EIS Volume 2 Appendix E

Preliminary Plans of the Proposed Substation

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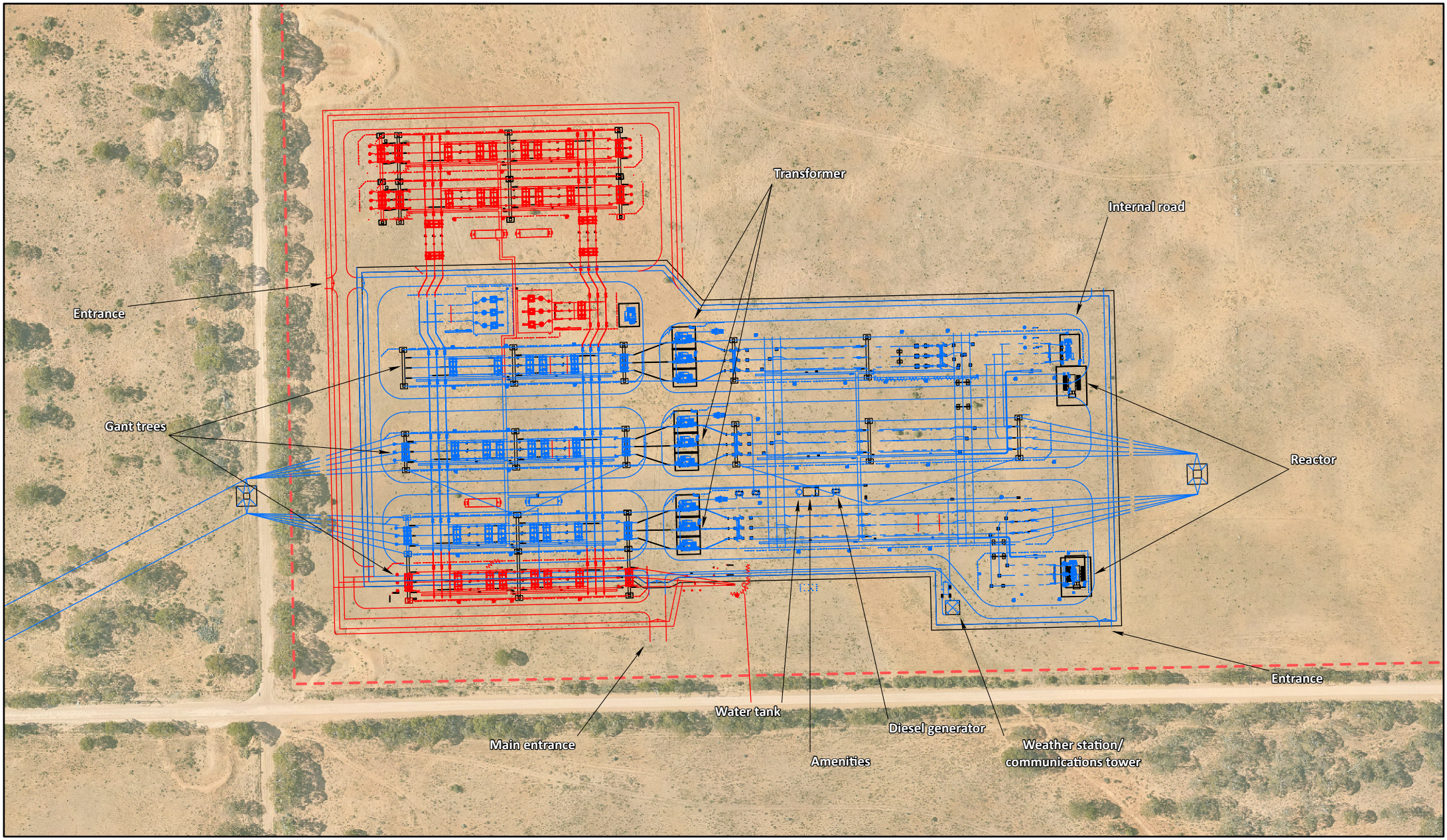
Appendix E Preliminary Plans - Proposed Substation

EIS Guidelines

The EIS Guidelines require a number of plans and forms for the proposed Project infrastructure to be provided as part of the EIS. Given the iterative nature of the Project design process, only preliminary plans are available at this stage of the development. Detailed design, final results of geotechnical investigations, micro-siting surveys, final landholder agreements and requirements will all inform the final location and built form of the proposed infrastructure. The table below provides a summary of the general Guideline requirement applicable to the proposed Bundey substation.

Table 1: Summary of EIS Guideline requirements and status of appended proposed substation plans

EIS Guidelines and Assessment Requirements	Current status
• **Context and locality plans** should illustrate and analyse the existing environment and site conditions and the relationship of the proposal to surrounding land and buildings. The plan should be drawn to a large scale and be readily legible. The plan(s) should indicate: - any neighbouring buildings, infrastructure or facilities, including identification of all nearest sensitive receptors and the likely use of existing or proposed neighbouring buildings (e.g. dwelling, farm outbuildings, shop, office) - location of any watercourse, dams, underground wells and/or any other environmentally sensitive areas - location of any state heritage and cultural heritage in relation to the site - existing native vegetation, regulated or significant trees - known sites for protected, threatened or vulnerable species, including migratory species, on the site, the adjoining land and riverine environment - existing roads and access tracks (public & private) - any other information that would help to set the context for the locality	• **Context and locality plans** – locality plans are included throughout Chapters 9 – 19 of Volume One of the EIS, including the current baseline environment in relation to the proposed substation.
• **Site plan(s)** (drawn at a scale of 1:100 or 1:200) clearly indicating all proposed buildings, structures and works.	• **Site plan(s)** – preliminary site plans of the proposed Bundey Substation and repeater station are included in this Appendix.
• **Elevations** (drawn at a scale of 1:100 or 1:200) showing all sides of the buildings, structures and works with levels and height dimensions provided in Australian Height Datum. • **Cross sections of the buildings**, structures and works, including stockpile and storage facilities showing ground levels, floor levels, ceiling heights and maximum height in Australian Height Datum.	• **Elevations and cross sections of buildings** – preliminary substation plans and tower cross sections are included in this Appendix. Final designs are subject to detailed design and construction planning.
• **Route survey plan** that shows indicative easement corridor and the location of towers within easement. • **Any technical or engineering drawings and specifications** including geotechnical data, details of cut and fill and depth to groundwater.	• **Route survey plan** – refer Appendix D. Final designs are subject to detailed design and construction planning. • **Any technical or engineering drawings and specifications** – Refer to Chapter 7 Project Description.



Proposed Bundey substa on Cer cate of Title

Indica ve Bundey substa on layout

Current proposed

Poten al future

Figure 1
Indicative layout of the proposed Bundey substation

0 100

metres

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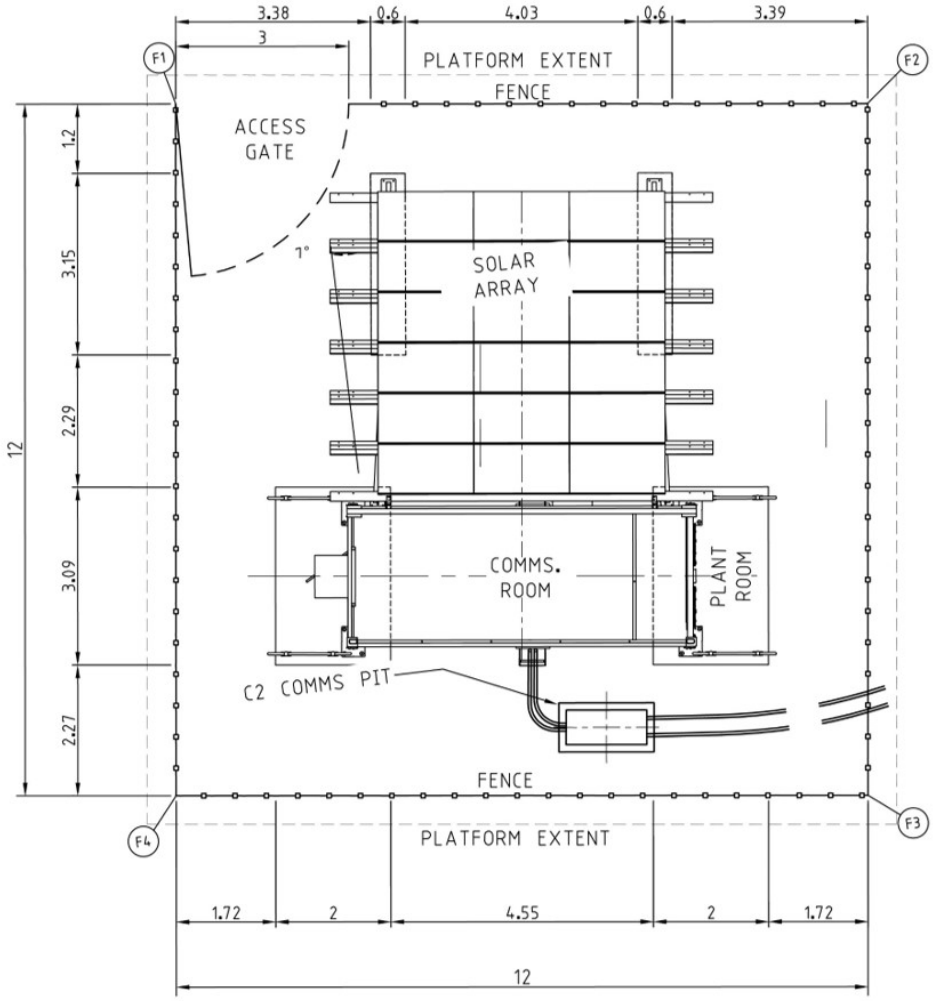

Figure 2
Example layout of the proposed repeater station

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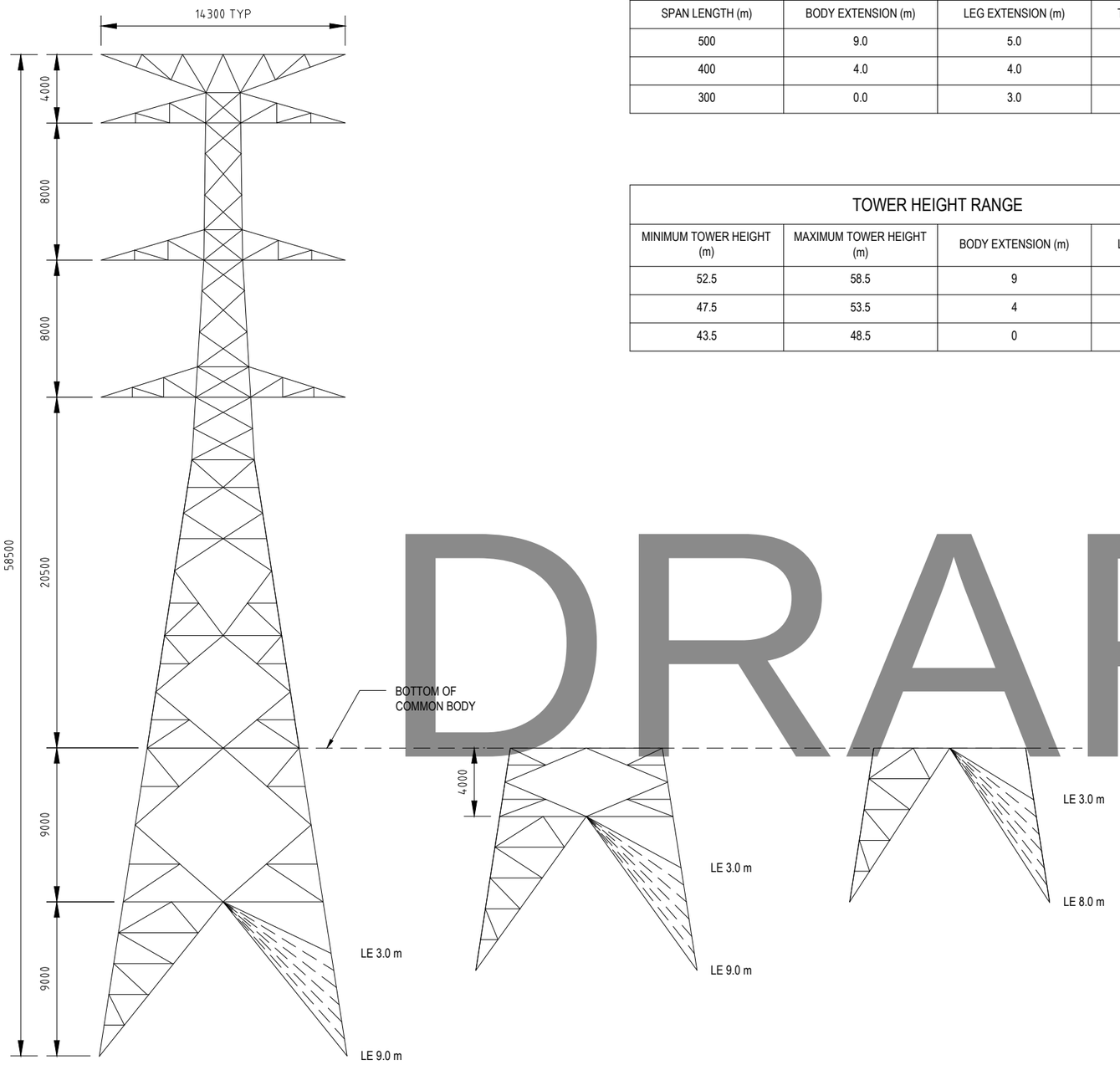

TRANSVERSE ELEVATION
(MAXIMUM HEIGHT TOWER)
9m BODY EXTENSION
LEG EXTENSIONS 3 m TO 9 m

4m BODY EXTENSION
LEG EXTENSIONS 3 m TO 9 m

0m BODY EXTENSION
LEG EXTENSIONS 3 m TO 8 m

INDICATIVE TOWER HEIGHT AND WEIGHT vs SPAN LENGTH				
SPAN LENGTH (m)	BODY EXTENSION (m)	LEG EXTENSION (m)	TOWER HEIGHT[2] (m)	TOWER WEIGHT (kg)
500	9.0	5.0	54.5	19100
400	4.0	4.0	48.5	16700
300	0.0	3.0	43.5	13600

TOWER HEIGHT RANGE			
MINIMUM TOWER HEIGHT (m)	MAXIMUM TOWER HEIGHT (m)	BODY EXTENSION (m)	LEG EXTENSION (m)
52.5	58.5	9	3 TO 9
47.5	53.5	4	3 TO 9
43.5	48.5	0	3 TO 8

REFERENCES:

2589087-UT-001/2 LIGHT SUSPENSION ELECTRICAL CLEARANCE DIAGRAM
2589087-UT-001/3 LIGHT SUSPENSION LOADING CHART

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS STATED OTHERWISE.
2. TOWER HEIGHTS ARE PROVIDED FOR GUIDANCE ONLY AND ARE BASED ON THE FOLLOWING:
   - TWIN MANGO ACSR CONDUCTOR WITH MAXIMUM OPERATING TEMPERATURE OF 120°C.
   - FLAT TERRAIN, WITH HEIGHTS GOVERNED BY MID SPAN GROUND CLEARANCE UNDER MAXIMUM OPERATING TEMPERATURE CONDITION.
   - A MAXIMUM EVERYDAY TENSION OF 22.5% UTS. NOTE TENSIONS WILL VARY DEPENDENT UPON THE RULING SPAN OF THE SECTION.
3. STRUCTURE WEIGHTS SHOWN INCLUDE THE FOLLOWING;
   - 2 m LONG STUB LEGS.
   - 10% ALLOWANCE FOR GUSSETS AND PLATES.
4. STRUCTURE WEIGHTS SHOWN EXCLUDE ANY ALLOWANCE FOR BOLTS, LADDERS, AND GALVANISING.

DRAFT

ORIGINAL DRAWING IN COLOUR

No.	Revision	By	Chk	Appd	Date
A	ISSUED FOR INFORMATION	MB	HG	MJ	05.19

Drawing Originator: Beca

Original Scale (A3): 1:300

Design	MB	05.19	Approved For Construction*
Drawn	MD	05.19	
Dsg Verifier	HG	05.19	
Dwg Check	MB	05.19	Date

* Refer to Revision 1 for Original Signature

Client: TransGrid / ElectraNet

Project: ENERGYCONNECT

Title: ROBERTSTOWN TO BURONGA 330kV LIGHT SUSPENSION STRUCTURE OUTLINE

Discipline: TRANSMISSION

Drawing No.: 2589087-UT-001/1

Rev.: A

Document No. 2589087-UT-001_1.DWG

DO NOT SCALE

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INDICATIVE TOWER HEIGHT ADN WEIGHT vs SPAN LENGTH				
SPAN LENGTH (m)	BODY EXTENSION (m)	LEG EXTENSION (m)	TOWER HEIGHT[2] (m)	TOWER WEIGHT (kg)
600	16.0	7.0	63.5	31500
500	9.0	5.0	54.5	23800
400	4.0	4.0	48.5	19100
300	0.0	3.0	43.5	15800

TOWER HEIGHT RANGE			
MINIMUM TOWER HEIGHT (m)	MAXIMUM TOWER HEIGHT (m)	BODY EXTENSION (m)	LEG EXTENSION (m)
60.5	63.5	16	4 TO 7
57.5	61.5	13	4 TO 8
52.5	58.5	9	3 TO 9
47.5	53.5	4	3 TO 9
43.5	48.5	0	3 TO 8

REFERENCES:

2589087-UT-002/2 HEAVY SUSPENSION ELECTRICAL CLEARANCE DIAGRAM
2589087-UT-002/3 HEAVY SUSPENSION LOADING CHART

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS STATED OTHERWISE.
2. TOWER HEIGHTS ARE PROVIDED FOR GUIDANCE ONLY AND ARE BASED ON THE FOLLOWING:
   - TWIN MANGO ACSR CONDUCTOR WITH MAXIMUM OPERATING TEMPERATURE OF 120°C
   - FLAT TERRAIN, WITH HEIGHTS GOVERNED BY MID SPAN GROUND CLEARANCE UNDER MAXIMUM OPERATING TEMPERATURE CONDITION
   - A MAXIMUM EVERYDAY TENSION OF 22.5% UTS. NOTE TENSIONS WILL VARY DEPENDENT UPON THE RULING SPAN OF THE SECTION.
3. STRUCTURE WEIGHTS SHOWN INCLUDE THE FOLLOWING;
   - 2 m LONG STUB LEGS.
   - 10% ALLOWANCE FOR GUSSETS AND PLATES.
4. STRUCTURE WEIGHTS SHOWN EXCLUDE ANY ALLOWANCE FOR BOLTS, LADDERS, AND GALVANISING.

TRANSVERSE ELEVATION
(MAXIMUM HEIGHT TOWER)
16 m BODY EXTENSION
LEG EXTENSIONS 4 m TO 7 m

13 m BODY EXTENSION
LEG EXTENSIONS 4 m TO 8 m

9 m BODY EXTENSION
LEG EXTENSIONS 3 m TO 9 m

4m BODY EXTENSION
LEG EXTENSIONS 3 m TO 9 m

0m BODY EXTENSION
LEG EXTENSIONS 3 m TO 8 m

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ORIGINAL DRAWING IN COLOUR

No.	Revision	By	Chk	Appd	Date
B	ISSUED FOR INFORMATION	MB	HG	MJ	05.19
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Drawing Originator: Beca

Original Scale (A3): 1:300

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Drawn	MD	05.19	
Dsg Verifier	HG	05.19	
Dwg Check	MB	05.19	Date

* Refer to Revision 1 for Original Signature

Client: TransGrid / ElectraNet

Project: ENERGYCONNECT

Title: ROBERTSTOWN TO BURONGA 330kV HEAVY SUSPENSION STRUCTURE OUTLINE

Discipline: TRANSMISSION

Drawing No.: 2589087-UT-002/1

Rev.: B

Document No. 2589087-UT-002_1.DWG

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INDICATIVE TOWER HEIGHT AND WEIGHT vs SPAN LENGTH				
SPAN LENGTH (m)	BODY EXTENSION (m)	LEG EXTENSION (m)	TOWER HEIGHT[2] (m)	TOWER WEIGHT (kg)
600	16.0	7.0	64.5	39100
500	9.0	5.0	54.5	31500
400	4.0	4.0	48.5	25100
300	0.0	3.0	44.5	21400

TOWER HEIGHT RANGE			
MINIMUM TOWER HEIGHT (m)	MAXIMUM TOWER HEIGHT (m)	BODY EXTENSION (m)	LEG EXTENSION (m)
61.5	64.5	16	4 TO 7
58.5	62.5	13	4 TO 8
53.5	59.5	9	3 TO 9
48.5	54.5	4	3 TO 9
44.5	49.5	0	3 TO 8

REFERENCES:

2589087-UT-004/2 MEDIUM ANGLE STRAIN ELECTRICAL CLEARANCE DIAGRAM
2589087-UT-004/3 MEDIUM ANGLE STRAIN LOADING CHART

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS STATED OTHERWISE.
2. TOWER HEIGHTS ARE PROVIDED FOR GUIDANCE ONLY AND ARE BASED ON THE FOLLOWING:
   - TWIN MANGO ACSR CONDUCTOR WITH MAXIMUM OPERATING TEMPERATURE OF 120°C
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   - A MAXIMUM EVERYDAY TENSION OF 22.5% UTS. NOTE TENSIONS WILL VARY DEPENDENT UPON THE RULING SPAN OF THE SECTION.
3. STRUCTURE WEIGHTS SHOWN INCLUDE THE FOLLOWING;
   - 2 m LONG STUB LEGS.
   - 10% ALLOWANCE FOR GUSSETS AND PLATES.
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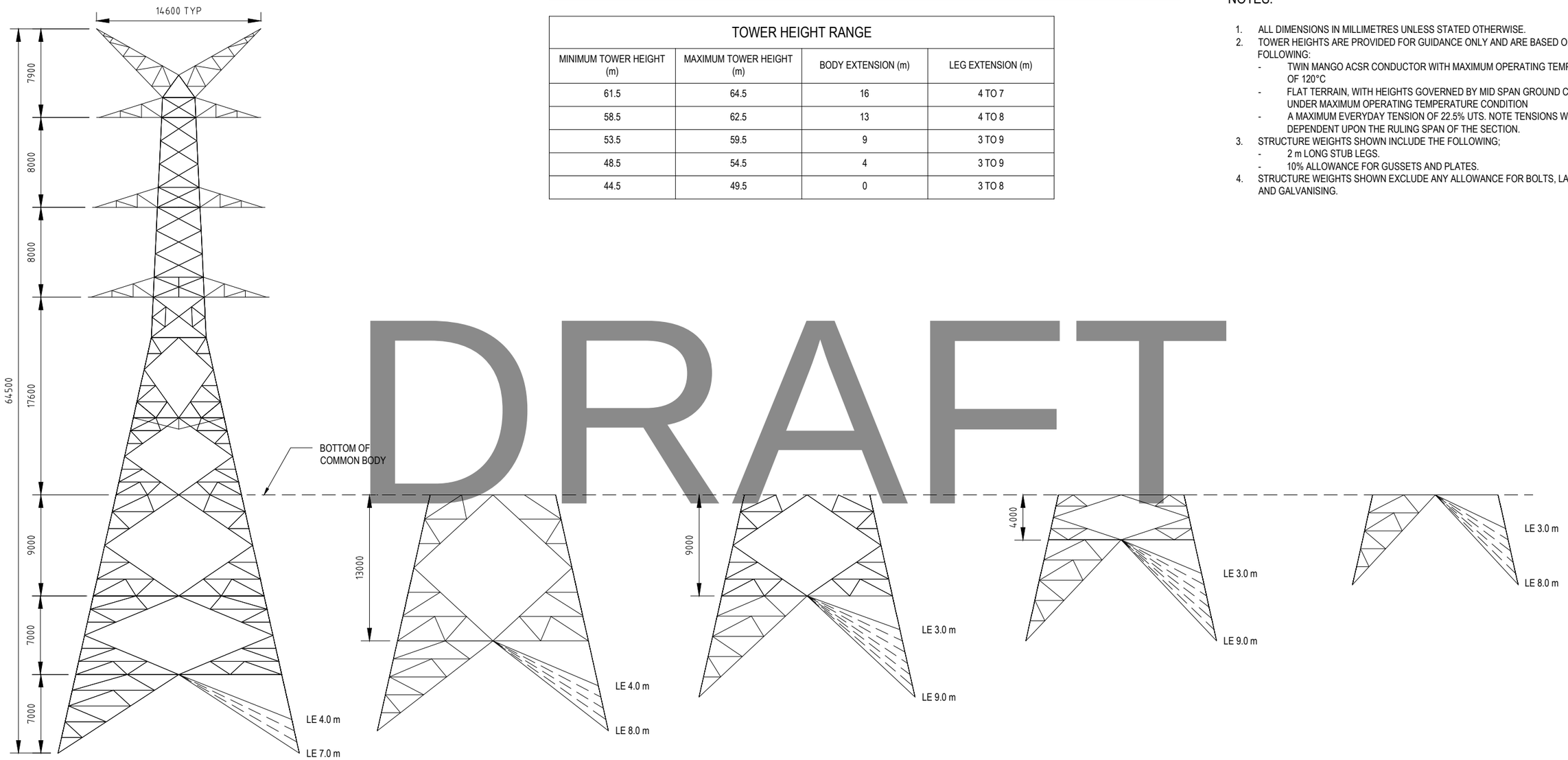

TRANSVERSE ELEVATION
(MAXIMUM HEIGHT TOWER)
16 m BODY EXTENSION
LEG EXTENSIONS 4 m TO 7 m

13 m BODY EXTENSION
LEG EXTENSIONS 4 m TO 8 m

9 m BODY EXTENSION
LEG EXTENSIONS 3 m TO 9 m

4m BODY EXTENSION
LEG EXTENSIONS 3 m TO 9 m

0m BODY EXTENSION
LEG EXTENSIONS 3 m TO 8 m

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No.	Revision	By	Chk	Appd	Date
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Approved For Construction* Date

* Refer to Revision 1 for Original Signature

Client: TransGrid / ElectraNet

Project: ENERGYCONNECT

Title: ROBERTSTOWN TO BURONGA 330kV MEDIUM ANGLE STRAIN TOWER OUTLINE

Discipline: TRANSMISSION

Drawing No.: 2589087-UT-004/1

Rev.: B

Document No. 2589087-UT-004_1.DWG

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