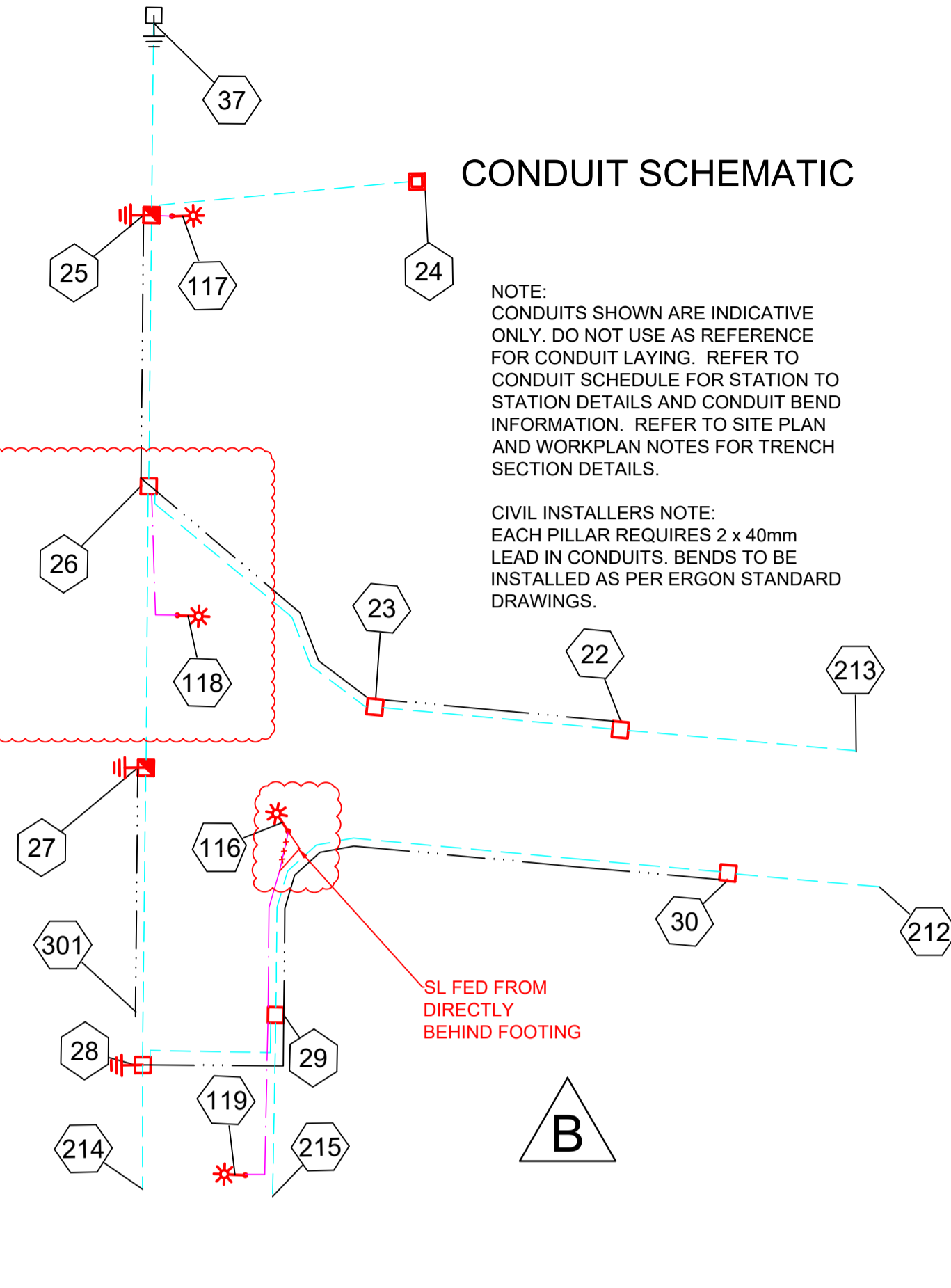
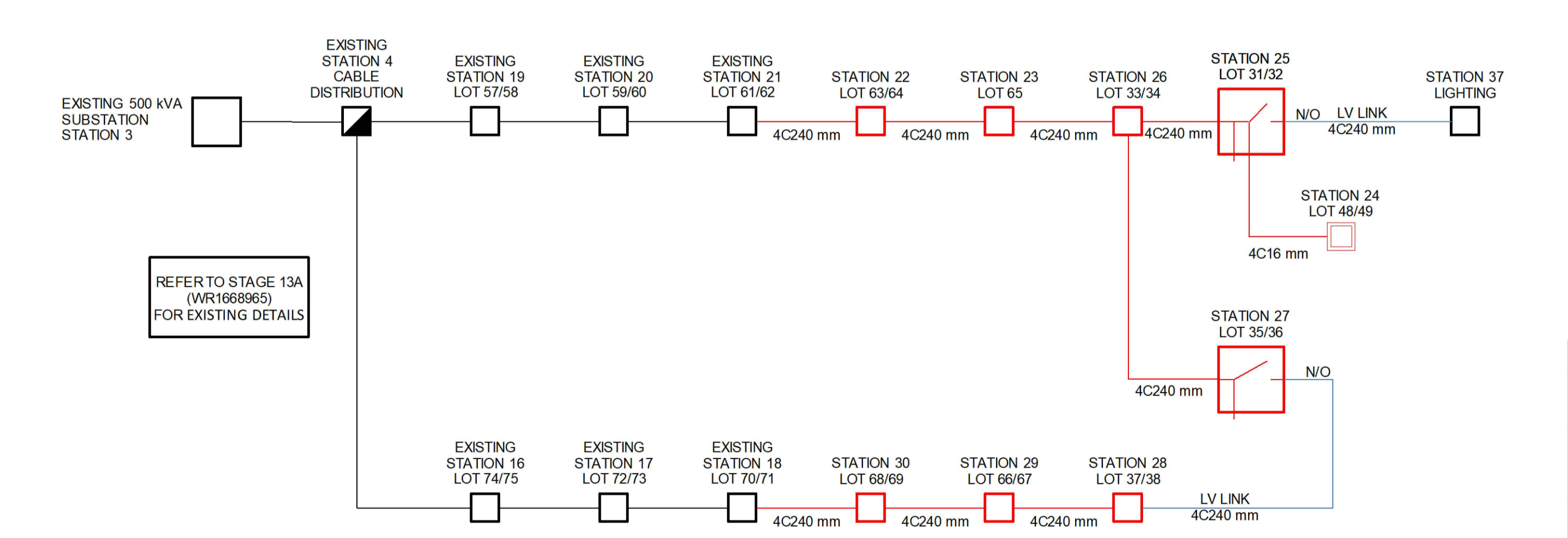


LV SCHEMATIC



SPA LIGHTING DESIGN COMPLIANCE CERTIFICATE

THIS LIGHTING DESIGN COMPLIES GENERALLY WITH THE NOMINATED CATEGORIES OF AS1158 FOR RATE 1 AND RATE 2 LUMINAIRES.

NAME: JANE ERREY TITLE: SENIOR ELECTRICAL ENGINEER RPEQ: 6863

LIGHTING CATEGORIES: LOCAL COUNCIL: LUMINAIRE UPCAST: MAINTENANCE FACTOR

CATEGORY P4 TOWNSVILLE CITY COUNCIL 0 DEGREES UPCAST ANGLE 0.75

THE DESIGN ASSUMES MAINTENANCE FACTORS OF 0.75 FOR MINOR ROAD LIGHTING AND 0.75 FOR MAJOR ROAD LIGHTING. THESE MAINTENANCE FACTORS ARE BASED ON THE FOLLOWING MAINTENANCE SCHEDULE, WHICH MIGHT NOT NECESSARILY BE ADOPTED BY ERGON.

- LAMPS SHALL BE REPLACED AT 36- MONTH INTERVALS.
- ALL THAT TIME, LUMINAIRES SHALL BE CLEANED, INSPECTED AND MAINTAINED.
- VEGETATION SHALL BE KEPT CLEAR OF STREET LIGHTS.
- INSPECTION PATROLS AND SPOT LAMP REPLACEMENT SHALL MAINTAIN SERVICE AVAILABILITY AT NO LESS THAN 95%.
- LUMINAIRES AND LAMPS SHALL BE REPLACED WITH EXACT EQUIVALENTS.

ALL LIGHTING CALCULATIONS ARE AVAILABLE UPON REQUEST.

FOR LIGHTING ARRANGEMENT, SPACINGS, MOUNTING HEIGHTS, OUTREACH DETAILS AND SIGNIFICANT ROAD FEATURES, REFER TO DRAWING.

WORKPLAN NOTES

- FOR STANDARD UNDERGROUND DUCT SECTIONS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5168.
- POLYMERIC COVER TO BE INSTALLED OVER CONDUITS OUTSIDE NORMAL ERGON ALIGNMENT AS PER ERGON DRAWING. 5022-1 AND 5124-1 & 2.
- STANDARD TRENCH ALIGNMENT IS 0.3 TO 0.9 METRES OFF PROPERTY ALIGNMENT SUBJECT TO LOCATION OF OTHER SERVICES. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5163 AND DRAWING 5228 FOR TRENCHES WITH NBNC CONDUITS.
- STREETLIGHT POLE FOOTINGS SHALL BE LOCATED PERPENDICULAR TO THE KERB, AT THE PROLONGATION OF THE SIDE PROPERTY BOUNDARY, UNLESS DETAILED OTHERWISE. WHERE DIMENSIONS ARE SHOWN, THEY TAKE PRECEDENCE OVER GRID COORDINATES.
- ALL CONDUITS SHALL BE CONTINUOUS UNLESS DETAILED OTHERWISE.
- FOR STANDARD UDC CONSTRUCTION PRACTICES REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWINGS 5022, 5085 AND 5124.
- DEVELOPER SHALL INSTALL PLINTH AND CONCRETE SURROUND. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWINGS 5004 & 5005 AND RMU DWG 5217.
- THERE ARE 4 x 17W LED SYLVANIA STREET MINOR ROAD STREETLIGHTS ON RATE 2.
- STREETLIGHT DESIGN TO AS1158 CATEGORY P4.
- MINOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 1200mm FOR MINOR STREETLIGHTS. FOR ALL OTHER FOOTPATH WIDTHS, CENTRELINE OF STREETLIGHT SHALL BE 1.05m FROM BACK OF KERB. WHERE THE ROAD IS UN-KERBED OR THERE IS A FLUSH KERB, CENTRELINE OF STREETLIGHT SHALL BE 1.3m FROM THE OUTER EDGE OF THE BITUMEN.
- THE LIGHTING DESIGN INCLUDES AN ALLOWANCE FOR CONSTRUCTION TOLERANCE OF LIGHT POLES SUCH THAT ANY STREETLIGHT CAN BE POSITIONED UP TO A MAXIMUM OF ±350mm LONGITUDINALLY FROM THE POSITION SHOWN AND UP TO 100mm MAXIMUM FURTHER FROM KERB EDGE, INCLUDING POLES WITH GRID COORDINATES, AND STILL MAINTAIN COMPLIANCE.
- CONFIRM ALL CONDUIT AND CABLE LENGTHS PRIOR TO INSTALLATION.
- IN ACCORDANCE WITH ELECTRICAL SAFETY ACT, A SAFETY OBSERVER MUST BE PRESENT AT ALL TIMES WHEN WORKING IN THE VICINITY OF ENERGISED CABLES. CONTACT ERGON ENERGY ON 131046.
- WHERE SHOWN, 35mm sq ANNEALED BARE Cu EARTH SHALL BE INSTALLED AT BOTTOM OF TRENCH, IN NATURAL SOIL. BELOW BEDDING SAND, LOCATED A MINIMUM OF 50mm HORIZONTALLY TOWARDS PROPERTY BOUNDARY FROM CONDUITS (HV OR LV) INSTALLED ON PROPERTY BOUNDARY SIDE OF TRENCH. COIL 2m OF CABLE AT SPECIFIED STATIONS IN THE CONDUIT DUCTING SCHEDULE AND ALL REQUIRED JOINTS FOR CONNECTION BY ELECTRICAL CONTRACTOR. THE USE OF THE EARTH ROD CONNECTOR (U-BOLT, IIN. 0719437) IS NOT ACCEPTABLE FOR CONDUCTOR / CABLE TO CONDUCTOR / CABLE CONNECTIONS. IN ADDITION PARALLEL GROOVE CLAMPS ARE NOT ACCEPTABLE FOR JOINTING OR CONNECTING EARTHS BELOW GROUND LEVEL. ACCEPTABLE METHODS SHALL BE EITHER A CRIMP LINK OR A 'C' TYPE COMPRESSION CONNECTOR. CRIMP LINKS AND 'C' TYPE COMPRESSION CONNECTORS ARE AVAILABLE FROM ERGON ENERGY STORES IIN. 0157746 AND IIN. 2406222 RESPECTIVELY.
- ELECTRONIC CABLE MARKERS (ECM'S) ARE TO BE SUPPLIED BY THE ELECTRICAL CONTRACTOR AND ARE REQUIRED AT ENDS OF ALL SPARE CONDUITS AND AT ALL CABLE JOINTS. ECM'S SHALL BE PLACED 150mm ABOVE THE LINE OF CONDUIT FOR CABLE JOINTS AND 150mm ABOVE THE LINE OF CONDUIT FOR SPARE CONDUITS. ECM'S ARE RECOVERABLE AND SHALL BE RETURNED TO THE ELECTRICAL CONTRACTOR WHEN ALL SPARE CONDUIT ENDS ARE REMOVED FROM A LOCATION.
- WHERE NOTED ON THE DESIGN, ELECTRICAL CONDUITS SHALL BE INSTALLED UNDERNEATH STORMWATER PIPES WHERE CLASHES OCCUR. SEPARATION FROM BOTTOM OF STORMWATER PIPE TO TOP OF ERGON CONDUIT SHALL BE NO LESS THAN 300mm.
- ADDITIONAL CONDUIT BENDS SHALL BE INSTALLED TO ACHIEVE INCREASED BURIAL DEPTH AT ROAD CROSSINGS. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5022.
- ALL CONTRACTORS MUST CARRY OUT A DIAL BEFORE YOU DIG ENQUIRY BEFORE COMMENCING ANY EXCAVATION.
- INSTALL PILLAR OFFSET IN ACCORDANCE WITH ERGON DRAWING 5196-2 & DETAIL B.
- CONTRACTOR TO SUPPLY AND INSTALL ENGRAVED LABEL LOCATED ON LIGHTING TERMINAL STATING "LIGHT FED FROM PILLAR ASSET NUMBER _____"
- WARNING:** LIVE CABLES AND EXISTING SERVICES IN AREA. CONTRACTOR TO USE POT HOLING, HYDRO-VAC EXCAVATION AND CABLE LOCATION WHEN INSTALLING NEW INFRASTRUCTURE.

Rev Date 24-1-18

STN NO	SITE LABEL	POLE ALIGNMENT	POLE SETTING DEPTH	ACTION	CONSTRUCTION CLASS	CONSTRUCTION CODE	DRAWING NUMBER	POSITION ON POLE	REMARKS
18	11809662			INSTALL - ERGON	PILLAR UPGRADE	LV PNU1-2/240/N	5074		ERGON ENERGY TO UPGRADE PILLAR TO 2 WAY AND TERMINATE CABLE FROM 18 TO 30
21	11809622			INSTALL - ERGON	PILLAR UPGRADE	LV PNU1-2/240/N	5074		ERGON ENERGY TO UPGRADE PILLAR TO 2 WAY AND TERMINATE CABLE FROM 21 TO 22
37	11871521			INSTALL - ERGON	PILLAR UPGRADE	LV PNU1-2/240/N	5074		ERGON ENERGY TO UPGRADE PILLAR TO 2-WAY IN THIS STAGE AND TERMINATE CABLE FROM STN 37 TO 25.

AS CONSTRUCTED

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO PROJECT MANAGER

CHANGES: YES/NO

ELECTRICAL CONTRACTOR

NAME: Powerup Project Reticulation

SIGNATURE: Ben Hall

DATE: 24/2/23

CIVIL CONTRACTOR

NAME: BMD Construction

SIGNATURE: Anthony Burke

DATE: 18/11/22

Code	Date	Description	Revised	Code	Date	Description	Revised
B	27/2/23	AS CONSTRUCTED	SW				
A	25/03/22	FOR CONSTRUCTION	NJ				

CLIENT: URBEX PTY LTD (TOWNSVILLE)

PO Box 6008, TOWNSVILLE, QLD. 4810 Ph. 07 4750 7007 Fax

CIVIL ENGINEER Empower Engineers & Project Managers (Townsville)

PO Box 6008, TOWNSVILLE, QLD. 4810 Ph. 07 4750 7000 Fax

spa consulting engineers

Tel: (07) 4032 3311 Fax: (07) 4032 5633

PO Box 664 North Cairns QLD 4870

Email Address: admin@spaconsulting.com.au

A business unit of SPA Consulting Engineers (Qld) Pty Ltd a.s. 91 010 844 418

LEGEND

--- CABLE EXISTING	□ SUBSTATION	□ COMMERCIAL/ INDUSTRIAL PILLAR
--- CABLE PLANNED	✓ HV ISOLATING DEVICE	□ DISTRIBUTION CABINET
--- CABLE RECOVER	LV ISOLATING DEVICE	* STREETLIGHT
--- EQUIPMENT EXISTING	□ NORMAL PILLAR	--- EARTH
--- EQUIPMENT RECOVER	□ CROSS ROAD PILLAR	○ POLE
--- LIGHTING DUCT	□ LINKING PILLAR	□ CABLE JOINT
--- 35mm sq ANNEALED BARE COPPER EARTH		

Drawing Title

THE RESERVE (KALYNDA CHASE) STG 13B UDC UG ELECTRICAL RETICULATION SITE PLAN, ERGON WORKS SCHEDULE SCHEMATICS

Date: APRIL 2022

Scale: 1:500@A1

Drawn: NJ

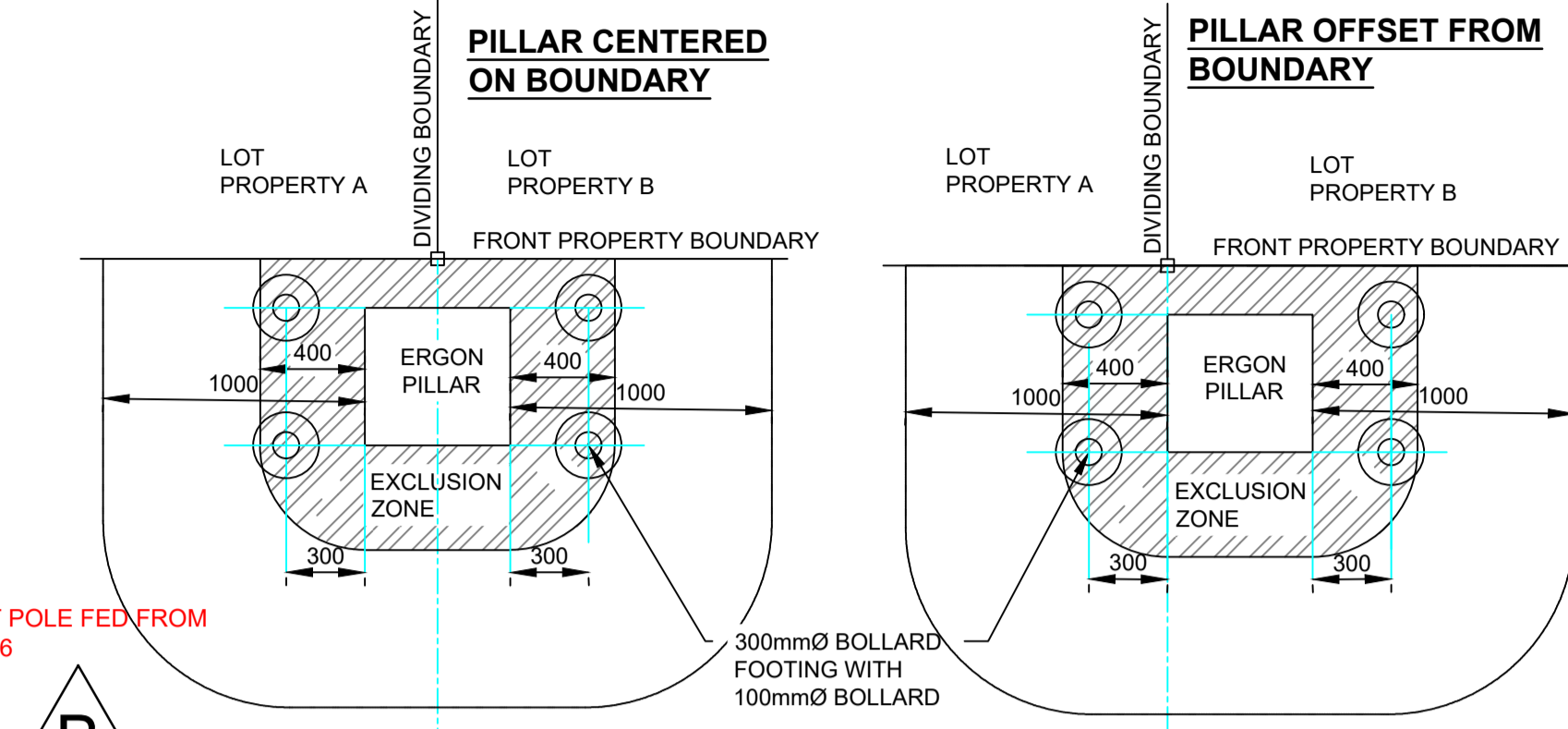
RPEQ Design Certification Jane Errey 6863

Sheet: 1 OF 2

Project Description: KALYNDA CHASE, BOHLE PLAINS

ERGON Project Number: 1668991 SPA Drawing Number: 3392-E01 Revision: B

UNDERGROUND CABLE SCHEDULE							
STN FROM	STN TO	ACTION	VOLTAGE	CONSTRUCTION CODE	ROUTE LENGTH	CABLE LENGTH	REMARKS
18	30	INSTALL	415V	LVI-240C4/1611	25	29	COIL CABLE AT STN 18 FOR FINAL TERMINATION BY ERGON ENERGY.
21	22	INSTALL	415V	LVI-240C4/1611	26	30	COIL CABLE AT STN 21 FOR FINAL TERMINATION BY ERGON ENERGY.
22	23	INSTALL	415V	LVI-240C4/1611	13	17	
23	26	INSTALL	415V	LVI-240C4/1611	43	47	
25	24	INSTALL	415V	LVI-16CUC4/1601	27	31	
25	117	INSTALL	240V	LVI-4CU2NS/1671	5	10	
26	25	INSTALL	415V	LVI-240C4/1611	25	29	
26	27	INSTALL	415V	LVI-240C4/1611	27	31	
26	27	INSTALL	240V	LVI-4CU2NS/1671	17	22	
28	27	INSTALL	415V	LVI-240C4/1611	29	33	LV LINK
29	28	INSTALL	415V	LVI-240C4/1611	18	22	
29	116	INSTALL	240V	LVI-4CU2NS/1671	18	23	
29	119	INSTALL	240V	LVI-4CU2NS/1671	17	22	
30	29	INSTALL	415V	LVI-240C4/1611	58	62	
37	25	INSTALL	415V	LVI-240C4/1611	19	23	COIL CABLE AT STN 37 FOR FINAL TERMINATION BY ERGON ENERGY. LV LINK



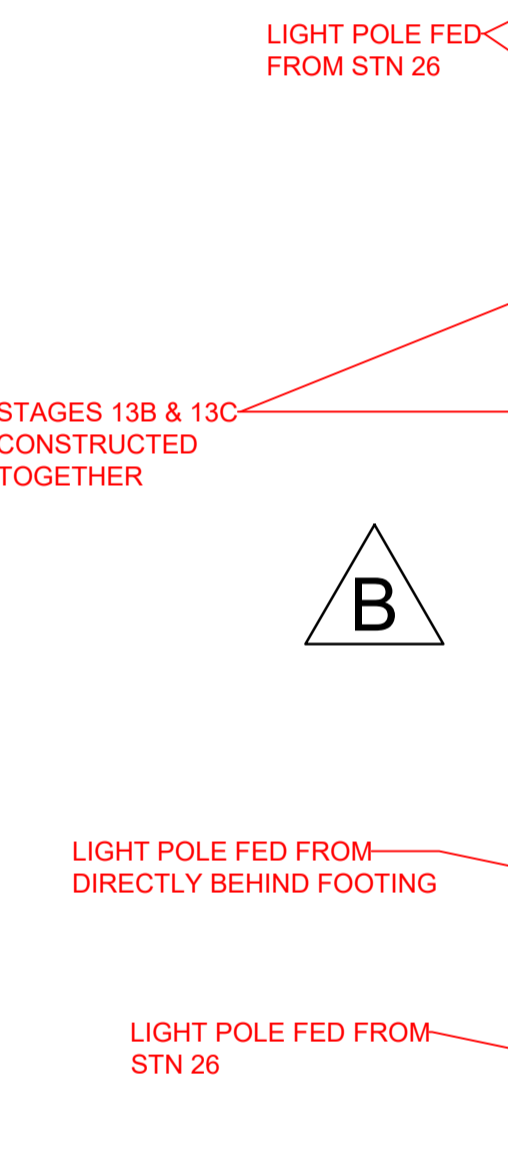
DETAIL B: PILLAR ON BUILD TO BOUNDARY LOTS

- PILLAR TO BE INSTALLED OFFSET FROM PROPERTY BOUNDARY TOWARD ADJACENT LOT, UNLESS DRIVEWAY ACCESS FOR BOTH LOTS ARE LOCATED ON THE COMMON BOUNDARY.
- EDGE OF PILLAR CANNOT BE LOCATED MORE THAN 100mm FROM PROPERTY BOUNDARY PEG.
- DRIVEWAY ACCESS TO LOTS CANNOT BE LOCATED WITHIN 1m OF THE EDGE OF PILLAR, OR SAFETY BOLLARDS MUST BE INSTALLED, AS SHOWN.

PUBLIC LIGHTING SCHEDULE							
STN NO	SITE LABEL	ACTION	CONSTRUCTION CODE	RATE	TARIFF OWNER	MOUNTING HEIGHT (m)	REMARKS
115	11809660	EXISTING					
116	12505944	INSTALL	SLED GL 0167 N	RATE 2	TCC	7.5	
117	12505945	INSTALL	SLED GL 0167 N	RATE 2	TCC	7.5	
118	12505946	INSTALL	SLED GL 0167 N	RATE 2	TCC	7.5	
119	12505947	INSTALL	SLED GL 0167 N	RATE 2	TCC	7.5	

CONDUIT DUCTING SCHEDULE							
STN FROM	STN TO	ACTION	CONSTRUCTION CODE	LENGTH (m)	No. of LENGTHS / DRUM	BENDS (Degrees/ Radius(mm) x No.)	Remarks
22	23	INSTALL - CIVIL	C80L	13	2.2	45/1200x2	
22	25	INSTALL - CIVIL	35mm2 ANNEALED BARE Cu EARTH	83	0.3		COIL 2M OF CABLE AT STN 25 FOR CONNECTION BY ERGON ENERGY. LEAVE AT BOTTOM OF TRENCH AT STN 22.
22	213	INSTALL - CIVIL	C80L	23	3.8	45/1200x1	LOCATE EXISTING CAPPED CONDUIT AT 213. CONNECT TO NEW.
23	26	INSTALL - CIVIL	C80L	43	7.2	45/1200x2 45/1830x1 30/1830x3 15/1830x2	ADD BEND TO AVOID NBN PIT.
25	24	INSTALL - CIVIL	C80L	27	4.5	90/450x2 45/1830x1 15/1830x2	ADD BEND TO AVOID STREET LIGHT.
25	31	INSTALL - CIVIL	C80L	19	3.2	45/1200x2	
25	117	INSTALL - CIVIL	C50H	5	1.3	90/300x2	
26	25	INSTALL - CIVIL	C80L	25	4.2	45/1200x2	
26	27	INSTALL - CIVIL	C80L	27	4.5	45/1200x2	
26	27	INSTALL - CIVIL	C50H	17	4.3	90/300x2 90/600x1	
27	301	INSTALL - CIVIL	35mm2 ANNEALED BARE Cu EARTH	27	0.1		COIL 2M OF CABLE AT STN 27 FOR CONNECTION BY ERGON ENERGY. LEAVE AT BOTTOM OF TRENCH AT STN 301.
28	27	INSTALL - CIVIL	C80L	29	4.8	45/1200x2	
29	28	INSTALL - CIVIL	C80L	18	3.0	45/1200x2 45/1830x4 15/1830x4	ADD BEND TO AVOID NBN PIT.
29	116	INSTALL - CIVIL	C50H	18	4.5	90/300x2 90/600x1	
29	119	INSTALL - CIVIL	C50H	17	4.3	90/300x2 90/600x1	
30	28	INSTALL - CIVIL	35mm2 ANNEALED BARE Cu EARTH	78	0.3		COIL 2M OF CABLE AT STN 28 FOR CONNECTION BY ERGON ENERGY. LEAVE AT BOTTOM OF TRENCH AT STN 30.
30	29	INSTALL - CIVIL	C80L	58	9.7	45/1200x2 30/1830x2 15/1830x2	
30	212	INSTALL - CIVIL	C80L	15	2.5	45/1200x1	LOCATE EXISTING CAPPED CONDUIT AT 212. CONNECT TO NEW.
214	28	INSTALL - CIVIL	C80L	12	2.0	45/1200x1	CAP CONDUIT AT STN 214.
215	29	INSTALL - CIVIL	C80L	17	2.8	45/1200x1	CAP CONDUIT AT STN 215.

CONSTRUCTION SCHEDULE									
STN NO	SITE LABEL	POLE ALIGNMENT	POLE SETTING DEPTH	ACTION	CONSTRUCTION CLASS	CONSTRUCTION CODE	DRAWING NUMBER	POSITION ON POLE	REMARKS
3	11809661			EXISTING	EARTH				
3	11809661			EXISTING	SUBSTATION INC HV SWITCHGEAR				
4	11809617			EXISTING	DISTRIBUTION CABINET				
4	11809617			EXISTING	EARTH				
16	11809607			EXISTING	PILLAR				
17	11809627			EXISTING	PILLAR				
18	11809662			EXISTING	EARTH				
18	11809662			EXISTING	PILLAR				
18	11809662			INSTALL - ERGON	PILLAR UPGRADE	LV PNU1-2/240/N	5074		ERGON ENERGY TO UPGRADE PILLAR TO 2 WAY AND TERMINATE CABLE FROM 18 TO 30.
19	11809609			EXISTING	PILLAR				
20	11809640			EXISTING	PILLAR				
21	11809622			EXISTING	EARTH				
21	11809622			EXISTING	PILLAR				
21	11809622			INSTALL - ERGON	PILLAR UPGRADE	LV PNU1-2/240/N	5074		ERGON ENERGY TO UPGRADE PILLAR TO 2 WAY AND TERMINATE CABLE FROM 21 TO 22.
22	12505935			INSTALL	PILLAR	LV PN2/6/240/N	5026		INSTALL PILLAR OFFSET TOWARDS LOT 64. REFER TO NOTE 19 AND DETAIL B.
23	12505936			INSTALL	PILLAR	LV PN2/6/240/N	5026		INSTALL PILLAR OFFSET TOWARDS LOT 65. REFER TO NOTE 19 AND DETAIL B.
24	12505937			INSTALL	PILLAR	LV PX/6/16CUI/N	5041		
25	12505938			INSTALL	EARTH	E MEN/PIL	5085		
25	12505938			INSTALL	PILLAR	LV PL2/6S/240/N	5042		
26	12505939			INSTALL	PILLAR	LV PN3/6/240/N 6S	5027		INSTALL PILLAR OFFSET TOWARDS LOT 34. REFER TO NOTE 19 & 17 AND DETAIL B.
27	12505940			INSTALL	EARTH	E MEN/PIL	5085		
27	12505940			INSTALL	PILLAR	LV PL2/6S/240/N	5042		
28	12505941			INSTALL	EARTH	E MEN/PIL	5085		
28	12505941			INSTALL	PILLAR	LV PN2/6/240/N PN3	5026		PILLAR TO BE UPGRADED TO 3-WAY IN FUTURE. INSTALL PILLAR OFFSET TOWARDS LOT 38. REFER TO NOTE 19 & 17 AND DETAIL B.
29	12505942			INSTALL	PILLAR	LV PN2/6S/240/N PN3	5026		ADDITIONAL 32A FUSE REQUIRED. PILLAR TO BE UPGRADED TO 3-WAY IN FUTURE.
30	12505943			INSTALL	PILLAR	LV PN2/6/240/N	5026		INSTALL PILLAR OFFSET TOWARDS LOT 68. REFER TO NOTE 19 AND DETAIL B.
37	11871521			EXISTING	EARTH				
37	11871521			EXISTING	PILLAR				
37	11871521			INSTALL - ERGON	PILLAR UPGRADE	LV PNU1-2/240/N	5074		ERGON ENERGY TO UPGRADE PILLAR TO 2-WAY IN THIS STAGE AND TERMINATE CABLE FROM STN 37 TO 25.
115	11809660			EXISTING	POLE				
116	12505944			INSTALL	POLE	SL BPM/75/1 15 CI	1-6-4-1 & 2		INSTALL LIGHT POLE PERPENDICULAR TO PROPERTY TRUNCATION. REFER TO NOTE 20.
117	12505945			INSTALL	POLE	SL BPM/75/1 15 CI	1-6-4-1 & 2		
118	12505946			INSTALL	POLE	SL BPM/75/1 15 CI	1-6-4-1 & 2		INSTALL LIGHT POLE OFFSET 0.5M TOWARDS LOT 35. REFER TO NOTE 20.
119	12505947			INSTALL	POLE	SL BPM/75/1 15 CI	1-6-4-1 & 2		REFER TO NOTE 20.



AS CONSTRUCTED

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO PROJECT MANAGER

CHANGES: YES/NO

ELECTRICAL CONTRACTOR
 NAME: Powerup Project Reticulation
 SIGNATURE: Ben Hall
 DATE: 24/2/23

CIVIL CONTRACTOR
 NAME: BMD Construction
 SIGNATURE: Anthony Burke
 DATE: 18/11/22

	CLIENT: URBEX PTY LTD (TOWNSVILLE) PO Box 6008, TOWNSVILLE, QLD 4810 Ph: 07 4750 7007 Fax:		LEGEND --- CABLE EXISTING --- CABLE PLANNED --- CABLE RECOVER --- EQUIPMENT EXISTING --- EQUIPMENT RECOVER --- 35mm sq ANNEALED BARE COPPER EARTH --- SUBSTATION --- HV ISOLATING DEVICE --- LV ISOLATING DEVICE --- NORMAL PILLAR --- CROSS ROAD PILLAR --- LINKING PILLAR --- COMMERCIAL/ INDUSTRIAL PILLAR --- DISTRIBUTION CABINET --- STREETLIGHT --- EARTH --- POLE --- CABLE JOINT	Drawing Title THE RESERVE (KALYNDIA CHASE) STG 13B UDC UG ELECTRICAL RETICULATION DETAIL B & SCHEDULES Project Description KALYNDIA CHASE, BOHLE PLAINS	Date: APRIL 2022 Scale: NTS Drawn: NJ RPEG Design Certification: Jane Errey 6863 Sheet: 2 OF 2 ERGON Project Number: 1668991 SPA Drawing Number: 3392-E02 Revision: B
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