TAMWORTH REGIONAL COUNCIL

ANNEXURES
for
ORDINARY COUNCIL AGENDA

24 MARCH 2026

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Data taken from TPAC design feasibility report by Williams Ross Architects.

Tamworth Regional Council
Council Offices

Projected Staff Numbers & Facility Brief

williamsross

Area Analysis Summary:
Area analysis is a non site-specific pre-design tool to assist in projecting the approximate area requirements of a facility.
As it does not take into account specific site constraints it indicates the most efficient, lowest theoretically possible area facility, which may not be achievable in particular site situations.
Site contraints often result in less efficient facility planning leading to increased floor area.
An area "contingency" allowance is added to provide for further circulation and site related facility planning constraints.
Occupancy numbers as based on i) probable usage, or ii) Building Code area calculations.
Occupancy numbers are used to determine toilet amenity requirements.

WRA Ref: 2319

Date	Revision
15.02.2024	P.1
08.03.2024	P.2

Projected Staff Numbers - Total Organisation

	Department	Number of Ex Staff	Number of New Staff	Preferred Desk Ratio		Accomodation Type & Numbers based on desk ratio: Total Number of Office (CEO,Mayor, Managers)	Open Workstations (Desk ratio)	Informal Workpoints
	Office of the General Manager	92	110	9 to 10		6	94	10
	Livable Communities	67	90	8 to 10		1	71	18
	Regional Services	51	75	8 to 10		1	59	15
	Water and Waste	35	45	9 to 10		1	40	4
	Growth and Prosperity	12	20	8 to 10		1	15	4
Other	Councillors	9	9			1	6	2
	Total Existing Projected Persons / Area	**266**	**349**			**11**	**285**	**53**
								349

	Description	Number of Visitors	Number of New Staff		Recommended Area Area (m2)	Recommended External Area (m2)
	Car Parking (multi-deck and on-grade - refer drawings)	0	8		385	5,100
	Entry Foyer & Lobby	0	0		1,390	0
	GMs Office & Executive	0	17		372	0
	Livable Communities	0	84		716	0
	Regional Services	0	75		633	0
	Water & Waste	0	0		316	0
	Growth & Prosperity	0	20		277	0
	Amenities	0	0		426	200
	Additional office space (future growth or tenant)				1000	
		0	**204**		**5,515**	**5,300**

OFFICE PROPOSAL BASED ON 3 LEVELS OF FLOOR SPACE

Room / Space	Description	Number of Visitors	Number of Staff	Recommended Area Area (m2)	Recommended External Area (m2)	Open Workstations 8:10 ratio	Informal Workpoints
	Car Parking (multi-deck and on-grade - refer drawings)						
~~Car Parking - PAC~~	~~260 spacesinc 6 x accessible spaces~~				~~7,800~~		
Car Parking - Offices	140 spaces inc 3 x accessible spaces				4,200		
~~Existing Parking~~	~~255 exisitng on-grade spaces - some to be retained and some incorporated into~~ new muti-deck parking - refer drawing						
Egress Stairs	min. 2 stairs			60			
Lift	Lift			10			
Lift Lobby	Glazed lift lobby on each level (refer drawings for number of levels)			50			
Bicycle Parking	Secure internal and external bike parking			30	50		
Water Tanks				200			
	Car Parking (multi-deck and on-grade - refer drawings)			**350**	**4,250**		
	Structure & Circulation at 10%			35	850		
	Car Parking (multi-deck and on-grade - refer drawings)			**385**	**5,100**		
	Entry Foyer & Lobby						
Entry Foyer & Lobby	**On L1 and L2**						
Airlock	1 x airlock			20			
Foyer	Small foyer for staff, connection to PAC?			50			
Lift	2 x No lifts			25			
Reception	reception counter with 2 staff positions, accessible access bench		2	20			
Customer Service	Locate behind Reception as back up; say 6 desks (from Livable Communties)		6	60			
Fire Stair	2 x no fire stairs			50			
Meeting Spaces							
Meeting Room 1	Acoustically private, glazed meeting space for 2-4 people			12			
Meeting Room 2	Acoustically private, glazed meeting space for 4-6 people			16			
Meeting Room 3	Acoustically private, glazed meeting space for 4-6 people			16			
Meeting Room 4	Acoustically private, glazed meeting space for 8-10 people			30			
Meeting Room 5	Acoustically private, glazed meeting space for 8-10 people			30			
Shared spaces with PAC	refer TPAC Area schedule						
Salon	double as Council Chambers			100			
Plating Kitchen				50			
Functions A and B	for larger community meetings			300			
Public Accessible Amenities	1 x facility incl baby change			7			
Male public amenities				18			
Female public amenities				25			
Storage				130			
Council storage	Provide a dedciated Council storage area accessible from the ground floor for event equipment, on-site equipment etc			200			
	Entry Foyer & Lobby			**1,159**			
	Structure & Circulation at 20%			231			
	Entry Foyer & Lobby			**1,390**			
	GMs Office & Executive						
GM Office	Acoustically private, glazed office with workstation and small meeting table		1	20			
Mayors Office	Acoustically private, glazed office with workstation and small meeting table		1	16			
Shared EA	Desk in semi-open area close to GM and Mayor		1	10			
Councillor Work Area	Workstations in open area with shared meeting space		8	35			
Shared Exec Work Area	Shared work space with semi-private screening and good acoustics. Close to private small and medium meeting spaces and booths		6	60			
Executive Board Room	Seat 20; acoustically private meeting space with AV, kicthenette			60			
Meeting Room 1	Acoustically private, glazed meeting space for 2-4 people			12			
Meeting Room 2	Acoustically private, glazed meeting space for 4-6 people			16			
Meeting Room 3	Acoustically private, glazed meeting space for 8-10 people			30			
Privacy Booth	Acoustically private, glazed booth for VC			6			
Privacy Booth	Acoustically private, glazed booth for VC			6			
Fire-proof store	Records			15			
	GMs Office & Executive			**286**			
	Structure & Circulation at 30%			86			
	GMs Office & Executive		17	**372**			

Room / Space	Description	Number of Visitors	Number of Staff	Recommended Area Area (m2)	Recommended External Area (m2)	Open Workstations 8:10 ratio	Informal Workpoints
	Livable Communities						
Manager	Locate in shared work space with additional space		1	10			
Open workspace	1600mm long desks, sit / stand with low acoustic screen between		68	409			
Informal Work Space	Informal work points in Breakout spaces		15	30			
Meeting Room 1	Acoustically private, glazed meeting space for 2-4 people			12			
Meeting Room 2	Acoustically private, glazed meeting space for 4-6 people			16			
Meeting Room 3	Acoustically private, glazed meeting space for 8-10 people			30			
Large Collaborative 1	Semi-open collab space with large screen and table			20			
Privacy Booth	Acoustically private, glazed booth for VC			6			
Privacy Booth	Acoustically private, glazed booth for VC			6			
Privacy Booth	Acoustically private, glazed booth for VC			6			
Privacy Booth	Acoustically private, glazed booth for VC			6			
	Livable Communities			**551**			
	Structure & Circulation at 30%			165			
	Livable Communities		84	**716**			
	Regional Services						
Manager	Locate in shared work space with additional space		1	10			
Open Workspace	1600mm long desks, sit / stand with low acoustic screen between		59	355			
Informal Work Space	Informal work points in Breakout spaces		15	30			
Meeting Room 1	Acoustically private, glazed meeting space for 2-4 people			12			
Meeting Room 2	Acoustically private, glazed meeting space for 4-6 people			16			
Large Collaborative 1	Semi-open collab space with large screen and table			20			
Large Collaborative 2	Semi-open collab space with large screen and table			20			
Privacy Booth	Acoustically private, glazed booth for VC			6			
Privacy Booth	Acoustically private, glazed booth for VC			6			
Equipment Store	Surveying equipment			12			
	Regional Services			**487**			
	Structure & Circulation at 30%			146			
	Regional Services		75	**633**			
	Water & Waste						
Manager	Locate in shared work space with additional space		1	10			
Open Workspace	1600mm long desks, sit / stand with low acoustic screen between		40	238			
Informal Work Space	Informal work points in Breakout spaces		4	9			
Meeting Room 1	Acoustically private, glazed meeting space for 2-4 people			12			
Meeting Room 2	Acoustically private, glazed meeting space for 4-6 people			16			
Large Collaborative 1	Semi-open collab space with large screen and table			20			
Privacy Booth	Acoustically private, glazed booth for VC			6			
Privacy Booth	Acoustically private, glazed booth for VC			6			
	Water & Waste			**316**			
	Structure & Circulation at 30%			95			
	Water & Waste		45	**411**			

Room / Space	Description	Number of Visitors	Number of Staff	Recommended Area Area (m2)	Recommended External Area (m2)	Open Workstations 8:10 ratio	Informal Workpoints
	Growth & Prosperity						
Manager	Locate in shared work space with additional space		1	10			
Open Workspace	1600mm long desks, sit / stand with low acoustic screen between		15	91			
Informal Work Space	Informal work points in Breakout spaces		4	8			
Meeting Room 1	Acoustically private, glazed meeting space for 2-4 people			12			
Meeting Room 2	Acoustically private, glazed meeting space for 4-6 people			16			
Privacy Booth	Acoustically private, glazed booth for VC			6			
Events Team storage	pamphlets etc			20			
Events Team storage	Equipment for events - store in basement			50			
	Growth & Prosperity			**213**			
	Structure & Circulation at 30%			64			
	Growth & Prosperity		20	**277**			
	Amenities						
Staff Tea Points	Allow a good sized kitchen on each level - 2 No			40			
Staff Room	One larger space, kitchen, seating, connection to roof terrace / outdoor space			100			
Terrace	Outdoor space attached to Lounge				200		
End of Trip Facilities				40			
Quiet Space	Wellness, breastfeeding etc			12			
Staff First Aid				12			
Print hub				12			
Staff Amenities							
Accessible	1 per level			21			
All-gender	say 3 per level (9 total = 135 staff)			18			
Male	say 8-10 pans / urinals			50			
Female	say 8 pans			50			
	Amenities			**355**	**200**		
	Structure & Circulation at 20%			71			
	Amenities			**426**	**200**		

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Client: Tamworth Regional Council
Project: Tamworth Council Offices ROM
Report: Tamworth Council Offices_Masterplan_v0

Ref.	Description	Quantity	Unit	Rate	Total
1	GENERAL NOTES				0
2	EARLY WORKS	11,500	m2	130	1,491,900
3	COUNCIL ADMINISTRATION BUILDING	5,515	m2	4,165	22,972,303
4	VISITOR EXPERIENCE CENTRE	2,000	m2	3,126	6,252,100
5	MULTI-STOREY CARPARK	5,100	m2	1,500	7,650,000
6	EXTERNAL WORKS	5,962	m2	167	998,230
7	EXTERNAL SERVICES	5,962	m2	117	700,000
	NETT CONSTRUCTION COST [NCC]	**12,615**	**m2**	**3,176**	**40,064,533**
8	PRELIMINARIES	18	% of NCC		7,211,616
9	STAGING COSTS				EXCLUDED
10	CONTRACTOR'S DESIGN FEES	5	% of NCC		2,003,227
11	MARGIN	5	% of Above		2,463,969
12	LOCALITY ALLOWANCE	6	% of Above		3,104,601
13	ESCALATION	15.83	% of Above		8,682,430
	GROSS CONSTRUCTION COST [GCC]	**12,615**	**m2**	**5,036**	**63,530,376**
14	PROFESSIONAL FEES	8	% of GCC		5,082,431
15	AUTHORITY FEES	0.75	% of GCC		476,478
16	INTERNAL COSTS				EXCLUDED
	TOTAL PROJECT COST [TPC]	**12,615**	**m2**	**5,477**	**69,089,285**
17	DESIGN CONTINGENCY	10	% of GCC		6,353,038
18	CONSTRUCTION CONTINGENCY	10	% of GCC		6,353,038
	END TOTAL COST [ETC]	**12,615**	**m2**	**6,484**	**81,795,361**
	BELOW THE LINE				
19	SAVING FOR ON-GRADE CARPARK [ETC]	1	Item	-13,535,738	-13,535,738

Area schedule provided at the end of the cost plan.

Ref.	Description	Quantity	Unit	Rate	Total
1	**GENERAL NOTES**				
	Assumptions / Clarifications				
	The following general assumptions/clarifications have been made when preparing the cost estimate:		*Note*		
1.1	This cost plan is prepared based on the schedule of areas received, dated 08/03/2024 Revision P.2				
1.2	Programme is based on the advised duration of 18months and commencement anticipated mid 2029				
1.3	Escalation includes for pre-commencement and post commencement up until mid-point of construction programme				
1.4	Works will be tendered as a competitive lump sum.				
1.5	Procurement method will be under a Design & Construct contract				
1.6	The site area is allowed as the blue area 11,498.71m2 as advised (Rounded up for master planning purposes)				
1.7	The multi-storey carpark is assumed to be 3 storey's per the office building scope intent				
1.8	The office building and multi-storey carpark has nominally split the area equally across all 3 floors, i.e. 5,515m2 across floors = 1,838m2 per level. Fit-out section is based on “2319 Staff Accommodation Analysis – Issue A. where appropriate”				
1.9	Generally, works and scope has been extrapolated based on the information (emails) and documentation (2319 Staff Accommodation Analysis) provided to date. Where works are not clear, AG have made assumptions regarding the scope required (e.g. External Services). AG recommend this reviewed to ascertain whether or not the allows made are per expectations of the projects requirements.				
1.10	Generally, AG have assumed excavation quantities as balance cut & fill across site at <500mm deep. For the purposes of this report, AG have assumed 10% as GSW material will be disposed, and 10% would need to be imported fill.				
1.11	AG has allowed to demolish all the existing buildings on site (2x building + 1x canopy) per Google maps.				
1.12	The office building is assumed to be concrete structure with mixed glazed/solid wall facade and fitout to a medium level of finish				
1.13	Preliminaries has been allowed at 18% of NCC.				
1.14	Contractors design finalisation has been allowed at 5% of NCC.				
1.15	Margin has been allowed at 5% of the above items and NCC.				
1.16	Locality has been allowed at 5% of the above items and NCC.				
1.17	Professional Fees has been allowed at 5% of GCC. AG have queried and requested if a fixed fee is currently available.				
1.18	Authority Fees has been allowed at 1% of GCC. AG have queried and requested if a fixed fee is currently available.				
1.19	Design Contingency has been allowed at 20% of GCC and Professional Fees.				
1.20	Construction Contingency has been allowed at 10% of GCC and Professional Fees.				
1.21	Please refer to the estimate for further assumptions made.				
	Exclusions				
	The following general exclusions have been made when preparing the cost estimate:		*Note*		
1.22	Amounts payable on the cost of land, incl. development contributions.				

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Ref.	Description	Quantity	Unit	Rate	Total
1	**GENERAL NOTES**				
1.23	Costs related to any repair work of the existing buildings.				
1.24	Costs related to any part of the development subject to a separate project.				
1.25	Wet fire protection				
1.26	Flood mitigation measures either engineered solutions (i.e. flood barriers) and increase of site levels (i.e. retained fill)				
1.27	Staging				
1.28	Link bridge between multi-storey carpark and office building				
1.29	Any council internal cost or management fees				
1.30	Archaeological investigations.				
1.31	On-going maintenance or use of the development.				
1.32	Legal Fees.				
1.33	Finance costs.				
1.34	Works outside specified areas.				
1.35	Works to neighboring properties / projects.				
1.36	Dewatering.				
1.37	Artworks / sculptures.				
1.38	Out of hours works.				
1.39	GST.				
1.40	Other exclusions as noted in this estimate.				
	Risk				
	The following risk have been identified when preparing the cost estimate:		*Note*		
1.41	Design: The current level of design is not fully detailed and there are a number of assumptions and allowance surrounding scope. It is recommended this report is reviewed in detail to scope is included per expectations.				
1.42	Latent Conditions: Existing ground conditions and building are unknown at present and may give rise to cost should in-ground contamination or hazardous materials in the existing buildings are encounted onsite. AG recommends the appropriate testing and reports are sought at future stage of the project to further understand any cost implications				
1.43	Wet fire protection: AG have assumed this is not required for the classification of buildings proposed and may give rise to cost if BCA consultant confirms otherwise				
1.44	Flooding: AG notes the close proximity of the river and flag the potential risk of flood levels affecting the site				
			GENERAL NOTES TOTAL		**0**

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Ref.	Description	Quantity	Unit	Rate	Total
1	**GENERAL NOTES**				

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Ref.	Description	Quantity	Unit	Rate	Total
2	**EARLY WORKS**				
2.1	DEMOLITION AND SITE PREPARATION	11,500	m2	66.23	761,650
2.2	EARTHWORKS	11,500	m2	63.50	730,250
				EARLY WORKS TOTAL	**1,491,900**

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Ref.	Description	Quantity	Unit	Rate	Total
2	**EARLY WORKS**				
2.1	**DEMOLITION AND SITE PREPARATION**				
2.1.1	Demolish existing buildings [Single level structures - Measure per Google maps]	1,190	m2	200	238,000
2.1.2	Demolish existing canopy structure [Measure per Google maps]	120	m2	50	6,000
2.1.3	Demolish existing carpark, kerbs	6,790	m2	35	237,650
2.1.4	General allowance for site clearance	11,500	m2	10	115,000
2.1.5	Provisional allowance to remove and dispose existing streetlights (assumed 20 No.)	20	No.	1,000	20,000
2.1.6	Allowance for capping off of existing services	1	Item	25,000	25,000
2.1.7	Provisional allowance for other misc. demolition	1	Item	20,000	20,000
2.1.8	Provisional allowance for demolish any existing service for relocation or abolishment	1	Item	100,000	100,000
	DEMOLITION AND SITE PREPARATION TOTAL				**761,650**
2.2	**EARTHWORKS**				
2.2.1	Provisional allowance for balance cut to fill (assumed average 500mm depth)	5,750	m3	30	172,500
2.2.2	Allowance for disposal off site (ENM)				EXCLUDED
2.2.3	Allowance for GSW @ 10% to be disposed off site	1,035	tonne	300	310,500
2.2.4	Allowance for imported fill @ 10% for balance	1,035	tonne	150	155,250
2.2.5	Allowance for compaction in layers (2 layers allowed)	11,500	m2	8	92,000
	EARTHWORKS TOTAL				**730,250**

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Ref.	Description	Quantity	Unit	Rate	Total
3	**COUNCIL ADMINISTRATION BUILDING**				
3.1	SUBSTRUCTURE	5,515	m2	139.97	771,960
3.2	COLUMNS	5,515	m2	90.00	496,350
3.3	UPPER FLOORS	5,515	m2	333.27	1,838,000
3.4	ROOF	5,515	m2	243.29	1,341,740
3.5	STAIRCASES	5,515	m2	53.85	297,000
3.6	EXTERNAL WALLS & WINDOWS	5,515	m2	500.68	2,761,250
3.7	EXTERNAL DOORS	5,515	m2	40.00	220,600
3.8	INTERNAL WALLS	5,515	m2	149.50	824,493
3.9	INTERNAL SCREENS	5,515	m2	100.00	551,500
3.10	INTERNAL DOORS	5,515	m2	50.00	275,750
3.11	WALL FINISHES	5,515	m2	90.00	496,350
3.12	FLOOR FINISHES	5,515	m2	147.02	810,820
3.13	CEILING FINISHES	5,515	m2	179.45	989,680
3.14	JOINERY	5,515	m2	250.00	1,378,750
3.15	FURNITURE, FITMENTS & EQUIPMENT	5,515	m2	357.00	1,968,855
3.16	HYDRAULIC SERVICES	5,515	m2	220.00	1,213,300
3.17	MECHANICAL SERVICES	5,515	m2	550.00	3,033,250
3.18	ELECTRICAL SERVICES [INCL AV, SECURITY & COMMS]	5,515	m2	558.13	3,078,100
3.19	FIRE PROTECTION	5,515	m2	35.00	193,025
3.20	TRANSPORTATION SERVICES	5,515	m2	36.26	200,000
3.21	BWIC [3%]	5,515	m2	41.98	231,530
	COUNCIL ADMINISTRATION BUILDING TOTAL				**22,972,303**

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Ref.	Description	Quantity	Unit	Rate	Total
3	**COUNCIL ADMINISTRATION BUILDING**				
3.1	**SUBSTRUCTURE**				
3.1.1	Note: 3 storey office, assumed area is equal across all 3 floors, i.e. 5,515m2 across floors (1,838m2 per level). Fit-out section is based on "2319 Staff Accommodation Analysis – Issue A."				
3.1.2	Allowance for piling	1,838	m2	120.00	220,560
3.1.3	Allowance for substructure	1,838	m2	300.00	551,400
				SUBSTRUCTURE TOTAL	**771,960**
3.2	**COLUMNS**				
3.2.1	Allowance for columns	5,515	m2	90	496,350
				COLUMNS TOTAL	**496,350**
3.3	**UPPER FLOORS**				
3.3.1	Allowance for upper floors including beams, folds and set downs	3,676	m2	500	1,838,000
				UPPER FLOORS TOTAL	**1,838,000**
3.4	**ROOF**				
3.4.1	Allowance for Roof	1,838	m2	600	1,102,800
3.4.2	Allowance for Roof Plumbing	1,838	m2	80	147,040
3.4.3	Allowance for Roof Safety	1,838	m2	50	91,900
				ROOF TOTAL	**1,341,740**
3.5	**STAIRCASES**				
3.5.1	Fire Stairs [Assume 2no.]	27	m/rise	5,000	135,000
3.5.2	Internal / Feature inter-department stairs [1no.]	14	m/rise	12,000	162,000
				STAIRCASES TOTAL	**297,000**
3.6	**EXTERNAL WALLS & WINDOWS**				
3.6.1	Glazing [Assume 50%]	1,175	m2	1,600.00	1,880,000
3.6.2	Solid Wall [Assume 50%]	1,175	m2	650.00	763,750
3.6.3	Extra over for core walls [40% of solid wall area]	470	m2	250.00	117,500
				EXTERNAL WALLS & WINDOWS TOTAL	**2,761,250**

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Ref.	Description	Quantity	Unit	Rate	Total
3	**COUNCIL ADMINISTRATION BUILDING**				
3.12	**FLOOR FINISHES**				
	FLOOR PREPARATION				
3.12.1	Waterproofing [Amenities]	426	m2	75	31,950
	FLOOR FINISHES				
	Epoxy Finish				
3.12.2	Car Parking (multi-deck)	385	m2	30	11,550
	Feature Tile				
3.12.3	Entry Foyer & Lobby	1,390	m2	300	417,000
	Carpet				
3.12.4	GMs Office & Executive	372	m2	80	29,760
3.12.5	Livable Communities	716	m2	80	57,280
3.12.6	Regional Services	633	m2	80	50,640
3.12.7	Water & Waste	316	m2	80	25,280
3.12.8	Growth & Prosperity	277	m2	80	22,160
3.12.9	Additional office space (future growth or tenant)	1,000	m2	80	80,000
	Tiling				
3.12.10	Amenities	426	m2	200	85,200
				FLOOR FINISHES TOTAL	**810,820**
3.13	**CEILING FINISHES**				
	Suspended Grid Tile Ceiling				
3.13.1	Car Parking (multi-deck)	385	m2	110	42,350
3.13.2	GMs Office & Executive	372	m2	110	40,920
3.13.3	Livable Communities	716	m2	110	78,760
3.13.4	Regional Services	633	m2	110	69,630
3.13.5	Water & Waste	316	m2	110	34,760
3.13.6	Growth & Prosperity	277	m2	110	30,470
3.13.7	Additional office space (future growth or tenant)	1,000	m2	110	110,000
	Suspended Flush Set Plasterboard Ceiling				
3.13.8	Entry Foyer & Lobby	1,390	m2	145	201,550
3.13.9	Amenities	426	m2	145	61,770
	Extra Over for Feature Ceiling Finish				
3.13.10	Entry Foyer & Lobby	1,390	m2	150	208,500
	Extra Over for Acoustic Ceiling Finish				
3.13.11	Assume 30% of Suspended Grid Tile Ceiling Area	1,110	m2	100	110,970
				CEILING FINISHES TOTAL	**989,680**

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Ref.	Description	Quantity	Unit	Rate	Total
3	**COUNCIL ADMINISTRATION BUILDING**				
3.15	**FURNITURE, FITMENTS & EQUIPMENT**				
	Furniture				
3.15.1	Loose Furniture & Appliances	5,515	m2	200	1,103,000
3.15.2	Workstations	5,515	m2	95	523,925
	Fitments				
3.15.3	Wayfinding & Statutory signage	5,515	m2	25	137,875
3.15.4	Window coverings	5,515	m2	32	176,480
3.15.5	Miscellaneous fitments	5,515	m2	5	27,575
	FURNITURE, FITMENTS & EQUIPMENT TOTAL				**1,968,855**
3.18	**ELECTRICAL SERVICES [INCL AV, SECURITY & COMMS]**				
3.18.1	Lighting & Power	5,515	m2	300.00	1,654,500
3.18.2	Comms	5,515	m2	60.00	330,900
3.18.3	Security	5,515	m2	60.00	330,900
3.18.4	AV	5,515	m2	120.00	661,800
3.18.5	Provision for PV solar	1	Item	100,000.00	100,000
	ELECTRICAL SERVICES [INCL AV, SECURITY & COMMS] TOTAL				**3,078,100**
3.19	**FIRE PROTECTION**				
	Wet Fire Protection is excluded		*Note*		
3.19.1	Allowance for Dry Fire Protection	5,515	m2	35	193,025
	FIRE PROTECTION TOTAL				**193,025**

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Client: Tamworth Regional Council
Project: Tamworth Council Offices ROM
Report: Tamworth Council Offices_Masterplan_v0

Ref.	Description	Quantity	Unit	Rate	Total
4	**VISITOR EXPERIENCE CENTRE**				
4.1	SUBSTRUCTURE	2,000	m2	350.00	700,000
4.2	COLUMNS	2,000	m2	75.00	150,000
4.3	UPPER FLOORS	2,000	m2		N/A
4.4	ROOF	2,000	m2	320.00	640,000
4.5	STAIRCASES	2,000	m2		N/A
4.6	EXTERNAL WALLS & WINDOWS	2,000	m2	480.00	960,000
4.7	EXTERNAL DOORS	2,000	m2	20.00	40,000
4.8	INTERNAL WALLS	2,000	m2	70.00	140,000
4.9	INTERNAL SCREENS	2,000	m2	15.00	30,000
4.10	INTERNAL DOORS	2,000	m2	45.00	90,000
4.11	WALL FINISHES	2,000	m2	80.00	160,000
4.12	FLOOR FINISHES	2,000	m2	135.00	270,000
4.13	CEILING FINISHES	2,000	m2	120.00	240,000
4.14	JOINERY	2,000	m2	250.00	500,000
4.15	FURNITURE, FITMENTS & EQUIPMENT	2,000	m2	100.00	200,000
4.16	HYDRAULIC SERVICES	2,000	m2	200.00	400,000
4.17	MECHANICAL SERVICES	2,000	m2	450.00	900,000
4.18	ELECTRICAL SERVICES	2,000	m2	350.00	700,000
4.19	FIRE PROTECTION	2,000	m2	35.00	70,000
4.20	TRANSPORTATION SERVICES	2,000	m2		N/A
4.21	BWIC [3%]	2,000	m2	31.05	62,100
				VISITOR EXPERIENCE CENTRE TOTAL	**6,252,100**

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Ref.	Description	Quantity	Unit	Rate	Total
4	**VISITOR EXPERIENCE CENTRE**				

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Report: Tamworth Council Offices_Masterplan_v0

Ref.	Description	Quantity	Unit	Rate	Total
6	**EXTERNAL WORKS**				
6.1	Provisional allowance for landscaping - say 70% of site area (deducting the floor plate area)	4,175	m2	90	375,750
6.2	Provisional allowance for hardscaping, e.g. footpaths, etc. (remainder of site floor area)	1,789	m2	320	572,480
6.3	Provisional allowance for external fixtures and fittings.	1	Item	50,000	50,000
				EXTERNAL WORKS TOTAL	**998,230**

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Report: Tamworth Council Offices_Masterplan_v0

Ref.	Description	Quantity	Unit	Rate	Total
6	**EXTERNAL WORKS**				

Ref.	Description	Quantity	Unit	Rate	Total
7	**EXTERNAL SERVICES**				
	L3, LV & HV connections, substations and the like are excluded		*Note*		
7.1	Provisional allowance for external services, connection into existing, etc.	1	Item	550,000	550,000
7.2	Provisional allowance for relocating existing services.	1	Item	150,000	150,000
				EXTERNAL SERVICES TOTAL	**700,000**

Ref.	Description	Quantity	Unit	Rate	Total
7	**EXTERNAL SERVICES**				

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Report: Tamworth Council Offices_Masterplan_v0

Ref.	Description	Quantity	Unit	Rate	Total
19	**SAVING FOR ON-GRADE CARPARK [ETC]**				
19.1	SAVING FOR ON-GRADE CARPARK	-5,100	m2	1,300	-6,630,000
	NETT CONSTRUCTION COST [NCC]	**1**	**Item**	**-6,630,000**	**-6,630,000**
19.2	PRELIMINARIES	18	% of NCC		-1,193,400
19.3	STAGING COSTS				EXCLUDED
19.4	CONTRACTOR'S DESIGN FEES	5	% of NCC		-331,500
19.5	MARGIN	5	% of Above		-407,745
19.6	LOCALITY ALLOWANCE	6	% of Above		-513,758
19.7	ESCALATION	15.83	% of Above		-1,436,794
	GROSS CONSTRUCTION COST [GCC]	**1**	**Item**	**-10,513,197**	**-10,513,197**
19.8	PROFESSIONAL FEES	8	% of GCC		-841,055
19.9	AUTHORITY FEES	0.75	% of GCC		-78,848
19.10	INTERNAL COSTS				EXCLUDED
	TOTAL PROJECT COST [TPC]	**1**	**Item**	**-11,433,100**	**-11,433,100**
19.11	DESIGN CONTINGENCY	10	% of GCC		-1,051,319
19.12	CONSTRUCTION CONTINGENCY	10	% of GCC		-1,051,319
	END TOTAL COST [ETC]	**1**	**Item**	**-13,535,738**	**-13,535,738**
				SAVING FOR ON-GRADE CARPARK [ETC] TOTAL	**-13,535,738**

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Client: Tamworth Regional Council
Project: Tamworth Council Offices ROM
Report: Tamworth Council Offices_Masterplan_v0

Ref.	Description	Quantity	Unit	Rate	Total
19	**SAVING FOR ON-GRADE CARPARK [ETC]**				

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KERBSIDE BIN AUDITS 2025

Tamworth Regional Council

TAMWORTH REGIONAL COUNCIL

knowwaste

E. info@knowwaste.com.au
P. 02 9452 1688
M. 0455 119 703
www.knowwaste.com.au

ABN: 76 236 788 017
ACN: 169 152 532

Disclaimer

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Glossary

Bagged waste / bagged recycling
Waste or recyclable materials placed inside bags before disposal in kerbside bins. Bagging can reduce sorting efficiency and increase contamination.

CDS (Container Deposit Scheme)
A program that provides a refund for eligible beverage containers returned for recycling

Food in containers
Food waste that remains inside packaging or containers when disposed of. For the purpose of this audit, the container and the food contents were weighed together and not separated prior to measurement.

FOGO (Food Organics Garden Organics)
A kerbside collection system that accepts both food waste and garden organics for processing.

Generation rate
The quantity of waste produced per household over a specified period (typically kg per household per week).

Leakage
Recoverable materials disposed of in the wrong bin, typically recyclables or organics placed in general waste.

Presentation rate
The proportion of households that place their bin out for collection.

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Executive Summary

Knowwaste undertook a kerbside bin audit of Tamworth Regional Council's three bin collection system during October–November 2025 in accordance with NSW EPA audit guidelines.

The audit assessed household waste generation, bin presentation, material composition, contamination, and geographic variation across Urban and Regional Centre areas.

Average household waste generation across all three streams was 27.74 kg per household per week, with garden organics representing the largest proportion (13.58 kg/hh/wk), followed by general waste (10.89 kg/hh/wk) and mixed recycling (3.27 kg/hh/wk). When compared with 2022–23 NSW data, Tamworth households generate proportionally more garden organics, while mixed recycling generation is slightly lower than the NSW average. General waste generation in Tamworth is consistent with the state average.

General waste represents the greatest opportunity for improved diversion. Organic material accounts for over half of the residual waste stream (51.78%), with food waste (loose food waste 21.49%, food in containers 14.05%, and garden organics 16.24%) comprising a substantial proportion of recoverable material. Approximately 26.53% of general waste could already be diverted using existing kerbside services (garden organics 16.24% and mixed recycling 10.29%), indicating clear potential for improved recovery through behaviour change and service optimisation.

Mixed recycling performance is generally strong, with recyclables comprising around 81% of the stream. Contamination (19.04%) is primarily associated with misplaced garden organics (7.10%) and food in containers (2.87%).

Manilla was included in the audit but does not have access to a garden organics service. Results show that garden organics contamination is strongly influenced by the absence of dedicated organics collection. When analysis was limited to areas with a full three-bin system and Manilla excluded, garden organics contamination in general waste and mixed recycling decreased to 8.89% and 0.25% respectively. This confirms that service availability is a key driver of disposal behaviour.

Executive Summary

The garden organics service is performing exceptionally well, with contamination consistently below 0.5% and material capture exceeding 99% in serviced areas. This demonstrates very high levels of correct use and strong resident understanding of acceptable materials.

The audit confirms that service availability is a key driver of waste behaviour. Areas without organics services show higher organic material in residual waste and recycling streams.

Overall, Tamworth Regional Council's kerbside services are performing well. The primary opportunity for improved diversion lies in increasing recovery of food waste currently disposed of in general waste. The strong performance of the existing garden organics service provides a solid foundation for the potential implementation or expansion of a FOGO service, alongside continued targeted education to improve recycling capture and reduce contamination.

Introduction

Knowwaste undertook a kerbside audit of Tamworth Regional Council 3-bin waste collection service from 27th October to 7th November 2025. Including, general waste, mixed recycling and garden organics.

Methods followed NSW EPA Guidelines for Conducting Household Kerbside Residual Waste, Recycling and Garden Organics Audits in NSW, Local Government Areas 2008, Addendum 2010.

Project objectives

The objectives of this audit was to understand;

1. Generation rates and presentation rates per household.
2. Material composition of all three streams.
3. Leakage of recoverable items in the waste streams (items that could have been placed in the existing kerbside recycling and garden organic bins).
4. Contamination rates in the recycling and garden organic bins.
5. Geographic variation between urban and regional centre services.

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Introduction

Tamworth Regional Council is located in the New England region of New South Wales, Australia.

Tamworth's residents have a kerbside collection service contracted to Cleanaway and are provided in the following waste collection regions and frequencies;

Region	General Waste (Red Lid)	Mixed Recycling (Yellow Lid)	Garden Organics (Green Lid)
Urban	Weekly	Fortnightly	Fortnightly
Regional Centre	Weekly	Fortnightly	Fortnightly (*Apart from the area of Manilla where no service is available)*

Bins supplied are largely 240 litre mobile garbage bins (MGBs).

All kerbside collection materials (general waste, recycling, garden organics) are delivered to Tamworth Waste Management Facility (Forest Road) in side-arm collection vehicles.

For this audit, samples were picked up on a daily basis by Cleanaway collection vehicle and dropped off at the waste management facility for sorting by the Knowwaste team.

A Knowwaste auditor was in the truck for all sample collections.

Introduction

The table below shows the areas visited on each collection day.

Note that residents of Manilla do not have access to a separate garden organics bin. As a result, Manilla data has been excluded from the analysis on pages 10, 13 and 21 to present a non-skewed set of results. All other pages are an aggregate of data across all households.

Day	Suburb	Region	General Waste (Red Lid)	Mixed Recycling (Yellow Lid)	Garden Organics (Green Lid)
Monday	Manilla	Regional Centre	Weekly	Fortnightly	Service Not Available
Tuesday	Westdale	Urban	Weekly	Fortnightly	Fortnightly
Wednesday	Calala	Urban	Weekly	Fortnightly	Fortnightly
Thursday	Kootingal	Regional Centre	Weekly	Fortnightly	Fortnightly
Friday	North Tamworth	Urban	Weekly	Fortnightly	Fortnightly

In week 1 of the audit, general waste and garden organics was collected from 256 households.

In week 2 of the audit, the same streets were visited to collect the recycling bins.

Presentation rates of each bin type were recorded at the point of collection.

Generation Rates

The table below provides the weekly generation rates of all audited households for each waste stream type.

Garden organics was found to be the highest generation of material at 13.58 kg per household per week, accounting for approximately 49% of total household waste.

General waste is the second largest stream in the LGA with a generation rate of 10.89 kg/hh/wk, approximately 39% of total waste generation.

Mixed recycling was found to be 3.27 kg/hh/wk, making up approximately 12% of total waste produced per household per week.

When comparing the Tamworth LGA figures to 2022–23 NSW data reported by the EPA, Tamworth households generate proportionally more garden organics, while mixed recycling is slightly lower than the NSW average. General waste generation in Tamworth is consistent with that of the state average.

Table 1 - Generation rates of all households

Waste stream	Tamworth LGA Households	NSW Households*
General Waste	10.89 Kg	11 Kg
Mixed Recycling	3.27 Kg	4 Kg
Garden Organics	13.58 Kg	6 Kg
Total	**27.74 Kg**	**21 Kg**

**Source: Environment Protection Authority: NSW Local Government Waste and Resource Recovery Data Report 2022-23 (www.epa.nsw.gov.au/sites/default/files/24p4569-warr-data-report-2022-23.pdf)*

Generation Rates - Region

The table below shows the waste generation rates of each waste stream by geographic area, urban and regional centre.

Total waste generation increases with remoteness, rising from 24.13 kg per household per week in Urban areas to 33.39 kg/hh/wk in the Regional Centre. This increase is driven primarily by higher general waste and garden organics generation.

Mixed recycling generation is relatively consistent across areas, while garden organics remains the dominant waste stream, reinforcing its key role in reducing residual waste. Regional Centre areas generate more garden organics than Urban areas, and the same trend can be seen across general waste.

Note that the area of Manilla does not have a garden organics service, therefore, the reported Regional Centre garden organics generation rate reflects data from Kootingal only.

Table 2 - Generation rates of all households by region

Waste stream	Urban	Regional Centre
General Waste	8.24 Kg	13.99 Kg
Mixed Recycling	3.25 Kg	3.30 Kg
Garden Organics	12.64 Kg	16.10 Kg
Total	**24.13 Kg**	**33.39 Kg**

Presentation Rates

The following table provides the presentation rates of each waste stream.

Presentation Rate: The percentage of households who presented their bin to the kerb for collection on the audit day.

General waste was found to have the highest presentation rate at 83.12%, indicating strong reliance on the residual bin and consistent household participation.

Mixed recycling had a presentation rate of 77.35%.

Garden organics had a lower presentation rate of 51.54%, which may indicate seasonal variation in garden waste generation, under utilisation of the garden organics service, lower participation, and/or capacity being managed through other streams.

Overall, the presentation data suggests that households prioritise general waste and mixed recycling, while garden organics presents an opportunity for improved participation.

Table 3 - Presentation rates

Waste stream	All Households
General Waste	83.12%
Mixed Recycling	77.35%
Garden Organics	51.54%

Presentation Rates - Region

The following table provides presentation rates by geographic area, urban and regional centre.

Consistent with generation rate, general waste presentation increases with remoteness, rising from 79.77% in Urban areas to 87.41% in Regional Centres, indicating greater reliance on the residual bin.

In contrast, mixed recycling presentation decreases with remoteness, suggesting recycling participation is more sensitive to geography and may reflect differences in household engagement.

Garden organics presentation is highest in Regional Centres (60.29%), likely reflecting higher vegetation levels, seasonal influences, or behavioural differences. This figure represents Kootingal only, as Manilla does not have a garden organics service.

Table 4 - Presentation rates by region

Waste stream	Urban	Regional Centre
General Waste	79.77%	87.41%
Mixed Recycling	83.22%	71.53%
Garden Organics	48.89%	60.29%

Generation & Presentation Rates - Excluding Manilla

To better understand behaviour where all services are available, the following table excludes Manilla data. Removing Manilla (which does not have a garden organics service) provides a clearer view of household behaviour where all three services are accessible.

Garden organics is the dominant stream by generation, with the highest generation rate (13.58 kg/hh/wk), although presentation is moderate at 52.62%, indicating opportunity to increase utilisation of the garden organics service. However, seasonal variation may also influence participation and presentation rates throughout the year.

General waste generation is lower (9.68 kg/hh/wk), while presentation remains high (81.97%), indicating continued reliance on the residual bin.

Mixed recycling generation remains relatively consistent (3.14 kg/hh/wk), with strong presentation (79.65%). This suggests that households with access to recycling services are actively using them, although further improvements in participation may still be possible.

Overall, the results confirm that service availability strongly influences bin use and the potential for improved diversion performance.

Table 5 - Generation and presentation rates excluding Manilla

Waste stream	Generation Rates	Presentation Rates
General Waste	9.68 Kg	81.97%
Mixed Recycling	3.14 Kg	79.65%
Garden Organics	13.58 Kg	52.62%

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General Waste Summary

The table below summarises key findings from the general waste bins audited.

- Organic material makes up 51.78% of the stream (Loose food waste 21.49%, food in containers 14.05% and garden organics 16.24%), highlighting significant diversion potential into the garden organics bin already provided by the council and suggesting the need for a FOGO bin.
- 10.29% of material could have been recovered in the existing mixed recycling bins, suggesting ongoing opportunities to improve recycling capture and recovery.
- Other materials account for 37.94%, representing non-recoverable or miscellaneous waste.

Overall, the composition highlights misplaced organics and recyclables, reinforcing the need for further garden organics service uptake, the implementation of a FOGO service and targeted education to recover recycling.

Table 6 - General waste summary data

General Waste	2025
Garden organics	16.24%
Loose food waste	21.49%
Food in containers	14.05%
Mixed recycling	10.29%
Other materials	37.94%
Total	**100%**

General Waste - Regional

The table below summarises key findings from the general waste audit by region.

- Garden organics make up a substantially higher proportion of general waste in Regional Centre areas (26.48%) compared with Urban areas (6.15%). Note that Manilla is included within the Regional Centre classification.
- Food in containers is similar across both regions, comprising 13.96% of Urban general waste and 14.13% in Regional Centres.
- Mixed recycling is more prevalent in Urban general waste (11.72%) compared with Regional Centres (8.83%), indicating slightly higher recyclable leakage in Urban areas.
- Total food waste (loose food plus food in containers) accounts for a significant share of general waste in both regions, comprising 37.58% in Urban areas and 33.46% in Regional Centres. This indicates strong potential for the implementation of a FOGO service, supported by the strong performance of the existing garden organics service.

Overall, Regional Centre general waste contains a higher proportion of garden organics, while Urban bins show greater recyclable leakage. These patterns highlight clear opportunities to improve diversion.

Table 7 - General waste summary data by region

General Waste	Urban	Regional Centre
Garden organics	6.15%	26.48%
Loose food waste	23.62%	19.33%
Food in containers	13.96%	14.13%
Mixed recycling	11.72%	8.83%
Other materials	44.55%	31.23%
Total	100%	100%

General Waste - Excluding Manilla

Manilla has been excluded from the summary table below to demonstrate overall general waste composition in areas with access to standard 3 stream kerbside bin services. As Manilla does not have a kerbside garden organics bin, its inclusion was found to increase the proportion of organic material in the general waste stream.

Loose food waste was the largest single identifiable component of general waste at 21.87%, with an additional 16.12% of food found in containers. Together, food waste accounts for approximately 37.99% of general waste, highlighting significant opportunity to reduce food related disposal and increase diversion through the implementation of a kerbside FOGO service.

While the removal of Manilla reduces the proportion of garden organics present in the general waste stream, the overall composition patterns remain consistent across the LGA. Food waste continues to dominate the recoverable material, and mixed recycling still accounts for approximately one tenth of disposal. This indicates that key disposal behaviours remain unchanged, reinforcing the strong potential for diversion through the implementation or expansion of a FOGO service and further recycling education.

Table 8 - General waste summary data of all areas excluding Manilla

General Waste	2025
Garden organics	8.89%
Loose food waste	21.87%
Food in containers	16.12%
Mixed recycling	11.84%
Other materials	41.28%
Total	100%

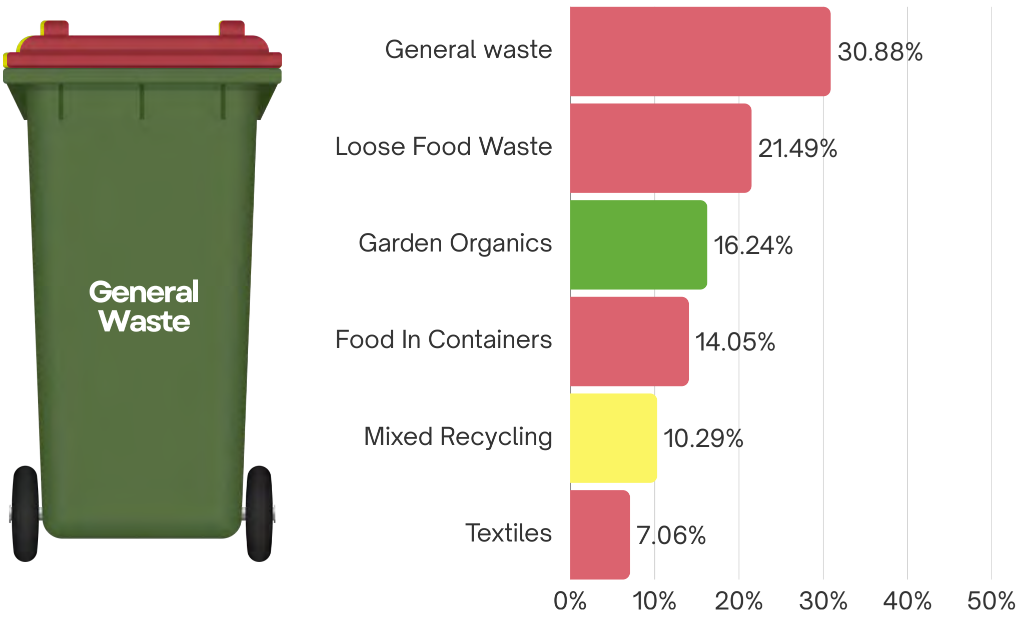
General Waste Results

The following figure shows the composition of the general waste bins for all households across all regions.

It was found that 26.53% of the total weight of the general waste bin contents could have been recovered in the existing kerbside bins.

- 16.24% garden organics
- 10.29% mixed recycling

Figure 1 - General waste composition summary

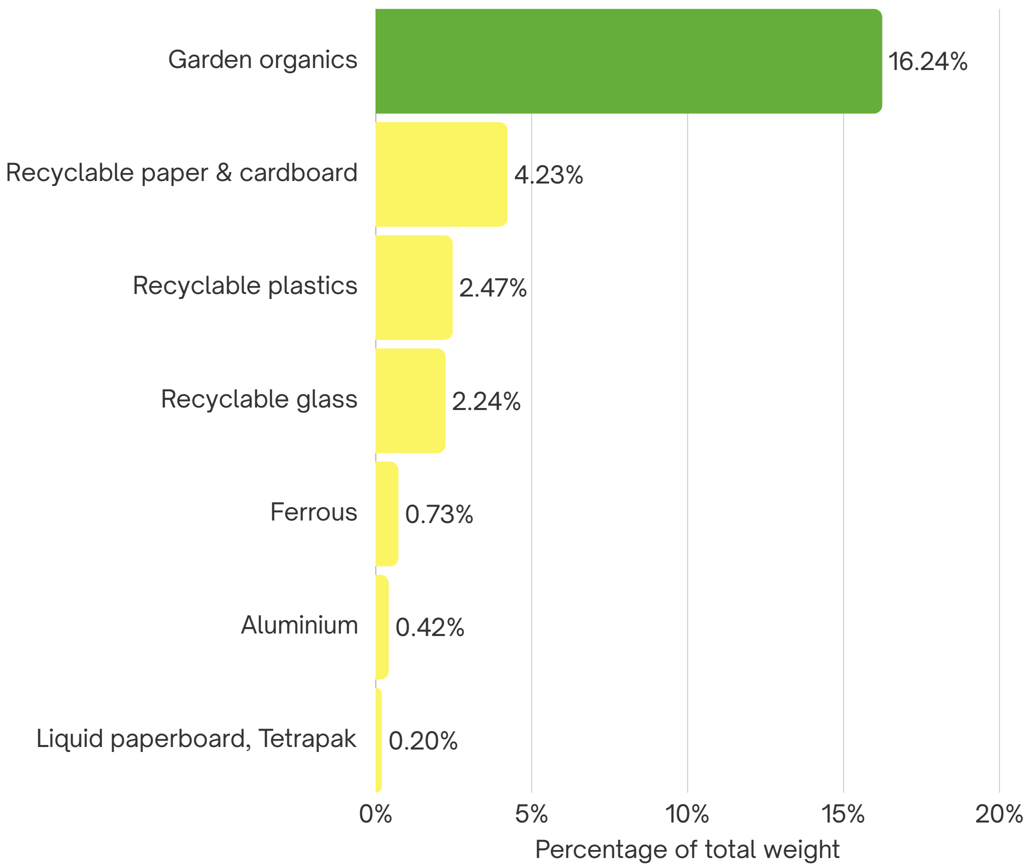


As depicted in previous figures, the general waste bins had a presentation rate of 83.12% and an average generation rate of 10.89 kg per week across all households.

General Waste Leakage

The figure below shows an itemised breakdown of the leakage found in the general waste bins. Items have been categorised in order of highest percentage of weight to lowest.

Figure 2 - General waste itemised leakage

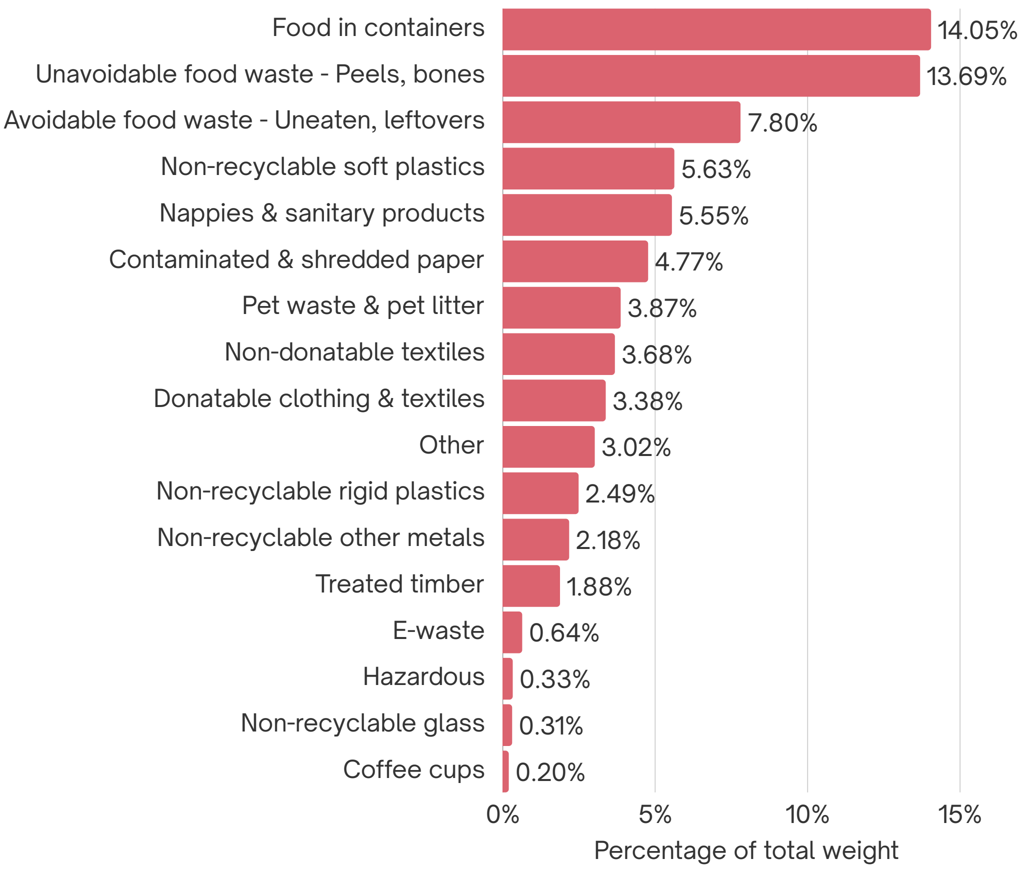


General Waste Items

The remaining 73.48% of material has been itemised below and ordered from highest percentage of total weight to lowest.

Food related material dominates the waste stream, with food in containers, unavoidable food waste and avoidable food waste together accounting for over 35% of total weight, highlighting a strong opportunity for food waste diversion. Soft plastics and nappies/sanitary products are the largest non-recoverable items, while textiles remain notable (7.06% combined). Overall, the composition reinforces food waste as the key diversion priority, supporting the case for a food waste or FOGO service.

Figure 3 - Items from the general waste bins



General Waste Composition

The following table provides the sorting category breakdown of the general waste bins from the audit.

Table 9 - General waste composition breakdown by sorting category

Description		Percentage of total weight 2025
Paper & cardboard	Recyclable paper & cardboard	4.23%
	Nappies & sanitary products	5.55%
	Liquid paperboard, Tetrapak	0.20%
	Contaminated & shredded paper	4.77%
	Coffee cups	0.20%
Plastic	Recyclable plastics	2.47%
	Non-recyclable soft plastics	5.63%
	Non-recyclable rigid plastics	2.49%
Metal	Ferrous	0.73%
	Aluminium	0.42%
	Non-recyclable other metals	2.18%
Glass	Recyclable glass	2.24%
	Non-recyclable other glass	0.31%

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General Waste Composition

Table 9 - General waste composition breakdown by sorting category

Description		Percentage of total weight 2025
Organics	Avoidable food waste - Uneaten, leftovers	7.80%
	Unavoidable food waste - Peels, bones	13.69%
	Food in containers	14.05%
	Non-compliant compostable packaging	-
	Garden organics	16.24%
	Non-compliant garden organics	-
	Pet waste & pet litter	3.87%
	Treated timber	1.88%
E-waste	E-waste	0.64%
Hazardous	Hazardous	0.33%
Textiles	Donatable clothing & textiles	3.38%
	Non-donatable textiles	3.68%
Other	Other	3.02%
Total		100%

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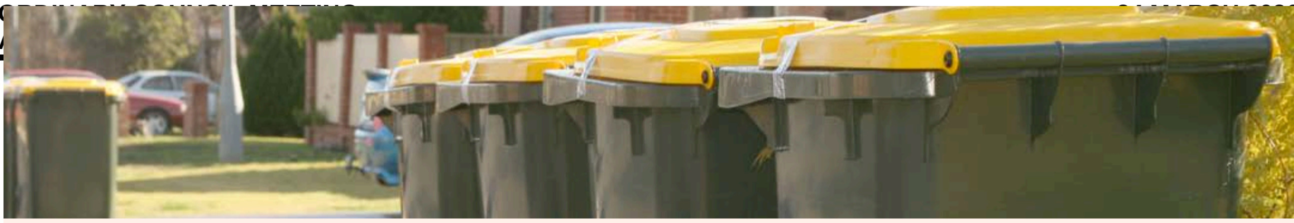

Mixed Recycling Summary

The following table provides the key summary data for the mixed recycling bins audited.

- Mixed recyclables dominate the stream 80.96%, showing households are largely using the service as intended but there are occurrences of high contamination.
- Contamination was measured at 19.04%, driven primarily by garden organics (7.10%), other materials (7.28%), food in containers (2.87%), textiles (1.19%), and loose food waste (0.61%).

Mixed recycling shows a high capture of recyclables with some significant organics contamination, highlighting the potential to improve through education or service improvements.

Table 10 - Mixed recycling summary data

Mixed Recycling	2025
Mixed recycling	80.96%
Food in containers	2.87%
Garden organics	7.10%
Loose food waste	0.61%
Other materials	8.47%
Total	100%

Mixed Recycling - Regional

The table below summarises key findings from the mixed recycling bins audited by region.

- Recyclables dominate the stream in both Urban, 85.48% and Regional Centres, 75.54%. However, a high proportion of the Regional Centre mixed recycling stream was composed of garden organics (15.23%), reflecting the absence of a garden organics service in the area of Manilla which is included in the Regional Centre classification.
- All other contamination was found to be low across both areas, with food in containers, loose food waste and miscellaneous materials generally under 10-15%.

Overall, households were found to largely use the recycling service correctly, while Regional Remote bins show significant garden organics contamination, highlighting a key target for organics service introduction and contamination reduction.

Table 11 - Mixed recycling summary data by region

Mixed Recycling	Urban	Regional Centre
Mixed recycling	85.48%	75.54%
Food in containers	3.64%	2.00%
Garden organics	0.04%	15.12%
Loose food waste	0.84%	0.34%
Other materials	10.01%	7.00%
Total	100%	100%

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Mixed Recycling - Excluding Manilla

Manilla has been excluded from the summary table below to demonstrate the impact of these households on overall mixed recycling composition.

When Manilla data is excluded, the majority of material in the mixed recycling stream is correctly sorted, with 86.25% classified as mixed recyclables. Garden organics contamination is minimal at 0.25%, indicating that most garden organics contamination in the recycling stream is associated with Manilla.

Loose food waste and food in containers together make up less than 4% of the recycling stream, indicating that contamination from organic materials is relatively low. Other non-recyclable materials comprise 9.58% of bin contents, with non-recyclable soft plastics, non-recyclable rigid plastics, and food in containers accounting for 4.62% of this total.

Overall, this adjusted dataset shows that mixed recycling streams are generally well sorted in areas with standard services and reinforces the importance of maintaining low contamination from organic materials and non-recyclables. These results also indicate that contamination is concentrated in specific areas.

Table 12 - Mixed recycling summary data of all areas excluding Manilla

Mixed Recycling	2025
Mixed recycling	86.25%
Food in containers	3.14%
Garden organics	0.25%
Loose food waste	0.78%
Other materials	9.58%
Total	100%

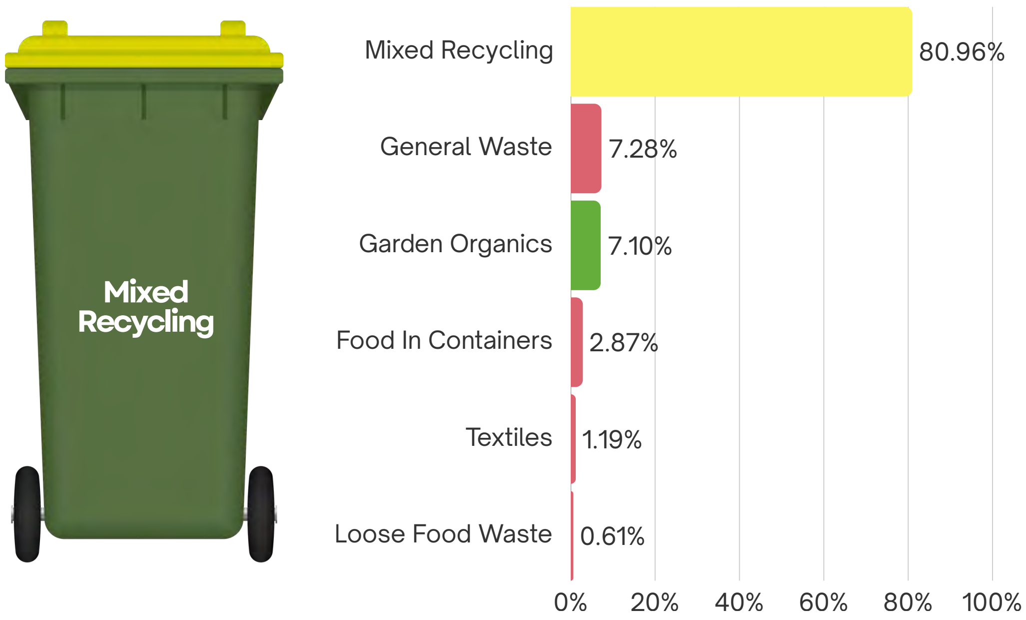
Mixed Recycling Results

The following figure shows the composition of the mixed recycling for all households.

The mixed recycling stream is largely used as intended, with recyclables accounting for 80.96% of the material. Contamination totalled 19.04% and consisted of garden organics (7.10%) and food in containers (2.87%), with minimal loose food waste (0.61%) and textiles (1.19%). The remaining 7.28% was made up of other multiple general waste items.

The data indicates opportunities to further reduce garden organics contamination through targeted education and service optimisation.

Figure 4 - Mixed recycling composition summary



Mixed recycling bins had a presentation rate of 77.35%.

The average weekly mixed recycling generation rates for all households was 3.27 Kg.

Bagged Waste, Recycling & Curby

Bagged recycling and bagged waste found in the mixed recycling stream are considered contaminants and are typically removed during processing and disposed of as general waste. Bagged materials were identified across both regions, indicating contamination within the mixed recycling stream

Urban areas recorded the highest number of bagged items overall, Regional Centre areas recorded more bagged recycling but fewer instances of bagged waste. However, when bagging occurred in Regional Centres, the average bag weight was substantially higher.

Average bag weights for bagged recycling were similar across both regions, suggesting comparable bagging behaviour for recyclable materials.

A small number of Curby bags were identified in both Urban and Regional Centre areas with similar average weights, indicating consistent but limited participation in the Curby soft plastics recycling scheme.

Table 13 - Regional bagged recycling, waste and Curby bag summary data

	Bagged Recycling		Bagged Waste		Curby Bags	
Region	**Number of bags**	**Average weight of bag**	**Number of bags**	**Average weight of bag**	**Number of bags**	**Average weight of bag**
Urban	14	0.74 Kg	8	0.82 Kg	4	0.51 Kg
Regional Centre	18	0.73 Kg	3	1.79 Kg	4	0.49 Kg

CDS Containers

CDS eligible containers were identified across all regions in the mixed recycling bins.

The highest average number per household was observed in the Urban regions of 13.4 containers per household per week. ds in the Regional Centre disposed of 7.2 containers per household per week in thier mixed recycling bins.

Table 14 - Regional CDS summary data

Region	CDS per Household
Urban	13.4
Regional Centre	7.2

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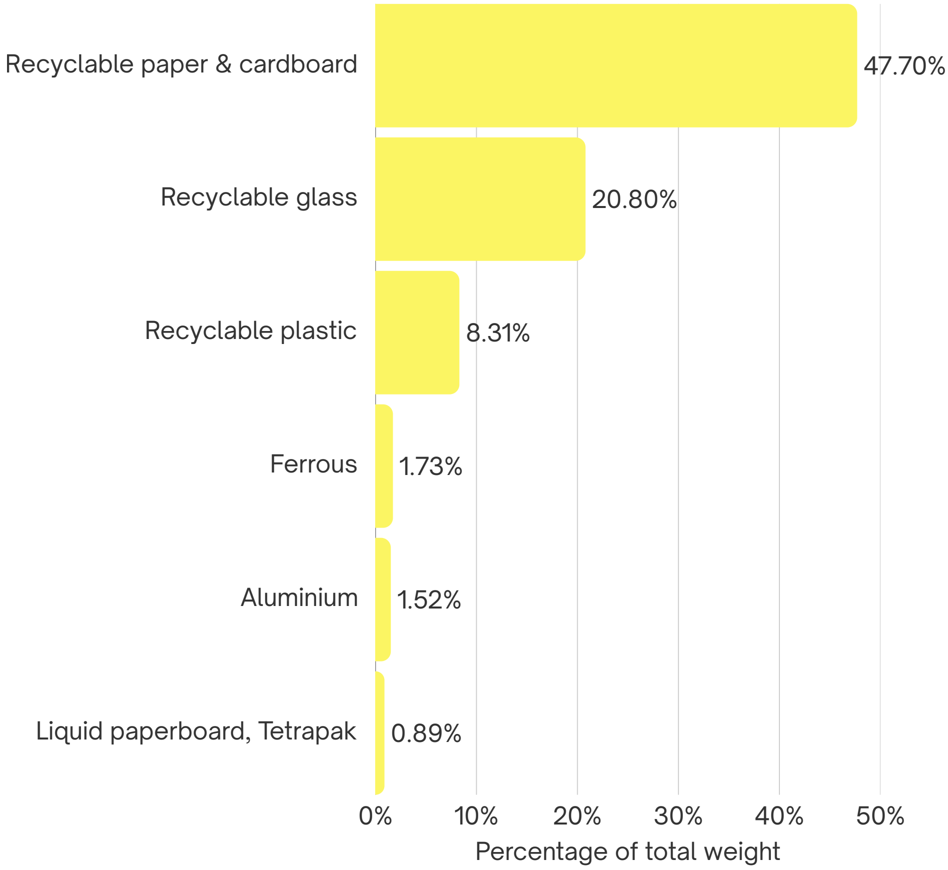
Mixed Recycling Items

The figure below shows a breakdown of the recyclable items found in the mixed recycling bins. Items have been categorised in order of highest percentage of weight to lowest.

Figure 5 - Items from the mixed recycling bins



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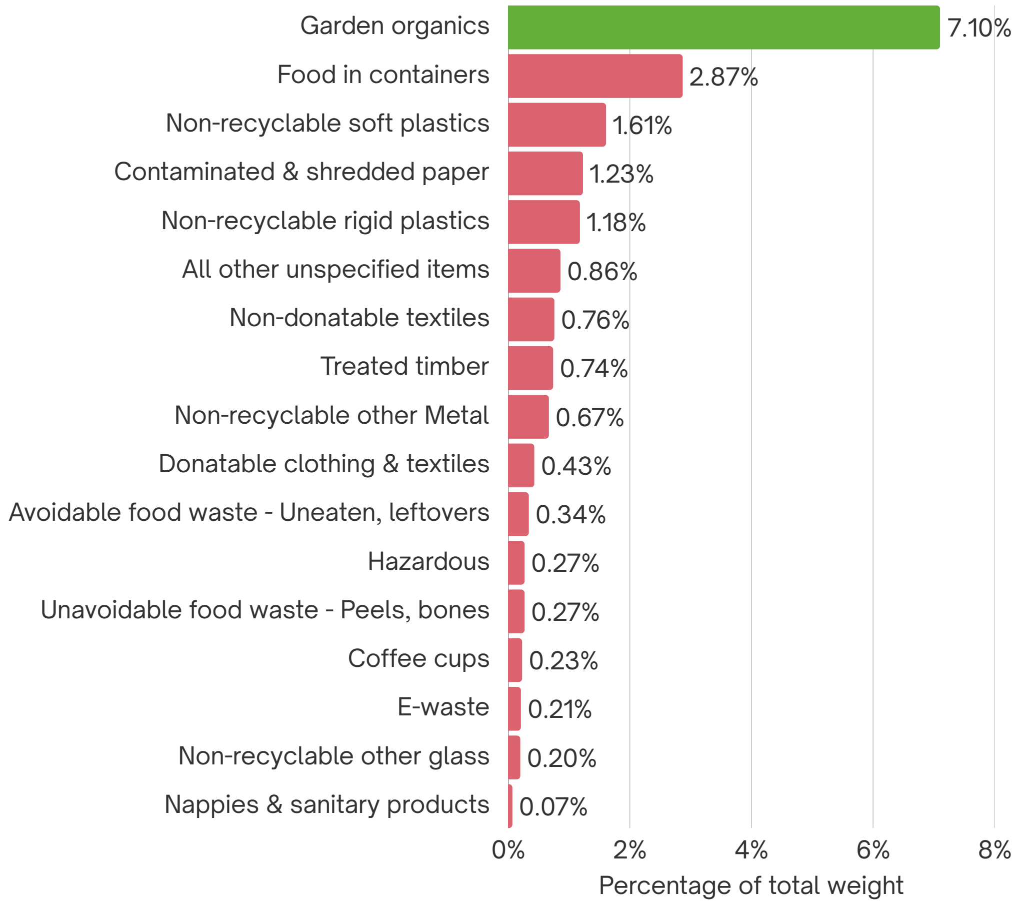
Mixed Recycling Contamination

The figure below shows an itemised breakdown of the contamination found in the mixed recycling bins. Items have been categorised in order of highest percentage of total weight to lowest.

Figure 6 - Contamination in the mixed recycling bins



Mixed Recycling Composition

The following table provides the sorting category breakdown of the mixed recycling bins from the audit.

Table 15 - Mixed recycling composition breakdown by sorting category

Description		Percentage of total weight
		2025
Paper & cardboard	Recyclable paper & cardboard	47.70%
	Nappies & sanitary products	0.07%
	Liquid paperboard, Tetrapak	0.89%
	Contaminated & shredded paper	1.23%
	Coffee cups	0.23%
Plastic	Recyclable plastics	8.31%
	Non-recyclable soft plastics	1.61%
	Non-recyclable rigid plastics	1.18%
Metal	Ferrous	1.73%
	Aluminium	1.52%
	Non-recyclable other metals	0.67%
Glass	Recyclable glass	20.80%
	Non-recyclable other glass	0.20%

Mixed Recycling Composition

Table 15 - Mixed recycling composition breakdown by sorting category

Description		Percentage of total weight
		2025
Organics	Avoidable food waste - Uneaten, leftovers	0.34%
	Unavoidable food waste - Peels, bones	0.27%
	Food in containers	2.87%
	Non-compliant compostable packaging	-
	Garden organics	7.10%
	Non-compliant garden organics	-
	Pet waste & pet litter	0.001%
	Treated timber	0.74%
E-waste	E-waste	0.21%
Hazardous	Hazardous	0.27%
Textiles	Donatable clothing & textiles	0.43%
	Non-donatable textiles	0.76%
Other	Other	0.86%
Total		**100%**

Garden Organics Summary

The following table provides the key summary data for the garden organic bins audited.

The stream is almost entirely garden organics (99.54%), with minimal contamination from food, containers, recyclables, or other materials (<0.5%).

Overall, the garden organics service is highly effective at capturing its intended material, with very low contamination, highlighting strong program performance and potential for organic waste diversion.

Table 16 - Garden organics summary data

Garden Organics	2025
Garden organics	99.54%
Loose food waste	0.05%
Food in containers	0.05%
Mixed recycling	0.01%
Other materials	0.35%
Total	100%

Garden Organics - Regional

The table below summarises key findings from the garden organics bins audited, broken down by region.

Garden organics dominate the stream in both Urban and Regional Centre areas, indicating very high levels of correct use of the service.

- **Urban**: Garden organics comprise 99.71% of the stream, with total contamination below 0.3%. Minor contaminants include loose food waste (0.09%), food in containers (0.04%), and other materials (0.16%).
- **Regional Centre**: Garden organics account for 99.25% of material, with contamination below 1%. Minor contaminants include food in containers (0.07%), mixed recycling (0.01%), and other materials (0.67%).

No data is presented for Manilla, as households in this area do not have access to a dedicated garden organics service.

Overall, the results demonstrate very high compliance with correct garden organics disposal in areas where the service is available, with contamination levels extremely low and well within acceptable thresholds.

Table 17 - Garden organics summary data by region

Garden Organics	Urban	Regional Centre
Garden organics	99.71%	99.25%
Loose food waste	0.09%	-
Food in containers	0.04%	0.07%
Mixed recycling	-	0.01%
Other materials	0.16%	0.67%
Total	100%	100%

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Garden Organics Results

The following figure shows the composition of the garden organics bins for all households.

The garden organics stream was very clean, with garden organics comprising 99.54% of the material. Contamination from general waste, food, recyclables, and containers is negligible (<0.5%), indicating excellent source separation and strong service performance.

Figure 7 - Garden organics composition summary

As shown in previous figures, the garden organics bins had a presentation rate of 51.54%, which may indicate seasonal variation in garden waste generation, and an average generation rate of 13.58 Kg per week across all households.

Garden Organics Composition

The following table provides the sorting category breakdown of the garden organics bins from the audit.

Table 18- Garden organics composition breakdown by sorting category

Description		Percentage of total weight
		2025
Paper & cardboard	Recyclable paper & cardboard	0.002%
	Nappies & sanitary products	-
	Liquid paperboard, Tetrapak	-
	Contaminated & shredded paper	0.002%
	Coffee cups	0.001%
Plastic	Recyclable plastics	0.003%
	Non-recyclable soft plastics	0.002%
	Non-recyclable rigid plastics	0.01%
Metal	Ferrous	-
	Aluminium	0.001%
	Non-recyclable other metals	0.01%
Glass	Recyclable glass	-
	Non-recyclable other glass	-

Garden Organics Composition

Table 18 - Garden organics composition breakdown by sorting category

Description		Percentage of total weight 2025
Organics	Avoidable food waste - Uneaten, leftovers	0.001%
	Unavoidable food waste - Peels, bones	-
	Food in containers	0.05%
	Non-compliant compostable packaging	-
	Garden organics	99.54%
	Non-compliant garden organics	-
	Pet waste & pet litter	-
	Treated timber	-
E-waste	E-waste	-
Hazardous	**Hazardous**	-
Textiles	Donatable clothing & textiles	-
	Non-donatable textiles	-
Other	Other	0.3%
Total		**100%**

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Key Takeaways

General Waste

- General waste remains the primary disposal stream and the largest opportunity for improved diversion.
- Organic material represents a 51.78% of residual waste (Loose food waste 21.49%, food in containers 14.05% and garden organics 16.24%),
- Approximately 26.53% of general waste could already be diverted through existing kerbside services. (Garden organics 16.24% and mixed recycling 10.29%).
- Areas without access to kerbside garden organics services show higher levels of organic material in the residual stream.
- High general waste presentation rates indicate strong reliance on the red bin.
- Targeted food waste reduction and improved organics recovery would significantly reduce landfill disposal.

Mixed Recycling

- The mixed recycling stream is performing well overall, with recyclable materials forming the majority of contents (80.96%).
- Recycling performance improves (86.25%) in areas with access to full 3 bin kerbside services, indicating infrastructure availability supports correct sorting.
- Contamination is primarily driven by misplaced organic materials and food in containers.
- Overall results indicate strong resident understanding of the recycling system with some improvements needed.

Garden Organics

- The green bin is used almost entirely correctly, with >99% garden organics.
- Contamination is consistently very low (<0.5%) across serviced areas.
- The service is well understood and trusted by residents.
- Presentation rates are comparatively lower than other streams, which may reflect seasonal variation in garden waste generation and maintenance activity, as well as differences in participation.
- Results provide a strong foundation for future food waste or FOGO services.

Project Recommendations

General Waste

Investigate implementation of a FOGO service
Progress planning for the introduction or expansion of a Food Organics Garden Organics (FOGO) service to capture the significant proportion of food waste currently disposed of in general waste. The audit confirms food waste remains the largest recoverable component of the residual stream, presenting a major diversion opportunity.

Target food in containers through focused education
Implement clear and consistent resident messaging to encourage removal of food from packaging prior to disposal (e.g. “empty first” guidance). Food remaining in containers continues to contribute to both general waste disposal and contamination of other streams.

Continue assessment of organics service provision in Manilla
Further investigate the feasibility of providing an organics service in Manilla, recognising that the increase in organic material in general waste reflects service availability rather than household behaviour. Expanding service access would support more consistent diversion outcomes across the region.

Project Recommendations

Mixed Recycling

Maintain and optimise the current mixed recycling system
Continue operating the existing mixed recycling service, which is performing well across most service areas. High proportions of recyclable material in the stream indicate strong resident understanding and effective service design.

Target organics contamination through location-specific education
Deliver focused education to reduce the placement of garden organics and food waste in recycling bins, particularly in areas without access to garden organics services. Contamination patterns indicate that service availability influences disposal behaviour.

Reinforce “no bagged recycling” messaging
Strengthen resident guidance on placing recyclable materials loose in the recycling bin. Bagging increases processing losses, and can lead to otherwise recyclable material being rejected.

Build on strong recycling behaviours in serviced areas
Maintain current education and engagement efforts. Continued reinforcement will help sustain high capture rates and low contamination.

Project Recommendations

Garden Organics

Recognise and maintain the garden organics service as a high-performing system
Continue to support the garden organics service, which demonstrates very high levels of correct material capture and low levels of contamination. This reflects strong resident understanding and effective service delivery.

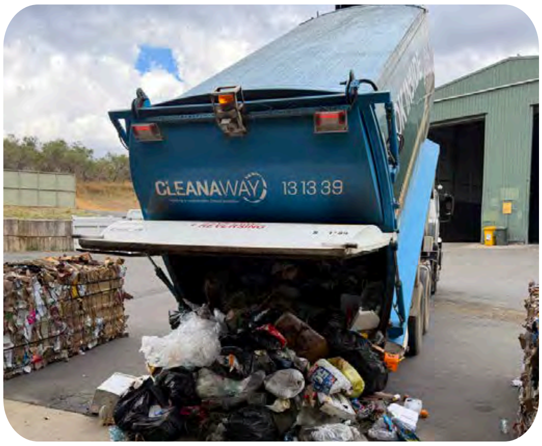
Use current performance as a foundation for FOGO expansion
Build on the success of the garden organics system by investigating opportunities to incorporate food organics collections where feasible. The existing high compliance and low contamination provide a strong operational base for potential FOGO implementation.

Encourage consistent participation through targeted seasonal messaging
Provide periodic reminders aligned with peak vegetation growth and garden maintenance periods to support consistent use of the service. Clear guidance on accepted materials will help maintain high performance levels.

Appendix - Methodology

Collection truck

Site delivery



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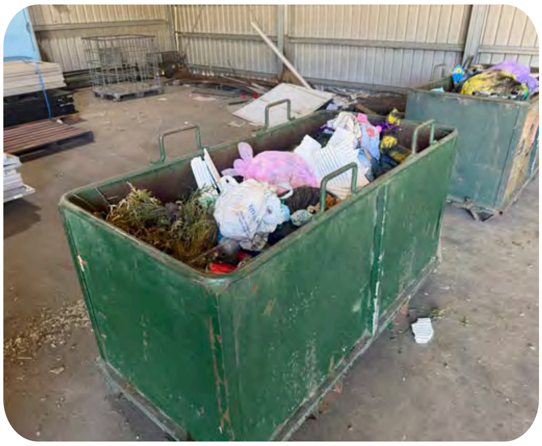
Appendix - Methodology

Auditing site

Sorted material



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Appendix - General Waste

Loose food

Recyclable plastics

Ferrous

Aluminium

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Appendix - General Waste

Glass

Recyclable paper

Liquid paperboard, Tetrapak

Garden organics

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Appendix - Mixed Recycling

Ferrous

Recyclable glass

Aluminium

Appendix - Mixed Recycling

Non-recyclable other metals

Non-recyclable rigid plastics

Food in containers

Appendix - Mixed Recycling

Plastics containers

Nappies & sanitary products

Coffee cups

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Appendix - Mixed Recycling

EP-6

Garden organics

Treated timber

E-waste

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Appendix - Mixed Recycling

Bagged becycling

Curby bags

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Appendix - Garden Organics

Sample delivery

Sorting

Contamination

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SELF-HAUL ASSESSMENTS 2025

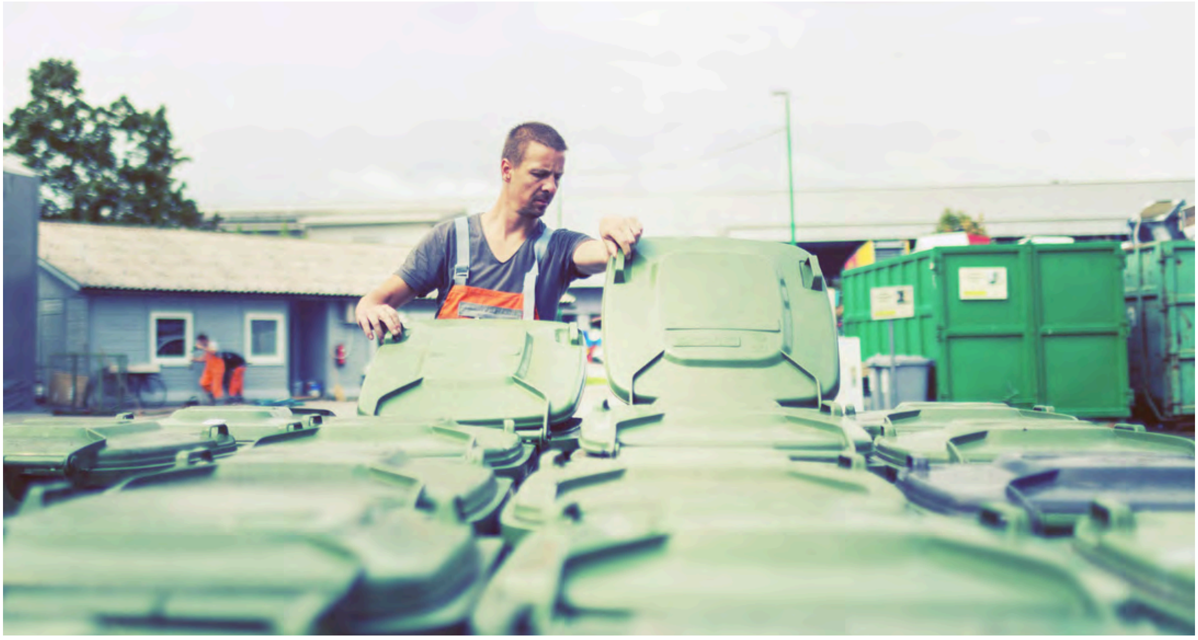
REGIONAL COUNCIL
Tamworth

NOVEMBER 2025

Prepared for

Tamworth Regional Council

knowwaste



© Knowwaste Pty Ltd 2026

E. info@knowwaste.com.au
P. 02 9452 1688
M. 0455 119 703
www.knowwaste.com.au

ABN: 76 236 788 017
ACN: 169 152 532

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Executive summary

In November 2025, Knowwaste conducted assessments of resident self-haul loads across three Tamworth Regional Council waste facilities: Kootingal, Barraba and Duri.

Across all sites, the average load size was approximately 0.64 m^3, roughly equivalent to a standard ute tray of material.

Most residents arrived in cars, utes or towing trailers, with some bringing material in 240L bins or loose loads (particularly garden organics and scrap metal).

Only two loads were identified as not appropriately covered for transport.

A strong level of source separation was observed. In most cases, residents clearly segregated materials into different streams prior to arrival, indicating a good understanding of how the facilities operate.

Overall, more than 71% of material assessed was likely diverted from landfill, with an additional 8% potentially recoverable if further recycling options were available in future. such as soft plastics (5.5%), other rigid plastics (1.7%) and timber (0.7%). The remaining 21% was general household waste destined for landfill. Diversion performance varied by site:

- Kootingal: 79% diverted, driven largely by high volumes of scrap metal and paper & cardboard.
- Duri: 75% diverted, with garden organics, mixed recycling and scrap metal dominant.
- Barraba: 51% diverted, a higher proportion of landfill-quality furniture and timber compared with other sites.

knowwaste

Executive summary

Signage was present at all sites but was inconsistent in design, placement, condition and clarity. Some locations may have had too many signs, while others had signs obscured by vegetation or unsecured. A coordinated, uniform signage system is recommended across all facilities.

Use of spill pallets for hazardous items, such as batteries was inconsistent between sites, suggesting the need for clearer protocols and consistent equipment provision.

Overall, the self-haul network is performing well in supporting waste diversion and providing accessible recycling services to rural communities. With targeted improvements to signage, site safety and housekeeping, Council can further enhance both environmental outcomes and customer experience at these facilities.

Introduction

The purpose of the assessments was to observe and characterise what materials residents were bringing to these sites, how well materials were being separated, and how effectively the facilities were supporting diversion from landfill.

The assessments also examined site operations, signage, safety infrastructure and user experience.

Site visits were conducted during normal operating hours across multiple days in early November 2025 to capture a representative sample of resident drop-offs.

All loads delivered by residents on audit days were visually assessed and categorised by material type and likely disposal or recovery pathway.

This report presents the findings of these assessments, including:

- the composition of materials being dropped off at each site,
- the proportion of material likely diverted from landfill,
- consistency of site layout, signage and safety controls, and
- key observations and opportunities for improvement across the network of self-haul facilities.

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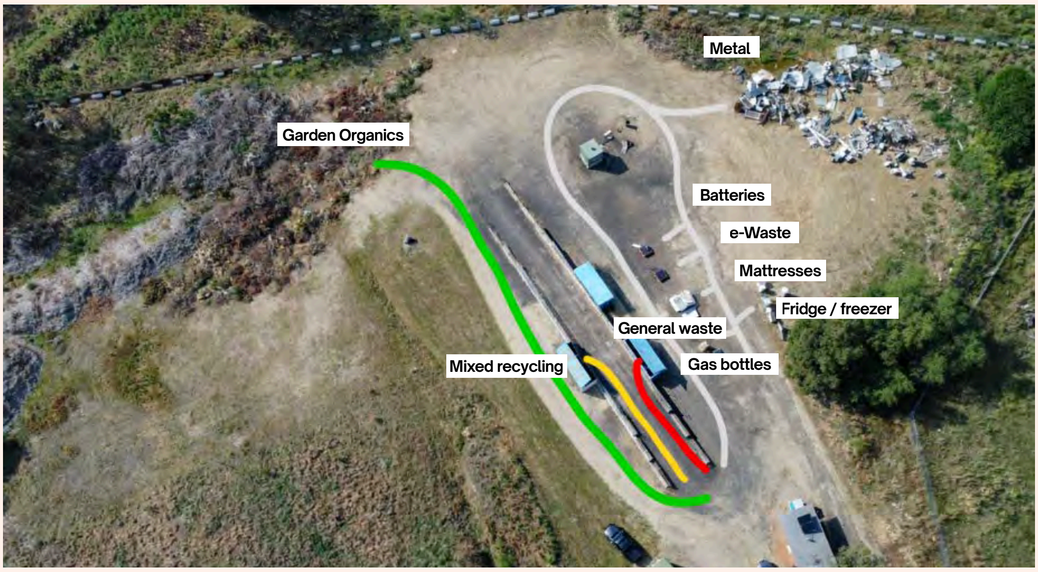
Kootingal

Location: 1428 New England Highway, Kootingal

Operational hours: Monday 08:30 - 11:30. Saturday 13:00 - 16:00.



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What can be dropped off?

Kootingal self-haul drop off accepts the following materials:

- Aerosol cans (empty)
- Aluminium cans
- Aluminium foil
- Domestic household waste
- Gas bottles
- Glass bottles & jars
- Green waste
- Mattresses
- Metal
- Motor oil
- Paper & cardboard
- Plastic, PET-1 , HDPE-2 PVC-3 LDPE-4 PP-5, household containers
- Steel food cans
- Tyres
- Vehicle batteries
- Whitegoods

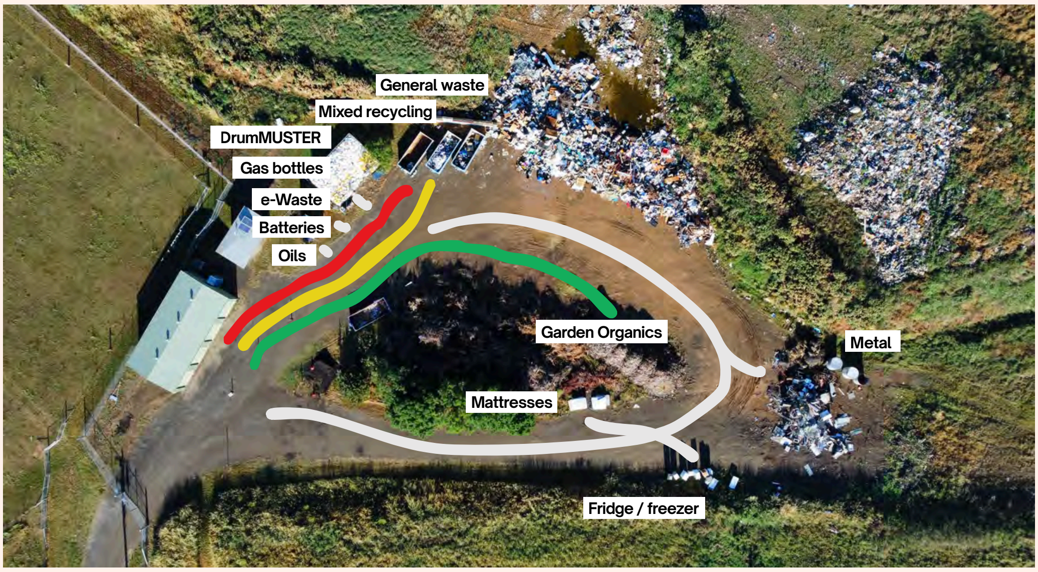
Residents are encouraged to sort and separate their items for recycling. This can also help save the residents money, as recycling drop off is cheaper than domestic household waste.

Material drop off

Barraba

Location: 80 Wittens Lane, Barraba

Operational hours: Tuesday & Friday 08:30 - 11:30. Sunday 13:00 - 16:00.



What can be dropped off?

Barraba self-haul drop off accepts the following materials:

- Aerosol cans (empty)
- Aluminium cans
- Aluminium foil
- Domestic household waste
- DrumMUSTER
- Gas bottles
- Glass bottles & jars
- Green waste
- Mattresses
- Metal
- Motor oil
- Paper & cardboard
- Plastic, PET-1 , HDPE-2 PVC-3 LDPE-4 PP-5, household containers
- Steel food cans
- Timber
- Tyres
- Vehicle batteries
- Whitegoods

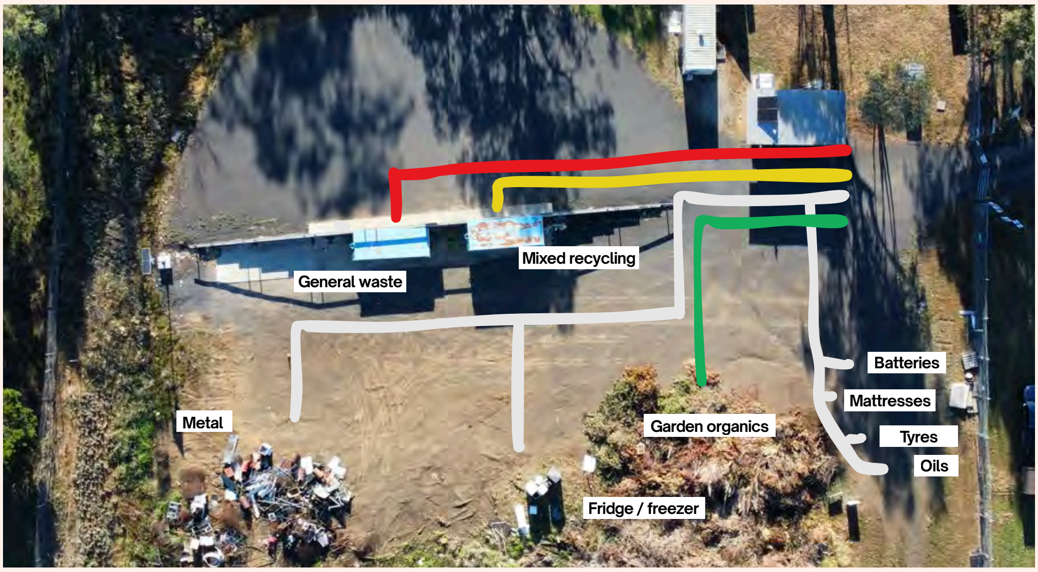
Residents are encouraged to sort and separate their items for recycling. This can also help save the residents money, as recycling drop off is cheaper than domestic household waste.

DrumMUSTER drop off cage

Duri

Location: 520 Duri Winton Road, Duri

Operational hours: Wednesday 08:30 - 11:30. Sunday 13:00 - 16:00.



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What can be dropped off?

Duri self-haul drop off accepts the following materials:

- Aerosol cans (empty)
- Aluminium cans
- Aluminium foil
- Domestic household waste
- Glass bottles & jars
- Green Waste
- Mattresses
- Metal
- Motor oil
- Paper & cardboard
- Plastic, PET-1 , HDPE-2 PVC-3 LDPE-4 PP-5, household containers
- Steel food cans
- Tyres
- Vehicle batteries
- Whitegoods

Residents are encouraged to sort and separate their items for recycling. This can also help save the residents money, as recycling drop off is cheaper than domestic household waste.

Car batteries, tyres and mattresses

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What is being dropped off?

All load drop-offs from residents on audit days were assessed. The average sample size across the sites was 0.64m³, approximately a ute tray load of material.

Residents dropped their samples in cars, utes and trailers. Some material was brought to site in 240L mobile garbage bins or other containers, whilst some items were brough in loose, such as garden organics and scrap metal. Only two loads were identified as ‘not covered’ for transport.

The majority of loads were segregated into the recovery streams available on site. For example if a resident was dropping off garden organics, household waste and scrap metal, all three streams were clearly segregated in their vehicle, highlighting that residents are familiar with the facility and procedures.

Of the samples assessed at all sites, over 71% of the material is likely diverted from landfill, approximately 8% may be able to be diverted with new recycling options, and 21% was general waste items that are sent to landfill. The following table provides a summary overview.

Table 1 - Summary samples

Site	Average sample size	Diversion from landfill	Potentially recoverable	Landfill
Kootingal	0.82m³	79%	2%	18%
Barraba	0.49m³	51%	21%	27%
Duri	0.60m³	75%	4%	21%

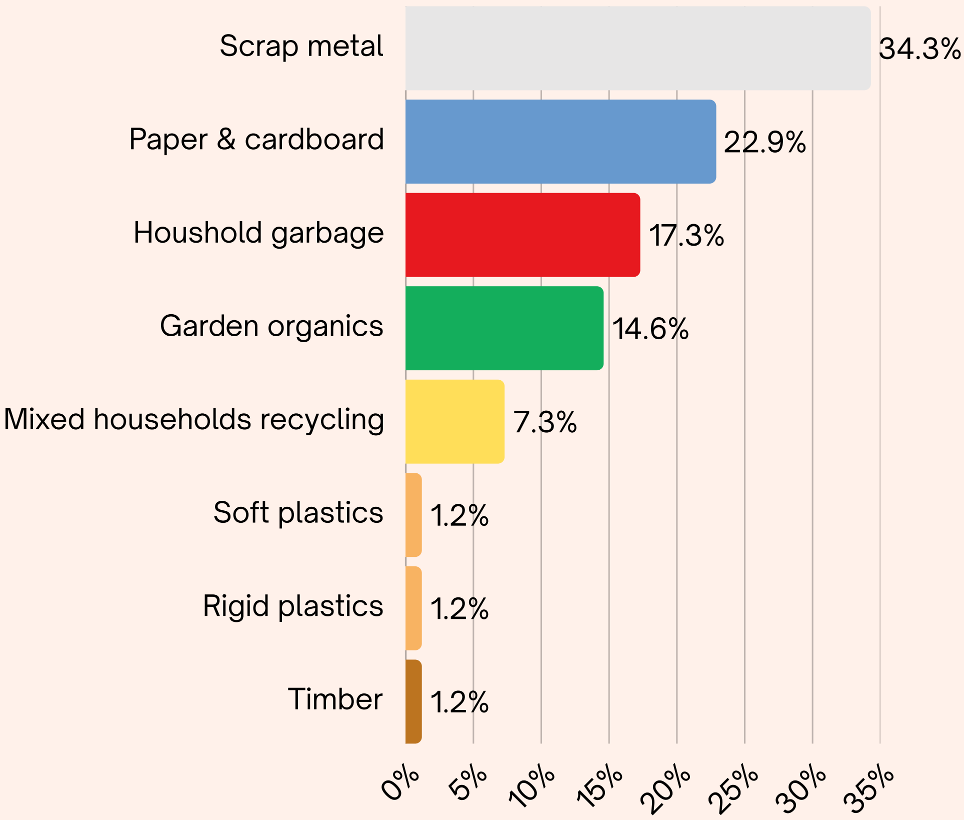
What is being dropped off?

Kootingal

The following graph shows that 79% of the material brought to the waste management facility at Kootingal is likely diverted from landfill. With scrap metal and paper & cardboard contributing to over 57% of the total material brought to site during the assessment period.

Household garbage contributed to the third most material brought to site and contributed over 17% of the total.

Figure 1 - Kootingal - What is being dropped off?



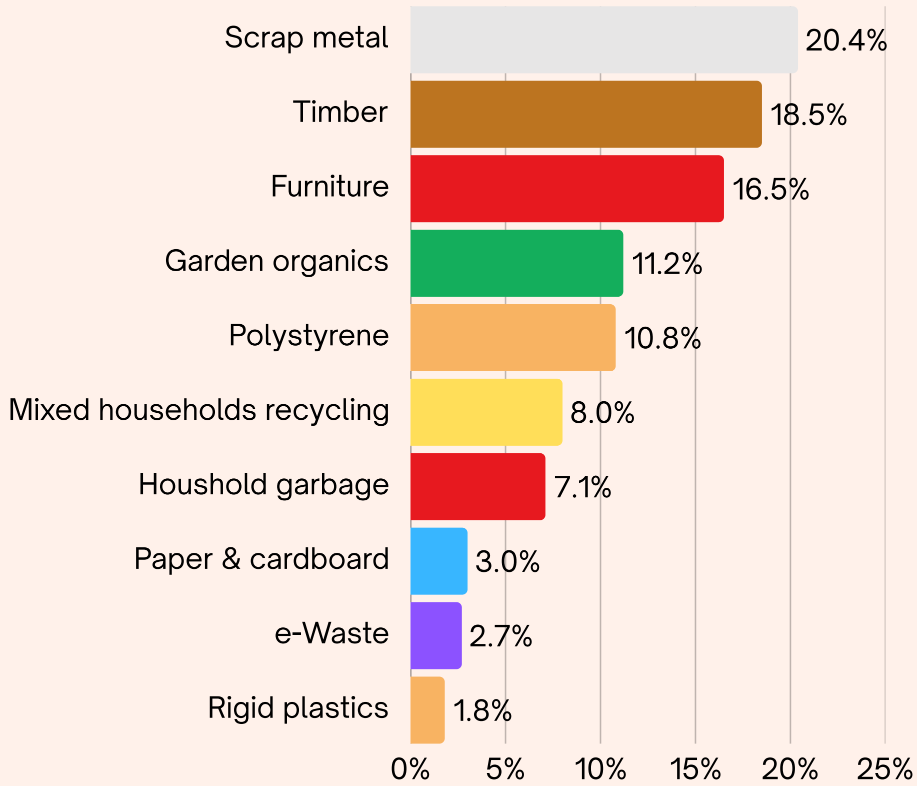
What is being dropped off?

Barraba

The following graph shows that over 51% of the material brought to the waste management facility at Barraba is likely diverted from landfill. With scrap metal, garden organics and mixed recycling contributing to over 39% of the total material brought to site during the assessment period.

Landfill quality furniture and timber contributed to the second most material brought to site and contributed 35% of the total.

Figure 2 - Barraba - What is being dropped off?



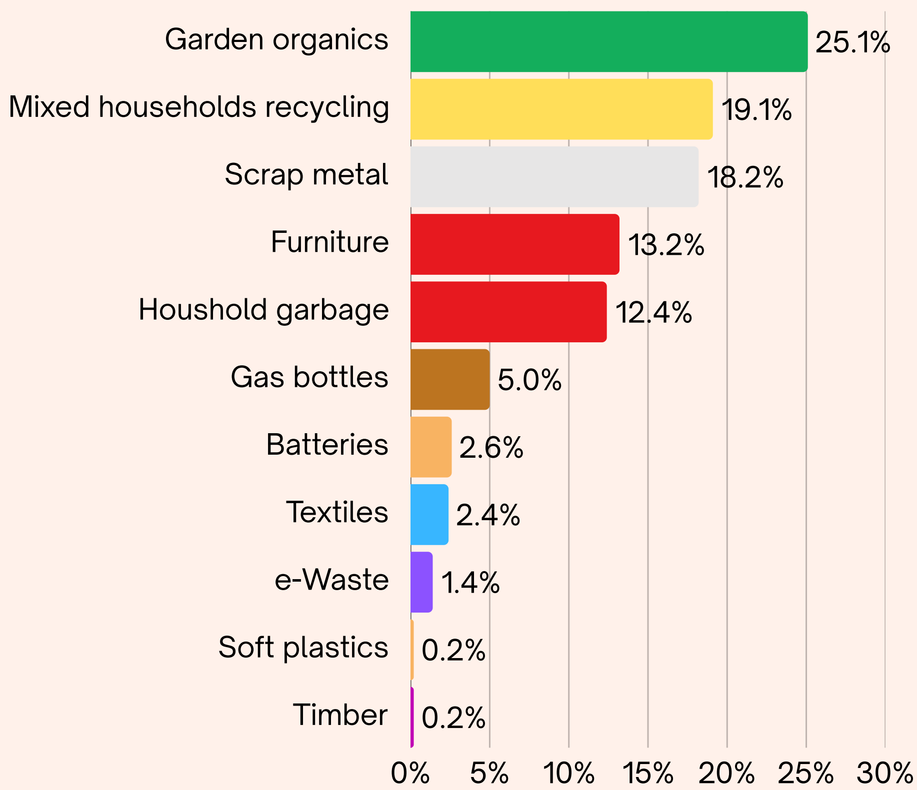
What is being dropped off?

Duri

The following graph shows that over 75% of the material brought to the waste management facility at Duri is likely diverted from landfill. With garden organics, mixed recycling and scrap metal contributing to over 62% of the total material brought to site during the assessment period.

Landfill quality furniture and other household garbage contributed to the fourth most material brought to site and contributed 26% of the total.

Figure 2 - Duri - What is being dropped off?



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Signage

All sites had signage educating residents on site protocols, opening hours and informing residents where they should drop off their items. However, signage was inconsistent in design, colour, placement and condition.

Some sites had multiple signs in different formats giving the same messaging. Some locations had signs obstructed by overgrown vegetation. Some sites had signs laying on the floor that coud not be read.

Knowwaste recommends a full overhaul of signage at all self-haul sites.

Council may consider a uniformed design for all sites, considering, fonts, colours and content.

Each site may have different size signage or the material signs are constructed from, such as free standing metal signs or corflute signs attached to fencing, but the content, colour and fonts should be uniform across all locations.

Site entry signage needs to be considered and uniformed across all sites. One site had twelve individual signs at the front gate. This is too much information to digest. Can the information be consolidated to two signs only?

Signage - Kootingal

There was some inconsistency with spill pallet use across sites. Consider a revision on the correct protocols and when to use spill pallets and take a stock if all sites have stock.

Multiple signs for mixed recycling

Three signs for garden orgaincs

Two signs for fridges / freezers

Entry signs

Signage - Barraba

There was some inconsistency with spill pallet use across sites. Consider a revision on the correct protocols and when to use spill pallets and take a stock if all sites have stock.

Entry signs

E-waste sign not secured

Paper & cardboard signs on the floor near container

Fridges/freezer sign overgrown vegetation

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Signage - Duri

There was some inconsistency with spill pallet use across sites. Consider a revision on the correct protocols and when to use spill pallets and take a stock if all sites have stock.

Entry signs

Two garden organics signs

Sign fallen off posts

Heavilly weathered littering sign

Spill pallets

There was some inconsistency with spill pallet use across sites. Consider a revision on the correct protocols and when to use spill pallets and take a stock if all sites have stock.

Kootingal - spill pallet for e-waste

Kootingal - spill pallet for batteries

Barraba - spill pallet for batteries

Duri - no spill pallet for batteries

Customer feedback

Residents who used the self-haul drop offs were generally very satisfied with the service provided by Council.

Residents were not requesting longer opening hours and more services, which was somewhat expected by the assessment team.

The most frequent recurring feedback for improvement at all sites, was the frequency residents had recalled getting punctures after visiting the drop off centres.

On closer examination, there were a lot of nails and screws across site floors. Council may consider a more frequent street sweeping service at their sites to help prevent this problem.

Screws and nails - Duri

Recommendations

- Implement a consistent, network-wide signage system
  - Develop a standard suite of signage for all self-haul facilities with consistent colours, fonts, symbols and terminology.
  - Reduce sign clutter at site entrances by consolidating key messages onto no more than two primary entry signs.
  - Ensure all signs are securely installed, visible, unobstructed by vegetation, and in good condition.

- Standardise spill pallet protocols across all sites
  - Develop a clear written protocol for when spill pallets must be used.
  - Ensure all three sites have adequate spill pallet stock and staff are trained in their use.
  - Regularly inspect spill pallets to confirm they are correctly positioned and being utilised.

- Improve site housekeeping and debris management
  - Increase the frequency of street sweeping across all facilities to reduce nails, screws and sharp debris causing potential tyre punctures.
  - Prioritise high-traffic areas.
  - Monitor this as a safety issue given repeated reports of punctures from residents.

- Maintain and enhance high diversion performance
  - Continue to support strong source separation by residents through clear signage and layout.
  - Explore opportunities to capture the additional ~8% of “potentially recoverable” materials (e.g., soft plastics, rigid plastics, and timber) where feasible in future.
  - Monitor site-specific diversion rates, particularly at Barraba where landfill volumes were higher.

- Review site layout for clarity and safety
  - Ensure material bays are logically arranged to minimise vehicle congestion and cross-traffic.
  - Consider visual floor markings to guide residents to correct drop-off areas.

Recommendations

- Targeted improvements at Barraba
  - Investigate options to reduce furniture and timber waste entering general waste, which contributed significantly to lower diversion rates at this site. This should also be applied to other sites.
  - Consider separate recovery pathways for timber where practical.

- Strengthen hazardous waste handling consistency
  - Standardise placement and signage for batteries, e-waste, oils, and gas bottles across all sites.
  - Ensure these materials are always stored on appropriate spill containment infrastructure.

- Maintain current operating hours but monitor demand
  - As residents did not request extended hours, retain existing opening times while continuing to monitor customer needs.
  - Periodically review service usage to ensure hours remain appropriate.

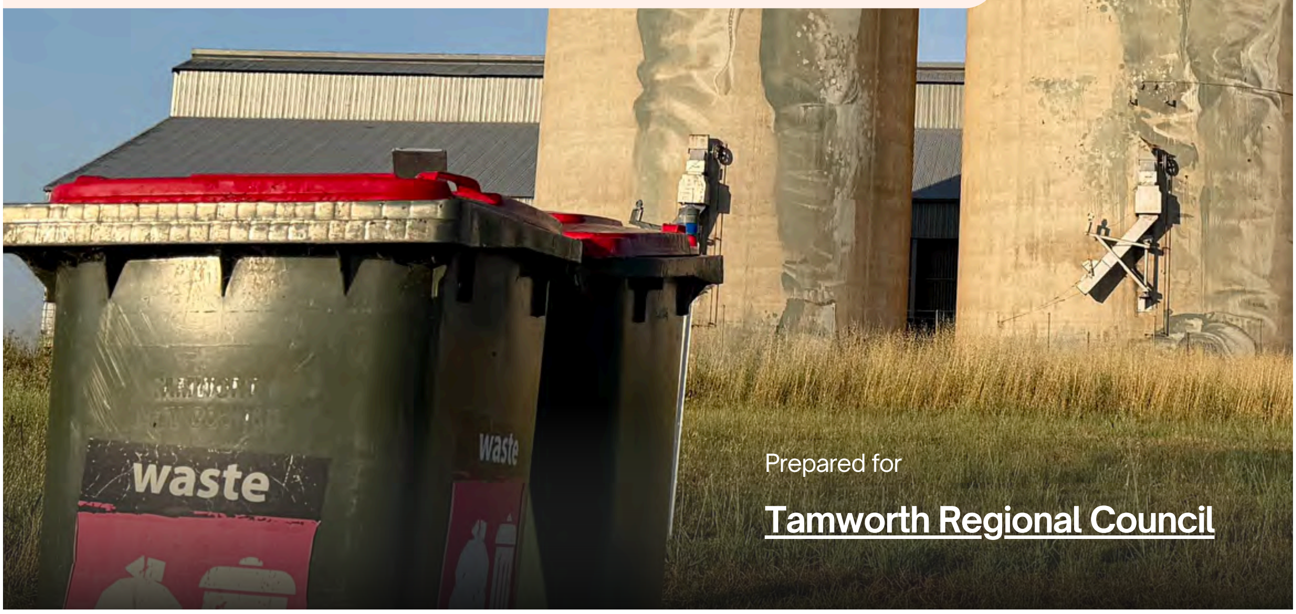
- Repeat self-haul assessments in future to track performance trends and the effectiveness of improvements.

- Use data from these audits to inform Council's broader waste diversion strategy.

knowwaste

PUBLIC PLACE BIN ASSESSMENTS 2025

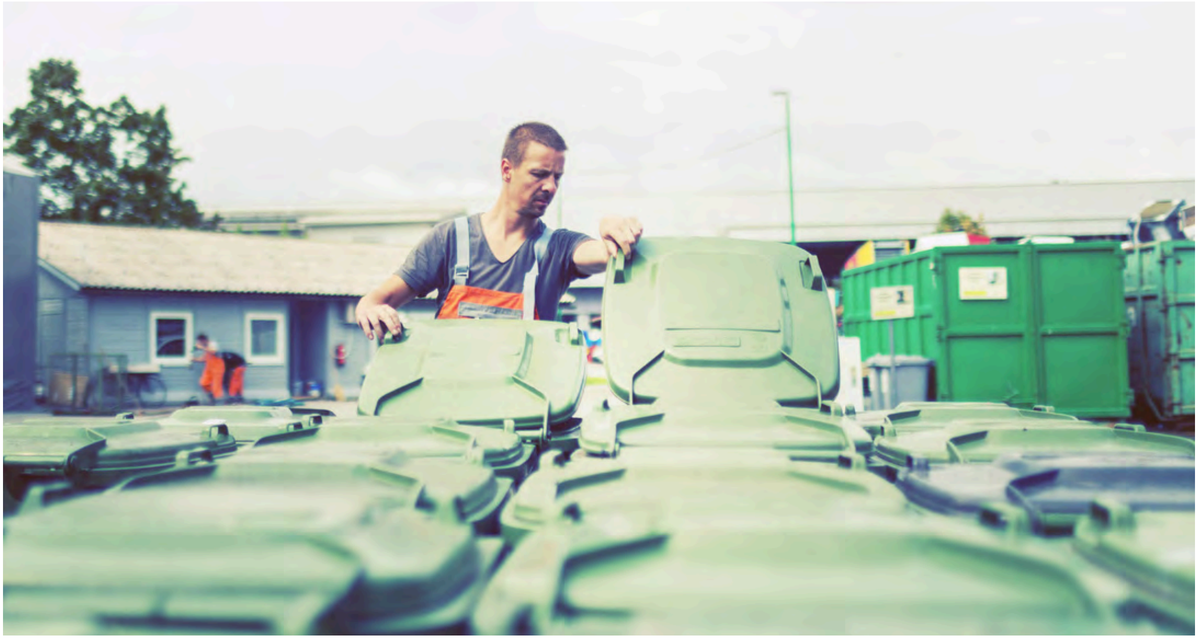
DECEMEBR 2025



Prepared for

Tamworth Regional Council

knowwaste



E. info@knowwaste.com.au
P. 02 9452 1688
M. 0455 119 703
www.knowwaste.com.au

ABN: 76 236 788 017
ACN: 169 152 532

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knowwaste

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knowwaste

Executive summary

In October and November 2025, Knowwaste conducted assessments of 159 public place bins across the Tamworth Regional Council area.

the assessments included a variety of locations and bin types including pedestal bins, single and double MGBs stands , and single and double bin surrounds.

The assessments captured baseline data covering bin condition, usage levels, contamination rates, recycling system effectiveness and the scale of Container Deposit Scheme (CDS) items being placed in the bins.

Across the LGA, the average bin fullness ranged between 32% - 59%, indicating generally sufficient capacity, though isolated examples of overflowing bins were observed.

Recyclable material leakage into general waste was consistent across multiple bin types, with approximately 8.7% - 13.9% of waste bin contents able to be diverted to existing kerbside recycling systems.

The presence of CDS-eligible items was significant, particularly in double bin surround recycling bins where an average of 25.3 refundable containers per bin were found, representing a potential revenue stream.

knowwaste 1

Executive summary

Signage was found to be a critical service gap and potentially a driver of poor diversion performance. While 92% of double bin surrounds had good-quality signage, most other bin types lacked clear education material, with:

- 100% of pedestal bins missing acceptable signage
- 90% of single and double bin stands have no signage or poor signage

Illegal dumping behaviours were widespread in freestanding MGB configurations, observed in 31% - 65% of stand bins. In contrast, bin surrounds which restrict access experienced higher asset protection and longer residual lifespan.

Overall, the assessment highlights an opportunity for Council to potentially improve recycling outcomes, resource recovery performance and bin amenity by maintaining and updating the existing network, improving signage, and leveraging CDS opportunities.

These upgrades would help enhance visual amenity and extend bin asset life across high-use areas.

All assessed areas were very clean. Site users are clearly using the bins provided.

knowwaste 2

Introduction

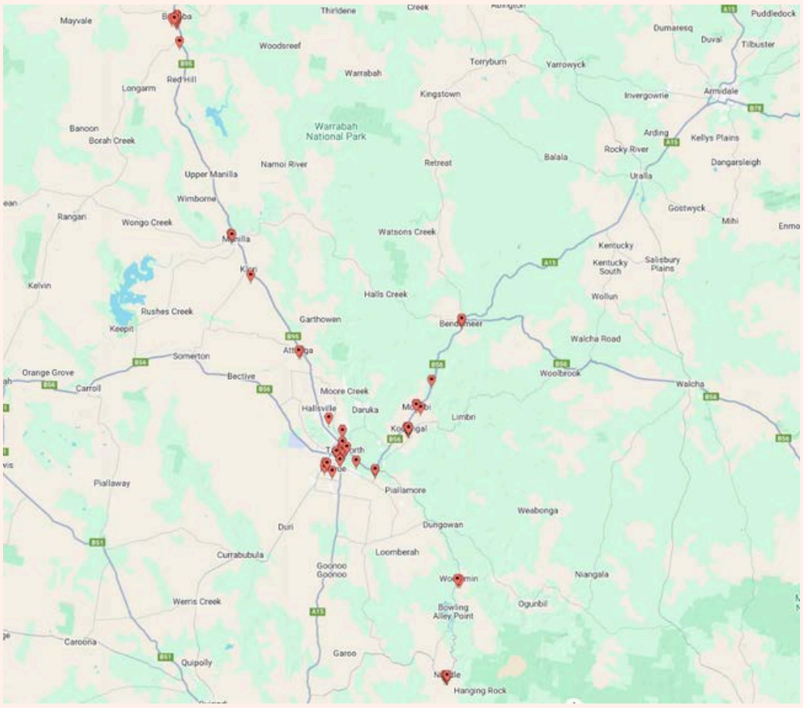
In Spring 2025 Knowwaste completed assessments of 159 Public Place Bins across Tamworth Regional Council.

The aim of the project was to capture an insight into the current situation of bin usage. Site visits included different site types, bin types and bin sizes to reflect the variables of the whole LGA.

The project objectives were to capture baseline data on:

- Bin condition
- Bin usage rates
- Contamination rates of recycling bins
- Leakage of recyclable material in waste bins
- The number of Container Deposit Scheme (CDS) items in bins

Figure 1 - Bins assessed



knowwaste

Table 1 - Bins assessed

Public Place bins	Pedestal Bin	Single Stand	Double Stand	Single Surround	Double Surround	Total
ATTUNGA			6			**6**
BARRABA		3	3	11		**17**
BENDEMEER			12			**12**
EAST TAMWORTH			6		4	**10**
HILLVUE		4		1	6	**11**
KLORI			4			**4**
KOOTINGAL		10	2			**12**
MANILLA		12	1			**13**
MOONBI		3	5			**8**
NEMINGHA		2				**2**
NORTH TAMWORTH		4				**4**
NUNDLE		1	10			**11**
TAMWORTH	2	1	1		16	**20**
WEST TAMWORTH	11	3	7			**21**
WOOLOMIN			8			**8**
Tota	**13**	**43**	**65**	**12**	**26**	**159**

knowwaste

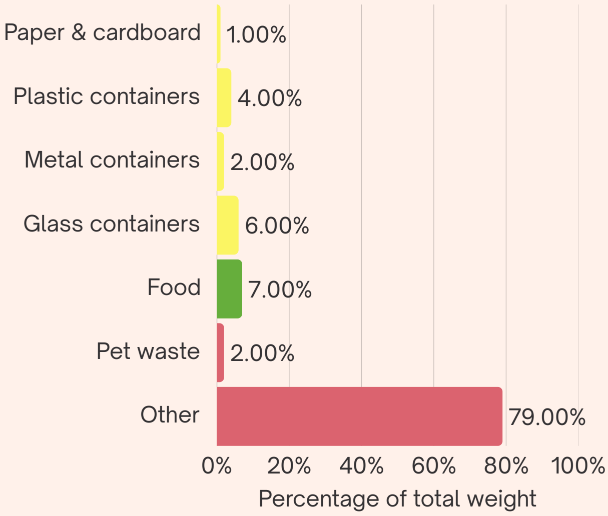
Pedestal bin results

Table 2 - summary results Pedestal bin

Item	Result
Average bin percent full	32%
Average weight of bin contents	1.07kg
Average number of CDS per bin	2.0

12.41% of the pedestal waste bin contents could be diverted into recycling bins

Figure 2 - Pedestal bin composition



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Pedestal bin condition

Table 3 - summary results Pedestal bin

Item	Result
Percent of bins with graffiti	56%
Condition rating	Medium deterioration
Remaining life of bins	~30% of bin life remaining
Illegal dumping present	No illegal dumping in bins

Bin signage

No pedestal bins had acceptable education signage. 52% of bins had no signage at all. 48% of bins had poor deteriorating/illegible signage.

Pedestal bins

Overflowing pedestal bin

Pedestal bin

knowwaste

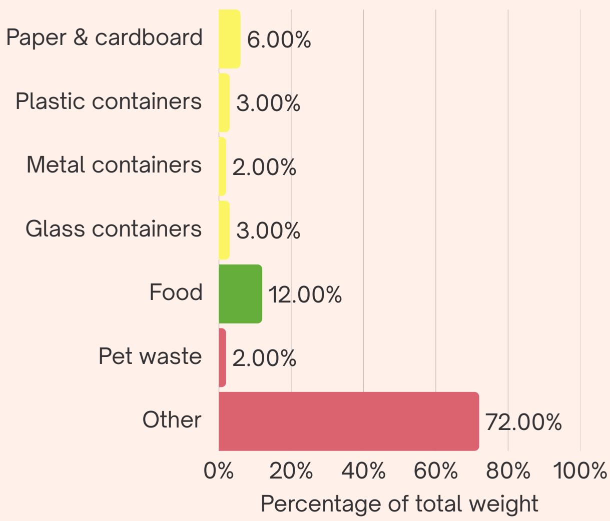
Single bin stand results

Table 4 - summary results Single bin stand

Item	Result
Average bin percent full	59%
Average weight of bin contents	5.89kg
Average number of CDS per bin	4.5

13.74% of the waste bin contents could be diverted into recycling bins

Figure 2 - Single bin stand composition



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Single bin stands condition

Table 5 - Summary results Single bin stand

Item	Result
Percent of bins with graffiti	35%
Condition rating	Medium deterioration
Remaining life of bins	~40% of bin life remaining
Illegal dumping present	65% of bins had illegal dumping

Bin signage

90% of bin had no education signage, the remaining 10% of bins had signage in poor condition.

Single bin stands

Single bin stand

Single bin stand

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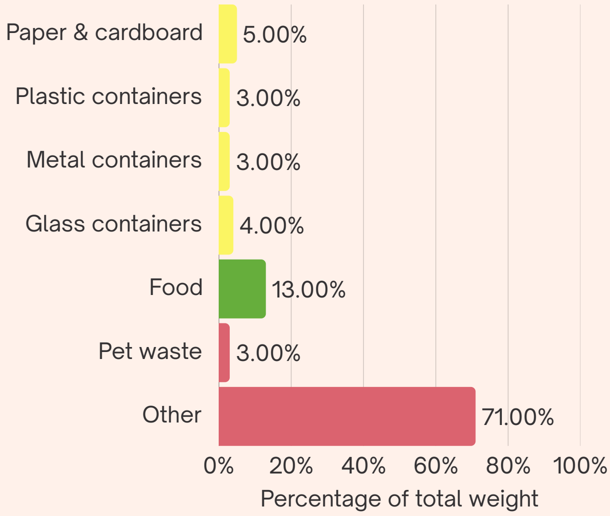
Double bin stand results

Table 6 - summary results double bin stand

Item	Result
Average bin percent full	57%
Average weight of each bin	6.16kg
Average number of CDS per bin	7.1

13.95% of the waste bin contents could be diverted into recycling bins

Figure 2 - Double bin stand composition



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Double bin stands condition

Table 7 - Summary results Double bin stands

Item	Result
Percent of bins with graffiti	18%
Condition rating	Medium deterioration
Remaining life of bins	~50% of bin life remaining
Illegal dumping present	31% of bins had illegal dumping

Bin signage

90% of bin had no education signage, the remaining 10% of bins had signage in poor condition.

Double bin stands

240L MGBs

240L MGBs

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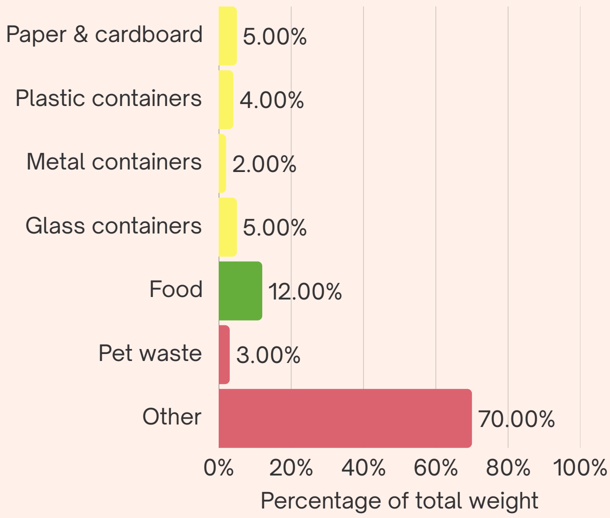
Single bin surround results

Table 8 - summary results Single bin surround

Item	Result
Average bin percent full	57%
Average weight of each bin	4.89kg
Average number of CDS per bin	13.1

13.95% of the waste bin contents could be diverted into recycling bins

Figure 2 - Single bin surround composition



Single bin surround condition

Table 9 - Summary results Double bin stands

Item	Result
Percent of bins with graffiti	42%
Condition rating	Slight deterioration
Remaining life of bins	~70% of bin life remaining
Illegal dumping present	42% of bins had illegal dumping

Bin signage

17% of bins had no education signage, the remaining 83% of bins had signage with a lot of the bins with signage in a deterioration.

Single bin surround

Single bin surround - Green

Single bin surround - Green

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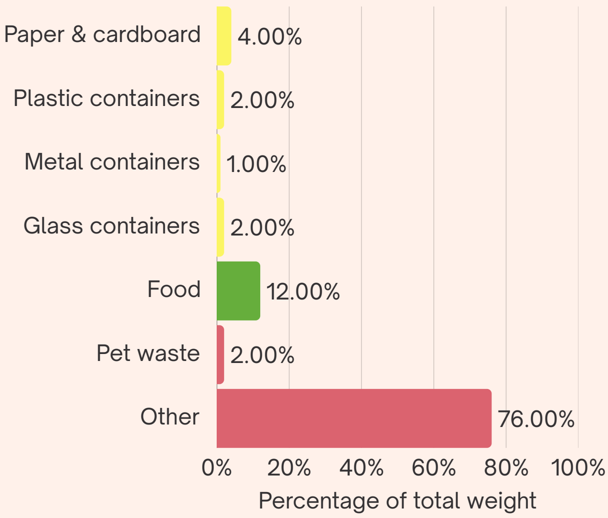
Double bin surround results

Table 10 - summary results Double bin surround - Waste bin

Item	Result
Average waste bin percent full	57%
Average waste weight of each bin	5.69kg
Average CDS per waste bin	10.4

8.71% of the waste bin contents could be diverted into recycling bins

Figure 2 - Double bin surround composition



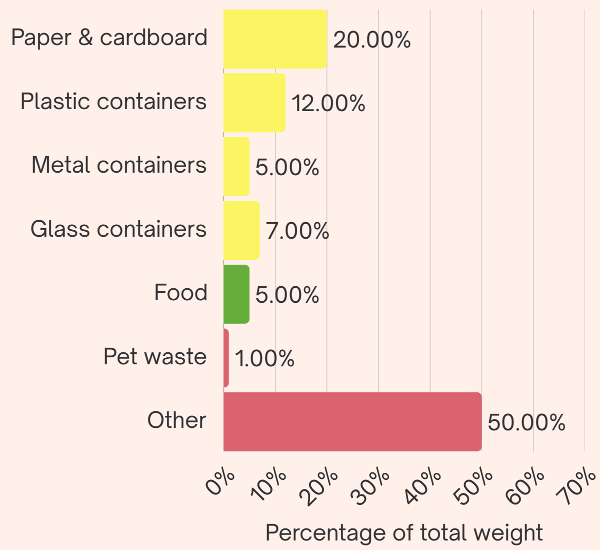
Double bin surround results

Table 11 - summary results Double bin surround - Recycling bin

Item	Result
Average recycling bin percent full	40%
Average weight of each bin	2.46kg
Average CDS per recycling bin	25.3

50% of the recycling bin contents were contamination, however CDS items were significant in number; averaging 25.3 eligible CDS items per recycling bin.

Figure 2 - Double bin surround composition



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Double bin surround condition

Table 12 - Summary results Double bin stands

Item	Result
Percent of bins with graffiti	23%
Condition rating	Little deterioration
Remaining life of bins	~85% of bin life remaining
Illegal dumping present	54% of bins had illegal dumping

Bin signage

92% of double bin surrounds assessed had good education signage with little deterioration. A few examples had no signage.

Double bin surround

Bin surround - Good signage

Bin surround - Good signage

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Recommendations

Based on the assessment of 159 public place bins across the Tamworth Regional Council area, the following actions are recommended to improve performance, asset condition, community amenity and service efficiency:

Improve waste and recycling signage

- Prioritise upgrades for pedestal bins and MGB stands where signage is currently absent or deteriorated.
- Maintain the strong performance of surrounds with good-quality, consistent education messaging.

Expected benefits: Increased resource recovery, reduced contamination, clearer user behaviour.

Transition to bin surrounds

- Replace high-risk single and double bin stands, where 31%–65% illegal dumping was observed, with secure bin surrounds.
- Surrounds provide higher asset protection and reduce vandalism and dumping.

Expected benefits: Longer asset lifespan, reduced servicing issues, improved visual amenity.

Container Deposit Scheme (CDS)

- Provide clearer recycling instructions and/or dedicated CDS return points in high-foot-traffic areas.
- Monitor opportunities for revenue recovery from containers — an average of 10.4–25.3 CDS items per surround bin were recorded.

Expected benefits: Increased recycling value and reduced litter leakage into general waste.

Reccomendations

Replace or refurbish damaged bins

- Plan staged replacement where structural damage, broken lids or mounting failures affect function and safety.
- Prioritise bins with <50% remaining life to maintain reliability and presentation.

Expected benefits: Assets remain safe, functional and aligned with amenity expectations.

Monitor capacity and service frequency in localised hotspots

- Overflowing bins were isolated but indicate areas of seasonal or event-based demand or higher illegal dumping frequency.
- Review collection schedules or capacity increases only where data supports change.

Expected benefits: Prevention of overflow events, continued provision of clean public spaces.

Maintain high cleaning standards

- Cleanliness across all sites was excellent — maintain current servicing and inspection practices to preserve visual amenity and user trust.
- Some bins could benefit from more frequent bin cleaning, specifically single and double bin surrounds.

Expected benefits: Continued pride in public spaces and strong usage compliance.

Good signage on bins

Bins with good signage

Bins with good signage

No signage on bins

Bins with no signage

Bins with no signage

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Deteriorating signage on bins

Bin signage peeling off bin

Bin signage peeling off bin

Broken MGBs

Broken bin lids

Split bodies

knowwaste

Broken MGBs

Broken bin body

Broken bin body

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Broken bin srrounds

Broken bin surround - recycling

Missing cigarette butt receptacle

knowwaste 28

Broken pedestal bins

Broken bin

Broken bin

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Dirty bins

Dirty bin surround - dirt & cobwebs

Dirty bin surround - chewing gum

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Clean sites

Well maintained parks

Well maintained rest area and park

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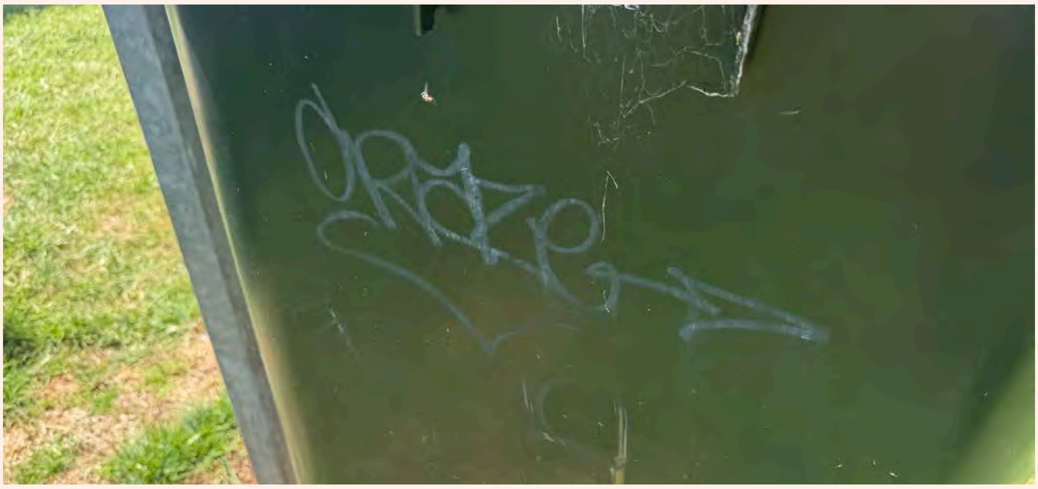
Graffiti

Graffiti on bins

Split bodies



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CDS in bins

Significant volumes of CDS items

Split bodies

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Illegal dumping in bins

Domestic dumping - pool cover

Domestic dumping

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BLUEPRINT 100

Draft Fees and Charges - Airport

2026/27

Tamworth REGIONAL COUNCIL

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Name	Pricing Policy	CSO	GST	Year 25/26 Last YR Fee (incl. GST)	Year 26/27 Fee (incl. GST)	% Increase

Tamworth Regional Council

Airport

Aeronautical Fees

Tamworth Regional Airport

A fee will be levied on aircraft that exceed the allowed stay limits in high demand aircraft parking areas.

Name	Pricing Policy	CSO	GST	Year 25/26 Last YR Fee (incl. GST)	Year 26/27 Fee (incl. GST)	% Increase
Aeromedical Services (charitable not for profit)	F	N	Y	No charge with prior application/approval		
Landing charge - Non RPT aircraft using Avtur fuels per 1,000 kg MTOW pro rata	F	N	Y	$15.25	$15.75	3.28%
Landing charge - Non RPT aircraft using Avgas fuels per 1,000 kg MTOW pro rata	F	N	Y	$11.30	$11.65	3.10%
RPT/Airport operating fee per arrival and departing passengers (per person)	F	N	Y	$21.50	$22.20	3.26%
Instrument Landing System (ILS) – approaches (per approach)	F	N	Y	$38.65	$39.90	3.23%
Training Flights - Aircraft undertaking circuit training within the Tamworth Control Zone to be charged 25% of the Non RPT Landing Fee for each circuit (including missed approach or go-around)	F	N	Y	$5.60	$5.80	3.57%
Australian Defence Force aircraft – As per agreement negotiated by the AAA.	F	N	Y	As per agreement negotiated with AAA.		
Airport security screening charge – per departing passenger	F	N	Y	$18.51	$19.25	4.00%

Barraba Landing Strip

Name	Pricing Policy	CSO	GST	Year 25/26 Last YR Fee (incl. GST)	Year 26/27 Fee (incl. GST)	% Increase
Barraba Air Strip annual aircraft basing fee	F	N	Y	$235.00	$243.00	3.40%

Aircraft Parking Fees

Name	Pricing Policy	CSO	GST	Year 25/26 Last YR Fee (incl. GST)	Year 26/27 Fee (incl. GST)	% Increase
GA Hangar apron parking annual concessional fee per rego	F	N	Y	$1,500.00	$1,557.00	3.80%
General aviation apron parking fee (between hangars 6-7) per night per aircraft	F	N	Y	$7.00	$7.25	3.57%
General aviation apron parking fee (between hangars 7-8) per night per aircraft	F	N	Y	$7.00	$7.25	3.57%
General aviation apron parking fee (between private hangars and aviskills) per night per aircraft	F	N	Y	$7.00	$7.25	3.57%
General aviation grass annual concessional parking fee	F	N	Y	$920.00	$930.00	1.09%
General aviation grass parking daytime hours	F	N	Y	No charge.		
General aviation grass parking overnight per aircraft	F	N	Y	$4.95	$6.00	21.21%
General aviation parking international flight training Tamworth - per night per aircraft	F	N	Y	$10.40	$10.40	0.00%
Not available for shorter periods						
General aviation parking international flight training Tamworth annual fee - per aircraft	F	N	Y	$2,906.40	$2,906.40	0.00%
General aviation/charter aircraft parking (PaPa bays and bays 10-14) annual fee per aircraft rego	F	N	Y	$3,200.00	$3,321.00	3.78%
General aviation/charter aircraft parking (PaPa bays and bays 10-14) daylight hours	F	N	Y	No charge.		
Registration changeover fee (each)	F	N	Y	$35.00	$40.00	14.29%

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Name	Pricing Policy	CSO	GST	Year 25/26 Last YR Fee (incl. GST)	Year 26/27 Fee (incl. GST)	% Increase

Aircraft Parking Fees [continued]

General Aviation Aircraft Parking (PaPa Bays and Bays 10-14) Fee per night	F	N	Y	$15.00	$16.00	6.67%
RPT Apron Aircraft parking fee on RPT bays and exceeding 4 hours stay (excludes scheduled overnight RPT services) - 10,000kg MTOW and above (per day or part thereof)	F	N	Y	$447.91	$464.93	3.80%
RPT Apron Aircraft parking fee on RPT bays and exceeding 4 hours stay (excludes scheduled overnight RPT services) - Up to 10,000kg MTOW (per day or part thereof)	F	N	Y	$192.70	$200.00	3.79%
Helipad overnight parking (pads 1, 2 and 3)	F	N	Y	$15.00	$15.50	3.33%

Airport Carpark

General Fees and Charges

Lost, faded or damaged ticket fee	F	N	Y	$70.00	$70.00	0.00%
Administration fee – car park	F	N	Y	$12.00	$14.00	16.67%

Short Term Airport Carpark

Short term airport carpark – 0 to 2 hours	F	N	Y	$0.00	$0.00	0.00%
Short term airport carpark – 2 or more hours (hourly rate)	F	N	Y	$2.00	$2.50	25.00%
Short term airport carpark – maximum daily rate (24 hours)	F	N	Y	$12.00	$14.00	16.67%
Short term airport carpark – weekly rate (7 days)	F	N	Y	$80.00	$83.00	3.75%
Short term airport carpark – 1 week or more (weekly pro rata rate)	F	N	Y	$80.00	$83.00	3.75%
Short term airport carpark – monthly pass (28 days) multiple entry	F	N	Y	$160.00	$160.00	0.00%
Short term airport carpark – annual pass (52 weeks) multiple entry	F	N	Y	$1,920.00	$1,920.00	0.00%

Long Term Airport Carpark

Long term airport carpark – 0 to 2 hours	F	N	Y	$0.00	$0.00	0.00%
Long term airport carpark – 2 or more hours (hourly rate)	F	N	Y	$2.00	$2.50	25.00%
Long term airport carpark – maximum daily rate (24 hours)	F	N	Y	$10.00	$12.00	20.00%
Long term airport carpark – weekly rate (7 days)	F	N	Y	$50.00	$52.00	4.00%
Long term airport carpark – 1 week or more (weekly pro rata rate)	F	N	Y	$50.00	$52.00	4.00%
Long term airport carpark – monthly pass (28 days) multiple entry	F	N	Y	$155.00	$155.00	0.00%
Long term airport carpark – annual pass (52 weeks) multiple entry	F	N	Y	$1,860.00	$1,860.00	0.00%

Airport Buildings and Land

Leasing and Terminal Space

Function room ½ day (up to 4 hours) includes cleaning	F	N	Y	$188.00	$190.00	1.06%
Catering and equipment hire by individual agreement						

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Leasing and Terminal Space [continued]

Name	Pricing Policy	CSO	GST	Year 25/26 Last YR Fee (incl. GST)	Year 26/27 Fee (incl. GST)	% Increase
Function room full day (4 or more hours) includes cleaning	F	N	Y	$335.00	$340.00	1.49%
Catering and equipment hire by individual agreement						
Terminal airline counter annual fee per counter	F	N	Y	$850.00	$850.00	0.00%
Leased areas (undeveloped site) – per square metre/ per year	F	N	Y	$7.34	$7.34	0.00%
Building leases – based on 10% – 30% of valuation of building and taking into account conditions and amenities – per square metre/per year	F	N	Y	$179.00	$185.00	3.35%
Terminal space – based on comparable office rent on fringe areas of Tamworth's CBD plus a proportion of terminal cleaning and maintenance costs – per square metre plus per square metre outgoings	F	N	Y	$370.00	$382.00	3.24%
Electricity charge	F	N	Y	to be applied on a proportional basis		
Digital and static advertising within the passenger terminal and precinct grounds	F	N	Y	Price on application		

Private Works

Name	Pricing Policy	CSO	GST	Year 25/26 Last YR Fee (incl. GST)	Year 26/27 Fee (incl. GST)	% Increase
Maintenance works for airport tenants will be costed as follows:- wages	F	N	Y	Costs + 108% on costs plus GST		
Maintenance works for airport tenants will be costed as follows:-plant and materials	F	N	Y	Costs + 10% plus GST		

Pilot Training Facility - International Flight Training Tamworth (IFTT)

Name	Pricing Policy	CSO	GST	Year 25/26 Last YR Fee (incl. GST)	Year 26/27 Fee (incl. GST)	% Increase
International Flight Training Tamworth (IFTT)	F	N	Y	The pilot training facility - International Flight Training Tamworth (IFTT) is managed and operated as a commercial activity of the council. Fees and charges related to the services and hire of the facility are not published for reason that knowledge of the schedule of the fees and charges would confer a commercial advantage on a competitor of the council. Fees and charges applicable will be provided to individual hirers on application to the council.		
Hangar bays International Flight Training Tamworth	F	N	Y	By negotiation		
IFTT call out fee (0000 - 0600 hours) at tenants fault	F	N	Y	$350.00	$350.00	0.00%
IFTT call out fee (0600-2100 hours) at tenants fault	F	N	Y	$110.00	$110.00	0.00%
IFTT call out fee (2100 - 0000 hours) at tenants fault	F	N	Y	$220.00	$220.00	0.00%
IFTT call out fee at tenants fault (fire alarm)	F	N	Y	$2,500.00	$2,500.00	0.00%
Replacement IFTT key	F	N	Y	$80.00	$85.00	6.25%
Replacement IFTT swipe card or fob	F	N	Y	$35.00	$35.00	0.00%

General Airport Fees

Name	Pricing Policy	CSO	GST	Year 25/26 Last YR Fee (incl. GST)	Year 26/27 Fee (incl. GST)	% Increase
Airport call out fee (airport reporting and safety officer) per hour	F	N	Y	$110.00	$110.00	0.00%
Airport call out fee (airport technical officer) per hour	F	N	Y	$195.00	$195.00	0.00%
Airport call out fee (aviation precinct coordinator) per hour	F	N	Y	$220.00	$220.00	0.00%
Airport call out fee (aviation precinct manager) per hour	F	N	Y	$330.00	$330.00	0.00%
Replacement aviation precinct key	F	N	Y	$80.00	$85.00	6.25%

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General Airport Fees [continued]

Name	Pricing Policy	CSO	GST	Year 25/26 Last YR Fee (incl. GST)	Year 26/27 Fee (incl. GST)	% Increase
Replacement aviation precinct swipe card or fob	F	N	Y	$35.00	$35.00	0.00%

Other Airport Fees

Name	Pricing Policy	CSO	GST	Year 25/26 Last YR Fee (incl. GST)	Year 26/27 Fee (incl. GST)	% Increase
Airside licence replacement	F	N	Y	$30.00	$30.00	0.00%
Airside vehicle permit (valid for 12 months) per vehicle	F	N	Y	$55.00	$55.00	0.00%
Initial airside drivers licence	F	N	Y	$45.00	$45.00	0.00%
OLS penetration report (per report)	F	N	Y	$300.00	$300.00	0.00%
Special events zone application (per application)	F	N	Y	$350.00	$350.00	0.00%
Airport invoicing (landing fees, car parking etc) by mail (per invoice)	F	N	Y	$5.00	$6.00	20.00%
No charge for emailed invoice						

100% renewables

Tamworth REGIONAL COUNCIL

Tamworth Regional Council

Energy Audits Final Report

February 2026

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1 Executive summary

Tamworth Regional Council (TRC, or Council) commissioned 100% Renewables to deliver energy audits at a number of its community facilities and infrastructure assets, aligned with the AS/NZS 3598:2014 Standard for Type 2 energy audits, specifically for commercial buildings (3598.1), and for industrial and related activities (3598.2) as applicable.

Council had two primary drivers to develop this project, including:

- To develop an energy audit-informed action plan for energy management, energy efficiency, and renewable energy improvements across multiple TRC high energy consuming facilities and assets. The recommendations from this report are intended to inform Council's Asset Management Plans, Operational Plan, Delivery Program and budget processes going forward.
- To identify and develop energy saving and renewable energy opportunities that align with the requirements of the Australian Government's Community Energy Upgrade Fund (CEUF) Round 2, to support an application to the grant. This component of the audit focused on facilities that provide community benefit in accordance with the CEUF grant requirements. The CEUF grant application was unsuccessful, however the works are still required as outlined within this report.

This report presents the findings and recommendations from energy audits completed at a total of 22 Council sites, including seven high-priority facilities identified as potential CEUF grant candidates, and 15 additional sites audited to inform Council's broader energy management strategy.

CEUF-applicable sites:

- Australian Equine and Livestock Events Centre (AELEC)
- Barraba Swimming Pool
- Tamworth Regional Entertainment and Conference Centre (TRECC)
- Tamworth Sports Dome
- Australian Country Music Hall of Fame
- Tamworth City Library and Tamworth Regional Gallery
- Tamworth Town Hall

Other sites audited:

- Calala Water Treatment Plant (WTP)
- Victoria Park Reservoir and Pumping Station
- Dungowan Dam
- Manilla Water Treatment Plant (WTP)
- Manilla Pumping Stations
- Namoi Pumping Stations
- Flynn Street Depot
- Barraba Water Treatment Plant
- Nemingha Pumping Station
- Lockheed Street Depot
- 7–11 Anne Street
- Forest Road Landfill – Landfill, North Reservoir, and SMRF
- 474 Peel Street
- Bicentennial Park
- Peel House

Collectively, these audits provide a comprehensive assessment of Council's current energy performance, identifying opportunities to reduce electricity consumption, improve asset efficiency, expand onsite renewable generation, and support Council's long-term sustainability and emissions reduction goals.

1.1 Energy audit findings and recommendations

1.1.1 Annual energy usage and costs

The energy usage of the audit sites was based on electricity during the 12-month period from February 2024 to January 2025, using data provided by Zen Energy. During this period, the sites incurred the following electricity consumption and associated estimated costs.

TABLE 1: ENERGY USE AND COSTS AT AUDITED TAMWORTH SITES FROM FEB 2024 - JAN 2025

Site	NMI	Annual consumption	Annual cost (ex-GST)	Ave. rate per kWh
CEUF-applicable sites				
Library and Gallery	4001157534	503,191 kWh	$105,415	0.21 $/kWh
AELEC	4001200848 4001202062	645,202 kWh	$170,186	0.26 $/kWh
TRECC	NFFFNRKS99	936,142 kWh	$225,022	0.24 $/kWh
Town Hall	NFFFNRKE90	255,375 kWh	$88,302	0.35 $/kWh
Sports Dome	4001230122	290,532 kWh	$77,077	0.27 $/kWh
Australian Country Music Hall of Fame	NFFFNRKE97	76,644 kWh	$17,016	0.22 $/kWh
Barraba Pool	4407330738	89,572 kWh	$19,361	0.22 $/kWh
Other sites audited				
Calala WTP	4001256770	3,254,305 kWh	$598,458	0.18 $/kWh
Victoria Park Reservoir and Pumping Station	4001219572	296,489 kWh	$63,360	0.21 $/kWh
Dungowan Dam	NFFFNRKV87	230,292 kWh	$45,353	0.21 $/kWh
Manilla WTP	4001327061	130,621 kWh	$28,264	0.22 $/kWh
Barraba WTP	NFFFAA1719	111,538 kWh	$23,107	0.21 $/kWh
Manilla Pumping Stations	4407360424	37,348 kWh	$10,758	0.29 $/kWh
Namoi Pumping Stations	4001341746	51,184 kWh	$12,117	0.24 $/kWh
Nemingha Pumping Station	NFFFAA2427	92,161 kWh	$20,183	0.22 $/kWh
Flynn Street Depot	4407320237	101,479 kWh	$23,633	0.23 $/kWh
Lockheed St Depot	4407338456	88,603 kWh	$19,629	0.22 $/kWh
7-11 Anne street	4407312948	84,857 kWh	$22,800	0.27 $/kWh
474 Peel St	4407319603	72,335 kWh	$17,718	0.24 $/kWh
Peel House (Level 2)	4407377707	77,635 kWh	$21,804	0.28 $/kWh
Bicentennial Park	NFFFAA2338 NFFFAA2440	56,249 kWh	$12,674	0.23 $/kWh
Forest Rd Landfill – Landfill, North Res, SMRF	4407356089 4407318215 4407338711	131,557 kWh	$32,698	0.25 $/kWh

1.1.2 Assumptions used in the assessment of opportunities

The following assumptions were used to complete the assessment of opportunities recommended for Tamworth Regional Council:

- Energy cost savings were generally calculated by multiplying the kWh saved by the average cost of electricity (based on current rates for each site).
- For certain initiatives (e.g. tariff switching, load shifting, and base energy/demand management opportunities), savings estimates used the applicable time-of-use-based energy rates and network kVA demand charges to reflect how costs are incurred; for other initiatives such as renewable energy and energy-efficiency opportunities, savings were estimated using the average cost of electricity consolidated from actual billing data.
- Energy savings from demand management and reduction were estimated by analysing the load profiles of the sites where available.
- For non-solar PV opportunities, the level of analysis assumes constant annual energy savings and does not factor in a discount rate, thus not reflecting the time value of money.
- DSA report 'Tamworth Regional Council: Energy Audits May 2025' should be referred to when seeking further detail around the Tamworth Regional Council Library, Gallery, Town hall and TRECC.

The table below shows the unit cost assumptions used in the analysis. Technology cost assumptions are necessarily simplified, using figures close to the current average prices of commonly available brands/models in each technology category. **For more precise costing and business case development, Council is encouraged to seek multiple quotes from reputable suppliers and contractors.**

TABLE 2: COST ASSUMPTIONS

Item	Estimated Cost	Source/Assumptions
Solar PV installed on roof or ground (commercial scale)	$1.3/W for systems below 100 kW, $1.6/W for systems above 100 kW	Includes cost of PV modules, inverters, racking, balance systems, labour, testing, engineering, certifications, grid connection, and electrical inspection fees. The higher unit cost of systems larger than 100 kW is due to the fact that these systems cannot claim an upfront discount from the purchase price, as is available for systems smaller than 100 kW.
Average cost of battery energy storage system (BESS)	$900/kWh	Simplified assumption based on observed current market range (excluding outliers) of $825 to $1,038 per kWh storage capacity.
Average cost of electricity	$0.18/kWh – $0.35/kWh	Derived from actual billing data and reflects the blended all-in electricity cost, including energy (TOU), network and environmental charges (excluding GST). See Table 1 for the specific average cost per site.

Item	Estimated Cost	Source/Assumptions
Power factor correction equipment	$150/kVAr	Based on current market range of ~$110 to ~$200 per kVAr capacitor size.
Other costs	Approximate estimates	Derived from current market prices gathered through quotations on hand and desktop research.

1.1.3 Summary of assessed opportunities

Below is a summary of opportunities derived from the energy audit, offering high-level actions for Council's consideration.

- **Solar PV and battery storage:** Finalise feasible locations for solar PV installation through stakeholder consultation and structural assessments. Prioritise solar PV systems to generate renewable energy on-site, maximise self-consumption, and reduce grid electricity demand—noting that oversizing PV beyond on-site utilisation is generally ineffective for TRC operations. Across the assessed sites, proposed PV (and BESS where applicable) system sizes were generally targeted to achieve high self-consumption (typically ~80–100% where feasible), which is good practice as it prioritises daytime load reduction over exports and delivers significant reductions in daytime grid electricity use. Evaluate the integration of battery storage to store surplus solar generation, improve load management, and enhance site resilience during peak or off-grid periods. Batteries should be sized and programmed primarily to offset peak demand (rather than routinely discharging in off-peak), and can be configured to "flex" operation—for example, partially recharging off-peak after evening discharge, then discharging in the morning to reduce shoulder-period start-up loads.
- **Power factor correction:** Install power factor correction (PFC) units at sites with confirmed reactive demand to reduce apparent power (kVA), improve electrical efficiency, and lower network demand charges. Ensure appropriate sizing and verify available space within main switchboards before installation. Engage a suitably qualified electrical professional to design, install, and periodically inspect/maintain PFC equipment to ensure safe and reliable operation.
- **Tariff switching:** Implement immediate cost savings by transitioning suitable sites from obsolete tariffs to current network tariffs (e.g. BLND1AB or BLNBSS1) that better align with site consumption profiles. Review tariff structures regularly to ensure Council remains on the most cost-effective network option as usage patterns and site loads evolve. Tariff changes should be requested through Council's electricity retailer (Zen Energy), who can assess eligibility and lodge the tariff change on Council's behalf.
- **EV charging infrastructure and EV upgrade:** Support Council's broader fleet transition strategy by installing dedicated EV charging infrastructure at key operational sites such as AELEC and Council depots. Align charger installation with vehicle procurement to ensure sufficient capacity for both passenger and light commercial EVs, helping to reduce long-term transport emissions and operating costs. This should be supported by TRC fleet/leaseback policy settings that allow purchase of fully electric vehicles and, where appropriate, incentivise EV uptake to ensure the chargers are utilised. In parallel, trial an electric ride-on mower as part of the transition of the plant and heavy equipment fleet, assessing performance, whole-of-life costs, and suitability for wider adoption across Council operations.

- **LED lighting upgrade:** Prioritise LED upgrades for all remaining fluorescent, compact fluorescent, and metal halide fittings to improve energy efficiency and lighting quality. In specialist spaces such as galleries, confirm with stakeholders that proposed LED fittings provide acceptable colour rendering and presentation quality before replacing existing halogen lighting, which may have been an intentional design choice. Identify high-use or critical areas for early implementation and integrate occupancy or daylight sensors where appropriate to further reduce electricity consumption and maintenance costs.
- **HVAC system upgrade:** Replace ageing, inefficient HVAC systems with modern, high-efficiency units using low-GWP refrigerants, following DSA recommendations for key sites such as the Library & Gallery, Town Hall, and TRECC. This is also an operational and compliance-driven upgrade where R22 systems remain in service—R22 is being phased out, is increasingly difficult and costly to source, and will ultimately be unavailable—creating a material reliability risk if major faults occur. Upgrades should include economy cycles, improved zoning, and integration with building management systems (BMS) to deliver sustained energy savings and improved comfort. Given the high capital cost and long simple payback for some sites, implementation will typically require grant funding (e.g. CEUF) and/or scheduling through Council's capital renewal program; DSA also identifies staged interim pathways (including staged costings where applicable) to prioritise critical areas and maintain operations while funding is secured for full replacement.
- **HVAC system optimisation:** Enhance system performance by installing advanced controls, zoning sensors, and occupancy-based scheduling so HVAC operates only when required. Where available, leverage or upgrade the BMS to improve scheduling, setpoints, and monitoring. Implement periodic commissioning and control tuning to reduce wastage and maintain stable temperature and humidity conditions, particularly in facilities with strict environmental requirements.
- **Energy-efficient motors and drives:** At sites with both large and smaller motor-driven systems, replace end-of-life motors with high-efficiency IE4/IE5 inverter-duty models and install variable speed drives (VSDs) to better match motor output to process demand. This includes smaller systems such as hydrotherapy pool pumps, clearwater pumps, and balance tank mixers, where speed modulation can deliver meaningful efficiency gains. Confirm speed settings and turnover rates during commissioning to ensure operating speeds are correctly aligned with process requirements, maximising energy savings and equipment longevity. Note that motor upgrades should be coordinated with VSD suitability—installing high-efficiency motors on DOL start can increase inrush current risk, and any VSD retrofit should confirm motors are inverter-duty (or include replacement/mitigation) to avoid premature failure.
- **Air compressor efficiency:** Undertake regular leak detection and repair programs to maintain compressor efficiency. Where continuous operation is required, consider replacing fixed-speed compressors with variable speed models to reduce energy use during low-demand periods and improve reliability. Confirm compressors/motors are VSD-rated and appropriately sized to ensure expected savings and avoid control/reliability issues.
- **Time-of-Use management:** Optimise operational schedules to shift major loads—such as pumping, heating, and cooling—away from peak tariff periods (typically 5–8 pm). Adjust start-up and shutdown sequences, where feasible, to take advantage of lower shoulder or off-peak rates, achieving measurable cost reductions without compromising service delivery. Notably, Council's water and wastewater operations already schedule pumping and treatment loads to minimise

electricity costs where operationally possible, and the opportunities identified build on this existing practice.

- **Base energy demand management:** Identify and manage persistent overnight or weekend base loads by implementing formal shutdown procedures for non-essential lighting, HVAC, and appliances. Engage building users in awareness programs to promote efficient after-hours energy use and maintain accountability for demand reduction targets. For event-driven venues where energy use is inherent to service delivery, Council should also consider whether event pricing appropriately recovers electricity costs when further efficiency reductions are impractical.
- **Billing and metering review:** Verify metering configurations and account NMIs across multi-user or complex sites to ensure accurate billing and load allocation. Where tenants are present, formalise sub-metering and cost recovery arrangements to improve transparency, support energy accountability, and enable targeted energy initiatives.
- **Building sealing & insulation:** Improve thermal efficiency by inspecting and sealing building envelopes to reduce infiltration and heat loss. Install or upgrade insulation where practical to stabilise indoor conditions, enhance comfort, and reduce heating and cooling energy use across Council facilities.
- **Gas collection and energy generation:** Continue to operate and maintain existing landfill gas flare systems to ensure environmental compliance. While current gas production levels do not support viable energy generation, monitor gas yields over time and reassess the feasibility of power generation or low-emission recovery technologies if volumes or funding opportunities increase.

Implementing the identified opportunities would require a total investment **from $10.06 million** (minimum scenario) to **$11.76 million** (maximum scenario). Estimated cost savings (per annum) range from **$743,168 to $866,573**, with an average simple payback **of 13.5 years** (minimum scenario) to **13.6 years** (maximum scenario).

Based on the assessment at the time this report was prepared, the measures are expected to reduce Council's electricity consumption by **3,180 MWh/year** (minimum scenario) to **3,798 MWh/year** (maximum scenario). Collectively, these measures could reduce Council's carbon emissions by **1,785 to 2,217 tonnes CO_2-e per year**, demonstrating strong financial and environmental benefits.

Table 3 below summarises the total cost–benefit results for each audited site, grouped into the CEUF-applicable priority sites and the other audited sites, and reflects the maximum scenario (i.e. the option set with the highest total CAPEX where alternative scopes exist).

TABLE 3: SUMMARY OF TOTAL COST-BENEFIT ANALYSIS FOR IDENTIFIED OPPORTUNITIES ON EACH SITE (MAXIMUM)

Site	Capital cost	Electricity savings	Annual cost savings	Payback years
All sites	**$11,755,227**	**3,797,543 kWh**	**$866,573**	**13.6 years**
CEUF-applicable sites	**$8,164,739**	**2,098,432 kWh**	**$438,543**	**18.6 years**
Library and Gallery	$1,541,031	250,215 kWh	$60,995	25.3 years
AELEC	$1,064,400	969,854 kWh	$124,487	8.6 years
TRECC	$3,097,144	507,068 kWh	$137,435	22.5 years
Town Hall	$1,756,174	97,715 kWh	$39,922	44.0 years
Sports Dome	$579,080	212,187 kWh	$60,206	9.6 years

Site	Capital cost	Electricity savings	Annual cost savings	Payback years
Australian Country Music Hall of Fame	$65,060	25,535 kWh	$5,669	11.5 years
Barraba Pool	$61,850	35,859 kWh	$9,829	6.3 years
Other sites audited	**$3,590,488**	**1,699,112 kWh**	**$428,030**	**8.4 years**
Calala WTP	$1,737,300	970,064 kWh	$238,896	7.3 years
Victoria Park Res. and Pumping Station	$305,000	51,052 kWh	$16,123	18.9 years
Dungowan Dam	$325,740	106,900 kWh	$21,552	15.1 years
Manilla WTP	$217,200	81,136 kWh	$19,273	11.3 years
Barraba WTP	$182,000	79,746 kWh	$18,475	9.9 years
Manilla Pumping Station	NA	NA	$538	NA
Namoi Pumping Station	$79,500	30,922 kWh	$7,320	13.3 years
Nemingha Pumping Station	$118,250	32,767 kWh	$9,625	12.3 years
Flynn Street Depot	$226,088	110,911 kWh	$28,348	8.0 years
Lockheed St Depot	$96,440	59,000 kWh	$14,372	6.7 years
7-11 Anne street	$52,650	30,813 kWh	$13,135	4.0 years
474 Peel St	$35,100	24,692 kWh	$6,048	6.0 years
Peel House	$96,320	49,280 kWh	$16,198	5.9 years
Bicentennial Park	$900	678 kWh	$488	1.8 years
Forest Rd – Landfill, North Res, SMRF	$118,000	71,151 kWh	$17,638	6.7 years

Table 4 summarises the equivalent totals under the minimum scenario, reflecting the lowest-CAPEX option set for sites where lower-cost alternatives are available (e.g. AELEC, Calala WTP, Dungowan Dam, and Flynn Street Depot).

TABLE 4: SUMMARY OF TOTAL COST-BENEFIT ANALYSIS FOR IDENTIFIED OPPORTUNITIES ON EACH SITE (MINIMUM)

Site	Capital cost	Electricity savings	Annual cost savings	Payback years
All sites	**$10,056,659**	**3,180,645 kWh**	**$743,168**	**13.5 years**
CEUF-applicable sites	**$7,907,339**	**2,010,600 kWh**	**$415,357**	**19.0 years**
Library and Gallery	$1,541,031	250,215 kWh	$60,995	25.3 years
AELEC	***$807,000***	***882,022 kWh***	***$101,301***	***8.0 years***
TRECC	$3,097,144	507,068 kWh	$137,435	22.5 years
Town Hall	$1,756,174	97,715 kWh	$39,922	44.0 years
Sports Dome	$579,080	212,187 kWh	$60,206	9.6 years
Australian Country Music Hall of Fame	$65,060	25,535 kWh	$5,669	11.5 years
Barraba Pool	$61,850	35,859 kWh	$9,829	6.3 years
Other sites audited	**$2,149,320**	**1,170,045 kWh**	**$327,811**	**6.6 years**
Calala WTP	***$751,300***	***557,590 kWh***	***$163,043***	***4.6 years***
Victoria Park Res. and Pumping Station	$305,000	51,052 kWh	$16,123	18.9 years
Dungowan Dam	***$35,700***	***29,390 kWh***	***$6,288***	***5.7 years***
Manilla WTP	$217,200	81,136 kWh	$19,273	11.3 years
Barraba WTP	$182,000	79,746 kWh	$18,475	9.9 years
Manilla Pumping Station	NA	NA	$538	NA

Site	Capital cost	Electricity savings	Annual cost savings	Payback years
Namoi Pumping Station	$79,500	30,922 kWh	$7,320	13.3 years
Nemingha Pumping Station	$118,250	32,767 kWh	$9,625	12.3 years
Flynn Street Depot	***$60,960***	***71,829 kWh***	***$19,246***	***3.2 years***
Lockheed St Depot	$96,440	59,000 kWh	$14,372	6.7 years
7-11 Anne street	$52,650	30,813 kWh	$13,135	4.0 years
474 Peel St	$35,100	24,692 kWh	$6,048	6.0 years
Peel House	$96,320	49,280 kWh	$16,198	5.9 years
Bicentennial Park	$900	678 kWh	$488	1.8 years
Forest Rd – Landfill, North Res, SMRF	$118,000	71,151 kWh	$17,638	6.7 years

The tables below present the detailed business cases for each audited site, outlining the specific energy and cost-saving opportunities identified, along with their estimated capital costs, annual savings, and simple payback periods.

TABLE 5: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – TAMWORTH LIBRARY AND ART GALLERY

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Power factor correction	Install a 90 kVAr power factor correction unit to raise the site power factor to 1.0 and reduce demand charges, subject to space and structural feasibility within the main switch room.	$13,500	NA	$3,516	3.8 years
Solar PV (long term)	Plan for future solar PV upgrades by replacing the existing 80 kW array with higher-efficiency panels within the same footprint once the current system reaches payback—targeting an upgrade to ~99 kW using current high-wattage panels (with potential to increase further to ~144 kW over time as panel efficiencies improve).	NA	NA	NA	NA
LED lighting upgrade	Replace remaining fluorescent, halogen, and track lighting with high-efficiency LED fittings across Library and Gallery areas to reduce energy use, maintenance costs, and improve lighting quality.	$139,278	30,773 kWh	$11,396	12.2 yrs
HVAC system upgrade	Implement DSA's Option 2 upgrade, replacing ageing R22-based HVAC units with high-efficiency systems and a chilled-water network for gallery and collection spaces, integrated with enhanced BMS control. DSA notes a staged interim approach is feasible to maintain operations ahead of full replacement. Given the high CAPEX and long payback on energy savings alone, delivery will likely require grant funding and/or inclusion in Council's capital renewal program.	$1,388,253	219,442 kWh	$46,083	30.1 years
Total		**$1,541,031**	**250,215 kWh**	**$60,995**	**25.3 years**

TABLE 6: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – AELEC

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Solar PV (Option 1)	Install a 50 kW solar PV system on suitable AELEC rooftops, such as the Cattle Holding Area, to offset up to 26% of daytime electricity use while addressing stakeholder and structural concerns.	$65,000	68,411 kWh	$18,059	3.7 years
Solar PV and battery storage (Option 2)	Install a larger 134 kW solar PV system with 120 kWh battery storage to improve energy resilience and self-sufficiency (up to 60% of daytime electricity use), subject to confirming roof capacity and resolving stakeholder concerns.	$322,400	156,242 kWh	$41,246	7.7 years
LED lighting upgrade	Replace main arena HID broadcast lights with a dimmable LED system featuring event presets to reduce energy use and improve lighting quality. For the Ebb & Flow and warm-up arenas, TRC and/or Coombes to confirm if a structural assessment is required and provide estimates to supply and install suitable LED replacement lights.	$680,000	126,552 kWh	$58,569	11.6 years
Ride-on mower electrification	Purchase one electric ride-on mower to trial electric plant suitability for daily operations, reduce fuel use, and support Council's broader transition to an electric fleet.	$45,000	0 kWh	$3,677	12.2 years
EV charging infrastructure	Install two 11 kW EV chargers to support Council staff leaseback vehicles and develop internal EV capability ahead of future charging rollout, strengthening fleet electrification readiness.	$12,000	630,779 kWh	$6,139	2.0 years
Base energy demand management	Undertake a night-time energy demand assessment to identify and reduce unnecessary loads during non-event periods, focusing on lighting, HVAC, and auxiliary systems.	$5,000	56,280 kWh	$14,857	0.3 years
Total (Maximum)		**$1,064,400**	**969,854 kWh**	**$124,487**	**8.6 years**
Total (Minimum)		**$807,000**	**882,022 kWh**	**$101,301**	**8.0 years**

TABLE 7: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – TRECC

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Power factor correction	Install a 230 kVAr power factor correction system to improve power factor to 1.0 during peak demand and reduce demand charges, installed either outdoors beside the transformer or on the internal arena wall due to limited MSB space.	$34,500	NA	$9,147	3.8 years
Solar PV and battery storage	Install an additional 77 kW rooftop solar PV system on the north-west main arena roof, remaining under the 100 kW STC threshold, with a 40 kWh battery to increase self-consumption and offset up to 23% of daytime electricity use.	$136,100	102,548 kWh	$24,650	5.5 years
LED lighting upgrade	Replace 68 × 400 W metal halide lamps in the main arena with dimmable LED high bays to achieve ~55% demand reduction. Replace 220 fluorescent fittings in foyer, toilets, and arena ceiling with LED panels, downlights, battens, and tubes for improved efficiency and lighting quality.	$61,350	114,210 kWh	$33,857	1.8 years
HVAC system upgrade	Implement DSA's Option 1B to replace end-of-life R22 DX plant with high-efficiency water-cooled units and electric heat pump heating, eliminating R22 and reducing HVAC energy use by ~49% while maintaining current capacity. DSA notes the system is undersized for peak comfort (Options 2B/2C improve comfort but require higher CAPEX and lower net energy savings), and that BMCS upgrades, relief-duct dampers and filter-access rectification are not explicitly costed and should be allowed for in delivery. Given the significant CAPEX and long payback on energy savings alone, implementation will likely require grant funding and/or inclusion in Council's capital renewal program.	$2,865,194	290,310 kWh	$69,782	41.1 years
Total		**$3,097,144**	**507,068 kWh**	**$137,435**	**22.5 years**

TABLE 8: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – TOWN HALL

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Power factor correction	Install a 120 kVAr power factor correction unit to improve power factor to 1.0 during peak demand periods and reduce demand charges.	$18,000	NA	$5,426	3.3 years
Solar PV	Install a 15 kW solar PV system on the northeast-facing roof to maximise solar self-consumption and reduce daytime energy use by up to 15%, subject to heritage and structural approvals.	$19,500	18,890 kWh	$6,532	3.0 years
LED lighting upgrade	Replace the remaining 62 non-LED lights, prioritising the 500 W HID lamps in the main hall, along with 20 exit lights and other outdated fittings, to achieve around 58% energy savings and reduced maintenance.	$16,880	10,261 kWh	$3,967	4.3 years
HVAC system upgrade	Replace the ageing 6-stage reciprocating chiller system with a high-efficiency HVAC system as per Option 1 in DSA's 2025 audit recommendations to improve comfort, reliability, and energy performance. Given the significant CAPEX and long payback on energy savings alone, implementation will likely require grant funding and/or inclusion in Council's capital renewal program.	$1,701,794	68,564 kWh	$23,998	70.9 years
Total		**$1,756,174**	**97,715 kWh**	**$39,922**	**44.0 years**

TABLE 9: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – SPORTS DOME

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Solar PV	Install an additional 87.5 kW rooftop solar PV system on the main Sports Dome roof (below the 100 kW STC threshold) to offset daytime grid use by up to 72%, subject to inverter placement and structural assessment.	$113,750	105,490 kWh	$27,986	4.2 years
LED lighting upgrade	Replace 400 W HID lamps in the Showcourt and Courts 1–3 with 200 W LEDs, and upgrade 44 × twin 28 W T5 lights in ground floor offices to LED panels, implemented via supply-only purchase and in-house installation or inclusion in CEUF grant.	$27,730	33,257 kWh	$10,737	2.6 years
LED lighting upgrade (long term)	Replace 2000 W HID floodlights at Netball, Athletics, and Velodrome fields with LED equivalents when due for renewal, pending structural assessment and review of E-Switch usage data to confirm lamp hours and wattage.	$437,600	73,440 kWh	$21,483	20.4 years
Total		**$579,080**	**212,187 kWh**	**$60,206**	**9.6 years**

TABLE 10: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – AUSTRALIAN COUNTRY MUSIC HALL OF FAME

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Solar PV and battery storage	Install an additional 13 kW rooftop solar system with a 6.4 kWh battery to increase self-consumption and reduce daytime energy use by up to 41%, subject to roof space and structural assessment.	$20,060	13,972 kWh	$3,102	6.5 years

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
HVAC system upgrade	Replace the two remaining original Actron units with high-efficiency HVAC systems once specifications, age, and condition are confirmed to improve reliability and energy performance.	$45,000	11,563 kWh	$2,567	17.5 years
Total		**$65,060**	**25,535 kWh**	**$5,669**	**11.5 years**

TABLE 11: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – BARABBA POOL

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Tariff switching	Transition the site to the BLND1AB network tariff to achieve lower network charges, with existing interval metering suitable for the new tariff structure.	NA	NA	$2,022	NA
Solar PV and battery storage	Install a 10.5 kW solar PV system with a 30 kWh battery to increase self-consumption and reduce daytime electricity use by up to 46%, subject to confirming switchboard capacity and roof suitability.	$40,650	14,359 kWh	$3,104	16.5 years
LED lighting upgrade	Replace fluorescent fittings in the Hydrotherapy pool area with LED battens to improve lighting quality and achieve around 55% energy reduction.	$1,700	500 kWh	$164	10.4 years
Solar water heating systems	Reinstate the disconnected solar matting system to preheat the hydrotherapy pool and reduce heat pump electricity use, once wall repairs and leak risks are addressed.	TBD	12,593 kWh	$2,722	NA

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Energy-efficient motors and drives	Confirm previous VSD settings for the 11 kW filter pump to align turnover and speed settings, and retrofit the hydro pool pumps with VSDs or two-speed controls to reduce flow during low-demand periods.	$4,000	3,371 kWh	$729	5.5 years
Building sealing & insulation	Seal roof-to-wall junctions and assess the feasibility of adding ceiling insulation to reduce heat loss and improve energy efficiency in the hydro pool building.	$15,500	5,037 kWh	$1,089	14.2 years
Total		**$61,850**	**35,859 kWh**	**$9,829**	**6.3 years**

TABLE 12: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – CALALA WTP

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Power factor correction	Install a 390 kVAr power factor correction system to raise power factor to ~1.0 and reduce demand charges, subject to available space for capacitor bank installation.	$58,500	NA	$10,899	5.4 years
Solar PV (short term)	Install a 400 kW ground-mounted solar PV system between the plant and Calala Storage Dam to offset daytime grid electricity use by up to 38%.	$640,000	507,330 kWh	$93,297	7.0 years
Solar PV and battery storage (long term)	Install a 622.5 kW ground-mounted solar PV system with 700 kWh battery storage to support high daytime loads and VSD-driven pumps, and offset daytime grid electricity use by up to 69%, subject to land availability and long-term planning (this is a mutually exclusive alternative to the short-term option).	$1,626,000	919,804 kWh	$169,150	9.4 years

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
LED lighting upgrade	Replace all remaining non-LED fittings with energy-efficient LED lights to reduce lighting energy use.	$19,800	35,335 kWh	$9,480	2.1 years
Air compressor efficiency (leak management)	Implement routine compressed air leak inspections and promptly repair any leaks to prevent energy waste and maintain compressor efficiency.	NA	NA	NA	NA
Air compressor efficiency (VSD upgrade)	Replace both fixed-speed 22 kW air compressors with VSD models to improve efficiency and reduce electricity consumption.	$28,000	14,925 kWh	$2,745	10.2 years
HVAC system upgrade	Replace the remaining R22 air conditioning unit with a high-efficiency model at end of life to improve reliability and energy performance, with optional integration into a building management system (BMS) if warranted.	NA	NA	NA	NA
Time-of-Use management	Implement demand-based scheduling for the 500 kW clearwater pumps to reduce 5–8 pm weekday peak demand charges while maintaining operational flexibility.	$5,000	NA	$46,622	0.1 years
Total (Maximum)		**$1,737,300**	**970,064 kWh**	**$238,896**	**7.3 years**
Total (Minimum)		**$751,300**	**557,590 kWh**	**$163,043**	**4.6 years**

Table 13: Potential energy and cost-saving opportunities – Victoria Park Reservoir & PS

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Tariff switching	Remain on the BLND3AO tariff following automatic transition from BLNDTRS, as no alternative tariff currently offers a positive business case.	NA	NA	NA	NA
Energy-efficient motors and drives	During scheduled renewals, replace existing pumps with IE4/IE5 inverter-duty motors and high-efficiency pumps, adding VSDs where ≥10–15% turndown is achievable, to improve overall system efficiency to ~85%.	$300,000	51,052 kWh	$10,000	30.0 years
Time-of-Use management	Shift pumping operations from 5–8 pm to 2–5 pm or overnight/off-peak periods where feasible to reduce peak demand costs and enhance savings once VSDs are installed.	$5,000	NA	$6,123	0.8 years
Total		**$305,000**	**51,052 kWh**	**$16,123**	**18.9 years**

Table 14: Potential energy and cost-saving opportunities – Dungowan Dam

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Power factor correction	Install a 30 kVAr power factor correction system to raise site power factor to ~1.0 and reduce demand charges, subject to space availability for capacitor bank installation.	$4,500	NA	$500	9.0 years
Solar PV (short term)	Install a 24 kW solar PV system with high-efficiency panels to expand onsite generation and offset daytime energy use by up to 40%.	$31,200	29,390 kWh	$6,231	5.1 years

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Solar PV and battery storage (long term)	Install a 71.4 kW solar PV system with a 230 kWh battery to offset 100% of daytime energy use and store excess solar energy for morning and evening compressor loads, improving self-consumption and site resilience (this is a mutually exclusive alternative to the short-term option). Council could also stage delivery by progressively expanding PV capacity and adding battery storage in smaller increments (e.g. expand to 50 kW and install a ~120 kWh BESS) to build resilience over time.	$321,240	106,900 kWh	$22,664	17.3 years
Time-of-Use management	Shift compressor operation about one hour earlier to reduce post-5 pm operation, lowering energy costs by moving load from peak to shoulder tariff periods.	NA	NA	NA	NA
Total (Maximum)		**$325,740**	**106,900 kWh**	**$21,552**	**15.1 years**
Total (Minimum)		**$35,700**	**29,390 kWh**	**$6,288**	**5.7 years**

TABLE 15: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – MANILLA WTP

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Tariff switching	Transition from BLNT1AO to BLND1AB to reduce network charges, pending confirmation of interval meter installation and validation with actual demand data.	NA	NA	$1,717	NA
Solar PV and battery storage	Install an 84 kW ground-mounted solar PV system with a 120 kWh battery to increase solar self-consumption, subject to confirming load profiles and export constraints.	$217,200	81,136 kWh	$17,556	15.4 years
Total		**$217,200**	**81,136 kWh**	**$19,273**	**11.3 years**

TABLE 16: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – BARABBA WTP

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Tariff switching	Transition from BLNT1AO to BLND1AB to achieve annual savings, using interval meter data to validate demand patterns and tariff suitability.	NA	NA	$1,954	NA
Solar PV and battery storage	Install a 40 kW east-facing solar PV system with 100 kWh battery storage to reduce grid reliance during morning and evening hours by offsetting 100% of daytime energy use, subject to resolving existing power supply constraints.	$142,000	49,458 kWh	$10,246	17.2 years
Energy-efficient motors and drives	Install VSDs on the two 37 kW clearwater pumps and the 2.5 kW PAC balance tank mixer to optimise energy use by matching motor speed to demand, improving process control and reducing operating costs.	$29,000	22,789 kWh	$4,721	6.1 years
Air compressor efficiency	Replace the 7.5 kW fixed-speed air compressor with a VSD model and repair existing air leaks to reduce unnecessary runtime and improve overall system efficiency by up to 20%.	$11,000	7,498 kWh	$1,553	7.1 years
Total		**$182,000**	**79,746 kWh**	**$18,475**	**9.9 years**

Table 17: Potential energy and cost-saving opportunities – Manilla Pumping Stations

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Tariff switching	Transition from BLNN1AU to BLND1AB to reduce network charges, pending installation of an interval meter and confirmation of savings through demand data.	NA[1]	NA	$538	NA
Total		**NA**	**NA**	**$538**	**NA**

Table 18: Potential energy and cost-saving opportunities – Namoi Pumping Stations

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Solar PV and battery storage	Install a 30 kW ground-mounted solar PV system with a 45 kWh battery to support seasonal pumping operations, subject to confirming load profiles, available space, and runtime alignment.	$79,500	30,922 kWh	$7,320	13.3 years
Total		**$79,500**	**30,922 kWh**	**$7,320**	**13.3 years**

[1] Capital cost, electricity savings, and payback are shown as NA for Manilla Pumping Station as in tariff switching, tariff changes involve negligible or no CAPEX, do not result in physical reductions in electricity consumption (kWh), and therefore do not generate a conventional payback period, but instead deliver cost savings through revised network and pricing structures.

Table 19: Potential energy and cost-saving opportunities – Nemingha Pumping Station

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Tariff switching	Transition from BLNT2AL to BLNBSS1 to save on network charges, using the existing interval meter to support tariff transition.	NA	NA	$949	NA
Solar PV and battery storage	Install a 12.5 kW pole-mounted solar PV system with a 30 kWh battery to offset daytime pumping energy use by 51% and support evening operations, reducing peak demand and improving site resilience.	$43,250	17,539 kWh	$3,841	14.1 years
Energy-efficient motors and drives	At the next renewal, replace existing IE3 motors with IE4/IE5 inverter-duty models and higher-efficiency pumps, adding VSDs if duty analysis confirms ≥10–15% turndown, to improve long-term efficiency.	$70,000	15,228 kWh	$3,335	21.0 years
Time-of-Use management	Reschedule pump operations to avoid 5–8 pm weekday peak periods, adjusting control settings to align with reservoir levels and reduce electricity costs.	$5,000	NA	$1,500	3.3 years
Total		**$118,250**	**32,767 kWh**	**$9,625**	**12.3 years**

Table 20: Potential energy and cost-saving opportunities – Flynn Street Depot

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Tariff switching	Shift from BLNC1AU and BLNT2AL to BLND1AB to to save on network charges, using the existing interval meter to confirm demand patterns and validate tariff suitability.	NA	NA	$2,401	NA

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Solar PV (short term)	Install a 42 kW solar PV system on office and workshop roofs to maximise daytime self-consumption and reduce daytime electricity use by up to 82%.	$54,600	42,666 kWh	$9,936	5.6 years
Solar PV and battery storage (long term)	Install a 68 kW solar PV system with 146 kWh battery storage to improve solar utilisation (reducing 100% of daytime energy use) and supply evening loads, subject to confirming connection capacity and load modelling.	$219,728	81,748 kWh	$19,038	14.4 years
LED lighting upgrade	Replace 8 twin 36 W fluorescent battens in the mechanics workshop pit with LED equivalents to cut energy use, improve lighting quality, and reduce maintenance.	$1,360	1,023 kWh	$355	3.8 years
Base energy management	Implement night-time and weekend shutdown procedures targeting non-essential HVAC and lighting loads to reduce demand by up to 5 kW, supported by staff engagement and insulation improvements.	$5,000	28,140 kWh	$6,553	0.8 years
Total (Maximum)		**$226,088**	**110,911 kWh**	**$28,348**	**8.0 years**
Total (Minimum)		**$60,960**	**71,829 kWh**	**$19,246**	**3.2 years**

TABLE 21: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – LOCKHEED STREET DEPOT

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Tariff switching	Transition from BLNT2AL to BLND1AB to save on network charges, leveraging the existing interval meter for accurate billing and tariff validation.	NA	NA	$1,236	NA

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Solar PV and battery storage	Install a 30 kW east-facing solar PV system with 50 kWh battery storage to improve morning self-consumption and reduce grid reliance, potentially eliminating 100% of daytime energy use, subject to network export and capacity limits.	$84,000	29,434 kWh	$6,521	15.9 years
LED lighting upgrade	Replace all external HID floodlights and fluorescent fittings with LED battens and floodlights to cut energy use, reduce maintenance, and enhance lighting reliability.	$7,440	7,054 kWh	$1,628	4.6 years
Base energy management	Implement shutdown procedures and staff engagement programs to reduce night-time electricity use by up to 4 kW through targeted HVAC and lighting controls.	$5,000	22,512 kWh	$4,987	1.0 years
Total		**$96,440**	**59,000 kWh**	**$14,372**	**6.7 years**

TABLE 22: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – 7-11 ANNE STREET

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Tariff switching	Shift from BLNN1AU to BLNBSS1 to reduce network charges, aligning tariff structure with site usage and future solar integration.	NA	NA	$4,855	NA
Solar PV and battery storage	Install separate solar PV systems—25.5 kW for Inflatable World and 15 kW for Tamworth Bouldering—with potential expansion to 40 kW and 20 kW to maximise self-consumption and offset grid use, subject to confirming tenant energy data.	$52,650	30,813 kWh	$8,279	6.5 years

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Billing and metering review	Review and update metering and billing arrangements to enable direct billing or cost recovery from tenants, noting potential need for reconfiguration and lease updates.	NA	NA	NA	NA
Total		**$52,650**	**30,813 kWh**	**$13,135**	**4.0 years**

TABLE 23: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – 474 PEEL STREET

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Solar PV and battery storage	Install a 27 kW solar PV system to offset weekday energy use, with future expansion to 50 kW and ~80 kWh battery storage subject to roof space and adjacent development constraints.	$35,100	24,692 kWh	$6,048	6.0 years
HVAC system optimisation	Install zoning sensors or additional control units to improve comfort and HVAC efficiency across different building areas, noting limited energy savings but operational benefits.	NA	NA	NA	NA
Total		**$35,100**	**24,692 kWh**	**$6,048**	**6.0 years**

TABLE 24: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – PEEL HOUSE L2

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Tariff switching	Transition to BLND1AB for a more cost-effective tariff structure, noting that savings depend on interval metering and verified demand data.	NA	NA	$1,653	NA
Solar PV	Install a 20 kW solar PV system to offset Council electricity use and improve self-consumption, subject to confirmation of tenancy and load arrangements.	$26,000	22,542 kWh	$6,331	4.2 years
LED lighting upgrade	Replace all Level 2 fluorescent troffers and CFL downlights with LED fittings to cut lighting energy use by ~50% and reduce maintenance costs.	$10,320	10,087 kWh	$3,539	2.9 years
HVAC system upgrade	Plan medium-term replacement of the four existing APAC R22 HVAC units (74 kW total) with high-efficiency air-cooled systems using low-GWP refrigerants to enhance performance and reliability.	$60,000	16,650 kWh	$4,676	12.8 years
Total		**$96,320**	**49,280 kWh**	**$16,198**	**5.9 years**

TABLE 25: POTENTIAL ENERGY AND COST-SAVING OPPORTUNITIES – BICENTENNIAL PARK

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
LED lighting upgrade	Verify if centre pathway lights are non-LED and replace with compatible LED fittings to reduce energy use and improve reliability.	$900	678 kWh	$488	1.8 years
Total		**$900**	**678 kWh**	**$488**	**1.8 years**

Table 26: Potential energy and cost-saving opportunities – Forest Rd Landfill

Assessed opportunity	Recommended action	Capital cost	Electricity savings	Annual cost savings	Payback years
Solar PV (Landfill)	Install a 45 kW ground-mounted solar PV system with battery storage to offset daytime loads from blowers, pumps, and weighbridge operations, subject to available space and grid connection constraints.	$58,500	43,296 kWh	$9,418	6.4 years
Solar PV (North reservoir)	Install a 10 kW rooftop solar PV system on the office or workshop to offset weekday daytime loads from HVAC, lighting, and equipment, ensuring system size aligns with actual usage and available roof space.	$13,000	9,027 kWh	$2,916	4.6 years
Solar PV and battery storage (SMRF)	Replace the failed 15 kW section of the existing 47 kW solar system and add a 30 kWh battery to improve self-consumption and restore full solar capacity, subject to confirming site ownership, metering, and long-term facility use.	$46,500	18,828 kWh	$5,304	8.5 years
Billing and metering review	Verify and update all meter and equipment connections across the landfill, SMRF, and reservoir accounts to ensure accurate billing, load allocation, and future upgrade planning (no cost-benefit case).	NA	NA	NA	NA
Gas Collection and energy generation	Verify and update all meter and equipment connections across the landfill, SMRF, and reservoir accounts to ensure accurate billing, load allocation, and future upgrade planning (no cost-benefit case).	NA	NA	NA	NA
Total		**$118,000**	**71,151 kWh**	**$17,638**	**6.7 years**

100% renewables

Tamworth Regional Council

Energy audit of each site

2 Tamworth Library and Art Gallery

2.1 Site description

Tamworth Library and Art Gallery is a public cultural facility combining library services and art exhibition spaces. The two-story building operates six days a week, with peak visitation during weekday afternoons and weekends. Primary energy consumers include HVAC systems (critical for preserving artwork), lighting, and IT infrastructure. To reduce its environmental impact, the facility has installed an 80-kW solar PV system, which offsets a portion of its daytime energy demand, and has installed LED lighting in most ‘front of house’ areas of the library and parts of the gallery.

The site’s NMI is 4001157534, and the available interval data spans February 2024 to January 2025, enabling detailed analysis of daily and seasonal consumption patterns. We've also reviewed electricity bills for the same period, which provide a complete breakdown of Time-of-Use (ToU) consumption and demand across peak, off-peak, and shoulder periods, along with their associated costs.

2.2 Electricity

Based on the provided electricity billing for NMI 4001157534, covering the period from February 2024 to January 2025, the grid electricity usage at the library and art gallery amounted to 503 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility’s electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 27: ANNUAL ELECTRICITY USE AT TAMWORTH LIBRARY AND ART GALLERY

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	3,916 kWh	19,049 kWh	24,138 kWh	47,906 kWh
Aug-24	2,780 kWh	12,001 kWh	15,945 kWh	30,734 kWh
Sep-24	2,807 kWh	9,335 kWh	13,363 kWh	25,401 kWh
Oct-24	4,576 kWh	14,751 kWh	21,501 kWh	40,500 kWh
Nov-24	4,247 kWh	16,886 kWh	22,079 kWh	42,836 kWh
Dec-24	4,185 kWh	16,702 kWh	21,968 kWh	42,888 kWh
Jan-25	4,490 kWh	18,833 kWh	22,381 kWh	45,729 kWh
Feb-24	4,247 kWh	16,246 kWh	17,707 kWh	38,207 kWh
Mar-24	4,200 kWh	15,153 kWh	20,917 kWh	40,225 kWh
Apr-24	5,234 kWh	21,263 kWh	27,517 kWh	54,005 kWh
May-24	4,465 kWh	18,679 kWh	25,419 kWh	48,579 kWh
Jun-24	3,170 kWh	15,798 kWh	27,245 kWh	46,197 kWh
Total	**48,316 kWh**	**194,697 kWh**	**260,179 kWh**	**503,207 kWh**

This consumption data is graphed to highlight that off-peak electricity consumption is the dominant time-of-use period given the 24/7 nature of HVAC operations for much of the gallery.

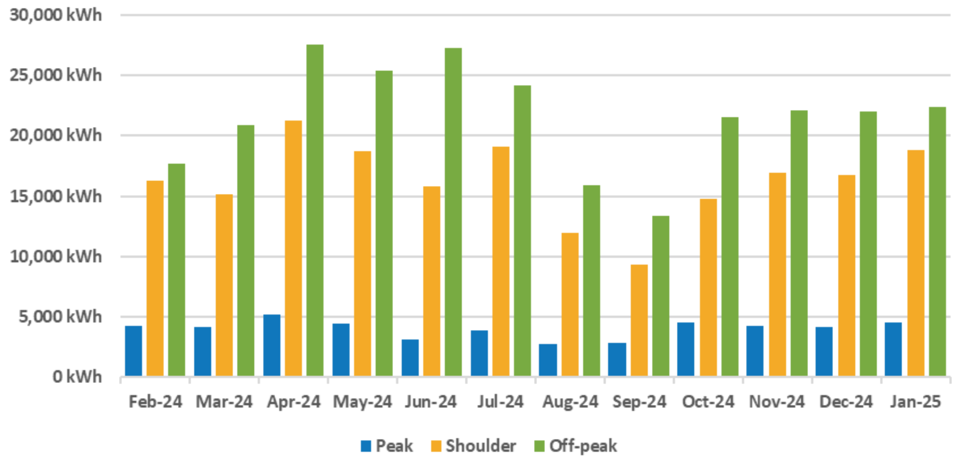


FIGURE 1: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT TAMWORTH LIBRARY AND ART GALLERY

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 28: ANNUAL ELECTRICITY USE AND COSTS AT THE TAMWORTH LIBRARY AND ART GALLERY

Site	NMI	Annual consumption	Annual cost (Ex-GST)	Average rate	Network Tariff
Tamworth Library and Art Gallery	4001157534	502,608 kWh	$105,415	0.21 $/kWh	BLND3AO

2.3 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Tamworth Library and Art Gallery. Below are the hourly load profiles for Tamworth Library and Art Gallery on representative summer and winter months. From these profiles, key insights can be drawn.

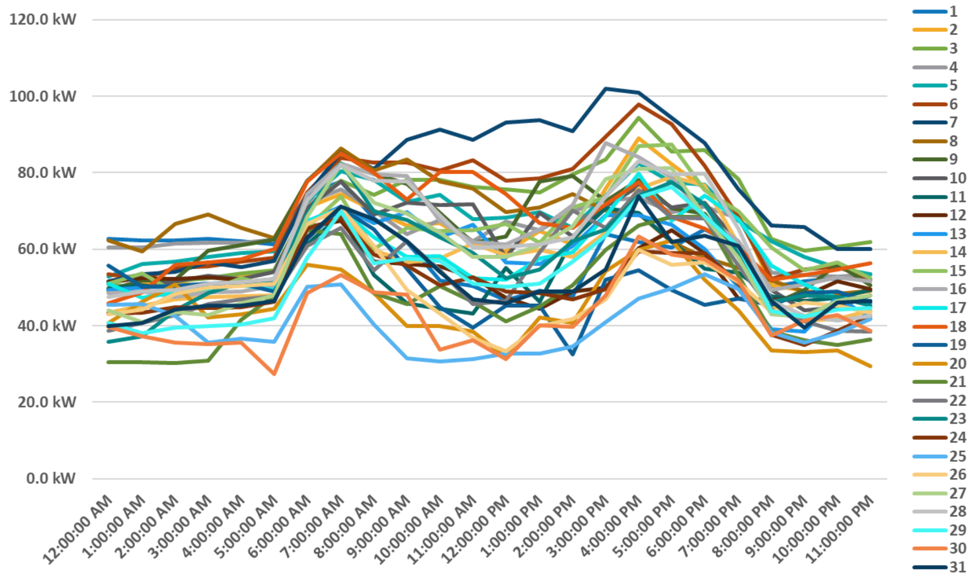


FIGURE 2: INTERVAL DATA AT TAMWORTH LIBRARY AND ART GALLERY FOR SUMMER (DEC-FEB)

- High and variable overnight energy demand is principally to meet the HVAC energy needs of the gallery, where all exhibition and art storage spaces require tight control of both temperature and humidity.
- Daytime profiles are characterised by library cooling systems and whole-facility lighting systems activated ahead of opening of the facility to the public, and for staff who work in both the library and gallery. During summer a late afternoon peak in grid demand is typical, with lighting and library HVAC systems energy demand falling as these systems shut down based on a schedule aligned with the facility's opening hours.
- The impact of the 80kW solar array to mitigate grid demand during the daytime is a prominent feature of the load profiles, with little or no export evident on any day.

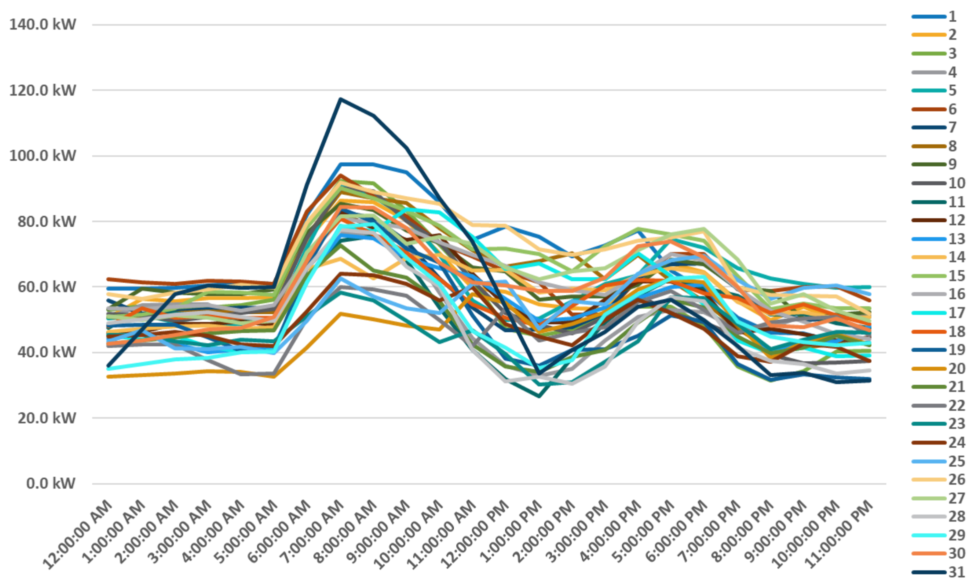


FIGURE 3: INTERVAL DATA AT TAMWORTH LIBRARY AND ART GALLERY FOR WINTER (JUN-AUG)

- Overnight energy demand in winter is comparable to summer and will simply reflect a change to heating of gallery spaces to maintain the required indoor conditions.
- Unlike in summer, winter profiles are characterised by high early morning peaks associated with heating of library and all back-of-house spaces as staff arrive at work. As solar PV is not working by the time HVAC systems are activated in winter, morning peak demand is more pronounced than is the case in summer.
- The influence of the solar array is also prominent in winter, and like summer there appears from load profiles to be little or no export to the grid.

2.4 Current solar PV installed (80-kW system)

The 80-kW solar PV system at Tamworth Library and Art Gallery generated 99,686 kWh of renewable electricity during the 2024 calendar year, demonstrating a 100% self-consumption rate—meaning all energy produced was used on site, with zero kWh exported to the grid.

Monthly generation data followed expected seasonal trends, with peak output occurring during summer months and the lowest production in winter. These fluctuations align with normal variations in solar irradiance and are typical for solar PV systems.

From a financial perspective, the 100% self-consumption model delivers significant value as every kilowatt-hour generated displaces grid electricity at retail rates, maximising cost savings. This annually offsets around $21,189 based on 0.21 $/kWh average rate of the site.

However, it is also noted that the recorded yield equates to 1,246 kWh of solar energy per kW of installed capacity, which is lower than a north-tilted array may produce for the region, but typical for the flat-mounted layout that has been implemented to maximise solar capacity on the roof.

TABLE 29: ANNUAL SOLAR GENERATION, ON-SITE CONSUMPTION AND EXPORT AT TAMWORTH LIBRARY AND ART GALLERY

Month	Generation (kWh)	On-site consumption (kWh)	Export (kWh)
Jan-24	11,554.40	11,554.40	0
Feb-24	9,742.58	9,742.58	0
Mar-24	9,391.01	9,391.01	0
Apr-24	6,489.84	6,489.84	0
May-24	5,467.44	5,467.44	0
Jun-24	3,817.43	3,817.43	0
Jul-24	4,464.28	4,464.28	0
Aug-24	6,184.23	6,184.23	0
Sep-24	8,400.08	8,400.08	0
Oct-24	10,572.92	10,572.92	0
Nov-24	10,796.29	10,796.29	0
Dec-24	12,805.92	12,805.92	0
Total	**99,686.40**	**99,686.40**	**0**

FIGURE 4: TAMWORTH LIBRARY AND ART GALLERY ONSITE SOLAR

2.5 Equipment audit

An on-site audit was conducted in March 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid + solar electricity usage, providing an overview of the primary areas of energy consumption. It is important to note that this was not a precision audit based on sub-metered data. The table and figure below summarise the primary electricity consumers observed on site.

TABLE 30: ENERGY END USE BREAKUP AT LIBRARY & ART GALLERY

Category	Annual consumption	%
Lighting	74,052 kWh	12%
HVAC	447,030 kWh	74%
Power and appliances	81,800 kWh	14%
Total	**602,882 kWh**	**100%**

The total energy use estimated from the audit is almost exactly the recorded grid plus solar energy consumption for the site.

Within the above breakdown, there are a number of energy end use systems that are noted.

2.5.1 Lighting

- The library has 110 LED panels and 80 LED downlights that are energy efficient and require no further optimisation.
- The gallery has over 90 LED downlights that are energy efficient and require no further optimisation.
- Across both sections there are 119 recessed twin 28W T5 fluorescent light fittings, nearly all in back-of-house areas. There are twin 28W T5 suspended fittings in studios on the gallery level, and T5 fluorescent uplights in the pelmet around much of the library level.
- In the gallery, there are some 33 halogen downlights and at least 55 track lights (plus additional in storage and used depending in the exhibition being installed).

2.5.2 Heating, ventilation and air conditioning (HVAC)

HVAC systems dominate the energy demand at the library and gallery, with approximately 250kWr of capacity serving the gallery and 270kWr serving the library. All main HVAC systems were installed in 2004 and so are 21 years old. These are nearly all APAC heat pumps (split system) and cooling-only units (with supplementary electric duct heaters, EDH), and all use the banned R22 refrigerant gas, which is being phased out.

Summarising the main observed HVAC systems at the site:

TABLE 31: MAIN HVAC ENERGY-USING COMPONENTS AT LIBRARY & ART GALLERY (CHILL-RITE)

Unit Number	Building	Area Serving	Type	Make	Model	Capacity	Refrigerant
AC UNIT 1.1	LEVEL 1	FOYER & ENTRANCE	ROOF TOP PACKAGE UNIT	APAC	PO64AHR9AD	64	R22
AC UNIT 1.2	LEVEL 1	LIBRARY		APAC	SO641HR9AA/SO640VR9A	64.1	R22

Unit Number	Building	Area Serving	Type	Make	Model	Capacity	Refrigerant
AC UNIT 1.3	LEVEL 1	ADMIN	SPLIT DUCTED	APAC	SO361HR9AA/SO360VR9AD	36.1	R22
AC UNIT 1.4	LEVEL 1	COMMS ROOM	HI WALL SPLIT	MHI	DXC24ZRA-W	7.1	R32
AC UNIT 2.1	LEVEL 2	STUDIO	ROOF TOP PACKAGE UNITS	APAC	PO14AHR9AD	14	R22
AC UNIT 2.2	LEVEL 2	MEETING ROOM		APAC	PO19AHR9AD	19	R22
AC UNIT 2.3	LEVEL 2	CAFÉ, LOBBY & KITCHEN		APAC	PO23AHR9AA	23	R22
AC UNIT 2.4	LEVEL 2	GALLERY FOYER		APAC	PO16AHR9AD	16	R22
AC UNIT 2.5	LEVEL 2	ADMINISTRATION		APAC	PO14AHR9AD	14	R22
AC UNIT 2.6	LEVEL 2	GALLERY 1 & 2		APAC	S98CBH-02	98	R22
AC UNIT 2.7	LEVEL 2	COLLECTION		APAC	PO30AHC9AA	30	R22
AC UNIT 2.8	LEVEL 2	CONSERVATION, PREP, STORE	SPLIT DUCTED	APAC	SO171HR7AD/SO170VR9AD	17.1	R22
EXHAUST FANS	ALL AREAS				10 OFF		
Units 1.1-2.6	Level2	A/C units 1.1 - 2.6		Innotech	Genesis		

Library

The library features several rooftop and horizontal and vertical split ducted reverse-cycle air conditioning units located across several plant rooms, as noted above.

- The Comms room unit was replaced in 2019 and is the only system replaced since the system was built in 2004,
- In addition to reverse cycle operation, AC1.3 serving the admin section on level 1 has supplementary electric duct heaters installed on 4 VAV boxes, with 1 to 3 stages of heating. Total installed EDH load of 20kW.

Gallery

The Tamworth Regional Gallery is serviced by a range of reverse-cycle and cooling-only air conditioning units, electric duct heaters (EDHs), and humidifiers. Units are across multiple rooftop plant rooms.

- AC2.1 to AC2.5 are reverse cycle rooftop package units, total capacity 86kW,
- Gallery and Collection systems are cooling-only rooftop package units, with 60kW of EDH load including 45kW for the Gallery and 15kW for Collections,
- Humidity control is managed via humidifiers 6.2.1 and 6.2.2 – 4 kW each, and via a Condair steam humidifier (AC2.7) – 3.8 kW.

Key observations

- A mix of continuous operation (Gallery) and seasonal load (Library) is evident from differing estimated annual hours.
- Nearly all systems use legacy R22 refrigerant, which will require planning for upgrade or phase-out.

2.5.3 Power and appliances

Energy use by plug-in power and IT systems is estimated drawing on the number of devices observed to be installed across the gallery and library and is a less precise estimate than is feasible with the more significant HVAC as well as lighting systems.

2.6 Potential energy and cost-saving opportunities

2.6.1 Power factor correction

The Library & Gallery facility has a fairly poor power factor. At the peak demand recorded each month for Peak, Shoulder and Off-peak times, power factor averages just 0.9. Setting a target power factor of 1.0 (maximum), we calculate that a power factor correction (PFC) unit of **90 kVAr** capacity would be required.

An analysis of sizing requirements and cost-benefit looks at all 36 chargeable peak demand events over a year and calculates the kVA demand savings in all periods where the PFC unit has reduced demand. The PFC unit is sized based on rounding up the highest level of capacitance needed in any peak period to achieve a power factor of 1.0.

The primary challenge at the Library & Gallery is space. The Main Switchroom is small, located on the upper level at the rear of the building (Gallery). The MSB houses the incoming supply meter, main switchboard, one distribution board (2C), the solar PV grid protection unit and the solar inverters. Siting a PFC unit of 90kVAr (or smaller if achieving say 0.98 at peak demand is satisfactory) in the main switchroom would require assessment by an electrical contractor or PFC firm. Note that ongoing operation also requires periodic inspection and maintenance by a suitably qualified person to ensure the PFC equipment remains safe, reliable, and effective.

TABLE 32: BUSINESS CASE FOR POWER FACTOR CORRECTION FOR TAMWORTH LIBRARY AND ART GALLERY

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
No PFC is installed, and power factor at peak demand ranges from 0.75 to 0.97 at peak demand across all ToU periods.	Install a 90 kVAr power factor correction system to raise site power factor to 1.0 during peak demand periods and reduce demand charges.	Limited space in the main switchroom presents the key constraint. The room—located on the upper level at the rear of the Gallery—already contains the main switchboard, supply meter, distribution board (2C), solar grid protection unit, and inverters. Installing a 90 kVAr (or smaller) PFC unit will require a site professional assessment.	$13,500	NA	$3,516	3.8 years

2.6.2 Solar PV

The site operates an 80-kW solar PV system (240 × 330 W panels) installed in 2019, producing about 100 MWh annually—consistent with its layout and age. Roof space appears near-maximised; a north-tilted layout could have marginally improved yield but reduced capacity.

No further expansion on the building is currently justified. Essential Energy typically requires systems to be on the same Lot as the connected NMI, limiting feasibility for carpark solar unless an exemption (e.g. via an embedded network) is pursued with an Accredited Service Provider (ASP).

In the long term, the system could be upgraded to higher-wattage panels once it has paid back. Replacing panels with current 605 W models could raise capacity to ~99 kW (+25%) within the same footprint. By 2030, with ~30% efficient panels (~1000 W each), up to ~140 kW could fit, generating ~170 MWh per year—around 29% of current site demand.

2.6.3 LED lighting upgrade

A range of lighting upgrade opportunities have been identified across the Tamworth Library and Art Gallery. Existing fittings—primarily T5 fluorescents, halogens, and older track lights—represent a significant share of site energy use and maintenance effort.

At the Library, 72 recessed twin 28 W T5 fittings and 55 pelmet uplights are to be replaced with LED panels and tubes (or LED strips where required), improving lighting quality and reducing annual consumption of around 21 MWh.

At the Art Gallery, upgrades include replacing 67 fluorescent fittings in back-of-house and studio spaces with LED panels or suitable alternatives, 33 halogen downlights in the main gallery with dimmable LED downlights, and 110 track lights with efficient LED gallery fittings. These actions will enhance illumination quality, reduce heat load, and support significant long-term energy savings.

All measures are short-term opportunities (by 2030) and will require confirmation of dimmable and mounting requirements, as well as coordination with suppliers (e.g. ERCO) to confirm technical compatibility and costings.

Table 33: Business case for LED lighting upgrade for Library & Art Gallery

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Library: 72 twin 28W T5 fittings (recessed, mostly back-of-house) and 55 single T5 28W pelmet uplights (assumed, only a few sighted from Gallery level) are installed. Annual energy use estimated to be 21 MWh.	Replace 72 recessed twin T5 fittings with LED panels and 55 pelmet T5 uplights with LED tubes (or LED strips if required).	Confirm whether pelmet lights are T5 type and verify availability of suitable LED tube replacements, or identify an alternate solution such as LED strip lighting.	$17,740	10,042 kWh	$3,566	5.0 years
Gallery: 47 recessed and 20 suspended twin 28W T5 fittings are installed, all in back of house and studio rooms at the front of the upper level.	Replace all 67 non-LED fittings in the gallery's back-of-house and studio areas with LED panels or suitable LED alternatives to reduce energy use, with bespoke solutions as needed for suspended studio fittings.	Confirm whether pelmet lights are T5 type and verify availability of suitable LED tube replacements or identify an alternate solution such as LED strip lighting.	$11,990	6,062 kWh	$2,129	5.6 years
33 of 120W halogen lights are installed in the main Gallery, and are estimated to consume nearly 14 MWh of energy annualy.	Replace the 33 halogen lights in the main gallery with LED downlights to significantly reduce annual energy use, confirming dimmable compatibility as needed.	Gallery staff must confirm dimming and control requirements and assess whether replacing halogen lighting would affect curatorial outcomes (e.g., colour rendering and presentation quality). The existing halogen system may be an intentional design choice for artwork display, so any LED	$6,600	11,204 kWh	$2,953	2.2 years

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
		replacement should be trialled/validated (including CRI/CCT and beam characteristics) to ensure exhibition standards are maintained before proceeding.				
Gallery track lights range in wattage (average 30W taken from inspection of a couple of lights). LED track lights are available, with a single supplier in Australia (ERCO). In addition to 55 installed track lights, others are stored and swapped in or out to suit art installation requirements. total 110 new LEDs to be quoted for replacement.	Replace all 110 gallery track lights with LED fittings to improve energy efficiency and lighting quality, pending cost and specification confirmation with the supplier.	Gallery to liaise with ERCO to assess cost implications and wattage differences between existing track lights and proposed LED upgrades.	$102,948	3,465 kWh	$2,747	37.5 years

2.6.4 HVAC system upgrade

A detailed HVAC upgrade proposal for the Tamworth Library and Art Gallery has been developed by DSA Consulting (May 2025). The DSA report notes that the HVAC plant is already at (or beyond) its economic life and is operating on R22 refrigerant, which DSA flags as a “phased out” gas. While the units were observed to be generally operational, DSA also recorded active faults (e.g., a compressor fault) and control-system obsolescence (legacy Genesis controllers no longer supported), which increases the risk of unplanned outages and reduced controllability. In critical collection and gallery spaces, DSA specifically observed that humidity control is not being maintained when components trip (with flow-on impacts to temperature/RH stability), highlighting an operational risk if the system continues to degrade. DSA further notes that ageing HVAC plant experiences material efficiency deterioration over life (up to ~30% for air-cooled systems), increasing energy use to maintain conditions.

DSA's recommended scope (Option 2 in the DSA report) involves replacing most existing air-cooled units with new APAC systems, while upgrading the Gallery, Collection, Foyer, and Store areas to a high-efficiency chilled/hot-water system using a 4-pipe chiller. This configuration enables simultaneous heating and cooling and eliminates electric duct heaters. The proposal also includes adding outside-air economy cycles in key spaces and updating the building management system (BMS) for improved control and monitoring.

Based on energy modelling by 100% Renewables, the proposed system is expected to reduce HVAC electricity use by approximately 219,000 kWh per year, equivalent to 49% savings against current consumption. Estimated savings are derived from efficiency improvements across replacement types—45% for like-for-like units, 56% for chilled-water systems, and 65% for electric-to-reverse-cycle heating conversions—summarised in the tables below.

TABLE 34: HVAC SYSTEM CONSUMPTION AT LIBRARY & ART GALLERY

System group	Annual energy use	Energy savings	Included Equipment
Like-for-like units	~183,139 kWh	82,413 kWh	AC 1.1, AC 1.2, AC 1.3, AC 2.1, AC 2.2, AC 2.3, AC 2.5, AC 1.2 (Gallery centre), AC 1.3 (Gallery centre)
Chiller-based units	~117,657 kWh	65,888 kWh	AC 2.4, AC 2.6, AC 2.7, AC 2.8 (Gallery Foyer, Gallery 1 & 2, Collection, Conservation/Store/Prep)
EDH heating units	~109,448 kWh	71,141 kWh	AC 2.7 EDH, AC 2.6 EDHs (2.6.1A, 2.6.1B, 2.6.2), EDH VAVs 1.3.1–1.3.4
Already upgraded / misc	~36,786 kWh	0 kWh	AC 1.4 (Comms), humidifiers, exhaust fans
Total	**447,030 kWh**	**219,442 kWh**	

TABLE 35: HVAC SYSTEM UPGRADE SAVINGS RATES AT LIBRARY & ART GALLERY

Upgrade Type	Savings rate*	Comments
Like-for-like replacement (RC APAC)	45%	Applies to most older APAC units
Chiller-based systems (vs. RC systems)	56%	Applies to Gallery, Collection, Store, Foyer
Electric duct heaters (EDH → RC heating)	65%	Applies to EDHs connected to AC2.6 and AC2.7
Outside air economy cycle	~4.8%**	Small building-wide improvement
BMS improvements	Excluded	Minor, not factored in headline

The DSA report provides the project cost estimate of ~$1.39 million. The upgrade will deliver improved reliability, tighter temperature and humidity control for collection areas, and long-term reductions in maintenance and reactive repair costs.

TABLE 36: BUSINESS CASE FOR HVAC SYSTEM UPGRADE FOR LIBRARY & ART GALLERY

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Library: APAC systems 1.1 to 1.4 have an estimated 180kWr of capacity (some labels are unreadable), with a mix of reverse cycle and cooling-only units with separate electric duct heating. Library systems operate during scheduled library opening hours. All APAC systems were installed in 2004 and use R22 gas which is being phased out. **Gallery:** APAC systems 2.1 to 2.8 have an estimated 280kWr of capacity (some labels are unreadable), with a mix of reverse cycle and cooling-only units with separate electric duct heating, as well as several humidifiers. Gallery systems operate 24/7 to maintain temperature and RH levels, with requirements in several areas on levels maintained so as to be able to host certain collections. All APAC systems were installed in 2004 and use R22 gas which is being phased out.	Based on DSA's 2025 recommendations, replace the ageing R22-based HVAC systems at the Library and Gallery with like-for-like high-efficiency units, and provide a chilled-water system for critical humidity-controlled spaces (gallery, collection, and store). Integrate upgrades with enhanced BMS control to improve efficiency and maintain stable temperature and humidity conditions, using CEUF grant funding to offset capital costs. This project is capital-intensive and is best progressed with grant funding and/or through Council's capital renewal planning, given the long simple payback when assessed purely on energy savings.	As outlined in the DSA report (May 2025), installation of the new 4-pipe chiller system will require significant space allocation for plant and pipework routing, as well as integration with the existing building structure. Access constraints and the need to maintain environmental control for Gallery spaces during works may also impact installation sequencing and cost.	$1,388,253	219,442 kWh	$46,083	30.1 years

Given the scale of CAPEX and long payback, implementation would typically require grant support (e.g. CEUF) and/or be programmed into Council's capital renewal plan as the HVAC approaches end of life.

Note that the DSA report also identifies a staged (interim) pathway for the Tamworth Library and Art Gallery HVAC upgrade to support continued operation ahead of a full replacement. DSA advises the works could be delivered over multiple years, with Stage 1 prioritising the most critical humidity-controlled areas (Gallery, Collection and Store) and upgrade of the Building Management and Control System (BMCS), which DSA describes as obsolete and at higher risk of failure than some plant components. Later stages would then address the remaining Level 1 and Ground Floor systems as funding and scheduling allow. DSA also notes there is a risk in relying on the ageing R22-based plant during a multi-year rollout, and that staging can increase overall project cost due to escalating labour and equipment rates.

TABLE 37:STAGED HVAC UPGRADE PATHWAY – LIBRARY & ART GALLERY (DSA OPTION 2)

Stage	Indicative timing	Scope	Indicative cost
Stage 1	2025/26	Upgrade Gallery, Collection and Store + upgrade BMCS	$832,900
Stage 2	2026/27	Upgrade remainder of Level 1	$55,300
Stage 3	2027/28	Upgrade remainder of Ground Floor	$502,000
		Total (staged)	**$1,390,200**

**DSA notes that spreading works over ~3 years may increase total cost (order of ~20%) due to labour and equipment escalation.*

It is recommended to keep stage 1 and 2 in the 2026/2027 FY, where it isn't possible to schedule stage 1 for the 2025/2026 FY.

3 Australian Equine and Livestock Events Centre (AELEC)

3.1 Site description

The Australian Equine and Livestock Events Centre (AELEC) in Tamworth, New South Wales, is a purpose-built facility catering to a range of equine and livestock events. Key features of AELEC include:

- Main indoor arena: seating for 3,360 spectators.
- Sales arena: circular indoor arena linked to the main arena, with seating for 660, used for sales and warm-up.
- Outdoor arenas include the Ebb & Flow arena and a warm-up arena, both all-weather surfaces, and the Campdraft arena.
- Stabling: six blocks housing 478 permanent stables, with wash bays and amenities, with two warmup arenas to the north of the stables on either side of the venue.
- Education building includes a lecture theatre and facilities for animal demonstrations.
- Camping facilities: 187 powered campsites adjacent to stables, with unpowered sites also available.

The AELEC centre hosts over 50 events annually, including dressage, showjumping, rodeos, dog agility trials, and livestock shows.

3.2 Electricity

Based on the provided electricity billing for NMIs 4001200848 and 4001202062, covering the period from February 2024 to January 2025, the grid electricity usage at AELEC amounted to 645 MWh. The consumption for NMI 4001200848 has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 38: ANNUAL ELECTRICITY USE AT AELEC (NMI 4001200848)

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	2,482 kWh	7,875 kWh	16,332 kWh	26,689 kWh
Aug-24	6,306 kWh	19,691 kWh	32,911 kWh	58,908 kWh
Sep-24	6,943 kWh	22,075 kWh	36,526 kWh	65,543 kWh
Oct-24	12,541 kWh	3,777 kWh	19,974 kWh	36,292 kWh
Nov-24	3,684 kWh	11,243 kWh	21,858 kWh	36,785 kWh
Dec-24	1,807 kWh	6,882 kWh	11,820 kWh	20,509 kWh
Jan-25	6,642 kWh	21,430 kWh	24,864 kWh	52,936 kWh
Feb-24	8,192 kWh	29,392 kWh	43,370 kWh	80,955 kWh
Mar-24	2,587 kWh	9,101 kWh	19,235 kWh	30,923 kWh
Apr-24	19,410 kWh	5,959 kWh	30,896 kWh	56,265 kWh

Month	Peak	Shoulder	Off-peak	Total usage
May-24	9,420 kWh	31,184 kWh	38,091 kWh	78,694 kWh
Jun-24	6,469 kWh	26,445 kWh	46,435 kWh	79,349 kWh
Total	**86,483 kWh**	**195,054 kWh**	**342,312 kWh**	**623,849 kWh**

This consumption data is graphed to highlight that off-peak electricity consumption is the dominant time-of-use period.

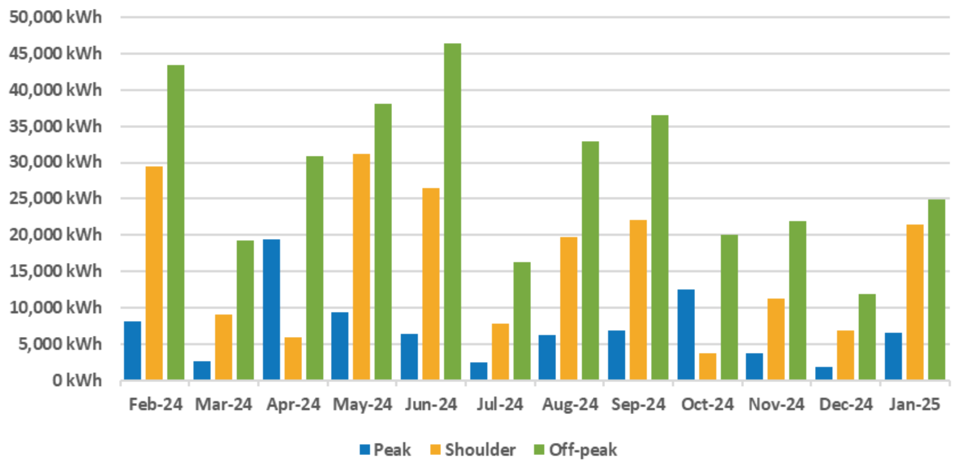


FIGURE 5: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT AELEC (NMI 4001200848)

The consumption for NMI 4001202062 has not been categorised based on the time of use; it is currently under the anytime tariff and billed quarterly. Monthly consumption is normalised based on daily average and number of days in each month.

TABLE 39: ANNUAL ELECTRICITY USE AT AELEC (NMI 4001202062)

Month	Total usage
Jul-24	1,808 kWh
Aug-24	1,808 kWh
Sep-24	1,750 kWh
Oct-24	1,809 kWh
Nov-24	1,750 kWh
Dec-24	1,809 kWh
Jan-25	1,809 kWh
Feb-24	1,692 kWh
Mar-24	1,809 kWh
Apr-24	1,750 kWh
May-24	1,808 kWh
Jun-24	1,750 kWh
Total	**21,352 kWh**

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 40: ANNUAL ELECTRICITY USE AND COSTS AT AELEC

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
AELEC	4001200848	623,849 kWh	$164,687	0.27 $/kWh	BLND3AO
AELEC	4001202062	21,352 kWh	$5,499	0.26 $/kWh	BLNT2AU

3.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for AELEC. Below are the hourly load profiles for AELEC on representative summer and winter months. From these profiles, key insights can be drawn.

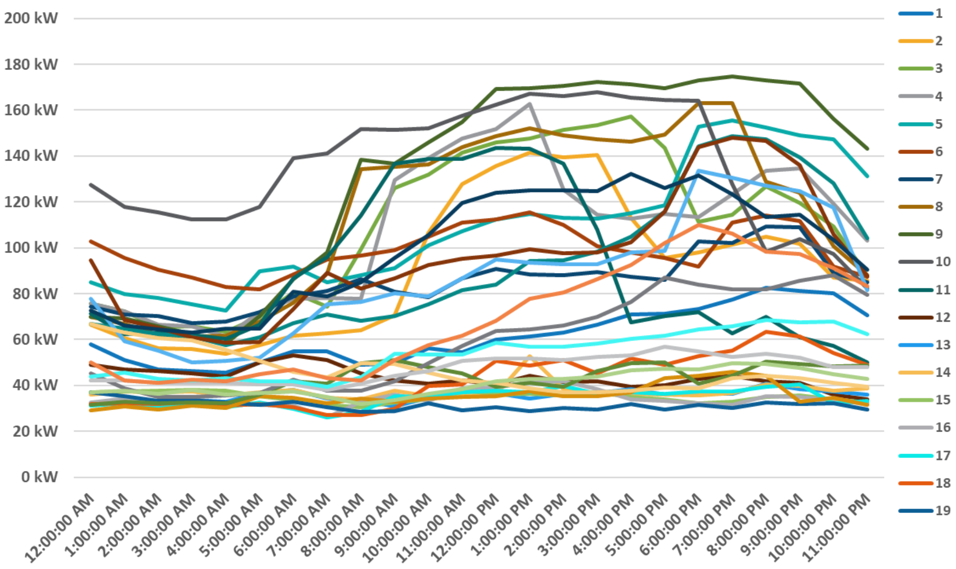


FIGURE 6: INTERVAL DATA AT AELEC FOR SUMMER (DEC-FEB)

- Load at AELEC is a function of the type, scale and duration of events at the venue.
- Days with no or low level activity are characterised by all-day demand in the range 30-50kW, and will be for carpark lighting, other venue lighting like bollards, exit lights, etc, as well as appliances, potentially coolrooms and ICT demand. During the daytime the small number of split AC units may run based on office use.
- When the venue is in use for events, the major loads are lighting and visitor camping demand for powered sites. Main Arena events may see lighting for the full arena including broadcast lighting in operation, with lights for Ebb & Flow, Campdraft and stables areas also used as required.

Catering energy demand may also be high during events, with coolrooms stocked and in use for the duration of events.

- When events are run, higher overnight demand is likely due to load from powered camping sites.

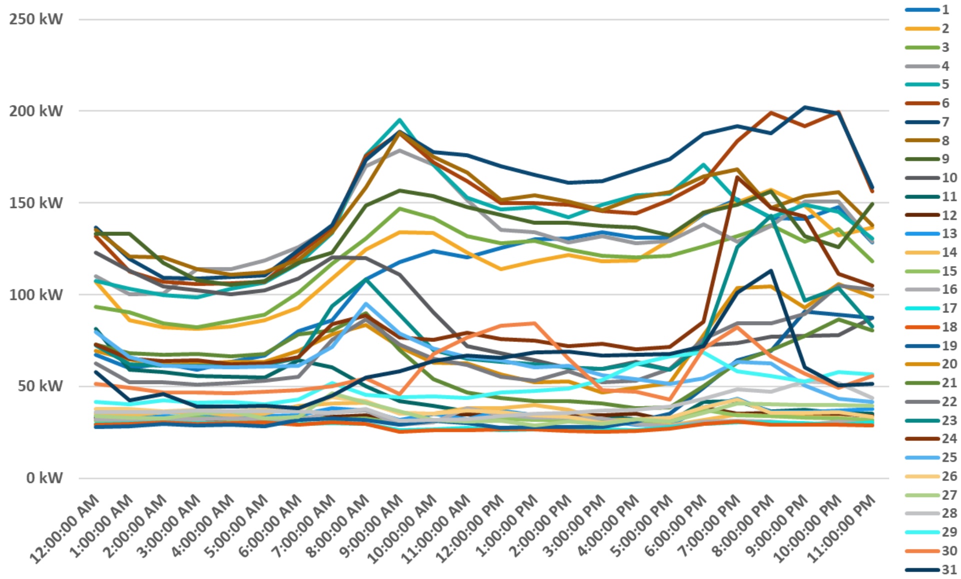


FIGURE 7: INTERVAL DATA AT AELEC FOR WINTER (JUN-AUG)

- During the winter months, energy profiles are little changed from summer time, with key differences in energy use across periods impacted only by the number and duration of events held.

3.3 Equipment audit

An on-site audit was conducted in March 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table and figure below summarise the primary electricity consumers observed on site.

TABLE 41: ENERGY END USE BREAKUP AT AELEC

Category	Annual consumption	%
Lighting	387,910 kWh	60%
HVAC	31,920 kWh	5%
Power and appliances	209,100 kWh	32%
Electric vehicles	16,000 kWh	2%
Total	**644,930 kWh**	**100%**

The total energy use estimated from the audit is almost exactly the recorded grid energy consumption for the site, covering both NMIs. Within the above breakdown, there are a number of energy end use systems that are noted.

3.3.1 Lighting

- There are an estimated 134 x 1000W broadcast lights in the main arena. Estimated to run 1300 hours a year, these will consume over 190 MWh a year and are the largest single energy using equipment on the site.
- The vast majority of lighting (over 820 lights) has already been upgraded to LED technology, covering main arena, warmup arena and Campdraft Arena floodlights, spectator seating suspended and recessed LEDs, downlights, panels in offices, exit signage, and others. Estimated annual energy use by LED lighting is 117 MWh and will represent a significant energy saving compared with pre-LED lighting at the AELEC.
- Aside from the broadcast lighting, the balance of non-LED lights is mainly due to the HID floodlights serving the Ebb & Flow arena and its adjacent warm up area. 60 lamps are installed, estimated to be 2kW each, with relatively low assumed run hours.

3.3.2 Heating, ventilation and air conditioning (HVAC)

HVAC systems at AELEC have minimal influence on energy use. Systems observed include:

- A small number of split AC units serving offices & kiosks around the perimeter of the main arena,
- Big fans in the main arena,
- Ceiling fans and wall mounted heating in the Education centre

In total AC services are estimated to account for less than 5% of the site’s energy use.

3.3.3 Power and appliances

Most power use is expected to come from visitors plugged in to powered sites in the main carpark, with around 250 x 15 amp power outlets available for free use by attending visitors. Other sizeable sources of power consumption will be for catering during events, including coolrooms, vending machines and kiosk appliances.

3.3.4 Electric vehicles

A handful of 'golf carts' are used at the facility, some electric and others petrol driven. A token estimate of power used by plug-in carts is made.

3.4 Potential energy and cost-saving opportunities

3.4.1 Solar PV and battery storage

AELEC currently has no solar PV installed, although several roof areas—particularly the Cattle Holding Area and warm-up arenas—are well suited for installation. Previous proposals have not progressed due to stakeholder concerns about the visual and structural impacts of rooftop solar.

Two opportunities were assessed: a 50-kW solar-only system and a larger 134 kW solar PV array with a 120-kWh battery to enhance energy resilience and self-sufficiency. Both would offset significant daytime energy use and reduce reliance on grid electricity.

As summarised in the attached table, the recommended action is to install a 134-kW solar PV system with 120-kWh battery storage on suitable AELEC rooftops—preferably the Cattle Holding Area—subject to resolving stakeholder concerns regarding aesthetics and structural capacity.

FIGURE 8: AELEC – 50 KW SOLAR ON CATTLE HOLDING AREA

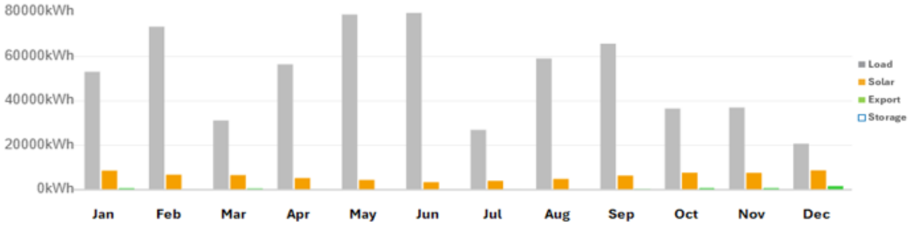


FIGURE 9: AELEC – 50 KW SYSTEM PROJECTED MONTHLY SOLAR GENERATION

FIGURE 10: AELEC – 134-KW SOLAR ON CATTLE HOLDING AREA W/ 120 KWH BESS

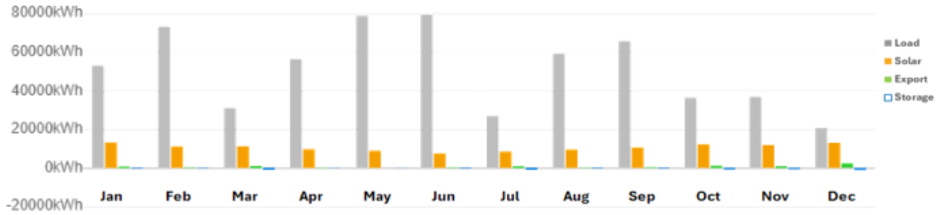


FIGURE 11: AELEC – 134 KW + 120 KWH BESS SYSTEM PROJECTED MONTHLY SOLAR GENERATION

TABLE 42: BUSINESS CASE FOR A 50-KW SOLAR AND 134KW SOLAR + 120KWH BESS ON CATTLE HOLDING AREA FOR AELEC

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
There is no solar PV at AELEC	**Solar PV only (Option 1):** Install a 50-kW solar PV system on suitable AELEC rooftops of the Cattle Holding Area to offset up to 26% of daytime electricity use while addressing stakeholder concerns around visual and structural impacts.	Stakeholder concerns about installing solar on the roof of the facility, esp on the Main Arena and the adjacent stables and warm up arenas.	$65,000	68,411 kWh	$18,059	3.7 years
There is no solar PV at AELEC	**Solar PV and BESS (Option 2):** Install a 134-kW solar PV system with a 120-kWh battery on the roof of the Cattle Holding Area to offset up to 60% daytime energy use and improve resilience, subject to addressing stakeholder concerns about rooftop solar on AELEC structures.	Stakeholder concerns about installing solar on the roof of the facility, esp on the Main Arena and the adjacent stables and warm up arenas.	$322,400	156,242 kWh	$41,246	7.7 years

3.4.2 LED lighting upgrade

The main lighting systems still to be upgraded to LED technology at AELEC are the main arena broadcast lights and the Ebb & Flow / warm-up arena floodlights. Together, these systems consume an estimated 271 MWh annually, representing roughly 42% of AELEC's total electricity use.

For the **main arena**, a detailed LED lighting design was completed in September 2024 (see figure below), replicating existing light levels and aiming to improve energy performance and lighting quality. The design proposes 74 LED floodlights and drivers to replace 134 existing 1 kW HID broadcast fittings. The new system will enable dimmable operation with event presets, providing significant energy and maintenance savings while improving comfort and visual performance.

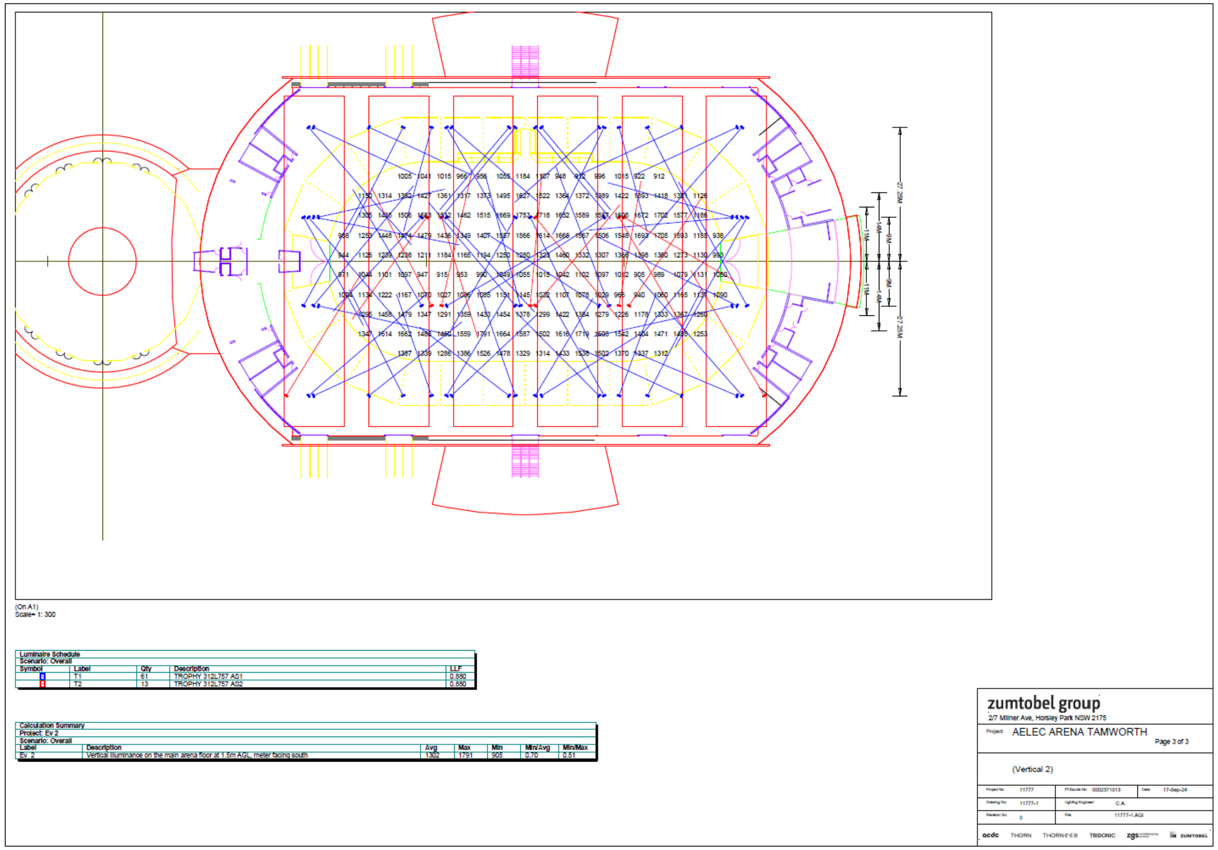


FIGURE 12: AELEC – INITIAL LED DESIGN FOR MAIN ARENA (SEPT-2024)

For the **Ebb & Flow and warm-up arenas**, 60 existing 2 kW HID floodlights are to be replaced with high-efficiency LED units on a one-for-one basis. A structural assessment may be required to confirm tower suitability for the new fittings.

As summarised in the attached table, these upgrades will deliver major reductions in electricity consumption and maintenance effort, while improving lighting quality and operational flexibility across AELEC.

TABLE 43: BUSINESS CASE FOR LED LIGHTING UPGRADE FOR AELEC

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
134 of 1kW HID Broadcast lights are installed in the main arena, and are run for events. They are estimated to be the largest draw on power at the AELEC.	Replace HID broadcast lights with a dimmable LED system with event presets to cut energy use and internal heat gain while improving lighting quality; engage Coombes Electrical to update design, supply/ installation pricing and maintenance savings based on current costs, and have TRC confirm non-energy benefits and their estimated value.	NA - has been designed and costed previously.	$380,000	90,552 kWh	$44,756	8.5 years
60 of 2kW HID floodlights are mounted on light towers for the Ebb & Flow arena and the adjacent warmup arena, and are run for showjumping and dressage events.	TRC and/or Coombes to confirm if a structural assessment is required, and to provide estimates to supply and install suitable LED replacement lights.	Structural assessment may be needed to confirm if LED systems weight can be accommodated by the existing towers.	$300,000	36,000 kWh	$13,813	21.7 years

3.4.3 Ride-on mower electrification

AELEC currently operates diesel ride-on mowers for daily grounds maintenance, with no electric equivalents in use. Introducing electric equipment offers an opportunity to reduce fuel use, emissions, and noise while supporting Council's broader transition toward electric fleet operations.

The agreed action is to purchase one electric ride-on mower to complement existing diesel units and assess operational performance under site conditions. This will serve as a practical trial to evaluate charging requirements, runtime adequacy, and maintenance savings.

The recommendation is based on a Mean Green Rival Zero electric mower (approximately $45,000 landed cost). Under full utilisation (~7 hours per day, 250 days per year), the mower delivers estimated savings of $10,700 per year and a 4-year payback. With lighter use (~4 hours per day, 150 days per year), payback extends to ~12 years with net savings of about $3,600 per year, but remains reasonable when factoring in the avoided purchase cost of a standard diesel mower ($12,000–$15,000), which further improves the effective payback in both cases.

TABLE 44: BUSINESS CASE FOR ELECTRIC RIDE-ON MOWER FOR AELEC

Current situation	Recommended action	Barriers	Capital cost	Diesel savings	Annual cost savings	Payback years
Electric carts are used on site for personal transport, but there are no electric mowers or other large plant	Purchase one electric ride-on mower to complement diesel equipment, reducing fuel use and trialling suitability for broader electric fleet transition.	Fitness for purpose in terms of charge duration and duty required will need to be assessed. Buying Evs is ineligible under CEUF grant conditions, though EV charging infrastructure is eligible.	$45,000	2.27 kL	$3,677	12.2 years

3.4.4 EV charging infrastructure

There is currently no electric vehicle (EV) charging infrastructure at AELEC. As several Council staff based at the site have leaseback vehicles, AELEC presents a suitable pilot location for small-scale EV charging to support Council's transition toward electric fleet adoption.

The modelled business case for two 11-kW chargers indicates a capital cost of approximately $12,000 and annual net savings of around $6,000, based on avoided diesel fuel costs offset by additional electricity use. The chargers are expected to deliver energy equivalent ~44,000 km of annual driving range.

At this utilisation level, transitioning two leaseback vehicles to EVs offers a strong financial case—current market trends show that the five-year total cost of ownership (TCO) for an EV passenger vehicle (~15,000 km/year) is already lower than an internal combustion engine (ICE) vehicle and comparable to a plug-in hybrid (PHEV). For SUVs, where annual driving distance is close to ~30,000 km/year, the outcome is similar.

Hence, the business case for installing the EV charging stations is strengthened, as they will be fully justified if Council proceeds with the purchase of two EVs (one passenger vehicle and one SUV). At the combined annual utilisation of approximately 44–45,000 km, these EVs would have a lower total cost of ownership (TCO) than equivalent new internal combustion engine (ICE) vehicles. Moreover, the operational savings enabled by the EV chargers would help offset the higher upfront capital cost of the EVs, further improving the overall financial viability of the transition.

To enable uptake, Council policy and fleet settings will also need to support (and ideally incentivise) leaseback selection of fully electric vehicles, so the chargers can be effectively utilised.

Table 45: Business case for EV chargers for AELEC

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
There is no EV charging at the site. Council is to assess suitable sites for charging of Council vehicles. A few leaseback vehicles are owned by Council staff at the site.	Install two 11 kW electric vehicle (EV) chargers at AELEC to support Council staff leaseback vehicles and develop internal capability ahead of any broader EV charging rollout. While no charging infrastructure currently exists on site, AELEC hosts several Council staff with leaseback vehicles, making it a suitable pilot location.	Whether AELEC is a high priority site for Council to install EV charging, and whether Council leaseback policy supports (and incentivises) uptake of fully electric vehicles to ensure charger utilisation.	$12,000	630,779 kWh	$6,139	2.0 years

3.4.5 Base energy demand management

Analysis of AELEC's energy data indicates a consistent overnight base load of around 30 kW, even during non-event periods when minimal activity occurs. This represents over 40% of total daily energy use, suggesting that a portion of this demand is attributable to systems operating unnecessarily after hours.

The recommended action is to conduct a night-time energy demand assessment during a non-event period to identify and reduce unnecessary loads contributing to AELEC's high overnight baseload. Focus areas are expected to include lighting, ventilation, and auxiliary systems that may not require continuous operation.

As illustrated in the December load profile below, a 10 kW reduction in overnight demand would equate to approximately 56,300 kWh per year, translating to indicative annual savings of around $15,000 under current tariff rates. While no formal business case is developed for this opportunity, these findings highlight the value of improved system scheduling and controls to reduce wasted energy and costs.

It is also noted that event operation for sites like AELEC (as well as TRECC and Town Hall) inherently drives higher energy use; where efficiency improvements are limited, Council should consider whether event pricing appropriately recovers electricity costs associated with hosting major events.

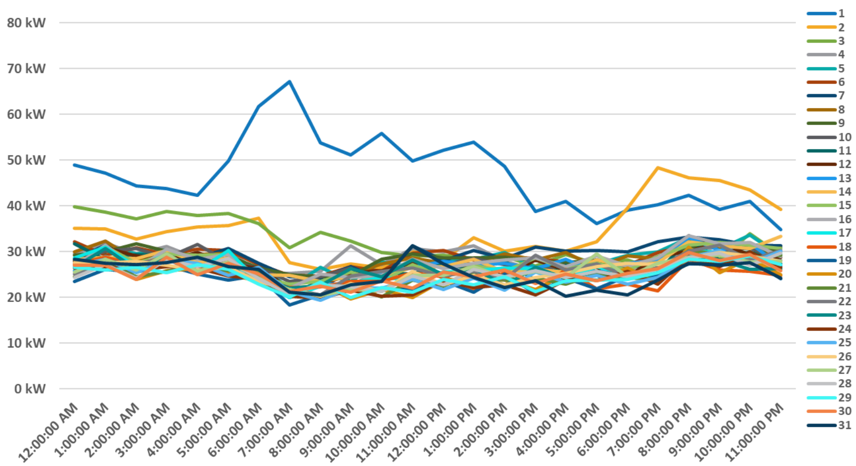


FIGURE 13: AELEC – DECEMBER 2024 LOAD PROFILE

TABLE 46: BUSINESS CASE FOR BASE ENERGY DEMAND MANAGEMENT FOR AELEC

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
AELEC maintains an average base electrical demand of around 30 kW throughout the year, even during periods of little to no site activity. This represents over 40% of total daily energy use on a 24/7 basis, and more than 20% of consumption when considering night-time baseload only.	Conduct a night-time energy demand assessment during a non-event period to identify unnecessary loads and implement shutdown/scheduling changes to reduce the overnight baseload by approximately 10 kW.	Requires scheduling the assessment during a non-event period and consulting staff to agree shutdown procedures, including engagement with cleaning contractors to ensure consistent implementation.	$5,000	56,280 kWh	$14,857	0.3 years

4 Tamworth Regional Entertainment and Conference Centre (TRECC)

4.1 Site description

The Tamworth Regional Entertainment and Conference Centre (TRECC) is a multi-purpose venue, that opened in January 1999. It hosts a range of events including concerts, conferences, exhibitions, and community events, and serves as a central venue for entertainment and conferences in the Tamworth region. The venue includes:

- Capacity for close to 5,000 people for concerts, with smaller capacities for different event types.
- Facilities include break-out rooms, meeting areas, green rooms, and flexible stage configurations.
- TRECC is well equipped with audio-visual technology suitable for various events.
- The venue offers catering and bar areas for events.
- There is parking for over 1,000 cars around the venue.

4.2 Electricity

Based on the provided electricity billing for NMI NFFFNRKS99, covering the period from February 2024 to January 2025, the grid electricity usage at TRECC amounted to 936 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 47: ANNUAL ELECTRICITY USE AT TRECC

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	12,701 kWh	58,665 kWh	61,357 kWh	132,723 kWh
Aug-24	5,432 kWh	28,545 kWh	27,672 kWh	61,649 kWh
Sep-24	4,150 kWh	16,492 kWh	15,682 kWh	36,324 kWh
Oct-24	2,147 kWh	14,182 kWh	13,598 kWh	29,927 kWh
Nov-24	8,346 kWh	36,936 kWh	37,861 kWh	83,143 kWh
Dec-24	8,482 kWh	35,310 kWh	31,162 kWh	74,953 kWh
Jan-25	14,141 kWh	60,346 kWh	72,399 kWh	146,885 kWh
Feb-24	10,614 kWh	50,518 kWh	61,207 kWh	122,339 kWh
Mar-24	6,716 kWh	33,338 kWh	24,358 kWh	64,412 kWh
Apr-24	699 kWh	6,556 kWh	2,742 kWh	9,997 kWh
May-24	3,949 kWh	21,824 kWh	13,907 kWh	39,681 kWh
Jun-24	11,328 kWh	46,793 kWh	75,991 kWh	134,112 kWh
Total	**88,703 kWh**	**409,505 kWh**	**437,935 kWh**	**936,142 kWh**

This consumption data is graphed to highlight that off-peak electricity consumption is the dominant time-of-use period.

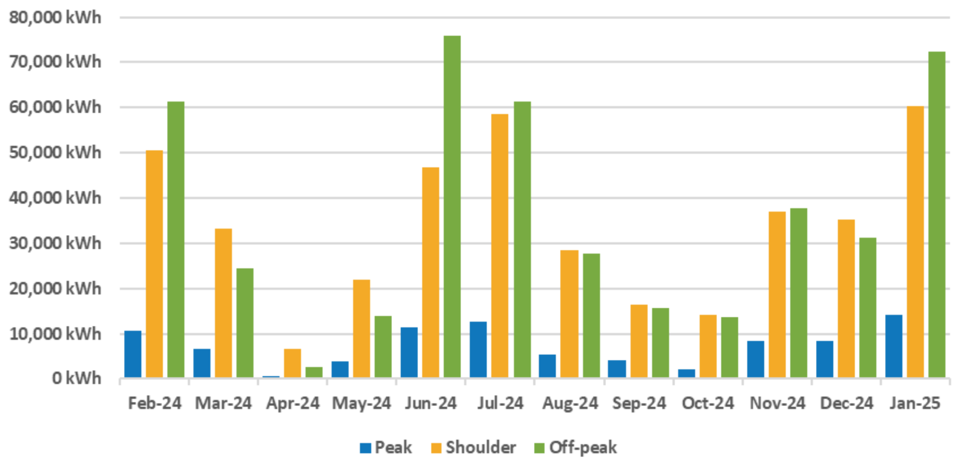


FIGURE 14: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT TRECC

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 48: ANNUAL ELECTRICITY USE AND COSTS AT THE TAMWORTH LIBRARY AND ART GALLERY

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
TRECC	NFFFNRKS99	936,142 kWh	$225,022	0.29 $/kWh	BLNDTRS

4.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for TRECC. Below are the hourly load profiles for TRECC on representative summer and winter months. From these profiles, key insights can be drawn.

The major factor determining energy demand at TRECC is the number, type and duration of events run. When large events are run, we see 24/7 energy demand in excess of 200kW and up to 400kW. During 2024 this occurred on an estimated 110 days, a little under one in three days.

Conversely there are many days when energy demand is low, on average less than 20kW across a 24-hour period. This indicates nil or very low level activity, strong likelihood that HVAC systems are not operating, and arena and/or front of house lights may only be running during the daytime. There were more than 150 such days across 2024.

Then there are around 100 days when energy demand is in the range 50-100kW on average across a typical 24-hour period. This will reflect a number of different types of day, including small events, short duration but high energy demand events, and days when systems are being set up for major events.

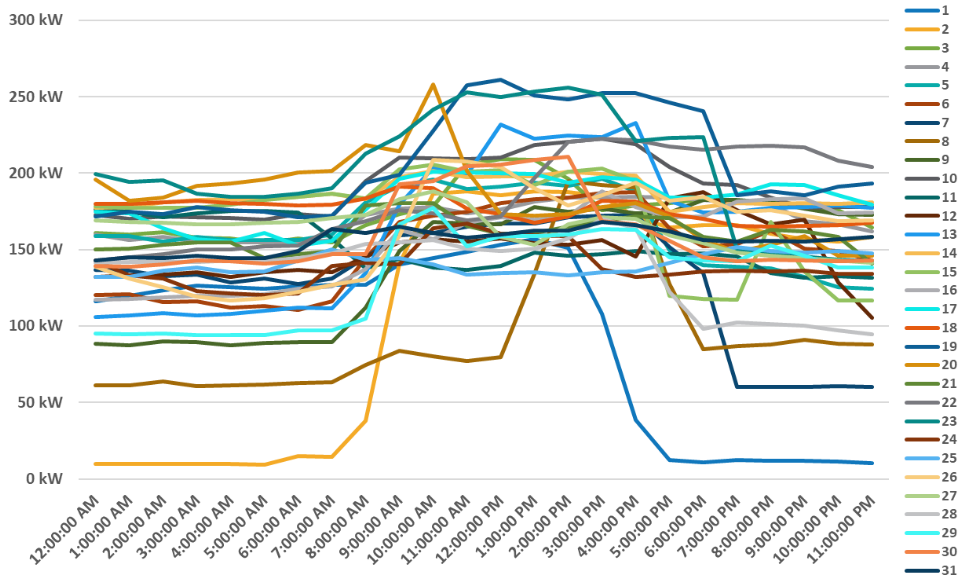


FIGURE 15: INTERVAL DATA AT TRECC FOR SUMMER (DEC-FEB)

- Energy demand levels are a function of what events are being held at TRECC, and the event duration.
- When multi-day events are run it is evident that major air conditioning systems are left to run 24/7, the main reasoning being that it takes several hours to cool (or heat) the venue to the desired temperature.
- When no events are on the nighttime base demand can be very low, down to ~10kW, likely supplying exit lighting, external lights and ICT systems and appliances in the venue.
- A rise in daytime demand can be due to operation of systems like main hall lighting, AV systems and air conditioning systems for the front foyer & Star Room areas or the Green Room at the rear of the venue.

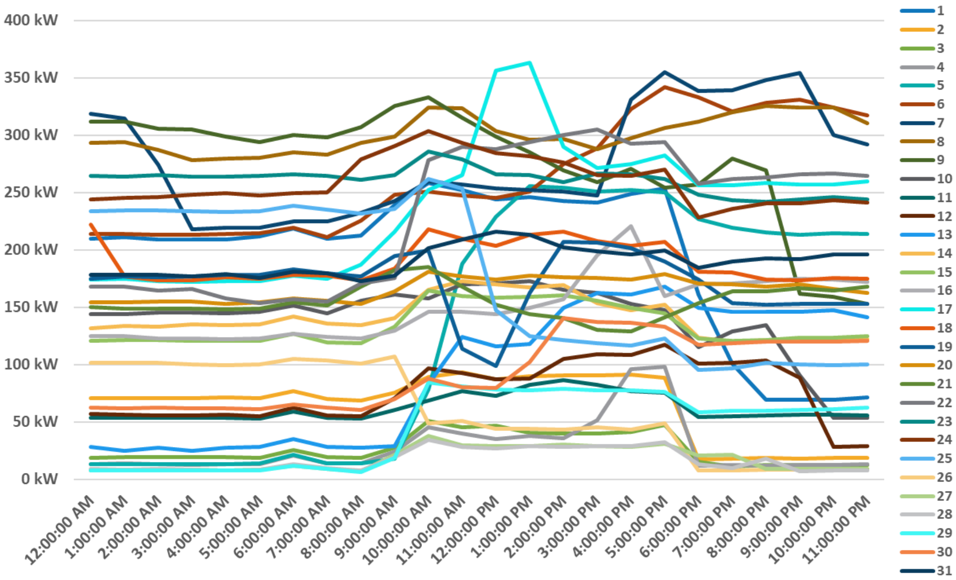


FIGURE 16: INTERVAL DATA AT TRECC FOR WINTER (JUN-AUG)

- For the winter month shown we continue to see the large influence of HVAC systems that run 24/7 during times when events are on at TRECC.
- Maximum demands tend to occur in winter, which will be due to the fact that electric duct heaters (EDH) supply the venue's heating requirements, though the total consumption per month is a function of how many events are run.

4.2.2 Current solar PV installed (20-kW system)

The 20-kW solar PV system at TRECC generated 26,720 kWh of renewable electricity during the 2024 calendar year, demonstrating a 99% self-consumption rate—meaning almost all energy produced was used on site, with just 379 kWh exported to the grid.

Monthly solar generation data followed expected seasonal trends, with peak output occurring during summer months and the lowest production in winter. These fluctuations align with normal variations in solar irradiance and are typical for solar PV systems.

From a financial perspective, the 99% self-consumption model delivers significant value as almost every kilowatt-hour generated displaces grid electricity at retail rates, maximising cost savings. This annually offsets around $7,639 based on 0.29 $/kWh average rate of the site.

The system's yield equates to 1,336 kWh per kW of solar PV installed, which is a reasonable yield given the flat placement and minor early morning losses from shading.

TABLE 49: ANNUAL SOLAR GENERATION, ON-SITE CONSUMPTION AND EXPORT AT TRECC

Month	Generation (kWh)	On-site consumption (kWh)	Export (kWh)
Jan-24	2,843 kWh	2,764 kWh	80 kWh
Feb-24	2,409 kWh	2,399 kWh	9 kWh

Month	Generation (kWh)	On-site consumption (kWh)	Export (kWh)
Mar-24	2,527 kWh	2,452 kWh	75 kWh
Apr-24	1,892 kWh	1,865 kWh	27 kWh
May-24	1,738 kWh	1,659 kWh	78 kWh
Jun-24	1,232 kWh	1,196 kWh	36 kWh
Jul-24	1,429 kWh	1,409 kWh	20 kWh
Aug-24	1,855 kWh	1,828 kWh	26 kWh
Sep-24	2,455 kWh	2,448 kWh	7 kWh
Oct-24	2,772 kWh	2,765 kWh	7 kWh
Nov-24	2,620 kWh	2,607 kWh	12 kWh
Dec-24	2,950 kWh	2,948 kWh	1 kWh
Total	**26,720 kWh**	**26,341 kWh**	**379 kWh**

FIGURE 17: TRECC ONSITE SOLAR

4.3 Equipment audit

An on-site audit was conducted in March 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table and figure below summarise the primary electricity consumers observed on site.

TABLE 50: ENERGY END USE BREAKUP AT TRECC

Category	Annual consumption	%
Lighting	258,566 kWh	27%
HVAC	596,765 kWh	62%
Power and appliances	107,580 kWh	11%
Total	**962,911 kWh**	**100%**

The total energy use estimated from the audit is almost exactly the recorded grid energy consumption for the site, covering both solar and the grid supply. Within the above breakdown, there are a number of energy end use systems that are noted.

4.3.1 Lighting

- There are 68 x 400W metal halide lamps in the main hall and the rear of the venue, not yet upgraded to LED. These are fairly high-use lights, being the main source of lighting in the venue. They are estimated to consume nearly 135 MWh a year.
- LED lighting upgrades are not well advanced, with LEDs limited mainly to Green Room / rear areas of the facility, as well as for some stage lighting.
- Several fluorescent lighting fitting types are in use, including 120 surface mounted and recessed twin 36W fittings in front foyer/Star Room areas and along the sides of the main hall (commercial kitchen, toilets, etc), along with twin CFL downlights (foyer), single 36W fluorescent lamps (roof of main hall), and twin 18W fluoros (e.g. toilets). More than 60 MWh of power is consumed by fluorescent lights at TRECC.
- Stage lights are a mix of LED and non-LED. Despite high wattage, the number of annual operating hours will be low relative to other lighting systems.

4.3.2 Heating, ventilation and air conditioning (HVAC)

HVAC systems at TRECC have a major influence on energy use, accounting for an estimated 62% of power consumption. The main hall is conditioned via decentralised water-cooled packaged systems with seven self-contained air conditioning units on both the north and south sides, each including a DX compressor and fan coil, and heat rejected via a shared condenser water loop connected to a cooling tower. Electric duct heaters are located “high up inside” supply air ductwork, discharging into the large open space of the main hall. No return air ductwork, grilles or fan components were sighted or included in asset schedules.

Two reverse cycle packaged units, three evaporative cooling systems and a relatively new Mitsubishi multi-unit split system provide conditioning to other spaces at the venue, including foyer/offices, Green Room and Star Room. The BMS is basic and the system is manually operated including for temperature setback functionality for example during major events.

In summary, air conditioning at TRECC lacks a traditional return air system, is a self-contained water-cooled system that relies on free mixing, basic zone-level control and electric reheating. The set up is for simple operation and not for energy efficiency.

TABLE 51: MAIN HVAC ENERGY-USING EQUIPMENT AT TRECC

Asset Name	Area Located	Make	Model	Area Served
Cooling Towers	Plantroom 1, 5	BAC	VXT 120	Water Cooled AC Units
Condenser Pumps - CWP 1, 2	Plantroom 1, 5	Ajax-Elite	E80 - 32	Water Cooled AC Units
Package Units & EDH - AC Unit 1, 8	Plantroom 1, 5 & ductwork	APAC cooling units, generic EDH	2 x W8510 S85 WC/BV & 2 x 2-stage EDHs	Zone 1 South West & North West
Package Unit - AC Unit 2	Plantroom 2, 3, 4, 6, 7, 8 & ductwork	APAC cooling units, generic EDH	12 x W7510 S75 WC/BV & 12 x 2-stage EDHs	Zone 1, 2 & 3 South + North
Package Unit - AC Unit 15	Above Backstage Area	APAC	PO32AHR9AA	Backstage Area
Split System - Ducted - AC Unit 16 + 1 x FCUs	Roof Plant Area Above Left Front Entrance	APAC	H1140S11HP/CHB	Office Area
Condensing Unit – VRF + 5 x FCUs	Outside North, serves Star Room	Mitsubishi Heavy Industries	FDC560KXZE1 (CU)	Star Room
Evaporative Coolers - EC 2, 3, 4 + EDH	Above Foyer	Email Air cooling, generic EDH	RV303SDAL x 2 or 3, 3 x 2-stage EDHs	Foyer
Exhaust fans	12 total for kitchen, toilets, etc	Fantech, others		All areas
Control System BMS	All Areas	EasyIO	30P	HVAC

Apart from the Star Room air conditioning system, all HVAC systems are original, dating to 1998 when the facility was built. All APAC systems use R22 refrigerant gas, which is being phased out.

4.3.3 Power and appliances

Power consumption is not estimated precisely, but by difference to the total energy usage. Power comes from plugged-in sound / AV systems which will vary from event to event, from temporary event catering demand – e.g. cool rooms, commercial kitchen use, etc, and from other general office power and appliances installed at TRECC.

4.4 Potential energy and cost-saving opportunities

4.4.1 Power factor correction

TRECC currently exhibits a relatively poor power factor, averaging just 0.9 during the monthly peak demand periods across Peak, Shoulder, and Off-peak times. To achieve the optimal power factor of 1.0, a power factor correction (PFC) unit with a capacity of **230 kVAr** is recommended.

This sizing is based on an analysis of all 36 chargeable peak demand events over the past year. For each event, the reduction in apparent power (kVA) was calculated assuming a power factor of 1.0, and the required PFC capacity was determined by rounding up the highest level of reactive power compensation needed during any of these periods.

Space constraints in the main switch room may necessitate installing the PFC unit outdoors, adjacent to the incoming transformer, or on the internal wall of the main arena behind the main switchboard. It's also worth noting that upgrades to the HID lighting and HVAC systems could independently improve the site's power factor, potentially reducing or eliminating the need for a dedicated PFC unit. Note that ongoing operation also requires periodic inspection and maintenance by a suitably qualified person to ensure the PFC equipment remains safe, reliable, and effective.

TABLE 52: BUSINESS CASE FOR POWER FACTOR CORRECTION FOR TRECC

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
No PFC is installed, and power factor at peak demand ranges from 0.86 to 0.92 at peak demand across all ToU periods.	Install a 230 kVAr power factor correction system to raise site power factor to 1.0 during peak demand periods and reduce demand charges.	Physical space in the main switchroom to site PFC is limited, and it may need to be installed outdoors beside the incoming transporner, or on the inside wall of the main arena behind the MSB. Note that upgrades to HID lighting and the HVAC system may well improve PF without the installation of PFC equipment.	$34,500	NA	$9,147	3.8 years

4.4.2 Solar PV and battery storage

TRECC currently operates a small 20 kW solar PV system located on the lower rear roof, which supplies a modest portion of on-site energy use. The venue's large roof areas present an opportunity to significantly expand solar generation and reduce grid consumption.

The proposed project involves installing an additional 77-kW of rooftop solar PV on the north-west corner of the main arena roof, keeping the total system capacity below the 100 kW Small-scale Technology Certificate (STC) threshold. The system should be sized to maximise on-site self-consumption, noting that oversizing PV beyond TRECC's usable daytime load is generally ineffective for TRC operations. A 40 kWh battery energy storage system (BESS) is also recommended, sized primarily to offset peak-period demand; it can be programmed to "flex" operation by discharging through peak events, partially recharging off-peak, and then discharging in the morning to reduce shoulder-period start-up loads (e.g. HVAC).

This expansion would increase self-generated renewable energy, reduce daytime demand from the grid, and improve TRECC's long-term energy resilience while aligning with Council's broader sustainability and emissions reduction objectives.

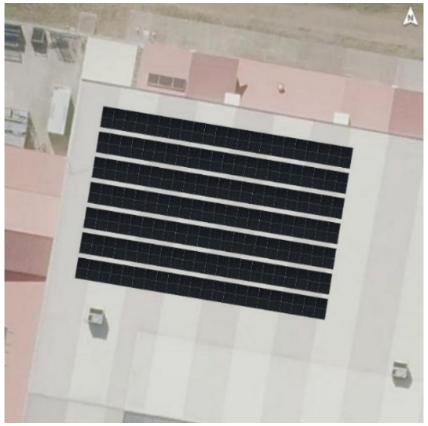


FIGURE 18: TRECC – 77 KW SOLAR ON NORTH-WEST CORNER OF THE MAIN ARENA ROOF W/ 40 KWH BESS

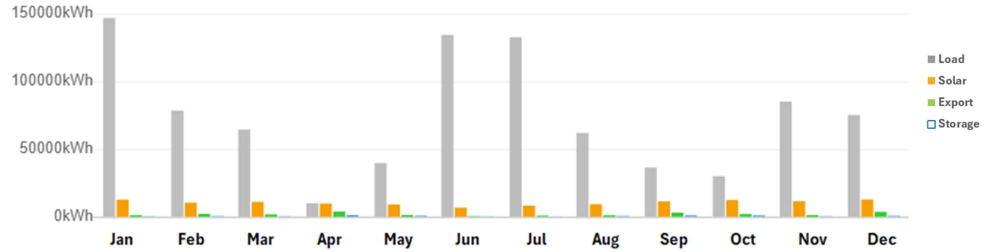


FIGURE 19: TRECC – 77 KW SOLAR SYSTEM + 40 KWH BESS PROJECTED MONTHLY SOLAR GENERATION

TABLE 53: BUSINESS CASE FOR 77 KW SOLAR + 40 KWH BESS FOR TRECC

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
A small 20kW solar array is installed on the lower rear roof of TRECC, and is almost wholly self-consumed on site.	Install an additional 77-kW of rooftop solar PV on the main arena roof at TRECC to remain under the 100 kW STC threshold, along with a 40-kWh BESS to offset up to 23% daytime energy use and improve resilience.		$136,100	102,548 kWh	$24,650	5.5 years

4.4.3 LED lighting upgrade

The main arena is illuminated by 68 metal halide (MH) lamps rated at 400W each. Load profiles have been utilised to estimate the annual operating hours of these lights, leading to an estimated annual energy consumption of 135 MWh. It is recommended to replace all high bay MH lamps with LEDs that provide equivalent light levels. For enhanced functionality, a more advanced option involves installing dimmable LEDs, which could offer additional operational benefits.

In the entrance foyer, toilets, and at ceiling height in the main arena, lighting is provided by a mix of linear and compact fluorescent lamps. These 220 lights collectively consume an estimated 61 MWh annually. A proposed upgrade involves replacing all fluorescent lights with LED alternatives. This includes using plug-in LED panels and downlights in the foyer, surface-mounted LED battens in the toilets and adjacent entry areas, and either LED tubes or surface-mounted battens in the arena ceiling.

TABLE 54: BUSINESS CASE FOR LED LIGHTING UPGRADE BUSINESS CASE FOR TRECC

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
68 of 400W metal halide lamps light the main arena, and load profiles are used to provide a good estimate of annual	Replace the 68 existing 400 W metal halide lamps in the main arena with LED high bays (dimmable preferred), achieving ~55% demand	Decision should be made if this opportunity should be in a CEUF grant application (50:50 with installation costs), or if	$30,600	73,440 kWh	$19,527	1.6 years

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
run hours, leading to estimated energy use of 135 MWh.	reduction with ~1.3-year payback, through supply-only purchase with in-house installation.	Council should purchase LEDs on a supply-only basis and use own staff and mobile hoist to install new lamps (plug-in).				
Entrance foyer area, toilets and ceiling-level lights in the main arena are linear and compact fluorescent, consuming an estimated 61 MWH annually across 220 lights.	Replace 220 fluorescent lights with LED panels, downlights, battens, and tubes (including arena ceiling fittings).	Arena ceiling lights are twin fittings with one fluoro lamp being an emergency light. A different solution may be required for these lights. Council to determine if it would purchase lamps only, supply-install while claiming ESCs for the savings, or include in the CEUF grant application.	$30,750	40,770 kWh	$14,330	2.1 years

4.4.4 Main HVAC system upgrade

A detailed HVAC upgrade proposal for the TRECC has been developed by DSA Consulting (2025). The venue is currently serviced by 14 water-cooled APAC packaged units with electric duct heaters (EDHs) connected via shared condenser water loops and cooling towers. Most units were installed in 1998, operate on R22 refrigerant, and use constant-speed fans and basic controls, driving high energy use and limited controllability. The system consumes approximately 600 MWh annually, with electric duct heating responsible for nearly half of this load, and DSA notes the plant is at (or beyond) its economic life—creating increasing reliability and serviceability risk as equipment degrades and R22 becomes harder to support.

DSA assessed five upgrade options, ranging from like-for-like system replacement to full conversion to reverse-cycle chilled/hot-water systems with expanded capacity (Options 1 through 2C). As summarised in the attached table, Option 1B—a like-for-like replacement incorporating hot water heating via an electric heat pump—represents the most economical and balanced solution, maintaining existing capacity while achieving substantial efficiency gains. Higher-spec options (2B and 2C) would improve comfort but add roughly $1 million in capital cost and deliver lower net energy savings due to increased plant size. It is noted that the existing system is undersized; however, increasing capacity to meet full comfort design conditions would require materially higher capital investment.

TABLE 55: HVAC SYSTEM CONSUMPTION AT TRECC

System group	Annual energy use	Energy savings	Savings rate	Included Equipment
BAC Cooling Tower Fans	~24,000 kWh	8,400 kWh	35%	4 × BAC tower fans (DOL), serving the water-cooled DX plant (north & south plant rooms).
Condenser Pumps	~30,800 kWh	15,400 kWh	50%	2 × Grundfos condenser-water pumps (~11 kW each), ~80% duty.
Cooling & Ventilation (DX systems)	~247,170 kWh	86,510 kWh	35%	12 × APAC R22 DX package units for main hall including AC Unit 1 N6 – APAC 85 kW (R22); also covers unit supply/return fans and ventilation load.
Heating (Electric Duct Heaters)	~270,000 kWh	180,000 kWh	67%	Integral EDHs on the DX systems, including AC Unit 1 EDH ×2 (mirrored across north/south plant rooms).
Supplementary AC (VRF / PAC / Evap.)	~24,795 kWh	0 kWh	Excl.	PAC unit (Green Room), multisplit (Annex), foyer swamp boxes (evaporative).
Total	**596,765 kWh**	**290,310 kWh**		

TABLE 56: HVAC SYSTEM UPGRADE OPTIONS AT TRECC PER DSA

HVAC upgrade option	Cost	Comment
Option 1 – Like-for-like water-cooled package units	$2,200,154	Retains existing system capacity with minimal infrastructure changes. No improvement in comfort levels or operating efficiency.
Option 1B – Like-for-like replacement with hot water heating via electric heat pump	$2,865,194	Maintains existing system capacity with minor infrastructure changes. Delivers moderate efficiency gains and lower heating energy use compared with Option 1.
Option 2 – Chilled-water/hot-water AHUs with reverse-cycle chillers	$3,302,176	Major system upgrade to chilled-water configuration with reverse-cycle chillers. Similar capacity but improved plant efficiency and maintainability.
Option 2B – As per Option 2 with increased capacity to achieve 27 °C internal design condition	$3,474,300	Increases overall system capacity with significant infrastructure changes. Provides minor comfort improvement under higher ambient conditions.

HVAC upgrade option	Cost	Comment
Option 2C – As per Option 2 with increased capacity to achieve 24 °C internal design condition	$3,844,004	Increases system capacity and efficiency to meet full design comfort conditions. Delivers major improvements in occupant comfort, system control, and energy performance.

Under Option 1B, estimated energy savings total ~290 MWh per year (49%), primarily from eliminating resistive heating and improving cooling system efficiency. While the final selection depends on Council's priorities, Option 1B has been adopted for the business case as it presents the strongest overall value proposition, balancing energy savings, capital cost, and operational performance. Note that the DSA report also identifies the need for a BMCS upgrade, addition of dampers to the relief ducts, and rectification of filter access issues at TRECC; however, these works are not explicitly costed within the DSA option estimates and should be treated as additional scope allowances to be confirmed during detailed design and procurement.

Table 57: Business case for HVAC system upgrade for Library & Art Gallery

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
HVAC systems consume almost 600 MWh annually at TRECC, by far the largest consumer of power at the site. Most of this is used by original APAC water-cooled DX, cooling-only air conditioning units with electric reheat. Cooling tower fans, condenser water pumps are DOL, and control systems are basic. APAC cooling systems use R22 gas which is being phased out. Units appear in reasonable condition but will be approaching end of life, and with R22 gas being phased out an asset replacement plan should be in place.	Based on DSA's 2025 recommendations, replace TRECC's end-of-life R22 water-cooled DX systems with a high-efficiency reverse-cycle chilled-water system comprising air-cooled chillers, variable-speed pumps, and modern AHUs integrated with a Niagara-based BMS (≈1,100 kWr total). This upgrade—aligned with DSA's recommended Option 2C—will improve comfort (achieving 24 °C design conditions), eliminate R22 refrigerant, reduce HVAC energy use by ~20–25%, and lower long-term maintenance and water-treatment costs. Given the higher CAPEX, this option would typically require grant funding and/or be scheduled through Council's capital renewal planning.	Per the DSA report (May 2025), the main barrier relates to limited plantroom space and the need to coordinate changeovers to minimise event disruption. Additionally, the existing HVAC system is undersized, so while Option 1B offers efficiency and cost benefits, it does not increase system capacity, which may limit comfort improvements under high ambient conditions.	$2,865,194	290,310 kWh	$69,782	41.1 years

Given the scale of CAPEX and long payback, implementation would typically require grant support (e.g. CEUF) and/or be programmed into Council's capital renewal plan as the HVAC approaches end of life.

Note that the DSA report also identifies a staged delivery pathway for the TRECC HVAC upgrade to allow works to be spread over multiple financial years while maintaining continued operation of the venue. DSA advises that the existing plant is likely to remain serviceable over a three-year period, enabling a progressive replacement approach if required for funding or programming reasons. Under this staged scenario, early works would prioritise upgrades to the Building Management and Control System (BMCS), back-of-house rooftop DX plant, and office split systems, followed by sequential replacement of the main arena plant on each side of the building in subsequent years. DSA cautions that staging the works would increase overall project costs (by approximately 20%) due to escalation in labour and equipment pricing, and that capacity upgrades to address current comfort limitations would only be achievable under higher-spec options. While staging remains a viable interim approach, the recommended Option 1B business case assumes delivery as a single coordinated upgrade to minimise cost escalation and operational risk.

5 Town Hall

5.1 Site description

The Tamworth War Memorial Town Hall has been a Council-owned community venue since it first opened in 1934.

- It hosts a variety of events, including concerts, conferences, career expos, antique shows, and weddings.
- The Hall can host up to 1,000 people for theatre productions, and up to 300 for round-table events in the hall.
- The venue has an arch stage, 3 dressing rooms and a seated gallery level. Rooms on the lower level such as the Passchendaele Room and upper levels are available for hire for small events / exhibitions or are leased by regular users such as the RSL and the Conservatorium of music.
- The venue is air conditioned, with a small commercial kitchen and adjacent parking.

5.2 Electricity

Based on the provided electricity billing for NMI NFFFNRKE90, covering the period from February 2024 to January 2025, the grid electricity usage at the town hall amounted to 255 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 58: ANNUAL ELECTRICITY USE AT TOWN HALL

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	3,333 kWh	15,040 kWh	15,179 kWh	33,552 kWh
Aug-24	1,425 kWh	6,684 kWh	7,621 kWh	15,730 kWh
Sep-24	527 kWh	2,750 kWh	2,366 kWh	5,644 kWh
Oct-24	515 kWh	2,917 kWh	2,730 kWh	6,161 kWh
Nov-24	3,232 kWh	13,922 kWh	16,304 kWh	33,458 kWh
Dec-24	1,853 kWh	7,347 kWh	3,575 kWh	12,776 kWh
Jan-25	5,450 kWh	21,583 kWh	31,296 kWh	58,329 kWh
Feb-24	2,562 kWh	12,110 kWh	9,866 kWh	24,538 kWh
Mar-24	1,594 kWh	6,280 kWh	7,368 kWh	15,242 kWh
Apr-24	913 kWh	3,635 kWh	2,906 kWh	7,454 kWh
May-24	870 kWh	4,109 kWh	3,327 kWh	8,306 kWh
Jun-24	2,956 kWh	13,767 kWh	17,462 kWh	34,185 kWh
Total	**25,229 kWh**	**110,145 kWh**	**120,001 kWh**	**255,375 kWh**

This consumption data is graphed to highlight that off-peak electricity consumption is the dominant time-of-use period.

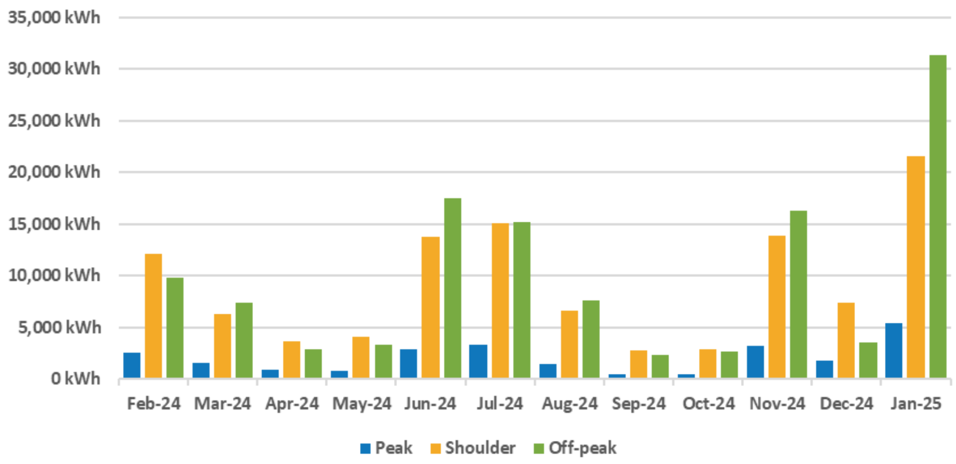


FIGURE 20: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT TOWN HALL

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 59: ANNUAL ELECTRICITY USE AND COSTS AT THE TOWN HALL

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Town Hall	NFFFNRKE90	255,375 kWh	$88,302	0.35 $/kWh	BLNDTRS

5.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Town Hall. Below are the hourly load profiles for Town Hall on representative summer and winter months. From these profiles, key insights can be drawn.

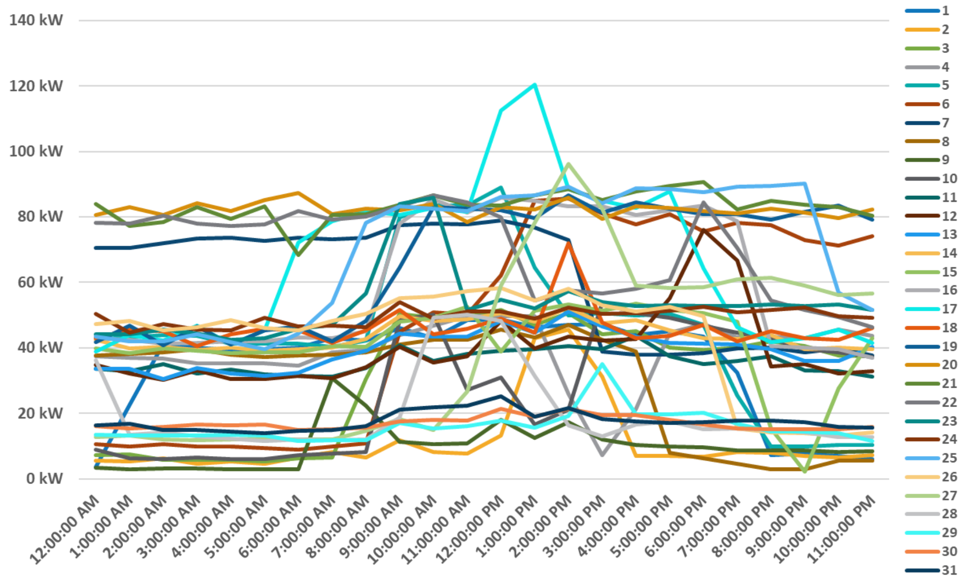


FIGURE 21: INTERVAL DATA AT TOWN HALL FOR SUMMER (DEC-FEB)

- Energy profiles at Town Hall are very similar to those at TRECC, characterised by 24/7 operation of major systems when events run.
- On more than 235 days in the 12-month period average demand across 24 hours is under 15kW, indicating that when there are no events the load is small. On these days HVAC system use will be nil for the main system, and energy demand will be limited to lighting, appliances, and potentially one or more small air conditioning systems.
- On 87 days over a 12-month period, demand over 24 hours averaged in the range 120-80kw, and are indicative of events held that may run for most of a day, or that may run during mild weather conditions when cooling and heating demand are moderate.
- On just 41 days over 12 months was demand more than 100kW across 24 hours. All these days were in mid-summer and mid-winter, and may simply emphasise the additional cooling and heating demand that comes with running events in these times.

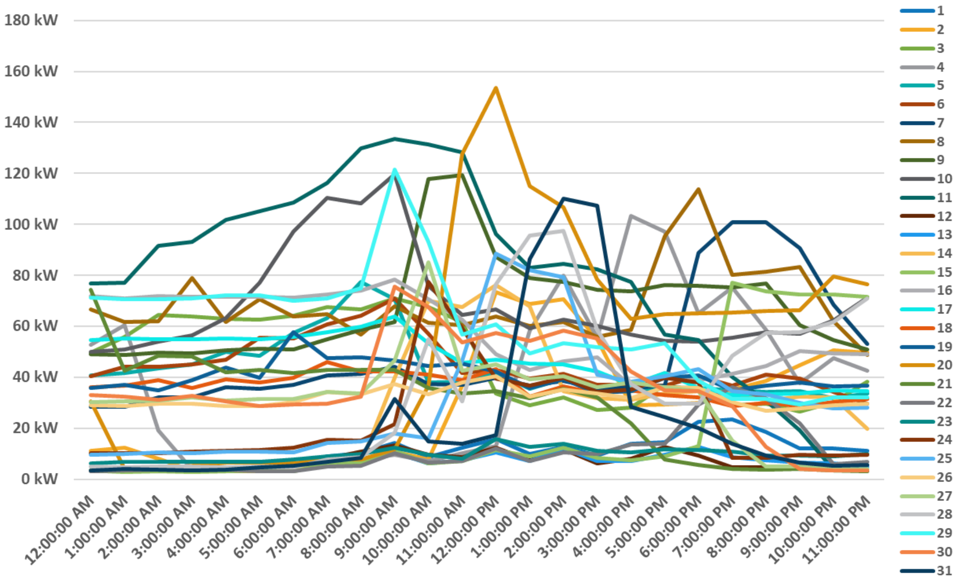


FIGURE 22: INTERVAL DATA AT TOWN HALL FOR WINTER (JUN-AUG)

- Winter periods show near identical profiles to those in summer.
- There were just 14 days of highest demand (>100kW average across 24 hours), so while heating systems are energy intensive their annual utilisation may be quite low.
- Peak demand is little different from summer.

5.3 Equipment audit

An on-site audit was conducted in March 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table and figure below summarise the primary electricity consumers observed on site.

TABLE 60: ENERGY END USE BREAKUP AT TOWN HALL

Category	Annual consumption	%
Lighting	50,788 kWh	20%
HVAC	165,645 kWh	65%
Power and appliances	38,669 kWh	15%
Total	**255,102 kWh**	**100%**

The total energy use estimated from the audit is almost exactly the recorded grid energy consumption for the site, covering the grid supply. Within the above breakdown, there are a number of energy end use systems that are noted.

5.3.1 Lighting

Lighting systems account for approximately 15% of total site electricity demand. The site's lighting infrastructure comprises around 400 individual fixtures, with a full inventory of lighting assets compiled and presented below.

TABLE 61: TOWN HALL LIGHTING ASSET LIST

Location	Equipment	Quantity	Power rating (kW)
Mezzanine/Gallery	500W HID lamps	8	0.55
	Multicolour wall lights	36	0.01
	In-set lights in perimeter	18	0.01
Auditorium	Single T5 28W lights	16	0.03
	LED pendant lights	8	0.01
Tamworth RSL Rooms	Twin fluorescent 36W lights	13	0.08
Conservatorium of Music	Twin fluorescent 36W lights	12	0.08
	Single fluorescent 36W lights - pelmet	10	0.04
	CFL downlights	3	0.03
Exit points	15W halogen globes	20	0.02
Basement	LED globes	5	0.01
	Incandescent globes	5	0.04
Front	Green pole lights	2	0.25
	Ground inset flood lights	2	1.00
	Wall mounted decorative lights	2	0.25
Kitchen	LED surface battens	3	0.02
Laneway	108 LED Festoon lights	108	0.004
Mayor's office	Twin fluorescent 36W lights	2	0.08
	CFL suspended lights	2	0.03
Stage	1200W incandescents	25	1.20
	600W lights	25	0.60
	LED stage lights	25	0.50
Stairs to Level 1	6 x chandeliers with LED drops	36	0.004
Entry	Chandelier	8	0.004

5.3.2 Heating, ventilation and air conditioning (HVAC)

HVAC systems represent the largest portion of the facility's electricity consumption, accounting for approximately 65% of total use. The main HVAC assets at the Town Hall are listed below:

TABLE 62: MAIN HVAC ENERGY-USING EQUIPMENT AT TOWN HALL

Asset name	Make	Model	Area served
Water chiller (420 kW cooling capacity)	Multi-Stack	RC 130	Main Hall
Chiller water pump	Southern Cross	unknown	Main Hall
Condenser water pump	Southern Cross	unknown	Main Hall
Fan coil unit	Dricon	unknown	Main Hall
Cooling tower	BAC	VXT-85	Main Hall
Split ducted unit - unit is in poor condition with coil leaks and a defective second-stage compressor, recommend for replacement	Dricon	SFH1500-C	Small Town Hall

Asset name	Make	Model	Area served
Split AC unit - at end of serviceable life, runs on obsolete R500 refrigerant, with a damaged fan blade	Carrier	unknown	Old Council Chambers
Split AC unit - at end of serviceable life with a faulty condenser fan and poor indoor drainage	Carrier	unknown	Old Mayor's Office
AC unit (picture unavailable) - in fair condition with refrigerant leaks	Bradway	unknown	Front Office (Music Studio)
Electronic controls	Micro Air	unknown	HVAC

5.3.3 Power and appliances

Energy use from plug-in power and IT systems represents a relatively small portion of total electricity consumption, estimated at approximately 15%. This estimate is based on the number and type of devices observed across the Town Hall and is inherently less precise than for larger end-use systems such as HVAC or lighting. Key contributors include a projector in the Passchendeale Room, kitchen appliances such as the fridge, oven, microwave, and Zip unit, and IT equipment in the Business Chamber, including a server located in the basement. Additional miscellaneous loads across the facility, including lighting and power not otherwise accounted for, are also included in this category.

5.4 Potential energy and cost-saving opportunities

5.4.1 Power factor correction

The Town Hall exhibits a consistently poor power factor, averaging just 0.89 at the monthly peak demand across Peak, Shoulder, and Off-Peak periods. To improve efficiency and reduce demand charges, a target power factor of 1.0 (the maximum achievable) has been set. Based on this target, a power factor correction (PFC) unit with a capacity of **120 kVAr** is recommended.

A detailed analysis of sizing requirements and cost-benefit was conducted, evaluating all 36 chargeable peak demand events recorded over a 12-month period. The analysis calculated the potential kVA demand reduction in each instance where the PFC unit would lower demand. The PFC system size was determined by rounding up the highest level of reactive power compensation required during any peak period to achieve a power factor of 1.0.

The primary constraint with installing PFC at the Town Hall building is the age of the main switch and that there is no space to physically install this equipment in the MSB room. As such it is likely that a main switchboard upgrade would have to be implemented in order for PFC to be installed. As such it is recommended as a long term initiative, noting that further LED lighting and future HVAC upgrades may well improve power factor levels. Note that ongoing operation also requires periodic inspection and maintenance by a suitably qualified person to ensure the PFC equipment remains safe, reliable, and effective.

TABLE 63: BUSINESS CASE FOR POWER FACTOR CORRECTION FOR TOWN HALL

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
No PFC is installed, and power factor at peak demand ranges from 0.77 to 0.99 at peak demand across all ToU periods.	Install a 120 kVAr power factor correction system to raise site power factor to 1.0 during peak demand periods and reduce demand charges.	The main constraint is the age and limited space of the Town Hall's main switchboard, leaving no room for PFC equipment. A switchboard upgrade would likely be required before installation. It is therefore recommended as a long-term initiative, noting that upcoming LED and HVAC upgrades may improve power factor levels naturally.	$18,000	NA	$5,426	3.3 years

5.4.2 Solar PV

Tamworth Town Hall currently does not have a solar PV system installed. However, the venue features roof areas that are well-suited for solar installation. While these roofs present a strong opportunity for solar generation, aesthetic concerns, structural and heritage considerations may influence stakeholder support.

The proposed system is a 15-kW solar array, designed to maximise onsite solar self-consumption. A suggested location for the array is the northeast-facing roof, as shown below. Given the site's event-driven load profile, PV should be sized to match typical daytime demand (rather than maximise exports), and any future battery should be sized primarily to reduce peak-period costs during event operations and/or morning start-up loads, with programmable control to "flex" charging/discharging across peak and off-peak periods.

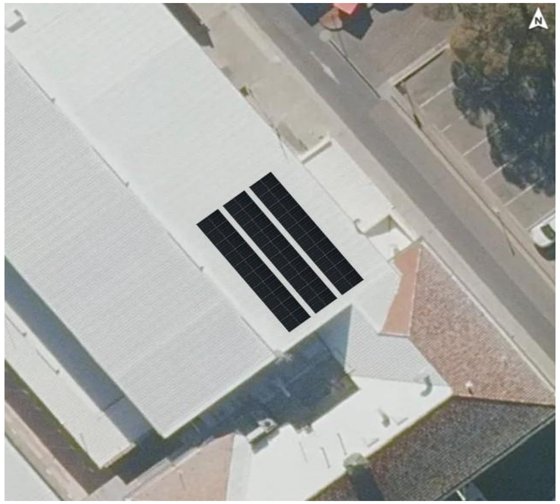


FIGURE 23: TOWN HALL – 15 KW SOLAR ON THE NORTHEAST-FACING ROOF

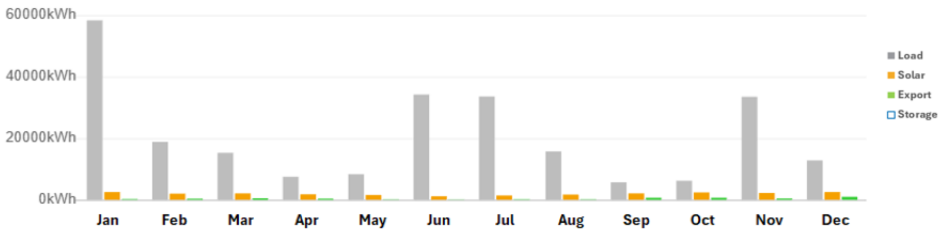


FIGURE 24: TAMWORTH TOWN HALL – 15 KW SOLAR SYSTEM PROJECTED MONTHLY SOLAR GENERATION

TABLE 64: BUSINESS CASE FOR 15-KW SOLAR FOR TOWN HALL

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
There is no solar PV at the Town Hall The building has suitable roof areas for solar installation.	Install a 15-kW solar PV system on the northeast-facing roof, designed to maximise on-site solar self-consumption and reduce daytime energy use by up to 15%.	Potential heritage and aesthetic restrictions, along with the need for structural assessment of roof integrity, may affect installation feasibility and final system design.	$19,500	18,890 kWh	$6,532	3.0 years

5.4.3 LED lighting upgrade

Lighting at the town hall has been partially upgraded to LED. However, several key systems remain in need of replacement. These include HID lamps in the main hall and mezzanine, where suitable LED retrofit options for the heritage fittings have not yet been identified. An indicative cost of around $1,000 per fitting has been used but remains an estimate only. Other non-LED systems include twin and single linear fluorescent fittings in the RSL and Conservatorium rooms on Level 1, compact fluorescent lamps in the same spaces, and single T5 fittings around the perimeter of the main hall.

Approximately 20 exit signs currently use halogen globes, consuming over 2,500 kWh per year. While compliant LED exit signs could deliver notable energy and cost savings, Council has not yet identified suitable products and will need to decide whether to invest in replacements. A small number of non-LED fixtures also remain in the basement, though these are infrequently used.

In total, 86 non-LED lights were identified as suitable for upgrade. It is noted that overall lighting utilisation is relatively low, particularly in the upstairs areas.

TABLE 65: BUSINESS CASE FOR LED LIGHTING UPGRADE FOR TOWN HALL

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Town Hall lights are partially upgraded to LED, with several key systems still to be upgraded. These include the 500W HID lamps in	Replace the 62 remaining non-LED lights in the Town Hall, prioritising the 500 W HID lamps in the main hall, with LED alternatives where available to achieve an	Council has tried to source replacements for the 500W HID lights in the main hall, so far without success. These are the	$16,880	8,509 kWh	$3,361	5.0 years

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
the main hall, twin and single 36W linear fluorescents in the RSL and Conservatorium rooms on level 1, CFL lights in these spaces, and single 28W T5 lights in the perimeter around the main hall	estimated 58% reduction in energy demand and a 5-year payback period.	highest energy-using lights.				
Town Hall lights are partially upgraded to LED, with several key systems still to be upgraded. These includes approximately 20 exit lights and a handful of other non-LED lights in the Mayor's office.	Replace all 20 exit signs with compliant exit signs.			1,752 kWh	$606	

5.4.4 Main HVAC system upgrade

A detailed HVAC upgrade proposal for Tamworth Town Hall has been developed by DSA Consulting (May 2025). The system comprises a mix of water-cooled chiller plant, DX systems, EDHs, and multiple fan-coil and air-handling units, much of which is seriously aged and deteriorating. DSA reports existing failures within the chiller plant and broader condition issues across the air-cooled plant and cooling tower, indicating elevated risk of unplanned outages and reduced ability to maintain comfort if the upgrade is deferred.

The recommended scope (Option 1 in the DSA report) involves replacing major plant components on a one-for-one basis, upgrading fans to efficient EC plug types, and reconfiguring retained electric heating with reverse-cycle and BMS control integration. The design maintains current capacity while significantly improving energy efficiency and operational reliability.

As summarised in the attached tables, the upgraded system is expected to reduce HVAC electricity use by approximately 68,500 kWh per year, equivalent to 41% savings relative to current consumption. These savings are driven by higher-efficiency chillers and pumps, modern reverse-cycle units, and BMS-linked fan control. The upgrade will deliver improved comfort, reduced maintenance costs, and alignment with Council's broader energy efficiency and emissions reduction objectives.

Table 66: HVAC system consumption at Town Hall

System group	Annual energy use	Energy savings	Included Equipment
Chiller	~38,927 kWh	19,464 kWh	Multi-stack RC 130.3 (6-stage)
Pumps & Cooling Tower	~38,926 kWh	15,960 kWh	CWP (7.5 kW), CHWP (11 kW), Cooling Tower BAC VXT 85
DX Systems	~24,847 kWh	9,939 kWh	PAC1 (Stage), PAC2 (Main Hall), PAC3 (Passchendaele), Carrier Splits (Council Chamber, Old Mayor Office), Temperzone, Bradway
Electric Duct Heaters	~49,694 kWh	19,227 kWh	Main EDH (3×42.5 kW), EDH HIA (2×28 kW), H2 (2×5.5 kW), H3 (2×15 kW), H4 (2×5 kW), Passchendaele EDH (11 kW)
Fans & AHUs	~13,253 kWh	3,976 kWh	SAF 1 (4 kW), other fan coils and air handling units
Total	**165,647 kWh**	**68,564 kWh**	

Table 67: HVAC system upgrade savings rates at Town Hall

Upgrade Type	Savings rate*	Comments
Chiller (replacement)	50%	Replaced with modular water-cooled chiller (higher COP/IPLV)
Pumps & Cooling Tower (system upgrade)	41%	New tower and pump systems to restore hydraulic efficiency
DX Systems (RC unit upgrade)	40%	Replaced with modern reverse-cycle units with EER/COP ~2.8–3.3
Electric Duct Heaters (EDH → RC/BMS)	39% (blended)	Some replaced with RC, others retained but reconfigured with BMS controls
Fans & AHUs (EC fan upgrade)	30%	Upgraded to EC plug fans with turndown via BMS

The DSA report provides a project cost estimate of ~$1.7 million. The upgrade will deliver improved reliability and system efficiency, along with enhanced temperature control and occupant comfort throughout the Town Hall. It will also provide long-term reductions in maintenance and reactive repair costs, supporting more consistent building performance and lower operational risks.

TABLE 68: BUSINESS CASE FOR HVAC SYSTEM UPGRADE FOR TOWN HALL

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
System is very old, centred around a 6-stage reciprocating chiller, and needs replacement. The system includes ageing water-cooled chillers, DX units, EDHs, and fan-coil/AHU equipment, with existing chiller failures and poor plant condition that increase the risk of outages and reduced comfort if upgrades are delayed.	Based on DSA's 2025 HVAC and Lighting Audit, replace the Town Hall's aging HVAC system—including the main 6-stage reciprocating chiller—with a modern, energy-efficient system to improve reliability, comfort, and operational performance, using CEUF grant funding to offset capital costs.	As noted in the DSA report (May 2025), the existing main switchboard and electrical infrastructure at Town Hall are aged and non-compliant with current standards (AS/NZS 61439). Even for a like-for-like HVAC replacement, switchboard replacement or major upgrade may be required to meet current regulations, life-safety, and smoke-control power supply requirements. These works would add cost and complexity to implementation and should be addressed alongside the HVAC renewal.	$1,701,794	68,564 kWh	$23,998	70.9 years

Given the scale of CAPEX and long payback, implementation would typically require grant support (e.g. CEUF) and/or be programmed into Council's capital renewal plan as the HVAC approaches end of life.

Note that the DSA report indicates staging the Town Hall HVAC upgrade is generally not recommended, as the plant across all locations is heavily aged, already experiencing failures (including the chiller), and the air-cooled plant is in serious deterioration—meaning a multi-year staged rollout is unlikely to be practical or reliable. As a minimum, DSA suggests a two-step approach: Stage 1 would prioritise replacement of the main hall plant together with controls and smoke exhaust works, followed by Stage 2 to replace ancillary-area plant (noting DSA questions whether this equipment will reliably last to a second stage given its condition and the limited use of some spaces).

6 Sports Dome

6.1 Site description

The Tamworth Sports Dome precinct includes the Tamworth Regional Athletics Centre and the Tamworth Velodrome. These facilities are interconnected and share infrastructure, including electricity supply and lighting systems.

Sports Dome has the following facilities:

- Indoor courts:
    - Seven multi-purpose courts meeting international standards, including a Show Court with seating for up to 600 spectators.
    - Six other indoor courts across two halls.
- Outdoor courts:
    - 18 netball courts, with two adaptable for basketball.
    - Mix of acrylic and tar surfaces, with courts 9–10 and 13–18: equipped with lighting.
- Facilities:
    - Six change rooms, treatment and referee rooms.
    - Commercial café servicing both indoor and outdoor areas.
    - 182-space car park with overflow capacity for major events.
    - Children's playground and outdoor seating area.
    - Public address system with wireless microphone and audio streaming capabilities.
    - Physiology and allied health services provided by Rural Fit.

The Tamworth Regional Athletics Centre opened in 2019 and is an IAAF Class 2 accredited facility, with lighting supplied from 30-metre poles, designed for night training and events.

The adjacent Tamworth Velodrome and Criterium Track was also completed in 2019 and includes an asphaltic concrete track as well as a criterium track around the perimeter of the overall venue. It also has light towers to cater for night use. Both tracks has storage, amenities and carparking.

6.2 Electricity

Based on the provided electricity billing for NMI 4001230122, covering the period from February 2024 to January 2025, the grid electricity usage at the sports dome amounted to 291 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility’s electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 69: ANNUAL ELECTRICITY USE AT SPORTS DOME

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	4,428 kWh	13,662 kWh	8,192 kWh	26,282 kWh
Aug-24	4,555 kWh	10,174 kWh	9,020 kWh	23,748 kWh
Sep-24	3,876 kWh	9,432 kWh	8,171 kWh	21,478 kWh
Oct-24	3,638 kWh	9,658 kWh	7,684 kWh	20,981 kWh
Nov-24	4,277 kWh	10,763 kWh	8,686 kWh	23,725 kWh
Dec-24	3,467 kWh	11,161 kWh	8,167 kWh	22,795 kWh
Jan-25	3,286 kWh	12,911 kWh	7,686 kWh	23,883 kWh
Feb-24	4,270 kWh	12,689 kWh	9,885 kWh	26,844 kWh
Mar-24	4,457 kWh	10,917 kWh	9,460 kWh	24,833 kWh
Apr-24	3,684 kWh	10,191 kWh	8,887 kWh	22,763 kWh
May-24	5,330 kWh	11,862 kWh	10,337 kWh	27,530 kWh
Jun-24	4,753 kWh	11,578 kWh	9,338 kWh	25,669 kWh
Total	**50,021 kWh**	**134,999 kWh**	**105,512 kWh**	**290,532 kWh**

This consumption data is graphed to highlight that shoulder electricity consumption is the dominant time-of-use period.

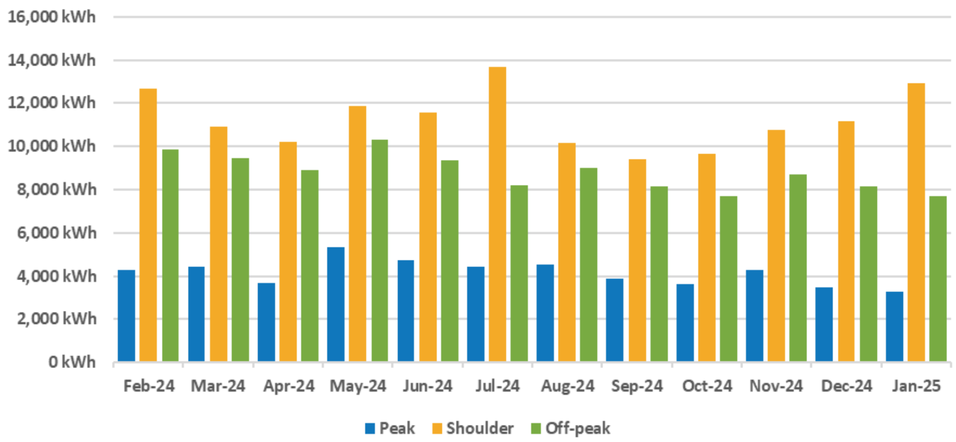


FIGURE 25: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT SPORTS DOME

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 70: ANNUAL ELECTRICITY USE AND COSTS AT THE SPORTS DOME

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Sports Dome	4001230122	290,532 kWh	$77,077	0.27 $/kWh	BLNDTRS

6.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Sports Dome. Below are the hourly load profiles for Sports Dome on representative summer and winter months. From these profiles, key insights can be drawn.

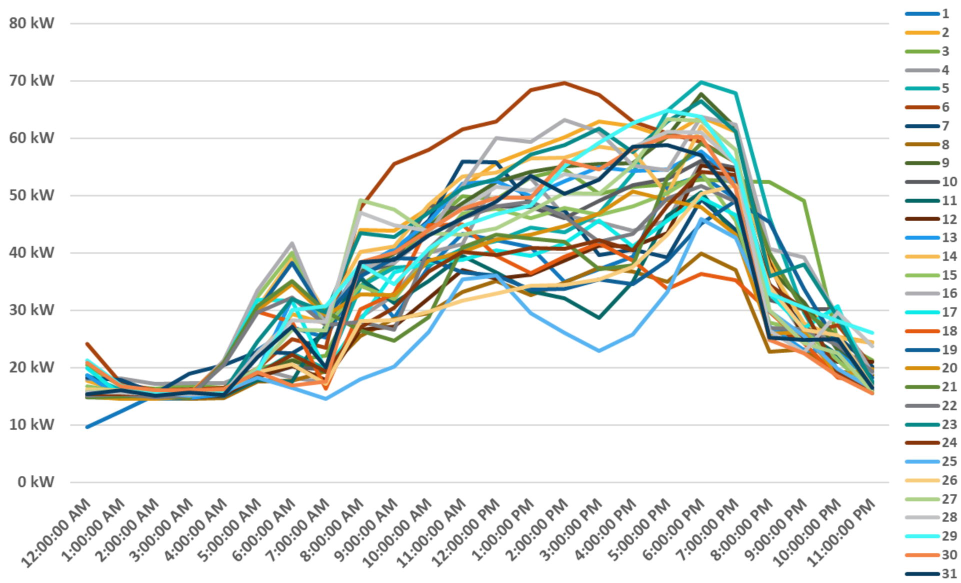


FIGURE 26: INTERVAL DATA AT SPORTS DOME FOR SUMMER (DEC-FEB)

- Overnight demand at the venue is consistently 15-18 kw year round, with low variation which suggests consistent shutdown procedures. Car park lighting, external building lights, ICT systems (incl server room + AC) and appliances will make up the majority of this demand.
- Early morning demand increases as staff arrive, with indoor lighting and some air conditioning systems run.
- From the time the venue opens to the public, we understand that sports hall lighting will be turned on, and load variability will be due mainly to HVAC demand.
- Demand in summer rises to a daytime peak in the late afternoon, with a later and larger peak occurring as occupancy increases for evening sport, and outdoor lighting for netball, cycling and/or athletics drive the facility's peaks.
- The influence of solar PV is barely discernible in the load data owing to its small size.

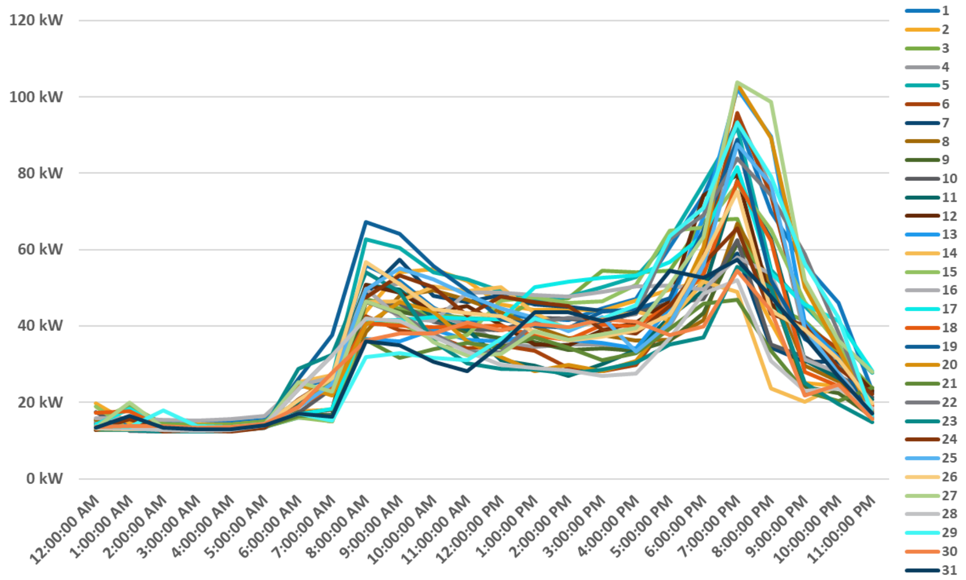


FIGURE 27: INTERVAL DATA AT SPORTS DOME HALL FOR WINTER (JUN-AUG)

- More consistent profiles are evident from day to day, characterised by early morning heating and evening peaks for indoor and outdoor sports lighting.
- The venue's highest peak demands occur in winter, reaching a maximum of 160 kW in the period assessed.

6.2.2 Current solar PV installed (10-kW system)

The 10-kW solar PV system at Sports Dome generated 16,236 kWh of renewable electricity during the 2024 calendar year, demonstrating a 100% self-consumption rate—meaning all energy produced was used on site, with zero kWh exported to the grid.

Monthly generation data followed expected seasonal trends, with peak output occurring during summer months and the lowest production in winter. These fluctuations align with normal variations in solar irradiance and are typical for solar PV systems.

From a financial perspective, the 100% self-consumption model delivers significant value as every kilowatt-hour generated displaces grid electricity at retail rates, maximising cost savings. This annually offsets around $4,384 based on 0.27 $/kWh average rate of the site.

TABLE 71: ANNUAL SOLAR GENERATION, ON-SITE CONSUMPTION AND EXPORT AT SPORTS DOME

Month	Generation (kWh)	On-site consumption (kWh)	Export (kWh)
Jan-24	1,024 kWh	1,024 kWh	0 kWh
Feb-24	1,054 kWh	1,054 kWh	0 kWh
Mar-24	802 kWh	802 kWh	0 kWh
Apr-24	899 kWh	899 kWh	0 kWh
May-24	1,191 kWh	1,191 kWh	0 kWh

Month	Generation (kWh)	On-site consumption (kWh)	Export (kWh)
Jun-24	1,472 kWh	1,472 kWh	0 kWh
Jul-24	1,802 kWh	1,802 kWh	0 kWh
Aug-24	1,560 kWh	1,560 kWh	0 kWh
Sep-24	1,833 kWh	1,833 kWh	0 kWh
Oct-24	1,695 kWh	1,695 kWh	0 kWh
Nov-24	1,440 kWh	1,440 kWh	0 kWh
Dec-24	1,464 kWh	1,464 kWh	0 kWh
Total	**16,236 kWh**	**16,236 kWh**	**0 kWh**

FIGURE 28: SPORTS DOME ONSITE SOLAR

6.3 Equipment audit

The table and figure below summarise the primary electricity consumers observed on site.

TABLE 72: ENERGY END USE BREAKUP AT SPORTS DOME

Category	Annual consumption	%
Lighting	176,980 kWh	51%
HVAC	94,581 kWh	27%
Power and appliances	78,840 kWh	22%
Total	**350,401 kWh**	**100%**

The total energy use recorded from the audit is equal to the sum of on-site solar generation and grid supply. Within this breakdown, several key energy end-use systems have been identified and documented.

6.3.1 Lighting

Lighting systems constitute the largest share of the site's total electricity consumption, accounting for approximately 51% of overall demand. The site's lighting infrastructure consists of 436 individual fixtures in total, an inventory of lighting assets has been compiled and is presented below.

TABLE 73: SPORTS DOME LIGHTING ASSET LIST

Location	Equipment	Quantity	Power rating (kW)
Indoor courts	HIDs (Showcourt, Courts 1–3)	45	0.44
	LEDs (Courts 4–6)	30	0.20
Indoor centre	LED panels	100	0.03
	LED downlights	50	0.02
	2 x 28W T5 light fittings	44	0.06
Carpark	LED lights	15	0.02
Athletics track	HID floodlights	48	2.00
Velodrome	HID floodlights	32	2.00
Netball courts	HID floodlights	32	2.00
Outdoor (perimeter)	Other outdoor lights	40	0.01

6.3.2 Heating, ventilation and air conditioning (HVAC)

HVAC systems represent the second-largest energy demand on site, accounting for 27% of total electricity consumption. The facility's HVAC infrastructure comprises seven (7) individual units.

TABLE 74: AUSTRALIAN COUNTRY MUSIC HALL OF FAME HVAC ASSET LIST

Location	Equipment	Quantity	Power (kW)
Indoor centre	HVAC2 Temperzone OSA116RKSGH	1	4.40
Indoor centre	HVAC2 Temperzone OSA351RLTFV-S1	1	14.00
Indoor centre	HVAC2 Temperzone OSA351RLTFV-S1	1	14.00
Indoor centre	HVAC1 Temperzone OSA211RLTFH-S1 - offices	1	7.60
Indoor centre	HVAC1 Temperzone OSA211RLTFH-S1 - foyer/kiosk	1	7.60

Location	Equipment	Quantity	Power (kW)
Indoor centre	HVAC1 Temperzone OSA200RKTV - kiosk	1	9.09
Indoor centre	Daikin VRV Multi	1	7.00

6.3.3 Power and appliances

Power consumption for general usage, not explicitly accounted for, is estimated by calculating the difference between total energy usage and the total demand. This includes equipment such as IT devices, and other miscellaneous loads that are not separately measured but contribute to overall energy consumption.

6.4 Potential energy and cost-saving opportunities

6.4.1 Solar PV

The Sports Dome currently operates a 10-kW solar PV system installed on the lower front roof above the main switchboard, generating approximately 16,200 kWh of renewable electricity annually.

An expansion is proposed to install an additional 87.5 kW solar PV array, maximising on-site solar self-consumption while remaining within the STC threshold (<100 kW total). The system would be located on roof areas directly above and opposite the existing array, mirroring the current installation to optimise available space and solar generation.

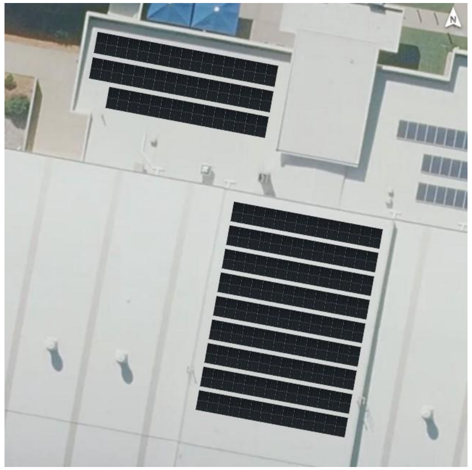


FIGURE 29: SPORTS DOME – 87.5 KW SOLAR ON THE ROOF AREA DIRECTLY ABOVE THE EXISTING SOLAR ARRAY AND THE ROOF SPACE OPPOSITE (MIRRORING) THE CURRENT INSTALLATION

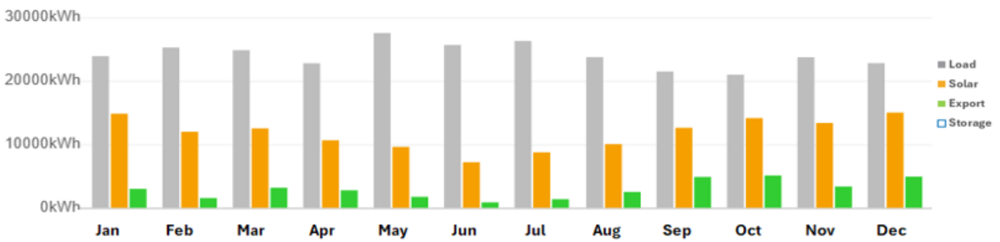


FIGURE 30: SPORTS DOME – 87.5 KW SOLAR SYSTEM PROJECTED MONTHLY SOLAR GENERATION

TABLE 75: BUSINESS CASE FOR 87.5 KW SOLAR FOR SPORTS DOME

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
A 10 kW solar aray is installed on the lower front roof of the Sports Dome, above the main switchboard. Yield for the system is high, with over 16 MWh of annual solar energy generation.	Install an additional 87.5 kW rooftop solar PV system on the main Sports Dome roof, below the 100 kW STC threshold, and reduce daytime energy use by up to 72%. Assess inverter placement and roof structural suitability before proceeding.	Current inverter is wall mounted outside the MSB and space for new inverters will need to be identified, potentially on the low roof below the new array - TBC. Structural evaluation based on as-built drawings by a qualified engineer may also be needed tverify the ability for the main roof to be used.	$113,750	105,490 kWh	$27,986	4.2 years

6.4.2 LED lighting upgrade

At the Sports Dome, most indoor courts have been upgraded to LED lighting except for the Showcourt and Courts 1–3, which still use 400 W HID lamps. It is recommended to replace these remaining fittings with 200 W LED lights, ensuring consistent, energy-efficient lighting across all indoor courts.

The ground floor office area still uses 44 twin 28 W T5 fluorescent lights, which should be replaced with LED panels to improve light quality and reduce energy and maintenance costs.

For the Netball, Athletics, and Velodrome fields, existing pole-mounted 2000 W HID floodlights are to be upgraded to LED technology when due for replacement, retaining the E-Switch platform for remote access, scheduling, and usage tracking. The estimated upgrade cost is around $5000 per fitting, which is not feasible at this time, but LED lighting remains recommended for future replacement to enhance energy efficiency, lighting performance, and operational management.

TABLE 76: BUSINESS CASE FOR LED LIGHTING UPGRADE FOR SPORTS DOME

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Lighting in Showcourt and Courts 1, 2 & 3 are 400W HID lamps, whereas lighting in other indoor courts has been upgraded to 200W LEDs.	Upgrade Showcourt and Courts 1–3 from 400 W HID lamps to 200 W LEDs, with implementation via supply-only purchase with in-house installation.	Council to decide if they would preference supply-only of lamps and perform its own installation, or include in CEUF grant.	$20,250	27,000 kWh	$8,246	2.5 years
Most indoor lights are upgraded to LED, excepting ground floor office space where 44 x twin 28W T5 lights are installed.	Upgrade 44 twin 28 W T5 lights in the ground floor office to LED panels, with implementation via supply-only purchase with in-house installation.	Council to decide if they would preference supply-only of LED panels and perform its own installation, or include in CEUF grant.	$7,480	6,257 kWh	$2,492	3.0 years
Netball, Athletics and Velodrome lighting is supplied from pole mounted 2000W HIDs, with most lights and most utilisation by Netball. E-Switch platform enables users to access and pay for sports field lighting, and can be used to record utilisation of lighting.	Upgrade pole-mounted 2000 W HID lights at the Netball, Athletics, and Velodrome fields to LED technology, when these lights are next due to be replaced	Council to provide E-Switch data for the 3 fields confirming lamp wattage and hours of use in the last year. Structural assessment likely required to inform any upgrade, particularly in the Athletics and Velodrome tracks.	$437,600	73,440 kWh	$21,483	20.4 years

7 Australian Country Music Hall of Fame

7.1 Site description

The Australian Country Music Hall of Fame is a museum dedicated to preserving and showcasing the history of Australian country music. The museum features a collection of memorabilia from early and contemporary Australian country music artists.

- A key exhibit at the HOF is the “Walk a Country Mile” exhibition, which is a permanent, interactive exhibit that traces the development of Australian country music from the late 1700s through to current times, and includes historical recordings, instruments, and memorabilia from artists across all periods.
- In the main museum, displays are regularly rotated to highlight various aspects of country music history.
- Whilst open to the public for just 6 hours daily (except Monday and Public Holidays when the venue is closed), the space is conditioned 24/7 to preserve exhibits.

7.2 Electricity

Based on the provided electricity billing for NMI NFFFNRKE97, covering the period from February 2024 to January 2025, the grid electricity usage at the facility amounted to 77 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility’s electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 77: ANNUAL ELECTRICITY USE AT AUSTRALIAN COUNTRY MUSIC HALL OF FAME

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	738 kWh	3,819 kWh	5,900 kWh	10,456 kWh
Aug-24	512 kWh	1,997 kWh	4,548 kWh	7,056 kWh
Sep-24	449 kWh	1,341 kWh	3,740 kWh	5,530 kWh
Oct-24	528 kWh	1,258 kWh	2,572 kWh	4,358 kWh
Nov-24	709 kWh	1,987 kWh	2,570 kWh	5,267 kWh
Dec-24	854 kWh	2,386 kWh	3,293 kWh	6,533 kWh
Jan-25	874 kWh	2,650 kWh	2,909 kWh	6,434 kWh
Feb-24	816 kWh	2,996 kWh	3,781 kWh	7,594 kWh
Mar-24	709 kWh	2,143 kWh	3,298 kWh	6,150 kWh
Apr-24	468 kWh	1,363 kWh	2,391 kWh	4,222 kWh
May-24	462 kWh	1,657 kWh	2,515 kWh	4,634 kWh
Jun-24	524 kWh	3,348 kWh	4,539 kWh	8,410 kWh
Total	**7,642 kWh**	**26,945 kWh**	**42,056 kWh**	**76,644 kWh**

This consumption data is graphed to highlight that off-peak electricity consumption is the dominant time-of-use period.

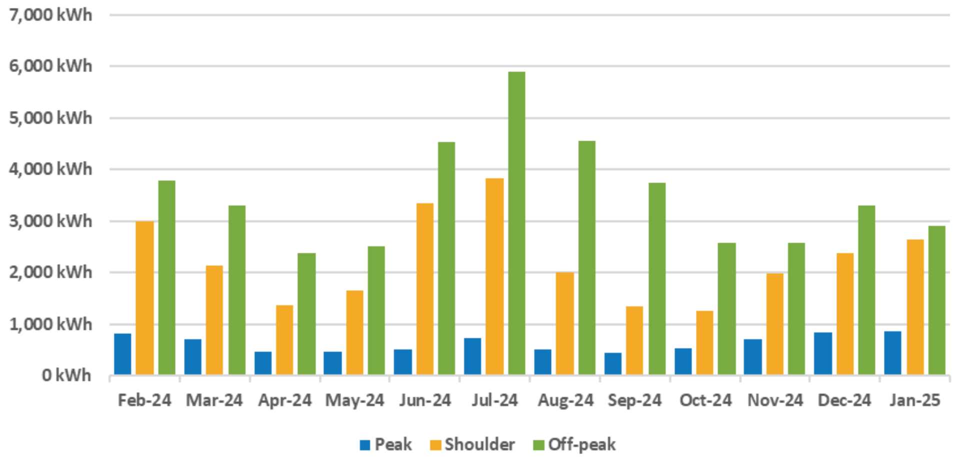


FIGURE 31: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT AUSTRALIAN COUNTRY MUSIC HALL OF FAME

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 78: ANNUAL ELECTRICITY USE AND COSTS AT THE AUSTRALIAN COUNTRY MUSIC HALL OF FAME

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Australian Country Music Hall of Fame	NFFFNRKE97	76,644 kWh	$17,016	0.22 $/kWh	BLNT1AO

7.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Australian Country Music Hall of Fame. Below are the hourly load profiles for Australian Country Music Hall of Fame on representative summer and winter months. From these profiles, key insights can be drawn.

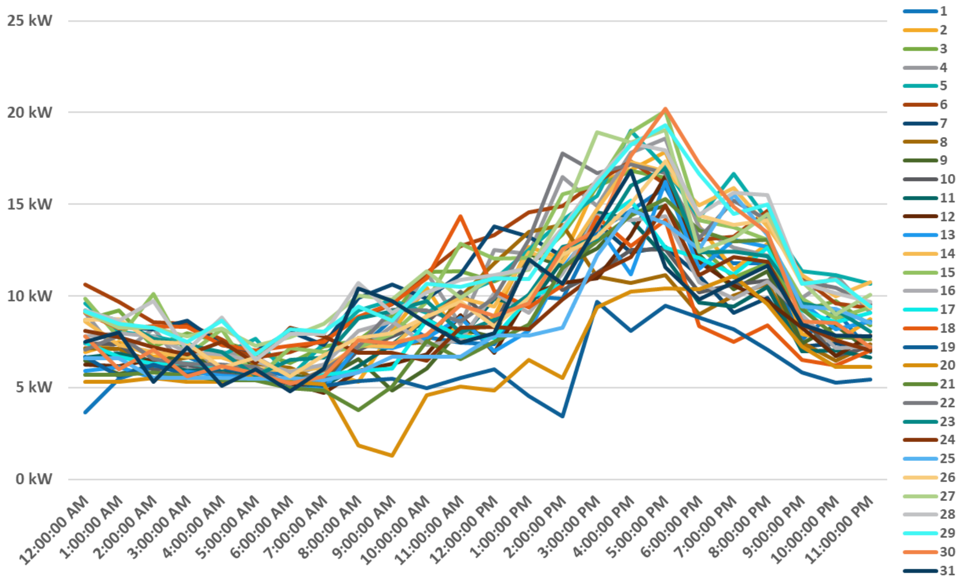


FIGURE 32: INTERVAL DATA AT AUSTRALIAN COUNTRY MUSIC HALL OF FAME FOR SUMMER (DEC-FEB)

- The summer energy usage profile follows a clear daytime pattern, reflecting facility's operational schedule. Energy demand begins to rise in the morning as the facility opens and remains steady throughout the day, closely aligned with visitor activity and staffing. This suggests that energy consumption is largely driven by building systems supporting daily operations—such as lighting, displays, cooling, and equipment used in public and staff areas.
- Cooling systems are the dominant contributor to energy use. As with many public-facing cultural venues, maintaining indoor thermal comfort for visitors and protecting sensitive materials or exhibits from heat and humidity are key priorities. This continuous cooling demand during the day points a need for consistent climate control.
- After hours, energy use drops somewhat, with notable HVAC overnight consumption.
- The 20kW solar array onsite mitigates some grid demand during the daytime with little to no export evident on any day.

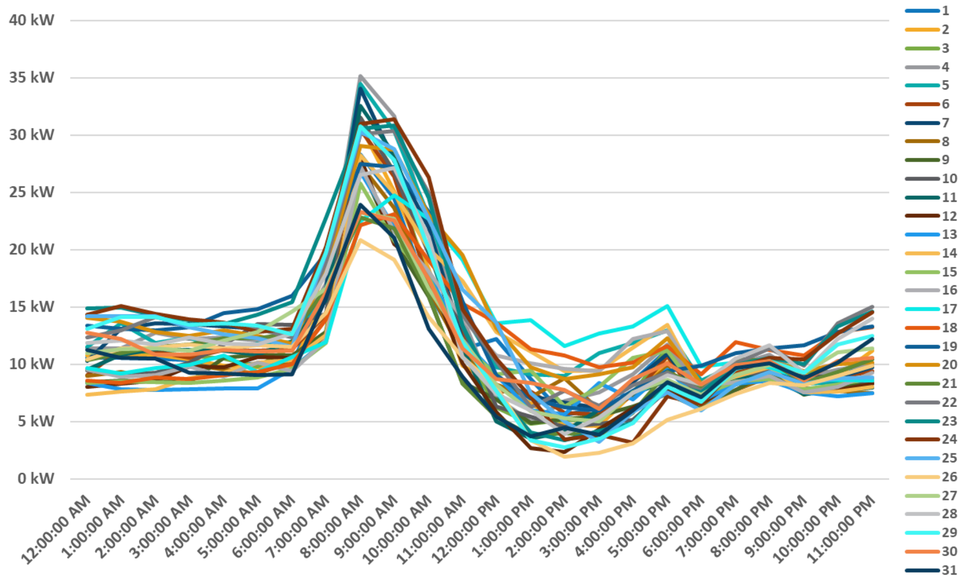


FIGURE 33: INTERVAL DATA AT AUSTRALIAN COUNTRY MUSIC HALL OF FAME FOR WINTER (JUN-AUG)

- In winter, early morning heating demand is the most prominent feature, before solar yield impacts grid supply.
- The effect of solar on the facility's energy demand is more noticeable in winter.
- Night demand for heating is higher than summer night demand.

7.2.2 Current solar PV installed (20-kW system)

The 20-kW solar PV system at Australian Country Music Hall of Fame generated 28,031 kWh of renewable electricity during the 2024 calendar year, demonstrating a 94% self-consumption rate—meaning large portion of energy produced was used on site, with 1,685 kWh exported to the grid.

Monthly generation data followed expected seasonal trends, with peak output occurring during summer months and the lowest production in winter. These fluctuations align with normal variations in solar irradiance and are typical for solar PV systems.

From a financial perspective, the 94% self-consumption model delivers significant value as every kilowatt-hour generated displaces grid electricity at retail rates, maximising cost savings. This annually offsets around $6,169 based on 0.22 $/kWh average rate of the site.

TABLE 79: ANNUAL SOLAR GENERATION, ON-SITE CONSUMPTION AND EXPORT AT AUSTRALIAN COUNTRY MUSIC HALL OF FAME

Month	Generation (kWh)	On-site consumption (kWh)	Export (kWh)
Jan-24	3,115 kWh	3,105 kWh	10 kWh
Feb-24	2,677 kWh	2,669 kWh	8 kWh
Mar-24	2,587 kWh	2,523 kWh	63 kWh

Month	Generation (kWh)	On-site consumption (kWh)	Export (kWh)
Apr-24	1,857 kWh	1,612 kWh	245 kWh
May-24	1,582 kWh	1,403 kWh	179 kWh
Jun-24	1,058 kWh	1,036 kWh	21 kWh
Jul-24	1,252 kWh	1,233 kWh	19 kWh
Aug-24	1,789 kWh	1,596 kWh	193 kWh
Sep-24	2,373 kWh	1,998 kWh	376 kWh
Oct-24	3,005 kWh	2,571 kWh	433 kWh
Nov-24	3,086 kWh	2,999 kWh	86 kWh
Dec-24	3,650 kWh	3,600 kWh	50 kWh
Total	**28,031 kWh**	**26,346 kWh**	**1,685 kWh**

FIGURE 34: AUSTRALIAN COUNTRY MUSIC HALL OF FAME ONSITE SOLAR

7.3 Equipment audit

The table and figure below summarise the primary electricity consumers observed on site.

TABLE 80: ENERGY END USE BREAKUP AT AUSTRALIAN COUNTRY MUSIC HALL OF FAME

Category	Annual consumption	%
Lighting	12,000 kWh	12%
HVAC	57,816 kWh	56%
Power and appliances	32,850 kWh	32%
Total	**102,666 kWh**	**100%**

The total energy use estimated from the audit closely aligns with the recorded energy consumption for the site, accounting for both on-site solar generation and grid supply. Within this breakdown, several key energy end-use systems have been identified and documented.

7.3.1 Lighting

The lighting system is fully outfitted with energy-efficient LED fixtures. Given that these fixtures already adhere to high efficiency standards, a detailed analysis of individual components has not been conducted, as further optimisation is considered unnecessary at this stage. These lighting systems are estimated to account for 12% of the site's total energy demand.

7.3.2 Heating, ventilation and air conditioning (HVAC)

The HVAC units at the site consist of two Acton units, each less than 6 years old and using R410A refrigerant, and two older HVAC units that are 30 years old and use R22 refrigerant. These units together account for 56% of the site's total energy demand.

TABLE 81: AUSTRALIAN COUNTRY MUSIC HALL OF FAME HVAC ASSET LIST

HVAC Unit	Units	Age	Refrigerant
Acton units	2	< 6 years old	R410A
Older HVAC units NEED DETAILS	2	30 years old	R22

7.3.3 Power and appliances

Power consumption for general usage, not explicitly accounted for, is estimated by calculating the difference between total energy usage and the sum of specifically allocated loads. This includes equipment such as TVs, security systems, IT devices, and other miscellaneous loads that are not separately measured but contribute to overall energy consumption.

7.4 Potential energy and cost-saving opportunities

7.4.1 Solar PV and battery storage

The Australian Country Music Hall of Fame operates a 20-kW rooftop solar PV system with the inverter located in the southern rooftop plant area. The system generates around 28,000 kWh annually, with only 6% exported, indicating it is well sized for on-site use.

A proposed expansion involves adding a 13-kW solar array and a 6.4 kWh battery, designed to maximise self-consumption while remaining under the 100 kW STC threshold. The additional panels would be installed on the southeast and west roof sections, with the battery likely housed in the existing rooftop plant area. The expansion should continue to prioritise self-consumption (rather than oversizing for export), while the battery is best sized to clip morning/evening peaks; controls can also be configured to partially recharge off-peak and discharge during shoulder/peak periods where this improves economics.

FIGURE 35: AUSTRALIAN COUNTRY MUSIC HALL OF FAME – 13 KW SOLAR ON SOUTHEAST AND WEST ROOF SECTIONS W/ 6.4 KWH BESS

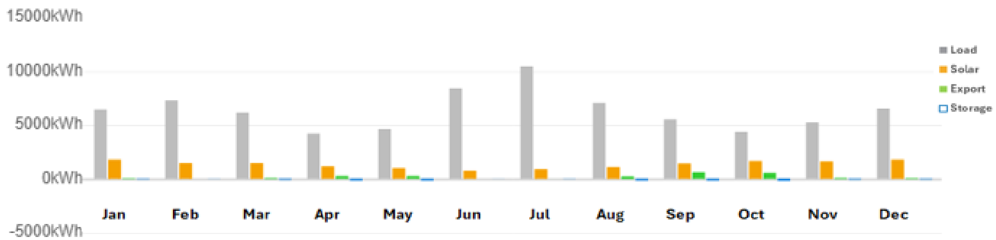


FIGURE 36: AUSTRALIAN COUNTRY MUSIC HALL OF FAME – 13 KW SOLAR SYSTEM W/ 6.4 KWH BESS PROJECTED MONTHLY SOLAR GENERATION

TABLE 82: BUSINESS CASE FOR 13 KW SOLAR + 6.4 KWH BESS FOR AUSTRALIAN COUNTRY MUSIC HALL OF FAME

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
A 20kW solar array is mounted on the roof, inverter located on the southern end rooftop plant area. Export is just 6% of yield suggesting the system is well sized.	Install an additional 13-kW of rooftop solar and a 6.4-kWh battery to increase self-consumption and reduce daytime energy use by up to 41%, subject to roof space and structural confirmation.	Roof space and structure need to be confirmed. Aerial images suggest that new panels on the south east and west side can be considered, and a batery may be located in the rooftop plant area. Switching to the BLND1AB tariff with current early morning demand will not yield a saving, but a battery that trims the morning peak can lead to a further cost saving.	$20,060	13,972 kWh	$3,102	6.5 years

7.4.2 HVAC system upgrade

The Australian Country Music Hall of Fame operates four HVAC units, two of which are relatively new Actron models, while the remaining two units are original and nearing end of life. Specifications and model details could not be confirmed during the site visit due to limited roof access.

It is recommended to replace the two older Actron HVAC units with modern, energy-efficient models once full specifications, age, and condition are verified. This upgrade will enhance reliability, improve thermal comfort, and reduce ongoing maintenance costs.

The business case assessment outlines the indicative energy savings, cost impacts, and payback estimates for the proposed upgrade. These results are provisional and intended to guide future planning once detailed specifications and unit conditions are confirmed.

TABLE 83: BUSINESS CASE FOR HVAC SYSTEM UPGRADE FOR AUSTRALIAN COUNTRY MUSIC HALL OF FAME

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Of 4 HVAC units at the HoF, two Actron units are relatively new and two are original. Specifications / models not sighted as there was not roof access at the time of the visit.	Replace the two original Actron HVAC units with energy-efficient models once specifications, age, and condition are confirmed.	Details on the model, capacity, age and condition of the old units is required.	$45,000	11,563 kWh	$2,567	17.5 years

8 Barraba Pool

8.1 Site description

The Barraba Memorial Swimming Pool is a community aquatic facility established in 1964. It features:

- Outdoor 6-lane 33-metre pool, unheated and open for around 5-6 months a year
- Indoor 12.5-metre heated pool, used for hydrotherapy classes, as well as open to the general public and for private hire.
- A waterslide formerly operated at the pool but has been closed for some time.
- Grassed areas, BBQ facilities and a kiosk are operated when the facility is open to the public.

8.2 Electricity

Based on the provided electricity billing for NMI 4407330738, covering the period from February 2024 to January 2025, the grid electricity usage at the pool amounted to 90 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 84: ANNUAL ELECTRICITY USE AT BARRABA POOL

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	575 kWh	2,190 kWh	3,126 kWh	5,891 kWh
Aug-24	300 kWh	1,439 kWh	3,339 kWh	5,079 kWh
Sep-24	3,744 kWh	474 kWh	1,659 kWh	5,877 kWh
Oct-24	4,894 kWh	848 kWh	2,712 kWh	8,453 kWh
Nov-24	952 kWh	2,917 kWh	5,476 kWh	9,345 kWh
Dec-24	780 kWh	2,743 kWh	5,331 kWh	8,854 kWh
Jan-25	940 kWh	3,284 kWh	6,009 kWh	10,234 kWh
Feb-24	6,538 kWh	994 kWh	3,451 kWh	10,983 kWh
Mar-24	8,038 kWh	1,038 kWh	3,870 kWh	12,946 kWh
Apr-24	375 kWh	94 kWh	279 kWh	748 kWh
May-24	3,305 kWh	358 kWh	1,572 kWh	5,235 kWh
Jun-24	3,550 kWh	314 kWh	2,064 kWh	5,927 kWh
Total	**33,991 kWh**	**16,693 kWh**	**38,889 kWh**	**89,572 kWh**

This consumption data is graphed to highlight that off-peak electricity consumption is the dominant time-of-use period.

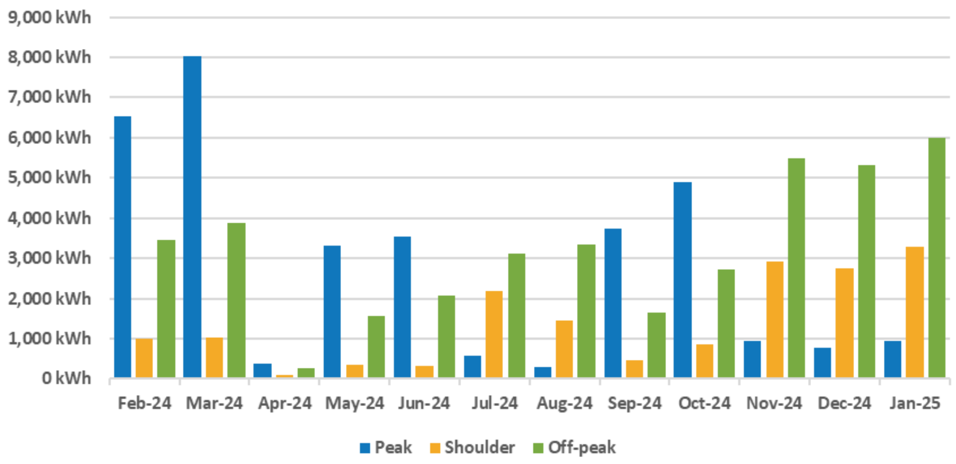


FIGURE 37: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT BARRABA POOL

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 85: ANNUAL ELECTRICITY USE AND COSTS AT THE BARRABA POOL

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Barraba Pool	4407330738	89,572 kWh	$19,361	0.23 $/kWh	BLNT1AO

8.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Barraba Pool. Below are the hourly load profiles for Barraba Pool on representative summer and winter months. From these profiles, key insights can be drawn.

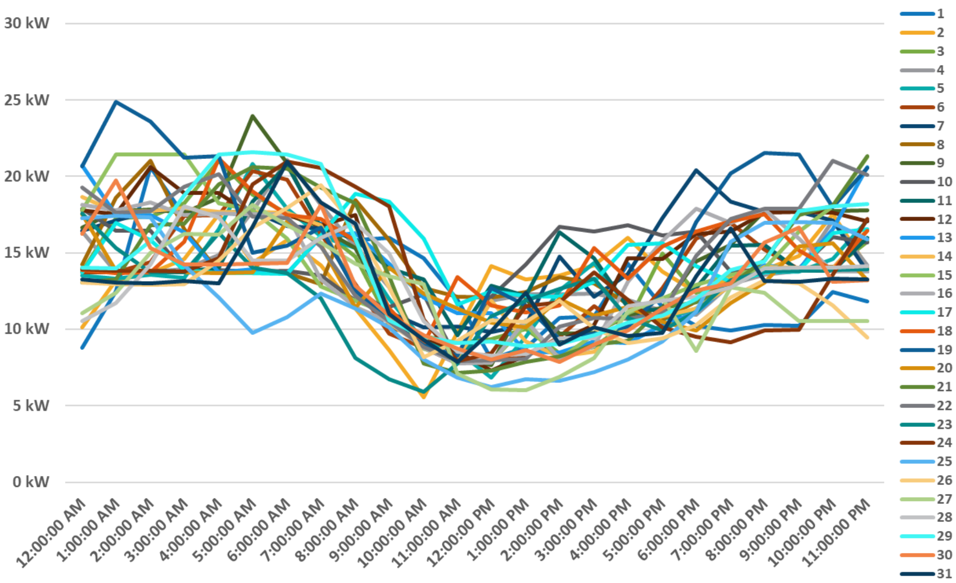


FIGURE 38: INTERVAL DATA AT BARRABA POOL FOR SUMMER (DEC-FEB)

- Load remains relatively high throughout the night, generally between 15–20 kW, indicating continuous background consumption.
- A gradual decline in demand is seen from early morning (~6 am) through to midday, reaching a midday low around 8–12 kW, before increasing again in the afternoon.
- Profiles are fairly consistent across days, with similar daily shapes and only minor variation in peak magnitudes.

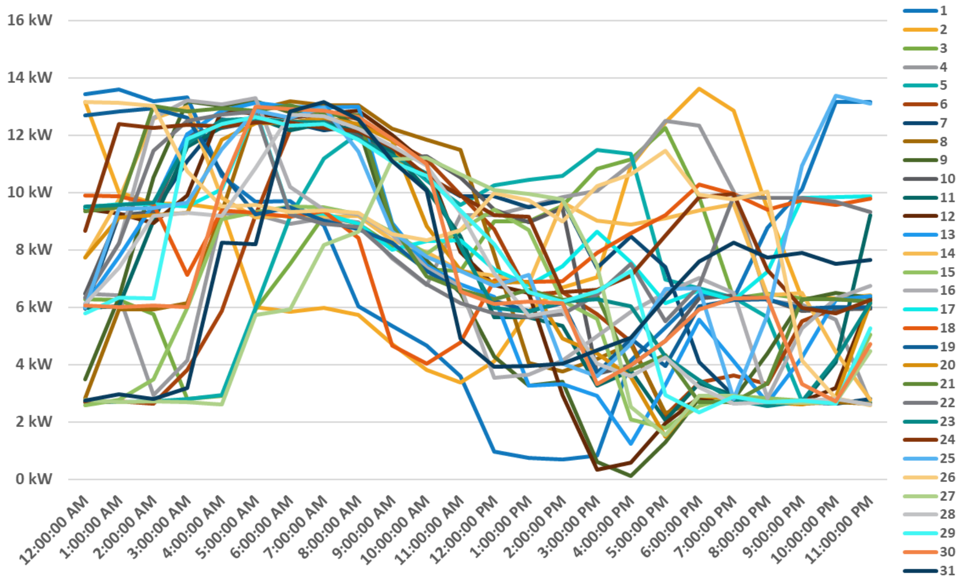


FIGURE 39: INTERVAL DATA BARRABA POOL FOR WINTER (JUN-AUG)

- The daily load curves are highly irregular, with no clear or repeating pattern from day to day.
- Overall demand ranges between 0 kW and 14 kW, but the timing of peaks and troughs varies significantly across the month.
- Compared to summer, the magnitude of demand is lower, but the variability is much higher, reflecting inconsistent site activity, possible maintenance periods, or sporadic equipment use.

8.2.2 Current solar PV installed (10-kW system)

The 10-kW solar PV system at Barraba Pool generated 14,408 kWh of renewable electricity during the 2024 calendar year, demonstrating a 91% self-consumption rate—meaning large portion of energy produced was used on site, with 1,352 kWh exported to the grid.

Monthly generation data followed expected seasonal trends, with peak output occurring during summer months and the lowest production in winter. These fluctuations align with normal variations in solar irradiance and are typical for solar PV systems.

From a financial perspective, the 91% self-consumption model delivers significant value as every kilowatt-hour generated displaces grid electricity at retail rates, maximising cost savings. This annually offsets around $3,003 based on 0.23 $/kWh average rate of the site.

TABLE 86: ANNUAL SOLAR GENERATION, ON-SITE CONSUMPTION AND EXPORT AT BARRABA POOL

Month	Generation (kWh)	On-site consumption (kWh)	Export (kWh)
Jan-24	1,581 kWh	1,552 kWh	29 kWh
Feb-24	1,348 kWh	1,343 kWh	5 kWh
Mar-24	1,337 kWh	1,320 kWh	17 kWh

Month	Generation (kWh)	On-site consumption (kWh)	Export (kWh)
Apr-24	964 kWh	174 kWh	791 kWh
May-24	874 kWh	792 kWh	82 kWh
Jun-24	650 kWh	629 kWh	21 kWh
Jul-24	801 kWh	736 kWh	65 kWh
Aug-24	994 kWh	832 kWh	162 kWh
Sep-24	1,253 kWh	1,074 kWh	179 kWh
Oct-24	1,475 kWh	1,475 kWh	0 kWh
Nov-24	1,399 kWh	1,399 kWh	0 kWh
Dec-24	1,732 kWh	1,731 kWh	1 kWh
Total	**14,408 kWh**	**13,056 kWh**	**1,352 kWh**

FIGURE 40: BARRABA POOL ONSITE SOLAR

8.3 Equipment audit

The table and figure below summarise the primary electricity consumers observed on site.

TABLE 87: ENERGY END USE BREAKUP AT BARRABA POOL

Category	Annual consumption	%
Lighting	800 kWh	1%
Heat pumps	33,580 kWh	33%
Power and appliances	8,760 kWh	8%
Motor systems	60,019 kWh	58%
Total	**103,159 kWh**	**100%**

The total energy use estimated from the audit closely aligns with the recorded energy consumption for the site, accounting for both on-site solar generation and grid supply. Within this breakdown, several key energy end-use systems have been identified and documented.

8.3.1 Lighting

In the hydro pool area, there are 10 twin 36W fluorescent lights with an estimated 1,000 hours of operation per year.

8.3.2 Heat pump

A single EvoHeat 47 kW heat pump operates at full capacity for approximately 2,920 hours per year, with an estimated average daily runtime of 6 hours.

8.3.3 Motor systems

Motor systems constitute the largest portion of energy consumption on site, accounting for approximately 58% of total usage. The primary filter pump serving the 33 m pool is a single unit with a rated power of 11 kW. It operates for an estimated 4,500 hours annually.

Additional equipment supporting the 33 m pool includes three smaller pumps and blowers for backwashing, splash pool boosting, and chemical dosing. These systems have a combined effective load of 2.4 kW and operate for approximately 1,500 hours per year. Given their relatively low energy demand, significant efficiency gains from these systems are unlikely.

In the hydro pool, two filter pumps—each rated at 1.2 kW—operate continuously throughout the year.

8.3.4 Power and appliances

Power consumption for general usage, not otherwise accounted for, is estimated indirectly by calculating the difference between the total energy usage and the sum of specifically accounted loads.

8.4 Potential energy and cost-saving opportunities

8.4.1 Tariff switching

The site is currently assigned to the Essential Energy network tariff BLNT1AO, which is the default tariff for business customers with annual electricity consumption not exceeding 160 MWh. This tariff structure is generally simpler, with time-of-use energy charges and no separate peak demand component, making it suitable for smaller or more consistent load profiles.

An alternative option is BLND1AB, which is available to customers consuming up to 100 MWh per year and equipped with an interval-capable (smart) meter. This optional tariff offers lower overall network charges compared to BLNT1AO but introduces a demand-based pricing component. Specifically, it includes a single peak demand charge applied to the highest demand recorded during Peak periods each month. While this tariff can reduce costs for sites with stable or low peak demand, it may lead to higher charges if short-term peak loads occur during the defined peak timeframes.

Based on an analysis of the annual costs for the two tariff options, the proposed tariff is preferred and incurs lower costs for TRC. It is recommended that Council seek to change tariff.

TABLE 88: NETWORK TARIFF ANALYSIS FOR BARRABA POOL (EX-GST RATES)

		Rate				
Charge type	Unit	BLNT1AO	BLND1AB	Data	BLNT1AO	BLND1AB
Daily access charge	$/day	2.2229	2.2229	366 days	$814	$814
Network charge						
Peak	¢/kWh	20.4161	13.5404	33,991 kWh	$6,940	$4,602
Off-peak	¢/kWh	8.4967	5.6231	38,889 kWh	$3,304	$2,187
Shoulder	¢/kWh	15.9733	9.5246	16,693 kWh	$2,666	$1,590
Demand charge						
Peak demand	$/kVA/mth		9.5054	264 kVA	$0	$2,509
Off-peak demand	$/kVA/mth			0 kVA	$0	$0
Shoulder demand	$/kVA/mth			0 kVA	$0	$0
Demand charge (flat)	$/kVA/mth			266 kVA		$0
					$13,724	**$11,702**

TABLE 89: BUSINESS CASE FOR NETWORK TARIFF SWITCHING FOR BARRABA POOL

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site is currently on the BLNT1AO tariff, which is now obsolete. Annual energy use is below 160 MWh, meeting the threshold for potential transition to BLND1AB. Interval metering and updated demand data are required to confirm suitability and potential savings.	Transition the site to the BLND1AB tariff, which offers a more favourable rate structure for sites under 160 MWh per year. This change is expected to deliver approximately 15% savings on network charges, with the site's existing interval (smart) meter already suitable for the new tariff.		NA	NA	$2,022	NA

8.4.2 Solar PV and battery storage

Barraba Pool currently operates a 10-kW solar PV system installed on roof of the facility, which generates approximately 14,400 kWh of renewable electricity annually. A potential expansion options have been analysed to enhance the site's renewable energy contribution.

The expansion involves a 10.5-kW solar array with a 30-kWh battery energy storage system (BESS), proposed location on the roof on the pool side, directly below the existing single row of panels, as well as adjacent roof space near the current installation. These areas have been selected due to the limited available space for additional solar infrastructure. Given the pool's daily operating profile and heating loads, the PV and battery should be sized to maximise on-site use and the battery should primarily target peak/shoulder periods and avoid routine discharge during off-peak where the value of stored energy may be lower than the effective lifetime battery cost.

FIGURE 41: BARRABA POOL – 10.5 KW SOLAR ON THE ROOF AREA ON THE POOL SIDE ADJACENT ROOF SPACES NEAR THE CURRENT INSTALLATION W/ 30 KWH BESS

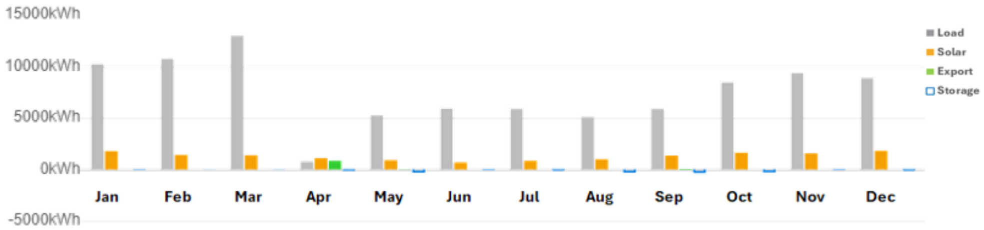


FIGURE 42: BARRABA POOL – 10.5 KW SOLAR SYSTEM PROJECTED MONTHLY SOLAR GENERATION

TABLE 90: BUSINESS CASE FOR 10.5-KW SOLAR + 30-KWH BESS FOR BARRABA POOL

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
There is a 10kW solar PV system on the building (30 panels at ~350W), with potential space for a further 10-15kW and battery storage.	Install a 10.5-kW solar PV system with a 30-kWh battery to increase solar use and cut daytime energy use by up to 46%, pending MSB and roof suitability checks.	Confirm MSB capacity for added loads and assess if one or two panel rows can fit on the pool-side roof below the existing array.	$40,650	14,359 kWh	$3,104	16.5 years

8.4.3 LED lighting upgrade

To enhance energy efficiency, reduce operational costs, and improve lighting quality in the hydrotherapy pool centre, we propose upgrading the existing indoor lighting system. The project involves replacing 10 outdated twin 36W fluorescent fixtures with modern, high-performance LED battens.

TABLE 91: BUSINESS CASE FOR LED LIGHTING UPGRADE FOR BARRABA POOL

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Indoor lights are twin linear fluorescent, with most installed in the Hydrotherapy pool centre.	Replace 10 fluorescent fittings in the hydro pool area with LED battens, achieving ~55% demand reduction		$1,700	500 kWh	$164	10.4 years

8.4.4 Solar water heating systems

The solar matting system, which was previously used to pre-heat the hydrotherapy pool, has been disconnected due to a water leak that caused damage to the male change room wall. Prolonged disconnection of this system has resulted in lost energy efficiency benefits, increasing reliance on heat pumps and raising operational costs. To restore the facility's energy efficiency and reduce long-term heating expenses, we recommend reinstating the solar matting system after conducting necessary repairs. This will allow the system to resume its function of pre-heating the hydrotherapy pool, thereby decreasing the load on the heat pumps and lowering energy consumption.

TABLE 92: BUSINESS CASE FOR WATER HEATING UPGRADE FOR BARRABA POOL

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The solar matting system is disconnected, having leaked and damaged the wall of the male change room.	Reinstate the disconnected solar matting system to pre-heat the hydrotherapy pool and reduce heat pump electricity use, once wall repairs are fully complete and leak risk is addressed.	Wall damage from chlorine exposure has required extended drying (12 months); reinstating the matting system must await full repairs and leak risk resolution. Added heat pump energy costs remain to be assessed.	TBD	12,593 kWh	$2,722	NA

8.4.5 Energy-efficient motors and drives

The new VSD for the 11-kW filtration pump is currently operating at a fixed frequency of 50 Hz. The previous VSD settings are unknown, making it unclear whether the current configuration maintains the required pool water turnover rate. It is recommended that the turnover rate be reviewed against operational requirements, and the VSD frequency adjusted accordingly to optimise both energy efficiency and filtration performance. As part of this process, it is necessary to engage the installer to confirm the previous operating frequency and ensure alignment of the speed setting with performance targets.

The two hydrotherapy pool circulation pumps are currently operating on Direct-On-Line (DOL) starters and run continuously 24 hours a day, seven days a week. To improve operational efficiency and reduce energy consumption, several optimisation strategies should be considered. These include: (1) operating a single pump outside of core usage hours, (2) retrofitting VSDs to enable dynamic control based on demand, or (3) implementing a dual-speed control strategy to differentiate between day and night operation. A technical and financial assessment should be undertaken to determine the most viable solution based on energy savings, system requirements, and return on investment.

Note that where motor or drive upgrades are pursued, the design should confirm motor compatibility and protection settings—high-efficiency motor replacements are best implemented with VSD control (not DOL start), and any VSD retrofit should verify the existing motor is VSD-rated (or include motor replacement/mitigation measures) to avoid premature insulation failure.

TABLE 93: BUSINESS CASE FOR ENERGY-EFFICIENT PUMPS/VSD UPGRADE FOR BARRABA POOL

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
New VSD for the 11-kW filter pump is currently set to operate at 50 Hz. The operating frequency of the previous VSD is unknown.	Confirm with the installer what the old Hz setting was and request the turnover and speed setting be aligned.	Requires confirmation of previous operating settings and installer input to verify turnover requirements and ensure any frequency changes maintain compliant water quality performance.	NA	NA	NA	NA
Two hydrotherapy pool pumps are DOL and operate continuously, 24/7.	Investigate and implement control upgrades to either operate a single hydro pool pump outside daily opening	Implementation is subject to confirming motor suitability for VSD or two-speed operation,	$4,000	3,371 kWh	$729	5.5 years

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
	hours or retrofit the existing pumps with VSDs or two-speed controls to reduce flow and energy consumption during low-demand periods.	potential protection and electrical upgrades, and ensuring operational and health requirements for the hydrotherapy pool are maintained.				

8.4.6 Building sealing & insulation

The hydro pool building exhibits several structural inefficiencies that impact its thermal performance and overall energy consumption. The building envelope lacks insulation, features single-glazed windows, and has unsealed junctions—particularly where the roof meets the walls. These deficiencies create multiple pathways for heat to escape and cold air to infiltrate, resulting in thermal losses. Consequently, the building's heat pump system must work harder and operate more frequently to maintain a stable internal environment suitable for pool activities, increasing energy demand and operational costs.

To address these issues and enhance the building's energy efficiency, a targeted upgrade strategy is recommended. As an immediate measure, sealing the roof-to-wall junctions with durable, weather-resistant materials would help mitigate air leakage and reduce uncontrolled ventilation. Beyond air sealing, the installation of ceiling insulation should be assessed. This intervention would reduce heat loss, stabilise internal temperatures, and decrease the load on the heat pump system.

TABLE 94: BUSINESS CASE FOR BUILDING SEALING & INSULATION UPGRADE FOR BARRABA POOL

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The hydrotherapy pool building lacks insulation, features single glazing, and has unsealed gaps around the roof and walls.	As a minimum, seal the roof-to-wall junction to reduce heat loss. Additionally, investigate the feasibility of installing ceiling insulation to further improve thermal performance and reduce heat pump demand.		$15,500	5,037 kWh	$1,089	14.2 years

9 Calala Water Treatment Plant

9.1 Site description

The Calala Water Treatment Plant (WTP) is the largest facility in the Tamworth region, supplying treated water to the City of Tamworth and the towns of Moonbi and Kootingal. The plant typically treats and delivers an average of 35 ML of water per day, with seasonal variations ranging from under 20 ML in winter to peaks of up to 50 ML in summer.

Raw water is sourced from Dungowan Dam, Chaffey Dam (occasionally), and the Peel River, and is stored on-site at the Calala Storage Dam (CSD). From there, it undergoes a multi-stage treatment process including chemical dosing, clarification, filtration, and disinfection, before being pumped to the Victoria Park pump station and the One Tree Hill reservoirs.

Much of the plant's infrastructure dates to the 1980s. However, key components have been recently upgraded, including the replacement of older 3.3 kV pumps with six new 415 V high lift clear water pumps in 2024. This upgrade also involved transitioning the site from high voltage (HV) to low voltage (LV) supply, with HV assets transferred to Essential Energy.

9.2 Electricity

Based on the provided electricity billing for NMI 4001356569, covering the period from May 2024 to January 2025, the grid electricity usage at Calala WTP amounted to approximately 3,250 MWh, with usage for February to April 2024 estimated. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 95: ANNUAL ELECTRICITY USE AT CALALA WATER TREATMENT PLANT

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	26,270 kWh	83,237 kWh	131,908 kWh	241,415 kWh
Aug-24	19,632 kWh	87,385 kWh	135,036 kWh	242,054 kWh
Sep-24	21,789 kWh	84,179 kWh	136,518 kWh	242,486 kWh
Oct-24	25,281 kWh	97,394 kWh	139,674 kWh	262,348 kWh
Nov-24	23,628 kWh	95,822 kWh	157,877 kWh	277,327 kWh
Dec-24	35,691 kWh	133,303 kWh	209,091 kWh	378,085 kWh
Jan-25	35,577 kWh	130,311 kWh	189,039 kWh	354,928 kWh
Feb-24	35,577 kWh	130,311 kWh	189,039 kWh	354,928 kWh
Mar-24	26,905 kWh	103,458 kWh	145,053 kWh	275,415 kWh
Apr-24	18,232 kWh	76,604 kWh	101,066 kWh	195,902 kWh

Month	Peak	Shoulder	Off-peak	Total usage
May-24	18,232 kWh	76,604 kWh	101,066 kWh	195,902 kWh
Jun-24	20,629 kWh	80,848 kWh	132,038 kWh	233,515 kWh
Total	**307,444 kWh**	**1,179,456 kWh**	**1,767,406 kWh**	**3,254,305 kWh**

This consumption data is graphed to highlight that off-peak electricity consumption is the dominant time-of-use period.

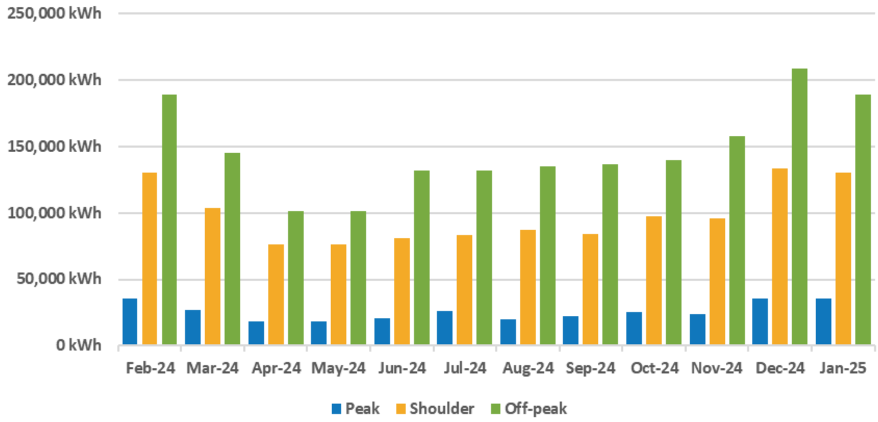


FIGURE 43: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT CALALA WATER TREATMENT PLANT

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 96: ANNUAL ELECTRICITY USE AND COSTS AT CALALA WATER TREATMENT PLANT

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Calala Water Treatment Plant	4001356569	3,254,305 kWh	$598,458	0.18 $/kWh	BLND3AO

9.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Calala Water Treatment Plant. Below are the hourly load profiles for Calala Water Treatment Plant on representative summer and winter months. From these profiles, key insights can be drawn.

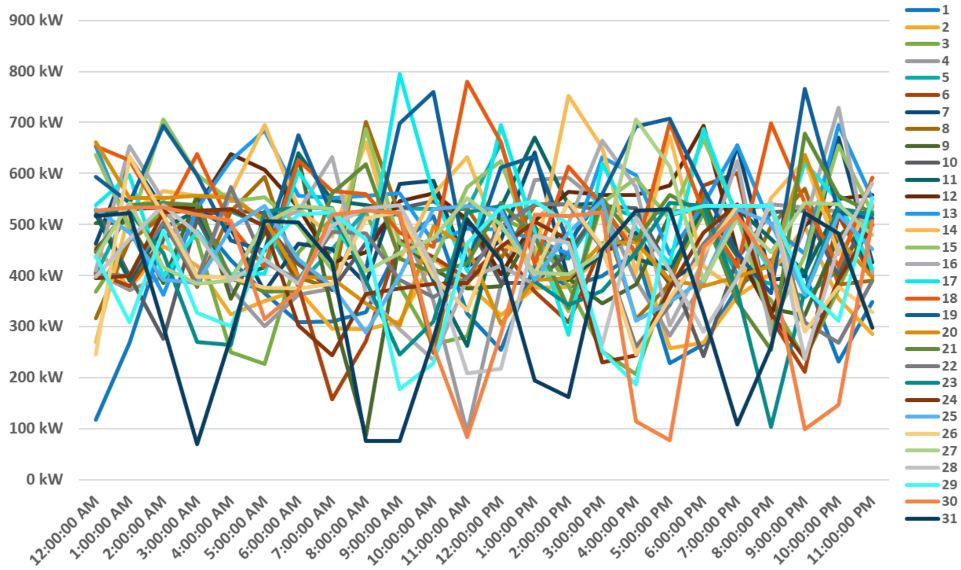


FIGURE 44: INTERVAL DATA AT CALALA WATER TREATMENT PLANT FOR SUMMER (DEC-FEB)

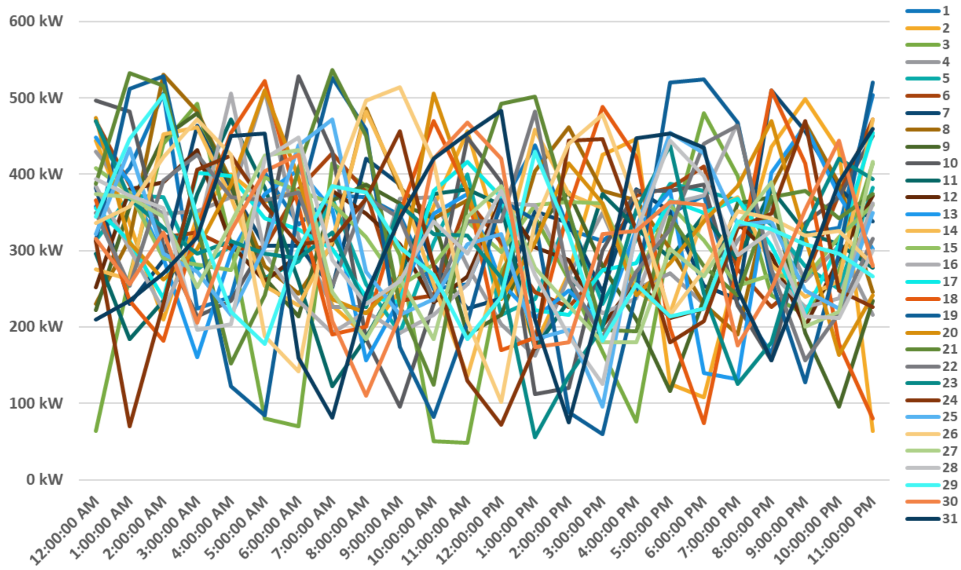


FIGURE 45: INTERVAL DATA AT CALALA WATER TREATMENT PLANT FOR WINTER (JUN-AUG)

- Both summer and winter load profiles are erratic and non-uniform, with no consistent daily load shape visible.
- Load patterns vary widely from day to day and hour to hour, indicating irregular or demand-triggered processes.

- There is no consistent time-of-day peak in either season; load spikes can be observed at virtually any hour, including overnight periods.
- Summer profiles reach higher maximum values (up to 800 kW), while winter remains below 600 kW, but both exhibit similarly erratic load distribution across the day.

9.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table below summarises the primary electricity consumers observed on site.

TABLE 97: ENERGY END USE BREAKUP AT CALALA WTP

Category	Annual consumption	%
Lighting	75,000 kWh	2%
HVAC	100,000 kWh	3%
Power and appliances	104,305 kWh	3%
Motor systems	2,975,000 kWh	91%
Total	**3,254,305 kWh**	**100%**

The total energy use estimated from the audit closely aligns with the recorded energy consumption for the site, accounting for both on-site solar generation and grid supply. Within this breakdown, several key energy end-use systems have been identified and documented.

9.3.1 Lighting

Lighting represents a minor share of the site's total energy consumption. The installed fittings comprise a mix of older 40 W T20 tubes, T8 linear fluorescents, LED downlights, and LED panels. Most of the lighting across the site has now been upgraded to LED, with approximately 150 T20 and T8 fittings still in operation, along with a few high-intensity discharge (HID) fixtures in the pump hall. Overall, lighting energy use is not expected to exceed 75 MWh per annum.

9.3.2 Heating, ventilation and air conditioning (HVAC)

Air conditioning at the site primarily serves the office and laboratory areas, delivered through several mid-sized packaged ducted units and smaller split systems of varying age and efficiency. The combined cooling capacity is around 100 kWr, with annual energy use estimated at approximately 100 MWh.

9.3.3 Power and appliances

Power consumption for general usage, not explicitly accounted for, is estimated by calculating the difference between total site energy use and the sum of specifically allocated loads. This category, estimated at approximately 104 MWh per annum, covers equipment such as computers, IT and communication devices, security systems, and other miscellaneous appliances.

9.3.4 Motor systems

Motor systems represent the largest share of site energy use, accounting for approximately 91% of total electricity consumption. Key motor-driven systems include:

- Clearwater pumping: Estimated at around 2,400 MWh per annum (≈70% of total use), based on reference data from a 2009 study adjusted for current water production and VSD control.
- High-lift pump VSD cooling: Five Temperzone units (215 kWr total cooling capacity) serving the main switchroom and six VSDs, consuming roughly 200 MWh per year.
- Air compressors: Two 22 kW units operate pneumatics and filter valves, using around 75 MWh annually; many air-operated devices have since been converted to electric.
- Backwash pumps and air scour blowers: Despite large motor ratings (2 × 15 kW blowers and 2 × 30 kW backwash pumps), limited run hours keep usage below 50 MWh per year.
- Other pumps, mixers, and controls: Estimated at 250 MWh per annum, comprising more than 50 individual drives, some with VSD control and others SS/DOL starters. Most units are used intermittently, and while retrofitting VSDs is not considered economically viable, they are typically specified for installation during motor system replacements.

9.4 Potential energy and cost-saving opportunities

9.4.1 Power factor correction

Analysis of recent energy data shows that Calala WTP operates with an average power factor of 0.95, indicating mild inefficiencies and some reactive demand charges. Improving power factor closer to unity would reduce apparent power (kVA) demand and lower electricity costs.

It is recommended to install a 390 kVAr power factor correction (PFC) system to raise the power factor to approximately 1.0, improving electrical efficiency and reducing demand charges. While the upfront cost is relatively high, payback is expected in under five years, contingent on confirming sufficient space for the capacitor bank within the existing switchroom. Note that ongoing operation also requires periodic inspection and maintenance by a suitably qualified person to ensure the PFC equipment remains safe, reliable, and effective.

TABLE 98: BUSINESS CASE FOR POWER FACTOR CORRECTION FOR CALALA WTP

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Calala WTP's power factor averages around 0.95, indicating moderate reactive load.	Install a 390 kVAr PFC system to improve power factor to ~1.0 and reduce demand charges. While upfront cost is relatively high, payback is expected in under 5 years. Subject to confirmation of space for capacitor bank.		$58,500	NA	$10,899	5.4 years

9.4.2 Solar PV and battery storage

Calala WTP consumes around 3,250 MWh of electricity per year and currently has no onsite solar PV or battery storage. The available land between the plant and Calala Storage Dam offers strong potential for ground-mounted solar installations to offset a portion of daytime energy demand. However, the proposed ground-mounted solar PV array would require removal of existing trees, with any vegetation clearing potentially needing offset planting elsewhere (subject to approvals and stakeholder support).

In the short term, the recommended action is to install a 400-kW ground-mounted solar PV system between the plant and the storage dam, generating approximately 616 MWh annually (around 82% to be self-consumed).

For the longer term, a larger system of around 622.5 kW with 700 kWh battery storage is proposed to support high daytime loads and VSD-controlled high-lift pumps, with potential to offset over 900 MWh per year. Note that the 700 kWh battery is intended primarily for peak shaving/solar shifting and should be confirmed against interval demand data to ensure adequate discharge duration at the target kW reduction. Implementation will depend on land availability, grid connection capacity, and long-term investment planning.

Consistent with TRC operating priorities, both PV and BESS should be sized around maximising self-consumption and reducing peak demand charges and daytime energy use; the battery can be programmed to flex operation (discharge through peak, partially recharge off-peak, then discharge into morning shoulder loads) where this improves overall economics.

FIGURE 46: CALALA WTP – 400 KW GROUND-MOUNTED SOLAR PV SYSTEM B/W THE PLANT AND CALALA STORAGE DAM

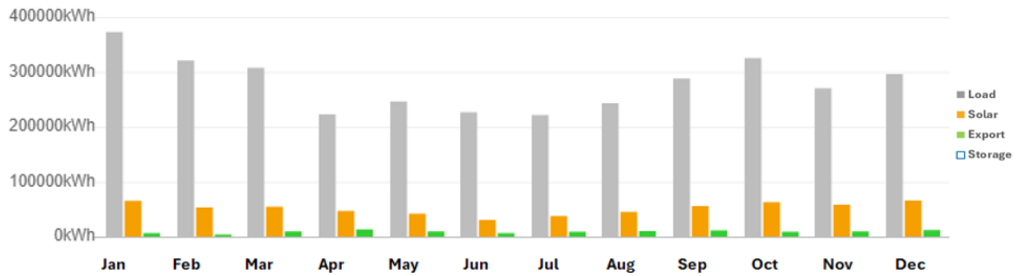


FIGURE 47: CALALA WTP – 400 KW SOLAR SYSTEM PROJECTED MONTHLY SOLAR GENERATION

FIGURE 48: CALALA WTP – 622.5 KW GROUND-MOUNTED SOLAR PV SYSTEM B/W THE PLANT AND CALALA STORAGE DAM W/ 700 KWH BESS

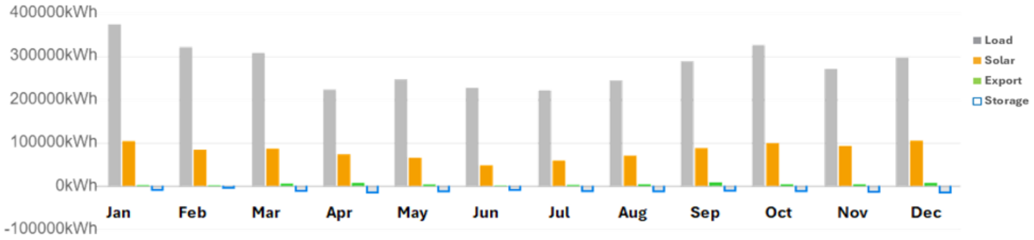


FIGURE 49: CALALA WTP – 622.5 KW SOLAR SYSTEM W/ 700 KWH BESS PROJECTED MONTHLY SOLAR GENERATION

TABLE 99: BUSINESS CASE FOR 400- KW SOLAR & 622.5-KW SOLAR + 700-KWH BESS FOR CALALA WTP

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The plant consumes ~3,250 MWh/year of electricity, with no onsite solar PV or battery storage installed. Land between the plant and the Calala Storage Dam is suitable for large-scale ground-mounted PV, and	**Solar PV only (short term):** Install a 400-kW ground-mounted solar PV system between the plant and Calala Storage Dam to reduce daytime electricity use by up to 38%.	Land availability between the plant and the Calala Storage Dam needs to be confirmed, and interval data gaps due to the HV–LV changeover make precise load profiling more complex. In addition, the	$640,000	507,330 kWh	$93,297	7.0 years

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
historical HV interval data (pre-2024) can help model generation and self-consumption potential.		preferred location may be constrained by established habitat trees, as vegetation removal may not be feasible and could attract community or political backlash.				
No battery storage is currently installed at Calala WTP, and additional solar PV capacity beyond 400 kW would require further investment and planning. Significant daytime load and VSD-controlled high lift pumps offer a strong case for onsite solar utilisation.	**Solar PV and BESS (long term):** Install a 622.5-kW ground-mounted solar PV system with 700-kWh battery storage to support high daytime loads and VSD-controlled pumps, reducing daytime electricity use by up to 69%, subject to land availability and long-term investment planning.	Requires expanded land access, long-term investment planning, and assessment of grid export or connection constraints; BESS sizing depends on clearer load profile data.	$1,626,000	919,804 kWh	$169,150	9.4 years

9.4.3 LED lighting upgrade

To enhance energy efficiency, reduce operational costs, and improve lighting quality in the pump hall of Calala Water Treatment Plant, we propose upgrading the remaining non-LED lighting system. The project involves replacing 40 outdated T20 40W lamps, 50 twin 36W fluorescent fixtures with high-performance LED battens and 10 high-intensity discharge (HID) lamps with modern with LED floodlights.

TABLE 100: BUSINESS CASE FOR LED LIGHTING UPGRADE FOR CALALA WTP

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Approximately 100 older fittings remain (including 40 W T20 tubes, twin 36 W T8s, and HID lamps) assumed to operate continuously, contributing an estimated 40 MWh/year to site consumption.	Replace all remaining non-LED fittings with high-efficiency LED lights to save approximately 40 MWh per year and achieve a 1.7-year payback period.		$19,800	35,335 kWh	$9,480	2.1 years

9.4.4 Air compressor efficiency

Calala WTP operates two 22-kW fixed-speed air compressors supplying the site's pneumatic systems, with an estimated annual energy use of ~75 MWh. No air leaks were detected during the current assessment, though past inspections (2009) identified significant leakage issues.

Two efficiency measures are recommended. The first is to implement routine air leak inspections and prompt repairs to maintain system efficiency and prevent future energy waste. This action can typically be implemented at minimal cost as part of standard maintenance practices.

The second opportunity involves replacing the existing fixed-speed compressors with variable speed drive (VSD) models to better match system demand. This upgrade would improve efficiency by approximately 20–30%, significantly reducing energy consumption and operating costs over time. Note that implementation is contingent on confirming that replacement compressors and associated motors are suitably rated for VSD operation and compatible with the site's pneumatic demand profile. Detailed load analysis and control integration are required to avoid oversizing, unstable operation, or reliability issues, and to ensure that efficiency gains are realised without compromising process performance.

TABLE 101: BUSINESS CASE FOR AIR COMPRESSOR IMPROVEMENTS & VSD REPLACEMENT FOR CALALA WTP

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Two 22 kW fixed-speed air compressors supply pneumatic systems, consuming an estimated ~75 MWh/year. No audible leaks were detected during this assessment, unlike in 2009 when leakage was significant.	**Air Compressor Improvements (Leak Reduction):** Implement routine compressed air leak inspections and prompt repairs to maintain system efficiency and prevent energy waste, building on improvements achieved since the 2009 audit. This measure can typically be implemented at no additional cost, depending on the extent of leaks detected.		NA	NA	NA	NA
Both air compressors are fixed-speed units, limiting efficiency gains during partial load operation.	**Air Compressor VSD Replacement:** Replace both fixed-speed 22 kW air compressors with variable speed drive (VSD) models to improve operational efficiency by ~20% and reduce electricity consumption in line with actual pneumatic demand variability.	Requires confirmation that compressors and motors are VSD-rated and correctly sized to avoid reliability or control issues and ensure expected efficiency gains.	$28,000	14,925 kWh	$2,745	10.2 years

9.4.5 HVAC system upgrade

Most air-conditioning systems at Calala WTP are modern air-cooled Temperzone units, though one older Actron Air R22 unit remains in service for office areas. As the R22 refrigerant has been phased out, the system should be scheduled for replacement with a high-efficiency unit when due.

Given the unit's recent refurbishment to extend its service life, early replacement is not immediately justified. The upgrade should therefore be treated as a long-term action, to be implemented at end of life to ensure compliance and improved efficiency.

9.4.6 Time-of-Use management

The six 500-kW VSD-controlled high lift pumps at Calala WTP account for the majority of site electricity use (~2,400 MWh/year) and are the main contributors to peak demand charges during the 5–8 pm weekday peak period.

It is recommended to implement demand-responsive, setpoint-based scheduling to minimise pump operation during this peak window—particularly in winter—while maintaining water quality and supply contingencies. This approach can significantly reduce demand charges without compromising operational reliability or system performance.

Notably, water and waste operations already actively design and run major equipment to avoid higher-cost periods where operationally feasible, reflecting a strong focus on minimising costs and maximising community value. Any future shift in operating strategy to prioritise emissions reduction (rather than lowest cost) would need to be assessed carefully, as it may increase operating costs even where grid emissions intensity is lower in some time periods.

TABLE 102: BUSINESS CASE FOR TIME-OF-USE MANAGEMENT FOR CALALA WTP

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Six new 500 kW VSD-controlled high lift pumps dominate site energy use (~2,400 MWh/year) and drive significant peak demand charges during the 5–8 pm weekday peak period.	Implement demand-responsive setpoint-based scheduling to minimise high lift pump operation during the 5–8 pm weekday peak period, particularly in winter, to reduce demand charges while maintaining operational flexibility and contingency.	Operational needs to maintain water supply in peak summer periods may limit the ability to fully avoid pumping during the 5–8 pm weekday peak tariff window.	$5,000	NA	$46,622	0.1 years

10 Victoria Park Reservoir and Pumping Station

10.1 Site description

The Victoria Park Reservoir and Pumping Station is one of two bulk storage reservoirs that receive treated water directly from the Calala WTP. The pumping station has two pump sets: Vic Park #1 supplies the nearby Oxley Park Reservoir, and Vic Park #2 supplies the Hills Plain Reservoir about 9 km away. Each set has two identical pump trains, with only one operating at a time.

Load profiles indicate three distinct demand levels – 80 kW (VP#1 only), 140 kW (VP#2 only), and 220 kW (both sets). Of the total annual consumption of 297 MWh, 87% occurs during Off-Peak periods, reflecting effective energy management. However, sustained operation during Peak and Shoulder periods from December to March leads to higher energy and demand charges.

The facility operates based on reservoir demand, with daily runtimes varying accordingly. Outside of summer, operation is mostly limited to Off-Peak periods, with extended weekend runtimes if needed to maintain reservoir levels. From December to March, water use increases significantly, requiring operation during both Peak and Shoulder periods.

The site is near a highway, with adjacent southeast-facing land potentially suitable for solar PV, though no space is available on site.

10.2 Electricity

Based on the provided electricity billing for NMI 4001219572, covering the period from February 2024 to January 2025, the grid electricity usage at Victoria Park and Pumping Station amounted to 296 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 103: ANNUAL ELECTRICITY USE AT VICTORIA PARK RESERVOIR AND PUMPING STATION

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	0 kWh	17 kWh	14,492 kWh	14,509 kWh
Aug-24	0 kWh	1 kWh	14,035 kWh	14,035 kWh
Sep-24	0 kWh	185 kWh	17,238 kWh	17,423 kWh
Oct-24	3 kWh	19 kWh	17,548 kWh	17,570 kWh
Nov-24	49 kWh	49 kWh	27,838 kWh	27,936 kWh
Dec-24	4,125 kWh	9,533 kWh	32,541 kWh	46,199 kWh
Jan-25	2,429 kWh	6,300 kWh	31,134 kWh	39,864 kWh
Feb-24	5,651 kWh	8,072 kWh	28,313 kWh	42,035 kWh
Mar-24	917 kWh	2,223 kWh	27,531 kWh	30,671 kWh
Apr-24	21 kWh	85 kWh	15,782 kWh	15,887 kWh

May-24	21 kWh	93 kWh	16,565 kWh	16,678 kWh
Jun-24	7 kWh	56 kWh	13,619 kWh	13,682 kWh
Total	**13,222 kWh**	**26,632 kWh**	**256,635 kWh**	**296,489 kWh**

This consumption data is graphed to highlight that off-peak electricity consumption is the dominant time-of-use period.

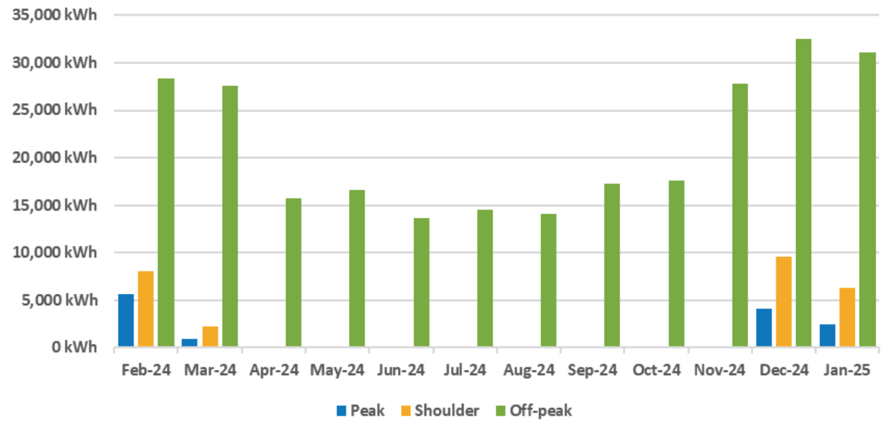


FIGURE 50: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT VICTORIA PARK RESERVOIR AND PUMPING STATION

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 104: ANNUAL ELECTRICITY USE AND COSTS AT VICTORIA PARK RESERVOIR AND PUMPING STATION

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Victoria Park Reservoir and Pumping Station	4001219572	296,489 kWh	$63,360.37	0.21 $/kWh	BLNDTRS

10.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Victoria Park Reservoir and Pumping Station. Below are the hourly load profiles for Victoria Park Reservoir and Pumping Station on representative summer and winter months. From these profiles, key insights can be drawn.

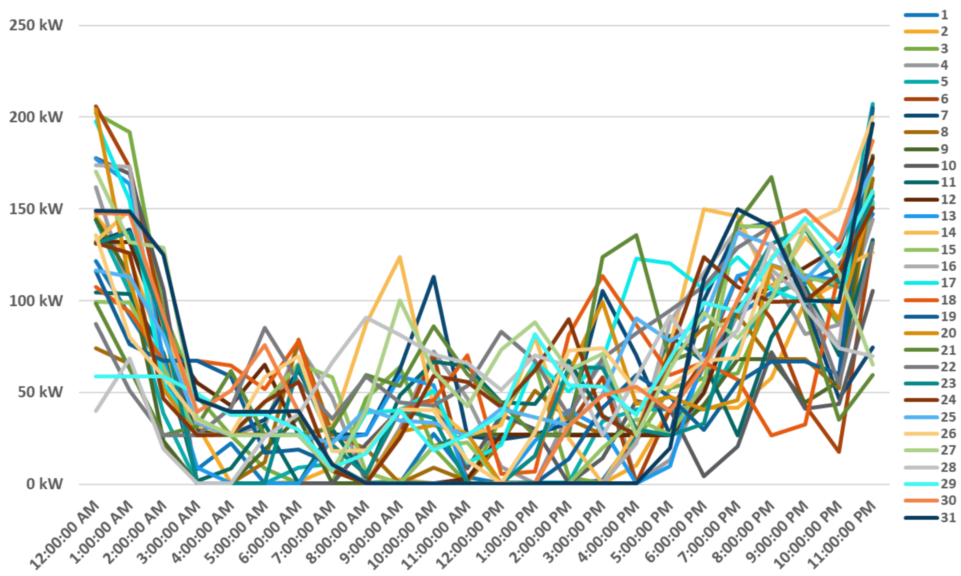


FIGURE 51: INTERVAL DATA FOR VICTORIA PARK RESERVOIR AND PUMPING STATION FOR SUMMER (DEC-FEB)

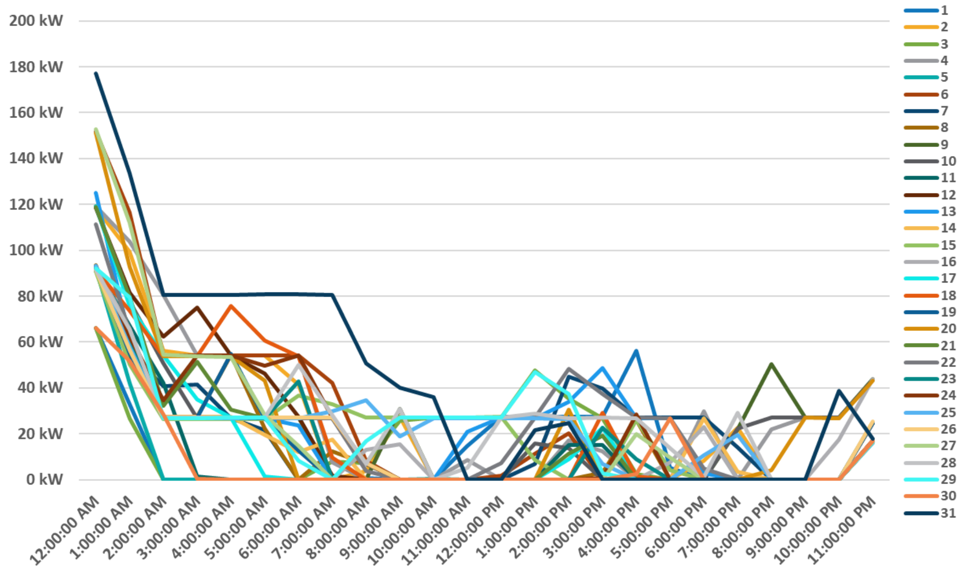


FIGURE 52: INTERVAL DATA FOR VICTORIA PARK RESERVOIR AND PUMPING STATION FOR WINTER (JUN-AUG)

- In both summer and winter, electricity demand is highest during the late evening hours (11:00 PM to 12:00 AM).
- After the overnight peak, both profiles show a decline in demand from 12:00 AM to 3:00 AM.

- Although not uniform, the load shape suggests scheduled pumping cycles, particularly evident in the repetitive peaks during off-peak hours and corresponding daytime troughs observed across both seasons.

10.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table below summarises the primary electricity consumers observed on site.

TABLE 105: ENERGY END USE BREAKUP AT VICTORIA PARK RESERVOIR AND PUMPING STATION

Category	Annual consumption	%
Ancillary loads (i.e. lighting, control systems, etc)	2,970 kWh	1%
Motor systems	294,064 kWh	99%
Total	**297,034 kWh**	**100%**

Within the above estimated consumption, there are a few energy end use systems that are noted.

10.3.1 Pumps and motors

Pumping systems account for over 99% of total site electricity consumption, with two main pump stations operating alternately based on water demand. Each station consists of two identical pump trains, with only one pump typically operating at a time.

Victoria Park #1 is equipped with two Teco 90 kW motors with direct-on-line (DOL) starting, each driving a TKL KL-Iso AKP2716C pump fitted with a 509 mm impeller. The motors are approximately 25 years old and assumed to operate at around 95% efficiency (IE3 class). Hydraulic efficiency for the pumps is estimated at 80–85%, depending on the operating point. Victoria Park #2 comprises two Teco Max-E2 and Max-E3 150 kW motors with star–delta starting, each coupled to a Southern Cross PRHF3C-F pump with a 317 mm impeller. These motors are about 15 years old, with similar efficiency assumptions to those at Vic Park #1.

The combined motor–pump system efficiency is approximately 78%. Pump operation varies with daily water demand, leading to fluctuating run hours. Distribution boards are installed per pump set, although the main switchboard was not observed during the site visit.

10.3.2 Ancillary loads

Ancillary loads, including lighting, control systems, telemetry, and ventilation, are minimal and represent only 1% of total site electricity consumption.

10.4 Potential energy and cost-saving opportunities

10.4.1 Tariff switching

The site is currently assigned to the Essential Energy network tariff BLNDTRS, which applies to large sites with annual consumption above 160 MWh. This tariff includes time-of-use energy charges (Peak, Shoulder, and Off-peak) and demand-based pricing, with separate demand components for each time period.

The BLNDTRS tariff is now obsolete and is being automatically transitioned to BLND3A0, the default replacement tariff with identical network and demand charge rates effective FY2025. A cost comparison indicates that BLND3A0 would slightly increase annual network costs (by approximately $2,900 or 8%), providing no financial advantage in switching early.

It is therefore recommended that Council remain on the automatic transition pathway to BLND3A0, which will ensure alignment with Essential Energy's standard tariff structure without affecting ongoing operating costs.

TABLE 106: NETWORK TARIFF ANALYSIS FOR VICTORIA PARK (EX-GST RATES)

		Rate				
Charge type	**Unit**	**BLNDTRS**	**BLND3AO**	**Data**	**BLNDTRS**	**BLND3AO**
Daily access charge	$/day	19.1811	20.8017	366 days	$7,020	$7,613
Network charge						
Peak	¢/kWh	5.4893	6.1763	13,222 kWh	$726	$817
Off-peak	¢/kWh	2.8850	3.2273	256,635 kWh	$7,404	$8,282
Shoulder	¢/kWh	4.4186	4.9580	26,632 kWh	$1,177	$1,320
Demand charge						
Peak demand	$/kVA/mth	11.0681	11.7932	414 kVA	$4,581	$4,881
Off-peak demand	$/kVA/mth	2.6240	2.7959	2,283 kVA	$5,990	$6,382
Shoulder demand	$/kVA/mth	10.0140	10.6700	797 kVA	$7,985	$8,508
Demand charge (flat)	$/kVA/mth		BLND3AO			
					$34,882	**$37,803**

10.4.2 Energy-efficient motors and drives

Victoria Park uses ageing motors and pumps operating at fixed speed, resulting in an overall system efficiency of around 78%. During scheduled renewals (circa 2030 for VP#1 and 2040 for VP#2), the units should be replaced with high-efficiency IE4/IE5 motors (≥96.5%) and hydraulically optimised pumps (≥85%), lifting total system efficiency to 83–85%. VSD-ready infrastructure should be included to enable dynamic flow control in future upgrades. Note that any VSD adoption should be subject to confirming motors are inverter-duty (or replaced accordingly) and that protection and harmonics considerations are addressed in the upgrade design.

Table 107: Business case for High-Efficiency Motors, Pumps, and VSD for Victoria Park

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Victoria Park #1 uses two 90 kW Teco motors (DOL start, ~25 years old) coupled to TKL KL-Iso AKP2716C pumps with 509 mm impellers, while Victoria Park #2 operates two 150 kW Teco Max-E2/Max-E3 motors (soft start, ~15 years old) driving Southern Cross PRHF3C-F pumps with 317 mm impellers. The motor efficiencies are estimated at ~95% (IE3 equivalent), and pump hydraulic efficiencies at ~80–85%, resulting in a combined system efficiency of ~78%. All pumps run at fixed speed, with no VSD control or throttling, which limits the ability to match flow to seasonal demand fluctuations.	At the next scheduled pump renewals (circa 2030 for Victoria Park #1 and 2040 for Victoria Park #2), replace existing units with high-efficiency IE4/IE5 inverter-duty motors (≥96.5%) and hydraulically optimised pumps (≥85%). This is expected to lift overall system efficiency from ~78% to 83–85%. Install VSDs where duty analysis shows ≥10–15% turndown for a significant share of operating hours; otherwise, provide VSD-ready infrastructure and operate fixed speed. Although not justified as an immediate retrofit (≈$300 k cost for ~ $10 k/yr savings), the upgrade should be planned as part of future pump renewal works.	Efficiency gains are modest—motor upgrades alone offer only ~1.5% improvement, VSD savings are likely limited because pumps already run at full flow without throttling or bypass, and detailed pump curve assessment has not yet been done to confirm potential benefits. VSDs (and any motor upgrades) require confirmation of inverter-duty motor suitability and appropriate electrical protection/control integration.	$300,000	51,052 kWh	$10,000	30.0 years

10.4.3 Time-of-Use management

Pumping operations at Victoria Park often extend into peak and shoulder tariff periods, particularly in summer, leading to higher electricity charges. It is recommended to shift pumping from 5–8 pm to 2–5 pm or overnight/off-peak periods, where operationally feasible. This load-shifting approach will reduce exposure to high peak tariffs and can be further enhanced once VSDs are installed.

It should be noted that where possible, Council already schedules pumping in water and wastewater assets to minimise energy costs. Any future shift to prioritise emissions outcomes over tariff optimisation would need to consider the potential cost impacts.

TABLE 108: BUSINESS CASE FOR TIME-OF-USE MANAGEMENT FOR VICTORIA PARK

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Pumping operations often extend into Peak and Shoulder tariff periods during summer, incurring higher demand and energy charges unnecessarily.	Consider shifting pumping from 5–8 pm to 2–5 pm or overnight/off-peak periods, where operationally feasible. This load-shifting strategy will reduce exposure to peak electricity tariffs and further enhance savings once variable-speed drives (VSDs) are installed.	Requires coordination with demand and water level constraints to avoid peak-period operation without compromising supply.	$5,000	NA	$6,123	0.8 years

11 Dungowan Dam

11.1 Site description

Dungowan Dam is a key facility supplying untreated water to the Tamworth Water Treatment Plant. The site consumes approximately 214 MWh of grid electricity per year with additional generation provided by a 50-kW solar PV system using Ackome panels and Huawei inverters.

Two large air compressors account for most of the site's energy consumption, operating on fixed daily cycles, approximately six hours in the morning and seven hours during the day. These compressors aerate the dam to prevent stratification and maintain water quality. Their operation is scheduled to avoid peak grid pricing (5–8 pm), and load patterns remain consistent across seasons. The remaining ~40 MWh/year is attributed to ancillary equipment including the SCADA system, lighting, sensors, and communications infrastructure. Most lighting on site is LED, with only a few fittings pending upgrade.

The facility presents strong potential for energy optimisation through solar PV system expansion, battery storage integration, and compressor load scheduling enhancements.

11.2 Electricity

Based on the provided electricity billing for NMI NFFFNRKV87, covering the period from February 2024 to January 2025, the grid electricity usage at Dungowan Dam amounted to 230 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 109: ANNUAL ELECTRICITY USE AT DUNGOWAN DAM

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	450 kWh	5,807 kWh	15,860 kWh	22,117 kWh
Aug-24	431 kWh	5,545 kWh	16,158 kWh	22,133 kWh
Sep-24	115 kWh	3,210 kWh	11,377 kWh	14,702 kWh
Oct-24	681 kWh	3,972 kWh	12,182 kWh	16,836 kWh
Nov-24	743 kWh	3,554 kWh	12,146 kWh	16,442 kWh
Dec-24	736 kWh	3,334 kWh	12,413 kWh	16,483 kWh
Jan-25	430 kWh	2,257 kWh	11,496 kWh	14,183 kWh
Feb-24	1,242 kWh	5,090 kWh	14,075 kWh	20,406 kWh
Mar-24	1,241 kWh	5,174 kWh	15,588 kWh	22,003 kWh
Apr-24	628 kWh	5,454 kWh	15,161 kWh	21,243 kWh
May-24	452 kWh	5,957 kWh	15,839 kWh	22,248 kWh
Jun-24	392 kWh	5,050 kWh	16,054 kWh	21,495 kWh
Total	**7,541 kWh**	**54,403 kWh**	**168,348 kWh**	**230,292 kWh**

This consumption data is graphed to highlight that off-peak electricity consumption is the dominant time-of-use period.

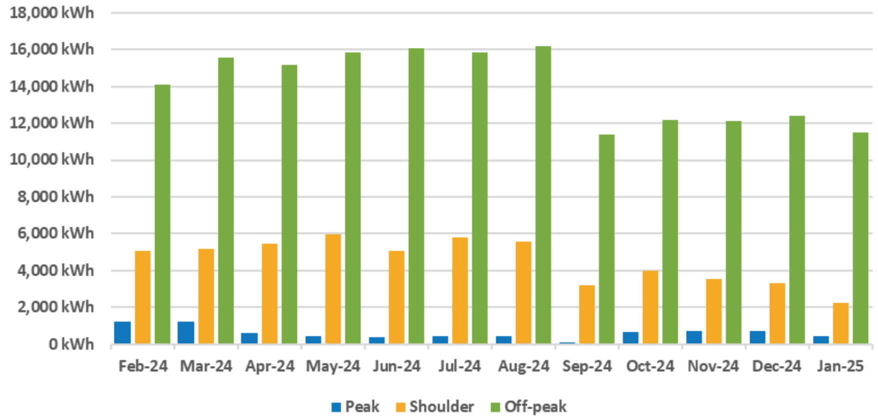


FIGURE 53: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT DUNGOWAN DAM

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 110: ANNUAL ELECTRICITY USE AND COSTS AT DUNGOWAN DAM

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Dungowan Dam	NFFFNRKV87	230,292 kWh	$45,353.17	0.20 $/kWh	BLND3AO

11.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Dungowan Dam. Below are the hourly load profiles for Dungowan Dam on representative summer and winter months. From these profiles, key insights can be drawn.

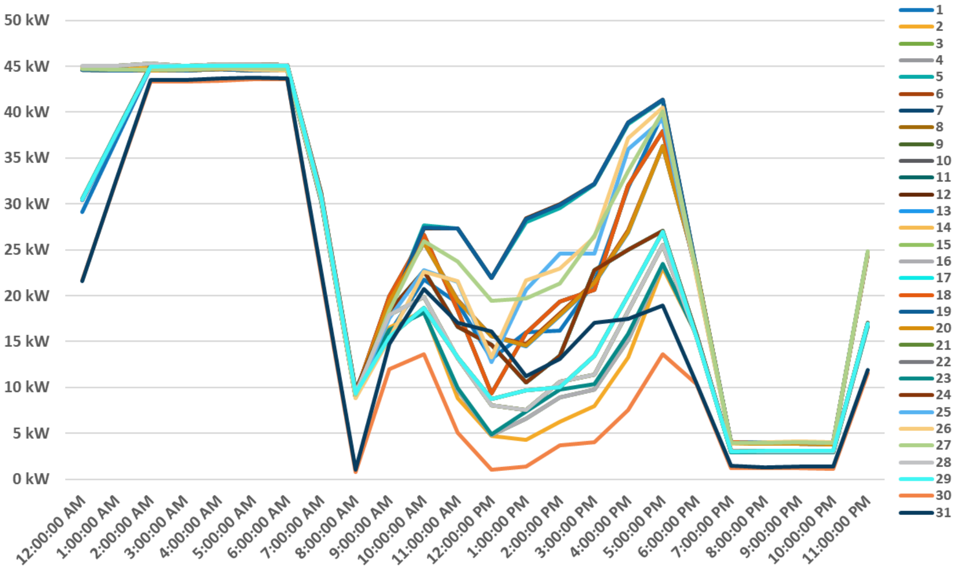


FIGURE 54: INTERVAL DATA AT DUNGOWAN DAM FOR SUMMER (DEC-FEB)

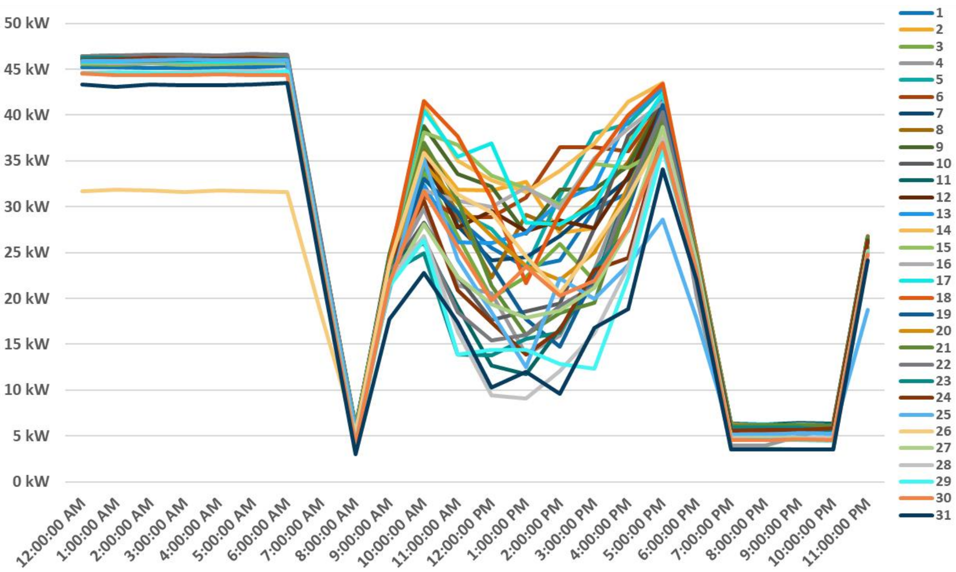


FIGURE 55: INTERVAL DATA AT DUNGOWAN DAM FOR WINTER (JUN-AUG)

- Both summer and winter show a very consistent and structured load profile, with pumping operations occurring in defined blocks of time. These cycles align closely with the site's reported fixed daily runtime of around 6 hours in the early morning and 7 hours during the day.

- This structured load shape is consistent across both seasons, confirming that operation is schedule-driven rather than demand- or temperature-driven, and that seasonal variation has minimal influence on consumption patterns.
- In both seasons, loads from 12:00 AM to 6:00 AM are steady and high, generally around 45 kW. This likely reflects scheduled nighttime pumping. After a brief dip, the second load block resumes around 10:00 AM and runs until 7:00 PM, with minor daily variation in magnitude but strong consistency in timing.
- A sharp drop to near-zero demand is seen after 7:00 PM, continuing until approximately 11:00 PM, at which point demand rises again, indicating the start of the next aeration cycle.

11.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table below summarises the primary electricity consumers observed on site.

TABLE 111: ENERGY END USE BREAKUP AT DUNGOWAN DAM

Category	Annual consumption	%
Air compressors	173,916 kWh	81%
Other equipment (i.e. lighting, SCADA,etc)	40,000 kWh	19%
Total	**213,916 kWh**	**100%**

The total energy use estimated from the audit closely aligns with the recorded energy consumption for the site, accounting for both on-site solar generation and grid supply. Within the above estimated consumption, there are a few energy end use systems that are noted.

11.3.1 Air compressors

Air compressors account for approximately 81% of total electricity consumption at Dungowan Dam. These units form the primary site load and are powered by both grid and on-site solar generation. Two compressors operate on alternating daily cycles to aerate the dam and reduce water stratification. Typical operation spans around 13 hours per day—approximately six hours in the morning and seven hours during the daytime—generally avoiding the 5:00 p.m. to 8:00 p.m. peak pricing period. Operating patterns remain consistent throughout the year, with minimal seasonal variation.

11.3.2 Other equipment

Other equipment, including SCADA systems, controls, sensors, and general building services, accounts for approximately 40 MWh per year. Most site lighting has been upgraded to LED, with only one or two internal fittings yet to be replaced.

11.4 Potential energy and cost-saving opportunities

11.4.1 Power factor correction

Power factor at Dungowan Dam averages 0.96, indicating a well-performing electrical system with minor room for improvement. Installing a 30 kVAr PFC system could help raise the power factor to near 1.0, improving electrical efficiency and reducing demand charges. Implementation will depend on available space for capacitor installation and site-specific electrical layout confirmation. Note that ongoing operation also requires periodic inspection and maintenance by a suitably qualified person to ensure the PFC equipment remains safe, reliable, and effective.

TABLE 112: POWER FACTOR CORRECTION BUSINESS CASE FOR DUNGOWAN DAM

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
No power factor correction equipment is installed, though the site's average power factor is 0.96, indicating good performance. Minor efficiency gains and reduced demand charges could still be achieved with targeted correction if billing is kVA-based.	Install a 30 kVAr power factor correction (PFC) system to improve the power factor to ~1.0, reducing demand charges, subject to confirmation of available space for capacitor bank installation.		$4,500	NA	$500	9.0 years

11.4.2 Solar PV and battery storage

Dungowan Dam currently operates a 50 kW solar PV system (Ackome 335 W panels with Huawei inverters), generating approximately 260–270 MWh per year and supplying about 20% of the site's total energy demand, primarily for daytime compressor operations. The site has sufficient structural and spatial capacity to accommodate further solar expansion.

In the short term, it is recommended to install an additional 24-kW of high-efficiency solar panels to expand onsite generation capacity and further offset daytime compressor electricity use.

In the longer term, the system could be expanded to around 71.4-kW and paired with a 230-kWh battery energy storage system (BESS). This would enable surplus daytime solar generation to be stored and used for early-morning and evening compressor operation, increasing solar self-consumption, reducing demand charges, and improving overall site resilience. Battery sizing should be targeted to compressor start-up/peak periods and evening operation (rather than routine off-peak discharge), with controls configured to flex charging/discharging to best offset peak and shoulder costs.

FIGURE 56: DUNGOWAN DAM – 24 KW GROUND-MOUNTED SOLAR PV SYSTEM ABOVE THE CURRENT SYSTEM

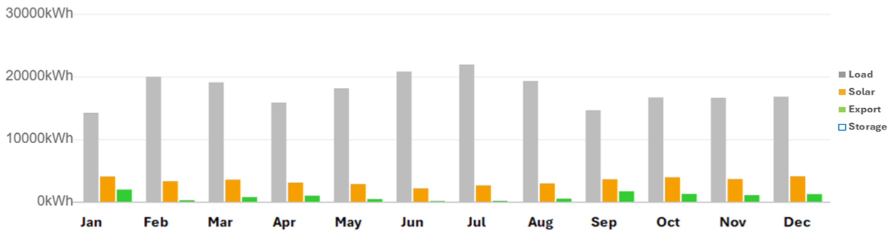


FIGURE 57: DUNGOWAN DAM – 24 KW SOLAR SYSTEM PROJECTED MONTHLY SOLAR GENERATION

FIGURE 58: DUNGOWAN DAM – 71.4 KW GROUND-MOUNTED SOLAR PV SYSTEM ABOVE THE CURRENT SYSTEM W/ 230 KWH BESS

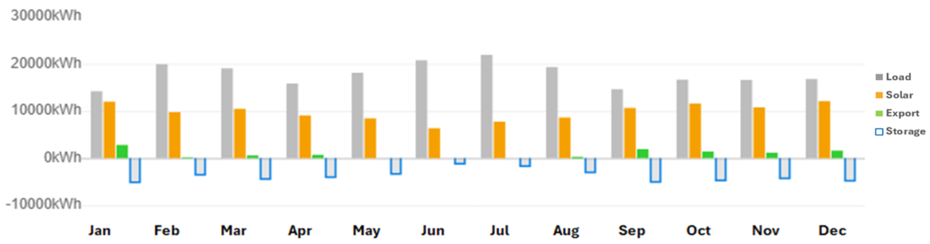


FIGURE 59: DUNGOWAN DAM – 71.4 KW SOLAR SYSTEM W/ 230 KWH BESS PROJECTED MONTHLY SOLAR GENERATION

TABLE 113: BUSINESS CASE FOR 24-KW SOLAR & 71.4-KW SOLAR + 230-KWH BESS FOR DUNGOWAN DAM

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Dungowan Dam has a 50 kW solar PV system (Ackome 335 W panels and Huawei inverters) that generates an estimated 20% of the site's total load (~260–	**Solar PV only (short term):** Install an additional 24 kW solar PV system using high-efficiency panels to expand onsite generation and further offset daytime energy use by up to 40%.		$31,200	29,390 kWh	$6,231	5.1 years

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
270 MWh/year), primarily offsetting compressor operation during daytime hours. Structural and spatial allowances appear sufficient to accommodate additional PV capacity.						
Beyond the existing 50 kW PV system, there is no onsite battery storage, and any surplus daytime solar cannot be stored for later use. With compressors running 13 hours daily, significant opportunity exists to capture excess generation and smooth load peaks.	**Solar PV and BESS (long term):** Install a 71.4 kW solar PV system with a 230 kWh battery energy storage system to offset 100% of daytime energy use and store surplus solar for early morning and evening compressor use, enhancing self-consumption and site resilience.	Larger expansion with battery storage depends on confirming feasibility, available space, and the site's actual load profile to size the system effectively.	$321,240	106,900 kWh	$22,664	17.3 years

11.4.3 Time-of-Use management

Analysis of Dungowan Dam's load profile indicates that site operations typically occur between 9 am and 6 pm, with compressor activity contributing significantly to electricity use during this period. This schedule results in part of the site's energy consumption extending into the 5–8 pm weekday peak tariff window, when electricity prices are highest.

It is recommended that operating schedules be adjusted to commence approximately one hour earlier, where operationally feasible, to reduce or eliminate post-5 pm operation. Shifting compressor use from the peak to the shoulder tariff period would lower demand-related costs and improve alignment with solar generation output during daylight hours, further increasing the utilisation of onsite renewable energy.

No formal cost-benefit analysis has been modelled for this measure, as savings would depend on actual operational flexibility and the extent to which schedules can be shifted without affecting water treatment performance or system reliability. Nonetheless, it remains a low-cost operational efficiency opportunity with potential to deliver meaningful tariff savings.

It should be noted that where possible, Council already schedules pumping in water and wastewater assets to minimise energy costs. Any future shift to prioritise emissions outcomes over tariff optimisation would need to consider the potential cost impacts.

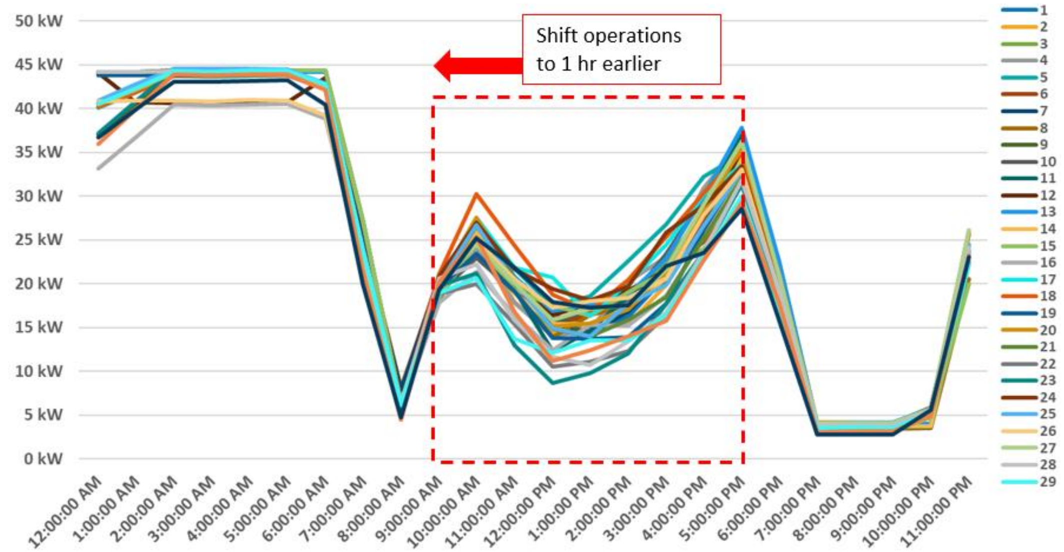


FIGURE 60: DUNGOWAN DAM – ANNUAL LOAD PROFILE

12 Manilla Water Treatment Plant

12.1 Site description

Commissioned in 2021, the Manilla Water Treatment Plant (WTP) services the town of Manilla and sources raw water from both the Namoi and Manilla Rivers. The plant was developed under the Manilla Water Supply Upgrade to replace aging infrastructure and improve water reliability for the community. The facility includes modern treatment processes and energy-efficient technologies and is located on Council-owned land near Reservoir Road.

The plant's annual grid electricity consumption is 131 MWh, supplemented by a 15 kW rooftop solar array, bringing total energy demand to approximately 152 MWh which is closely aligned with Barraba. Despite similar consumption, Manilla's higher water demand results in significantly lower energy intensity (kWh/ML), though operational differences limit direct comparison. There is no interval data is available which limits insight into base load behaviour.

Plant operations typically begin at 6:00 am, with runtime ranging from 4 to 10 hours daily, depending on seasonal demand. Treated water is transferred to a nearby 7 ML reservoir (with an effective working volume of ~2.5 ML) via two 22 kW clearwater pumps. All major pumps, including dosing and backwash systems, are variable speed drive (VSD) controlled, enhancing energy efficiency. The site also includes two 7.5 kW fixed-speed air compressors, though no leaks or inefficiencies were observed during the audit.

12.2 Electricity

Based on the provided electricity billing for NMI 4001327061, covering the period from February 2024 to January 2025, the grid electricity usage at Manilla Water Treatment Plant amounted to 131 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 114: ANNUAL ELECTRICITY USE AT MANILLA WATER TREATMENT PLANT

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	961 kWh	5,261 kWh	6,135 kWh	12,357 kWh
Aug-24	740 kWh	4,131 kWh	5,403 kWh	10,274 kWh
Sep-24	663 kWh	3,859 kWh	4,901 kWh	9,423 kWh
Oct-24	689 kWh	3,795 kWh	4,483 kWh	8,967 kWh
Nov-24	817 kWh	4,444 kWh	4,789 kWh	10,050 kWh
Dec-24	865 kWh	5,527 kWh	6,041 kWh	12,432 kWh
Jan-25	1,322 kWh	6,161 kWh	5,137 kWh	12,619 kWh
Feb-24	1,001 kWh	5,002 kWh	5,072 kWh	11,076 kWh
Mar-24	839 kWh	4,762 kWh	5,652 kWh	11,254 kWh
Apr-24	652 kWh	4,319 kWh	4,287 kWh	9,258 kWh

May-24	745 kWh	4,534 kWh	5,390 kWh	10,669 kWh
Jun-24	936 kWh	4,626 kWh	6,680 kWh	12,242 kWh
Total	**10,231 kWh**	**56,421 kWh**	**63,970 kWh**	**130,621 kWh**

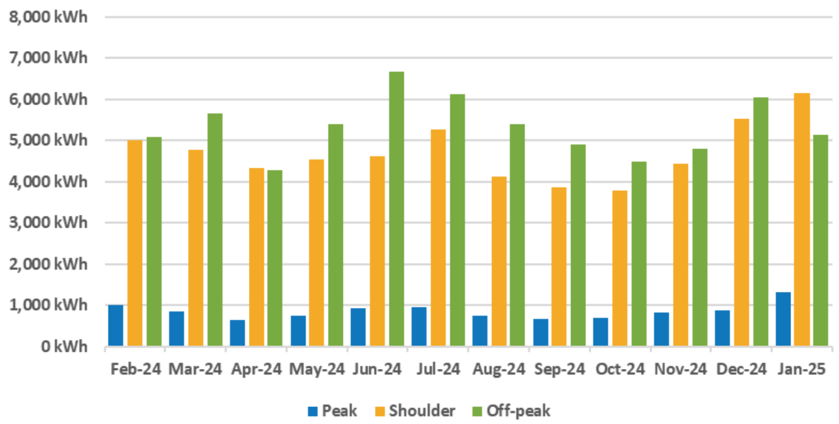


FIGURE 61: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT MANILLA WATER TREATMENT PLANT

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 115: ANNUAL ELECTRICITY USE AND COSTS AT MANILLA WATER TREATMENT PLANT

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Manilla Water Treatment Plant	4001327061	130,621 kWh	$28,263.64	0.22 $/kWh	BLNT1AO

12.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table below summarises the primary electricity consumers observed on site.

TABLE 116: ENERGY END USE BREAKUP AT MANILLA WATER TREATMENT PLANT

Category	Annual consumption	%
Clearwater pumping	60,000 kWh	40%
Air compressors	35,000 kWh	23%
Other pumps / mixers and controls	40,000 kWh	27%
Other demand (Lighting, HVAC, appliances, etc)	15,000 kWh	10%
Total	**150,000 kWh**	**100%**

The total energy use estimated from the audit closely aligns with the recorded energy consumption for the site, accounting for both on-site solar generation and grid supply. Within the above estimated consumption, there are a few energy end use systems that are noted.

12.3.1 Motor systems

Motor systems represent approximately 90% of total electricity consumption at the Manilla Water Treatment Plant, including clearwater pumping, air compressors, and other pumps, mixers, and controls. The plant typically starts operations at 6:00 a.m. and runs between 4 to 10 hours per day, depending on water demand and season.

Clearwater pumping is the primary energy load, consuming around 60 MWh per annum, with some demand offset by on-site solar generation. Operation is based on two 22 kW clearwater pumps transferring water to the adjacent reservoir, running for an average of seven hours per day at roughly 50% of installed electrical power due to VSD control. The two G7 FF air compressors operate at fixed speed, with one unit typically consuming about 25 MWh per year under 30% loaded, 30% unloaded, and 40% idle conditions, indicative of low system leakage. The second unit is used intermittently, mainly during summer months, bringing total air compressor consumption to approximately 35 MWh per year. Other pumps, mixers, and controls are estimated to account for a further 40 MWh annually.

12.3.2 Other demand

Other electricity demand, including lighting, air conditioning, and general appliances, is estimated at approximately 15 MWh per annum. The site is equipped with seven split AC units serving the main switch room, supporting the large number of VSDs installed. All lighting across the plant has been upgraded to LED, and the AC units are energy efficient.

12.4 Potential energy and cost-saving opportunities

12.4.1 Tariff switching

The site is currently assigned to the Essential Energy network tariff BLNT1AO, an obsolete tariff applicable to business customers with annual electricity consumption below 160 MWh. This tariff features time-of-use energy charges without a separate demand charge, making it suitable for smaller sites with steady or predictable load profiles.

A more cost-effective alternative is BLND1AB, which also applies to sites consuming under 160 MWh per year but requires an interval-capable (smart) meter. This tariff includes a peak demand charge applied to the highest demand during peak periods each month, while offering lower network energy charges overall. For sites like Manilla WTP, where demand is relatively stable, this structure could deliver annual savings of around $1,700 (approximately 6% of the site's total electricity cost).

It is recommended that Council transition from BLNT1AO to BLND1AB, subject to confirmation that interval metering is in place and further validation of the business case using detailed demand data. This change would align the site with Essential Energy's current tariff framework and improve long-term cost efficiency.

TABLE 117: NETWORK TARIFF ANALYSIS FOR MANILLA WTP (EX-GST RATES)

		Rate						
Charge type	**Unit**	**BLNT1AO**	**BLND1AB**	**BLNBSS1**	**Data**	**BLNT1AO**	**BLND1AB**	**BLNBSS1**
Daily access charge	$/day	2.2229	2.2229	2.2229	366 days	$814	$814	This tariff requires PK & OP consumption from the SS time period, which cannot be estimated w/o interval data
Network charge								
Peak	¢/kWh	20.4161	13.5404	17.9646	10,231 kWh	$2,089	$1,385	
Off-peak	¢/kWh	8.4967	5.6231	8.1015	63,970 kWh	$5,435	$3,597	
Shoulder	¢/kWh	15.9733	9.5246		56,421 kWh	$9,012	$5,374	
Demand charge								
Peak demand	$/kVA/mth		9.5054		470 kVA		$4,463	
Off-peak demand	$/kVA/mth				0 kVA			
Shoulder demand	$/kVA/mth				0 kVA			
Demand charge (flat)	$/kVA/mth				0 kVA			
						$17,350	**$15,633**	

TABLE 118: BUSINESS CASE FOR NETWORK TARIFF SWITCHING FOR MANILLA WTP

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site remains on the BLNT1AO network tariff, which is also obsolete. Annual usage is within the <160 MWh threshold, allowing eligibility for a different tariff that may offer lower network charges and potential cost savings with smart metering.	Shift from the current BLNT1AO tariff to BLND1AB to reduce network charges. This requires an interval meter—confirm if one is already installed—and validation of the business case with actual demand data.		NA	NA	$1,717	NA

12.4.2 Solar PV and battery storage

The Manilla Water Treatment Plant (WTP) currently consumes approximately 131 MWh of grid electricity per year, partially offset by a 15 kW north-facing solar PV array generating around 21 MWh annually. The site features efficient VSD-driven pumps and available land within the fenced compound suitable for solar expansion.

To further reduce grid reliance, it is recommended to install an 84 kW ground-mounted solar PV system with a 120 kWh battery. This system would substantially increase solar self-consumption and improve energy resilience, particularly during evening and early-morning operation. With interval data available, the proposed PV and BESS sizing could potentially offset up to 100% of daytime electricity demand, subject to confirming the site's actual daytime load profile. Final sizing and design will depend on load profile confirmation and export constraint assessments.

Given the site's relatively modest annual consumption, the expanded PV system should be confirmed against actual daytime demand to avoid oversizing, while the battery should be sized primarily for peak/shoulder reduction (with optional flex control to recharge off-peak and discharge during morning shoulder starts where beneficial).

FIGURE 62: MANILLA WTP– 84 KW SOLAR ON NORTH LAWN W/ 120 KWH BESS

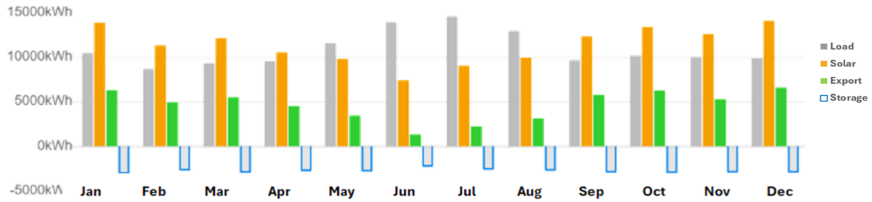


FIGURE 63: MANILLA WTP – 84 KW SOLAR SYSTEM SOLAR SYSTEM W/ 120 KWH BESS PROJECTED MONTHLY SOLAR GENERATION

TABLE 119: BUSINESS CASE FOR 84 KW SOLAR + 120 KWH BESS FOR MANILLA WTP

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The plant uses ~131 MWh/year of grid electricity, partly offset by a 15-kW solar PV system (~21 MWh/year). With efficient VSD-driven pumps and available land north of the compound, the site is well-suited for additional solar installation, though interval data is needed to confirm load profile and battery sizing.	Install an 84-kW ground-mounted solar PV system with a 120-kWh battery to increase self-consumption, subject to confirming load profiles and export constraints.	Lack of interval data means the optimum battery size and system design cannot be confirmed at this time.	$217,200	81,136 kWh	$17,556	15.4 years

13 Barraba Water Treatment Plant

13.1 Site description

The Barraba Water Treatment Plant, established in 1999 as a Dissolved Air Flotation system, provides water to the town of Barraba. The facility has undergone multiple upgrades, including the installation of a new raw water pipeline from Split Rock Dam in 2014. The plant now delivers a reliable supply of potable water, aligning with modern treatment standards.

The site's total annual energy consumption is approximately 153 MWh, comprising 111 MWh from the grid and an estimated 40 MWh from a 30-kW ground-mounted solar PV system with a 30 kVA Huawei inverter. A continuous base load of around 10 kW contributes to approximately 45 MWh of out-of-hours usage which is roughly 40% of grid-sourced consumption.

Operations begin daily at 6 am, running for 4 to 10 hours depending on demand. Two 37 kW clearwater pumps (duty/standby) transfer treated water to an elevated town reservoir. These pumps are DOL-started and retrofitting VSDs would offer efficiency gains.

The site includes a 2.5 kW mixer in the balance tank (running 24/7 to keep PAC in suspension), two 11 kW VSD-controlled DAF recirculation pumps, and a 7.5 kW fixed-speed air compressor used for water aeration and valve control. Air leaks were noted, potentially increasing compressor load and contributing to the base demand.

Multiple small dosing pumps and mixers are in use with intermittent operation. Controls and displays contribute to the base demand of the plant. Lighting and AC systems are small and only account for around 5 MWh of site energy use.

The solar array appears well-matched to daytime load, limiting the scope for further solar expansion. Efficiency opportunities focus on reducing base load, optimising pump control, and addressing compressed air losses.

13.2 Electricity

Based on the provided electricity billing for NMI NFFFAA1719, covering the period from February 2024 to January 2025, the grid electricity usage at Barraba Water Treatment Plant amounted to 111 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 120: ANNUAL ELECTRICITY USE AT BARRABA WATER TREATMENT PLANT

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	835 kWh	2,934 kWh	6,482 kWh	10,251 kWh
Aug-24	654 kWh	2,569 kWh	5,688 kWh	8,911 kWh

Month	Peak	Shoulder	Off-peak	Total usage
Sep-24	565 kWh	2,211 kWh	5,387 kWh	8,163 kWh
Oct-24	543 kWh	2,552 kWh	5,204 kWh	8,299 kWh
Nov-24	443 kWh	2,640 kWh	4,554 kWh	7,636 kWh
Dec-24	437 kWh	3,357 kWh	5,148 kWh	8,943 kWh
Jan-25	446 kWh	4,218 kWh	5,098 kWh	9,762 kWh
Feb-24	493 kWh	3,223 kWh	5,848 kWh	9,565 kWh
Mar-24	491 kWh	3,815 kWh	6,334 kWh	10,641 kWh
Apr-24	666 kWh	3,500 kWh	5,263 kWh	9,429 kWh
May-24	619 kWh	3,549 kWh	4,812 kWh	8,979 kWh
Jun-24	753 kWh	3,266 kWh	6,940 kWh	10,959 kWh
Total	**6,945 kWh**	**37,835 kWh**	**66,758 kWh**	**111,538 kWh**

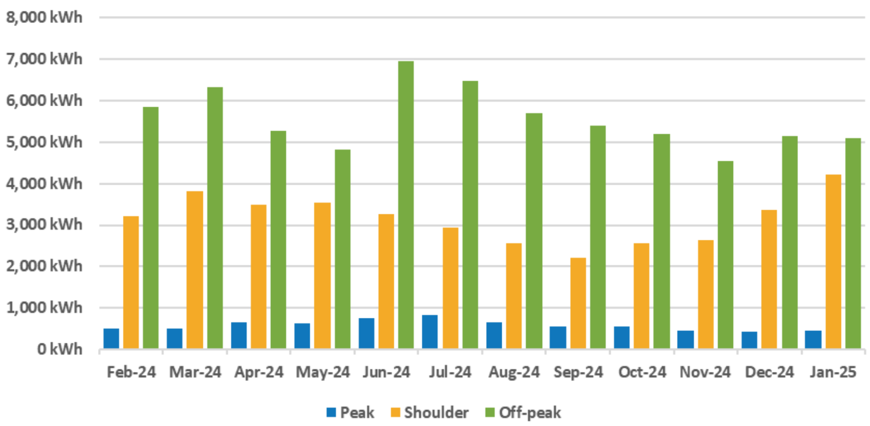


FIGURE 64: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT BARRABA WATER TREATMENT PLANT

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 121: ANNUAL ELECTRICITY USE AND COSTS AT BARRABA WATER TREATMENT PLANT

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Barraba Water Treatment Plant	NFFFAA1719	111,538 kWh	$23,107.38	0.21 $/kWh	BLNT1AO

13.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Barraba Water Treatment Plant. Below are the hourly load profiles for Barraba Water Treatment Plant on representative summer and winter months. From these profiles, key insights can be drawn.

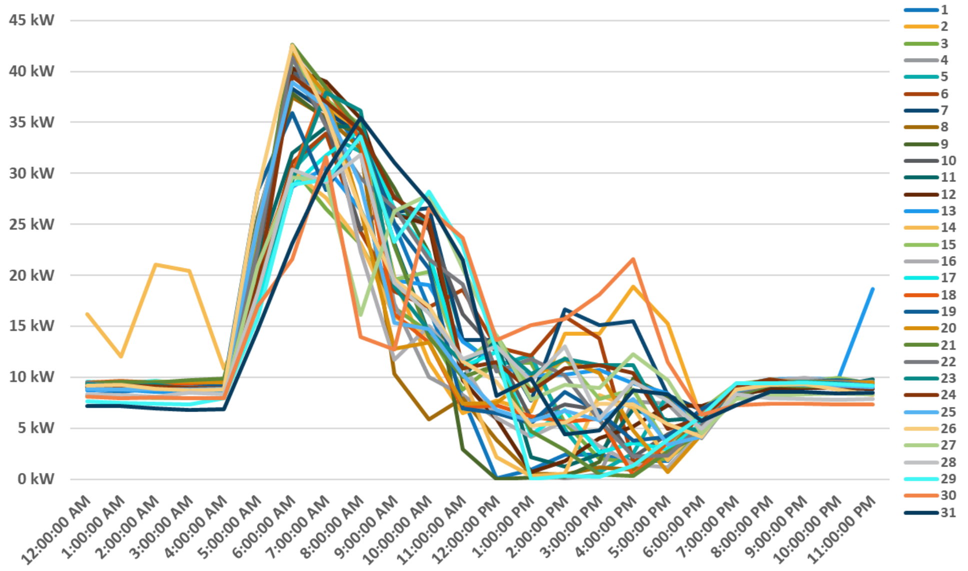


FIGURE 65: INTERVAL DATA AT BARRABA WATER TREATMENT PLANT FOR SUMMER (DEC-FEB)

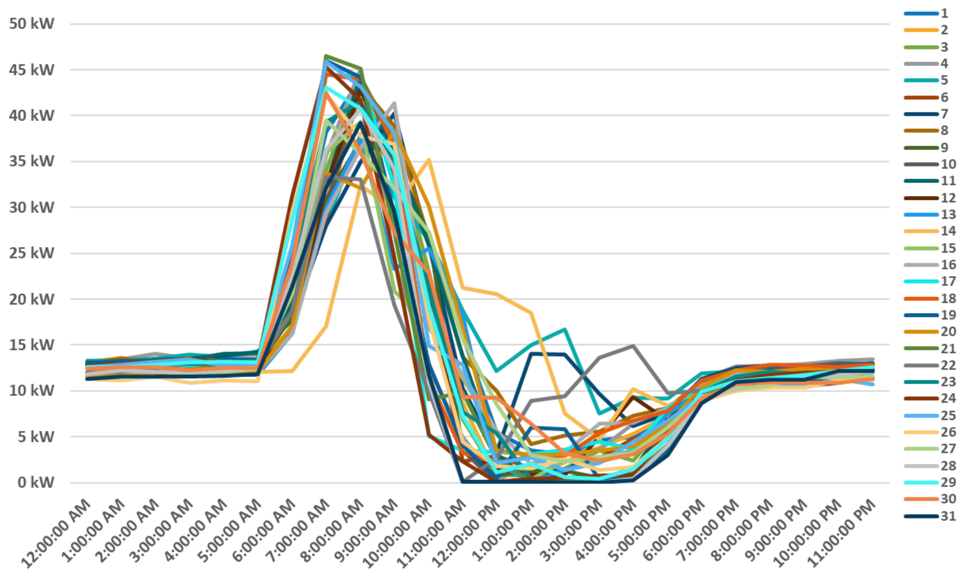


FIGURE 66: INTERVAL DATA AT BARRABA WATER TREATMENT PLANT FOR WINTER (JUN-AUG)

- Load profiles in both summer and winter show a consistent and well-defined daily pattern with high repeatability across the month. A sharp morning ramp-up starts around 4:00–7:00 AM, reaching daily peaks typically between 7:00–8:00 AM.

- After the morning peak, demand steadily declines, falling below 10 kW by the afternoon. This tapering is slightly more gradual in winter, while summer afternoons show more variability, potentially from temperature-driven loads or pumping adjustments.
- Midday to afternoon loads decline more sharply and consistently in winter, whereas summer profiles exhibit greater variability during this period, potentially influenced by operational changes or external temperature effects.
- Electricity use from 7:00 PM to 5:00 AM is low and consistent likely due to essential systems remaining on standby.

13.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table below summarises the primary electricity consumers observed on site.

TABLE 122: ENERGY END USE BREAKUP AT BARRABA WATER TREATMENT PLANT

Category	Annual consumption	%
Clearwater pumping	75,000 kWh	55%
Air compressors	38,000 kWh	28%
Other pumps / mixers and controls	10,000 kWh	7%
DAF pumps	7,000 kWh	5%
Other demand (Lighting, HVAC, appliances, etc)	6,000 kWh	4%
Total	**136,000 kWh**	**100%**

The total energy use estimated from the audit closely aligns with the recorded energy consumption for the site, accounting for both on-site solar generation and grid supply. Within the above estimated consumption, there are a few energy end use systems that are noted.

13.3.1 Motor systems

Motor systems account for approximately 94% of total electricity consumption at Barraba WTP, including clearwater pumping, air compressors, other pumps and mixers, and DAF pumps. The two 37 kW clearwater pumps operate on a duty/standby basis and are run daily, consuming around 75 MWh per year, with some demand met by solar generation. These are DOL started, and VSD retrofits would offer significant efficiency gains.

The 7.5 kW fixed-speed air compressor supplies aeration for the DAF system and operates numerous pneumatic valves, using approximately 38 MWh per year. High compressor use is likely due to leakage observed during the site visit. The 2.5 kW balance tank mixer operates continuously to maintain PAC suspension, accounting for about 17 MWh per year.

DAF recirculation pumps (11 kW each, two units) are VSD controlled and typically run at low load, consuming around 7 MWh per year. Other small pumps, mixers, and control equipment contribute roughly 10 MWh per year, with some non-essential units such as the 0.75 kW coagulant mixer and UV lamps currently turned off following recent power supply issues.

13.3.2 Other demand

Other electrical demand includes lighting, air-conditioning, and general appliances. This is estimated at approximately 6 MWh per year, representing around 4% of total site consumption.

13.4 Potential energy and cost-saving opportunities

13.4.1 Tariff switching

Barraba Water Treatment Plant is currently on the Essential Energy BLNT1AO network tariff, which is now obsolete. This tariff applies to business customers consuming less than 160 MWh per year, but the site's current grid use—approximately 111 MWh per year after solar offset—places it within the eligibility range for the BLND1AB or BLNBSS1 tariffs.

The BLND1AB tariff introduces a peak demand charge but offers lower overall network rates, while BLNBSS1 applies only peak and off-peak energy charges. Both options could deliver cost savings; however, BLND1AB presents the stronger business case, with estimated annual savings of up to $1,950 (around 9% of total electricity costs).

It is recommended that Council transition from BLNT1AO to BLND1AB, using the existing interval-capable meter to confirm demand patterns and verify suitability. If an interval meter is not already installed, it should be upgraded to meet tariff requirements. This change would align the site with Essential Energy's current tariff framework and reduce long-term operating costs.

TABLE 123: NETWORK TARIFF ANALYSIS FOR BARRABA WTP (EX-GST RATES)

		Rate							
Charge type	Unit	BLNT1AO	BLND1AB	BLNBSS1	Data	Data for SS1	BLNT1AO	BLND1AB	BLNBSS1
Daily access charge	$/day	2.2229	2.2229	2.2229	366 days	366 days	$814	$814	$814
Network charge									
Peak	¢/kWh	20.4161	13.5404	17.9646	6,945 kWh	37,861 kWh	$1,418	$940	$6,801
Off-peak	¢/kWh	8.4967	5.6231	8.1015	66,758 kWh	73,677 kWh	$5,672	$3,754	$5,969
Shoulder	¢/kWh	15.9733	9.5246		37,835 kWh	0 kWh	$6,044	$3,604	
Demand charge									
Peak demand	$/kVA/mth		9.5054		303 kVA			$2,881	
Off-peak demand	$/kVA/mth				0 kVA				
Shoulder demand	$/kVA/mth				0 kVA				
Demand charge (flat)	$/kVA/mth				754 kVA				
							$13,947	**$11,993**	**$13,584**

TABLE 124: BUSINESS CASE FOR NETWORK TARIFF SWITCHING FOR BARRABA WTP

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site remains on the BLNT1AO network tariff, which is also obsolete. Annual usage is within the <160 MWh threshold, allowing eligibility for a different tariff that may offer lower network charges and potential cost savings with smart metering.	Shift from the current BLNT1AO tariff to BLND1AB to realise potential annual savings of up to $1,954 (>9% of site's annual electricity bill), using the existing interval meter to assess demand patterns and confirm the suitability of the new tariff structure. Note that BLNBSS1 also offers potential savings, but BLND1AB presents a better business case.		NA	NA	$1,954	NA

13.4.2 Solar PV and battery storage

Barraba Water Treatment Plant currently operates a 30-kW ground-mounted solar PV system with a 30 kVA Huawei inverter, generating around 42 MWh per year and meeting much of the site's daytime energy demand. Approximately 111 MWh per year of grid electricity is still required, primarily during morning and evening periods. Council also owns adjacent land suitable for additional east-facing arrays, providing scope for future expansion.

It is recommended to install a 40-kW east-facing solar PV system with a 100-kWh battery to further reduce reliance on grid electricity during non-solar hours. This upgrade would enable greater use of onsite renewable energy and improve operational resilience, subject to resolving current site power supply constraints before implementation.

The battery should be sized and controlled to reduce peak/shoulder demand (morning and evening pumping/plant loads), avoiding oversized storage that routinely discharges during off-peak when cost savings are limited.

FIGURE 67: BARRABA WTP – 40 KW SOLAR ON WEST-SIDE ADJACENT LAND W/ 100 KWH BESS

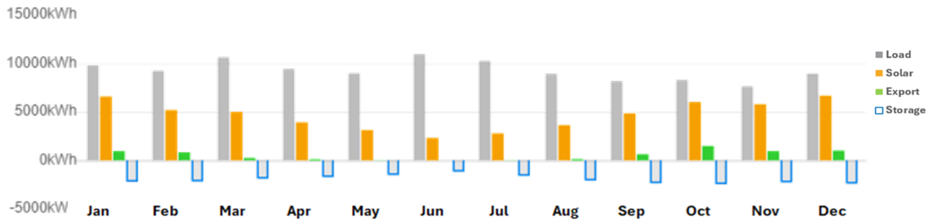


FIGURE 68: BARRABA WTP – 40 KW SOLAR SYSTEM W/ 100 KWH BESS PROJECTED MONTHLY SOLAR GENERATION

TABLE 125: BUSINESS CASE FOR 40 KW SOLAR + 100 KWH BESS FOR BARRABA WTP

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The plant operates a 30 kW ground-mounted solar PV system (30 kVA inverter) generating ~42 MWh/year, leaving ~111 MWh/year of grid demand, mainly in morning and evening periods. Adjacent land is available for east-facing expansion, though site power supply issues may affect timing.	Install a 40 kW east-facing solar PV system with 100 kWh battery storage to reduce reliance on grid electricity during morning and evening hours by offsetting 100% of daytime energy use, subject to resolving current site power supply constraints.	Timing of this expansion may be impacted by existing energy supply issues at the site.	$142,000	49,458 kWh	$10,246	17.2 years

13.4.3 Energy-efficient motors and drives

Two 37 kW clearwater pumps currently operate in a duty/standby rotation with direct-on-line (DOL) starters, consuming approximately 75 MWh per year. The pumps run at fixed speed regardless of system demand, leading to unnecessary energy use during lower-flow conditions. It is recommended to install VSDs on both clearwater pumps to dynamically adjust pump speed to match demand, reducing energy consumption and peak demand while improving compatibility with extended solar generation operation.

In addition, the 2.5 kW PAC balance tank mixer operates continuously at full speed (~17 MWh per year) without control or process feedback. Installing VSD control would allow dynamic speed adjustment—running at full speed only after PAC dosing, then reducing to a lower maintenance speed—to achieve up to 50% energy savings. Integration of a turbidity or suspended-solids sensor could further optimise performance, subject to verification of process requirements.

Note that any VSD adoption should be subject to confirming motors are inverter-duty (or replaced accordingly) and that protection and harmonics considerations are addressed in the upgrade design.

TABLE 126: BUSINESS CASE FOR VSD UPGRADE FOR BARRABA WTP

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Two 37 kW clearwater pumps currently operate on duty/standby rotation with DOL starters, consuming up to ~75 MWh/year. No variable speed control is installed, resulting in fixed-speed operation regardless of flow requirements.	**Clearwater Pumps VSD:** Install VSDs on the two 37 kW clearwater pumps to optimise energy consumption by dynamically adjusting pump speed to match system demand, enabling peak demand reduction and longer runtime compatibility with solar generation.	VSDs (and any motor upgrades) require confirmation of inverter-duty motor suitability and appropriate electrical protection/control integration.	$24,000	15,105 kWh	$3,129	7.7 years
The 2.5 kW balance tank mixer operates 24/7 at full speed to maintain PAC suspension, consuming ~17 MWh/year, with no variable control or monitoring of turbidity.	**PAC Mixer Control:** Install VSD control on the 2.5 kW PAC balance tank mixer for dynamic speed adjustment—running at full speed after dosing, then reducing to maintenance speed—to cut continuous energy use. Consider a suspended-solids sensor for further optimisation, subject to process review.	Requires evaluation to confirm whether constant speed operation is necessary and whether VSD control is feasible.	$5,000	7,684 kWh	$1,592	3.1 years

13.4.4 Air compressor efficiency

The site operates a 7.5 kW fixed-speed air compressor that runs continuously to aerate DAF recirculated water and supply pneumatic systems, consuming approximately 38 MWh per year. During the audit, multiple audible air leaks were detected across the plant, contributing to excess runtime and increasing the site's base load.

It is recommended to conduct pre-start leak testing and repair all identified leaks, followed by six-monthly inspections to maintain system integrity and achieve an estimated 20% reduction in compressor energy use.

Additionally, the existing compressor should be replaced with a modern variable speed drive (VSD) model capable of modulating output in response to air demand. This upgrade would improve efficiency by a further 20–30%, reducing unnecessary energy use during periods of low demand and ensuring sustained long-term performance when combined with ongoing leak management.

TABLE 127: BUSINESS CASE FOR AIR COMPRESSOR IMPROVEMENTS & VSD REPLACEMENT FOR BARRABA WTP

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Air Compressor Efficiency (Leak Reduction): A 7.5 kW fixed-speed air compressor operates continuously to aerate DAF recirculated water and supply pneumatic systems, consuming ~38 MWh/year. Multiple audible air leaks were observed throughout the plant, significantly increasing compressor run time and contributing to the ~10 kW base load.	Conduct a pre-start leak test and repair all identified air leaks to reduce unnecessary compressor runtime, then implement six-monthly inspections to sustain performance and target an estimated 20% reduction in compressor energy use. This measure can generally be implemented at no additional cost, depending on the extent of leaks detected.	Requires leak testing before and after works to confirm savings.	NA	NA	NA	NA

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Air Compressor Improvements (VSD): The existing compressor is a fixed-speed 7.5 kW unit with no capacity to adjust output based on load, resulting in inefficient operation, particularly during periods of low demand or partial load.	Replace the existing 7.5 kW fixed-speed air compressor with a modern VSD-controlled unit to improve energy efficiency by ~20%, reducing unnecessary power consumption during periods of low air demand and complementing leak reduction efforts for sustained long-term savings.		$11,000	7,498 kWh	$1,553	7.1 years

14 Manilla Pumping Station

14.1 Site description

The Manilla Pumping Station supplies approximately 10% of raw water from the Manilla River to the Manilla Water Treatment Plant (WTP). The facility is located at River Street and Lloyd Street in Manilla, adjacent to the Manilla River, and comprises two 105 kW variable speed drive (VSD) pumps operating in duty/standby configuration.

The site's annual grid electricity consumption is approximately 37 MWh, with 100% attributable to raw water pumping to the WTP. All pumps are VSD-controlled, supporting efficient and flexible operation.

Opportunities for improvement at the site are limited. Solar photovoltaic and battery storage systems are unlikely to be feasible due to space and utilisation constraints, and VSD optimisation is not considered applicable. Potential initiatives include reviewing electricity tariffs against billed usage and assessing the applicability of power factor correction where demand tariffs may apply.

14.2 Electricity

Based on the provided electricity billing data for NMI 4407360424, covering the period from February 2024 to January 2025, the grid electricity usage at Manilla Pumping Station amounted to 37 MWh. The site is billed on an any-time tariff, with charges differentiated between peak and off-peak periods under Essential Energy's time-of-use structure. Notably, electricity consumption was only observed between March and June 2024, as shown in the table and graph below.

TABLE 128: ANNUAL ELECTRICITY USE AT MANILLA PUMPING STATION

Month	Peak	Off-peak	Total usage
Jul-24	0 kWh	0 kWh	0 kWh
Aug-24	0 kWh	0 kWh	0 kWh
Sep-24	0 kWh	0 kWh	0 kWh
Oct-24	0 kWh	0 kWh	0 kWh
Nov-24	0 kWh	0 kWh	0 kWh
Dec-24	0 kWh	0 kWh	0 kWh
Jan-25	0 kWh	0 kWh	0 kWh
Feb-24	0 kWh	0 kWh	0 kWh
Mar-24	5,216 kWh	4,494 kWh	9,709 kWh
Apr-24	7,001 kWh	3,798 kWh	10,800 kWh
May-24	7,796 kWh	3,484 kWh	11,279 kWh
Jun-24	3,116 kWh	2,444 kWh	5,560 kWh
Total	**23,129 kWh**	**14,219 kWh**	**37,348 kWh**

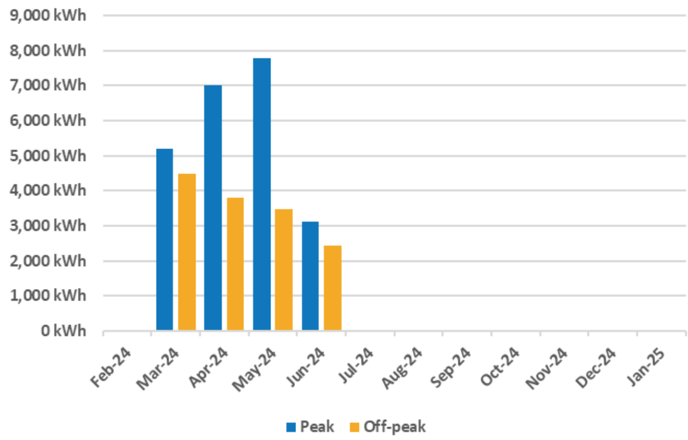


FIGURE 69: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT MANILLA PUMPING STATION

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 129: ANNUAL ELECTRICITY USE AND COSTS AT MANILLA PUMPING STATION

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Manilla Pumping Station	4407360424	37,348 kWh	$10,758.39	0.27 $/kWh	BLNN1AU

14.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data.

The audit determined that all electricity consumption at the site is attributable to the WTP pumps, with no other loads identified. The WTP pumps therefore account for 100% of annual consumption, estimated at **37 MWh**, indicating no ancillary or secondary end uses.

14.4 Potential energy and cost-saving opportunities

14.4.1 Tariff switching

The 7–11 Anne Street site is currently on the BLNN1AU network tariff, which is obsolete and designed for smaller loads under 100 MWh per year. The site's annual energy use is well within the <160 MWh threshold, making it eligible for newer tariffs such as BLND1AB or BLNBSS1 under Essential Energy's updated tariff framework.

While BLND1AB introduces demand-based pricing, BLNBSS1 applies only peak and off-peak energy charges, offering a simpler and more predictable structure. Based on current consumption patterns, transitioning to BLNBSS1 is recommended, as it would deliver approximately 29% savings on network charges.

Before implementation, Council should confirm the presence of an interval (smart) meter, as it is required for either tariff. This transition will align the site with current tariff structures and achieve meaningful reductions in ongoing electricity costs.

TABLE 130: NETWORK TARIFF ANALYSIS FOR 7-11 ANNE STREET (EX-GST RATES)

		Rate						
Charge type	Unit	BLNN1AU	BLND1AB	BLNBSS1	Data	BLNN1AU	BLND1AB	BLNN1AU
Daily access charge	$/day	2.2229	2.2229	2.2229	366 days	$814	$814	This tariff requires PK & OP consumption from the SS time period, which cannot be estimated w/o interval data
Network charge								
Peak	¢/kWh	18.7878	13.5404	17.9646	23,129 kWh		$3,132	
Off-peak	¢/kWh	8.4967	5.6231	8.1015	14,219 kWh	$7,017	$800	
Shoulder	¢/kWh	15.9733	9.5246		0 kWh		$0	
Demand charge								
Peak demand	$/kVA/mth		9.5054		268 kVA		$2,548	
Off-peak demand	$/kVA/mth				0 kVA			
Shoulder demand	$/kVA/mth				0 kVA			
Demand charge (flat)	$/kVA/mth				0 kVA			
						$7,830	**$7,293**	

TABLE 131: BUSINESS CASE FOR NETWORK TARIFF SWITCHING FOR 7-11 ANNE STREET

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site remains on the obsolete BLNN1AU network tariff, designed for smaller loads under 100 MWh per year. Estimated Council electricity use falls within the <160 MWh threshold, making the site eligible for alternative tariffs that could lower network charges and deliver cost savings with interval metering.	Transition from BLNN1AU to BLND1AB once interval (smart) meter data confirms demand patterns, to achieve lower network charges and align with current Essential Energy tariff structures.		NA	NA	$538	NA

15 Namoi Pumping Station

15.1 Site description

The Namoi Pumping Station supplies approximately 90% of raw water from the Namoi River to the Manilla Water Treatment Plant (WTP). The facility is located at the northeast corner of Chaffey Park, adjacent to the Manilla Weir, and includes two 55 kW variable speed drive (VSD) pumps in duty/standby configuration to supply the WTP, along with a 10 kW VSD pump that provides irrigation water to Chaffey Park.

The station's annual grid electricity consumption is approximately 51 MWh, with 90% attributable to WTP pumping and 10% to irrigation. Operating hours vary seasonally, with duty pumps typically running for around 4 hours per day in winter and up to 10 hours per day in summer. All pumps are VSD-controlled, supporting efficient operation.

Future opportunities for the site include reviewing electricity tariffs, assessing the need for power factor correction, and investigating the feasibility of a ~35 kW solar photovoltaic system with battery storage.

15.2 Electricity

Based on the provided electricity billing for NMI 4001341746, covering the period from February 2024 to January 2025, the grid electricity usage at Namoi Pumping Station amounted to 51 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 132: ANNUAL ELECTRICITY USE AT NAMOI PUMPING STATION

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	7 kWh	2,027 kWh	893 kWh	2,928 kWh
Aug-24	17 kWh	3,225 kWh	1,688 kWh	4,930 kWh
Sep-24	25 kWh	3,524 kWh	1,830 kWh	5,379 kWh
Oct-24	90 kWh	4,098 kWh	1,499 kWh	5,686 kWh
Nov-24	264 kWh	4,973 kWh	2,504 kWh	7,740 kWh
Dec-24	163 kWh	5,756 kWh	3,123 kWh	9,043 kWh
Jan-25	835 kWh	6,615 kWh	2,236 kWh	9,685 kWh
Feb-24	147 kWh	1,733 kWh	878 kWh	2,759 kWh
Mar-24	28 kWh	983 kWh	699 kWh	1,710 kWh
Apr-24	7 kWh	35 kWh	209 kWh	250 kWh
May-24	7 kWh	31 kWh	300 kWh	338 kWh
Jun-24	22 kWh	435 kWh	279 kWh	737 kWh
Total	**1,612 kWh**	**33,436 kWh**	**16,137 kWh**	**51,184 kWh**

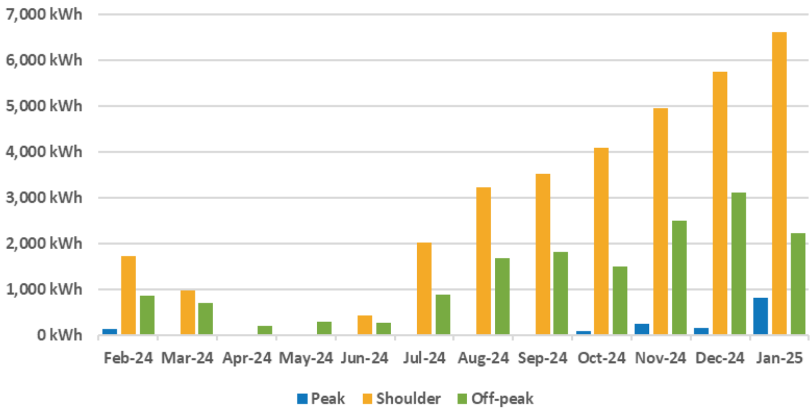


FIGURE 70: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT NAMOI PUMPING STATION

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 133: ANNUAL ELECTRICITY USE AND COSTS AT NAMOI PUMPING STATION

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Namoi Pumping Station	4001341746	51,184 kWh	$12,116.87	0.28 $/kWh	BLNT2AL

15.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table below summarises the primary electricity consumers observed on site.

TABLE 134: ENERGY END USE BREAKUP AT VICTORIA PARK RESERVOIR AND PUMPING STATION

Category	Annual consumption	%
WTP pumps	46,066 kWh	90%
Irrigation pumps	4,607 kWh	10%
Total	**51,184 kWh**	**100%**

Within the above estimated consumption, there are a few energy end use systems that are noted.

15.3.1 Pumps

The site comprises three variable speed drive (VSD) pumps. Two 55 kW VSD-driven pumps supply water to the Manilla Water Treatment Plant, typically operating one at a time for around four hours per day in winter and up to ten hours per day in summer, delivering up to 45 L/s. A third 10 kW VSD-driven pump provides irrigation water to Chaffey Park. Overall, the water treatment plant pumps account for approximately 90% of total site electricity use, while the irrigation pump represents the remaining 10%.

15.4 Potential energy and cost-saving opportunities

15.4.1 Solar PV and battery storage

Namoi Pump Station provides roughly 90% of the raw water supply to the Manilla Water Treatment Plant and operates two 55 kW VSD-driven duty pumps alongside a smaller 10 kW irrigation pump. The site consumes approximately 51 MWh of electricity per year.

Given this variable load profile, a solar-only installation would offer limited value due to inconsistent daytime operation. However, the adjacent fenced ground area near the pump station presents an opportunity for a combined solar PV and battery system to offset grid electricity use and support evening pumping. It is therefore recommended to install a 30 kW ground-mounted solar PV system paired with a 45 kWh battery, designed to align with the station's seasonal runtime. With confirmation of pump scheduling and interval data, the proposed system could offset up to 100% of daytime pumping energy, while the battery would be targeted at peak and shoulder periods rather than off-peak discharge.

To avoid oversizing, both the PV and battery capacities should be confirmed against actual operating profiles. Battery operation should prioritise peak/shoulder reduction, with optional flex control to recharge off-peak and discharge into higher-cost periods where practical. Subject to confirming load profiles, available space, and runtime consistency, the system would reduce grid demand, improve operational resilience during high-use periods, and provide a scalable renewable model for Council's remote pumping assets.

FIGURE 71: NAMOI PUMPING STATIONS – 30 KW GROUND-MOUNTED SOLAR PV SYSTEM W/ 45 KWH BESS

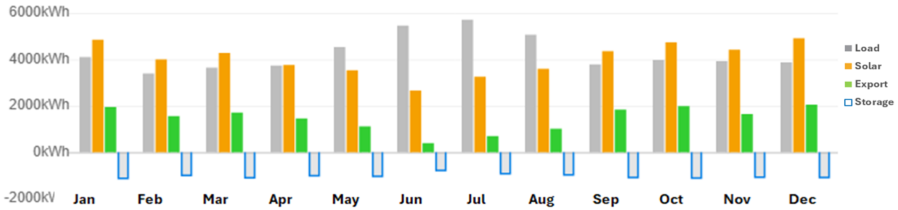


FIGURE 72: NAMOI PUMPING STATIONS – 30 KW SOLAR SYSTEM W/ 45 KWH BESS PROJECTED MONTHLY SOLAR GENERATION

Table 135: Business case for 30-kW solar + 45-kWh BESS for Namoi Pumping Stations

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The pump station consumes ~51 MWh/year, mainly from raw water pumping, with highly variable runtime—4 hours/day in winter and up to 10 hours/day in summer. No onsite solar generation or battery storage exists. While solar-only solutions may have limited viability due to intermittent pumping cycles, fenced ground space nearby could accommodate a solar array and battery system.	Install a 30-kW fenced ground-mounted solar PV system with a 45 kWh battery to support seasonal raw water pumping, subject to confirming confirming load profiles, available space, and runtime alignment.	Feasibility depends on confirming if fenced ground area is available, and intermittent runtime (4 hours/day in winter, up to 10 in summer) may limit viability.	$79,500	30,922 kWh	$7,320	13.3 years

16 Nemingha Pumping Station

16.1 Site description

The Nemingha Water Pumping Station is located just off the New England Highway in the suburb of Nemingha. This facility plays an important role in the local water distribution network by transferring treated water to elevated reservoirs serving the broader Tamworth area.

The station houses two identical pump trains, each comprising a 37 kW Toshiba energy-efficient three-phase induction motor coupled with a TKL HydroTitan HTP1417CMRS pump equipped with a 214 mm impeller. The pumps are configured to operate in an alternating duty cycle with only one pump runs at a time, depending on water demand. Electricity usage is dominated by pumping operations, with the facility consuming approximately 92 MWh per year.

Pump operation is demand-driven, with 2–3 cycles per day during winter and up to 5 cycles per day in summer, reflecting seasonal water usage trends. The motors are understood to operate efficiently under current duty conditions; however, control system improvements may yield additional energy savings.

Currently, the site does not include on-site renewable energy or battery storage systems. However, there is southeast-facing open land adjacent to the site, offering excellent potential for a solar PV installation. The main switchboard, located within the pump room, has adequate space to accommodate battery storage, should future upgrades be pursued.

16.2 Electricity

Based on the provided electricity billing for NMI NFFFAA2427, covering the period from February 2024 to January 2025, the grid electricity usage at Nemingha Pumping Station amounted to 92 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 136: ANNUAL ELECTRICITY USE AT NEMINGHA PUMPING STATION

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	1,307 kWh	2,075 kWh	2,544 kWh	5,925 kWh
Aug-24	1,535 kWh	1,696 kWh	2,289 kWh	5,520 kWh
Sep-24	1,327 kWh	1,946 kWh	3,210 kWh	6,482 kWh
Oct-24	1,308 kWh	2,298 kWh	2,947 kWh	6,553 kWh
Nov-24	1,301 kWh	2,679 kWh	4,265 kWh	8,246 kWh
Dec-24	1,853 kWh	4,578 kWh	6,853 kWh	13,285 kWh
Jan-25	1,323 kWh	4,017 kWh	4,497 kWh	9,837 kWh
Feb-24	1,414 kWh	3,687 kWh	5,152 kWh	10,253 kWh
Mar-24	1,575 kWh	3,030 kWh	4,988 kWh	9,593 kWh

Month	Peak	Shoulder	Off-peak	Total usage
Apr-24	1,100 kWh	1,859 kWh	2,619 kWh	5,578 kWh
May-24	1,492 kWh	1,832 kWh	2,314 kWh	5,638 kWh
Jun-24	1,167 kWh	1,466 kWh	2,619 kWh	5,252 kWh
Total	**16,701 kWh**	**31,163 kWh**	**44,296 kWh**	**92,161 kWh**

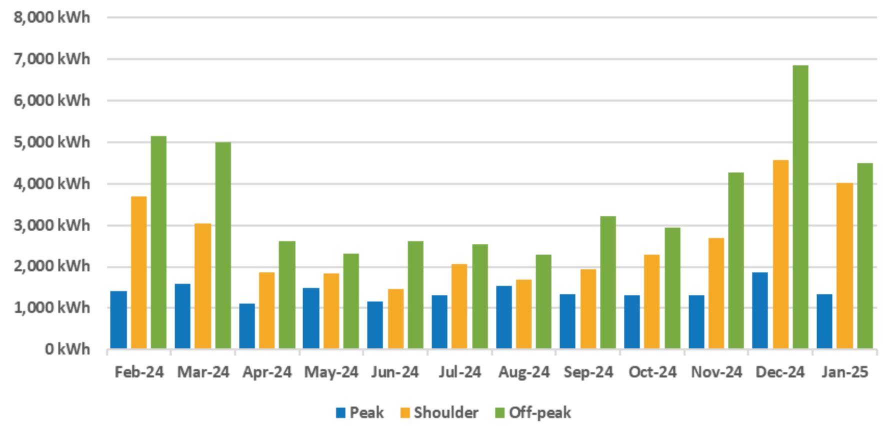


FIGURE 73: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT NEMINGHA PUMPING STATION

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 137: ANNUAL ELECTRICITY USE AND COSTS AT NEMINGHA PUMPING STATION

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Nemingha Pumping Station	NFFFAA2427	92,161 kWh	$20,180.51	0.22 $/kWh	BLNT2AL

16.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Nemingha Pumping Station. Below are the hourly load profiles for Nemingha Pumping Station on representative summer and winter months. From these profiles, key insights can be drawn.

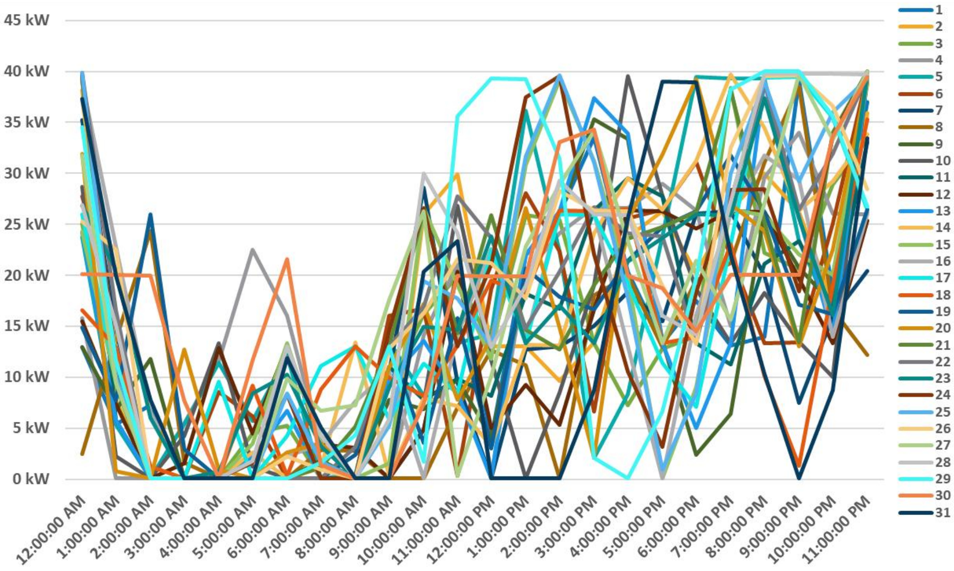


FIGURE 74: INTERVAL DATA AT NEMINGHA PUMPING STATION FOR SUMMER (DEC-FEB)

- Summer data show spikes in electricity demand occur at varied times, mostly during midday to late evening (12:00 PM–10:00 PM), but with no consistent daily peak pattern.
- There is minimal load activity overnight (12:00 AM–6:00 AM), with multiple days showing near-zero consumption during those hours.

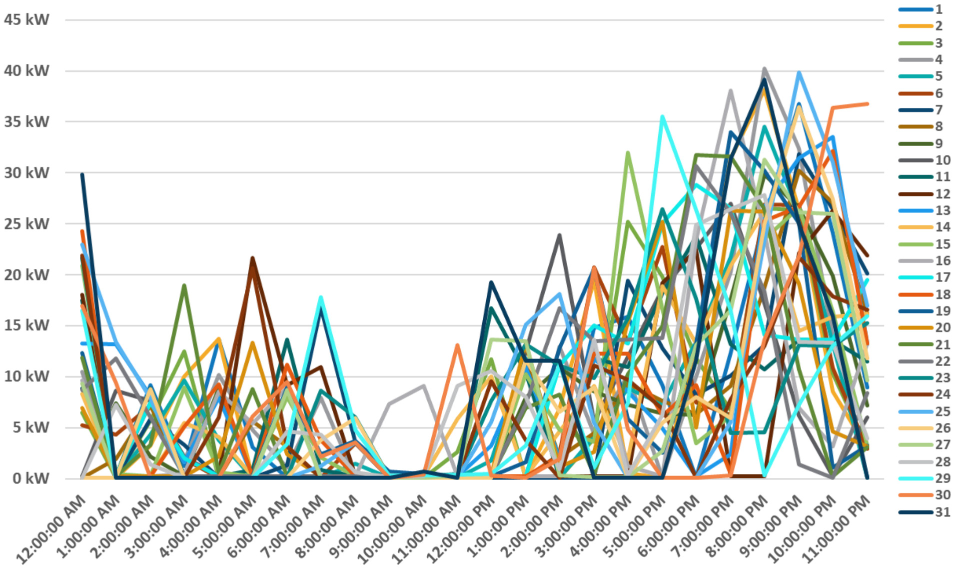


FIGURE 75: INTERVAL DATA AT NEMINGHA PUMPING STATION FOR WINTER (JUN-AUG)

- During winter, peaks are generally less frequent and slightly lower in magnitude compared to summer, which aligns with reduced seasonal pumping frequency (noted in site visit observations).
- Similar to summer, low or near-zero usage is observed in the early morning hours, with erratic peaks emerging from mid-morning onward.
- Both summer and winter graphs show erratic and highly variable load patterns, with frequent sharp spikes and troughs throughout the day.
- Load appears to range from near 0 kW up to 40 kW, with no clear or consistent daily profile.

16.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table below summarises the primary electricity consumers observed on site.

TABLE 138: ENERGY END USE BREAKUP AT NEMINGHA PUMPING STATION

Category	Annual consumption	%
Ancillary loads (i.e. lighting, control systems, etc)	4,608 kWh	5%
Motor systems	87,553 kWh	95%
Total	**92,161 kWh**	**100%**

Within the above estimated consumption, there are a few energy end use systems that are noted.

16.3.1 Pumps and motors

The site operates two identical pump trains, each comprising a Toshiba 37 kW high-efficiency motor (IE3 class, ~95% efficiency) coupled with a Thompson, Kelly & Lewis HydroTitan HTP1417CMRS pump fitted with a 214 mm impeller. Only one pump operates at a time, with operation varying in response to water demand.

The hydraulic efficiency of the pumps is estimated at 80–85%, resulting in an overall motor-pump system efficiency of approximately 78%. These motor systems represent the dominant energy consumers at the site, accounting for more than 95% of total annual electricity use. The main switchboard is located in the pump room and has sufficient capacity and space to accommodate potential future upgrades such as battery storage or additional monitoring equipment.

16.3.2 Ancillary loads

Ancillary loads include lighting, control systems, telemetry, and ventilation. Their contribution to annual energy use is minimal compared to the pumps and motors, accounting for only about 5% of total site consumption.

16.4 Potential energy and cost-saving opportunities

16.4.1 Tariff switching

Nemingha Pumping Station is currently on the BLNT2AL network tariff, which is obsolete and intended for sites consuming less than 100 MWh per year with interval-capable metering. The site's current energy use remains within the <160 MWh/year threshold, making it eligible for newer tariffs such as BLND1AB or BLNBSS1 under Essential Energy's current structure.

The BLND1AB tariff introduces a peak demand charge but offers lower network energy rates, while BLNBSS1 applies peak and off-peak energy charges only, making it simpler and well-suited for smaller or more consistent loads. Based on analysis of site consumption patterns, transitioning to BLNBSS1 is recommended, as it would deliver approximately 8% savings on network charges.

If the site does not currently have an interval (smart) meter, it should be upgraded to enable compliance and accurate billing under the new tariff. This change would align the site with Essential Energy's standard tariff framework and provide ongoing cost efficiencies.

Table 139: Network tariff analysis for Nemingha Pumping Station (ex-GST rates)

		Rate							
Charge type	Unit	BLNT2AL	BLND1AB	BLNBSS1	Data	Data for SS1	BLNT2AL	BLND1AB	BLNBSS1
Daily access charge	$/day	2.2229	2.2229	2.2229	366 days	366 days	$814	$814	$814
Network charge									
Peak	¢/kWh	20.7825	13.5404	17.9646	16,701 kWh	34,111 kWh	$3,471	$2,261	$6,128
Off-peak	¢/kWh	8.1015	5.6231	8.1015	44,296 kWh	58,049 kWh	$3,589	$2,491	$4,703
Shoulder	¢/kWh	15.1467	9.5246		31,163 kWh	0 kWh	$4,720	$2,968	
Demand charge									
Peak demand	$/kVA/mth		9.5054		484 kVA			$4,604	
Off-peak demand	$/kVA/mth				0 kVA				
Shoulder demand	$/kVA/mth				0 kVA				
Demand charge (flat)	$/kVA/mth				754 kVA				
							$12,593	**$13,138**	**$11,644**

TABLE 140: BUSINESS CASE FOR NETWORK TARIFF SWITCHING FOR NEMINGHA PUMPING STATION

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site remains on the BLNT2AL network tariff, which is now obsolete. Annual electricity consumption is below 160 MWh, making the site eligible for alternative tariffs which may offer lower network costs and improved billing alignment with current usage.	Shift from the current BLNT2AL tariff to BLNBSS1 to reduce network charges and deliver potential annual savings of up to $949 (>5% of site's annual electricity bill), leveraging the existing interval meter to support the change.		NA	NA	$949	NA

16.4.2 Solar PV and battery storage

Nemingha Pumping Station currently has no onsite renewable energy generation or battery storage. The site consumes approximately 92 MWh per year of grid electricity, primarily for pumping operations. The available land southeast of the site is suitable for installing a 10-20 kW ground-mounted solar PV system to offset daytime pump loads and reduce reliance on grid electricity.

It is recommended to install a 12.5-kW solar PV system paired with a 30 kWh battery storage system. This would enable the site to shift excess solar generation to evening pumping cycles, reduce peak demand charges, and improve overall energy resilience by balancing daytime solar use with evening energy needs. The suggested battery storage would also enhance operational flexibility and energy savings during high demand periods. Battery sizing should be targeted to the site's peak/shoulder pumping periods (rather than routine off-peak discharge), and can be programmed to flex charging/discharging to best reduce high-cost periods.

FIGURE 76: NEMINGHA PUMPING STATION – 12.5 KW POLE-MOUNTED SOLAR PV SYSTEM W/ 30 KWH BESS

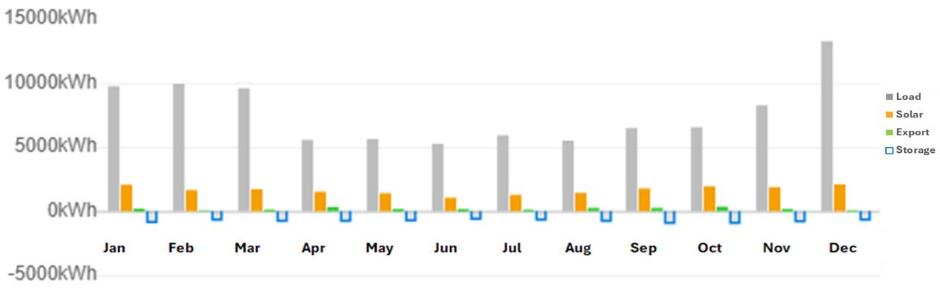


FIGURE 77: NEMINGHA PUMPING STATION – 12.5 KW SOLAR SYSTEM W/ 30 KWH BESS PROJECTED MONTHLY SOLAR GENERATION

TABLE 141: BUSINESS CASE FOR 12.5-KW SOLAR + 30-KWH BESS FOR NEMINGHA PUMPING STATION

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site has no onsite renewable generation or storage, using ~92 MWh/year of grid electricity mainly for pumps. Southeast-facing land near the highway suits a 10-20 kW solar array, and the pump room has space for a 30–70 kWh battery system.	Install a 12.5 kW pole-mounted solar PV system with a 30 kWh battery to offset daytime pump energy use by 51% and shift excess solar to support evening pumping, reducing peak demand charges and improving site resilience.		$43,250	17,539 kWh	$3,841	14.1 years

16.4.3 Energy-efficient motors and drives

The site operates with two Toshiba 37 kW IE3-class motors (≈95% efficiency) driving TKL Hydroflo pumps that achieve 80–85% hydraulic efficiency, resulting in an overall system efficiency of about 78%. The pumps currently operate at constant speed with no variable speed control, limiting their ability to adjust to varying demand conditions throughout the year.

At the next scheduled asset renewal, it is recommended to replace existing motors with high-efficiency IE4/IE5 inverter-duty models (≥96.5%) and install higher-efficiency pumps (>85%) matched to duty requirements. Where significant variability in operation exists (≥10–15% turndown), VSD-ready infrastructure should be included to enable dynamic control and improve operating efficiency. Given the modest standalone efficiency gains, upgrades are best implemented during planned renewals to optimise cost-effectiveness. Note that any VSD adoption should be subject to confirming motors are inverter-duty (or replaced accordingly) and that protection and harmonics considerations are addressed in the upgrade design.

TABLE 142: BUSINESS CASE FOR HIGH-EFFICIENCY MOTORS, PUMPS, AND VSD FOR NEMINGHA PUMPING STATION

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Nemingha Pumping Station operates two Toshiba 37 kW high-efficiency IE3-class motors (≈95% efficiency) driving TKL HydroTitan HTP1417CMRS pumps, which are estimated to achieve ~80–85% hydraulic efficiency. The combined system efficiency is therefore around 78%. Pumps currently operate at constant speed and full flow, with no VSD control, throttling, or bypass, limiting flexibility to match flow to seasonal demand fluctuations (typically 2–3 duty cycles per day in winter and 4–5 in summer).	At the next scheduled asset renewal, replace existing IE3 motors with high-efficiency IE4/IE5 inverter-duty models (≥96.5%) and evaluate higher-efficiency pumps (≥85%) matched to site duty. Consider VSDs if duty analysis confirms ≥10–15% turndown for a significant portion of operating hours; otherwise, provide VSD-ready infrastructure and operate fixed speed. As efficiency gains (~1.5% motor, modest VSD benefit) are limited, upgrades are best implemented during	Efficiency gains from motor upgrades alone are modest (~1.5%), while VSD-related energy savings may be limited because the pumps currently operate at or near full flow with minimal throttling. A detailed pump and system curve analysis is required to quantify potential savings and confirm that sufficient turndown exists to justify VSD investment. As such, upgrades are best aligned with planned asset renewal rather than pursued as standalone retrofits. Note that any	$70,000	15,228 kWh	$3,335	21.0 years

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
No recent pump curve assessment has been conducted to confirm whether newer hydraulic designs could better match the system's duty point or improve efficiency.	planned renewals rather than as standalone projects.	VSD adoption should be subject to confirming motors are inverter-duty (or replaced accordingly) and that protection and harmonics considerations are addressed in the upgrade design.				

16.4.4 Time-of-Use management

Pump operation at the site frequently extends into the 5–8 pm weekday peak tariff period, leading to higher electricity costs. Where operationally feasible, it is recommended to reschedule pump operations to avoid peak periods, prioritising pumping during off-peak and shoulder hours.

Adjusting pump setpoints and control parameters to better align with reservoir levels and system demand can help achieve measurable energy cost reductions without compromising water supply reliability.

It should be noted that where possible, Council already schedules pumping in water and wastewater assets to minimise energy costs. Any future shift to prioritise emissions outcomes over tariff optimisation would need to consider the potential cost impacts.

TABLE 143: BUSINESS CASE FOR TIME-OF-USE MANAGEMENT FOR NEMINGHA PUMPING STATION

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Pumping cycles currently occur throughout the day, including the 5–8 pm weekday peak tariff period, increasing exposure to higher electricity rates.	Reschedule pumping operations to avoid the 5–8 pm weekday peak tariff period where operationally feasible, adjusting control settings in line with reservoir levels and demand constraints to reduce electricity costs.	Requires coordination with demand and water level constraints to avoid peak-period operation without affecting supply.	$5,000	NA	$1,500	3.3 years

17 Flynn Street Depot

17.1 Site description

Flynn Street Depot is one of Tamworth Regional Council's two main operational depots, accommodating multiple functions including a mechanical workshop, electrical workshop, recreation and equipment storage, offices, training facilities, and staff amenities. The site operates primarily between 6:00 am and 4:00 pm on weekdays, with weekday and occasional weekend activity contributing to daytime energy use. After hours, a relatively high base load persists, largely due to continued air conditioning and equipment operation. The buildings have minimal ceiling and no roof insulation, causing rapid heat loss or gain, which contributes to sustained HVAC use outside occupied hours. All systems are controlled locally, with no integrated building automation aside from external lighting controlled via PE cells.

The site is supplied through a single meter (NMI 4407320237) and consumes approximately 100 MWh annually. Interval data is available, supporting accurate modelling for solar and battery storage. While the site currently has no solar generation, the roof is well-suited for solar installation, particularly with east and north-facing panels. Suggested inverter locations include the wall behind or adjacent to the main switchboard (MSB).

Facility features include LED high-bay lighting and small test equipment in the electrical workshop; a lunchroom and training area with two large TVs (one typically always on), LED lighting, and a Daikin multi-split HVAC system. Several appliances such as pie warmers and an ice maker add to energy use. Office areas use LED lighting and modern split-system Daikin air conditioning, frequently left running. Recreation and stores areas behind the MSB have LED lighting and no observed HVAC, but include hot water services and a high-pressure wash unit. The mechanical workshop includes mostly LED lighting (except for eight older twin 36W batten fittings), mobile cooling/heating units, welders, various tools, and a 7.5 kW air compressor. A separate air-conditioned office within the workshop is also in use.

17.2 Electricity

Based on the provided electricity billing for NMI NFFFAA1719, covering the period from February 2024 to January 2025, the grid electricity usage at Flynn Street Depot amounted to 101 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 144: ANNUAL ELECTRICITY USE AT FLYNN STREET DEPOT

Month	Peak	Shoulder	Off-peak	Controlled Load	Total usage
Jul-24	1,892 kWh	3,567 kWh	5,033 kWh	225 kWh	10,716 kWh
Aug-24	1,279 kWh	2,701 kWh	3,733 kWh	185 kWh	7,898 kWh
Sep-24	1,179 kWh	2,510 kWh	3,613 kWh	163 kWh	7,465 kWh

Oct-24	1,069 kWh	2,681 kWh	2,916 kWh	145 kWh	6,811 kWh
Nov-24	1,204 kWh	3,125 kWh	3,522 kWh	112 kWh	7,963 kWh
Dec-24	1,410 kWh	3,435 kWh	4,162 kWh	113 kWh	9,120 kWh
Jan-25	1,524 kWh	3,810 kWh	3,586 kWh	107 kWh	9,027 kWh
Feb-24	1,468 kWh	3,831 kWh	4,169 kWh	107 kWh	9,574 kWh
Mar-24	1,331 kWh	3,273 kWh	4,149 kWh	108 kWh	8,862 kWh
Apr-24	1,111 kWh	2,656 kWh	2,967 kWh	131 kWh	6,865 kWh
May-24	1,304 kWh	2,786 kWh	3,186 kWh	184 kWh	7,460 kWh
Jun-24	1,619 kWh	3,051 kWh	4,861 kWh	188 kWh	9,719 kWh
Total	**16,390 kWh**	**37,425 kWh**	**45,896 kWh**	**1,768 kWh**	**101,479 kWh**

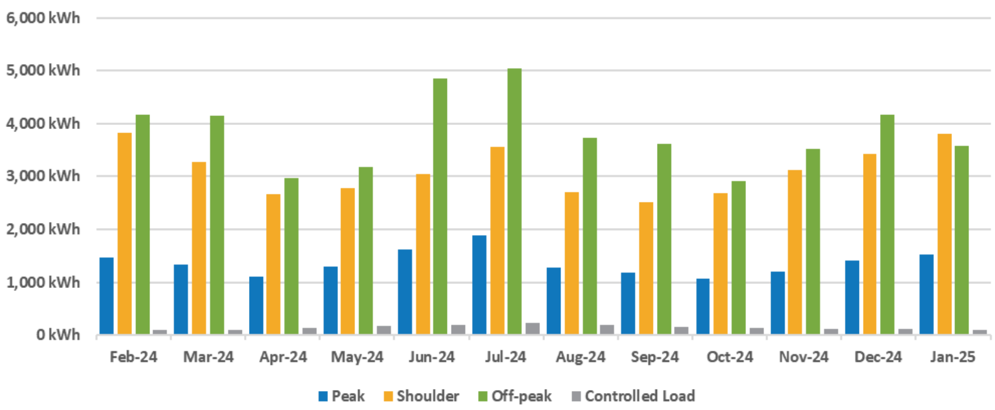


FIGURE 78: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT FLYNN STREET DEPOT

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 145: ANNUAL ELECTRICITY USE AND COSTS AT FLYNN STREET DEPOT

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Flynn Street Depot	4407320237	101,479 kWh	$23,633.17	0.23 $/kWh	BLNC1AU BLNT2AL

17.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Flynn Street Depot. Below are the hourly load profiles for Flynn Street Depot on representative summer and winter months. From these profiles, key insights can be drawn.

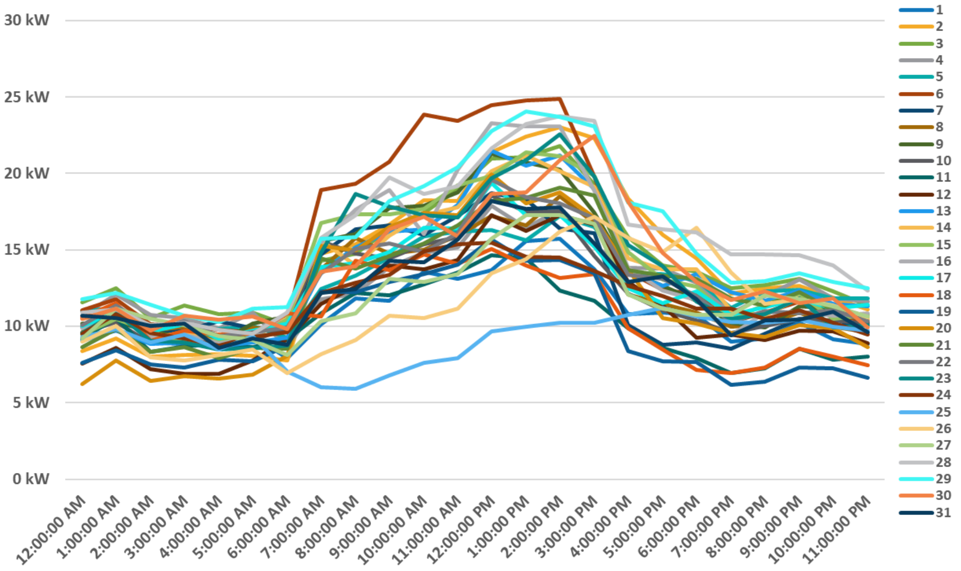


FIGURE 79: INTERVAL DATA AT FLYNN STREET DEPOT FOR SUMMER (DEC-FEB)

- Morning ramp-up begins earlier, around 6:00 AM, and demand increases rapidly between 7:00 AM and 10:00 AM, peaking between 11:00 AM and 2:00 PM. After 2:00 PM, demand starts to gradually decline, though it remains elevated until around 6:00 PM, after which it tapers off. This reflects typical activity patterns such as staff arrival, equipment start-up, and visitor presence, and indicates that daily operations are the primary drivers of energy use.
- Demand variability across days, with some days peaking well above others, suggests external factors such as ambient temperature or occupancy patterns (e.g. weekday vs weekend) significantly influence energy use.

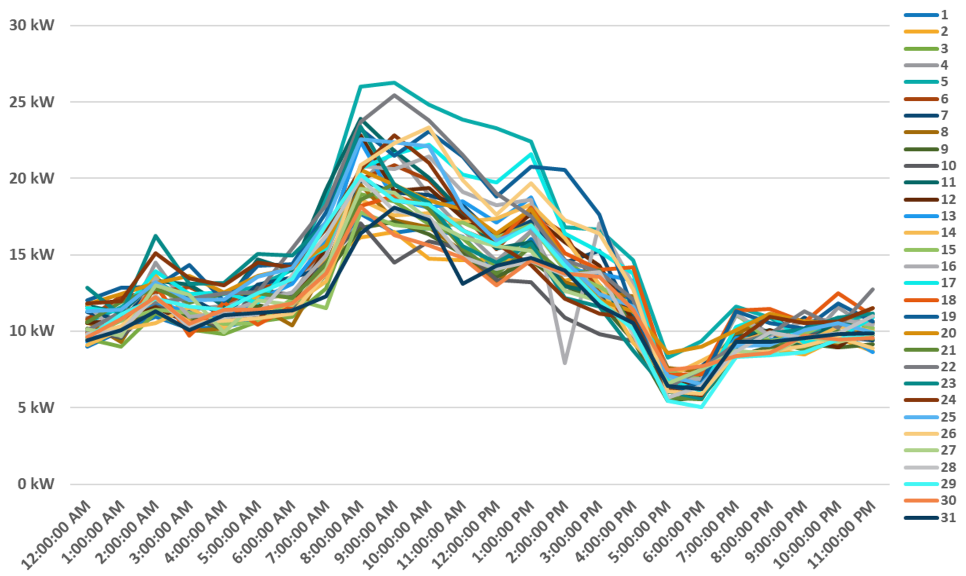


FIGURE 80: INTERVAL DATA AT FLYNN STREET DEPOT FOR WINTER (JUN-AUG)

- The daily peak is more pronounced and shorter compared to summer, with a sharper rise around 7:00 AM, peaking between 9:00 AM and 12:00 PM.
- Winter profiles display a secondary evening increase in some days, around 7:00 PM–9:00 PM, which may indicate after-hours work or scheduled lighting/heating loads.
- Overall, winter profiles are more uniform across days, with fewer outliers or spikes, indicating more predictable operational behaviour.

17.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table below summarises the primary electricity consumers observed on site.

TABLE 146: ENERGY END USE BREAKUP AT FLYNN STREET DEPOT

Category	Annual consumption	%
Lighting	15,000 kWh	15%
HVAC	45,000 kWh	45%
Appliances	10,000 kWh	10%
Workshop tools	30,000 kWh	30%
Total	**100,000 kWh**	**100%**

Within the above estimated consumption, there are a few energy end use systems that are noted.

17.3.1 Lighting

Lighting accounts for approximately 15 MWh per year, representing about 15% of total site consumption. All lighting across the depot is LED, except for eight fluorescent fittings located in the mechanics workshop pits. Lighting across the site is generally efficient, with minimal opportunity for further savings.

17.3.2 Heating, ventilation and air conditioning (HVAC)

HVAC systems are the largest energy user on site, consuming around 45% of total demand. The lunchroom, training area, and office spaces are served by Daikin split systems and a multi-unit condenser, most of which operate continuously, including after hours. Limited ceiling and roof insulation likely contribute to higher cooling and heating demand. Wall-mounted controllers are installed and can be programmed for improved scheduling.

17.3.3 Appliances

Appliances are estimated to use around 10 MWh per year, comprising equipment such as fridges, pie warmers, large screen TVs, clothes washing and drying machines, a large ice machine, and other small plug-in appliances across office and staff areas.

17.3.4 Workshop tools

Workshop tools and equipment account for approximately 30% of site demand. The mechanics and electrical workshops house MIG welders, portable tools, testing and tagging equipment, a 7.5 kW air compressor, and other small machines. Mobile evaporative coolers, an LPG heater, and hot pressure wash units were also noted in use.

17.4 Potential energy and cost-saving opportunities

17.4.1 Tariff switching

The Flynn Street Depot is currently billed under the BLNT2AL network tariff, which is obsolete and designed for sites consuming under 100 MWh per year, along with a BLNC1AU controlled-load tariff for secondary circuits. The site's annual consumption now aligns with the eligibility thresholds for the BLND1AB and BLNBSS1 tariffs (both applicable to sites under 160 MWh/year).

It is recommended that Council transition from BLNT2AL to BLND1AB, which introduces a peak demand charge but offers lower overall network rates. The BLNBSS1 tariff, which applies only peak and off-peak energy charges, also presents savings, though BLND1AB offers the stronger business case.

Preliminary analysis indicates potential annual savings of up to $2,400 (over 10% of total site electricity costs). To proceed, the site's interval meter should be verified or upgraded to meet BLND1AB requirements, enabling accurate demand tracking and confirmation of tariff suitability.

TABLE 147: NETWORK TARIFF ANALYSIS FOR FLYNN STREET DEPOT (EX-GST RATES)

		Rate									
Charge type	Unit	BLNC1AU	BLNT2AL	BLND1AB	BLNBSS1	Data	Data for SS1	BLNC1AU	BLNT2AL	BLND1AB	BLNBSS1
Daily access charge	$/day	0.1246	2.22	2.22	2.2229	366 days	366 days	$46	$814	$814	$814
Network charge											
Peak	¢/kWh		20.7825	13.5404	17.9646	16,390 kWh	32,549 kWh		$3,406	$2,219	$5,847
Off-peak	¢/kWh	3.0671	8.1015	5.6231	8.1015	45,896 kWh	68,930 kWh	$54	$3,718	$2,581	$5,584
Shoulder	¢/kWh		15.1467	9.5246		37,425 kWh	0 kWh		$5,669	$3,565	
Demand charge											
Peak demand	$/kVA/mth			9.5054		188 kVA				$1,788	
Off-peak demand	$/kVA/mth										
Shoulder demand	$/kVA/mth										
Demand charge (flat)	$/kVA/mth										
								$100	**$13,607**	**$10,966**	**$12,245**

TABLE 148: BUSINESS CASE FOR NETWORK TARIFF SWITCHING FOR FLYNN STREET DEPOT

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site remains on the BLNT2AL network tariff, which is now obsolete, along with a BLNC1AU controlled-load tariff. Annual consumption is below 160 MWh, making the site eligible for alternative tariffs which may offer lower network charges and potential cost savings with interval (smart) metering.	Shift from the current BLNC1AU and BLNT2AL tariffs to BLND1AB to enable annual savings of up to $2,401 (>10% of site's annual electricity bill), leveraging the existing interval meter to confirm demand patterns and validate business case and tariff suitability. Note that BLNBSS1 also offers potential savings, but BLND1AB presents a better business case.		NA	NA	$2,401	NA

17.4.2 Solar PV and battery storage

Flynn Street Depot consumes approximately 100 MWh of electricity per year and currently has no onsite solar PV or battery storage. The office, lunchroom, and workshop roofs provide ample space for solar installation, with ideal east–north-facing orientations for optimal yield. Interval meter data is available to accurately model solar generation and self-consumption.

In the short term, it is recommended to install a 42-kW solar PV system across the office and workshop roofs to maximise daytime self-consumption and reduce grid electricity use.

In the longer term, the system could be expanded to 68 kW with 146-kWh battery storage to increase renewable energy utilisation, supply evening loads, and further reduce demand charges. Implementation will depend on confirmation of network connection capacity and final load modelling.

PV and BESS sizing should be validated against depot demand to avoid oversizing; the battery should primarily target peak/shoulder periods and can be configured to flex (partial off-peak recharge followed by morning shoulder discharge) where this improves economics.

FIGURE 81: FLYNN STREET DEPOT – 42 KW FLUSH-MOUNTED ROOF SOLAR PV SYSTEM

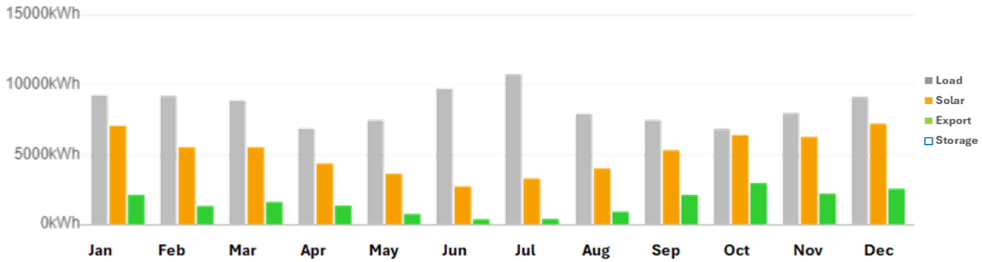


FIGURE 82: FLYNN STREET DEPOT – 42 KW SOLAR SYSTEM PROJECTED MONTHLY SOLAR GENERATION

FIGURE 83: FLYNN STREET DEPOT – 68 KW FLUSH-MOUNTED ROOF SOLAR PV SYSTEM W/ 146 KWH BESS

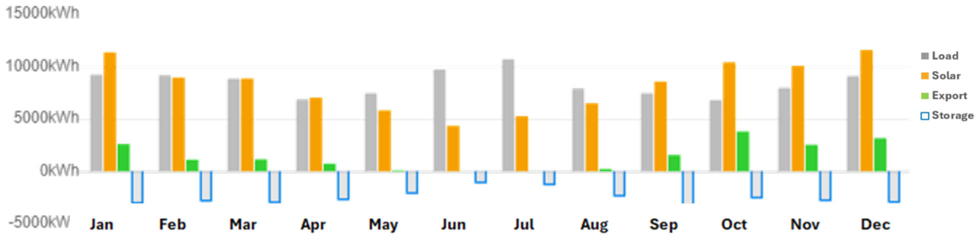


FIGURE 84: FLYNN STREET DEPOT – 68 KW SOLAR SYSTEM W/ 146 KWH BESS PROJECTED MONTHLY SOLAR GENERATION

TABLE 149: BUSINESS CASE FOR 42-KW SOLAR & 68-KW SOLAR + 146-KWH BESS FOR FLYNN STREET DEPOT

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The depot consumes ~100 MWh/year of grid electricity, with no existing solar PV or battery storage. The roof areas over the offices, lunchroom, and electricians workshop have ample space suitable for solar installation with optimal East and North-facing orientations, and interval meter data is available to model solar yield and self-consumption accurately.	**Solar PV (short term):** Install a 42-kW solar PV system on the office and workshop roofs to maximise daytime self-consumption and reduce daytime grid electricity use by up to 82%.		$54,600	42,666 kWh	$9,936	5.6 years
Beyond the proposed 40 kW solar array, no onsite energy storage is currently installed to capture surplus generation for later use. Evening and overnight loads from AC and appliances remain high, creating further opportunity for battery storage to improve renewable utilisation and reduce peak demand.	**Solar PV and BESS (long term):** Install a 68-kW solar PV system with 146 kWh battery storage to increase onsite solar utilisation (reducing 100% of daytime energy use) and supply evening loads, subject to confirming network connection capacity and final load modelling.		$219,728	81,748 kWh	$19,038	14.4 years

17.4.3 LED lighting upgrade

All site lighting has been upgraded to LED except for eight twin 36 W fluorescent battens located in the mechanics workshop pit. These lights operate approximately 50 hours per week, contributing to unnecessary energy use and increased maintenance requirements.

It is recommended to replace the remaining fluorescent battens with LED equivalents to reduce lighting energy consumption, improve illumination quality and visibility within the workshop pit, and minimise ongoing maintenance needs.

Table 150: Business case for Lighting LED upgrade for Flynn Street Depot

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
All site lighting has been upgraded to LED except for 8 twin 36W fluorescent battens in the mechanics workshop pit, which operate approximately 50 hours per week and contribute to unnecessary energy use and maintenance costs.	Replace 8 twin 36 W fluorescent battens in the mechanics workshop pit with LED equivalents to cut energy use, improve lighting quality, and reduce maintenance.		$1,360	1,023 kWh	$355	3.8 years

17.4.4 Base energy demand management

Analysis of site data shows that the Flynn Street Depot has an average night-time energy demand of around 9 kW, dropping to 4 kW at minimum load. This indicates continuous operation of air conditioning, lighting, and appliances outside working hours, particularly in the lunchroom, training room, and some offices where AC units operate 24/7. Limited roof insulation further contributes to temperature fluctuations and increased overnight energy use.

It is recommended to implement night-time and weekend shutdown procedures targeting non-essential HVAC and lighting loads to reduce demand by up to 5 kW (~28 MWh per year). Measures should include staff engagement, scheduled equipment shutdowns, and consideration of insulation improvements in key areas to stabilise indoor temperatures and maintain long-term efficiency.

TABLE 151: BUSINESS CASE FOR BASE ENERGY DEMAND MANAGEMENT FOR FLYNN STREET DEPOT

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Average night-time energy demand is ~9 kW year-round, dropping as low as 4 kW at minimum load, indicating substantial continuous operation of air conditioning, lighting, and appliances outside of working hours. The lunchroom, training room, and some offices have AC units running 24/7, compounded by minimal ceiling or roof insulation, which exacerbates temperature swings and drives overnight energy use.	Implement night-time and weekend shutdown procedures targeting non-essential HVAC and lighting loads to reduce energy demand by up to 5 kW, supported by staff engagement and insulation improvements in key areas	Requires staff consultation to develop and agree on shutdown procedures, and engagement with cleaning staff to ensure consistent implementation.	$5,000	28,140 kWh	$6,553	0.8 years

18 Lockheed St Depot

18.1 Site description

Lockheed St Depot is one of two main depots in Tamworth used by Council. It houses a Mechanics workshop, services workshop, stores, offices, training room and lunchroom. The site operates on weekdays from 5:00 AM to 5:00 PM, with a consistently high overnight base load of around 12 kW, primarily due to the ongoing use of air conditioning and other equipment.

Electricity is supplied through a single grid connection (NMI 4407338456), with annual usage of approximately 89 MWh. A roof-mounted 55 kW solar PV system above the mechanics workshop offsets a substantial portion of weekday daytime demand and regularly exports excess energy to the grid on weekends. Additional roof space appears suitable for expanding solar generation, particularly with east-facing panels to better align with early-morning load profiles. However, power supply constraints may limit the future integration of more PV, battery storage, or expanded EV charging infrastructure.

The depot has made notable strides in energy efficiency through full LED lighting upgrades and now includes EV charging for fleet vehicles and small plant equipment. Interval meter data is available, providing a solid foundation for accurate solar and battery modelling.

18.2 Electricity

Based on the provided electricity billing for NMI 4407338456, covering the period from February 2024 to January 2025, the grid electricity usage at Lockheed St Depot amounted to 89 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 152: ANNUAL ELECTRICITY USE AT LOCKHEED ST DEPOT

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	2,439 kWh	3,285 kWh	5,278 kWh	11,002 kWh
Aug-24	1,834 kWh	2,083 kWh	4,558 kWh	8,476 kWh
Sep-24	1,254 kWh	1,064 kWh	3,549 kWh	5,867 kWh
Oct-24	1,090 kWh	1,257 kWh	3,649 kWh	5,996 kWh
Nov-24	1,237 kWh	1,721 kWh	3,711 kWh	6,670 kWh
Dec-24	1,079 kWh	1,478 kWh	3,708 kWh	6,265 kWh
Jan-25	1,319 kWh	1,721 kWh	3,713 kWh	6,752 kWh
Feb-24	1,565 kWh	2,055 kWh	3,744 kWh	7,364 kWh
Mar-24	1,447 kWh	1,511 kWh	3,829 kWh	6,788 kWh
Apr-24	1,351 kWh	1,597 kWh	3,655 kWh	6,603 kWh
May-24	1,696 kWh	1,667 kWh	4,176 kWh	7,539 kWh
Jun-24	1,954 kWh	2,559 kWh	4,768 kWh	9,281 kWh

Total	**18,264 kWh**	**21,999 kWh**	**48,340 kWh**	**88,603 kWh**

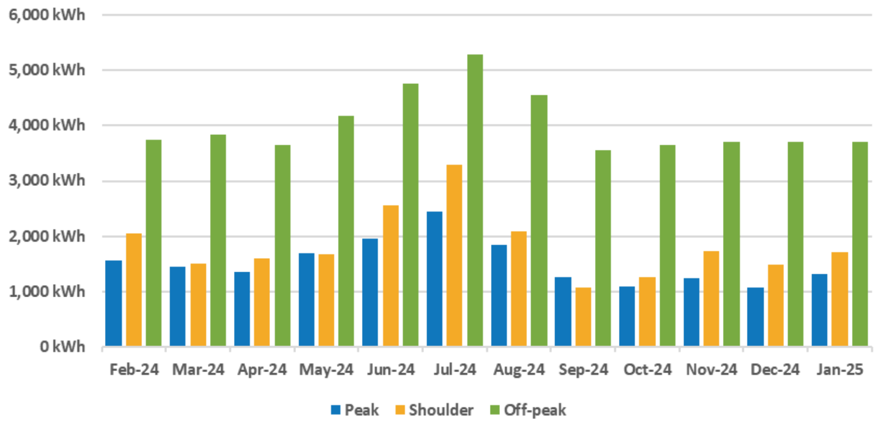


FIGURE 85: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT LOCKHEED ST DEPOT

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 153: ANNUAL ELECTRICITY USE AND COSTS AT LOCKHEED ST DEPOT

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Lockheed St Depot	4407338456	88,603 kWh	$19,629.22	0.22 $/kWh	BLNT2AL

18.2.1 Interval data analysis

Based on the 30-minute interval data received, we can examine the daily and seasonal electricity demand for Lockheed St Depot. Below are the hourly load profiles for Lockheed St Depot on representative summer and winter months. From these profiles, key insights can be drawn.

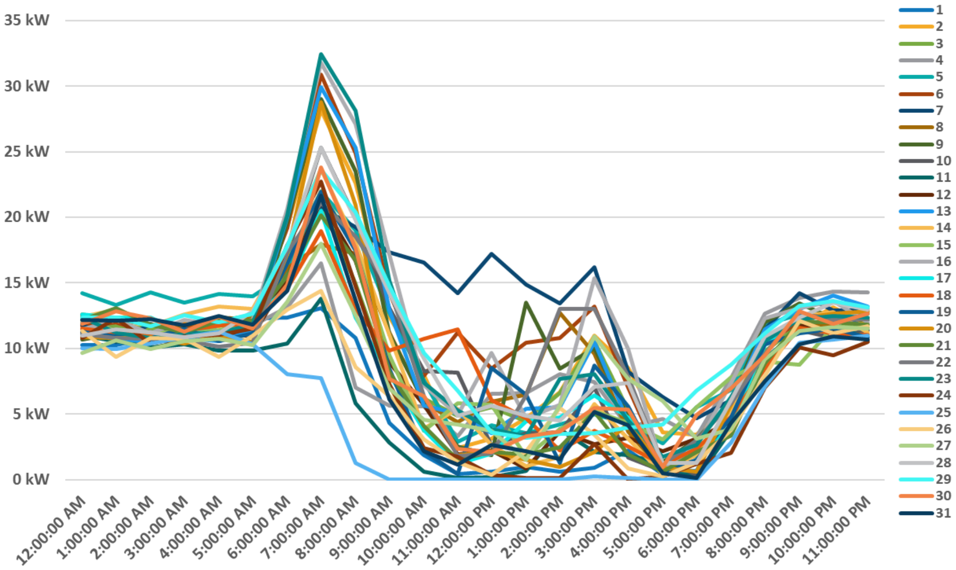


FIGURE 86: INTERVAL DATA AT LOCKHEED PUMPING STATION FOR SUMMER (DEC-FEB)

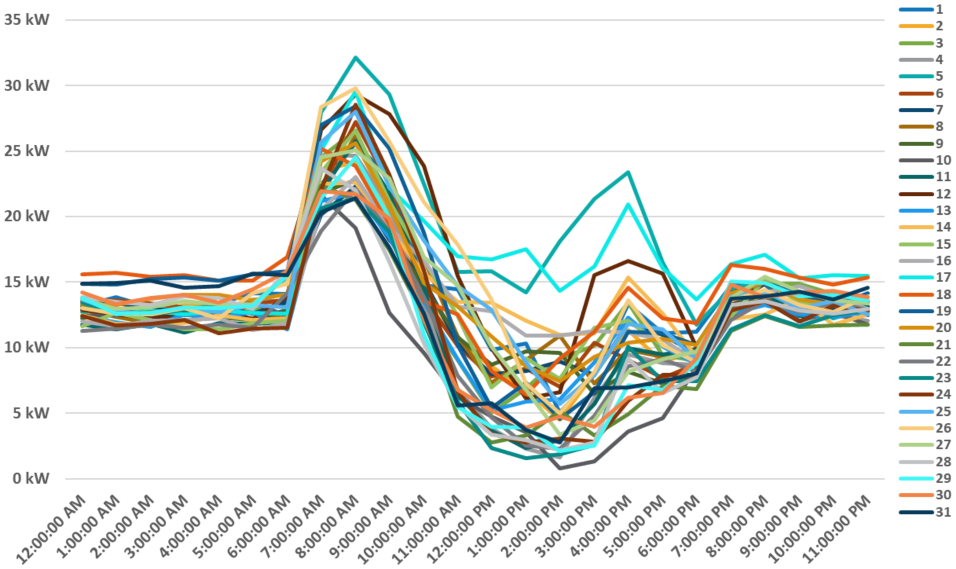


FIGURE 87: INTERVAL DATA AT LOCKHEED ST DEPOT FOR WINTER (JUN-AUG)

- Both summer and winter profiles show a sharp morning peak between 5:00–8:00 AM, with demand reaching over 30 kW. This aligns with the start of operational activities and simultaneous activation of high-load equipment like compressors, HVAC, lighting, and battery/EV charging.

- After the morning peak, both seasons experience a significant drop-off, though winter profiles show a more gradual decline, while summer sees a steeper drop, potentially due to greater solar PV offset during midday hours.
- Midday demand is lower and more variable in summer, often dipping below 5 kW, likely due to solar PV generation fully covering loads. In winter, midday loads remain slightly higher, indicating reduced solar contribution and sustained heating or lighting needs.
- Evening base load (~10-12 kW) is consistent across seasons, reflecting continuously operating systems such as IT infrastructure, air conditioning, and uncontrolled external lighting.
- Solar PV impact is more pronounced in summer, with deeper midday troughs and more frequent dips toward zero load—suggesting high self-consumption and occasional export during low-demand periods.

18.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table below summarises the primary electricity consumers observed on site.

The annual grid consumption of the depot is approximately 89 MWh which also operates a 55 kW roof-mounted solar PV array above the mechanics workshop. The array achieves an estimated annual generation of around 62 MWh which brings the total estimated annual energy use for the site to approximately 151 MWh (grid and solar combined).

TABLE 154: ENERGY END USE BREAKUP AT LOCKHEED ST DEPOT

Category	Annual consumption	%
Lighting	25,000 kWh	17%
HVAC	60,000 kWh	40%
Appliances	15,000 kWh	10%
Workshop tools	30,000 kWh	20%
EV & battery charging	20,000 kWh	13%
Total	**150,000 kWh**	**100%**

The total energy use estimated from the audit closely aligns with the recorded energy consumption for the site, accounting for both on-site solar generation and grid supply. Within this breakdown, several key energy end-use systems have been identified and documented.

18.3.1 Lighting

Lighting across the site is primarily LED, including high bay fittings in the mechanics workshop and stores area, as well as LED fixtures throughout the amenities block and offices. External lighting comprises approximately 12 HID floodlights and 12 twin 36 W fluorescent fittings, some of which were observed to operate continuously due to disconnected PE cell controls. Total lighting consumption is estimated at around 25 MWh per year.

18.3.2 Heating, ventilation and air conditioning (HVAC)

Space conditioning is provided through multiple wall-mounted split systems and two evaporative cooling units servicing the amenities, lunchroom, and office areas. Several plug-in heaters supplement comfort during winter. Significant after-hours operation was observed, contributing to higher overall energy use. HVAC systems are estimated to account for approximately 60 MWh per year, or about 40% of total site consumption.

18.3.3 Appliances

Appliances are concentrated within the lunchroom and office areas and include refrigerators, microwaves, an ice-making machine, large TV screens, and general kitchen and staff amenities. These loads collectively account for an estimated 15 MWh per year.

18.3.4 Workshop tools

The mechanics workshop includes a 22 kW Sullair Champion air compressor, battery charging stations for small plant, and various handheld and bench tools. Mobile evaporative coolers and fans are also used during summer. Workshop tools and associated plant are estimated to consume around 30 MWh per year.

18.3.5 EV & battery charging

EV and battery charging occur primarily within the stores and workshop sections, supplied from the same distribution board as the solar PV system. The site operates a Level 2 22 kW AC charger for the Council's full-electric BYD utility vehicle, along with several smaller battery charging units for hand tools and equipment. Total energy use from EV and battery charging is estimated at 20 MWh per year.

18.4 Potential energy and cost-saving opportunities

18.4.1 Tariff switching

Lockheed Street Depot is currently on the BLNT2AL network tariff, which is obsolete and designed for smaller sites consuming less than 100 MWh per year with interval-capable metering. The depot's annual electricity consumption remains within the <160 MWh threshold, making it eligible for newer tariff options such as BLND1AB and BLNBSS1 under Essential Energy's current framework.

Transitioning to BLND1AB would introduce peak demand charges but reduce overall network energy charges, while BLNBSS1 applies only peak and off-peak energy rates, offering a simpler structure with moderate savings. Both tariffs provide cost advantages compared to the current one, with BLND1AB presenting the stronger business case based on expected network charge reductions.

If the site does not already have an interval (smart) meter, it must be upgraded to comply with tariff requirements and enable accurate demand monitoring under the new billing structure.

TABLE 155: NETWORK TARIFF ANALYSIS FOR LOCKHEED STREET DEPOT (EX-GST RATES)

		Rate							
Charge type	Unit	BLNT2AL	BLND1AB	BLNBSS1	Data	Data for SS1	BLNT2AL	BLND1AB	BLNBSS1
Daily access charge	$/day	2.2229	2.2229	2.2229	366 days	366 days	$814	$814	$814
Network charge									
Peak	¢/kWh	20.7825	13.5404	17.9646	18,264 kWh	34,247 kWh	$3,796	$2,473	$6,152
Off-peak	¢/kWh	8.1015	5.6231	8.1015	48,340 kWh	54,355 kWh	$3,916	$2,718	$4,404
Shoulder	¢/kWh	15.1467	9.5246		21,999 kWh	0 kWh	$3,332	$2,095	
Demand charge									
Peak demand	$/kVA/mth		9.5054		265 kVA			$2,521	
Off-peak demand	$/kVA/mth				0 kVA				
Shoulder demand	$/kVA/mth				0 kVA				
Demand charge (flat)	$/kVA/mth				495 kVA				
							$11,858	**$10,621**	**$11,370**

TABLE 156: BUSINESS CASE FOR NETWORK TARIFF SWITCHING FOR LOCKHEED STREET DEPOT

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site remains on the BLNT2AL network tariff, which is now obsolete. Annual electricity consumption is below 160 MWh, making the site eligible for alternative tariffs which may offer lower network costs and improved billing alignment with current usage.	Shift from the current BLNT2AL tariff to BLND1AB to reduce network charges and realise potential savings of up to $1,236 annually (>6% of site's annual electricity bill), taking advantage of the site's existing interval meter. Note that BLNBSS1 also offers potential savings, but BLND1AB presents a better business case.		NA	NA	$1,236	NA

18.4.2 Solar PV and battery storage

Lockheed Street Depot currently consumes approximately 89 MWh of grid electricity per year, supplemented by around 62 MWh of self-consumed solar generation from the existing 55 kW roof-mounted array. Weekday daytime loads are largely met by solar, while night-time and early-morning demand continues to be supplied by the grid. Additional east-facing roof space provides capacity for further PV installation to enhance on-site generation; however, network capacity constraints may restrict expansion without integrated battery storage.

It is recommended to install a 30-kW east-facing solar PV system paired with a 50 kWh battery to improve morning self-consumption, reduce grid reliance, and mitigate export and capacity limitations. This configuration would optimise use of available roof area, support site energy resilience, and provide flexibility for future electrification initiatives such as EV charging.

The battery should be sized to reduce peak/shoulder costs and manage network constraints, avoiding oversized storage that discharges during off-peak periods with limited value; controls can be set to flex operation to best offset higher-cost morning and peak loads.

FIGURE 88: LOCKHEED STREET DEPOT – 30 KW ADDITIONAL FLUSH-MOUNTED ROOF SOLAR PV SYSTEM / 50 KWH BESS

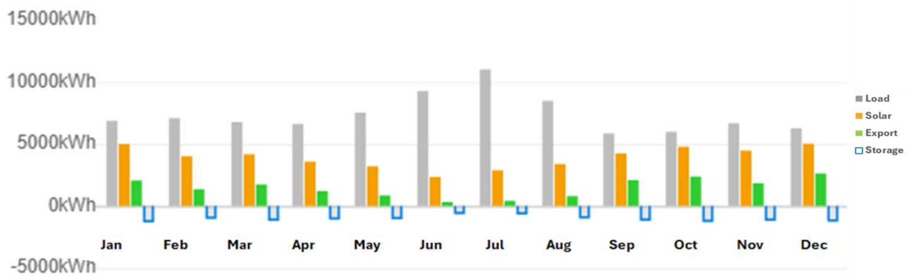


FIGURE 89: LOCKHEED STREET DEPOT – 30 KW SOLAR SYSTEM W/ 50 KWH BESS PROJECTED MONTHLY SOLAR GENERATION

TABLE 157: BUSINESS CASE FOR 30-KW SOLAR + 50-KWH BESS FOR LOCKHEED STREET DEPOT

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The depot uses ~89 MWh/year of grid electricity and ~62 MWh/year of self-consumed solar from an existing 55 kW array. East-facing roof areas allow for further PV expansion to meet morning demand, though network capacity limits may restrict growth without battery storage.	Install a 30 kW east-facing solar PV system with 50 kWh battery storage to improve morning self-consumption and reduce grid reliance, potentially eliminating 100% of daytime energy use, subject to network export and capacity constraints.	Potential network supply constraints may limit solar expansion, battery installation, and future EV charging capacity.	$84,000	29,434 kWh	$6,521	15.9 years

18.4.3 LED lighting upgrade

The site's external lighting currently comprises 12 HID floodlights (150 W) and 12 twin 36 W fluorescent fittings, many of which operate for extended hours — up to 12 hours per day and some 24/7. This results in unnecessary energy use and elevated maintenance costs.

It is recommended to replace all external HID and fluorescent fittings with LED battens and floodlights. The upgrade will significantly reduce lighting energy use, improve system reliability and illumination quality, and lower maintenance requirements, contributing to both operational savings and site safety improvements.

TABLE 158: BUSINESS CASE FOR LED LIGHTING UPGRADE FOR LOCKHEED STREET DEPOT

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
External lighting includes 12 HID floodlights (150 W) and 12 twin 36 W fluorescent fittings that are assumed to run 12 hours per day and 24/7 respectively, contributing to unnecessary energy consumption and higher maintenance costs.	Replace all external HID floodlights and fluorescent fittings with energy-efficient LED battens and floodlights to enhance reliability, and reduce maintenance costs and energy use.		$7,440	7,054 kWh	$1,628	4.6 years

18.4.4 Base Energy Demand Management

Analysis indicates that the site's night-time energy demand averages around 12 kW, with lows of approximately 8 kW, primarily driven by continuous operation of air conditioning, lighting, and appliances. This represents an opportunity to reduce unnecessary overnight energy consumption by up to 4 kW, equivalent to roughly 22 MWh per year in potential savings.

The recommended actions include staff engagement, education, and scheduled shutdown procedures targeting non-critical air conditioning and lighting loads. Implementing these low-cost measures will support consistent energy management practices and achieve sustained reductions in night-time electricity use.

TABLE 159: BUSINESS CASE FOR TIME-OF-USE MANAGEMENT FOR LOCKHEED STREET DEPOT

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Night-time energy demand averages ~12 kW, with observed lows of ~8 kW, driven by continuous operation of AC systems, appliances, and lighting. This equates to approximately 22 MWh/year of potential energy savings if night load is reduced.	Implement shutdown procedures and staff engagement strategies to reduce night-time electricity use by up to 4 kW through targeted reduction of air conditioning, lighting, and appliance loads.	Requires staff consultation to agree on shutdown procedures and engagement with cleaning staff to implement changes consistently.	$5,000	22,512 kWh	$4,987	1.0 years

19 7-11 Anne St

19.1 Site description

7–11 Anne Street is owned by Council and leased to two commercial tenants: Inflatable World Tamworth (a local entertainment and play centre) and Tamworth Bouldering (an indoor rock-climbing facility). The facility operates under a multi-tenancy arrangement where tenants are permitted to implement their own energy systems to meet operational needs.

Two tenant meters are in the main meter board, with no master (aggregate) meter sighted during the site visit. This raises uncertainty as to whether Council receives an aggregate bill for the entire facility or if its bill reflects only one of the two metered supplies. Neither tenant currently receives a direct electricity bill, suggesting Council may be covering energy costs as part of the lease arrangements.

The site presents a mixed-use energy profile, with significant load contributions from HVAC, high-bay and decorative lighting, and, in the case of Inflatable World, continuous-load blower fans and commercial kitchen equipment. There is no indication of on-site solar PV or battery systems.

19.2 Electricity

Based on the provided electricity billing data for NMI 4407312948, covering the period from February 2024 to January 2025, the grid electricity usage at 7-11 Anne St amounted to 84 MWh. The account is billed on an any-time tariff, meaning there is no differentiation between peak, shoulder, and off-peak periods under Essential Energy's time-of-use definitions. Instead, all electricity is charged at a single flat rate regardless of the time of day.

This arrangement simplifies billing however, it does not provide visibility into daily usage patterns, limiting the ability to analyse potential savings from shifting loads to lower-cost periods. Consumption trends can still be assessed monthly to identify seasonal variations and potential links to operational changes or weather impacts.

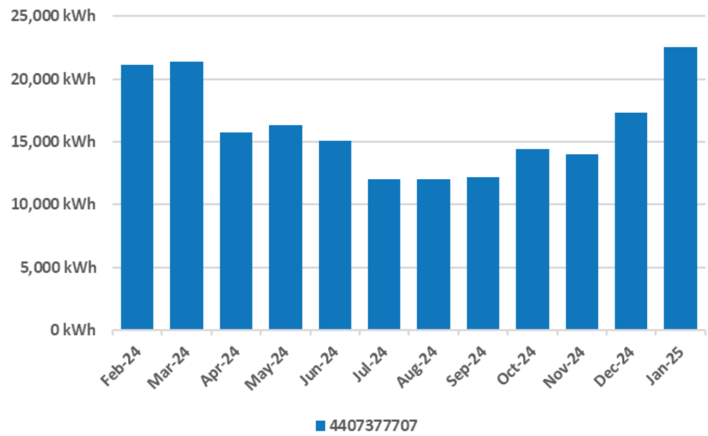


FIGURE 90: MONTHLY TOTAL ELECTRICITY CONSUMPTION AT 7-11 ANNE ST

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 160: ANNUAL ELECTRICITY USE AND COSTS AT 7-11 ANNE ST

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
7-11 Anne St	4407312948	84,373 kWh	$22,800.32	0.27 $/kWh	BLNN1AU

19.3 Equipment audit

An on-site audit in July 2025 identified the primary energy uses for both tenancies. Inflatable World Tamworth operates LED high-bay lighting (replacing 150 W HID fittings), suspended filament globes, several Daikin split air conditioning units, mobile evaporative coolers, and around 15 inflatable blowers rated at 1.2 kW each. A commercial kitchen with refrigeration and food preparation appliances also contributes to the load.

Tamworth Bouldering uses multiple Daikin and Mitsubishi Electric split air conditioning units, LED high-bay and globe lighting, and various small appliances to support operations.

Overall, electricity demand is driven by a combination of HVAC, high-intensity lighting, and constant-load blowers, with opportunities for improved efficiency through equipment scheduling, tenant engagement, and potential renewable generation.

19.4 Potential energy and cost-saving opportunities

19.4.1 Tariff switching

The 7–11 Anne Street site is currently on the BLNN1AU network tariff, which is obsolete and designed for smaller loads under 100 MWh per year. The site's annual energy use is well within the <160 MWh threshold, making it eligible for newer tariffs such as BLND1AB or BLNBSS1 under Essential Energy's updated tariff framework.

While BLND1AB introduces demand-based pricing, BLNBSS1 applies only peak and off-peak energy charges, offering a simpler and more predictable structure. Based on current consumption patterns, transitioning to BLNBSS1 is recommended, as it would deliver approximately 29% savings on network charges.

Before implementation, Council should confirm the presence of an interval (smart) meter, as it is required for either tariff. This transition will align the site with current tariff structures and achieve meaningful reductions in ongoing electricity costs.

TABLE 161: NETWORK TARIFF ANALYSIS FOR 7-11 ANNE STREET (EX-GST RATES)

		Rate						
Charge type	Unit	BLNN1AU	BLND1AB	BLNBSS1	Data	BLNN1AU	BLND1AB	BLNBSS1
Daily access charge	$/day	2.2229	2.2229	2.2229	366 days	$814	This tariff requires PK & OP consumption from the PSO-Int time period, which cannot be estimated w/o interval data	$814
Network charge								
Peak	¢/kWh	18.7878	13.5404	17.9646	42,186 kWh	$15,852		$7,579
Off-peak	¢/kWh		5.6231	8.1015	42,186 kWh[2]			$3,418
Shoulder	¢/kWh		9.5246		0 kWh			
Demand charge								
Peak demand	$/kVA/mth		9.5054		728 kVA			
Off-peak demand	$/kVA/mth				0 kVA			
Shoulder demand	$/kVA/mth				0 kVA			
Demand charge (flat)	$/kVA/mth				0 kVA			
						$16,665		**$11,810**

[2] Assumed 50/50 Peak–Off-peak split. Data is proxy only, as whatever split would still result in savings given that BLNBSS1 offers lower tariff rates than BLNN1AU.

TABLE 162: BUSINESS CASE FOR NETWORK TARIFF SWITCHING FOR 7-11 ANNE STREET

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site remains on the obsolete BLNN1AU network tariff, designed for smaller loads under 100 MWh per year. Estimated Council electricity use falls within the <160 MWh threshold, making the site eligible for alternative tariffs that could lower network charges and deliver cost savings with interval metering.	Transition from BLNN1AU to BLNBSS1 tariff to achieve lower network charges and ongoing cost savings.		NA	NA	$4,855	NA

19.4.2 Solar PV

The facility at 7–11 Anne Street is leased to two tenants — Inflatable World and Tamworth Bouldering — with combined annual grid electricity use of around 84 MWh, split roughly two-thirds for Inflatable World (56 MWh) and one-third for Tamworth Bouldering (28 MWh). The west-facing roof over Inflatable World provides a strong opportunity for solar PV installation, while the adjacent Bouldering roof could accommodate a smaller system.

It is recommended that separate solar PV systems be installed for each tenancy to maximise self-consumption and keep generation/billing allocation clear—approximately 25 kW for Inflatable World and 15 kW for Tamworth Bouldering. Subject to confirmation of daytime demand (ideally via interval data), these system sizes could potentially offset around 70–100% of each tenant's daytime electricity use, while avoiding inefficient oversizing that would drive exports.

In the longer term, if tenant loads and interval data support it, the systems could be expanded (to ~40 kW and ~20 kW respectively) and paired with battery storage targeted at peak/shoulder periods to trim residual grid demand and manage short-duration peaks, rather than discharging during low-value off-peak periods.

FIGURE 91: 7-11 ANNE STREET – 40.5 KW COMBINED SOLAR SYSTEM (25.5 KW FOR INFLATABLE WORLD AND 15 KW FOR TAMWORTH BOULDERING)

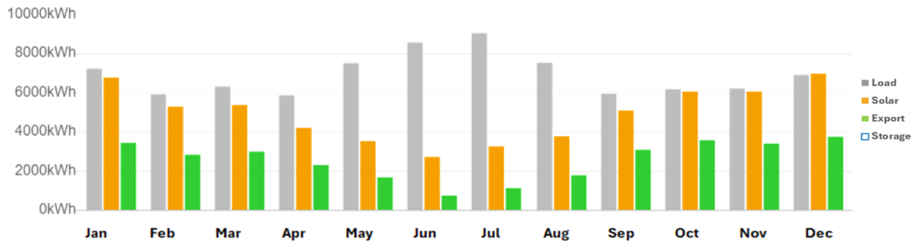


FIGURE 92: 7-11 ANNE STREET – 40.5 KW SOLAR SYSTEM PROJECTED MONTHLY SOLAR GENERATION

TABLE 163: BUSINESS CASE FOR 20-KW SOLAR FOR 7-11 ANNE STREET

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site uses ~84 MWh/year of grid electricity across two tenancies—Inflatable World (estimated ~56 MWh/year) and Tamworth Bouldering (~28 MWh/year)—with no existing solar PV or battery storage. The west-facing roof over the Inflatable World tenancy provides suitable space for solar installation.	Install separate solar PV systems sized to each tenancy—25.5 kW for Inflatable World and 15 kW for Tamworth Bouldering—and consider eventually expanding to 40 kW and 20 kW respectively to maximise solar self-consumption and offset grid use, subject to confirming each tenant's actual energy use.	Power use per tenancy is unknown, so system sizing and allocation depend on verifying actual consumption for each tenant.	$52,650	30,813 kWh	$8,279	6.5 years

19.4.3 Billing and Metering Review

The site currently has two tenant meters, but no clear master meter or defined billing arrangement is in place. Council presently pays the overall electricity bill, while tenants operate their own equipment and do not receive individual invoices. This setup limits visibility of actual energy use per tenancy and removes accountability for consumption.

It is recommended that Council review and formalise the metering and billing configuration to verify usage for each tenant and establish a fair cost recovery process. Options include on-charging tenants for their electricity use or allowing them to manage their own energy accounts. While no direct business case or cost benefit has been modelled, the measure would deliver administrative and operational improvements, ensuring equitable billing and encouraging tenants to engage in energy-saving initiatives.

20 474 Peel St

20.1 Site description

474 Peel Street is a single-storey Council facility housing the Customer Service and Planning teams, operating during weekday daytime hours. The building has a high-ceiling street-facing reception and office area at the front, leading to a larger rear section with open-plan workstations and offices along both sides. Amenities include a lunchroom and staff facilities at the rear.

The site is supplied by a single electricity meter (NMI 4407319603) with annual consumption of approximately 72 MWh. Time-of-use data indicates that off-peak consumption accounts for just 27% of total usage, with an average demand of around 4 kW. This relatively low overnight load suggests effective shutdown procedures and scheduling for lighting, HVAC, and ICT systems, with the residual demand likely attributable to ICT infrastructure, appliances, exit lighting, and security systems.

20.2 Electricity

Based on the provided electricity billing for NMI 4407319603, covering the period from February 2024 to January 2025, the grid electricity usage at 474 Peel St amounted to 72 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 7:00 am – 9:00 am & 5:00 pm - 8:00 pm on weekdays
- Shoulder: 9:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 164: ANNUAL ELECTRICITY USE AT 474 PEEL ST

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	1,614 kWh	3,435 kWh	2,935 kWh	7,984 kWh
Aug-24	938 kWh	2,344 kWh	1,731 kWh	5,013 kWh
Sep-24	864 kWh	2,044 kWh	915 kWh	3,823 kWh
Oct-24	924 kWh	2,729 kWh	929 kWh	4,582 kWh
Nov-24	1,029 kWh	3,762 kWh	2,075 kWh	6,867 kWh
Dec-24	1,239 kWh	4,068 kWh	2,662 kWh	7,970 kWh
Jan-25	1,300 kWh	4,558 kWh	2,367 kWh	8,225 kWh
Feb-24	1,611 kWh	4,480 kWh	1,538 kWh	7,628 kWh
Mar-24	1,416 kWh	3,675 kWh	1,102 kWh	6,193 kWh
Apr-24	829 kWh	2,022 kWh	770 kWh	3,620 kWh
May-24	1,010 kWh	2,307 kWh	827 kWh	4,144 kWh
Jun-24	1,265 kWh	3,089 kWh	1,931 kWh	6,285 kWh
Total	**14,038 kWh**	**38,515 kWh**	**19,782 kWh**	**72,335 kWh**

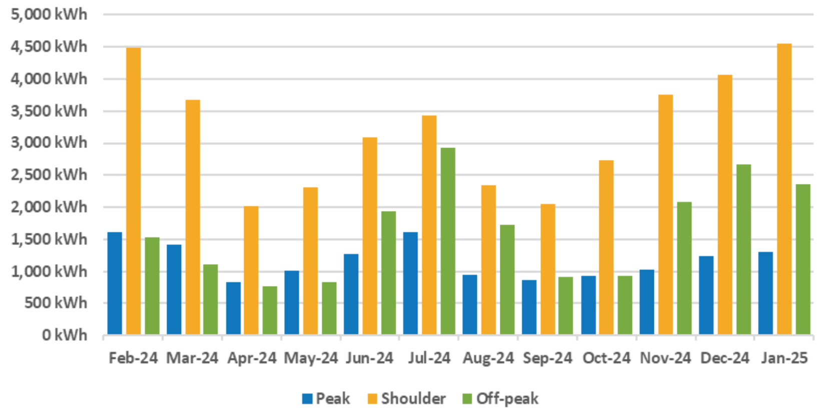


FIGURE 93: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT 474 PEEL ST

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 165: ANNUAL ELECTRICITY USE AND COSTS AT 474 PEEL ST

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
474 Peel St	4407319603	72,335 kWh	$17,717.89	0.25 $/kWh	BLNT2AU

20.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table and figure below summarise the primary electricity consumers observed on site.

TABLE 166: ENERGY END USE BREAKDOWN AT 474 PEEL ST

Category	Estimated annual consumption	Estimated %
Lighting	10,850 kWh	15%
HVAC	39,785 kWh	55%
ICT and office equipment	21,700 kWh	30%
Total	**72,335 kWh**	**100%**

The total energy use estimated from the audit is almost exactly the recorded grid energy consumption for the site, covering the grid supply. Within the above breakdown, there are a number of energy end use systems that are noted.

20.3.1 Lighting

All lighting in the facility has been upgraded to LED. The installation consists of seventy-eight 1200 × 600 mm LED panels rated at 50 W each and eleven 600 × 600 mm LED panels rated at 36 W each. These fittings operate primarily during weekday daytime hours, with an estimated annual consumption of approximately 10 MWh. Lighting is evenly distributed across the reception, open-plan work area, offices, and amenities.

20.3.2 Heating, ventilation and air conditioning (HVAC)

Heating and cooling are provided by two Mitsubishi Electric large split systems serving the front section of the building, each locally controlled and set between 24 °C and 25 °C. The rear section is served by two Actron Air packaged ducted units with a combined capacity of 78 kWr, located in the plant room at the rear of the building. These units are controlled from a single wall-mounted unit above the rear printer, with no secondary control point or remote temperature sensors observed.

Facilities staff have reported uneven temperature distribution, with the front section remaining cooler and the rear section warmer. The main HVAC systems are fairly new, replacing older units that incorporated electric duct heaters, resulting in improved energy efficiency. HVAC systems, including ancillary fans and exhaust units, account for an estimated 40 MWh of annual energy use.

20.3.3 ICT and Office Equipment

The building supports approximately 150 computer screens, along with servers, communications equipment, and various small ICT devices. These operate primarily during office hours, with some out-of-hours use reflected in the low overnight demand. ICT equipment is estimated to consume around 17 MWh annually. In addition, a range of small and large appliances, including lunchroom facilities, printers, and office equipment, contribute an estimated 5 MWh of annual usage. Time-of-use data indicates that off-peak consumption represents only 27% of total electricity use, averaging 4 kW overnight. This low figure demonstrates effective shutdown practices and scheduling for lighting, HVAC, and equipment, with the residual demand likely attributable to ICT systems, appliances, exit lighting, and security equipment.

20.4 Potential energy and cost-saving opportunities

20.4.1 Solar PV

474 Peel Street operates primarily during weekday business hours and consumes around 72 MWh of electricity per year, with demand largely concentrated in the daytime. The building has no existing solar PV or battery system, but the northwest-facing roof provides an ideal location for a flush-mounted solar array, with additional potential for a tilted system on the southeast-facing roof.

It is recommended that Council install a 27 kW solar PV system to offset weekday grid electricity use. Subject to confirmation of actual daytime demand (ideally through interval data), this system size could potentially offset around 60–100% of daytime electricity consumption while avoiding oversizing and unnecessary exports.

In the longer term, expansion to a ~50 kW PV system with an ~80 kWh battery could be considered, subject to roof availability and adjacent site development. Any battery should be sized and controlled primarily to reduce peak and shoulder-period demand, with optional flex control to recharge off-peak and discharge during morning or afternoon start-up periods where this delivers the greatest value.

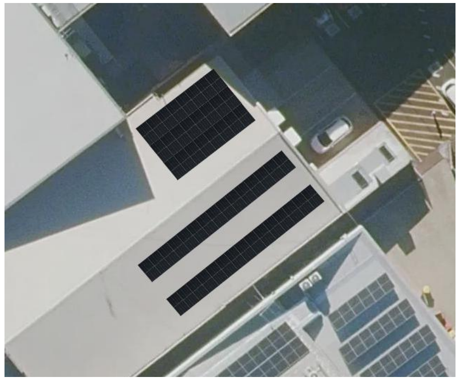


FIGURE 94: 474 PEEL STREET – 27 KW FLUSH-MOUNTED ROOF SOLAR PV SYSTEM

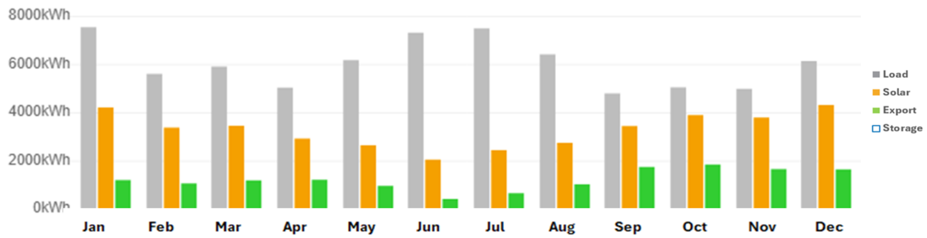


FIGURE 95: 474 PEEL STREET – 27 KW SOLAR SYSTEM PROJECTED MONTHLY SOLAR GENERATION

TABLE 167: BUSINESS CASE FOR 27-KW SOLAR FOR 474 PEEL STREET

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The building consumes ~72 MWh/year of grid electricity, primarily during weekday daytime hours. No onsite solar PV or battery storage is installed. The NW roof has ample space for a flush-mounted solar array, and the SE roof could accommodate a tilted row, though future Council developments next door may limit shading-free area.	Install a 27 kW solar PV system to offset weekday electricity use, with future expansion to 50 kW plus ~80 kWh battery storage subject to roof availability and adjacent development plans.	Future development on the adjacent site may affect roof availability and project timing.	$35,100	24,692 kWh	$6,048	6.0 years

20.4.2 HVAC system optimisation

The building's HVAC system includes two 39 kW Actron Air ducted units serving the rear area and two large ME split units serving the front. Although these systems are relatively modern and efficient, the absence of zoning controls or occupancy-based sensors results in uneven temperature distribution across the building, particularly warmer conditions in the rear areas.

It is recommended that Council engage the HVAC service provider to install zoning sensors or additional control units to improve temperature balance and occupant comfort. While no cost–benefit or business case has been modelled, the measure offers non-financial operational benefits, including improved comfort and potential productivity gains, rather than measurable energy savings.

21 Peel House

21.1 Site description

Peel House is a four-storey building located adjacent to Tamworth Memorial Town Hall, with bridge links between the buildings that are currently unused. The Basement and Ground Floor are occupied by the University of New England (UNE) and do not contribute to Council's energy demand. Level 1 has been unoccupied for several years, while Level 2 houses Council's Creative Communities & Experiences team.

Two meters supply Council-related loads. A smaller meter (NMI 4407372038) supplies common services, including foyer entry lighting and lift operation, with annual consumption of 8 MWh. The main Council meter (NMI 4407377707) records approximately 78 MWh annually. A third meter (NMI NFFNRKD48) in the main switchboard appears to supply light and power to the UNE tenancy and is not billed to Council.

Council spaces on Level 1 contain minimal lighting and HVAC equipment, resulting in very low usage. Level 2 accommodates a larger quantity of lighting, HVAC, and general office equipment. Energy use patterns indicate that the actual consumption attributable to Council operations is significantly lower than the total billed under the main meter. The building has no solar PV installed, although the large north-east facing roof provides good potential for future installation.

21.2 Electricity

Based on the provided electricity billing for NMI 4407372038 and NMI 4407377707, covering the period from February 2024 to January 2025, the grid electricity usage at Peel House Level 1 and Level 2 amounted to 8 MWh and 78 MWh, respectively. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 168: ANNUAL ELECTRICITY USE AT PEEL HOUSE LEVEL 1

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	86 kWh	381 kWh	250 kWh	717 kWh
Aug-24	84 kWh	380 kWh	305 kWh	769 kWh
Sep-24	74 kWh	347 kWh	255 kWh	676 kWh
Oct-24	80 kWh	349 kWh	239 kWh	668 kWh
Nov-24	74 kWh	339 kWh	261 kWh	673 kWh
Dec-24	62 kWh	309 kWh	243 kWh	615 kWh
Jan-25	80 kWh	379 kWh	285 kWh	743 kWh
Feb-24	78 kWh	350 kWh	278 kWh	706 kWh
Mar-24	74 kWh	332 kWh	298 kWh	704 kWh
Apr-24	80 kWh	344 kWh	280 kWh	704 kWh
May-24	89 kWh	407 kWh	306 kWh	802 kWh

Jun-24	75 kWh	320 kWh	263 kWh	659 kWh
Total	**937 kWh**	**4,235 kWh**	**3,264 kWh**	**8,436 kWh**

The estimated total electricity use for Council operations across Level 1 and Level 2 is approximately 86 MWh per year. Of this, about 8 MWh is attributed to Level 1, leaving an estimated 78 MWh for Level 2. These figures are shown in the table below, along with estimated peak, shoulder, and off-peak demand profiles.

TABLE 169: ANNUAL ELECTRICITY USE AT PEEL HOUSE LEVEL 2

Month	Total usage	Estimated Peak	Estimated Shoulder	Estimated Off-peak
Jul-24	4,795 kWh	577 kWh	2,546 kWh	1,672 kWh
Aug-24	4,795 kWh	524 kWh	2,367 kWh	1,904 kWh
Sep-24	4,862 kWh	534 kWh	2,495 kWh	1,832 kWh
Oct-24	5,777 kWh	688 kWh	3,020 kWh	2,069 kWh
Nov-24	5,591 kWh	616 kWh	2,811 kWh	2,164 kWh
Dec-24	6,931 kWh	702 kWh	3,485 kWh	2,745 kWh
Jan-25	9,031 kWh	969 kWh	4,602 kWh	3,460 kWh
Feb-24	8,448 kWh	935 kWh	4,183 kWh	3,330 kWh
Mar-24	8,545 kWh	897 kWh	4,025 kWh	3,622 kWh
Apr-24	6,310 kWh	719 kWh	3,081 kWh	2,510 kWh
May-24	6,520 kWh	723 kWh	3,309 kWh	2,487 kWh
Jun-24	6,031 kWh	690 kWh	2,934 kWh	2,407 kWh
Total	**77,635 kWh**	**8,573 kWh**	**38,859 kWh**	**30,203 kWh**

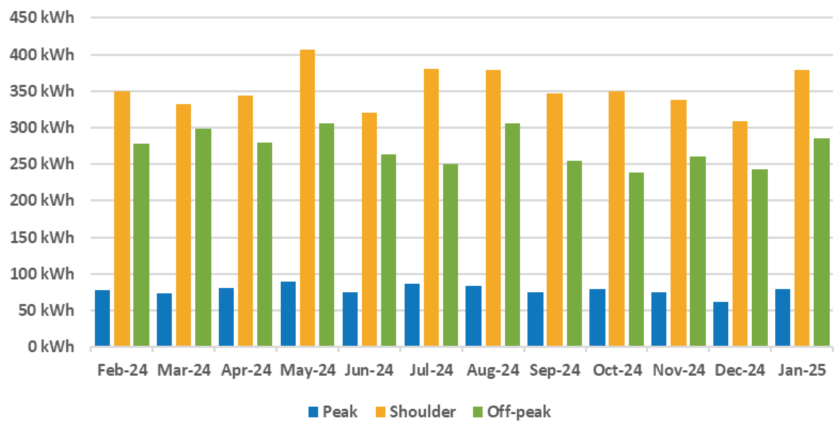


FIGURE 96: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT PEEL HOUSE LEVEL 1

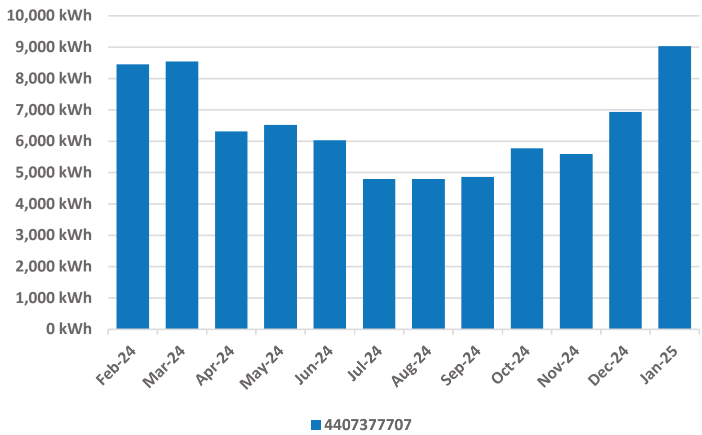


FIGURE 97: MONTHLY TOTAL ELECTRICITY CONSUMPTION AT PEEL HOUSE LEVEL 2

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 170: ANNUAL ELECTRICITY USE AND COSTS AT PEEL HOUSE

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Level 1	4407372038	8,436 kWh	$2,835.80	0.34 $/kWh	BLNT2AL
Level 2	4407377707	77,635 kWh	$21,803.56	0.28 $/kWh	BLNN1AU

21.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table below summarises the primary electricity consumers observed on site.

TABLE 171: ENERGY END USE BREAKDOWN AT PEEL HOUSE LEVEL 1 & 2

Category	Estimated annual consumption	Estimated %
Level 1 (Lights, power, & HVAC)	9,000 kWh	10%
Level 2 Lighting	16,000 kWh	19%
Level 2 HVAC	45,000 kWh	52%
Power and appliances	16,000 kWh	19%
Total	**86,000 kWh**	**100%**

Within the above estimated consumption, there are a few energy end use systems that are noted.

21.3.1 Lighting

Lighting on Level 1 consists of a mix of fluorescent oyster lights, twin surface-mounted T8 fluorescent fixtures, 26 LED downlights, and a small number of other fittings. Given the space is unoccupied, usage is minimal. On Level 2, lighting includes 40 twin recessed T8 linear fluorescent troffers occupying full-ceiling panels (600 mm × 1,200 mm), two conventional twin 36 W fittings (half-panels), 25 LED downlights (10 W each), and approximately 30 twin 300 mm CFL downlights (2 × 26 W). Annual run hours are taken to be around 3,000, giving an estimated lighting consumption of 16 MWh per year for Level 2.

21.3.2 Heating, ventilation and air conditioning (HVAC)

On Level 1, HVAC services include one large Mitsubishi Electric split system serving the main front room and a smaller split serving a front office, both of which see minimal operation. Level 2 is served by four APAC packaged units (25 kW, 20 kW, 9 kW, and 20 kW), all using R22 refrigerant. These units, with an estimated combined electrical load of 34 kW at full operation, have been refurbished to extend service life. Assuming 3,000 annual operating hours at a 40% load factor, plus ancillary power for condenser units, outside air supply, and exhaust fans, HVAC demand is estimated at 45 MWh annually.

The UNE tenancy HVAC systems, supplied from a separate mechanical board on Level 1, comprise four Mitsubishi Electric units (total capacity 181 kW), 23 fan coil units, and two outside air fans (2.2 kW total). Based on performance assumptions, these systems could account for an additional 108 MWh annually, potentially explaining the discrepancy between Council's estimated actual use (~86 MWh) and the billed total for the main meter (194 MWh).

21.4 Potential energy and cost-saving opportunities

21.4.1 Tariff switching

Peel House is currently on the BLNN1AU network tariff, which is obsolete and designed for smaller sites consuming less than 100 MWh per year. Council's estimated energy consumption for its occupied areas aligns with the <160 MWh/year threshold, making the site eligible for more modern tariff options such as BLND1AB or BLNBSS1.

Transitioning to BLND1AB would introduce demand-based pricing, offering potential network charge reductions compared to the current tariff, while BLNBSS1 provides a simpler time-of-use structure with peak and off-peak charges only. The preferred option, BLND1AB, presents a positive business case; however, implementation should follow confirmation of interval meter installation and further analysis using detailed time-of-use data to refine cost projections and ensure alignment with Council's demand profile.

TABLE 172: NETWORK TARIFF ANALYSIS FOR PEEL HOUSE (EX-GST RATES)

		Rate						
Charge type	Unit	BLNN1AU	BLND1AB	BLNBSS1	Data	BLNN1AU	BLND1AB	BLNBSS1
Daily access charge	$/day	2.2229	2.2229	2.2229	366 days	$814	$814	This tariff requires PK & OP consumption from the SS time period, which cannot be estimated w/o interval data
Network charge								
Peak	¢/kWh		13.5404	17.9646	8,573 kWh		$1,161	
Off-peak	¢/kWh	18.7878	5.6231	8.1015	30,203 kWh	$14,586	$1,698	
Shoulder	¢/kWh		9.5246		38,859 kWh		$3,701	
Demand charge								
Peak demand	$/kVA/mth		9.5054		670 kVA		$6,373	
Off-peak demand	$/kVA/mth							
Shoulder demand	$/kVA/mth							
Demand charge (flat)	$/kVA/mth							
						$15,399	**$13,747**	

TABLE 173: BUSINESS CASE FOR NETWORK TARIFF SWITCHING FOR PEEL HOUSE

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site remains on the obsolete BLNN1AU network tariff, designed for smaller loads under 100 MWh per year. Estimated Council electricity use falls within the <160 MWh threshold, making the site eligible for alternative tariffs that could lower network charges and deliver cost savings with interval metering.	Transitioning to BLND1AB presents a positive business case, but with a strong caveat due to uncertainty in metering and demand assumptions.		NA	NA	$1,653	NA

21.4.2 Solar PV

The site currently has no onsite solar PV system. Once tenancy and metering arrangements are clarified, the available roof space could support a ~20 kW solar PV system to offset a significant portion of Council's daytime electricity use and reduce grid consumption.

Subject to confirmation of the site's actual daytime demand (ideally through interval data), the proposed PV size could potentially offset around 90–100% of daytime electricity consumption while avoiding oversizing and unnecessary exports. Provision can also be made for future battery integration (with inverter/battery locations potentially within Level 1 or Level 2 plant rooms), noting any battery should be sized primarily to reduce peak/shoulder demand rather than discharge during off-peak periods.

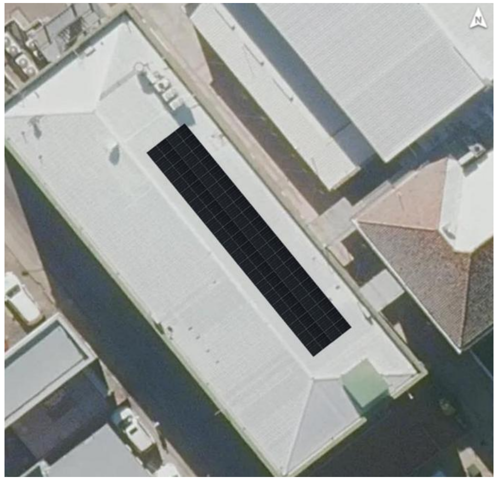


FIGURE 98: PEEL HOUSE – 20 KW SOLAR ON THE NORTH-EAST FACING ROOF

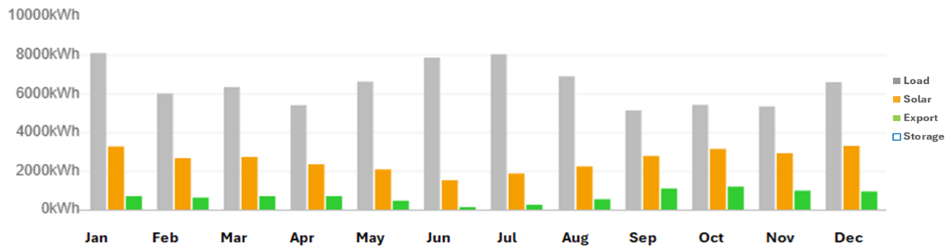


FIGURE 99: PEEL HOUSE – 20 KW SOLAR SYSTEM PROJECTED MONTHLY SOLAR GENERATION

TABLE 174: BUSINESS CASE FOR 20-KW SOLAR FOR PEEL HOUSE

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
The site could support a large solar PV system and a future battery storage to reduce reliance on grid electricity.	Install a 20-kW solar PV system to offset Council electricity use and improve self-consumption, with option to include battery storage in the future.	Depends on clarifying tenancy plans and confirming actual Council electricity consumption to size the system appropriately.	$26,000	22,542 kWh	$6,331	4.2 years

21.4.3 LED lighting upgrade

Lighting across Level 2 includes approximately 40 recessed twin T8 fluorescent troffers and around 30 compact fluorescent (CFL) downlights, consuming about 16 MWh per year. These fittings are older, less efficient, and contribute to higher energy and maintenance costs.

It is recommended that all existing fluorescent troffers and downlights be replaced with LED panels and LED downlights to reduce energy consumption by roughly 50% and improve light quality throughout the workspace. This aligns with lighting upgrades already undertaken in other Council facilities, such as 474 Peel Street, ensuring consistency in technology and performance across the building portfolio.

TABLE 175: BUSINESS CASE FOR LED LIGHTING UPGRADE FOR PEEL HOUSE

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Level 2 lighting includes ~40 twin recessed T8 troffers and ~30 CFL downlights, consuming an estimated 16 MWh/year, with limited previous LED upgrades.	Replace all Level 2 fluorescent troffers and CFL downlights with energy-efficient LED fittings to reduce lighting energy consumption by approximately 50% and lower maintenance costs.		$10,320	10,087 kWh	$3,539	2.9 years

21.4.4 Main HVAC system upgrade

The Level 2 HVAC system at Peel House consists of four APAC R22 units with a total cooling capacity of 74 kW. While these systems have recently been refurbished to extend operational life, they remain inherently inefficient compared with modern systems and continue to use R22 refrigerant, which is now being phased out. The systems are estimated to consume around 45 MWh per year, contributing significantly to Council's energy use for the building.

It is recommended that Council plan for medium-term replacement of the existing APAC units with high-efficiency air-cooled multi-split or packaged systems using low-GWP refrigerants. This upgrade will improve reliability, reduce maintenance and operating costs, and future-proof the building against the upcoming refrigerant phase-out. Replacement should be considered once metering and tenancy arrangements between Council and UNE are clarified.

TABLE 176: BUSINESS CASE FOR HVAC SYSTEM UPGRADE FOR LIBRARY PEEL HOUSE

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Level 2 HVAC consists of four APAC R22 units with combined cooling capacity of 74 kW (units AC1 25 kW, AC2 20 kW, AC3 9 kW, AC4 20 kW). While these have been refurbished to extend their service life, they remain inefficient compared to modern systems, and R22 refrigerant is being phased out.	Plan for medium-term replacement of the four existing APAC R22 HVAC units (total capacity: 74 kW) with high-efficiency air-cooled systems using low-GWP refrigerants, to improve system performance and future-proof against refrigerant phase-out.	Units were refurbished recently to extend service life, so immediate replacement may not be justified despite the R22 phase-out.	$60,000	16,650 kWh	$4,676	12.8 years

22 Bicentennial Park

22.1 Site description

Bicentennial Park is a public open space that accommodates a mix of recreational, community, and event facilities. The Park spans several sections, supported by four main electricity accounts but the audit only covered two accounts.

The first section covers from the oval to the middle carpark is the largest account consuming approximately 32 MWh annually. This section, *Lights, Stage & Toilet*, stretches from the sports oval to the middle carpark and includes path lighting, mostly LED with some central walkway lights reported as compact fluorescent (CFL, unverified), a toilet block fitted with LED lighting, and a stage area. The stage area contains multiple general-purpose outlets (GPOs) used periodically during community events and markets, contributing to intermittent load peaks.

The second section, *Pathway Lights & Bore Pump*, extends from the middle carpark to the children's play area. It consumes around 23 MWh annually and includes all-LED park lighting and a 2.2 kW variable-speed drive (VSD) bore pump. This pump draws water from a bore to a storage tank, supplying irrigation for landscaped areas, the #1 Oval, the splash park, and water features such as the pond and fountains. Pump operation is informed by rainfall data, rainfall forecasts, and pond water levels, ensuring efficient use of water and energy.

22.2 Electricity

Based on the provided electricity billing for NMI NFFFAA2338 and NMI NFFFAA2440, covering the period from February 2024 to January 2025, the grid electricity usage at Bicentennial Park: Lights, Stage & Toilet and Pathway Lights & Bore Pump amounted to 33 MWh and 23MWh, respectively. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 5:00 pm - 8:00 pm on weekdays
- Shoulder: 7:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

These categories help distinguish the different usage patterns and corresponding energy rates throughout the day. By analysing the consumption data within these time frames, we can gain insights into facility's electricity usage patterns and identify opportunities for optimising energy consumption during different periods of the day.

TABLE 177: ANNUAL ELECTRICITY USE AT BICENTENNIAL PARK (LIGHTS, STAGE & TOILET)

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	348 kWh	701 kWh	1,803 kWh	2,852 kWh
Aug-24	309 kWh	638 kWh	1,826 kWh	2,773 kWh
Sep-24	224 kWh	410 kWh	1,316 kWh	1,951 kWh
Oct-24	189 kWh	487 kWh	1,526 kWh	2,202 kWh
Nov-24	193 kWh	648 kWh	1,669 kWh	2,511 kWh
Dec-24	163 kWh	676 kWh	1,662 kWh	2,500 kWh
Jan-25	346 kWh	1,220 kWh	2,397 kWh	3,963 kWh
Feb-24	178 kWh	701 kWh	1,697 kWh	2,576 kWh
Mar-24	224 kWh	755 kWh	1,952 kWh	2,930 kWh

Month	Peak	Shoulder	Off-peak	Total usage
Apr-24	320 kWh	782 kWh	1,879 kWh	2,981 kWh
May-24	351 kWh	753 kWh	1,831 kWh	2,934 kWh
Jun-24	300 kWh	624 kWh	1,842 kWh	2,766 kWh
Total	**3,144 kWh**	**8,395 kWh**	**21,401 kWh**	**32,941 kWh**

TABLE 178: ANNUAL ELECTRICITY USE AT BICENTENNIAL PARK (PATHWAY LIGHTS & BORE PUMP)

Month	Peak	Shoulder	Off-peak	Total usage
Jul-24	203 kWh	686 kWh	1,152 kWh	2,040 kWh
Aug-24	191 kWh	647 kWh	1,227 kWh	2,065 kWh
Sep-24	171 kWh	608 kWh	1,152 kWh	1,930 kWh
Oct-24	167 kWh	670 kWh	1,169 kWh	2,007 kWh
Nov-24	144 kWh	611 kWh	1,158 kWh	1,913 kWh
Dec-24	166 kWh	696 kWh	1,203 kWh	2,065 kWh
Jan-25	150 kWh	673 kWh	1,097 kWh	1,920 kWh
Feb-24	149 kWh	619 kWh	1,102 kWh	1,870 kWh
Mar-24	177 kWh	704 kWh	1,379 kWh	2,261 kWh
Apr-24	165 kWh	554 kWh	911 kWh	1,630 kWh
May-24	169 kWh	535 kWh	938 kWh	1,642 kWh
Jun-24	178 kWh	569 kWh	1,219 kWh	1,966 kWh
Total	**2,031 kWh**	**7,572 kWh**	**13,705 kWh**	**23,308 kWh**

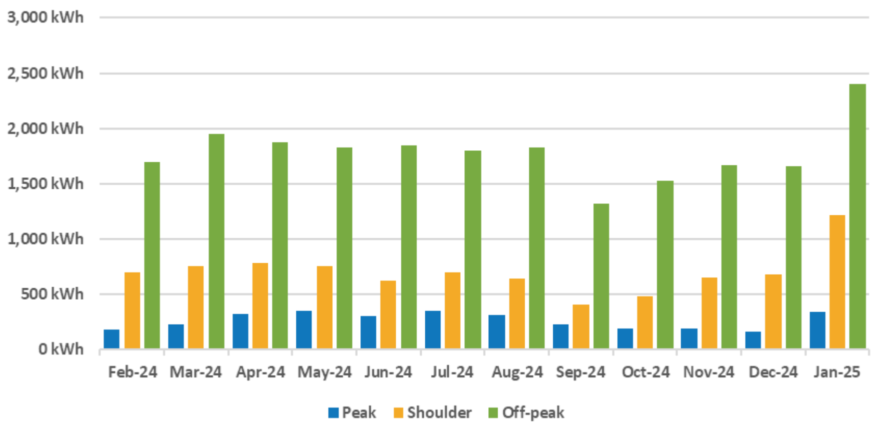


FIGURE 100: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT BICENTENNIAL PARK (LIGHTS, STAGE & TOILET)

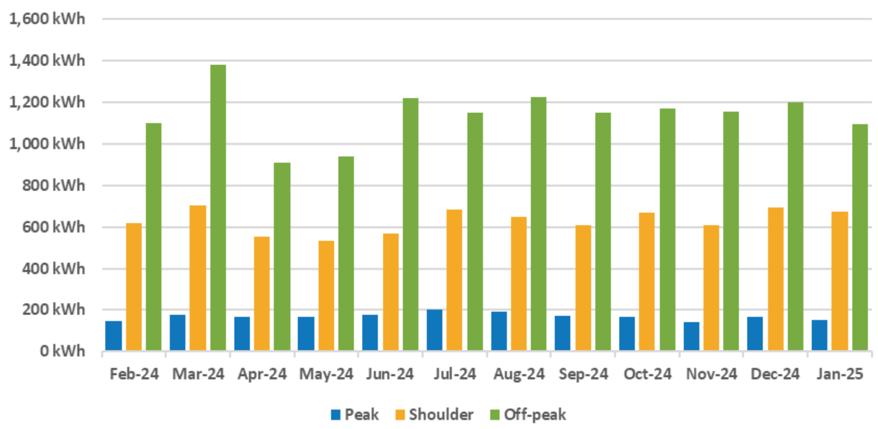


FIGURE 101: MONTHLY ELECTRICITY USE BY TIME-OF-USE AT BICENTENNIAL PARK (PATHWAY LIGHTS & BORE PUMP)

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 179: ANNUAL ELECTRICITY USE AND COSTS AT BICENTENNIAL PARK

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Lights, Stage & Toilet	NFFFAA2338	32,941 kWh	$7,271.16	0.22 $/kWh	BLNT2AL
Pathway Lights & Bore Pump	NFFFAA2440	23,308 kWh	$5,403.08	0.23 $/kWh	BLNT2AL

22.3 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The table below summarises the primary electricity consumers observed on site.

TABLE 180: ENERGY END USE BREAKUP AT BICENTENNIAL PARK (LIGHTS, STAGE & TOILET)

Category	Annual consumption	%
Lighting	15,000 kWh	47%
Toilet blocks	5,000 kWh	16%
Stage GPOs	12,000 kWh	38%
Total	**32,000 kWh**	**100%**

TABLE 181: ENERGY END USE BREAKUP AT BICENTENNIAL PARK (PATHWAY LIGHTS & BORE PUMP)

Category	Annual consumption	%
Lighting	3,000 kWh	13%
Bore pump	20,000 kWh	87%
Total	**23,000 kWh**	**100%**

Within the above estimated consumption, there are a few energy end use systems that are noted.

22.3.1 Lighting

Lighting across Bicentennial Park is primarily LED, including approximately 50 LED park lights estimated to consume around 10 MWh per year. The central walkway is fitted with compact fluorescent (CFL) fittings, though this has not been fully verified, contributing less than 5 MWh annually. Additional pathway lighting in the section between the carpark and children's play area is also LED, using an estimated 3 MWh per year. Overall, lighting represents a moderate share of site energy use across both accounts.

22.3.2 Bore Pump

The bore pump, located in the section between the carpark and children's play area, is a 2.2 kW unit supplying water to the irrigation system, splash park, and pond features. The pump operates via a variable speed drive (VSD) and is controlled using rainfall, predicted rainfall data, and pond float levels to optimise operation. Annual energy use is estimated at approximately 20 MWh, accounting for the majority of consumption under this account.

22.3.3 Toilet Blocks and Stage GPOs

The toilet block equipped with LED lighting and minor electrical load consumes less than 5 MWh annually. The stage area includes several general power outlets (GPOs) used intermittently for community events and market days. These GPOs account for an estimated 12 MWh per year, making them one of the larger end-use contributors at the site when in active use.

22.4 Potential energy and cost-saving opportunities

22.4.1 LED lighting upgrade

Most lighting within Bicentennial Park has already been upgraded to LED; however, 18 centre pathway lights near the oval and toilet block are believed to remain as non-LED compact fluorescent fittings, though this has not been confirmed. These older fittings contribute to higher energy use and increased maintenance costs compared to LEDs.

It is recommended to verify the lighting type for the centre pathway lights and, if confirmed to be non-LED, replace them with compatible LED lamps or fittings. This upgrade will reduce lighting energy consumption, improve reliability, and further standardise lighting systems across the park for ease of maintenance.

TABLE 182: BUSINESS CASE FOR LED LIGHTING UPGRADE FOR BICENTENNIAL PARK

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Most park lighting is LED; however, the 18 centre pathway lights near the oval and toilet block are advised to still be non-LED (compact fluorescent), though this has not been verified. These fittings contribute to higher energy use and maintenance costs compared to LEDs.	Verify if the centre pathway lights are non-LED and, if confirmed, replace them with compatible LED fittings to cut energy use and improve reliability.	Requires verification that the centre pathway lights are non-LED and confirmation that suitable LED replacements can be fitted to existing luminaires.	$900	678 kWh	$488	1.8 years

23 Forest Rd Landfill

23.1 Site description

The Forest Rd landfill is a multi-functional waste management facility that will remain in operation for several decades. It comprises three main electricity meters (NMIs) supplying the Small Materials Recovery Facility (SMRF), the workshop and office area located on the elevated section of the site near the North Tamworth Reservoir, and a meter near the Weighbridge which has the highest energy demand.

The site accommodates a range of waste management and processing activities, including the landfill itself, a gas flare system, green waste treatment operations, and a waste transfer station for recyclables. Several capped sections of the landfill contain gas extraction wells and have been revegetated.

The SMRF undertakes limited recycling activities, primarily baling cardboard and paper into approximately 900 kg bales for transport to Sydney by a third party. Around 20 tonnes of baled product are processed daily, with operations running from early morning to mid-afternoon. A solar PV array installed on the SMRF by a non-profit group several years ago offsets most of its energy needs; however, one inverter/string is currently non-operational.

The workshop and office facilities, supplied from the North Tamworth Reservoir meter, include an air-conditioned office, lighting, power, hot water, sheds, fuel storage and bowser facilities, and ancillary buildings.

The weighbridge and landfill operations draw the largest share of energy and supply a range of systems, including submersible leachate pumps to storage tanks, a blower in the leachate dam, a pump transferring water from the 6 ML dam to the 12 ML dam, blowers for aerating green waste rows, gas flare services, and site lighting.

The gas flare, installed around 6–7 years ago, is registered with the CER and generates ACCUs. Green waste is mulched, stockpiled, aerated, and screened on-site before being sold commercially.

23.2 Electricity

23.3 Forest Rd Green Waste Site

Based on the provided electricity billing data for NMI 4407356089, covering the period from February 2024 to January 2025, the grid electricity usage at Forest Rd Green Waste Site amounted to 80 MWh. The consumption has been categorised into peak, off-peak, and shoulder periods based on Essential Energy's time-of-use definitions, as outlined in the retail supply agreement with Zen Energy.

- Peak: 7:00 am – 9:00 am & 5:00 pm - 8:00 pm on weekdays
- Shoulder: 9:00 am - 5:00 pm & 8:00pm - 10:00 pm on weekdays
- Off-peak: All other times

The electricity bills are issued quarterly rather than monthly, so monthly peak, off-peak, and shoulder consumption data are unavailable. The graph below presents the normalised monthly consumption for the main landfill account.

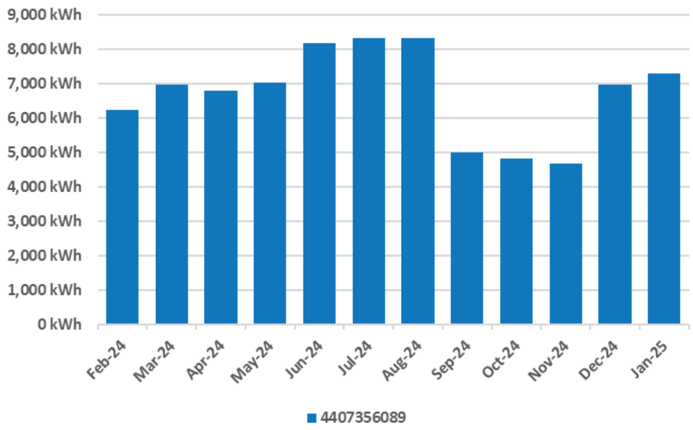


FIGURE 102: MONTHLY TOTAL ELECTRICITY CONSUMPTION AT FOREST RD GREEN WASTE SITE

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 183: ANNUAL ELECTRICITY USE AND COSTS AT FOREST RD GREEN WASTE SITE

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Forest Rd Green Waste Site	4407356089	80,674 kWh	$17,538.53	0.22 $/kWh	BLNT2AU

23.4 North Tamworth Reservoir

Based on the provided electricity billing data for NMI 4407318215, covering the period from February 2024 to January 2025, the grid electricity usage at North Tamworth Reservoir amounted to 19 MWh. The account is billed on an any-time tariff, meaning there is no differentiation between peak, shoulder, and off-peak periods under Essential Energy's time-of-use definitions. Instead, all electricity is charged at a single flat rate regardless of the time of day.

This arrangement simplifies billing however, it does not provide visibility into daily usage patterns, limiting the ability to analyse potential savings from shifting loads to lower-cost periods. Consumption trends can still be assessed monthly to identify seasonal variations and potential links to operational changes or weather impacts.

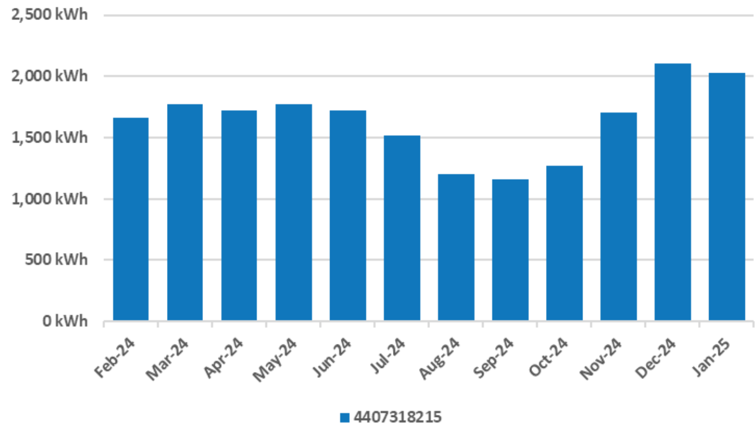


FIGURE 103: MONTHLY TOTAL ELECTRICITY CONSUMPTION AT NORTH TAMWORTH RESERVOIR

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 184: ANNUAL ELECTRICITY USE AND COSTS AT NORTH TAMWORTH RESERVOIR

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
North Tamworth Reservoir	4407318215	19, 625 kWh	$6,339.97	0.34 $/kWh	BLNN1AU / BLNBSS1

23.5 Small Materials Recovery Facility (SMRF)

Based on the provided electricity billing data for NMI 4407338711, covering the period from February 2024 to January 2025, the grid electricity usage at SMRF amounted to 31 MWh. The account is billed on an any-time tariff, meaning there is no differentiation between peak, shoulder, and off-peak periods under Essential Energy's time-of-use definitions. Instead, all electricity is charged at a single flat rate regardless of the time of day.

This arrangement simplifies billing however, it does not provide visibility into daily usage patterns, limiting the ability to analyse potential savings from shifting loads to lower-cost periods. Consumption trends can still be assessed monthly to identify seasonal variations and potential links to operational changes or weather impacts.

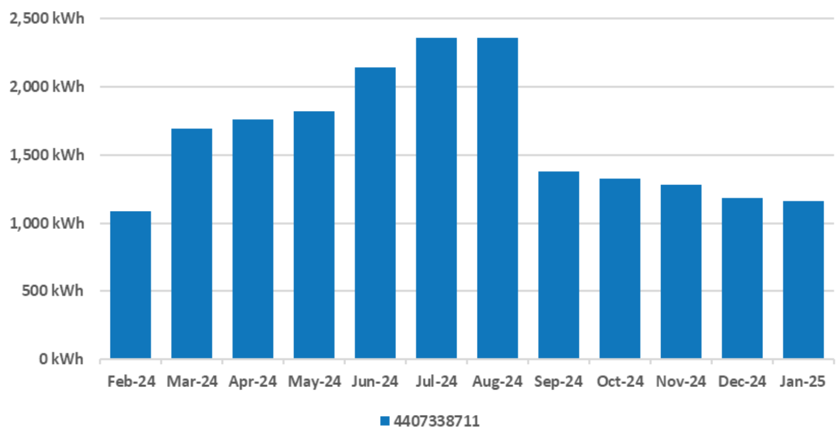


FIGURE 104: MONTHLY TOTAL ELECTRICITY CONSUMPTION AT SMRF

The table below summarises the grid consumption, cost (ex-GST) and simple average energy rate for the site's supply, along with the Essential Energy network tariff that applies to the site.

TABLE 185: ANNUAL ELECTRICITY USE AND COSTS AT SMRF

Site	NMI	Annual consumption	Annual cost (ex-GST)	Average rate	Network Tariff
Small Materials Recovery Facility (SMRF)	4407338711	31,308 kWh	$8,819.30	0.28 $/kWh	BLNN1AU

23.6 Equipment audit

An on-site audit was conducted in July 2025, to assess all equipment installed at the site. The aim of this audit was to create a bottom-up estimate of the site's grid electricity usage, providing an overview of the primary areas of energy consumption. It is noted that this was not a precision audit based on sub-metered data. The tables below summarise the primary electricity consumers observed on site.

TABLE 186: ENERGY END USE BREAKUP AT FOREST RD LANDFILL

Category	**Annual consumption**	**%**
Blowers	40,000 kWh	50%
Pumps	20,000 kWh	25%
Weighbridge	10,000 kWh	13%
Flare	10,000 kWh	13%
Total	**80,000 kWh**	**100%**

TABLE 187: ENERGY END USE BREAKUP AT NORTH TAMWORTH RESERVOIR

Category	**Annual consumption**	**%**
HVAC	8,000 kWh	40%
Lighting	4,000 kWh	20%

Category	Annual consumption	%
Heat pump	4,000 kWh	20%
Other loads	4,000 kWh	20%
Total	**20,000 kWh**	**100%**

TABLE 188: ENERGY END USE BREAKUP AT SMALL MATERIALS RECOVERY FACILITY (SMRF)

Category	Annual consumption	%
Baler	4,000 kWh	80%
Lighting	1,000 kWh	20%
Total	**5,000 kWh**	**100%**

The total energy use estimated from the audit closely aligns with the recorded energy consumption for the site, accounting for both on-site solar generation in SMRF and grid supply. Within the above estimated consumption, there are a few energy end use systems that are noted.

23.6.1 Blowers

At the Forest Rd Landfill, several blower systems operate across different processes. A 4 kW blower aerates the leachate dam and runs for much of the year (approximately 8,000 hours), consuming around 30 MWh annually. In addition, nine 1.1 kW blowers service the green waste composting rows, contributing a further 10 MWh per year. Combined, blowers represent roughly 50% of total landfill site electricity use.

23.6.2 Pumps

Multiple pumps operate at the landfill, including submersible leachate pumps transferring leachate to two storage tanks (approximately 10 MWh per year) and an 11 kW pump in the 6 ML dam, which supplies water to the 12 ML dam (around 10 MWh per year). Pump operation is intermittent, largely dependent on rainfall and leachate levels.

23.6.3 Weighbridge

The weighbridge office at the landfill supports IT systems, air conditioning, lighting, and general power loads, estimated to consume around 10 MWh per year. This includes energy for routine weighing operations and site administration.

23.6.4 Flare

A landfill gas flare, installed around six to seven years ago, operates under a registered ACCUs project with the Clean Energy Regulator. The flare system—including blower, scrubber, and ancillary controls—is estimated to consume approximately 10 MWh per year.

23.6.5 Lighting

Lighting is distributed across the landfill and the associated North Tamworth Reservoir and SMRF sites. At the landfill, external and internal lighting contributes a small share of total consumption. At the North Tamworth Reservoir, lighting accounts for approximately 4 MWh per year, while at the SMRF, LED lighting consumes about 1 MWh annually.

23.6.6 Heating, ventilation and air conditioning (HVAC)

HVAC systems are primarily located at the North Tamworth Reservoir workshop and office facilities, which operate five to six split-system air conditioners. Combined annual consumption is estimated at 8 MWh, representing the largest single energy end use at the reservoir.

23.6.7 Baler

At the Small Materials Recovery Facility (SMRF), baling equipment is used to compact cardboard and paper into 900 kg bales that are transported to Sydney by a third party. The facility operates from early morning to afternoon, processing around 20 tonnes of baled product daily. The baler represents the main source of electricity consumption within the SMRF, accounting for the majority of the site's annual load.

23.6.8 Baler

Other loads are primarily associated with the North Tamworth Reservoir facilities, including small power tools, shed equipment, and the fuel bowser system. These ancillary uses account for approximately 4 MWh per year.

23.7 Potential energy and cost-saving opportunities

23.7.1 Solar PV and battery storage

The Forest Road Landfill site comprises three separate electricity accounts—main landfill, north reservoir, and SMRF—each presenting distinct but complementary opportunities for solar PV and battery integration.

At the **main landfill**, annual electricity use of around 80–100 MWh is driven by leachate blowers, pumps, and weighbridge operations. The site currently has no solar generation, and available ground space is limited, though a small area near the weighbridge could support a ground-mounted system. It is recommended to install a 45 kW solar PV array with battery storage to offset daytime loads and improve self-consumption, subject to confirming grid connection limits and available space.

The **north reservoir** supplies a small office and workshop consuming approximately 20 MWh per year. The existing roof area offers good potential for a 10-kW rooftop solar system to meet most daytime loads from HVAC, lighting, and equipment, improving site efficiency with minimal infrastructure changes.

At the **SMRF**, a 47-kW solar system already exists, though only 20 kW is operational due to an inverter or string fault. The site is a candidate for partial system replacement (~15 kW) and installation of a 60-kWh battery to enhance self-consumption and provide greater resilience. These improvements would restore full solar output and help manage variability in future operations, subject to confirmation of site ownership, metering, and long-term use of the facility.

Across all three accounts, PV should be sized to maximise self-consumption (not exports), with the proposed system sizes capable of offsetting approximately 90–100% of daytime electricity use, subject to confirmation of actual daytime demand where interval data becomes available. Any batteries should be targeted to peak and shoulder demand reduction at each meter—avoiding oversized storage that routinely discharges off-peak—with optional “flex” control (peak discharge, partial off-peak recharge, shoulder discharge) where this improves the business case.

Collectively, these upgrades would significantly reduce grid electricity use, improve energy resilience across the landfill precinct, and support Council’s broader renewable energy objectives.

Figure 105: Forest Rd Landfill – Landfill – 45 kW ground-mounted roof solar PV system

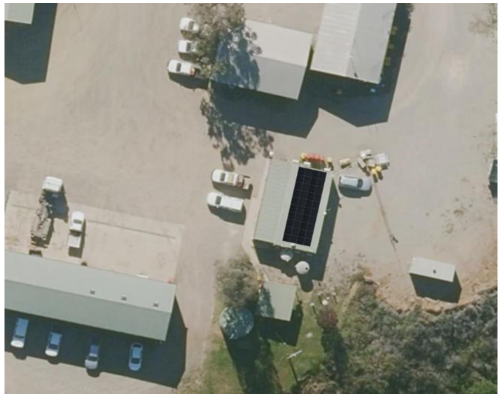


Figure 106: Forest Rd Landfill – North Reservoir – 10 kW flush-mounted roof solar PV system

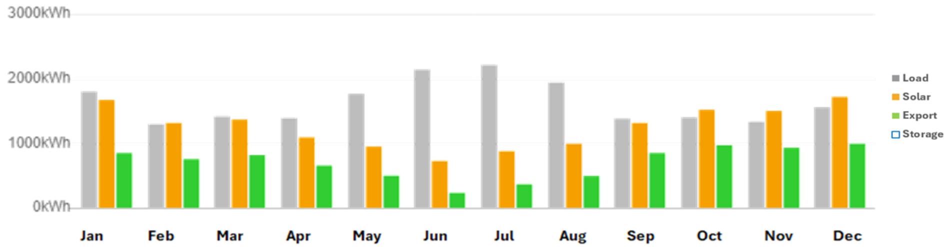


Figure 107: Forest Rd Landfill – North Reservoir – 10 kW solar system projected monthly solar generation

FIGURE 108: FOREST RD LANDFILL – SMRF – 15 KW FLUSH-MOUNTED ROOF SOLAR PV SYSTEM REPLACEMENT W/ 30 KWH BESS

TABLE 189: BUSINESS CASE FOR 45-KW, 10-KW, & 15-KW (+ 30-KWH BESS) SOLAR FOR FOREST RD LANDFILL (LANDFILL, NORTH RESERVOIR, SMRF)

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
Landfill: The main landfill account (NMI 4407356089) has daytime loads including the weighbridge, blower, 6 ML dam pump, submersible pumps and office; no solar PV is installed, and available ground space is limited.	Install a 45-kW ground-mounted solar PV system with battery storage to offset daytime loads at the landfill site and improve self-consumption, subject to available space and grid constraints.	Limited space on site for a ground-mounted array; site power constraints and export limits may apply.	$58,500	43,296 kWh	$9,418	6.4 years

Current situation	Recommended action	Barriers	Capital cost	Electricity savings	Annual cost savings	Payback years
North reservoir: The reservoir account (NMI 4407318215) supplies a workshop and office with 5–6 split AC units, lighting, heat pumps and other equipment; no solar PV is installed.	Install a 10-kW solar PV system on the office or workshop roof to offset weekday daytime loads from AC, lighting, and equipment, subject to confirming load profile and available roof space.	No specific barriers noted, but system sizing should align with actual daytime usage and available roof space.	$13,000	9,027 kWh	$2,916	4.6 years
SMRF: The SMRF has an existing solar PV system with 47 kW inverter capacity, but only ~20 kW is operational due to a failed inverter/string; the system supplies most of the SMRF's energy needs.	Replace the failed ~15 kW portion of the SMRF's solar system and add a 30-kWh battery to improve self-consumption, subject to confirming site ownership, metering, load profiles, and long-term building use.	The future use of the SMRF building is uncertain, and clarification is needed on solar system ownership and metering before investment.	$46,500	18,828 kWh	$5,304	8.5 years

23.7.2 Billing and Metering Review

A review of metering at the Forest Road Landfill precinct identified discrepancies between Council records and the meters installed onsite. The SMRF account's NMI does not align with Council's records, and several meters appear to be connected to the main landfill account, including those supplying the weighbridge and green waste area. These inconsistencies make it difficult to determine which loads belong to which account, limiting billing transparency and accurate monitoring of energy use.

It is recommended that Council verify and update all meter and equipment connections for both the SMRF and landfill accounts to ensure accurate billing and load allocation. This action will support future energy management, tariff optimisation, and upgrade planning. No cost-benefit assessment or business case has been developed, as this measure primarily serves to improve data accuracy and operational oversight rather than deliver direct financial savings.

23.7.3 Gas Collection and Energy Generation

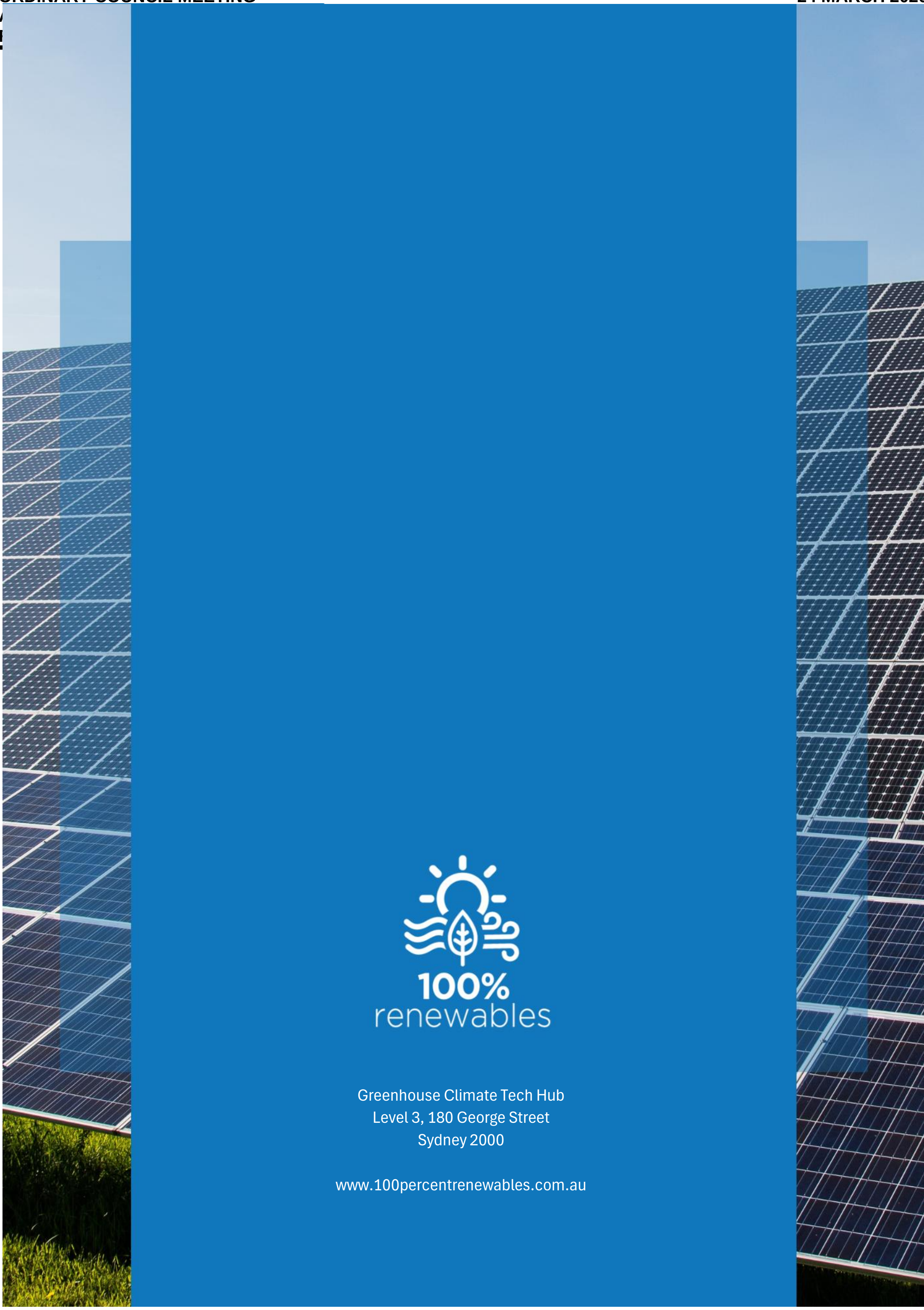
The Forest Road Landfill operates an active gas flare system, with landfill gas capture reported under the ACCU program, and revegetation projects established over capped landfill areas. However, current gas production volumes are well below the threshold required to make energy generation viable. Based on available data, approximately double the current gas volume would be required to justify generation without significant grant funding.

It is recommended that Council continue monitoring gas production and flare performance and reassess opportunities for power generation or low-emission recovery if volumes or funding improve. For now, no cost-benefit analysis or business case has been prepared, as this opportunity remains contingent on future gas yield increases and external funding support.

Appendix A: Glossary of terms and abbreviations

Term / Acronym	Definition
AC	Alternating Current. The form of electricity supplied by the grid and used by most building systems.
AHU (Air Handling Unit)	Equipment used to condition and circulate air as part of an HVAC system, typically including fans, filters, heating/cooling coils, and dampers.
BESS (Battery Energy Storage System)	A system that stores electrical energy (typically from solar PV) for later use. In this report, batteries are primarily considered for peak demand reduction, load shifting, and limited backup rather than bulk export.
BMS (Building Management System)	A computer-based system used to monitor and control building services such as HVAC, lighting, and energy use to improve efficiency, reliability, and occupant comfort.
BMCS (Building Management and Control System)	The combined hardware and software used to control building services. Several sites have legacy BMCS platforms noted as obsolete or unsupported.
CEUF (Community Energy Upgrades Fund)	An Australian Government grant program supporting energy efficiency and renewable energy upgrades in local government and community facilities.
COP (Coefficient of Performance)	A measure of HVAC efficiency, defined as the ratio of heating or cooling output to electrical energy input.
DOL (Direct-On-Line)	A motor starting method where full supply voltage is applied immediately, resulting in high inrush current and no speed control.
DX (Direct Expansion)	A type of HVAC system where refrigerant expands directly within the indoor unit to provide cooling or heating.
EDH (Electric Duct Heater)	Electric resistance heaters installed in air ducts; typically energy-intensive compared to heat pump alternatives.
EV (Electric Vehicle)	A vehicle powered fully by electricity rather than an internal combustion engine.
HVAC (Heating, Ventilation and Air Conditioning)	Systems used to provide thermal comfort, indoor air quality, and humidity control within buildings.
IE3 / IE4 / IE5 Motors	International Efficiency classes for electric motors, with IE5 being the highest efficiency. Higher-efficiency motors typically require VSDs for optimal operation.
Interval meter / interval data	Electricity meters that record usage in short intervals (e.g. 15 or 30 minutes), enabling detailed load profiling, tariff analysis, and demand management.
kW / kVA / kVAr	**kW:** real power consumed; **kVA:** apparent power supplied by the network; **kVAr:** reactive power associated with inductive loads.

Term / Acronym	Definition
Low-GWP refrigerant	Refrigerants with lower Global Warming Potential than legacy gases such as R22, reducing environmental and regulatory risk.
NMI (National Metering Identifier)	A unique identifier assigned to each electricity connection point in Australia.
PFC (Power Factor Correction)	Equipment used to reduce reactive power demand, improve power factor, and lower network demand charges.
PV (Photovoltaic)	Technology that converts sunlight directly into electricity using solar panels.
R22 refrigerant	A legacy HCFC refrigerant being phased out due to high ozone depletion and global warming potential; supply restrictions and bans create significant operational risk.
Self-consumption	The proportion of on-site generated electricity (e.g. from solar PV) that is used directly on site rather than exported to the grid.
STC (Small-scale Technology Certificate)	A renewable energy incentive under Australia's Renewable Energy Target for eligible systems under 100 kW.
Tariff (Time-of-Use)	Electricity pricing structure where energy costs vary by time of day (peak, shoulder, off-peak).
VSD (Variable Speed Drive)	An electronic device that controls motor speed by varying frequency and voltage, enabling energy savings and improved process control.


100%
renewables
Greenhouse Climate Tech Hub
Level 3, 180 George Street
Sydney 2000
www.100percentrenewables.com.au

TAMWORTH REGIONAL COUNCIL INVESTMENT REGISTER AS AT 28 FEBRUARY 2026

Investment Type: Term Deposit

Financial Institution	S&P Credit Rating	IFRS Classification	Investment Type	Investment Date	Maturity Date	No of Days	Interest Rate	Term Deposit Value
Westpac	A-1+	Held to Maturity	Term Deposit	8/03/2023	10/03/2026	1098	4.70%	2,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	16/04/2025	7/04/2026	356	4.23%	8,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	13/05/2025	13/05/2026	365	4.35%	7,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	20/05/2025	19/05/2026	364	4.35%	4,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	27/05/2025	26/05/2026	364	4.19%	4,000,000
NAB	A-1+	Held to Maturity	Term Deposit	27/05/2025	26/05/2026	364	4.15%	10,000,000
NAB	A-1+	Held to Maturity	Term Deposit	26/08/2025	9/06/2026	287	4.05%	4,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	27/01/2026	15/06/2027	504	4.78%	6,000,000
NAB	A-1+	Held to Maturity	Term Deposit	27/06/2025	16/06/2026	354	4.11%	7,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	29/07/2025	23/06/2026	329	4.14%	6,000,000
BOQ	A-2	Held to Maturity	Term Deposit	24/11/2025	23/06/2026	211	4.35%	4,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	8/07/2025	7/07/2026	364	4.10%	3,000,000
NAB	A-1+	Held to Maturity	Term Deposit	23/09/2025	7/07/2026	287	4.15%	6,000,000
NAB	A-1+	Held to Maturity	Term Deposit	12/08/2025	14/07/2026	336	4.10%	4,000,000
RAB	A-2	Held to Maturity	Term Deposit	15/07/2025	15/07/2026	365	4.20%	5,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	19/08/2025	18/08/2026	364	4.12%	8,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	9/09/2025	8/09/2026	364	4.13%	10,000,000
RAB	A-2	Held to Maturity	Term Deposit	9/09/2025	9/09/2026	365	4.14%	5,000,000
NAB	A-1+	Held to Maturity	Term Deposit	23/09/2025	22/09/2026	364	4.15%	6,000,000
NAB	A-1+	Held to Maturity	Term Deposit	22/10/2025	6/10/2026	349	4.10%	4,000,000
NAB	A-1+	Held to Maturity	Term Deposit	13/01/2026	20/10/2026	280	4.50%	8,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	6/11/2025	10/11/2026	369	4.30%	4,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	12/11/2025	12/11/2026	365	4.32%	4,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	24/11/2025	24/11/2026	365	4.37%	10,000,000
CBA	A-1+	Held to Maturity	Term Deposit	19/12/2025	17/12/2026	363	4.51%	11,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	13/01/2026	12/01/2027	364	4.56%	5,000,000
Westpac	A-1+	Held to Maturity	Term Deposit	20/01/2026	25/01/2027	370	4.59%	5,000,000
Westpac	AA-	Held to Maturity	Term Deposit	4/02/2026	9/02/2027	370	4.83%	5,000,000
Westpac	AA-	Held to Maturity	Term Deposit	4/02/2026	17/02/2027	378	4.83%	7,000,000
Westpac	AA-	Held to Maturity	Term Deposit	24/02/2026	23/03/2027	392	4.86%	6,000,000
Westpac	AA-	Held to Maturity	Term Deposit	26/08/2025	22/08/2030	1822	4.15%	4,000,000
					TOTAL		4.34%	$ 182,000,000

Investment Type: Floating Rate Note, Fixed Rate Bond

Financial Institution	S&P Credit Rating	IFRS Classification	Investment Type	Investment Date	Maturity Date	No of Days	Interest Rate	Purchase Value	# Maturity Value
Bendigo	A-2	Held to Maturity	Floating Rate Note	15/05/2023	15/05/2026	1096	BBSW+1.25%	3,000,000	3,000,000
Suncorp	A-1+	Held to Maturity	Floating Rate Note	19/01/2023	15/09/2026	1335	BBSW+0.48%	5,000,000	5,000,000
NAB	AA-	Held to Maturity	Fixed Rate Bond	4/03/2024	25/02/2027	1088	2.90%	5,000,228	5,241,000
CBA	AA-	Held to Maturity	Floating Rate Note	18/10/2022	18/08/2027	1765	BBSW+1.02%	1,000,000	1,000,000
ANZ	AA-	Held to Maturity	Floating Rate Note	8/11/2022	4/11/2027	1822	BBSW+1.20%	4,000,000	4,000,000
					TOTAL			$ 18,000,228	$ 18,241,000

Floating Rate Notes can be purchased at a premium or a discount. The difference between the Purchase Value and Market Value is recognised by Council on a monthly basis as interest.

Investment Type: On Call, On Hold

Financial Institution	S&P Credit Rating	IFRS Classification	Investment Type	Date Invested	Due Date	No of Days	Interest Rate	Market Value at 28 February 2026
NAB	A-1+	N/A	On Call	N/A	N/A	N/A	3.95%	19,417,621
Westpac	A-1+	Held to Maturity	On Hold		90 Day Maturity		4.40%	6,078,020
					TOTAL			$ 25,495,641

TOTAL INVESTMENT REGISTER	$	225,736,641

Comparative Rates

RBA Cash Rate: 607802010.00%
BBSW: 3.99%

I, Sherrill Young, Tamworth Regional Council Manager of Financial Services (Responsible Accounting Officer) certify as required under Section 16(1)(b) of the Local Government (Financial Management) Regulations 1999, that Council's investments have been made in accordance with the Local Government Act 1993, Regulations and Tamworth Regional Council Investment Policy.

Signed............ Sherrill Young

Investment By Rating (excluding cash accounts) as at 28 February 2026

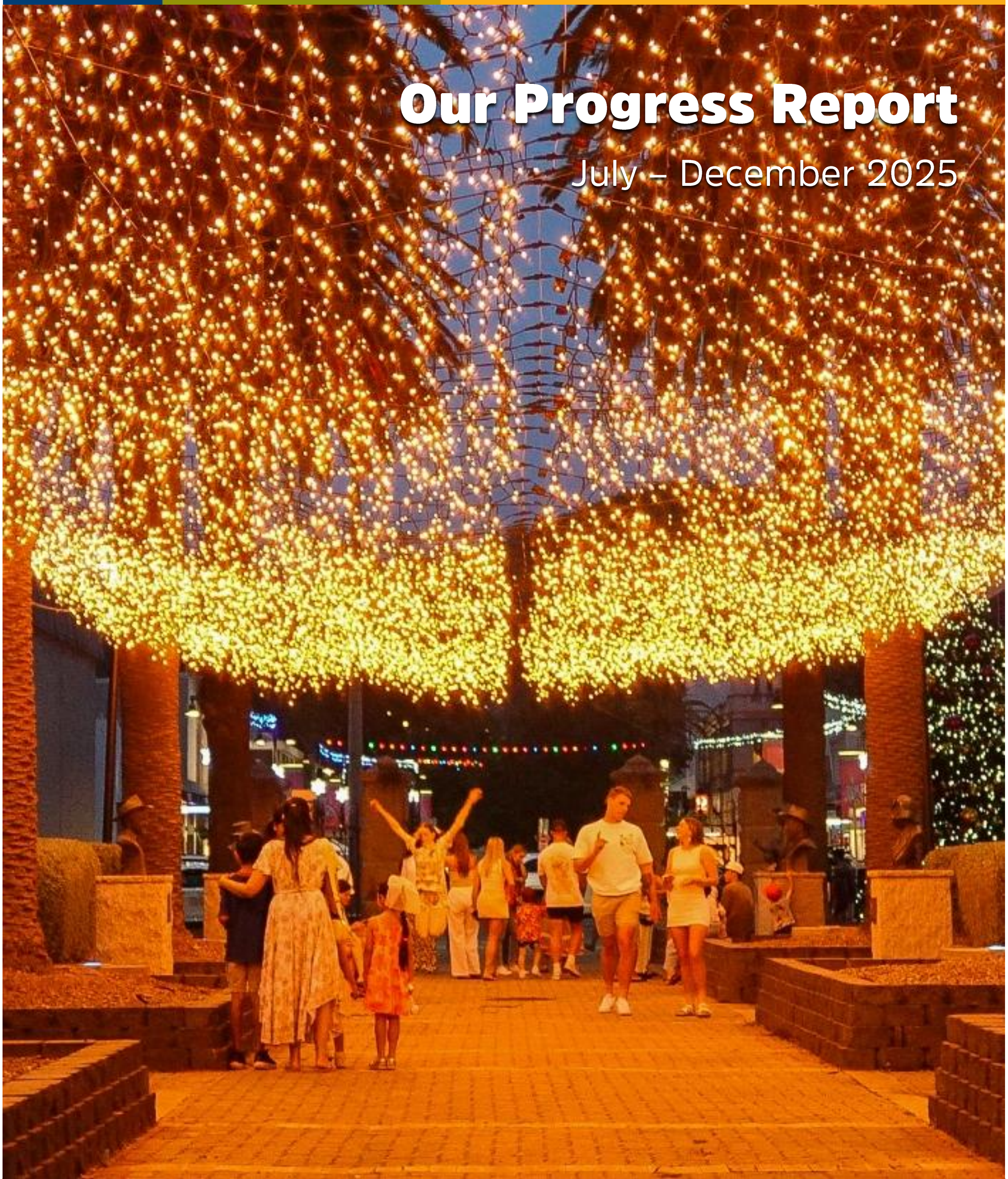
S&P Credit Rating							Maturity	
Short Term	Long Term	Portfolio Limit	Counterparty Limit	Bank	Amount invested as at 28 February 2026 ($)	% of Total Investments	Less than 12 months ($)	One to five years ($)
A-1+	AAA	100%	100%		-	0.00%	-	-
A-1+	AA+ to AA-	100%	100%	ANZ	4,000,000	2.00%	-	4,000,000
				CBA	12,000,000	6.00%	11,000,000	1,000,000
				NAB	54,000,228	27.00%	54,000,228	-
				Suncorp	5,000,000	2.50%	5,000,000	
				Westpac	108,000,000	54.00%	98,000,000	10,000,000
A-1	A+ to A	100%	30%		-	0.00%	-	-
A-2	A-	40%	20%	Bendigo	3,000,000	1.50%	3,000,000	-
				BOQ	4,000,000	2.00%	4,000,000	-
				RAB	10,000,000	5.00%	10,000,000	-
A-2	BBB+	30%	10%		-	0.00%	-	-
					$ 200,000,228	100.00%	$ 185,000,228	$ 15,000,000

The General Manager or his delegated representative is authorised to approve variations to Council's investment policy if the investment is to Council's advantage or due to revised legislation.

Council's investments are mostly comprised of restricted funds that have been received for specific purposes or funds held for future renewal works. The following table provides an indicative summary of investments held by each fund. The figures provided are based on opening balances from the last completed and audited financial year. The figures provide a guide on the proportion of total cash that is restricted in use:

Investments Held by Fund (including cash accounts)

Fund	Restriction	Amount	%
General	Unrestricted	12,994,360	5.76%
General	Internally Restricted	52,869,771	23.42%
General	Externally Restricted	33,015,958	14.63%
	General Fund Total	**$ 98,880,089**	**43.80%**
Water	Unrestricted	2,131,655	0.94%
Water	Internally Restricted	19,347,595	8.57%
Water	Externally Restricted	15,578,502	6.90%
	Water Fund Total	**$ 37,057,752**	**16.42%**
Sewer	Unrestricted	2,187,583	0.97%
Sewer	Internally Restricted	68,540,200	30.36%
Sewer	Externally Restricted	19,071,017	8.45%
	Sewer Fund Total	**$ 89,798,800**	**39.78%**
	Total Investments	**$ 225,736,641**	**100.00%**



Tamworth REGIONAL COUNCIL

Tamworth Regional Council would like to acknowledge the Gamilaroi/Kamilaroi/Gomeroi people, who are the traditional custodians of this land. We would like to pay respect to Elders past and present and extend that respect to other Aboriginal and Torres Strait Islander people living in and visiting our region.

The artwork on this page was created by Gomeroi artist Tess Reading. Her artwork was selected through an expression of interest where Aboriginal artists with a connection to the Kamilaroi/Gomeroi Nation were asked to create an artistic element for inclusion in Council's corporate brand.

Ms Reading describes her work as depicting the land and communities that spread across the Tamworth Regional Council footprint. Elements of the artwork will start to appear on Council's letterheads, business cards, signage and uniforms in 2025.

CONTENTS

FEEDBACK

We want to hear from you. Please direct any feedback or suggestions about this report to Council by calling (02) 6767 5555, emailing trc@tamworth.nsw.gov.au or visiting www.tamworth.nsw.gov.au.

INTRODUCTION

Welcome to Our Progress Report, July-Dec 2025. This report is prepared in accordance with Section 404 of the Local Government Act 1993, and the Integrated Planning and Reporting framework. This report demonstrates Council's progress in achieving outcomes against our Delivery Program 2025-2029 and the actions identified in our Operational Plan and Budget 2025/26.

Our Progress Report should be read in conjunction with the Integrated Planning and Reporting suite of documents which can be found on Council's website www.tamworth.nsw.gov.au.

INTEGRATED PLANNING AND REPORTING DOCUMENT SUITE

PLANNING

Community Strategic Plan (CSP)	Highest level plan within the IP&R suite, articulating the visions and strategic direction of the community for the next 10 years. The CSP informs development of all other strategies
Community Engagement Strategy (CES)	Supports the development of all policies, plans and key activities
Delivery Program (DP)	Articulates Council's commitment for delivering the objectives of the Community Strategic plan. Outlining key initiatives, strategies and actions over a four-year Council term
Resourcing Strategy (RS)	Demonstrates how the programs and activities identified in the Delivery Program will be resourced through: • Long-Term Financial Plan • Asset Management Strategy • Workforce Management Strategy
Operational Plan (OP)	Council's action plan for the projects, programs and initiatives it will deliver against the strategies of the Delivery Program over a 12-month period

REPORTING

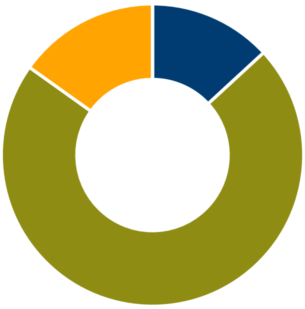
Progress Reports	Six-monthly report on Council's progress in delivering strategies of the Delivery Program
Annual Report	Reports on the work undertaken to deliver the Delivery Program and Operational Plan
State of Our Region	Prepared at the end of the Council term and reports on the effectiveness of the implementation of the Community Strategic Plan

SUMMARY OF PERFORMANCE

Council at its Ordinary Meeting held 30 June 2025, adopted the annual Operational Plan and Budget 2025/26 identifying actions aligning with the priorities of the Community Strategic Plan 2025-2035 and Delivery Program 2025-2029. This report outlines action progress for the period of July – December 2025.

At the conclusion of this reporting period, 85% of the identified actions were reported as *Achieved or On Track* and 15% identified as *Monitor* or *Discontinued*.

ACTION STATUS



	ACHIEVED	ON TRACK	MONITOR	DISCONTINUED	TOTAL
OUR WATER SECURITY	0	11	0	0	11
A LIVEABLE BUILT ENVIRONMENT	1	18	3	0	22
PROSPERITY AND INNOVATION	4	28	2	0	34
RESILIENT AND DIVERSE COMMUNITIES	7	27	13	0	47
CONNECT OUR REGION AND ITS CITIZENS	4	18	6	0	28
WORKING WITH AND PROTECTING OUR ENVIRONMENT	1	12	4	0	17
CELEBRATE OUR CULTURES AND HERITAGE	5	18	4	0	27
A STRONG AND VIBRANT IDENTITY	0	7	0	0	7
OPEN AND COLLABORATIVE LEADERSHIP	11	41	6	0	58
TOTAL	33	180	38	0	251

FOCUS AREA 1

OUR WATER SECURITY

ACHIEVED · ON TRACK · MONITOR · DISCONTINUED

	Action / Deliverable	Status	Reporting Period Insights
Establish appropriate drought contingency measures in collaboration with the State Government			
W.0101.01	Develop Tamworth Water Security Plan	On track	Draft report has been progressed; staff continue to work with the State Government on the surface water aspects of the plan.
Investigate and develop practical ways to secure our water supply			
W.0102.01	Investigate opportunities for using recycled water for industrial purposes	On track	Council is participating in a final business case looking at the cost effectiveness of a water purification facility. The business case is being delivered by the State Government.
W.0102.02	Provide Laboratory services	On track	The Laboratory has added an additional method (trace metals in water) to the scope of accreditation.
Improve water sustainability across the region			
W.0201.01	Implement water conservation initiatives identified in the Environmental Sustainability Strategy and Action Plan 2022-2026	On track	Water sustainability objectives on track in alignment with Council's Sustainability Strategy and Water Demand Management Plan.
Use demand management measures, such as water pricing, to encourage efficient water use			
W.0202.01	Conduct an annual pricing review	On track	This action is ongoing, Capital Works Plan review will be finalised by the end of February for modelling assessment.
Progress the establishment of sustainable effluent management practices for all wastewater treatment works			
W.0301.01	Investigate alternatives to land disposal of high salt concentration effluent	On track	All wastewater sites operating to regulatory requirements. Council is currently investigating recycled water treatment options.
W.0301.02	Review and update OEMP's for all wastewater treatment works	On track	OEMP for Tamworth wastewater has been updated, other plans to follow.
Plan for the renewal and upgrade our waste water infrastructure			
W.0302.01	Develop Asset Class Plans for wastewater infrastructure	On track	Budget alignment to Asset Class Plans has been completed. Strategies for maintenance and failure definitions are being developed.
W.0302.02	Review and update maintenance schedules for inclusion in each Asset Class Plan	On track	Wastewater infrastructure continues to be renewed as per the Asset Management Plan.
Ensure water sustainability is included in strategies, plans and policies			
W.0401.01	Provide guidance and support in the development of internal strategic plans and policies	On track	Water sustainability is included in internal plans and policies as appropriate.
Implement sustainable water practices across TRC services and facilities			
W.0402.01	Explore sustainable water options for open space areas to reduce reliance on portable water consumption	On track	All irrigated major sport fields have non-potable water connections. Staff continue to maintain these connections so they remain functioning.

FOCUS AREA 2

A LIVEABLE BUILT ENVIRONMENT

ACHIEVED · ON TRACK · MONITOR · DISCONTINUED

	Action / Deliverable	Status	Reporting Period Insights
Manage growth by updating the strategic land use plans and the Local Environmental Plan, and ensure developments meet these requirements			
L.0101.01	Review the Tamworth Regional Development Control Plan	MONITOR	A Draft Site-Specific Chapter of the DCP for the Stratheden Estate was prepared and placed on public exhibition in November 2025. The design excellence DCP chapter has been postponed until 2026.
Ensure sustainability principles are embedded into our policies and planning tools for future developments			
L.0102.01	Further the review and implementation of sustainability principles within the LEP	ON TRACK	Sustainability related data and guidance has been provided to the Future Communities team for inclusion in the LEP. This included data needed to develop an environmental clause for potential inclusion in the LEP.
Enhance and revitalise city and town centres			
L.0201.01	Complete the CBD precinct masterplan and planning proposal	MONITOR	The project has not commenced due to staff resourcing issues. Recruitment is again underway for a planner/designer. The current Special Entertainment Precincts project is adding momentum to the initiative.
Manage streetscapes to improve the visual appeal of the CBD			
L.0202.01	Complete a design for the extension of the Peel Street beautification plan from White Street to Murray Street	MONITOR	The design plans for the Peel Street beautification project are reciprocally connected to the outcomes of other CBD initiatives.
L.0202.02	Maintain Councils CBD's in accordance with the service standards of the Open Space Management Guide	ON TRACK	Staff have upgraded Tamworth's CBD Garden beds, as guided by the Open Space Management Guide.
Encourage night time social connections			
L.0203.01	Development of business and liveability content that includes the promotion of night-time activities, initiatives and opportunities	ON TRACK	Tamworth Night-time Economy Strategy is currently in final stages of development with a planned public exhibition to be scheduled for the first half of 2026.
L.0203.02	Seek funding to enhance the visitor and local night time engagement	ON TRACK	Council is actively seeking funding to enhance the visitors experience and create vibrant night time engagement through innovative programs and immersive activities.
Improve the greening and cooling of the region			
L.0204.01	Implementation of Urban Street Tree Management Plan and its associated planting priorities	ON TRACK	320 trees planted in the last 6 months. Zones: Greg Norman Drive Hill St, Winton Road, Hawker Road, multiple streets in Somerton, Woolomin and Nundle recreational ground, Railway Park, Marius/White St intersection.
Deliver more opportunities for affordable housing			
L.0301.01	Undertake a comprehensive review of Tamworth Local Environmental Plan - Phase 1 COMPLETED (Planning proposals are ongoing)	ON TRACK	The Tamworth Rural Lands Strategy was adopted in December 2025. Phase 2 will now commence of the LEP review addressing rural lands. Planning proposals continue to be processed.
Encourage the development of diverse housing options			
L.0302.01	Review the Tamworth Regional Local Environmental Plan rural/rural residential lands including minimum lot sizes component	ACHIEVED	The Tamworth Regional Rural Lands Strategy was adopted by Council in December 2025.
A more diverse Longyard Local Centre			
L.0303.01	Undertake a comprehensive review of Tamworth Local Environmental Plan	ON TRACK	Structure Planning for three significant precincts was finalised. Upon adoption by Council, planning proposals will likely begin to be lodged for these areas.
Implement the respective strategic plans and masterplans for our open spaces and recreational facilities			
L.0401.01	Provide quality sporting fields and facilities in accordance with Sports & Recreation's Strategic Plan	ON TRACK	Council's Sport and Recreation team continue to provide high quality sporting fields and facilities.

L.0401.02	Provide open spaces that are distributed, embellished and serviced in accordance with Council's Open Space Management Guide	●	Staff have upgraded Tamworth's CBD garden beds, and continue work in alignment to the Open Space Management Guide.
L.0401.03	Offer modern and diverse burial services to support our growing community	●	TRC have achieved and maintained compliance with new industry Standards set out by the State Government body Cemeteries and Crematoria NSW.
L.0401.04	Improve the sports field turf surfaces throughout TRC	●	Staff have improved surface drainage on eight hectares of sports fields in Plain Street.
L.0401.05	Provide aquatics facilities that service the community's needs	●	Council's six swimming facilities continue to operate with little to no downtime. Microbiological testing demonstrates effective filtration & disinfection.
L.0401.06	Improve the utilisation of Sports Dome and Northern Inland Centre of Sporting Excellence facilities	●	Utilisation of the Sports Dome has continued to increase with additional users accessing the facility during business hours. Continued success of the Sports Hub office space with all users signing extended leases.
L.0401.07	Development of masterplans for recreational precincts throughout TRC	●	Council is currently undertaking a strategic review of all equine facilities to ensure the best operation of these sites into the future.
L.0401.08	Construct the Tamworth Regional Skywalk	●	Construction of the Skywalk is progressing well. All foundations have been constructed with 20% of the boardwalk installed as of the end of 2025. Works are expected to be completed for opening of the Skywalk in late June 2026.
Develop an arts and learning precinct that includes a performing arts centre and shared cultural facilities			
L.0402.01	Further advance the performing arts centre business case and develop financial modelling	●	Awaiting application results from the Regional Precincts and Partnerships Program.
L.0402.02	Develop a detailed performing arts centre design	●	Awaiting application results from the Regional Precincts and Partnerships Program.
Establish an aquatic centre as a regional sports and recreation attraction			
L.0404.01	Construct the Tamworth Regional Aquatic Centre	●	The project is within an Early Contractor Involvement (ECI) phase with the ECI Contractor working with Council and the consultant team to finalise the design, scope, and construction methodology. A Design & Construct contract is expected to be signed and works commenced onsite by June 2026.


Carter Street fields- Koori Knockout, October 2025

FOCUS AREA 3

PROSPERITY AND INNOVATION

ACHIEVED | ON TRACK | MONITOR | DISCONTINUED

	Action / Deliverable	Status	Reporting Period Insights
Ensure business friendly principles are embedded into our policies, planning and operations			
P.0101.01	Promote and encourage the use of Fast Track Application lodgement	Monitor	Council continues to promote fast track developments; however, many applications are unable to be fast-tracked due to failure to comply with the Tamworth Regional Development Control Plan. A structure review has been undertaken and a Fast-Track DA planning team will be established in 2026 with the objective of promoting and encouraging Fast-Track applications.
P.0101.02	Deliver timely development approvals and Development Engineering services to meet state government timeframes	Monitor	Council continues to implement actions from the internal review of development application processing times in response to Council League Table. Development approval timeframes have decreased and are currently sitting below the State Governments KPI (105 days).
P.0101.03	Ongoing engagement and feedback capturing from business and industry through multiple forms of communication to report and advocate on current industry requirements	On Track	Dedicated Invest Tamworth Region Website is live and provides a centralised source of information for local business, community members and investors. Continued review and updates will be business as usual to ensure content reflects changing trends and meets user requirements.
P.0101.04	Review and implement a revised development contributions scheme for Tamworth Regional Council	On Track	The draft development contributions plan is currently being finalised. It is anticipated a report will be presented at a Council meeting in early 2026 seeking endorsement to commence public exhibition.
Identify and support investment opportunities for business and industry			
P.0102.01	Develop and maintain Invest Tamworth Website	Achieved	Dedicated Invest Tamworth Region Website is live and provides a centralised source of information for local business, community members and investors. Continued review and updates will be business as usual to ensure content reflects changing trends and meets user requirements.
Increase opportunities for Aboriginal economic and business growth			
P.0103.01	Leverage Councils role as an employer, purchaser and project delivery organisation	On Track	Council continues to leverage its role as a major employer, purchaser, and project delivery organisation by partnering on joint programs and collaborative projects. Current initiatives include new resident programs in development and volunteer opportunities with new investors to strengthen community engagement and regional growth.
P.0103.02	Work in partnership with industry, business and agencies to increase economic opportunities and capacity	On Track	Council is working in partnership with industry, business, and agencies to increase economic opportunities and build regional capacity. Collaborative initiatives include introducing new industry networks, supporting local businesses alongside the Business Chamber, and promoting the region through the Regional Australia Institute's 'Move to More' campaign.
Partner with stakeholders to advocate for greater availability and access to tertiary education			
P.0201.01	Prioritise the development of the aviation industry workforce and place-based skilling by establishing opportunities through partnerships with industry	On Track	Council is prioritising the development of the aviation industry workforce and place-based skills development through strong partnerships with industry. This includes engagement with local aviation businesses and new investors, connecting them with local skills providers.
Support the ongoing service provisions of TAFE and school-based vocational education			
P.0202.01	Advocate and support expansion of industry aligned courses to develop regional skill capabilities and opportunities	On Track	Supporting industry partners training needs provided through TAFE programs in Tamworth to ensure a workforce responsive to current and emerging industry demands.
Ensure strategies, plans and policies appropriately enable growth in our food processing industry			
P.0301.01	Investigate alternatives to land disposal of high salt concentration effluent	On Track	A specialist consultant has been engaged to undertake assessment.
Champion development of our health sector to attract a range of medical and allied services			
P.0302.01	Implement the Tamworth Story - Identify land and include in the review of Tamworth Regional Local Environmental Plan	Achieved	The implementation of the Tamworth Story has achieved its purpose via the completion and adoption of strategies including; the Housing Strategy, Rural Lands Strategy, Structure Plans, amendments to the TRDCP 2010 and multiple planning proposals to amend the TRLEP 2010. The Tamworth Story has been superseded by these strategies and processes which have taken up the role of identifying land to include in the review of the TRELP2010.
Collaborate with stakeholders to support establishment of a high technology agribusiness cluster			

P.0303.01	Position Tamworth to tap better into growth opportunities via improved linkages with the wider region	●	Council is positioning Tamworth to tap into growth opportunities by strengthening regional linkages and expanding digital connectivity. This includes ongoing research and development of Tamworth's unique business and community ecosystem to attract investors, facilitating introductions across industry networks, and forming partnerships with education providers to support a diversified and resilient economy.
Grow our aviation sector to support the economy			
P.0304.01	Attract and grow the aviation sector activity through investment attraction, business relocation, jobs and skills development	●	Council is positioning the Tamworth Region to tap into growth opportunities by strengthening regional linkages and expanding digital connectivity. This includes ongoing research and development of Tamworth's unique business and community ecosystem to attract investors, facilitating introductions across industry networks, and forming partnerships with education providers to support a diversified and resilient economy.
P.0304.02	Attract and grow the aviation sector activity through investment attractions, business relocation, jobs and skills development	●	Council is actively working to attract and grow aviation sector activity through strategic planning, targeted investment attraction, business relocation, and workforce development initiatives. These efforts ensure Tamworth Regional Airport has the resources and capability to expand within the aviation sector, deliver effective services to the community, and increase aeronautical economic opportunities through a sustainable service delivery model.
P.0304.03	Develop a Tamworth Regional Airport Aviation Development Plan, and Airport Business Plan which has a focus on growth and development	●	The Airport Master Plan is currently under review to ensure the Tamworth Aviation Precinct is strategically positioned to meet strong industry demand, adapt to evolving economic conditions, and capture emerging opportunities in the aviation sector.
P.0304.04	Explore funding options and secure financial support to deliver improvements and upgrades	●	International Flight Training Tamworth (IFTT) was successful in receiving $5m from the NSW State Government, bringing the IFTT and the Tamworth Region into the spotlight. In addition, the Tamworth Aviation Precinct will have a continued focus on securing State and Federal funding opportunities that will support the growth of the precinct and meet strong industry demands.
Leverage Tamworth's brand as the Australian Capital of Country Music to grow our regional offering of signature, bespoke and business events			
P.0401.01	Coordinate Citizenship Ceremonies	●	Two Citizenship Ceremonies were held: August and October.
P.0401.02	Deliver the annual La Fiesta Peel event	●	Fiesta La Peel was held on Saturday 18 October 2025 with over 4000 people in attendance.
P.0401.03	Market the Taste in the Park event to increase visits and grow vendors participation.	●	Marketing for Taste in the Park to commence in early 2026.
P.0401.04	Increase participation in businesses over the 10-day Taste Tamworth Festival	●	Planning is underway to review potential participating businesses.
P.0401.05	Develop a Regional Tourism Precinct business plan, including infrastructure, visitor experience and visitor servicing model	●	Council is planning a new visitor centre to better serve the visitors and increase our engagement with the community. The business plan assists to secure funding for this project.
P.0401.06	Identify funding opportunities to continue to grow the tourism sector by actively seeking funding that aligns with Tamworth Visitor Economy Plan and NSW Visitor Economy Strategy (THRIVE)	●	Council continues to support tourism industry growth by providing resources and sharing local experiences with a wider audience.
P.0401.07	Manage and implement the Tamworth Region Visitor Economy Plan (2022/27)	●	The Visitor Experiences team continue to work through the actions of the Visitor Economy Plan working collaboratively with all areas of Council and the community.
P.0401.08	Commence business case for a new Tamworth Visitor Centre and Tamworth Wax and Guitar Museum	●	Investigating a suitable location for a new visitor centre to enhance services and experiences for our community and visitors.
Enrich the experience of visitors through arts, culture, Aboriginal culture, nature, heritage and food experiences			
P.0402.01	Seek sponsorship for the Hats Off event	●	Hats Off to Country was held in July. The event secured new sponsorship support that helped in the delivery of the inaugural Tamworth Bush Ballad Awards.
P.0402.02	Consultation with country music stakeholders increasing the two-way sharing of information	●	The Advisory Group consists of key country music stakeholders and has met during this period.
P.0402.03	Deliver an annual calendar of events	●	Scheduled events are on track for this period. The annual Lighting of the Christmas Tree event, traditionally held in Fitzroy Street, transformed to a new event, Carols in the Park in Bicentennial Park.
P.0402.04	Develop an event management customer satisfaction survey process	●	Survey to be developed.
Activate our assets and precincts to maximise the potential for equine, agricultural, sport, education and visitor economy			
P.0403.01	Development of a property plan including Tamworth Global Gateway Park land and Council owned Commercial land	●	Council is progressing the development of a property plan, including Tamworth Global Gateway Park and Council-owned commercial land. This first phase focuses on defining a commercial strategy to optimise Council's real estate assets and maximise economic, social, and financial returns for the community.
P.0403.02	Manage Australian Equine and Livestock Events Centre (AELEC) 10 year Strategic and Master Plan	●	Following Council's adoption of a business case detailing plans to expand AELEC's infrastructure, the strategic and master plans are currently being updated to more accurately reflect the adjusted strategic focus and future planning.

P.0403.03	Review, maintain and update the AELEC strategic and master plan annually	On Track	Following Council's adoption of a business case detailing plans to expand AELEC's infrastructure, the strategic and master plans are currently being updated to more accurately reflect the adjusted strategic focus and future planning.
P.0403.04	Deliver AELEC events	On Track	AELEC hosted all planned events of local, state, national and international significance in the period. A number of new events unrelated to the equine or livestock industries were also hosted in this time.
P.0403.05	Increase utilisation of AELEC	On Track	AELEC continues to retain its reputation as an equine hub with a full event calendar. The AELEC is expanding its event portfolio into the bovine industry, trade shows, expos, and arena concerts. It has successfully hosted education/training/clinic days concurrently with other larger events to maximise utilisation of the facility.
P.0403.06	Commence the next stage of the Infrastructure Development Business case timeline to design the stable wing extensions	On Track	AELEC has applied for federal funding to continue with the next stage of planning and design development.

FOCUS AREA 4

RESILIENT AND DIVERSE COMMUNITIES

ACHIEVED ON TRACK MONITOR DISCONTINUED

	Action / Deliverable	Status	Reporting Period Insights
Foster local strategies for towns and villages, including Kootingal, Manilla, Barraba and Nundle			
R.0101.01	Development of strategies for towns and villages	Monitor	The development of strategies for towns and villages are on hold until the Community Precinct Committees are established.
Create inclusive opportunities for local communities to be actively involved in decision-making			
R.0102.01	Finalise Community Resilience Plans for Manilla, Barraba, Kootingal and Nundle	Monitor	The development of the Resilience Plans is on hold until the Community Precinct Committees are established.
R.0102.02	Support continuing Section S355 Committees to appropriately deliver their delegated functions	On Track	Section 355 Committee's review is continuing. All S355's are encouraged to review their strategy plans on an annual basis to assist with seeking project approvals and sourcing available funding options both internal and external.
Implement framework to support social and community services in the Tamworth Region			
R.0201.01	Establish Advisory Committee framework based on the Section 355 Committee review	Monitor	Section 355 Committee's review is continuing. Council supported the Moonbi Museum S355 Committee to transition to an Incorporated body and they now work directly with Council's Museums and Galleries Division, the Tamworth Film and Sound Archive Committee has dissolved their S355 Committee status and now work directly with Council's Museum and Gallery Division as Council volunteers. For both committees this lessens governance requirements under a S355 Committee structure.
Advocate and partner with stakeholders to improve inclusive outcomes for our communities including our youth, Aboriginal, aged, volunteer and disability communities			
R.0202.01	Consult with the Tamworth Regional Arts Advisory Committee	Achieved	Quarterly meetings have been held with the Tamworth Region Arts Advisory Committee (TRAAC).
R.0202.02	Manage Outside of School Hours Care (OSHC) Centres that meet the needs of families to work or study outside of school hours	On Track	Council continues to provide OSHC services to the community to support families who are working, studying or have carer responsibilities.
R.0202.03	Implement the Tamworth Region Disability Inclusion Action Plan 2025-2029 (DIAP)	Monitor	Council is working with the Disability Action Working Group to draft the Tamworth Region Disability Inclusion Action Plan 2025-2029 (DIAP).
R.0202.04	Explore external partnerships to create an integrated model for the delivery of youth services across the region	On Track	Council's Youth Development team facilitated a number of partnerships including participation in the Tamworth Youth Justice Collaborative, Office for Youth Connect and Thrive event, Homes North Youth Opportunities program, and delivery of the Tamworth Local Aboriginal Lands Council Opportunity Hub Cultural programs.
R.0202.05	Facilitate government, business and community service organisation meetings to advocate on behalf of youth, Aboriginal, aged and disability communities	On Track	Council's Youth Development team continued to monitor and progress actions in the Tamworth Youth Strategy Action Plan, including coordination of monthly Youth Council Meetings and delivery of afterschool and school holiday youth programs.
R.0202.06	Consult with the "Tamworth Region Inclusive Culture Advisory Committee" quarterly	Achieved	Tamworth Region Inclusive Culture Advisory Committee have continued to meet quarterly.
R.0202.07	Commence a new 5-year Multicultural Strategy	Monitor	The Multicultural Strategy is yet to commence.

R.0202.08	Develop and commence implementation of a 'Learning Region' plan	The Learning Region plan has progressed 50% through consultation stage. On track for this reporting period.
R.0202.09	Build a learning region culture and embed outcome-based learning activities in libraries	599 programs are currently offered in TRC libraries, including early childhood literacy programs, Tech Savvy Seniors and Adult Learners Week programs.
R.0202.10	Lead and develop library resource sharing arrangements	During this reporting period: • Improved catalogue processes using EDI • CNRL 75 years anniversary • New Local Studies Policy adopted, • One Book One Region program launched, • Adult Learners Week celebrated regionwide, • First Spydus library to use API interface for Comics Plus –holdings are integrated into the catalogue. • Solus EB#1 App has been rolled out (bookings and marketing app)
R.0202.11	Work towards meeting "Living Learning Libraries Standards and Guidelines for NSW public libraries"	New standards have been released and will be used to measure the 2025-26 performance.
R.0202.12	Develop a Tamworth Region Library Services Strategy 2025-2029	This plan is in progress.
R.0202.13	Commence investigating Barraba Library floor space expansion	This project has commenced and a meeting has been held on-site with heritage advisor.
R.0202.14	Commence investigating building modifications to South Tamworth library to allow the integration of Council Customer Services at this site	This action has not yet commenced due to budget constraints impacting the ability to obtain draft drawings and quotes for the proposed counter refurbishment at South Tamworth Library. Once preliminary costings are available, a business case will be developed to assess the feasibility of implementing a customer service touch point to support future population growth.
R.0202.15	Develop the Library's Local Studies Collection	New Local Studies Policy adopted November 2025. 23 local studies items added to TRC's collection and 27 to other CNRL branches.
R.0202.16	Conserve and protect our paper-based history	Tamworth Regional Council's earliest rates book have been digitised during this reporting period.
R.0202.17	Manage the Tamworth Region Volunteer Strategy 2025/2029	The final Draft Tamworth Region Volunteer Strategy is currently in review stage.
Align services and programs to meet "Closing the Gap" targets and priorities		
R.0301.01	Partner with Tamworth Aboriginal Community Controlled Organisations (TACCO) to deliver targets of Closing the Gap National Agreement	Council has recently recruited an Aboriginal Liaison Officer. This role will assist in supporting the adoption of the IRAP as part of Council's commitment to priorities and targets of the National Agreement on Closing the Gap.
Advocate to State and Federal Governments to help secure access to health services		
R.0401.01	Explore external funding opportunities to resource the development of a Social Sustainability Strategy for the Tamworth Region	No funding opportunities for grants have been identified up until December 2025.
R.0401.02	Provide quality education and care services that meet or exceed the National Quality Standard	Council's OOSH Services continued to achieve a rating of 'Meeting' based on their performance against the Australian Children's Education & Care Quality Authority National Quality Standards.
Improve drought resilience of regional communities		
R.0501.01	Implement relevant drought resilience projects, programs and initiatives	Flagship Action 5.2 from the Regional Drought Resilience Plan was successfully implemented using Commonwealth and State Government grant funding.
Support our region's prevention, preparedness, response and recovery measures to help build our resilience to disasters		
R.0502.01	Implement select climate change actions contained within the Environmental Sustainability Strategy and Action Plan 2022-2026, including ongoing tracking on carbon emissions	Projects have been identified from the various studies. Currently refining priorities and integrating this with the 4 Year Capital Works Plan.
R.0502.02	Produce a prioritised flood management works program derived from flood studies across the region including a flood awareness program	Projects have been identified from the various studies. Currently refining priority and integrating this with 4 Year Capital Works Plan.
R.0502.03	Work with Woolomin community to raise flood awareness	Follow up initial contact with SES to formalise the plan to progressively address flood awareness in Woolomin.
R.0502.04	Meet with the Local Emergency Management Committee (LEMC) and provide operational support to emergency management agencies where required	Regular meetings are being held and actions completed as set out by the LEMC.
Support the State Government's priority to reduce crime including violence, adult re-offending, road fatalities, domestic violence, youth crime		
R.0503.01	Review and implement the Community Safety and Crime Prevention Plan	Actions from the 2023 -2028 Community Safety and Crime Prevention Plan, are continuously reviewed and implemented.

R.0503.02	Prevent anti-social behaviour through the Graffiti Management Plan	Strategies identified in the 2025-2030 Graffiti Management Plan, continue to be implemented. The strategies are often implemented as part of larger projects, consistent with the aim of the Plan.
R.0503.03	Support agencies in reducing youth crime rate	Strategies are constantly being implemented to support agencies in reducing youth crime. These strategies are implemented in collaboration with the Community Safety Working Group partners.
R.0503.04	Facilitate the meeting of the Local Traffic Committee (LTC) to discuss and recommend solutions for identified road safety and traffic planning issues	The Tamworth Local Traffic Committee / Local Transport Forum have met each month and administrated accordingly.
Use education and enforcement of Council's compliance regulations to deliver equitable outcomes for individuals and the community		
R.0504.01	Host an annual Dog Gala Day community event	Dog Gala Day was held 28 September 2025 in Bicentennial Park on at the village green. *(Images below)*
R.0504.02	Continue to Increase the percentage of companion animals re-homed in compliance with the Companion Animals Act 1998	Over 92% of animals have been either rehomed via paws for life Animal Shelter, released to rescue/shelter organisations Australia wide or returned to owners.
R.0504.03	Investigate future growth/expansion of the Companion Animal Centre and Paws for Life Animal Shelter and boarding kennels. Enable readiness for potential grant submissions	Continued investigations into expansion locations have continued, with one property being highlighted as high potential location.
R.0504.04	Develop partnerships with external community groups to support the Companion Animal Centre and Paws for Life Animal Shelter	The Companion Animal Centre continues to network with a large number of rescue and shelter groups Australia wide and has found placement for 139 stray and surrendered animals.
R.0504.05	Provide children with additional needs the opportunity to participate in quality and inclusive before school care, after school care and vacation care services	Council's OOSH Service conducted 17 transitions to care Meetings. OOSH Staff worked with families to develop support strategies to ensure children's participation and engagement in the OOSH program met individual needs.
R.0504.06	Promote Food Safety in accordance with the Food Act.2000	Council's Authorised Officers have completed 50% of the scheduled inspections for high and medium risk food businesses across the local government area.
R.0504.07	Coordinate the swimming pool audit program in compliance with legislation	Ongoing pool audits are being conducted for all commercial pools within the Tamworth region, inclusive of schools, motels and any other publicly accessible pools.
R.0504.08	Undertake investigations into alleged breaches of planning laws and development consents and promote awareness of policy, procedure and laws to encourage compliant activity	A draft policy is with management to review and will progress to be reported to Council within the next 3 months. Community Safety staff, including Compliance Officers, Community Safety Rangers, Community Safety & CCTV Officers and Environmental Health Officers, received 187 reports from the community to be investigated in relation to potential unauthorised development.
R.0504.09	Promote our smoke free public spaces	A draft Communications Strategy has been developed It is anticipated that it will be rolled out in February/March of 2026.
R.0504.10	Monitor our smoke-free public spaces	ADHOC patrols conducted by Officers of the CBD for various issues raised, this includes smoking zones, alcohol free zones.
R.0504.11	Monitor public spaces and enforce Council's Alcohol-Free zones	ADHOC patrols conducted by Officers of the CBD for various issues raised, this includes smoking zones, alcohol free zones.
R.0504.12	Monitor hotspots of illegal activity such as illegal dumping	Community Safety Officers investigated 100 complaints of illegal dumping - this included house hold waste, bulk household items, furniture and general littering.
R.0504.13	Monitor hotspots of illegal activity of unattended vehicles	Community Safety Officers investigated 124 calls regarding unattended vehicles in the region.
R.0504.14	Promote awareness of policy, procedure and laws relating to fire safety regulations through submissions of Annual Fire Safety Statements and through the Fire Safety Statement program	Annual Fire Safety Statements have been slowly increasing as building owners become more aware of their statutory obligations in relation to fire safety in buildings. Council currently has 877 properties within the Fire Safety Program, this is a slight increase of 3.05% over the last 6-month period. Almost 40% of the 877 properties have lodged their Annual Fire Safety Statements over the reporting period.

Dog Gala Day , September 2025

FOCUS AREA 5

CONNECT OUR REGION AND ITS CITIZENS

ACHIEVED ON TRACK MONITOR DISCONTINUED

	Action / Deliverable	Status	Reporting Period Insights
Improve connections with capital cities, other regions and within the region			
C.0101.01	Provide a regional airport with a reputation for safety, comfort and reliability	Achieved	Tamworth Regional Airport has been audited by the Department of Home Affairs and continues to meet all compliance and regulatory requirements.
Plan transport infrastructure to meet the needs of our community into the future			
C.0201.01	Undertake Surveillance Audit to ensure our capacity to deliver works for Transport NSW	Achieved	Surveillance Audit was undertaken 16th to 18th of June 2025. Nil non-conformances were identified providing a sound result.
C.0201.02	Undertake Recertification Audit to allow civil construction to continue to deliver works for Transport NSW	On track	Audit has been scheduled for 15th to 17th of June 2026.
C.0201.03	Implement the Regional Transport Strategy	On track	Ongoing meetings with TfNSW to continue forward planning of our transport network as our region continues to grow to ensure we are providing a functional transport network
Provide and maintain safe, cost effective and fit for purpose roads, bridges and car parking			
C.0202.01	Review the Bridge & Culverts Strategy	On track	Draft update to the strategy is complete. The final is expected to be reported to Council for consideration before June 26.
C.0202.02	Manage the Bridge Renewal Program	On track	A new bridge engineer role has been established within Regional Services. This role will drive the management of bridges and major culverts, including maintenance, renewal and capital projects. Assistance from SAD division will be provided however to ensure that it aligns with the Bridge Strategy and sound asset management principles.
C.0202.03	Implement the Regional Parking Strategy	On track	Many changes to the parking network in the Tamworth CBD have occurred in this reporting period, including the rollout of new ticketless parking machines in the CBD, along with removal of meters in our off-street all-day car parks. Meters have been installed in Peel Street to assist with turnover of parking bays and preliminary data indicates this is working very well whilst still maintaining a high occupancy level.
C.0202.04	Continue to develop and implement the Pavement Management System to guide the sealed road maintenance and renewal program.	On track	Sealed roads pavement renewal activities progressing. Major works complete on Carthage St, with many roads resealed. Forward works program being developed for future years.
C.0202.05	Maintain the lifespan of our sealed roads by conducting maintenance in a timely manner	On track	Council has been routinely maintaining our sealed roads in a timely manner.
C.0202.06	Deliver the Sealed Roads Renewal Program	On track	Council is on track to deliver its largest sealed road renewal program.
C.0202.07	Maintain the unsealed road network by conducting maintenance in a timely manner	On track	Routine maintenance of unsealed roads continues to be conducted as required across the road network.
C.0202.08	Deliver the Gravel Re-sheeting Program	On track	Gravel renewal program currently on track with approximately 50% of planned works complete or committed. The remainder of the program will be undertaken during the first half of 2026.
C.0202.09	Deliver the Bridge Maintenance Program	On track	Council has been routinely maintaining our bridge network.
Partner with NSW Government to deliver efficient future proofed highways across our region			
C.0203.01	Continue to grow and connect our region in partnership with NSW Government	Monitor	Council continues to work collaboratively and proactively with TfNSW to ensure that our transport network meets existing demand and remains functional as we continue to grow. This includes regular meetings with TfNSW to ensure that strategic transport projects continue to be progressed.
Advocate for improved local bus services			
C.0301.01	Advocate for improved bus services	Monitor	TfNSW manage all public bus services in NSW, however Council plays an important role in advocating the needs of the community to TfNSW. For our community, Council is aware of limited bus services and the times of operation of these services and will continue to work closely with TfNSW to ensure that public bus transport becomes a viable transport option for more people in our community.
Investigate and advocate for the expansion of rail services within and out of our region			
C.0302.01	Advocate for improved rail services	Monitor	Council continues to evaluate and assess the need for additional rail services within the LGA. This includes both passenger and freight, and aims to explore the use of rail as a feasible transport alternative to road transport. This will assist in reducing demand on our road network and ultimately assist in reducing overall expenditure on our road network.
Support initiatives to increase community participation in walking and cycling			

C.0401.01	Review and update the Active Transport Strategy	Anticipated that an updated Active Transport Strategy will be completed by the end of 2026. Draft to be completed by mid-2026.
Support the community through improved IT services that meet the community's needs		
C.0501.01	Deliver the Technology One Program	Property & Rating reimplementation is on track and in configuration stage. Recruitment scoping is complete, configuration and admin training is upcoming. Grant/Contract module is in the testing stage, go live scheduled for February 2026. Purchase Card module is scheduled to begin before June 26.
C.0501.02	Manage the work orders process and system development	Currently working with internal stakeholders for financial integration of work orders. Further development of work orders in the waste division is progressing, with some activities having gone live.
C.0501.03	Implement the Microsoft 365 program - Initiative 4 of the Technology Blueprint Strategy. Build activities for M365 deployment in principle complete, rollout to all users within Council is to commence	Increased collaboration between staff through access to shared documents, Teams calling, and SharePoint. Strong compliance with Records policy and practice, and compliance legislation through SharePoint. ECM integration and removal of use of Network Drives for file management. Greater levels of information security including full active backup of all files.
C.0501.04	Implement a new Microsoft 365 - SharePoint based intranet - Initiative 4 of the Technology Blueprint Strategy	ECM integration and removal of use of Network Drives for file management. Greater levels of information security including full active backup of all files.
C.0501.05	Implement a new Council Website - Initiative 4 of the Technology Blueprint Strategy	Work is well underway on our website uplift project, which includes the redesign and build of nine Council websites. The website's designs are complete and the communications team is collaborating across the organisation to review and refine website content.
C.0501.06	Finalise Cybersecurity Initiatives - Initiative 9 of the Technology Blueprint Strategy.	The Cyber Security Analyst position is currently in the recruitment process.
C.0501.07	Finalise IT Service Management capabilities - Initiative 6 of the Technology Blueprint Strategy	New ServiceDesk software has been configured and capturing all service requests data.. DigITech is finalising SLA agreements to ensure response times meet requirements. Change management process has been created.
C.0501.08	Implement the Digital Mailroom	The external provider engaged for this action was unable to deliver the required functionality. As a result, alternative in-house solutions will be explored to progress this project.
C.0501.09	Complete review of ECM and implement Security and Access recommendations	Information security improvements have been implemented to strengthen privacy compliance. Enhanced security controls are in place for personal information and a regular audit schedule has been established to monitor and review system transactions. The target of 75% implementation has been fully achieved within the reporting period.
C.0501.10	Implement upgrades to Council's GIS systems - Initiative 4 of the Technology Blueprint Strategy	Information security improvements have been implemented to strengthen privacy compliance. Enhanced security controls are in place for personal information and a regular audit schedule has been established to monitor and review system transactions. The target of 75% implementation has been fully achieved within the reporting period.
C.0501.11	Implement Benefits Realisation reporting	Council has proactively identified system improvement initiatives and provided these to service owners for consideration and implementation. Over the next six months, support will be provided to help service owners implement and transition these initiatives. In parallel, a new reporting process is being developed to enable more consistent and collaborative outcome measurement across the organisation, targeted for completion by June.


New CBD parking meters


Road resealing


Carthage Street upgrades

FOCUS AREA 6

WORKING WITH AND PROTECTING OUR ENVIRONMENT

ACHIEVED ON TRACK MONITOR DISCONTINUED

	Action / Deliverable	Status	Reporting Period Insights
Promote energy efficiency and renewable energy			
E.0101.01	Implement Energy efficiency and renewable energy projects, programs and initiatives identified in the Environmental Sustainability Strategy & Action Plan 2022 - 2026	On track	Energy Actions from July to December 2025 have been completed. CEUF Application was submitted mid 2025 but was unsuccessful due to the competitive nature of the grant.
E.0101.02	Implement relevant recommendations from the Energy Audit to increase energy efficiency and reduce operational expenditure	On track	Recommendations from the Energy Audits will be discussed with our leadership team early 2026 to inform the best way forward.
E.0101.03	Implement renewable energy within the Tamworth Global Gateway Park	Monitor	This project is currently with the consultant undertaking due diligence to determine the financial and practical viability of their proposal.
Improve environmental sustainability across the region by implementing the initiatives, plans and programs identified within Council's Sustainability Strategy			
E.0201.01	Develop and insert enhanced environmental provisions in the Tamworth Regional Local Environmental Plan in accordance with government policy	On track	This action is awaiting completion of the Biodiversity Baseline Study. Updated environmental provisions will be developed as an outcome of the study and be implemented in the Tamworth Regional Local Environmental Plan 2010.
E.0201.02	Develop an Environmental Offsets Strategy for inclusion in the Tamworth Regional Local Environmental Plan	On track	This action is awaiting completion of the Biodiversity Baseline Study.
E.0201.03	Implement other relevant initiatives, plans and programs identified within Our Environmental Sustainability Strategy 2022-26	Achieved	As reported to Council October 2025 over 83.2% of actions contained within the Environmental Sustainability Strategy & Action Plan 2022-2026 have been completed or completed for 24/25 FY. 10.6% of actions were overdue or not started due to changes in resourcing, funding or viability over the last 3 years; and 6.2% of actions were on hold due to changes in funding availability, legislation changes, restructure or reliance on technology improvements.
Manage stormwater run-off to protect our built and natural environments			
E.0202.01	Compile a prioritised list of stormwater management options based on the output from the local stormwater management plans	Monitor	Projects have been identified from the various studies. Currently refining priority and integrating this with 4 Year Capital Works Plan.
E.0202.02	Develop and implement a delivery plan for the Stormwater Management Plan actions	Monitor	Following completion of the prioritised works program, the two projects for delivery in this year will be progressed.
E.0202.03	Maintain a safe and functional storm water system	On track	Routine maintenance of stormwater drainage system continues to be conducted as required across the network. CCTV inspections of a portion of the network anticipated over the coming six months.
Increase resource recycling, waste minimisation and segregation and improve operation efficiencies			
E.0301.01	Establish a FOGO processing facility	On track	Design and pricing has been completed, a report for Council to consider options will be put forward in first qtr. of the 2026 calendar year.
E.0301.02	Work towards achieving the targets within State Government's Waste and Sustainable Materials Strategy, including the NSW Plastics Action Plan	On track	After consultation with the building and construction industry and cradle skip companies, Council is in the process of trialling onsite source separation of cradle skip bins at Tamworth Waste Management Facility to recover more recyclable materials received as mixed loads. Council is working to align with the State's target of 80% recovery by 2030 and this trial supports.
E.0301.03	Implement relevant waste diversion and circular economy projects, programs and initiatives identified in Our Environmental Sustainability Strategy & Action Plan (2022-2026)	On track	Investigations are underway into the potential establishment of a reuse shop with a suitably experienced operator through an EOI process. Council has released a second EOI for the partnership and operation of the Hard Plastics Processing facility as the project scope and grant funding received warrants opening the opportunity back up to the open market. Council is still participating in the Curby program for soft plastics recycling for residents. An ongoing bin tagging program to reduce contamination is run through the waste contractor Cleanaway.
E.0301.04	Plan critical waste infrastructure placement	On track	Planning on both key rural and key operational infrastructure continues.
E.0301.05	Review the waste management business continuity plan	Monitor	High level review has commenced.
E.0301.06	Develop a new Waste Strategy	On track	Council has commenced preparation works to update the Waste and Resource Recovery Strategy.
Ensure that our planning and operational processes consider impacts on biosecurity and our natural environment			
E.0401.01	Implement relevant biodiversity actions from Our Environmental Sustainability Strategy & Action Plan	On track	Following the completion of updating the 2007 Biodiversity Baseline update in 2025, outputs from the study are currently being understood in order to improve local biodiversity outcomes.

	2022 – 2026, and investigate developing a Biodiversity Strategy for our LGA		Development of a Biodiversity Strategy will be included for consideration in the development of the new Sustainability Strategy commencing 2026.
E.0401.02	Provide education to the community through weeds management and encourage land owners to uphold their obligations in compliance with Biosecurity legislation		The Biosecurity Officer attended a field day on grass at Timbumburi, field day was conducted by DPI and was attended by local farmers in the area - The Biosecurity Officer also attended to the quarterly North West Regional Officers Weeds meeting in Bingara.

FOCUS AREA 7

CELEBRATE OUR CULTURES AND HERITAGE

ACHIEVED ON TRACK MONITOR DISCONTINUED

	Action / Deliverable	Status	Reporting Period Insights
Foster sustainable arts and cultural activity with an emphasis on celebrating diversity and strengthening creativity across the region			
H.0101.01	Implement the Tamworth Region Gallery Strategy 2025/2028		Implementation of the Tamworth Region Gallery Strategy 2025/2028 is underway.
H.0101.02	Implement the Tamworth Region Public Art Strategy 2024/25 to 2028/29		Implementation of the Tamworth Region Public Art Strategy 2024/25 to 2028/29 is underway.
H.0101.03	Implement the Tamworth Region Museum and Archive Strategy 2024/25-2029/30		Implementation of the Tamworth Region Museum and Archive Strategy 2024/25-2029/30 is underway.
H.0101.04	Apply for Create NSW Multi-year funding for Gallery & Museums		Successful multi-year funding from Create NSW achieved for the Tamworth Regional Gallery and Tamworth Regional Museums. Both applications successful for a two-year period.
H.0101.05	Apply for funding opportunities that support the development of the Cultural Precinct and new Performing Arts Centre		Further grant opportunities are to be investigated and work collaboratively with external partners.
H.0101.06	Apply for funding opportunities that support the development of the new Visitor Experience Centre & Museum		Grant applications to Clubs NSW and Creative Australia have been lodged.
H.0101.07	Report on the CNRL quarterly		All quarterly reports have been supplied to CNRL Committee.
H.0101.08	Develop new CNRL Regional Library Agreement.		CNRL Agreement is due 30 June 2026.
H.0101.09	Develop new CNRL plan (5-year Strategic Plan)		Consultation has commenced for this plan.
Encourage new community arts initiatives and use of public spaces			
H.0102.01	Implement the Tamworth Region Public Art Strategy 2024/25 to 2028/29		Implementation of the Tamworth Region Public Art Strategy 2024/25 to 2028/29 is underway.
H.0102.02	Develop Entertainment Venues five-year strategic plan		Council has undertaken a consultation phase in order to establish the building blocks for a strategic plan.
H.0102.03	Deliver season of events program		The 2026 season has been delivered, distributed, and is in the marketing phase.
H.0102.04	Deliver the Tamworth Region Creative Communities Plan 2024-2029		Implementation of the Tamworth Region Museum and Archive Strategy 2024/25-2029/30 is underway.
Support local Aboriginal and Torres Strait Islander communities in the preservation and celebration of their cultures			
H.0201.01	Deliver the Tamworth Regional Council Innovate Reconciliation Action Plan (iRAP)		Council's Innovate Reconciliation Working Group have progressed a draft iRAP document for endorsement by Reconciliation Australia.
H.0201.02	Reconciliation Action Working Group monitor progress of iRAP		Councillors and members of Council's Executive Team met with TACCO in August and December 2025. Project to progress following the adoption of Council's Innovate Reconciliation Action Plan.
H.0201.03	Explore new opportunities to consult with our Aboriginal Communities		Councillors and members of Council's Executive Team met with TACCO in August and December 2025.
H.0201.04	Advance the Mara Ngali Partnership Agreement to deliver outcomes under Closing the Gap National Agreement		Councillors and members of Council's Executive Team met with TACCO in August and December 2025. The establishment of a working group in early 2026 will advance the development of a Closing the Gap Strategy.
H.0201.05	Partner and collaborate with local Aboriginal and Torres Strait Islander communities to progress their vision for an Aboriginal Cultural Centre		Councillors and members of Council's Executive Team met with TACCO in August and December 2025. Project to progress following the adoption of Council's Innovate Reconciliation Action Plan.

H.0201.06	Observe dates of significance and participate in celebrations as advised by local Aboriginal and Torres Strait Islander communities		As part of its continued support for local NAIDOC Week celebrations, Council waived the fees for use of Council-facilities for NAIDOC events, subsidised at 100% of the associated fees, which totalled $36,364.
H.0201.07	Coordinate and support the operation of Council's Innovate Reconciliation Action Plan Working Group		Council continued to coordinate the iRAP Working Group meetings and have progressed a draft Innovate Reconciliation Action Plan (iRAP).
H.0201.08	Review and develop a new Tamworth Region Innovate Reconciliation Action Plan (iRAP)		Council's Innovate Reconciliation Working Group have progressed a draft iRAP document for endorsement by Reconciliation Australia.
H.0201.09	Develop a training matrix for Aboriginal cultural learning, awareness, and Reconciliation across the Organisation		Review and consultation for the development of an Aboriginal Employment Strategy will progress following the adoption of the Innovate Reconciliation Action Plan.
Support the development of museum and library heritage collections			
H.0301.01	Implement the Tamworth Region Museum and Archive Strategy 2024/25-2029/30		Implementation of the Tamworth Region Museum and Archive Strategy 2024/25-2029/30 is underway.
H.0301.02	Complete the development of an Aboriginal Cultural Heritage Study and implement relevant recommendations in the Tamworth Local Environmental Plan		Final draft of study has been completed and submitted to Heritage NSW.
H.0301.03	Continue to provide assistance through the Annual Heritage Assistance Fund		2025/2026 Heritage Assistance Fund applications have been reviewed by Tamworth Regional Council Heritage Working Group. Successful applicants were advised in September 2025.
Ensure development controls and zoning protect the heritage significance of items and conservation areas			
H.0302.01	Implement the Tamworth Region Museum and Archive Strategy 2024/25-2029/30		Implementation of the Tamworth Region Museum and Archive Strategy 2024/25-2029/30 is underway.
H.0302.02	Consult with the Tamworth Heritage Advisory Group		The Tamworth Heritage Advisory Group have met quarterly.

FOCUS AREA 8

A STRONG AND VIBRANT IDENTITY

ACHIEVED ON TRACK MONITOR DISCONTINUED

	Action / Deliverable	Status	Reporting Period Insights
Develop and evolve our story to expand Tamworth's identity through strategies, plans and communications			
S.0101.01	Manage good branding principles through the branding guidelines		Council's Marketing team and designers ensure all work adheres to guidelines.
S.0101.02	Continue to roll out the new branding across assets		Branding guidelines are embedded throughout the organisation.
S.0101.03	Develop and implement Tamworth Country Music Festival marketing plan		TCMF marketing plan developed and campaign launched in July 2025. Campaign is still rolling out and will cease after January 2026 Festival.
Market Tamworth beyond the region through our economic and tourism strategies			
S.0201.01	Ensure Economic Development and Investment attraction campaigns are clearly aligned to market segments		Council is ensuring economic development and investment attraction campaigns are aligned to key market segments, promoting a diversified and resilient economy through increased business investment. This includes the finalisation of a new 'Invest Tamworth Region' video showcasing business opportunities, lifestyle appeal, and connectivity at Tamworth Global Gateway Park.
S.0201.02	Review, develop and implement annual marketing plans		Tamworth Region 12 monthly marketing plan has been developed and being rolled out.
S.0201.03	Deliver on the marketing actions within the Visitor Economy Plan		This action is part of the 12 monthly marketing plan.
Enhance key city and town entrances through implementation of the Tamworth Regional Entrance Strategy			
S.0301.01	Implement the Regional Entrance Strategy across all towns and villages		Council continues to explore funding options to complete the remainder of the strategy actions.

FOCUS AREA 9

OPEN AND COLLABORATIVE LEADERSHIP

ACHIEVED ON TRACK MONITOR DISCONTINUED

	Action / Deliverable	Status	Reporting Period Insights
Ensure Council meets the requirements of the Local Government Act and other information and disclosure requirements under State and Federal Laws			
T.0101.01	Manage access to information and privacy processes	On Track	Access to Information requests actioned in accordance with prescribed timeframes and requirements. On track for this reporting period
T.0101.02	Deliver Governance function in accordance with all legislation and industry standards	Achieved	Governance functions and process improvements have been achieved in this reporting period.
T.0101.03	Maintain the Organisations Strategy and Plans database and process	On Track	Maintenance of processing system is on track for this reporting period.
T.0101.04	Manage the Modern Slavery requirements	Achieved	Modern Slavery Policy was revised and presented to Council on July 22, 2025. Annual return on Modern Slavery for the period 2024/25 was completed on time and submitted in December 2025.
T.0101.05	Annual self-assessment of Council's risk management framework (ISO31000)	Achieved	Council's Risk Management Framework continues to comply with ISO31000. The Risk Management Policy was reviewed and approved as part of Council's General Policy Register.
T.0101.06	Review Council's legislative compliance to WH&S Act	On Track	Council's safe systems of work comprises of policies, procedures, safe work method statements and standard work practices which are reviewed and continuously improved in consultation with workers. Council staff are consulted through multiple avenues including a Health Safety and Environment Committee.
T.0101.07	Manage our insurance portfolio	On Track	Insurance portfolio management activities are progressing effectively, with the Risk and Safety Team successfully coordinating and delivering the annual insurance renewal program.
T.0101.08	Manage the processing of insurance claims (not including workers compensation claims)	On Track	Claims management activities remain on track, with the majority of under-excess third party claims being effectively managed in house by the Risk and Safety Team. All over-excess claims continue to be referred to Council's insurer in line with established processes.
Make our planning and reporting easy to understand and reflective of the community's wants, needs and aspirations			
T.0102.01	Utilise the Integrated Planning and Reporting Framework to guide our community's short- and long-term vision for the region	Achieved	Integrated Planning and Reporting has met all Office of Local Government legislated targets and timeframes.
T.0102.02	Develop performance measures for the Integrated Planning and Reporting Framework	On Track	New comparative data measures have been identified and developed for services. These measures will identify trends in each service and is reported on in the Annual Report.
T.0102.03	Implement audit report recommendations for the Integrated Planning and Reporting process	On Track	The Integrated Planning and Reporting recommendations are being reviewed and actioned in line with the IP&R document suite cycle and review of Blueprint 100.
T.0102.04	Implement a system of organisational performance	On Track	The Business Improvement Review framework was established for implementation in accordance with the 2025-2029 Delivery Program schedule.
T.0102.05	Review and update Blueprint 100	On Track	The Blueprint 100 review commenced in July 2025. Significant progress on this project is expected in early 2026.
T.0102.06	Align operational risks to the Delivery Program	On Track	The first stage of this project identifying operational risks is complete. The next phase of this project is to align the operational risks to focus area strategies.
T.0102.07	Undertake Business Improvement Reviews	On Track	The Business Improvement Review is progressing in accordance with the 2025-2029 Delivery Program schedule.
Ensure long term financial sustainability through short-, medium- and long-term financial planning			
T.0201.01	Develop a streamlined grant application and management framework	On Track	Council is implementing a streamlined grant application and management framework, supported by the adoption of a new Grant Application and Management Policy. The configuration of a digital grant module is in its final stages, designed to simplify processes, improve funding outcomes, and eliminate duplication
T.0201.02	Meet the conditions outlined in the IPART Special Variation instrument	On Track	Expenditure of SV funding in accordance with the Special Variation is underway. Review and incorporation of proposed savings is actively being monitored.
T.0201.03	Manage Councils' income and expenditure in-line with Treasury guidelines	On Track	September Quarterly Budget Review Statement submitted in accordance with Statutory Guidelines. Other tasks progressing but not due as yet.
T.0201.04	Commence process for sale of land for unpaid rates	On Track	Commencement date is under review.
Assets are managed to meet our community's needs through sustainable, cost-effective lifecycle management			
T.0202.01	Review and finalise Asset Management Plans	Achieved	Annual update with current information delivered December 2025.
T.0202.02	Manage renewal of Councils plant assets	On Track	Replacement program is on time and within budget.

T.0202.03	Manage renewal of Councils fleet assets	Vehicles delivered on time and within budget.
T.0202.04	Manage & maintain Council buildings	Manage and maintain Council's buildings in accordance with the Asset Management Plan. On track for this reporting period.
T.0202.05	Maintain, monitor and improve the Project Management Framework including systems, documents, and processes	The Project Planning & Delivery team administer and maintain the Project Management Framework. The team has continued to provide support to the organisation in the use of the PMF through ad hoc training and support, as well as developing formal training.
T.0202.06	Project manage the delivery of capital works projects for asset owners	The Project Planning & Delivery team continues to deliver projects for Regional Services teams, with the Airport Precinct major projects most recently being assigned to the team. The team also continues to be involved in most other major projects within Council excluding for Water & Waste where project management is the responsibility of their specialist team.
Build trust and transparency through clear communications and increased community engagement		
T.0301.01	Communicate to the community via channels identified in Communications Strategy	Communication Plans are developed for all Council projects and programs and the principles of the Communications Strategy is followed.
T.0301.02	Provide inclusive opportunities through engagement processes for the community to get actively involved in decision-making	Face to face engagement activities have increased in the past 6 months compared to last year's numbers. July to December had 34 sessions held with a reach of approx. 600 attendance/exposure.
T.0301.03	Deliver monthly Your Council News newsletter	The distribution of the newsletter commenced 2 years ago. The distribution range blankets a number of locations across the region plus email distribution is available.
T.0301.04	Expand distribution and reach of monthly Your Council News newsletter	Have had a slight increase, another campaign coming in Feb to encourage subscriptions.
T.0301.05	Refresh website to make it more accessible	Project underway and on track for this reporting period.
T.0301.06	Communicate outcomes of fortnightly Council meetings	Regular fortnightly updates to the community in line with Council Ordinary meetings held through the following channels: media, social media, newspaper columns, and radio interviews.
T.0301.07	Deliver regular Connect with Council campaign	One campaign has been run. Another campaign is expected before June 2026.
T.0301.08	Hold regular Councillor catch ups	Council plans to host two Councillor catch ups per month at varying locations across the region.
T.0301.09	Develop marketing & communications plans for all Council projects and programs	The communications team provide a marketing service via a web-based platform available to project holders to access.
Provide customer services that are proactive, available, helpful and accessible		
T.0302.01	Investigate numbers at South Tamworth Library to implement a touch point allowing for population growth	This action has not yet commenced due to budget constraints impacting the ability to obtain draft drawings and quotes for the proposed counter refurbishment at South Tamworth Library. Once preliminary costings are available, a business case will be developed to assess the feasibility of implementing a customer service touch point to support future population growth.
T.0302.02	Enhance our Customer Service team's knowledge of the organisation and improve resolution skills to ensure faster responses, better customer satisfaction, and more effective problem-solving.	The permanent Training and Knowledge Management Officer has been appointed and is actively supporting the rollout of the new Genesis phone system within the Customer Service Call Centre. This has improved call flow management and the capture of customer service statistics, as well as supporting the training of new staff. The team continues to progress continuous improvement customer service initiatives, including updating customer service information documents available on the organisation's website.
T.0302.03	Digital Transformation - project rollout for further improvements and new functionalities to our digital experience platform	The transition to the Genesis telephone system has been completed, delivering improved call handling and reporting capabilities. Work is progressing on digital transformation initiatives to enhance customer self-service options, including the development of a web chat process. Tools and systems to better track customer enquiries across multiple touchpoints and measure customer satisfaction are being developed and will be progressively implemented as part of the Blueprint Technology Project.
Attract and retain a high performing and engaged workforce		
T.0401.01	Pilot projects and other initiatives aimed at attracting and retaining workforce across all industries	Council is implementing a streamlined grant application and management framework, supported by the adoption of a new Grant Application and Management Policy. The configuration of a digital grant module is in its final stages, designed to simplify processes, improve funding outcomes, and eliminate duplication
T.0401.02	Continue to evolve and implement Talent Acquisition Strategy including promotion of Employee Value Proposition	Council's EVP continues to be promoted across all recruitment marketing channels including brand awareness and more concentrated campaigns for hard to recruit roles.
T.0401.03	Set up new employees ready for success with an informative induction and onboarding experience	New Induction and Onboarding experience has been implemented including online, face-to-face training and on-the-job learning. Council continues to improve content and delivery based on feedback from the participants and the organisation.
T.0401.04	Design and implement a holistic performance management framework which is aligned to Council strategic objectives and delivery targets, leadership capability framework and to support the learning and development needs of the organisation	New Probation Review process has been implemented. New Performance Appraisal system is in the testing phase with roll out expected in early 2026.

T.0401.05	Review salary system procedures and technology to ensure consistent, transparent approach	Initial review of procedures and technology is underway from independent consultant.
T.0401.06	Continue to develop Council's 'Grow our Own' strategy to increase younger workforce through career pathways such as traineeships, apprenticeships, cadetships, internships and work experience	Council's Grown our Own strategy has been drafted for Council workshop. Traineeship and apprenticeship numbers continue to increase due to an injection of funds from the Office of Local Government Grant.
T.0401.07	Continue to implement and evolve Council's Learning and Development strategy to support current and future skill requirements, aligned to Council strategic objectives and future needs, including DEI and cultural sensitivity	A complete Training Needs Analysis has been completed in 2025 and integrated into TechOne to inform skill gap analysis for all roles. Work is now focused on identifying future critical skills and developing processes for competency verification in plant and equipment operation to support compliance and workforce capability.
T.0401.08	Develop and implement a succession planning framework for critical, emerging roles and retirement planning	Succession planning in Technology One will follow the implementation of Performance Appraisals. The system is closely linked and requires base information in Appraisals to assist with populating the Succession Planning module.
T.0401.09	Create a leadership capability framework and invest in leadership development programs as a foundation for leaders at all levels	Council invested in a range of leadership training in 2025 and continues to build on this with 360 Leadership reviews in 2026.
T.0401.10	Continue to monitor and measure organisational culture via annual and ongoing pulse surveys	Employee Surveys will be implemented in 2026 to benchmark previous results.
T.0401.011	Relaunch and embed Council's values across the organisation through consultation, education, procedures and documents to reinforce a values-based culture	Council launched its new values in June 2025. Accountability, One Team, Wellbeing and Excellence. Promotion and embedding of the values continue as part of business and usual and continuous improvement practices.
T.0401.012	Develop a diversity, equity and inclusion strategy to attract and retain employees from diverse backgrounds and create an inclusive working environment which reflects our community	Council's Respect at Work program was rolled out in early 2025 focusing on inclusion and respect in the workplace. More detailed action focusing on DEI initiatives is planned for 2026.
T.0401.013	Design and implement a Healthy Workforce Strategy including physical and mental health, addressing psychosocial hazards and psychological safety	Progress has been limited due to staff turnover in the second half of 2025.
T.0401.014	Continue to embed Council's Child Safe Framework to improve positive culture toward child safety	Council continues to embed its Child Safe Framework. The appointment of a new Child Safe Leader is required.
T.0401.015	Facilitate a culture of health, safety and respect in the workplace	Council has recently employed new Health and Wellbeing Specialists focusing on our Return-to-Work obligations, managing workers compensation claims and personal injuries. The Respect at Work program was implemented with face-to-face and online training implemented across Council in early 2025. Council's Health Monitoring program continued with audiometric and respiratory testing in late 2025. A new safety management system Be Safe was implemented in May 2025, including the Injury Management module.
T.0401.016	Embed a culture of integrated risk management across all functions and levels of the organisation	Council's Business Continuity Program is continuously improved to mitigate impacts on the community. These programs embed emergency response capabilities within workers and enable decision makers to focus their attention on the things that matter most, maintaining services for our community.
T.0401.017	Facilitate a culture of health, safety and respect in the workplace	Council's safe systems of work comprises of policies, procedures, safe work method statements and standard work practices which are reviewed and continuously improved in consultation with workers. Council staff are consulted through multiple avenues including a Health Safety and Environment Committee. The identification and management of risk across all work areas continues with controls continuously reviewed and improved wherever necessary.
Plan for our future workforce		
T.0402.01	Continue to develop and improve Workforce Planning toward best practice to ensure our workforce is sustainable through systematic and proactive engagement with business units	Council's workforce plan is reviewed annually. Identified organisational initiatives continue to progress and are reported on as part of the IP&R reporting. Strategic and project impacts on resourcing are monitored, planned and responded to through Council's People and Culture Business Partner function.
T.0402.02	Continue to design and evolve a sustainable organisational structure that aligns with Council's strategic priorities, changing needs, technological change and future ways of working	Council continues to evolve its structure to meet strategic and operational demands. This is undertaken through its structural review process and in line with workplace change requirements as part of the Local Government State (NSW) Award.
T.0402.03	Implement additional HRIS technology to increase efficiency, automation, use of AI and integration with Council's corporate systems, and provide a positive experience for workers	Council continues to implement employment related Technology One modules including recruitment, performance and development and other automations.
Develop and manage relationships with all levels of government and stakeholders		
T.0501.01	Continue to develop and manage relationships with all levels of government, stakeholders and community	Council continues to manage relationships with all levels of Government and relevant stakeholders and community groups.

MAJOR PROJECTS

TAMWORTH REGIONAL SKYWALK

Construction of the Skywalk has been underway since June 2025. This has involved the construction of over 800 concrete foundations, some dug by hand within rock. Installation of the boardwalk has progressed well with one of the three lookouts completed, and approximately 250m of boardwalk installed out of the 1,500m total length. In preparation for onsite installation, an additional 250m of boardwalk has been manufactured, painted, and delivered to site.

All remaining boardwalk and structural bridge components are at some stage within the manufacturing process. All works are scheduled to be completed for opening in late June 2026. Early works, including site clearing along the alignment, took place in January and February 2025 to facilitate the final survey and minor design adjustments. Full-time construction on the permanent works began in early June 2025, with completion anticipated in June 2026.

To streamline the delivery of the project, the design and subsequent construction of the Skywalk has been completed in a staged manner. While one stage is under construction, the next stage is going through design completion. This design process has now been completed for the boardwalk. The carpark and entrance designs are in development, along with embellishment of signage and information panels along the Skywalk.




MAJOR PROJECTS

AQUATIC, EDUCATION, AND HEALTH CENTRE OF EXCELLENCE

To date, the 90% detailed design has been completed and development consent issued.

An Early Contractor Involvement (ECI) phase has been implemented for the project. ECI is a project delivery approach where a main contractor is engaged early – prior to the award of a construction contract – to collaborate with the client and design team before entering into a formal, construction contract. In the ECI phase, the main contractor provides expert input on buildability, construction methodology, program, risk identification and management, cost planning, and value engineering to ensure the design is practical, efficient, and aligned with budget and stakeholder expectations.

This collaborative phase allows for further design refinement, early identification of potential issues, and improved certainty of scope and cost. Once the ECI deliverables are finalised and agreed upon, the client may then transition the main contractor into a negotiated Design & Construct (D&C) contract, where the same main contractor (or other through another tender process) becomes fully responsible for delivering the final D&C works. This model fosters early collaboration, innovation and risk mitigation, while streamlining the transition into construction and promoting greater cost, time, and quality control.

The next six months will see the awarding of the D&C contract and finalisation of the design. After these initial steps, works are expected to commence prior to June 2026.

Artist Impression

REGIONAL COUNCIL Tamworth

tamworth.nsw.gov.au

February 2026 - Monthly Budget Variations

Description	Reason	Budget Type	Budget Variation	Revenue	Reserves	Grants & Contributions	Loans
People & Culture							
Industrial Relations	Exp Increase	Op Exp NR	20,130	20,130	0	0	0
	Sub Total		20,130	20,130	0	0	0
Project Costing							
Marius Street Works - Peel Street to Dean St	New Project	Cap Exp	20,000	0	0	20,000	0
	Sub Total		20,000	0	0	20,000	0
Water & Wastewater							
Peel House - Office Investigations	New Project	Op Exp NR	100,000	0	100,000	0	0
	Sub Total		100,000	0	100,000	0	0
	Grand Total		**140,130**	**20,130**	**100,000**	**20,000**	**0**

Mr Paul Bennett

General Manager

Tamworth Regional Council

PO Box 555

Tamworth NSW 2340

Dear Mr Bennett,

Re: 2025 NAIDOC Week Celebrations, 6-13 July 2025

The Tamworth NAIDOC Committee is seeking the assistance from Tamworth Regional Council in relation to in-kind contributions, sponsorship and the waiver of Council fees, resulting from Tamworth's 2025 NAIDOC events. Which are scheduled to be held between Sunday, 6 July and Saturday, 13 July 2025.

A calendar of events is being prepared by the Tamworth NAIDOC Committee, a committee comprised of local organisations' including eight (8) Aboriginal organisations and representatives from a range of local NGOs and Tamworth Regional Council. We are extremely grateful for the support that Tamworth Regional Council has provided to the NAIDOC Committee in previous years and request your assistance again. This year's celebrations will align with the National NAIDOC theme "The Next Generation: Strength, Vision & Legacy".

In line with the Council's Blueprint 100 priority theme in Celebrating cultures, histories and heritage, we are asking for consideration in Tamworth Regional Council continued support requests for 2025.

The total cost of running NAIDOC Week celebrations in 2024 was approximately $75,000. In 2025, we have received $13,000 in government grants, which leaves a significant burden on the Aboriginal community to secure sponsorship for the remaining costs. Tamworth Regional Council ongoing support, sponsorship and the waiving of Council fees would lift some of this pressure.

Human Resources Support Request

The Tamworth NAIDOC Committee has benefitted in previous years from the support of numerous Tamworth Regional Council staff to ensure the smooth running of numerous NAIDOC events. It would be appreciated if Tamworth Regional Council can commit staff to providing this support again in 2025.

- The support of the Inclusive Community team to work alongside the committee and to manage all Council related facets of NAIDOC week planning;
- The support of the Inclusive community team to facilitate NAIDOC Committee meetings to be held on a monthly basis;
- The support of Tamworth Regional Gallery staff in providing exhibition space for the 2025, with the photo exhibition and light projections.

Fee Waiver Request

NAIDOC celebrations also incur Council fees relating to the following events:

1. NAIDOC March – Friday, 11 July - Peel Street/Brisbane Street Road closure, barrier fees;
2. NAIDOC Family Fun Day – Friday, 11 July - Bicentennial Park hire fees, park amenities, cleaning of toilets and waste removal;
3. NAIDOC Debutante Ball – Saturday, 12 July - TRECC Venue Hire;
4. NAIDOC Elders Lunch – Thursday, 25 September – TRECC Venue Hire.

Partnership Request - TRC Events and Communications Team

The Tamworth NAIDOC Committee organises a range of large-scale community events each year, designed to appeal to and attract people from across the Aboriginal and non-Aboriginal communities in order to broaden whole-of-community understanding regarding the contemporary cultural life of Tamworth's Aboriginal community and advance reconciliation across the local region. While this is the purpose of NAIDOC Week, the majority of participants in NAIDOC Week events historically have been Aboriginal community members. We are interested in the potential to form a partnership with Tamworth Regional Council Events Team, similar to the partnership held with Multicultural Tamworth for the purposes of staging Fiesta La Peel each year. We believe that a strong partnership with Council that supports event logistics and promotion could broaden the appeal, awareness and participation of the broader community across NAIDOC Week events each year. We would welcome the opportunity to meet with Council and initiate discussions around such a partnership.

The Tamworth NAIDOC Committee would also seek the support of Tamworth Regional Council's Communications Team in promoting our events in 2025. The Comms team has provided support in previous years via the promotion of the NAIDOC Calendar, daily tiles promoting upcoming events, and reposts from the Tamworth NAIDOC Committee's social pages. This has been a great assistance in broadening the audience and reach of our promotions.

We look forward to the ongoing collaboration with Tamworth Regional Council and celebrating our strong Aboriginal culture across the region.

Yours sincerely

Danny Dalton

Danny Dalton
Chairperson
Tamworth NAIDOC Committee

Organisation Name	Project Name	Requested ($)	Donated ($)
310 (City of Tamworth) Squadron Australian Air Force Cadets	310 (City of Tamworth) Squadron Recruit Training Weekend	$7,524.00	Nil
ArtsNational Tamworth	ArtsNational Tamworth Annual Lecture Program	$2,947.00	Nil
Barraba Mosaic Art Group (subgroup of Barraba Community Incorporated)	Barraba Community Beautification Project	$6,530.00	$5,000.00
Barraba P.,A&H Association Inc.	Saturday Night Entertainment	$10,000.00	$5,000.00
Barraba Potters and Craft Guild Inc.	Completion of a fully stainless steel kitchen	$3,600.00	$2,500.00
Barraba Preschool Incorporated	Bus Transportation	$1,800.00	$1,800.00
Bendemeer Pre-school Incorporated Assoc	Sandpit cover for playground	$1,432.00	$1,432.00
Co Care Inc.	Co Care Inc	$500.00	$500.00
Niangala Memorial Hall	Upgrade to Supper Room to Improve Heating	$5,000.00	$5,000.00
Nundle CWA Art Exhibition	Nundle CWA Art Exhibition	$1,000.00	$1,000.00
OXLEY DOG TRAINING CLUB INC	GROUNDS MAINTENANCE & ENHANCEMENT	$2,044.00	$2,044.00
PCYC Tamworth	PCYC Tamworth - Appliance upgrades to support youth program delivery.	$2,500.00	Nil
Riding for the Disabled (association) Tamworth Centre Inc.	Cover over saddling yards	$5,000.00	$5,000.00
Tamworth Birdwatchers Inc.	Feral Bird Aviary Project (FBAP) establishment costs	$1,329.16	$1,329.16
Tamworth Community Garden - project of the Rotary Club of Tamworth First Light	Tamworth Community Garden Accessibility Project	$3,000.00	$3,000.00
Tamworth Dementia Respite Service Inc	Tamworth Dementia Respite Service Inc	$2,523.49	$2,523.49
Tamworth Legacy Club	Tamworth Legacy Social Inclusion and Wellbeing Program Project	$5,000.00	$3,000.00
TAMWORTH NETWORKING GROUP	Tamworth Networking Group - Inclusive Dance, and International Day of People With Disability	$3,000.00	Nil

Tamworth Peel Evening View Club	Spring High Tea	$602.00	$602.00
Tamworth Physical Culture Club	Tamworth Physie 2025 Club Competition	$1,313.00	$1,313.00
Tamworth U3A Inc.	Enrich Learning the Fun Way with U3A	$1,304.34	$1,304.34
The Northcott Society	Mardi Gras Connect: “A Celebration of Diversity”	$14,500.00	Nil
United Hospitals Auxiliaries of NSW Inc Barraba Branch	Provision of six folding chairs for members at functions	$221.40	$221.40
Northern NSW Helicopter Rescue Services Limited T/A Westpac Rescue Helicopter	Procurement if Vital Equipment for Rescue Team Training	$5,000.00	Nil
Barraba Junior Touch Football	Inaugural Barraba Junior Touch Football Gala Day	$5,823.94	$5,823.94
	Total	**$93,494.33**	**$48,393.33**

From: David Lightowler
Sent: Monday, 9 March 2026 7:46 AM
To: Stephen Mears <Stephen.Mears@councillor.tamworth.nsw.gov.au>; Marc Sutherland <Marc.Sutherland@councillor.tamworth.nsw.gov.au>; Ryan Brooke <Ryan.Brooke@councillor.tamworth.nsw.gov.au>
Cc: Stephenie Crowell <Stephenie.Crowell@tamworth.nsw.gov.au>
Subject: RE: Manilla Show Society $5,000.00 payment

Morning Steve, Marc, Ryan,

Thank you for your support and approval in the allocation of the funds for the Manilla Show – we will look to consolidate these payments in future as part of recurring budget lines rather than having to tap into the Annual Donations budget.

Regards,

David Lightowler
Manager Community Safety and Wellbeing

M 0458 763 067 | **E** david.lightowler@tamworth.nsw.gov.au

474 Peel Street
PO Box 555 Tamworth NSW 2340
www.tamworth.nsw.gov.au

REGIONAL COUNCIL Tamworth

Tamworth Regional Council acknowledges the Gamilaroi/Kamilaroi people, who are the Traditional Custodians of this land. We would like to pay respect to Elders past and present, and extend that respect to other Aboriginal and Torres Strait Islander peoples living in and visiting our Region.

From: Stephen Mears <Stephen.Mears@councillor.tamworth.nsw.gov.au>
Sent: Saturday, 7 March 2026 9:37 AM
To: Marc Sutherland <Marc.Sutherland@councillor.tamworth.nsw.gov.au>; Ryan Brooke <Ryan.Brooke@councillor.tamworth.nsw.gov.au>; David Lightowler <David.Lightowler@tamworth.nsw.gov.au>
Cc: Stephenie Crowell <Stephenie.Crowell@tamworth.nsw.gov.au>
Subject: Re: Manilla Show Society $5,000.00 payment

Thanks Marc I was going to chat with you and Ryan. I also support the allocation

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From: Marc Sutherland <Marc.Sutherland@councillor.tamworth.nsw.gov.au>
Sent: Saturday, March 7, 2026 9:33:14 AM
To: Ryan Brooke <Ryan.Brooke@councillor.tamworth.nsw.gov.au>; Stephen Mears

<Stephen.Mears@councillor.tamworth.nsw.gov.au>; David Lightowler
<David.Lightowler@tamworth.nsw.gov.au>
Cc: Stephenie Crowell <Stephenie.Crowell@tamworth.nsw.gov.au>
Subject: Re: Manilla Show Society $5,000.00 payment

Yaama David,

I support the allocation to the Manilla Show Society from the remaining funds.

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From: Ryan Brooke <Ryan.Brooke@councillor.tamworth.nsw.gov.au>
Sent: Friday, March 6, 2026 8:09 PM
To: Stephen Mears <Stephen.Mears@councillor.tamworth.nsw.gov.au>; David Lightowler
<David.Lightowler@tamworth.nsw.gov.au>; Marc Sutherland
<Marc.Sutherland@councillor.tamworth.nsw.gov.au>
Cc: Stephenie Crowell <Stephenie.Crowell@tamworth.nsw.gov.au>
Subject: RE: Manilla Show Society $5,000.00 payment

I'm okay with this allocation from the remaining funds.

Ryan Brooke
Councillor
M 0432 737 788 | E ryan.brooke@councillor.tamworth.nsw.gov.au

474 Peel Street
PO Box 555 Tamworth NSW 2340
www.tamworth.nsw.gov.au

Tamworth Regional Council acknowledges the Gamilaroi/ Kamilaroi people, who are the Traditional Custodians of this land. We would like to pay respect to Elders past and present, and extend that respect to other Aboriginal and Torres Strait Islander peoples living in and visiting our Region.

From: Stephen Mears <Stephen.Mears@councillor.tamworth.nsw.gov.au>
Sent: Friday, 6 March 2026 5:47 PM
To: David Lightowler <David.Lightowler@tamworth.nsw.gov.au>; Marc Sutherland
<Marc.Sutherland@councillor.tamworth.nsw.gov.au>; Ryan Brooke
<Ryan.Brooke@councillor.tamworth.nsw.gov.au>
Cc: Stephenie Crowell <Stephenie.Crowell@tamworth.nsw.gov.au>
Subject: Re: Manilla Show Society $5,000.00 payment

Hi David, I'll chat with the others and advise

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From: David Lightowler <David.Lightowler@tamworth.nsw.gov.au>
Sent: Friday, March 6, 2026 4:09:00 PM
To: Marc Sutherland <Marc.Sutherland@councillor.tamworth.nsw.gov.au>; Stephen Mears <Stephen.Mears@councillor.tamworth.nsw.gov.au>; Ryan Brooke <Ryan.Brooke@councillor.tamworth.nsw.gov.au>
Cc: Stephenie Crowell <Stephenie.Crowell@tamworth.nsw.gov.au>
Subject: Manilla Show Society $5,000.00 payment

Afternoon Marc, Steve and Ryan,

I am advising that due to an oversight in the allocation of funds for the Manilla Show in our Annual Donations budget we need to assign $5,000.00 as an amount which the Manilla Show Society would have been entitled to.

As we had a surplus of approx.. $10,000.00+ I would request that we assign the $5,000.00 that the Manilla Show Society should have received as part of the ongoing donation from Council and further I would ask for your support in approving this.

My apologies that this wasn't on our list as a recurrent item but we need to make some policy/finance/recurrent budget adjustments for future reference (Council operational matter but I thought it best to layout the background)

I have not attached all the correspondence from our emails back and forward with our Finance/Business Partner Lauren MacPherson around this, but have copied the relevant extracts sent to me below:-

"Further to my email below, as a quick summary – it does appear the Manilla Show Society is entitled to funds per the General Policy Register (pages 32, 33 of the document)."
"Some are paid for by the Events Support budget in CCE, some are paid for by the big bucket of Annual Donations budget and some have a permanent budget line specifically for their group/event."

For future reference we will review the relevant policies to ensure that it aligns, and we don't miss recurring donations that need to be included in the Annual Donations review. This as you can see in the extracts has occurred due to some donations having recurrent (permanent) budget lines and therefore don't impact on the Annual Donations program and others such as Manilla Show should have been included in the Annual Donations.

That is my understanding anyway – I trust you will support this and please contact me directly if you want to discuss the matter.

Regards,

David Lightowler
Manager Community Safety and Wellbeing
M 0458 763 067 | **E** david.lightowler@tamworth.nsw.gov.au

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