AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: 33160935142

19/09/2025

Electrical Infrastructure Assessment – 135 Badgerys Creek Road, Bradfield
Client: Creative Vision

Introduction:

This electrical infrastructure report has been prepared on behalf of the Bradfield Corporation Pty Ltd (the applicant) by AA Power Engineering. It is submitted to the Department of Planning, Housing and Infrastructure (DPHI) in support of a State Significant Development Application (SSDA) on land 135 Badgerys Creek Road, Bradfield.

The following report is an assessment of the electrical infrastructure requirements and impacts, in relation to the proposed mixed-use development.

This report aims to address the following items:

- Development overview
- Existing electrical infrastructure
- Approximate maximum electrical demand of the proposed development
- Indicative electrical/Endeavour Energy requirements and indicative solutions

Site Description:

The site is located at 135 Badgerys Creek Road, Bradfield and is approximately 2.02ha in area. It is legally described as Lot 7 DP 243457 and is located approximately 250m to the future Bradfield Metro Station and 4km to the Western Sydney Airport. An aerial image of the site is provided in Error! Reference source not found..

The site shares a western frontage with Badgerys Creek Road. The eastern boundary of the site adjoins the State government-led Bradfield City Centre which is set to be a vibrant 24/7 global city, driving advancements in industry and will support 10,000 more homes and 20,000 new jobs in Western Sydney.

As defined by the Aerotropolis Precinct Plan, the site is located within the Aerotropolis Core Precinct which is envisioned as an attractive place for workers, residents and visitors. The Aerotropolis Core Precinct will leverage the positive economic impact of the adjacent Western Sydney Airport and Bradfield City Centre. It will attract business hubs, research and development, professional services and creative industries in addition to providing residential development within walking distance of the Bradfield Metro station and proximity to blue and green infrastructure.

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: **33160935142**

Figure: Site Plan

Figures: Locality area

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: 33160935142

Proposed Development:

The proposed development will seek consent for the redevelopment of the site, comprising:

- Enabling works including vegetation removal and earthworks;
- The construction of three buildings, comprising:
  - Residential use, including approximately 400 apartment units;
  - Hotel use, including approximately 450 hotel rooms;
  - Commercial use, including supermarket, food and drink and other commercial uses;
  - Medical centre use;
  - Childcare centre use;
- Construction of two basement structures, including approximately 800 carparking spaces;
- Public domain upgrades, including:
  - Construction of an internal road;
  - A public plaza;
- Rehabilitation and augmentation of the existing riparian corridor;
- Landscaping embellishments on the ground level and within the built form; and
- Services augmentation as required.

Refer to the Environmental Impact Statement for a detailed summary of the proposed development.

The development comprises of the following areas, which are relevant to the proposed electrical demand usage:

OVERALL

HEIGHT (m)	FTF (m)	LEVEL	GBA (m2)	TOTAL GFA (m2)	Resi G.F.A. (m²)	Retail G.F.A. (m²)	Super-market (m2)	Hotel G.F.A (m2)	Co-Working G.F.A. (m2)	Childcare G.F.A. (m2)	Childcare Outdoor (m2)	Medical G.F.A (m2)	Commercial G.F.A (m2)	GYM	Tavern	Lanscape Area (m2)	Deep Soil Area (m²)	Residential N.S.A. (m²)	Communal Area (m²) (incl. outdoor)	Efficiency N.S.A./G.F.A	No. of Car Space	Hotel Room	Apartment Mix 1 Bed	Apartment Mix 2 Bed	Apartment Mix 3 Bed	Apartment Mix 4 Bed	No. of Apartments	ADG Compliance Solar	ADG Compliance No Solar	ADG Compliance Cross-Ventilation
	3159	ROOF																												
	3160	L11		1155	480	0	0	675	0	0	0	0	0	0	0			441		92%		0	0	0	0					
	3160	L10		4065	3181	0	0	884	0	0	0	0	0	0	0			2623		82%		27	6	19	11		36	36	0	
	3160	L09		4937	4053	0	0	884	0	0	0	0	0	0	0			3388	631	84%		27	5	30	6		41	36	3	
	3160	L08		5669	4785	0	0	884	0	0	0	0	0	0	0			4037		84%		27	4	36	8		48	37	7	32
	3160	L07		5669	4785	0	0	884	0	0	0	0	0	0	0			4037		84%		27	4	36	8		48	36	8	30
	3160	L06		5669	4785	0	0	884	0	0	0	0	0	0	0			4037		84%		27	4	36	8		48	36	8	30
	3160	L05		5669	4785	0	0	884	0	0	0	0	0	0	0			4037		84%		27	4	36	8		48	36	8	30
	3160	L04		5600	4716	0	0	884	0	0	0	0	0	0	0			3829	1219	81%		27	11	30	7		48	33	9	24
	3160	L03		6854	2336	0	0	3201	536	781	686	0	0	0	0			1923		82%		102	4	17	3		24	18	5	14
	3160	L02		7672	2336	0	0	3285	578	0	0	427	1046	0	0			1923		82%		103	4	17	3		24	18	5	14
	3160	L01		7854	2360	0	0	2211	0	0	0	1496	0	885	902			1923	514	81%		51	5	16	3		24	18	5	14
	3000	MZ		750	750	0	0	0	0	0	0	0	0	0	0			544		73%		0	1	1	1		3	0	2	2
	3000	G		7280	2215	3014	1501	196	0	0	0	0	49	0	305			663	4378	30%	5	0	1	3	6		10	9	1	7
		LG		797	0	35	0	741	0	0	0	0	21	0	0						228									
		B01		748	0	0	0	665	0	0	0	0	25	0	58						253									
		B02		257	0	0	0	257	0	0	0	0	0	0	0						296									
TOTALS				70645	41567	3049	1501	17419	1114	781	686	1923	1141	885	1265	2973	2973	33405	6742	80%	782	445	53	277	72	0	402	313	61	197
										8.4m2/K	7.2m2/K					14.7%	14.7%		33.3%				13.2%	68.9%	17.9%	0.0%		78%	15%	61%
Required																						445						MIN. 70%	MAX. 15%	MIN. 60%

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: 33160935142

Secretary's Environmental Assessment Requirements:

SEAR's Request	Response / Location in Report
Item 21 – Assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site.	Section 3
Identify any infrastructure required on-site and off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained.	Sections 3, 4 & 5
Provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would coordinated, funded and delivered to facilitate the development.	Section 6
Address the requirements listed in SEARs advice Endeavour Energy	Sections 1-6

1. **Existing Electrical Infrastructure:**

There are existing Endeavour Energy electrical network assets surrounding the subject development site. Please refer to the Endeavour Energy network GIS exact below. The following items can be concluded upon review:

- Accordingly to current Endeavour Energy network plans, the site currently does not have an electrical service from the Endeavour Energy network.
- There is no high voltage electrical infrastructure located on the development property, such as substations or switching assets, therefore, there is no decomissioning of assets required for the demolition and construction works to be carried out.
- The existing infrstructure is suitable for the existing residential area, however does not appear able to cater for the future major redevelopmen which is to be carried out in the area. The high voltage feeders/cables within proximity of the site will not be able to cater for the load requirements of the proposed development (particularly if connected to one feeder/cable, which is likely to be required by Endeavour Energy).
- Overhead mains will be required to be relocated underground, with street light columns installed accordingly throughout all newly developed areas. In this instance, there or no overhead mains currenly fronting any of the development boundaries.

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: 33160935142

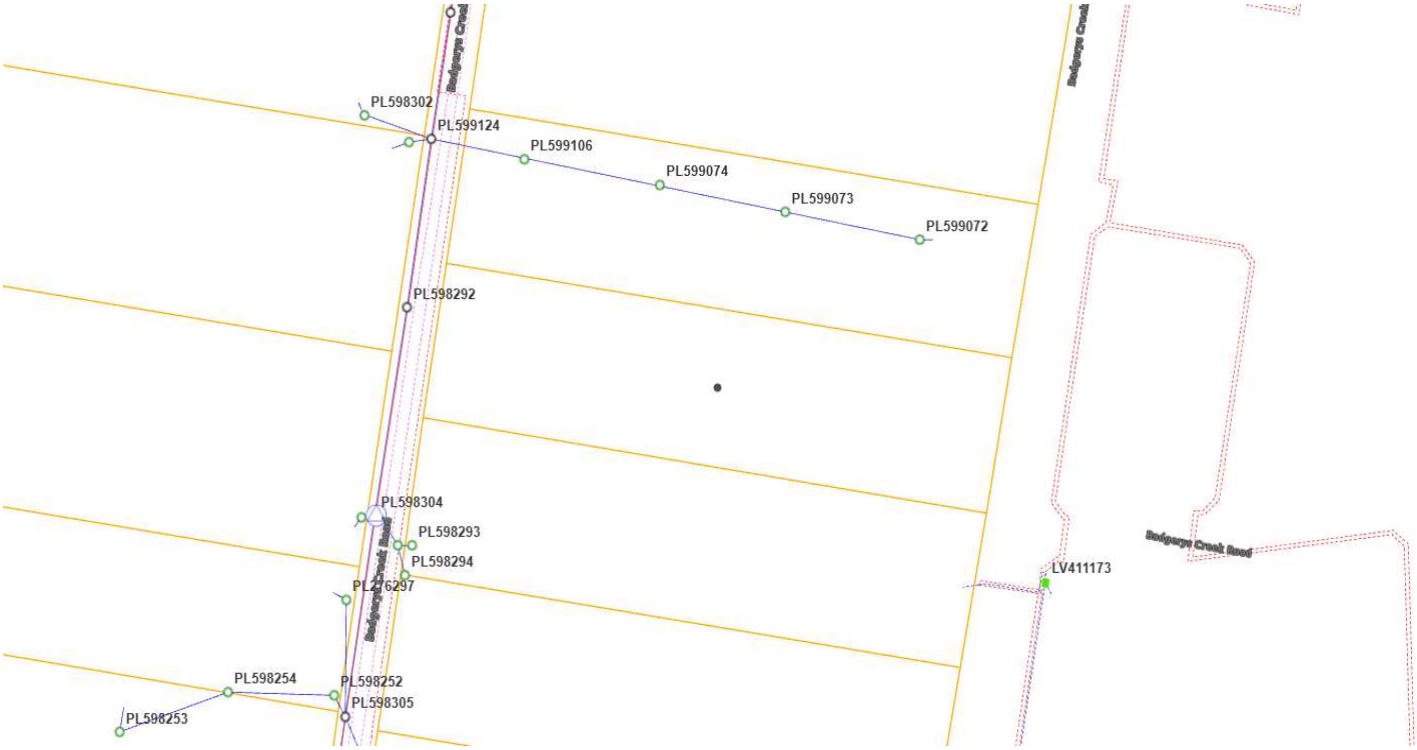


Figure: Endeavour Energy Network GIS

2. Maximum Demand Estimate (AS3000):

A preliminary estimate of the proposed maximum demand has been completed, and is it estimated that an approximate total of 8300 Amps per phase is required to facilitate the development requirements. This estimate has been completed on the basis of multiple assumptions and is subject to the formal appointment of an electrical services consultant.

The load assessment has been based on general AS3000 allowances and assumed uses of the commercial and retail spaces, with no allowance for specific equipment or special considerations.

The above-mentioned load may be considered relatively conservative due to class 2 EV charger allowance. This load may be diversified further to take time EV time usage into consideration and further reduce the overall calculations.

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: 33160935142

PRELIMINARY ONLY

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481

ABN: 33160935142

AS/NZS 3000
MAXIMUM DEMAND—SINGLE AND MULTIPLE DOMESTIC ELECTRICAL INSTALLATIONS
TABLE C1

REVISION A

STAGE 1

0.00	Residential units
0.00	Units per phase (highest phase)

ITEM	LOAD GROUP	Description	Allowance	Maximum Demand A (0 units)	Maximum Demand B (0 units)	Maximum Demand C (0 units)	Comments
1	A(i)	Lighting	6 A	6.00	6.00	6.00	
2	A (ii)	Lighting (Outdoor)	N/A	0.00	0.00	0.00	No assessment for the purpose of maximum demand
3	B(i)	Socket-outlets not exceeding 10A	10 A + 5 A Per Living Unit	10.00	10.00	10.00	
4	B(ii)	15 A socket-outlets	No	0.00	0.00	0.00	N/A
5	B(iii)	20 A socket-outlets	No	0.00	0.00	0.00	N/A
6	C	Ranges, cooking appliances, laundry equipment etc	15 A	15.00	15.00	15.00	
7	D	Fixed space heating or airconditioning	75% connected load	0.00	0.00	0.00	Assumption is 2 kW Split Systems (7 Amps 1 ph)
8	E	Instantaneous water heaters	N/A				
9	F	Storage water heaters	N/A				
10	G	Spa and swimming pool heaters	N/A				
11	H	Communal lighting	Full Connected Load	25.00	25.00	25.00	Assumed 5 Amps
12	I	Other Socket Outlets	N/A				N/A
13	J	Other Appliances	N/A				N/A
14	K	Lifts	>3 Lifts	120.00	120.00	120.00	(i) Largest lift motor — 125% full load (ii) Next largest lift motor — 75% full load (iii) Remaining lift motors — 50% full load
15	L	Motors	Full load of highest rated motor, plus 50% of full load of remainder	45.67	45.67	45.67	Refer to Worksheet 2
16	M	Carpark		730.21	730.21	730.21	Refer to Worksheet 3
17	O	EV Chargers	Class 2	0.00	0.00	0.00	
19	P	EV Chargers	Class 3	174.00	174.00	174.00	
20	N/A	HOTEL ROOMS	SEE PAGE 4	990.00	990.00	990.00	
21							
22							
23							
24							
			TOTAL	2115.88	2115.88	2115.88	
			Total (Including future allowance)	2120.00	2120.00	2120.00	

Figure: Stage 1 Maximum Demand – 2120A

PRELIMINARY ONLY

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481

ABN: 33160935142

AS/NZS 3000
MAXIMUM DEMAND—SINGLE AND MULTIPLE DOMESTIC ELECTRICAL INSTALLATIONS
TABLE C1

REVISION A

STAGE 2

196.00	Residential units
66.00	Units per phase (highest phase)

ITEM	LOAD GROUP	Description	Allowance	Maximum Demand A (66 units)	Maximum Demand B (66 units)	Maximum Demand C (66 units)	Comments
1	A(i)	Lighting	0.5 A Per Living Unit	33.00	33.00	33.00	
2	A (ii)	Lighting (Outdoor)	N/A	0.00	0.00	0.00	No assessment for the purpose of maximum demand
3	B(i)	Socket-outlets not exceeding 10A	50 A + 1.9 A Per Living Unit	175.40	175.40	175.40	
4	B(ii)	15 A socket-outlets	No	0.00	0.00	0.00	N/A
5	B(iii)	20 A socket-outlets	No	0.00	0.00	0.00	N/A
6	C	Ranges, cooking appliances, laundry equipment etc	2.8 A Per Living Unit	184.80	184.80	184.80	
7	D	Fixed space heating or airconditioning	75% connected load	346.50	346.50	346.50	Assumption is 2 kW Split Systems (7 Amps 1 ph)
8	E	Instantaneous water heaters	N/A				
9	F	Storage water heaters	N/A				
10	G	Spa and swimming pool heaters	N/A				
11	H	Communal lighting	Full Connected Load	25.00	25.00	25.00	Assumed 5 Amps
12	I	Other Socket Outlets	N/A				N/A
13	J	Other Appliances	N/A				N/A
14	K	Lifts	>3 Lifts	210.00	210.00	210.00	(i) Largest lift motor — 125% full load (ii) Next largest lift motor — 75% full load (iii) Remaining lift motors — 50% full load
15	L	Motors	Full load of highest rated motor, plus 50% of full load of remainder	51.68	51.68	51.68	Refer to Worksheet 2
16	M	Carpark		2238.86	2238.86	2238.86	Refer to Worksheet 3
17	O	EV Chargers	Class 2	0.00	0.00	0.00	
19	P	EV Chargers	Class 3	348.00	348.00	348.00	
20	N/A	HOTEL ROOMS	SEE PAGE 4	850.00	850.00	850.00	
21							
22							
23							
24							
			TOTAL	4463.25	4463.25	4463.25	
			Total (Including future allowance)	4470.00	4470.00	4470.00	

Figure: Stage 2 Maximum Demand – 4470A

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: 33160935142

PRELIMINARY ONLY

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT
Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: 33160935142

AS/NZS 3000
MAXIMUM DEMAND—SINGLE AND MULTIPLE DOMESTIC ELECTRICAL INSTALLATIONS
TABLE C1

REVISION A

STAGE 3

223.00	Residential units
75.00	Units per phase (highest phase)

ITEM	LOAD GROUP	Description	Allowance	Maximum Demand A (75 units)	Maximum Demand B (75 units)	Maximum Demand C (75 units)	Comments
1	A(i)	Lighting	0.5 A Per Living Unit	37.50	37.50	37.50	
2	A (ii)	Lighting (Outdoor)	N/A	0.00	0.00	0.00	No assessment for the purpose of maximum demand
3	B(i)	Socket-outlets not exceeding 10A	50 A + 1.9 A Per Living Unit	192.50	192.50	192.50	
4	B(ii)	15 A socket-outlets	No	0.00	0.00	0.00	N/A
5	B(iii)	20 A socket-outlets	No	0.00	0.00	0.00	N/A
6	C	Ranges, cooking appliances, laundry equipment etc	2.8 A Per Living Unit	210.00	210.00	210.00	
7	D	Fixed space heating or airconditioning	75% connected load	393.75	393.75	393.75	Assumption is 2 kW Split Systems (7 Amps 1 ph)
8	E	Instantaneous water heaters	N/A				
9	F	Storage water heaters	N/A				
10	G	Spa and swimming pool heaters	N/A				
11	H	Communal lighting	Full Connected Load	25.00	25.00	25.00	Assumed 5 Amps
12	I	Other Socket Outlets	N/A				N/A
13	J	Other Appliances	N/A				N/A
14	K	Lifts	>3 Lifts	120.00	120.00	120.00	(i) Largest lift motor — 125% full load (ii) Next largest lift motor — 75% full load (iii) Remaining lift motors — 50% full load
15	L	Motors	Full load of highest rated motor, plus 50% of full load of remainder	52.66	52.66	52.66	Refer to Worksheet 2
16	M	Carpark		323.23	323.23	323.23	Refer to Worksheet 3
17	O	EV Chargers	Class 2	0.00	0.00	0.00	
19	P	EV Chargers	Class 3	348.00	348.00	348.00	
20							
21							
22							
23							
24							
			TOTAL	1702.65	1702.65	1702.65	
			Total (Including future allowance)	1710.00	1710.00	1710.00	

Figure: Stage 3 Maximum Demand – 1710A

3. Indicative Electrical Requirements – ENL7173:

AAPE have lodged a formal technical enquiry to Endeavour Energy, based on the preliminary maximum demand calculations to identify the high voltage requirements associated with the project, and confirm if power supply with be available.

Endeavour Energy have provided a formal response via technical enquiry response ENL7173 – 08/07/2025 (refer to the attached email, final page of this report).

In summary, Endeavour Energy have confirmed the new North Bradfield Zone Substation and two initial 22kV feeders are currently in construction. This is a capital works project, meaning it is being carried out by Endeavour Energy. This is to be completed by June 2026.

The future of this particular area is to be serviced from West Bradfield Zone Substation, which would be closer to the development site, but not available until 2032.

It is Endeavour Energy's intention/request that the development at 135 Badgerys Creek Road run a new 22kV feeders from Bradfield North ZS to the development. This is a dedicated cable from the ZS to the development. This cable route will be approx. 2.0km. Utilisation of an existing conduit to reduce trenching/excavation is unknown at this stage.

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: 33160935142

4. **Substations:**

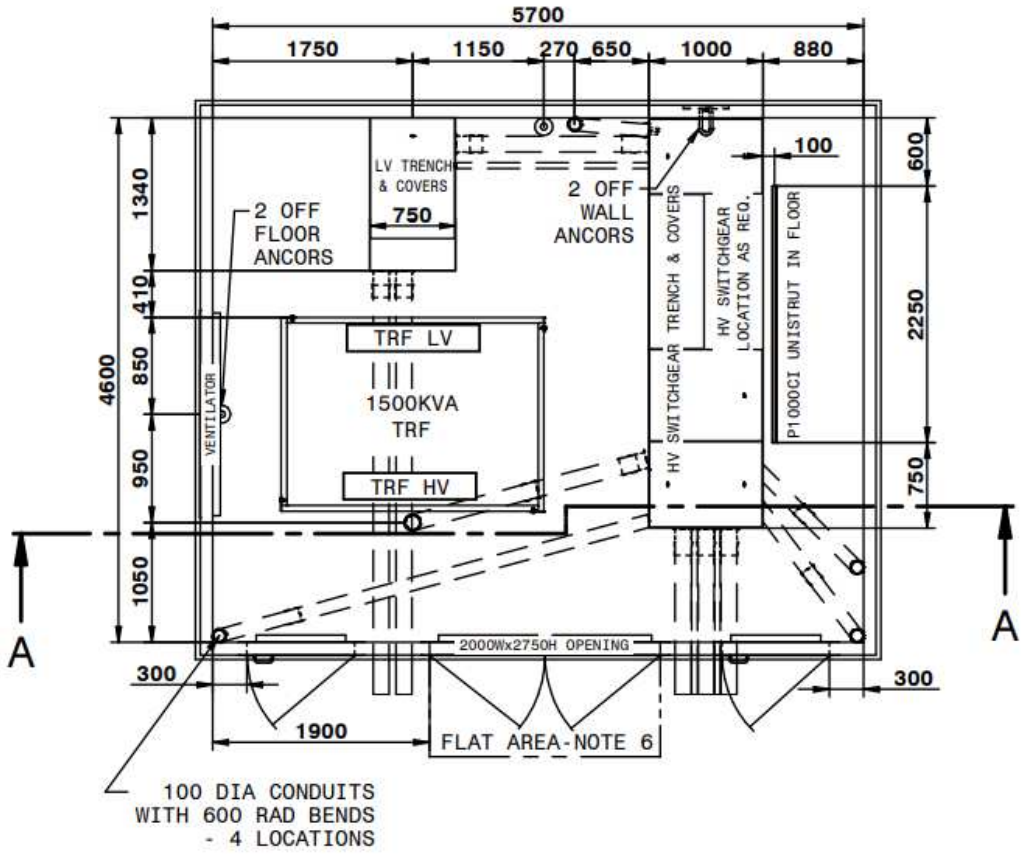
It is evident that multiple substations will be required to supply the development across the various stages to facilitate the development load. Based on the layout of the development, it would also appear chamber/indoor substations would be the likely selection of substation, however the use of padmount substations is also permitted. Options for each stage would be as follows (Subject to finalising electrical loads):

Stage 1 – 1 x Padmount Substation (1500kVA) or 1 x Single Indoor Substation (max 2100A output, if above 2100A, 2 x Padmount Substations or 1 x Multi-Transformer Indoor Substation required).
Stage 2 – 3 x Padmount Substation and 3 x Transformer Indoor Substation (potential to be 2 x PM substation or 2 x transformer substation if load is limited to 4200A).
Stage 3 – 1 x 1500kVA Padmount Substations or 1 x Single Indoor Substation (max 2100A output)

Upon confirmation of development loadings for each stage, further clarification can be provided for each substation layout.

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

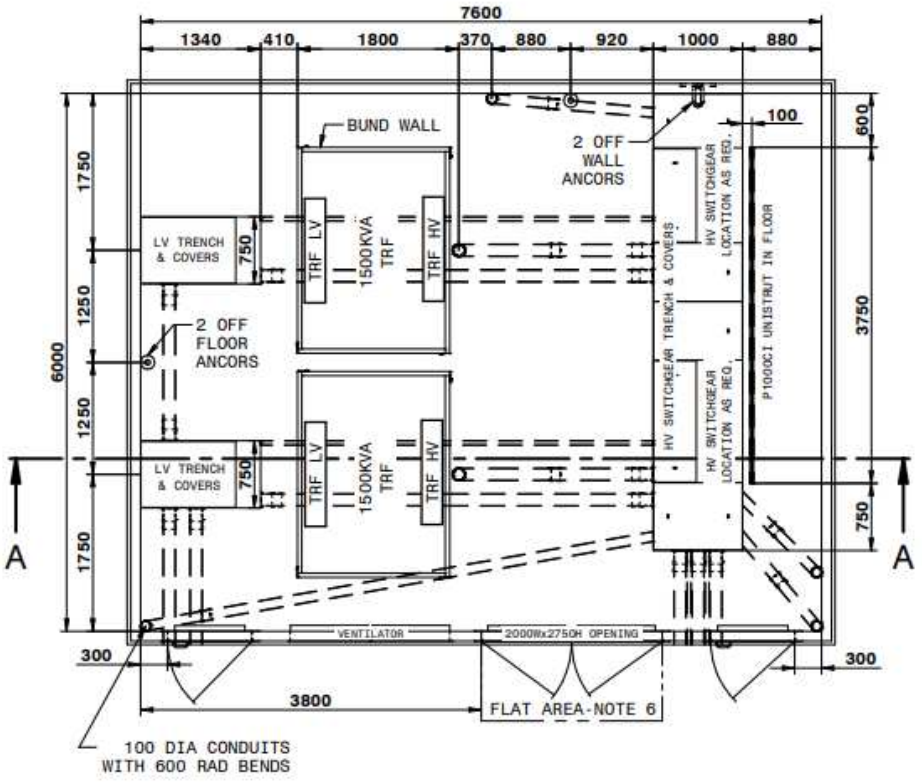
Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: 33160935142



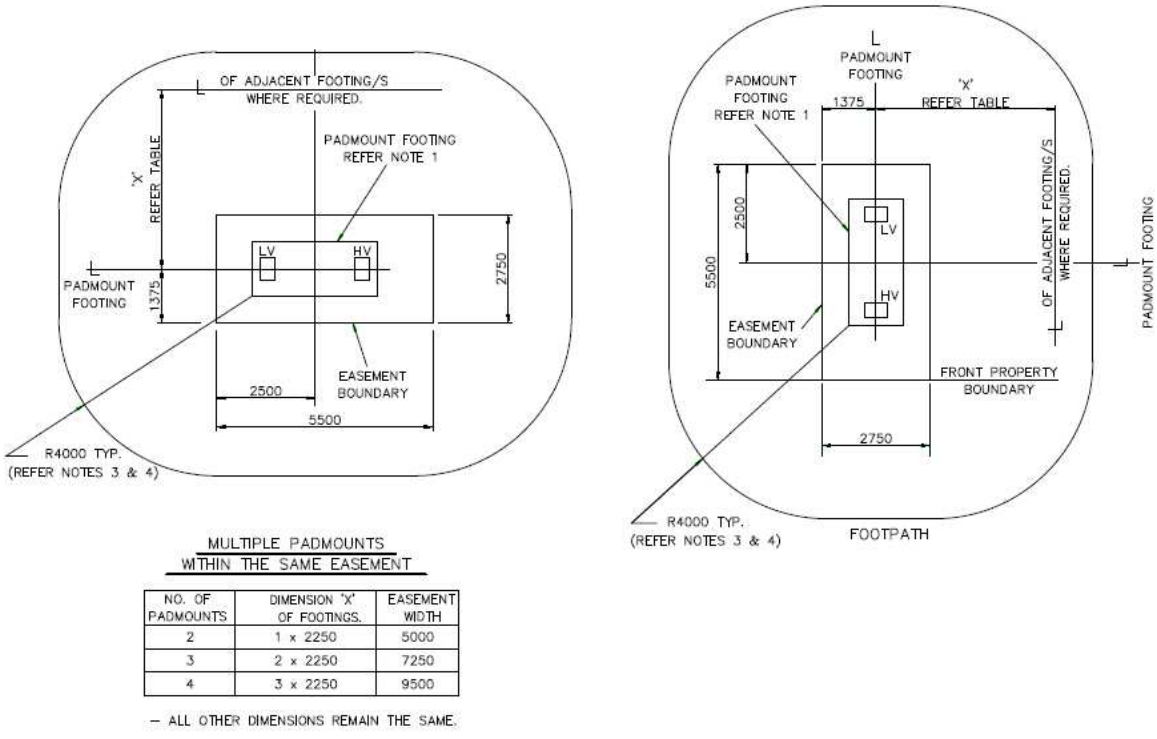
Single Transformer Substation Layout

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: **33160935142**



Two-Transformer Substation Layout (Third transformer can be added by increasing the size of the room).



MULTIPLE PADMOUNTS WITHIN THE SAME EASEMENT

NO. OF PADMOUNTS	DIMENSION 'X' OF FOOTINGS.	EASEMENT WIDTH
2	1 x 2250	5000
3	2 x 2250	7250
4	3 x 2250	9500

– ALL OTHER DIMENSIONS REMAIN THE SAME.

Padmount Substation Layout (external type substation), multiple can be utilised adjacent one another

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: **33160935142**

5. ENL Response

From: **John Le** <John.Le@endeavourenergy.com.au>
Date: Tue, Jul 8, 2025 at 11:11 AM
Subject: RE: ENL7173 - 7, 135 BADGERYS CREEK ROAD BRADFIELD - Planning Reply
To: INFO AAPE P/L <info@aapowereng.com>

Hi Ali,

Planning has the following reply.

The ultimate servicing strategy for this area is to be supplied at 22kV from a new West Bradfield City ZS. The initial servicing strategy for the area is extend feeders from Bradfield North ZS (currently under construction, due for completion mid 2026) to supply the initial developments. Bradfield North ZS will be located just south of the Ingham development on the Eastern side of Badgerys Creek Rd.

The timing for West Bradfield City ZS is not yet committed but is unlikely to be before 2032 so it won't meet the customers timing needs.

For the amount of load requested the customer would be required to run a new 22kV feeder from Bradfield North ZS. Will their development have any HV connectivity across the riparian corridor that runs through the site? If there is no HV connectivity, then each side will have to be given separate MOS. We would look to incorporate their feeders into adjacent feeders where possible to minimize the cost to developer.

John Le | Customer Solutions Engineering Specialist

P 9853 7658 M 0447 170 224

Level 40-42, 8 Parramatta Square, 10 Darcy Street

Parramatta NSW 2150. Dharug Country

endeavourenergy.com.au

Endeavour Energy respectfully acknowledges the Traditional Custodians on whose lands we live, work, and operate and their Elders past, present and emerging.

AA POWER ENGINEERING
• CONSULTING • PROJECT MANAGEMENT

Ph: (02) 9553 1857
Address: Suite 4, 15-17 Forest Rd, Hurstville, NSW 2220
Postal Address: PO BOX 910 HURSTVILLE NSW 1481
ABN: 33160935142

6. Potential Staging

There are two particular components relevant to the staging of the electrical infrastructure works – both of these elements are to be funded by the customer, under Endeavour Energy's 'causer pays' policy:

- Substations: The substations will need to be installed in accordance with section 4 – Substations. The substation will need to be install prior to completion of each stage.
- High Voltage Feeder: Endeavour Energy have identified that a high voltage feeder is required at some point of the development. This may or may not be required for stage 1, or 2, however it has been identified that it will certainly be required at stage 3 or prior.

The following RFI was raised under technical enquiry ENL7173, in additional to the information provided in section 5:

*We can however look at an interim connection to proposed 22kV feeder **NF2332 Badgerys Creek Rd South** from North Bradfield ZS with a X-FDR tie to feeder **NF2232 Bradfield City No.2** to get things going. Provision will need to be made for the future permanent feeder to be terminated at a predetermined location advised by the planner.*

Endeavour Energy will only provide final decisions in regards to high voltage staging requirements until the development is approved, and lodges a formal application for connection of load.