Ltd
Date: October 2019

Appendix C4
Tuflow Model Boundary Locations and Reporting Points

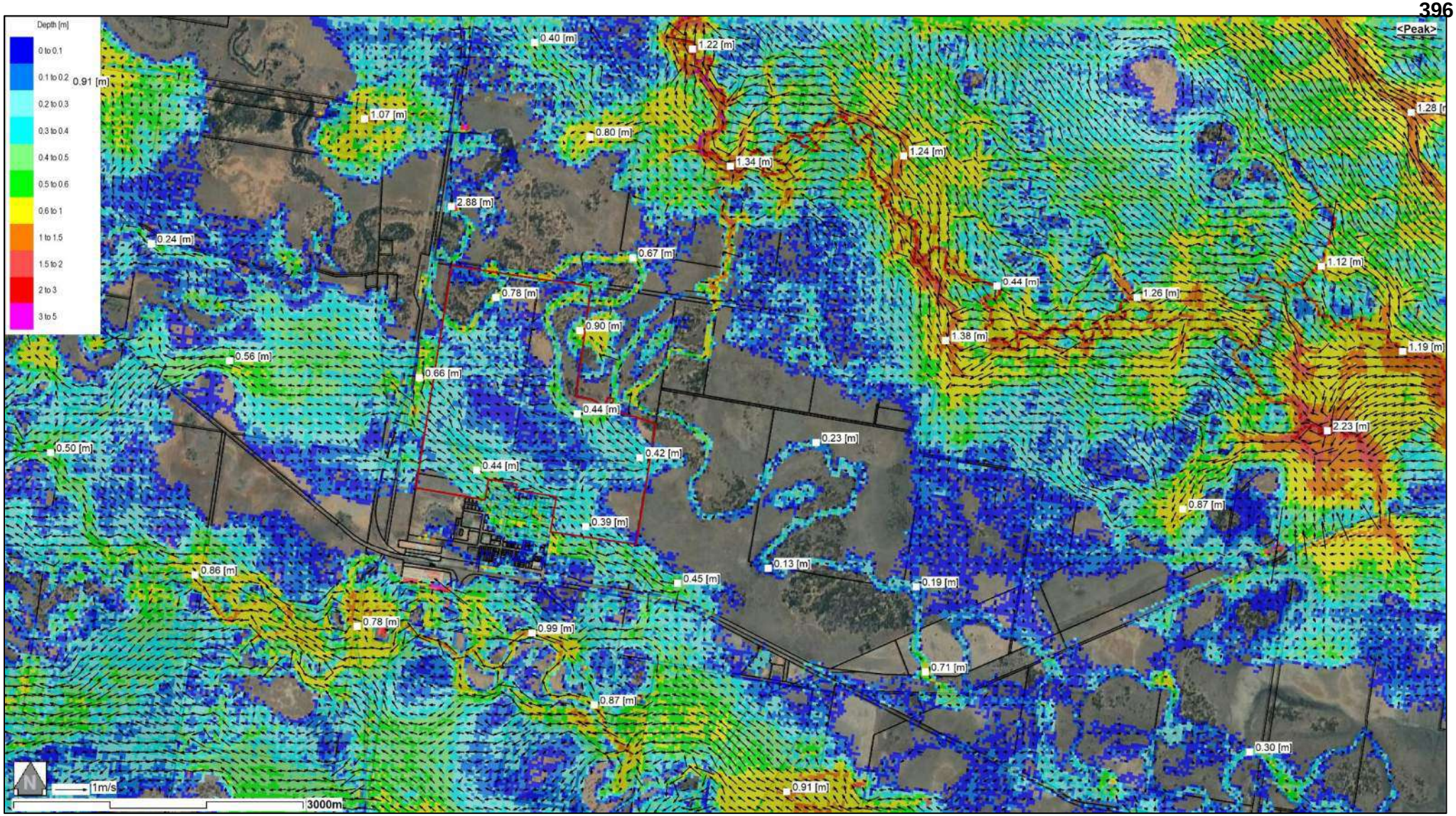
APPENDIX D PRE-DEVELOPMENT 1% AEP FLOOD MAPS



PROJECT: Burren Junction Solar Farm
CLIENT: Enerparc Australia Pty Ltd
DATE: October 2019

Figure D1 – 1%AEP Event Base Case Peak Water Surface Levels (Case E05)

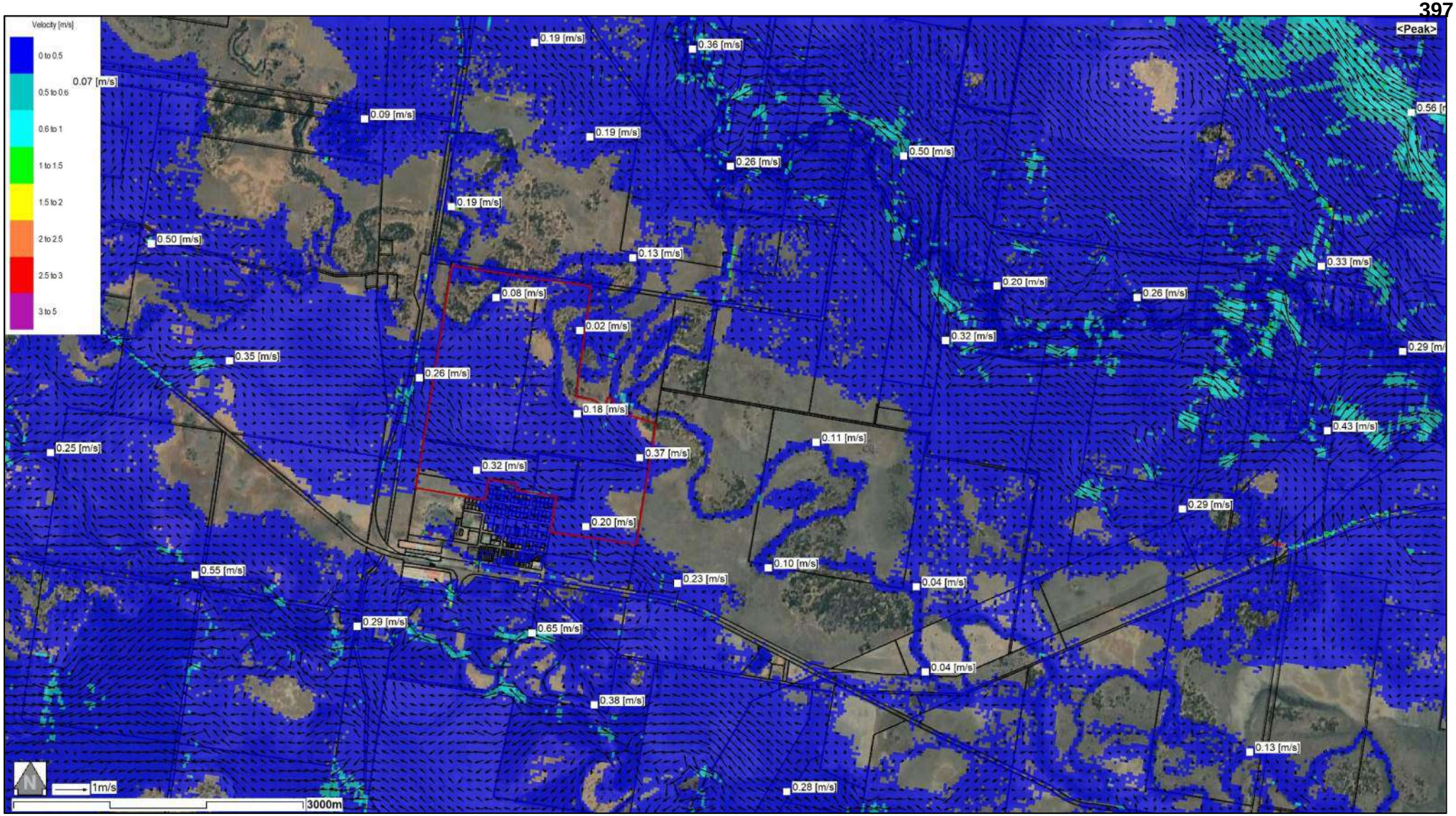
Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.com.au



PROJECT: Burren Junction Solar Farm
CLIENT: Enerparc Australia Pty Ltd
DATE: October 2019

Figure D2 – 1%AEP Event Base Case Peak Water Surface Depths (Case E05)

Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.com.au

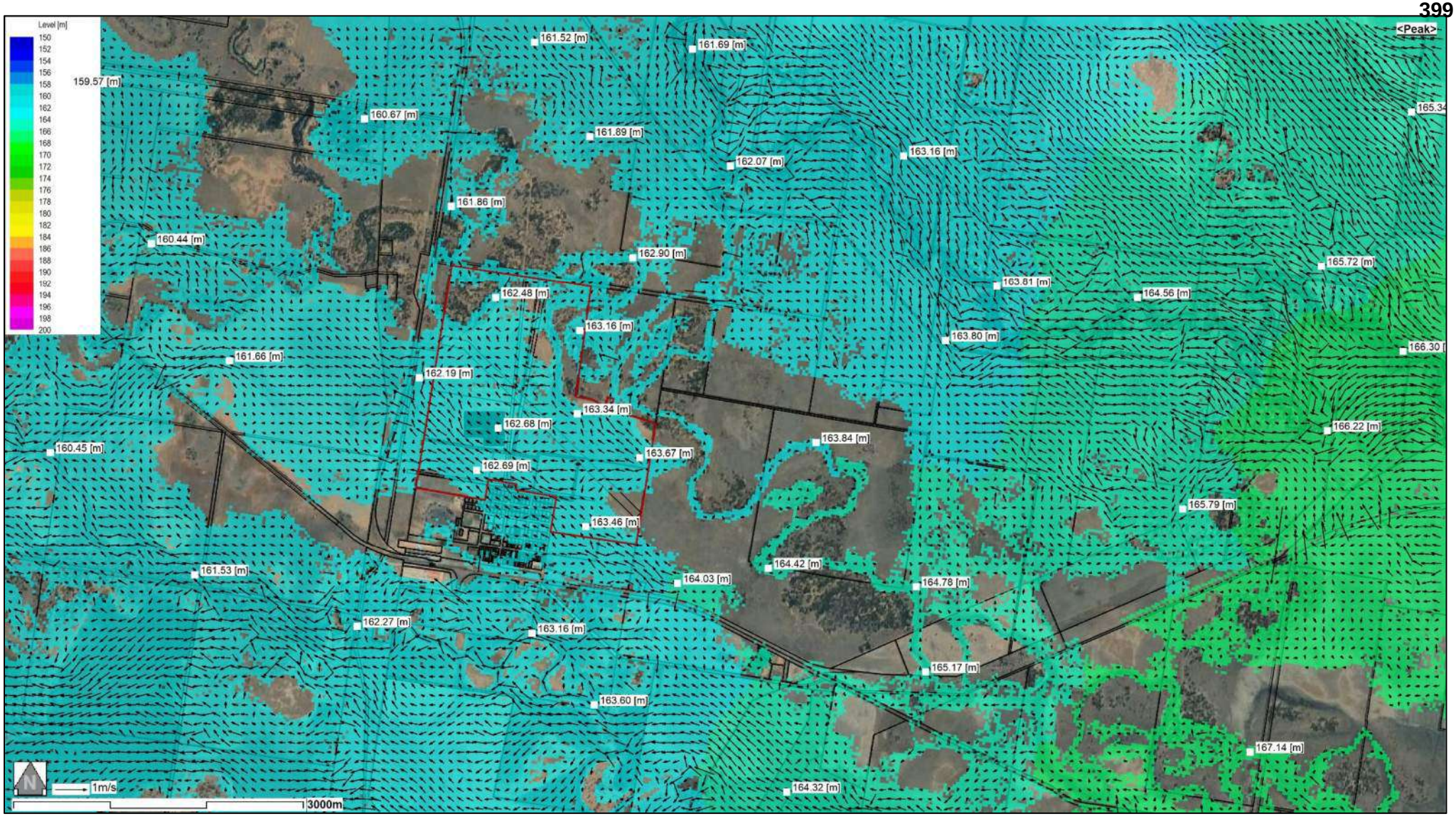


PROJECT: Burren Junction Solar Farm
CLIENT: Enerparc Australia Pty Ltd
DATE: October 2019

Figure D3 – 1%AEP Event Base Case Peak Water Surface Velocities (Case E05)

Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.com.au

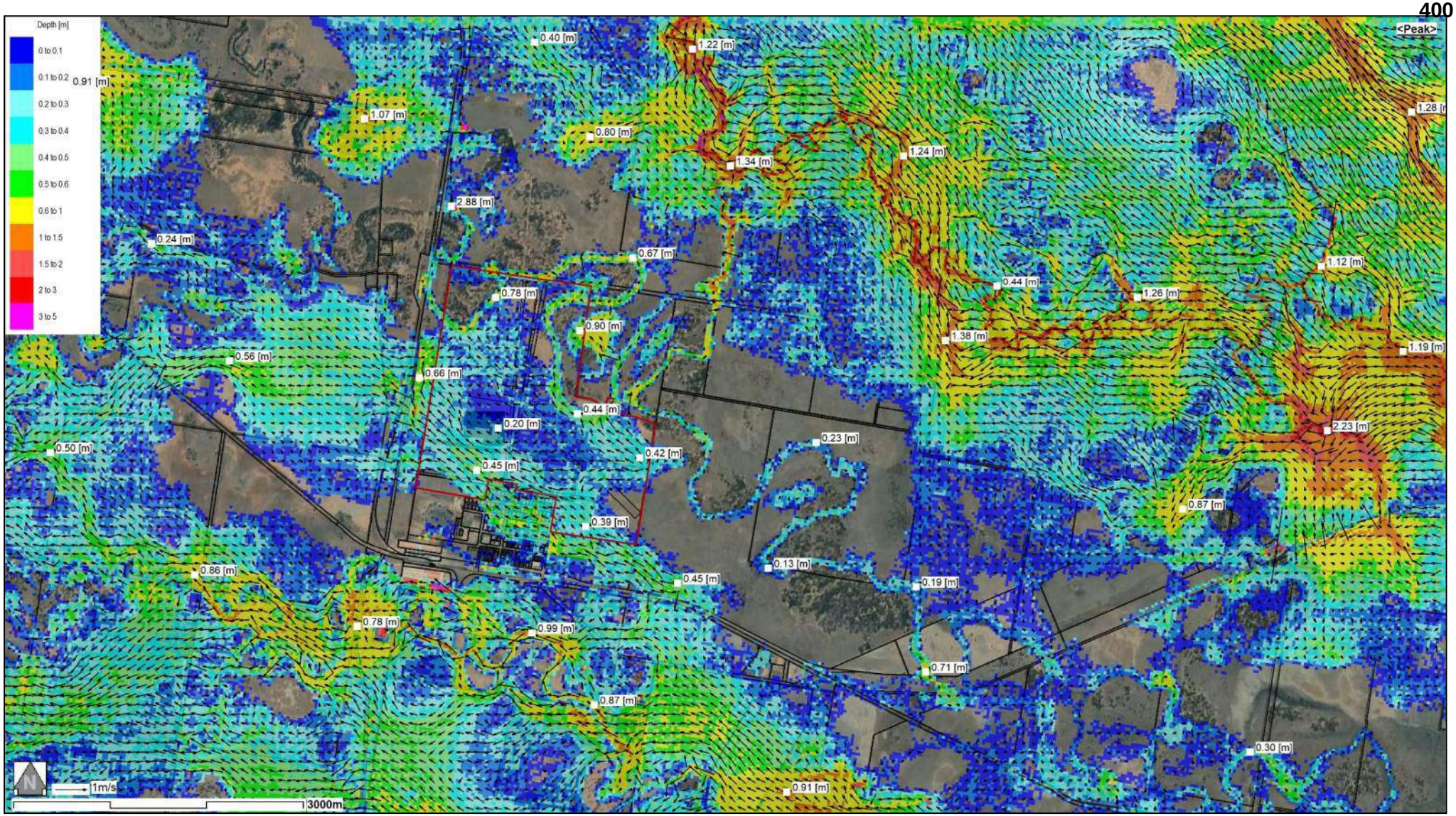
APPENDIX E POST-DEVELOPMENT 1% AEP FLOOD MAPS



PROJECT: Burren Junction Solar Farm
CLIENT: Enerparc Australia Pty Ltd
DATE: October 2019

Figure E1 – 1%AEP Event Predicted Peak Water Surface Levels (Case D03)

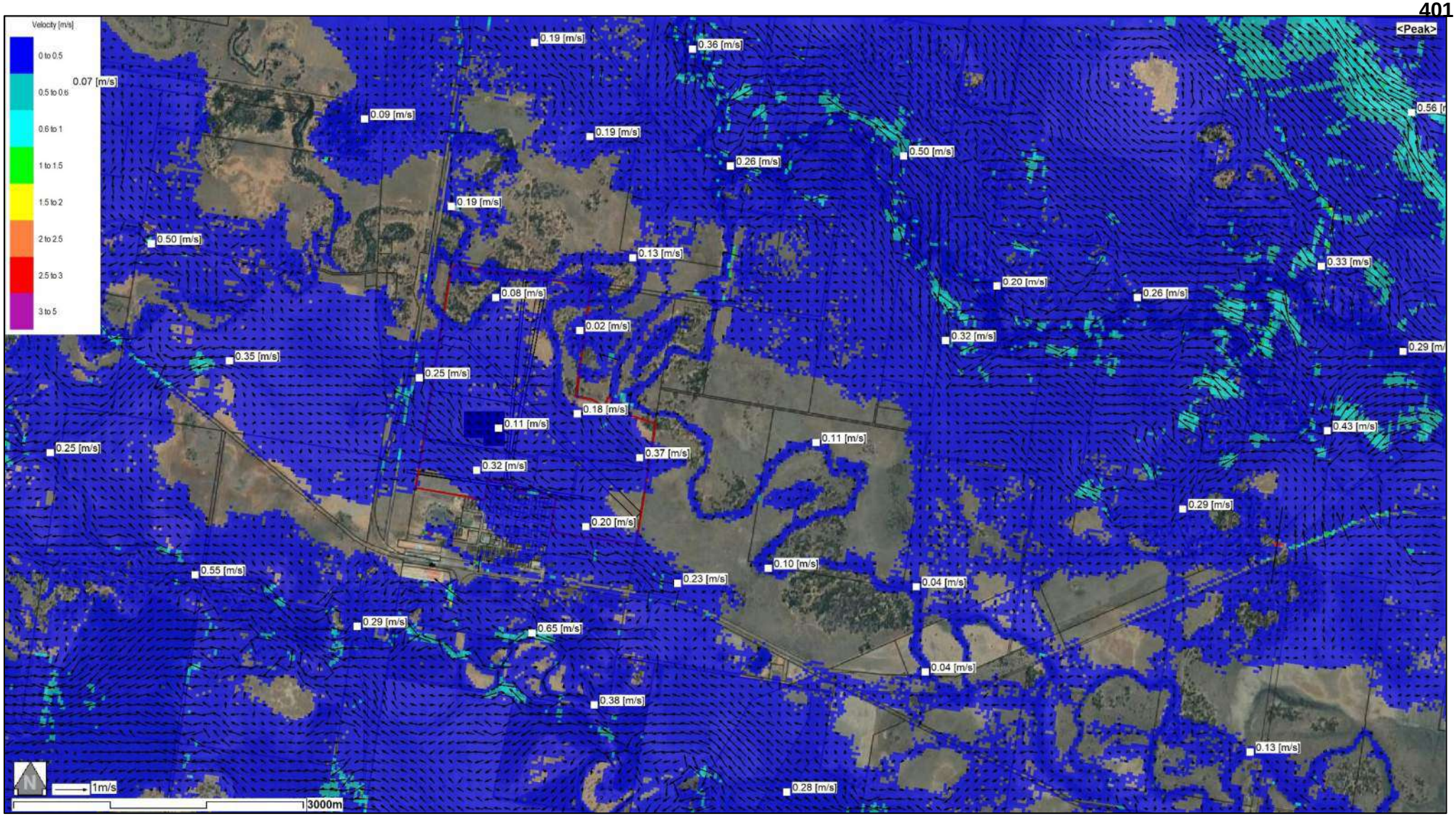
Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.com.au



PROJECT: Burren Junction Solar Farm
CLIENT: Enerparc Australia Pty Ltd
DATE: October 2019

Figure E2 – 1%AEP Event Predicted Peak Water Surface Depths (Case D03)

Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.com.au



PROJECT: Burren Junction Solar Farm
CLIENT: Enerparc Australia Pty Ltd
DATE: October 2019

Figure E3 – 1%AEP Event Predicted Peak Water Surface Velocities (Case D03)

Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.com.au

APPENDIX F 1% AEP FLOOD IMPACT MAP

PROJECT: Burren Junction Solar Farm
CLIENT: Enerparc Australia Pty Ltd
DATE: October 2019

Figure F1 – 1%AEP Event Peak Water Surface Level Impacts (Case D03)

Premise WATER
1300 017 736
mail@premise.com.au
PREMISE.com.au

Fiona Duncan

From: ConveyancingTeam
Sent: Wednesday, 28 October 2020 2:39 PM
To: 'admin@walgett.nsw.gov.au'
Subject: Re: NSW Government concurrence and referral request CNR-13197 / DA2020/18 - Sebastopol Street, Burren Junction (Lot 13 DP753926) - 5MWAC solar farm & associated infrastructure, 2.4m chain link security fencing

Dear Sir/Madam,

We refer to your correspondence seeking comment from Essential Energy in relation to the proposed development at the above property.

Essential Energy notes that existing overhead powerlines (66kV and 22kV) are impacted by the proposed development and it has safety concerns in relation to the proximity of the proposed development to its powerlines.

Please have the Applicant provide a detailed site plan showing:

- The location of all proposed solar farm infrastructure and proposed security fencing.
- The location of all proposed solar farm infrastructure and proposed security fencing including all elevations and height from the top of all structures to the nearest conductor/s (powerline/s) and nearest power pole/s.
- The location of all proposed solar farm infrastructure and proposed security fencing and the distance to the nearest conductor/s (powerline/s) and nearest power pole/s

Any development in proximity to Essential Energy's electrical infrastructure should comply with the latest industry guideline currently known as *ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure*. A copy of this guideline can be located at https://energy.nsw.gov.au/sites/default/files/2018-09/ISSC-20-Electricity-Easements.pdf.

If the Applicant believes that the proposed development complies with *ISSC 20*, then please provide plans certified by a suitability qualified person (showing distances from the proposed development to Essential Energy's infrastructure) together with any other relevant information for further consideration.

Council's and the Applicant's attention is also drawn to Section 49 *Electricty Supply Act 1995* (NSW). Relevantly, Essential Energy may require structures or things that could either destroy, damage or interfere with electricity works, or could make those works become a potential cause of bush fire or risk to public safety, to be modified or removed.

Should you require any clarification, please do not hesitate to contact me.

Regards

Fiona Duncan
Conveyancing Officer
Legal & Conveyancing
Governance & Corporate Services

T: 02 6589 8773 (Ext 88773) | conveyancingteam@essentialenergy.com.au
PO Box 5730 Port Macquarie NSW 2444 | essentialenergy.com.au
General enquiries: 13 23 91 | Supply interruptions (24hr): 13 20 80

Follow us

From: NSW Planning <planning.apps@planning.nsw.gov.au>
Sent: Wednesday, 28 October 2020 2:20 PM
To: Fiona Duncan <fiona.duncan@essentialenergy.com.au>
Cc: ConveyancingTeam <conveyancingteam@essentialenergy.com.au>
Subject: Update: NSW Government concurrence and referral request CNR-13197(WALGETT SHIRE COUNCIL)

The NSW Government consideration of an application DA2020/18 at Sebastopol Street Burren Junction has been assigned to you for assessment.

Please log into the NSW Planning Portal and use reference number CNR-13197 to action this request.

You can find general information about the online concurrence and referral system here or call our help line on 1300 305 695.

Fiona Duncan

From: ConveyancingTeam
Sent: Friday, 13 November 2020 9:46 AM
To: 'admin@walgett.nsw.gov.au'
Subject: Re: NSW Government concurrence and referral request CNR-13197 / DA2020/18 - Sebastopol Street, Burren Junction (Lot 13 DP753926) - 5MW solar farm & associated infrastructure, 2.4m high chain link security fencing

Dear Sir/Madam,

We refer to the above matter and to your correspondence via the NSW Planning Portal seeking comment from Essential Energy in relation to the proposed development.

Strictly based on the documents submitted, Essential Energy has no comments to make as to potential safety risks arising from the proposed development.

Essential Energy makes the following general comments:

1. If the proposed development changes, there may be potential safety risks and it is recommended that Essential Energy is consulted for further comment.

2. Any existing encumbrances in favour of Essential Energy (or its predecessors) noted on the title of the above property should be complied with.

3. The proposal must remain outside the easement area/width of the existing 22kV overhead powerlines.

4. The proposed access road must:

    a. meet the required clearances as per Essential Energy's design manual; and

    b. at all times, maintain a minimum of 10.0 metres clearance from any electrical structures.

5. Satisfactory arrangements are to be made with Essential Energy with respect to the proposed solar farm which will form part of the development. It is the Applicant's responsibility to enter into the required Connections Agreement/s and any other requirements with Essential Energy for the development, which may include the payment of fees and contributions. Refer Essential Energy's Network Connections team for requirements via email networkconnections@essentialenergy.com.au.

6. Satisfactory arrangements are to be made with Essential Energy for the provision of power with respect to the proposed development. It is the Applicant's responsibility to make the appropriate application with Essential Energy for the supply of electricity to the development, which may include the payment of fees and contributions. Refer Essential Energy's Contestable Works team for requirements via email contestableworks@essentialenergy.com.au.

7. In addition, Essential Energy's records indicate there is electricity infrastructure located within the property and within close proximity of the property. Any activities within these locations must be undertaken in accordance with the latest industry guideline currently known as *ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure*. Approval may be required from Essential Energy should activities within the property encroach on the electricity infrastructure.

8. Prior to carrying out any works, a "Dial Before You Dig" enquiry should be undertaken in accordance with the requirements of *Part 5E (Protection of Underground Electricity Power Lines)* of the *Electricity Supply Act 1995* (NSW).

9. Given there is electricity infrastructure in the area, it is the responsibility of the person/s completing any works around powerlines to understand their safety responsibilities. SafeWork NSW (www.safework.nsw.gov.au) has publications that provide guidance when working close to electricity infrastructure. These include the *Code of Practice – Work near Overhead Power Lines* and *Code of Practice – Work near Underground Assets*.

Should you require any clarification, please do not hesitate to contact us.

Regards

Fiona Duncan
Conveyancing Officer
Legal & Conveyancing
Governance & Corporate Services

T: 02 6589 8773 (Ext 88773) | conveyancingteam@essentialenergy.com.au
PO Box 5730 Port Macquarie NSW 2444 | essentialenergy.com.au
General enquiries: 13 23 91 | Supply interruptions (24hr): 13 20 80
Follow us

From: NSW Planning <planning.apps@planning.nsw.gov.au>
Sent: Wednesday, 28 October 2020 2:20 PM
To: Fiona Duncan <fiona.duncan@essentialenergy.com.au>
Cc: ConveyancingTeam <conveyancingteam@essentialenergy.com.au>
Subject: Update: NSW Government concurrence and referral request CNR-13197(WALGETT SHIRE COUNCIL)

The NSW Government consideration of an application DA2020/18 at Sebastopol Street Burren Junction has been assigned to you for assessment.

Please log into the NSW Planning Portal and use reference number CNR-13197 to action this request.

You can find general information about the online concurrence and referral system here or call our help line on 1300 305 695.

LEGEND

- SOLAR FARM - 2.4m HIGH STEEL MESH SECURITY FENCE
- OVERHEAD POWER LINES
- POWER POLES
- GRID CONNECTION
- CONSTRUCTION LAYDOWN

202
DP593298

EXISTING OVERHEAD HV LINE

EXISTING OVERHEAD HV LINE

48.5m FIRST ARRAY

20m

20m

22m

30.5m

79m

21m

26m

26m

9m

GRAVEL ACCESS ROAD

GRAVEL ACCESS ROAD

GRAVEL ACCESS ROAD

2.4 H SECURITY FENCE

2.4 H SECURITY FENCE

EXISTING SUBSTATION

WATERLOO STREET

BALACLAVA STREET

BURREN JUNCTION TOWNSHIP

13
DP753926

1
DP669968

1
DP214271

2
DP214271

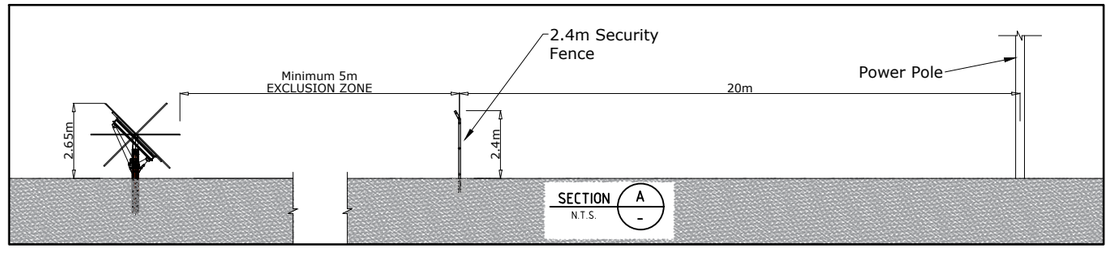
42
DP753926

PROPOSED SOLAR FARM ARRAY

2.4 H SECURITY FENCE

2.4 H SECURITY FENCE

2.4 H SECURITY FENCE



STRUCTURAL, CIVIL, PLANNING, SURVEYING, ARCHITECTURE & ENVIRONMENTAL

154 PEISLEY STREET
P.O. BOX 1963
ORANGE, NSW 2800
Ph. (02) 6393 5000
Fx. (02) 6393 5050
www.premise.com.au

REV.	DATE	DFTD.	APPD.	DETAILS
A	30/10/20	GT	AB	FOR INFORMATION

DRAWING SCALE

SCALE 1:1500 (A1)

0 20 40 60 80 100

0 20 40 60 80 100

SCALE 1:3000 (A3)

DO NOT SCALE FROM THESE DRAWINGS. ALL MEASUREMENTS SHALL BE CONFIRMED ON SITE AND WITH PREMISE PTY. LTD. PRIOR TO CONSTRUCTION

APPROVAL AUTHORITY

CLIENT

PROJECT

BURREN JUNCTION SOLAR FARM

DRAWING

PROXIMITY TO ESSENTIAL ENERGY INFRASTRUCTURE

PROJECT NUMBER 219367	DRAWING FILE 219367_03A-EV01.dwg	ORIGINAL A1
DATA SOURCE -		
IMAGE SOURCE -		SET 03A
STATUS FOR REVIEW	SHEET EV01 OF EV01	

13 November 2020

SF2020/186783; WST20/00365/01

General Manager
Walgett Shire Council
PO Box 31
Walgett NSW 2832
(By email only)

Attn: Libby Cumming, Town Planning Consultant

Dear Ms Cumming,

DA 2020/18: Lot 2 DP 214271 and others; Sebastopol Street, Burren Junction
Proposed 5 megawatt (peak AC) solar farm

Thank you for the above development application (DA) referral via the NSW Planning Portal on 8 October 2020 inviting comment from Transport for NSW (TfNSW).

From review of the available information, TfNSW notes that:

- The proposal is for a solar farm with a peak generation capacity of 5 megawatts (AC), and a site coverage of approximately 16 hectares. The site is set back around 400m from HW29 at its nearest point.

- Access to the proposed site will be via Waterloo Road (local road) which intersects with the Kamilaroi Highway (Slacksmith Street) which is a State classified road (HW29) in the township of Burren Junction.

- The DA consent would operate 'in perpetuity' (no expiry), and at the end of the 25-year design life and land lease the consent holder may decide either to renew and continue the operation, or rehabilitate the site to its former agricultural use.

- Electricity connection will be made to the Burren Junction zone substation which adjoins the property 500m to the south, under Essential Energy's *EP&A Act* Part 5 process. No new road crossings are required.

- The construction phase is anticipated by the applicant to have a 4-month duration, with a peak of 25 workers onsite. Up to 20 hourly Light Vehicle (LV) movements during the AM and PM commuter peak periods are proposed, based on the applicant's assumption that one third of workers will carpool.

- Up to 190 Heavy Vehicle (HV) loads in total (380 movements in and out combined) have been forecast as required by the applicant throughout construction. This includes transport of modules, frames, inverters, concrete, gravel and sand but does not include water haulage, which may be a significant proportion of total trips.

51-55 Currajong Street PARKES NSW 2870 | PO Box 334 PARKES NSW 2870 DX20256
P 6861 1449 | **W** development.western@rms.nsw.gov.au | ABN 18 804 239 602

- The applicant has agreed not to exceed a maximum of 10 heavy vehicle loads per day (20 movements).

- Commuter and HV haulage routes have not been specified. The proportions of the workforce that will be housed within the township versus commuting from Walgett or Narrabri is unknown at the current time. Haulage is proposed under General Mass Limits (GML). Trucks at GML are generally permitted on Burren Junction streets as shown by the Restricted Access Vehicle (RAV) map.

- Traffic during the operational phase will not be significant, with remote monitoring and routine maintenance of the facility.

- A key concern for TfNSW is the safety of State road network users and the provision of adequate turning treatments in accordance with Austroads *Guide to Road Design Part 4* Figure A 10 warrants to mitigate the risk of collisions, where there will be a significant increase in vehicle movements.

- In this regard it is noted that none of the available westbound right-turning movements from the Kamilaroi Highway within Burren Junction onto local streets has the benefit of a Basic Right (BAR) turn treatment.

TfNSW offers the following comments to Council for inclusion in any conditions of consent as part of a determination made with regard to this proposal:

- The applicant has agreed not to exceed a maximum of 10 heavy vehicle loads per day (20 movements). Accordingly a suitable condition should be imposed on the applicant to adhere to this commitment and clearly specifying the heavy vehicle type to be used.

- Noting the applicant has based carpooling uptake by potential employees on an assumption, a suitable condition should outline a commitment by the applicant to provide alternative means of transport and or carpooling incentives, including a quantifiable percentage or number of employees.

- There are road safety benefits to all road users in the applicant providing a bus for staff to commute to and from site during construction. Driver fatigue is a relatively significant consideration that should be undertaken by the applicant in offering a duty of care to employees during construction. Car pooling and provision of a commuter bus also lessens the impact of increased vehicles within the township of Burren Junction during construction.

- In noting the afore mentioned is lacking in some aspects of quantifiable and or measurable commitments by the applicant with regard to resulting traffic impacts, the warrants in accordance with *Austroads Guide to Road Design* for the intersection of the Kamilaroi Highway and Waterloo Road are not yet able to be determined.

- Accordingly, the consent authority should be satisfied that the applicant has adequately mitigated by way of measurable commitments to ensuring all road users are not adversely impacted as a result of this proposal at the intersection of the Kamilaroi Highway and Waterloo Road.

51-55 Currajong Street PARKES NSW 2870 | PO Box 334 PARKES NSW 2870 DX20256
P 6861 1449 | **W** development.western@rms.nsw.gov.au | ABN 18 804 239 602

- Subsequently if the consent authority deem intersection works are required at the intersection of the Kamilaroi Highway and Waterloo Road, a referral to TfNSW in accordance with Section 138(2) of the *Road Act, 1993* is required prior to any works commencing.

- The consent holder shall install at its cost advance warning 'Trucks Turning' signs (W5-22 with distance plate W8-5 under) on the Kamilaroi Highway approaches to the Burren Junction intersection that will be used as the haulage route, prior to any construction works commencing. Please contact development.western@rms.nsw.gov.au to obtain concurrence prior to installation. These signs are to be removed following completion of construction.

- Should additional works within HW29 become proposed or required, in accordance with the relevant legislation the developer shall:

    - Enter into a Works Authorisation Deed (WAD) with TfNSW if modification of TfNSW assets such as road pavement are required,

    - Obtain concurrence to the detailed design from TfNSW under Section 138 of the *Roads Act 1993* prior to construction (for works not covered by a WAD),

    - Obtain a Road Occupancy Licence (ROL) for works having potential to affect traffic operations on the State road.

- Prior to the commencement of construction works a Traffic Management Plan (TMP) including Driver Code of Conduct is to be prepared and implemented. The preparation of the TMP will require consultation with TfNSW, Walgett Shire Council, principal contractor(s) and relevant stakeholders. The requirements of the TMP and Driver Code of Conduct are to cover the matters referred to within the TMP Annexure (attached).

- The TMP is to be reviewed and updated in response to any changes in operating conditions. A copy of the TMP and Driver Code of Conduct is to be provided to contractors and employees as a part of the site induction.

- The use of local roads for the purposes of heavy vehicle haulage will require consent from Walgett Shire Council. All routes specified by the proponent for these purposes are to comply with the NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) map and or may be the subject of a Special Heavy Vehicle Permit via the National Heavy Vehicle Regulator (NHVR).

- Any Oversize/Overmass haulage required as part of this proposal will be subject to a special permit being obtained prior to haulage commencing via the National Heavy Vehicle Regulator (NHVR). The NHVR processes ALL Oversize/Overmass permit applications for travel within and between the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria via: https://www.service.nhvr.gov.au/

51-55 Currajong Street PARKES NSW 2870 | PO Box 334 PARKES NSW 2870 DX20256
P 6861 1449 | **W** development.western@rms.nsw.gov.au | ABN 18 804 239 602

- To negate future issues with access rights and servicing requirements, all lots that make up the site are required to be consolidated on one title, or appropriate easements for servicing and access are to be registered to the satisfaction of Council, before occupation or operation of the development.

Please be advised that under the provisions of the *Environmental Planning & Assessment Act 1979* it is the responsibility of the consent authority to assess the environmental implications, and notify potentially affected persons, of any referral agency conditions.

Please forward a copy of Council's determination to TfNSW at development.western@rms.nsw.gov.au when it is sent to the applicant. If you wish to discuss this matter further, please contact Bevan Crofts, Development Assessment Officer on (02) 6861 1449.

Yours faithfully

Ainsley Bruem
A/Manager Land Use Assessment
Region West

Enc. TMP Annexure

51-55 Currajong Street PARKES NSW 2870 | PO Box 334 PARKES NSW 2870 DX20256
P 6861 1449 | **W** development.western@rms.nsw.gov.au | ABN 18 804 239 602

TMP Annexure: Traffic Management Plan and Driver Code of Conduct

The Traffic Management Plan (TMP) and Driver Code of Conduct is to outline measures to manage traffic related issues associated with all phases of the development (e.g. deliveries, construction, operation, maintenance, decommissioning), any construction or excavated materials, machinery and personnel involved. The TMP is to detail the potential impacts associated with the development, the measures to be implemented, and the procedures to monitor and ensure compliance. The TMP is to address (but not be limited to):

a. Specific commitments for the provision and use of buses and car-pooling during construction to limit peak hourly traffic in accordance with the conditions of consent. Plans and measures to manage the impacts of personal vehicle parking at pickup points (e.g. in towns) are to be detailed.

b. An enforceable policy for staff and contractors to use the designated commuter route in preference to back roads, where the journey is not unreasonably lengthened.

c. Details of origin, destination, quantity, size and frequency of vehicle movements associated with the development including those accessing and egressing the site.

d. Timings and staging of construction and operation of the development.

e. Existing and projected background traffic, peak hour volumes and types and their interaction with projected development related traffic.

f. Loads, weights, lengths and number of movements of haulage and construction related vehicles including Over Size Over Mass (OSOM) loads.

g. The management and coordination of construction and staff vehicle movements to the site and measures to limit disruption to other motorists, including special OSOM management measures.

h. Scheduling of haulage vehicle movements to occur outside of daily commuter peak periods, local special event times, school bus (both in rural and town areas) and school zone operating hours.

i. Active communication procedures for traffic such as school buses or haulage vehicles from other quarries, or near potential safety hazards.

j. Scheduling of heavy vehicle movements to minimise convoy or platoon lengths.

k. Consideration to minimise the route length for road transport, particularly for OSOM loads.

l. Any OSOM will be the subject of separate permits through the National Heavy Vehicle Regulator.

m. Mitigation of local climate conditions that may affect road safety for vehicles used during construction, operation and decommissioning of the facility (e.g. scheduling during daylight hours, or outside of fog, wet weather, ice or snow).

n. Transport of hazardous materials in accordance with the relevant transport codes.

o. Specific mitigation measures along the approved transport routes. Road and intersection improvement works are to be completed prior to the commencement of on-site construction unless specifically approved otherwise in the conditions of consent.

p. Consultation and engagement with affected stakeholders, including regulatory authorities, landowners, businesses, bus operators and so forth.

51-55 Currajong Street PARKES NSW 2870 | PO Box 334 PARKES NSW 2870 DX20256
P 6861 1449 | **W** development.western@rms.nsw.gov.au | ABN 18 804 239 602

q. Policies and procedures for addressing concerns raised by the community on project related matters.

r. Dust suppression and mitigation measures on public roads and within the site boundaries.

s. Toolbox meetings to facilitate continuous improvement initiatives and incident awareness.

t. Truckloads are to be covered at all times when being transported, to minimise dust and loss of material onto roads which may form a traffic hazard.

u. Measures to ensure responsible fatigue management and discourage driving under the influence of alcohol and/or drugs, dangers of mobile phone use and driving to the conditions, and adherence to posted speed limits.

(End of TMP Annexure)

51-55 Currajong Street PARKES NSW 2870 | PO Box 334 PARKES NSW 2870 DX20256
P 6861 1449 | **W** development.western@rms.nsw.gov.au | ABN 18 804 239 602

Walgett Shire Council
Attention: Libby Cumming
77 Fox St,
Walgett NSW 2832

Dear Libby,

We thank you for the opportunity to comment on the TfNSW submission.

It is pleasing that TfNSW has not raised any objection or asked for intersection treatment works. We note specifically TfNSW's advice that this a matter for Council. To this end we make the following comments and commitments, noting that intersection works on the highway would compromise the viability of the project and, given the short duration and modest traffic movements involved, are not necessary.

Access onto Waterloo Road off the Kamilaroi Highway will happen in a low speed environment (70 kmph) at a location where line of sight distances from either the east or west are in excess of 500 m.

The existing intersection geometry can comfortably accommodate the swept path of a heavy vehicle (refer below generated from Autodesk Vehicle Tracking).

Left turn for east bound

Right turn for west bound

At just 5 MW capacity, construction related traffic is modest and can be readily and safely managed via the existing access onto Waterloo Road.

In terms of light vehicles the maximum number of workers on site would be only 25, and only for a two month period. We are confident that at the very least, carpooling would result in a maximum of 20 light vehicles travelling to and from the site daily over this two month peak. Similarly, there would only be a maximum of 10 heavy vehicles a day (20 movements).

We also emphasise that it is our intention to award the solar farm construction contract to a company that, amongst other things, demonstrates a commitment to maximise local expenditure. We note accommodation opportunities within Burren Junction includes the 16 cabins and additional powered sites for caravans at the Junction City Hotel. The point being, it is more than likely that a relatively significant number of the 25 workers present for the 2 month construction peak will stay in Burren Junction and not travel to the site from either Walgett or Narrabri daily: further reducing movements at the intersection.

Similarly, whilst the assessment assumes a worst case scenario of no workers staying in Burren Junction (which is unlikely), limited car pooling and no bus option, the reality is that these options will, in all likelihood, be actively pursued by the construction contractor because it provides for a more efficient and cost effective means of building the farm. To this end, the traffic travelling to the site, as assessed in the SEE, does effectively present a 'worst case' scenario that is highly unlikely to eventuate.

To provide Council reassurance of our commitments, Enerparc confirms the following and would be happy to have a consent condition that caps daily movements to 40 light vehicles and 20 heavy vehicles.

In addition to this, Enerparc also confirms that prior to commencement of construction we would:

- Consistent with the request of TfNSW, install advance warning 'Trucks Turning' signs (W5-22 with distance plate W8-5 under) on the Kamilaroi Highway approaches to the Burren Junction intersection that will be used as the haulage route, prior to any construction works commencing.
- Prior to the commencement of construction submit a Traffic Management Plan (TMP) including a Driver Code of Conduct to Walgett Shire Council for approval. The TMP and Driver Code of Conduct would cover all matters referred to within the TfNSW Annexure to its submission.

  Noting that it will be at this point in time, when a construction contract has been entered into, that Enerparc will be able to specify the locked in detail of exactly what will be happening with respect to options such as the numbers of construction staff planning to take up accommodation within Burren Junction during the build, the extent of car-pooling that will be adopted, or the bus option from either Walgett or Narrabri.
- Notify the local community about project-related traffic.

Through the above measures Enerparc is confident it can work collaboratively with Council to ensure that no road users are adversely impacted as a result of using the existing intersection of the Kamilaroi Highway and Waterloo Road, and that the amenity of residents within Burren Junction is not compromised.

Yours Sincerely,

Benjamin Hannig
Managing Director

Our ref: DOC20/831588
Senders ref: DA2020/18

Samuel Lenkaak
Walgett Shire Council
admin@walgett.nsw.gov.au

Dear Samuel

DA2020/18 - Sebastopol Street, Burren Junction

Thank you for your request dated 8 October 2020 to the Biodiversity, Conservation and Science Directorate (BCS) seeking advice in relation to the proposed solar farm at Sebastopol Street, Burren Junction.

BCD has reviewed the Statement of Environmental Effects (SEE) and the appended Biodiversity Assessment Report (BAR). We note that the BAR states that the development footprint occurs on land that is described as "*agricultural land, which does not support vegetation*" and "*does not provide significant habitat for any BC Act or EPBC Act threatened flora and/or fauna or any EPBC Act listed migratory species*".

BCS concurs with the conclusion that entry into the Biodiversity Offset Scheme (BOS) is not required.

Should you require further clarification on the items above please contact David Geering, Senior Conservation Planning Officer, via david.geering@environment.nsw.gov.au or 6883 5335.

Yours sincerely

Samantha Wynn
Acting Director North West
Biodiversity, Conservation and Science Directorate

9 October 2020