ELECTRICAL DESIGN GROUP
ELECTRICAL BUILDING SERVICES CONSULTANTS
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C3112a - CURRUMBIN WILDLIFE SANCTUARY - SITE MSB **C3112a-0001(D).xls**

ELECTRICAL SERVICES CONTRACT DOCUMENT SCHEDULE

REVISION D - 18 JANUARY 2024

ISSUING INFORMATION	DATE OF ISSUE								
DAY	24	16	11	18					
MONTH	08	11	01	01					
YEAR	23	23	24	24					
REASON FOR ISSUE	P	P	P	C					

A = APPROVAL C = CONSTRUCTION N = COORDINATION P = PRELIMINARY T = TENDER

DISTRIBUTION	NUMBER OF COPIES								
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DOCUMENTS		REVISION								
C3112a-E01.dwg	LEGEND, NOTES & LOCATION PLAN	A			B					
C3112a-E02.dwg	SITE PLAN ENERGEX EASEMENT	A	B	C	D					
C3112a-E03.dwg	ELECTRICAL PLANT SECTIONS	A	B	C	D					
C3112a-E04.dwg	ENERGEX STANDARD DETAILS	A			B					
C3112a-E05.dwg	ENERGEX STANDARD NOTES	A			B					
C3112a-E06.dwg	SITE CONDUIT PLAN & POWER SCHEMATICS	A	B		C					
C3112a-E07.dwg	ENERGEX REQUIREMENTS			A	B					
C3112a-E08.dwg	ENERGEX ACCESS & EXTENT OF BARRIER WALL			A	B					
C3112a-E09.dwg	CUSTOMER ELECTRICAL WORKS			A	B					
C3112a-0001.xls	CONTRACT DOCUMENT SCHEDULE	A	B	C	D					
C3112a-0002.xls	EQUIPMENT SCHEDULE	A	B							
C3112a-0004.xls	DISTRIBUTION BOARD DB-M SCHEDULE	A			B					

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ELECTRICAL EQUIPMENT SCHEDULE

REVISION B - 16 NOVEMBER 2023

THE LIGHT FITTING SUPPLIER CONTACT DETAILS MAY BE AVAILABLE ON THE EDG WEBSITE VIA THE FOLLOWING LINK www.edg.net.au/Links/Lighting.htm

TYPE	LAMPS	DESCRIPTION	COLOUR / ACCESSORY	CATALOGUE No	REV
L1	36W LED 4000K	1200 LONG SURFACE MOUNTED IP65 DIFFUSED BATTEN C/W INTEGRAL ELECTRONIC CONTROL GEAR AND AS2293 NON MAINTAINED EMERGENCY PACK. "WM" DENOTES FITTING TO BE WALL MOUNTED AS HIGH AS PRACTICAL.	LIGHT GREY	GAMMA ILLUMINATION STORM 1558-CCT-36W	B
L2	36W LED 4000K	1200 LONG SURFACE MOUNTED IP65 DIFFUSED BATTEN C/W INTEGRAL ELECTRONIC CONTROL GEAR. "WM" DENOTES FITTING TO BE WALL MOUNTED AS HIGH AS PRACTICAL.	LIGHT GREY	GAMMA ILLUMINATION STORM 1558-CCT-36W	B
ONE-WAY LIGHT SWITCH		ONE-WAY LIGHT SWITCH MOUNTED AT 1000mm AFFL UNLESS NOTED OTHERWISE.	GREY	CLIPSAL "56 SERIES"	A
ONE-WAY LIGHT SWITCH		ONE-WAY LIGHT SWITCH C/W LED INDICATOR THAT ILLUMINATES WHEN THE SWITCH IS ON MOUNTED AT 1000mm AFFL UNLESS NOTED OTHERWISE.	GREY	CLIPSAL "56 SERIES"	A
TWO-WAY LIGHT SWITCH		TWO -WAY LIGHT SWITCH MOUNTED AT 1000mm AFFL UNLESS NOTED OTHERWISE.	GREY	CLIPSAL "56 SERIES"	A
WEATHERPROOF POWER SINGLE OUTLET (WP)		IP54 WEATHERPROOF SINGLE / DOUBLE POWER OUTLET AS NOTED ON DRAWING C/W COVER FLAP OVER SOCKET. MOUNT AT MINIMUM 1000mm AFFL U.N.O. RATING 10A U.N.O.	-	CLIPSAL WSC227/1	A
WEATHERPROOF POWER DOUBLE OUTLET (WP)		IP54 WEATHERPROOF DOUBLE POWER OUTLET C/W COVER FLAP OVER SOCKET. MOUNT AT MINIMUM 1000mm AFFL U.N.O. RATING 10A U.N.O.	-	CLIPSAL WSC227/2	A
SINGLE-PHASE ISOLATOR		SINGLE-PHASE WEATHERPROOF ISOLATOR. MOUNT AT 1000mm AFFL U.N.O. RATING 20A U.N.O. CONNECT TO EQUIPMENT VIA FLEXIBLE CONDUIT.	-	CLIPSAL WHT20	A
THREE-PHASE ISOLATOR		THREE-PHASE WEATHERPROOF ISOLATOR. MOUNT AT 1000mm AFFL U.N.O. RATING 20A U.N.O. CONNECT TO EQUIPMENT VIA FLEXIBLE CONDUIT.	-	CLIPSAL WHT35	A
DB-A		DISTRIBUTION BOARD DB-A TO BE PROVIDED AS PART OF THE ADJACENT AUSTRALIANA PROJECT			A
DB-B		DISTRIBUTION BOARD DB-B TO BE PROVIDED AS PART OF THE ADJACENT AUSTRALIANA PROJECT			A
DB-S		EXISTING DISTRIBUTION BOARD DB-S TO BE MODIFIED AS NOTED. UPDATE THE SCHEDULE AND LABELLING AT PRACTICAL COMPLETION AND PROVIDE POLE FILLERS / BLACK COVERS AS NECESSARY.			A
DB-WI		EXISTING DISTRIBUTION BOARD DB-W1 TO REMAIN AS IS			A

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TYPE	LAMPS	DESCRIPTION	COLOUR / ACCESSORY	CATALOGUE No	REV
DB-WB		EXISTING DISTRIBUTION BOARD DB-WB TO BE RESUPPLIED FROM THE NEW MSB			A
DB-RT		EXISTING DISTRIBUTION BOARD DB-RT TO BE RESUPPLIED FROM THE NEW MSB			A
DB-CW		DISTRIBUTION BOARD DB-CW TO BE PROVIDED AS PART OF THE ADJACENT AUSTRALIANA PROJECT			A
HIGHWAY MSB		EXISTING MAIN SWITCHBOARD ON THE ADJACENT HIGHWAY LOT TO REMAIN AS IS. REMOVE THE SUBMAIN SUPPLYING DB-S AT PRACTICAL COMPLETION.			A
DB-M		NEW DISTRIBUTION BOARD DB-M TO BE PROVIDED AS PER THE DB-M SCHEDULE AND NOTES			A
MSB		NEW MAIN SWITCHBOARD TO BE PROVIDED AS PER THE SCHEMATIC AND NOTES			A
M1		QEMM COMPLIANT REVENUE METER			A
M2		MULTI FUNCTION METER WITH REAL TIME DEMAND OUTPUT			A
M3		MULTI FUNCTION METER WITH REAL TIME DEMAND OUTPUT			A
GC		GENERATOR CONTROLLER			A
PFR		PHASE FAILURE RELAY			A

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DISTRIBUTION BOARD DB-A

REVISION B - 18 JANUARY 2024

				REV
FAULT CURRENT:	6kA	MAIN SWITCH:	250A LOAD BREAK NON AUTO	A
CHASSIS SIZE:	60 POLES	CABLE	4C70	A
CHASSIS RATING:	250A			A
PHASES:	A			A
PROVIDE THE DB WITH 2 X 600 WIDE EMPTY DIN RAILS TO ACCOMMODATE FUTURE CONTACTORS AND CONTROLS IN ADDITION TO THE CONTROL EQUIPMENT PROVIDED AS PART OF THE INITIAL WORKS. PROVIDE THE DB WITH AN AS2293 EMERGENCY LIGHTING CONTROL SYSTEM TO CONTROL THE ASSOCIATED EMERGENCY LIGHTS.				A

CIRC	PH	CIRCUIT BREAKER (amps)	CONTROL EQUIPMENT	CABLE SIZE (mm^2)	LOCATION	CIRCUIT USE	
P1	1	20	RCBO	2.5	GENERATOR	BATTERY CHARGER	A
P2	1	20	RCBO	2.5	PLANT	MAINTENANCE GPO	A
P3	1	20	RCBO	2.5	PLANT	SUMP PUMP	A
P4							B
P5	1	20	RCBO	2.5	ROOF	EXHAUST FAN	A
P6	3	63		16.0	EXTERNAL	DB-RT	A
P7	1	20	RCBO	2.5	EXTERNAL	MAINTENANCE GPO	A
L1	1	20	RCBO	2.5	PLANT	LIGHTS	A

NOTES

1. EXTENT OF WORKS

THE ELECTRICAL SERVICES SUB-CONTRACT INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
- SUPPLY AND INSTALLATION OF ALL COMPONENTS FORMING PART OF THE ELECTRICAL SERVICES.
- INSPECTIONS.
- TESTING AND COMMISSIONING.
- MAINTENANCE.
- CABLING, CABLE SUPPORT SYSTEMS AND ACCESS.
- POWER DISTRIBUTION.
- LIGHTING.
- AS CONSTRUCTED DOCUMENTS.
- NEGOTIATION AND COORDINATION WITH THE GENERATOR SUPPLIER.
- NEGOTIATION AND COORDINATION WITH ENERGEX FOR THE INSTALLATION OF THE NEW PADMOUNT SUBSTATION AND METERING.
- NEGOTIATION AND COORDINATION WITH THE AUSTRALIAN PROJECT ELECTRICIAN.
- TEMPORARY WORKS.
- ALL MINOR COMPONENTS AND INCIDENTAL WORKS NOT SPECIFICALLY REFERRED TO, HOWEVER NECESSARY TO COMPLETE THE ELECTRICAL SERVICES INSTALLATION SUCH THAT IT IS HANDED OVER COMPLETE, OPERATIONAL AND FIT FOR THE INTENDED USE.

PRIOR TO COMMENCING WORK CONSULT SITE MANAGEMENT FOR ANY HAZARDOUS MATERIAL AND OR ASBESTOS REGISTERS AS WELL AS UNDERTAKE A THOROUGH INSPECTION OF THE SITE TO IDENTIFY ANY POTENTIAL HAZARDOUS MATERIALS, ASBESTOS AND HEALTH OR SAFETY RISKS. ADVISE THE CONTRACTOR OF ANY POTENTIAL HAZARDOUS MATERIALS, ASBESTOS AND HEALTH OR SAFETY RISKS IF IDENTIFIED AND DO NOT COMMENCE WORK UNTIL AN APPROPRIATE MANAGEMENT PLAN HAS BEEN DEVELOPED AND AGREED TO BY ALL PARTIES.

IDENTIFY ALL EXISTING UNDERGROUND SERVICES WITHIN THE SCOPE OF THE WORKS PRIOR TO UNDERTAKING ANY EXCAVATION. SUPPLY ALL LABOUR, MATERIALS, EQUIPMENT, AND ALL OTHER ITEMS, WHETHER MENTIONED IN DETAIL OR NOT, REQUIRED FOR THE SATISFACTORY COMPLETION OF THE ELECTRICAL SERVICES INSTALLATION, LEAVING IN FULL WORKING ORDER TO THE SATISFACTION OF THE PROJECT MANAGER.

ACCEPT FULL RESPONSIBILITY FOR LIASING, ARRANGING AND CO-ORDINATION OF ALL WORKS THAT HAVE AN EFFECT ON OR WILL BE AFFECTED BY THE ELECTRICAL SERVICES.

REFER TO THE EQUIPMENT SCHEDULE FOR ADDITIONAL REQUIREMENTS.

2. WORKMANSHIP

ENSURE THAT THE ELECTRICAL WORK IS PERFORMED BY THE HOLDER OF A CURRENT ELECTRICAL SUB CONTRACTOR LICENSE AND THE SERVICES COVERED BY THE ACMA IS PERFORMED BY THE HOLDER OF THE APPROPRIATE CURRENT ACMA LICENSE. ENSURE THE INSTALLATION AND ALL COMPONENTS, FIXTURES, FITTINGS, OUTLETS AND CABLES ARE SUPPLIED AND INSTALLED TO A HIGH STANDARD THROUGHOUT, AND INSTALLED IN A NEAT AND TRADESMAN LIKE MANNER, TO THE CURRENT INDUSTRY STANDARDS. ENSURE ALL MATERIALS AND COMPONENTS OF A SIMILAR TYPE ARE OF THE SAME MANUFACTURER AND INSTALLED IN A UNIFORM MANNER.

IT IS THE ELECTRICAL SUB CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE INSTALLATION IS FIT FOR PURPOSE AND IS PROVIDED AS A COMPLETE WORKING INSTALLATION. IT IS THE ELECTRICAL SUB CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL COMPONENTS, FITTINGS, FIXTURES, SYSTEMS, PROGRAMMING ETC IRRESPECTIVE OF THE LEVEL DETAILED IN THE DOCUMENTS SUCH THAT THE INSTALLATION IS PROVIDED AS A COMPLETE WORKING INSTALLATION.

CONCEAL ALL WIRING AND CONDUITS. EXPOSED CABLING OR CONDUITS ARE GENERALLY NOT ACCEPTABLE. IT IS NOTED THAT CHASING AND REINSTATEMENT WILL BE REQUIRED. ENSURE ALL COMPONENTS, EQUIPMENT AND MATERIALS SUPPLIED ARE NEW, UNUSED, DESIGNED AND SELECTED TO ENSURE SATISFACTORY OPERATION UNDER VARYING ATMOSPHERIC, CLIMATIC, HUMID TROPICAL CONDITIONS WITHOUT DISTORTION AND DETERIORATION IN ANY PART AFFECTING EFFICIENCY AND RELIABILITY OF THE SYSTEMS. DESIGN AND SELECT ALL EQUIPMENT TO PROVIDE THE NECESSARY SAFETY TO HUMAN LIFE AND PROPERTY DURING OPERATION AND MAINTENANCE WITH PARTICULAR ATTENTION GIVEN TO ELECTRICAL SAFETY AND SEGREGATION PRECAUTIONS.

CHECK THE FINISHED PAINTWORK AROUND THE AREA OF EACH INSTALLATION AND TOUCH UP ALL DAMAGED PARTS AND FINISHES AFTER THE INSTALLATION OF THE ELECTRICAL SERVICES.

ALL WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE BUILDER'S PROGRAM. ENSURE ALL FINAL LOCATIONS OF OUTLETS AND FITTINGS ARE CO-ORDINATED ONSITE WITH THE ARCHITECT AND ALL OTHER SERVICES, TO THE APPROVAL OF THE PROJECT MANAGER. ALLOW TO CO-ORDINATE THE FINAL LOCATION OF ALL EQUIPMENT, FITTINGS, & OUTLETS, SUCH THAT THEY ARE INSTALLED IN ACCORDANCE WITH THE AS3000 RESTRICTED ZONES, AND ARE NOT COVERED INAPPROPRIATELY.

ENSURE THAT ALL METAL SURFACES ARE SUITABLY PROTECTED AGAINST CORROSION, AND THAT ALL PLASTIC MATERIALS ARE UV STABILISED.

PROVIDE ALL MATERIALS AS NEW, AND OF THE HIGHEST CLASS AVAILABLE FOR THEIR RESPECTIVE TYPES. ENSURE ALL ASPECTS OF THE WORK ARE OF A HIGH STANDARD THROUGHOUT, AND INSTALLED IN A NEAT AND TRADESMAN LIKE MANNER, TO THE CURRENT INDUSTRY STANDARDS.

3. STANDARDS

IRRESPECTIVE OF INFORMATION CONTAINED IN THE ELECTRICAL SERVICES DOCUMENTS OR IN INSTRUCTIONS, IT IS THE ELECTRICAL SUB CONTRACTOR'S RESPONSIBILITY TO ENSURE ALL ELECTRICAL SERVICES WORKS ARE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE FOLLOWING. REFER ANY DISCREPANCIES BETWEEN THE REQUIREMENTS OF THE FOLLOWING AND/OR THE ELECTRICAL SERVICES DOCUMENTS AND INSTRUCTIONS TO THE ARCHITECT FOR CLARIFICATION PRIOR TO THE PLACING OF ORDERS, FABRICATION OR INSTALLATION OF THE ITEMS/METHODS IN DISCREPANCY.
- NCC BUILDING CODE OF AUSTRALIA.
- ELECTRICITY ACT.
- ELECTRICAL SAFETY ACT.
- ENERGEX REQUIREMENTS.
- THE QUEENSLAND ELECTRICITY CONNECTION MANUAL (QECM) AND QUEENSLAND ELECTRICITY METERING MANUAL (QEMM)
- AS/NZS3000.
- AS3008.
- WORKPLACE HEALTH AND SAFETY ACT.
- TELECOMMUNICATIONS ACT.
- ACMA REQUIREMENTS.

4. AUTHORITIES

ENSURE ALL OF THE ELECTRICAL SERVICES COMPLY WITH THE REQUIREMENTS OF ALL REGULATORY AUTHORITIES HAVING JURISDICTION OVER THE SITE INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- ACMA.
- LOCAL COUNCIL.
- LOCAL SUPPLY AUTHORITY.
- STATE GOVERNMENT DEPARTMENT OF ENVIRONMENT AND HERITAGE.
- QLD GOVERNMENT, DIVISION OF WORKPLACE, HEALTH AND SAFETY.
- QLD FIRE AND EMERGENCY SERVICES.

NOTES

5. CABLES

UNLESS OTHERWISE SPECIFIED, INSTALL AND TERMINATE CABLES IN ACCORDANCE WITH THE MANUFACTURERS' RECOMMENDATIONS. DETERMINE THE FINAL ROUTES TO SUIT THE BUILDING STRUCTURE AND SITE CONDITIONS. UNLESS NOTED OTHERWISE, PROVIDE ALL 240 VOLT POWER AND LIGHTING WIRING AS 2.5mm² TWIN & EARTH STRANDED COPPER CONDUCTORS, PVC INSULATED 0.6/1kV V75 GRADE TO AS3174, PROTECTED BY A 20 AMP CIRCUIT BREAKER. ALL CONDUIT AND FITTINGS TO BE RIGID UPVC TO AS2053, UNLESS NOTED OTHERWISE.

6. POWER DISTRIBUTION

THE POWER DISTRIBUTION COMPONENT OF THIS CONTRACT INCLUDES A TWO STAGE INSTALLATION.

STAGE 1 - INTENT
THE INSTALLATION IS TO BE ARRANGED TO UTILISE THE EXISTING ENERGEX SUPPLY TO DB-S TO SUPPLY THE SITE WITH THE GENERATOR BEING USED AS A BACK UP TO MEET ANY DEMAND SHORTFALLS UNTIL THE NEW ENERGEX PADMOUNT SUBSTATION BECOMES OPERATIONAL.

STAGE 1 - WORKS
THE EXISTING DISTRIBUTION BOARD DB-WB IS TO BE DISCONNECTED FROM DB-S AND SUPPLIED FROM THE NEW MSB. THE EXISTING DISTRIBUTION BOARD DB-RT IS TO BE DISCONNECTED FROM DB-S AND SUPPLIED FROM THE NEW MSB SUPPLIED DISTRIBUTION BOARD DB-M. THE EXISTING ENERGEX SUPPLY TO DB-S IS TO BE UTILISED TO TEMPORARILY SUPPLY DB-A, DB-B, DB-M AND DB-CW VIA THE NEW MSB. THE TEMPORARY SUPPLY FROM DB-S TO THE NEW MSB AND THE GENERATOR SUPPLY ARE TO BE PROVIDED WITH DEMAND MONITORING SUCH THAT WHEN THE DEMAND REACHES 150 AMPS FOR MORE THAN 30 SECONDS THE GENERATOR STARTS AND SUPPLIES THE LOAD UNTIL THE DEMAND HAS FALLEN BELOW 100 AMPS FOR MORE THAN 30 MINUTES AT WHICH TIME THE LOAD IS TO BE SWITCHED BACK TO THE DB-S SUPPLY. THE SUPPLY AND INSTALLATION OF THE DB-A, DB-B AND DB-CW SUBMAINS INTO THE NEW MSB WILL BE BY OTHERS BEING THE AUSTRALIAN PROJECT ELECTRICIAN. DURING STAGE 1 THE NEW MSB MEN LINK AND RETAIL METERS ARE TO BE DISCONNECTED/ NOT INSTALLED. THE NEW MSB IS TO CONTAIN THE FACILITY AND ALL NECESSARY APPROVALS SUCH THAT THE MEN LINK AND RETAIL METERING CAN BE SIMPLY INSTALLED / CONNECTED IN STAGE 2.

STAGE 2 - INTENT
ONCE THE ENERGEX PADMOUNT SUBSTATION BECOMES OPERATIONAL THE EXISTING SERVICE TO DB-S FROM THE HIGHWAY MSB IS TO BE REMOVED AND THE SITE IS TO BE SUPPLIED FROM THE NEW ENERGEX PADMOUNT SUBSTATION VIA THE NEW MSB.

STAGE 2 - WORKS
CONNECT THE NEW MSB TO THE NEW ENERGEX PADMOUNT SUBSTATION. PROVIDE / CONNECT THE NEW MSB WITH A MEN LINK AND RETAIL METERING. REMOVE THE DEMAND MONITORING CONTROL OF THE GENERATOR AND REPLACE IT WITH CONVENTIONAL PHASE FAILURE CONTROL. REMOVE THE EXISTING SERVICE TO DB-S FROM THE HIGHWAY MSB. ADJUST THE CONNECTION OF THE CABLING BETWEEN DB-S TO THE NEW MSB SUCH THAT DB-S IS FEED FROM THE NEW MSB. THE EXISTING HIGHWAY MSB IS TO REMAIN AS IT IS ON A SEPARATE TITLE TO THE SITE AND SUPPLIES A REMOTE PUMPING STATION.

CONFIGURE THE STAGE 2 GENERATOR CONTROL SYSTEM AND MSB CHANGE OVER FACILITY TO THE FOLLOWING OPERATION:

A. UPON SUPPLY AUTHORITY POWER FAILURE, THE GENERATOR CONTROL SYSTEM IS TO COMMENCE A 15 SECOND COUNTDOWN.
B. ONCE THE SUPPLY POWER HAS NOT BEEN AVAILABLE FOR 15 SECONDS THE STANDBY GENERATOR IS TO AUTOMATICALLY START.
C. TWENTY SECONDS AFTER STARTING THE STANDBY GENERATOR IS TO AUTOMATICALLY TAKE 100% OF THE STANDBY LOAD.
D. ONCE THE SUPPLY AUTHORITY POWER HAS RETURNED UNINTERRUPTED FOR 5 MINUTES THE STANDBY LOAD IS TO AUTOMATICALLY BE RETURNED TO THE SUPPLY AUTHORITY SUPPLY. THE STANDBY GENERATOR IS TO CONTINUE RUNNING FOR A FURTHER 10 MINUTES BEFORE AUTOMATICALLY SHUTTING DOWN.

SHOULD THE SUPPLY AUTHORITY SUPPLY STATUS CHANGE DURING ANY OF THE TIMED DELAYS, THE TIMED DELAY IS TO RECOMMENCE. IF THE SUPPLY AUTHORITY SUPPLY RETURNS DURING THE INITIAL 30 TIMED DELAY (A) THE STANDBY GENERATOR IS TO START AND AUTOMATICALLY STEP INTO THE (D) 10 MINUTE RUN ON BEFORE AUTOMATICALLY SHUTTING DOWN. IF DURING THIS PERIOD THE SUPPLY AUTHORITY SUPPLY FAILS THE INITIAL (A) 30 COUNTDOWN IS TO RECOMMENCE.

ALL OF THE EXISTING ELECTRICAL SERVICES INCLUDING CIRCUITS, CABLING AND OUTLETS THAT BECOME REDUNDANT ARE TO BE REMOVED. ANY INTERRUPTION TO THE POWER SUPPLY TO ANY SERVICES OUTSIDE OF THE AREA OF WORKS MUST BE RESTRICTED TO OUTSIDE OF THE SANCTUARYS OPERATING HOURS AND MUST BE ADVISED TO THE OPERATOR IN WRITING TWO WEEKS PRIOR.

- REMOVAL OF ALL EXISTING REDUNDANT SERVICES.

PROVIDE THE NEW MSB AS / WITH:
- SHOP DRAWINGS FOR APPROVAL.
- PLINTH MOUNTED.
- 316 STAINLESS STEEL.
- LIGHT GREY ENCLOSURE.
- WHITE ESCUTCHEONS WITH LIFT OFF HINGES AND 1/4 TURN LATCHES TO SECURE THE ESCUTCHEON THAT REMAIN PART OF THE ESCUTCHEON.
- SWITCHBOARD DOORS ARE NOT REQUIRED.
- FORM 1
- ENSURE ALL CABLE CONNECTIONS CAN BE THERMALLY SCANNED WITHOUT ISOLATING THE POWER.
- EACH CUBICAL CONTAINING SWITCHGEAR IS TO CONTAIN AN AUTOMATIC TEMPERATURE CONTROLLED ANTI CONDENSATION HEATER.
- THE RETAIL METER IS TO BE A SEPARATE WALL MOUNTED PANEL WITH THE SAME SPECIFICATION AS THE MSB.

PROVIDE DB-M AS/WITH:
- SHOP DRAWINGS FOR APPROVAL.
- WALL MOUNTED.
- 316 STAINLESS STEEL.
- LIGHT GREY ENCLOSURE.
- WHITE ESCUTCHEONS WITH LIFT OFF HINGES AND 1/4 TURN LATCHES TO SECURE THE ESCUTCHEON THAT REMAIN PART OF THE ESCUTCHEON.
- 92268 KEY LOCKABLE DOOR.
- FORM 2a
- ENSURE ALL CABLE CONNECTIONS CAN BE THERMALLY SCANNED WITHOUT ISOLATING THE POWER.

REFER TO THE DISTRIBUTION BOARD DB-M SCHEDULE FOR ADDITIONAL DB-M REQUIREMENTS AND CIRCUIT DETAILS.

NOTES

6. POWER DISTRIBUTION CONTINUED

THE POWER DISTRIBUTION COMPONENT OF THIS CONTRACT INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING EXTENT OF WORK:
- POWER DISTRIBUTION.
- NEW ENERGEX PADMOUNT SUBSTATION.
- NEW RETAIL METERING.
- NEW MAIN SWITCHBOARD.
- TEMPORARY STAGE 1 SUPPLY CONFIGURATION.
- PERMANENT STAGE 2 SUPPLY CONFIGURATION.
- GENERATOR CONTROL.
- DISTRIBUTION BOARD DB-M.
- SUBMAIN FROM DB-S TO THE NEW MSB.
- REPLACE THE EXISTING SUPPLY / SUBMAIN TO DB-WB WITH A NEW SUPPLY / SUBMAIN FROM THE NEW MSB.
- UPDATE THE DB-S SCHEDULE AND LABELLING.
- CABLE ACCESS WAYS.
- CIRCUITS.
- ISOLATORS AND OUTLETS.
- TESTING AND COMMISSIONING.

7. LIGHTING

ALL OF THE LIGHT FITTINGS, LAMPS AND ACCESSORIES ARE TO BE PROVIDED AS PART OF THIS CONTRACT. THE LIGHTING COMPONENT OF THIS CONTRACT INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING EXTENT OF WORK:
- LIGHTING.
- LIGHT FITTINGS AND ACCESSORIES.
- EMERGENCY AND EXIT LIGHTING.
- EARTHING OF THE LIGHTING INSTALLATION.
- LIGHTING CONTROL.
- LIGHTING SUBCIRCUITS.
- TESTING AND COMMISSIONING.

PROVIDE A SINGLE POINT EMERGENCY LIGHTING SYSTEM THAT COMPLIES WITH THE LATEST ISSUE OF ALL PARTS AS2293 AND THE RELEVANT PARTS OF THE NCC BCA. INSTALL EMERGENCY LIGHT FITTINGS NOMINATED AS MAINTAINED WITH THE LAMP PERMANENTLY ON SUPPLIED VIA AN UNSWITCHED ACTIVE MAINS SUPPLY WHEN THE MAINS SUPPLY IS AVAILABLE. WHEN THE MAINS SUPPLY IS NOT AVAILABLE, THE LAMP IS TO REMAIN ON SUPPLIED BY THE EMERGENCY PACK. SINGLE LAMP MAINTAINED EMERGENCY LIGHTS ARE NOT SWITCHED WITH THE LOCAL GENERAL AREA LIGHTING. (THE LAMP IS ALWAYS ON.)

INSTALL EMERGENCY LIGHT FITTINGS NOMINATED AS NON-MAINTAINED AS FOLLOWS:
- IF THE FITTING IS NOT BEING SWITCHED, THE LAMP IS TO REMAIN OFF WHEN THE MAINS SUPPLY IS AVAILABLE. WHEN THE MAINS SUPPLY IS NOT AVAILABLE THE LAMP IS TO BE SWITCHED ON SUPPLIED BY THE EMERGENCY PACK. UNSWITCHED SINGLE LAMP NON-MAINTAINED EMERGENCY LIGHTS ARE NOT SWITCHED WITH THE LOCAL GENERAL AREA LIGHTING. (THE LAMP IS ON ONLY WHEN THE MAINS SUPPLY IS NOT AVAILABLE.)
- IF THE FITTING IS BEING SWITCHED, THE LAMP IS TO BE SUPPLIED AND CONTROLLED WITH THE LOCAL GENERAL AREA LIGHTING WHEN THE MAINS SUPPLY IS AVAILABLE. WHEN THE MAINS SUPPLY IS NOT AVAILABLE THE LAMP IS TO BE SWITCHED ON, SUPPLIED BY THE EMERGENCY PACK. (THE LAMP IS ON WHEN TURNED ON WITH THE LOCAL GENERAL LIGHTING OR THE MAIN SUPPLY IS NOT AVAILABLE.)

INSTALL EMERGENCY LIGHTS SUCH THAT THE STATUS INDICATOR L.E.D. IS CLEARLY VISIBLE AND THE TEST BUTTONS ARE READILY ACCESSIBLE. LABEL EACH CIRCUIT BREAKER WHICH CONTROLS THE UNSWITCHED ACTIVE TO EXIT LIGHTS WITH A LABEL FIXED ADJACENT; ENGRAVED PLASTIC LAMINATE, GREEN BACKGROUND WITH WHITE CHARACTERS: -

WARNING
INTERRUPTING SUPPLY WILL DISCHARGE
EMERGENCY LIGHTING BATTERIES

PROVIDE WRITTEN EVIDENCE OF THE INITIAL COMMISSIONING AND TESTING AND TESTING FOR THE DURATION OF THE MAINTENANCE PERIOD IN ACCORDANCE WITH AS 2293. 2.

THIS EVIDENCE IS TO BE IN THE FORM OF A LOG BOOK SIMILAR TO THE GENERAL LIGHTING SERVICE PTY LTD "EMERGENCY LIGHTING MAINTENANCE LOG BOOK AND MANUAL" WHICH IS TO BE PROVIDED BY THE ELECTRICAL SUB-CONTRACTOR AND HAVE ALL ENTRIES FULLY COMPLETED AND BE PRESENTED FOR INSPECTION AT PRACTICAL COMPLETION. THE LOG BOOK IS TO BE RETAINED BY THE ELECTRICAL SUB-CONTRACTOR FOR THE DURATION OF THE MAINTENANCE PERIOD, AND THE SIX MONTHLY TEST AND MAINTENANCE RESULTS ENTERED. THE LOG BOOK IS TO BE PRESENTED FOR APPROVAL AT FINAL COMPLETION (EXPIRY OF THE MAINTENANCE PERIOD) AND WILL BE FORWARDED TO THE OPERATOR FOR THEIR USE.

PROVIDE MAINTENANCE OF THE EMERGENCY AND EXIT LIGHTING INSTALLATION INCLUDING RECORDS IN ACCORDANCE WITH THE LATEST ISSUE OF ALL PARTS AS2293 AND THE RELEVANT PARTS OF THE NCC BCA. PROVIDE THE EMERGENCY LIGHTING SYSTEM WITH A SUPPLY SENSING AND TESTING FACILITY IN ACCORDANCE WITH AS 2293. 1.

8. ABBREVIATIONS

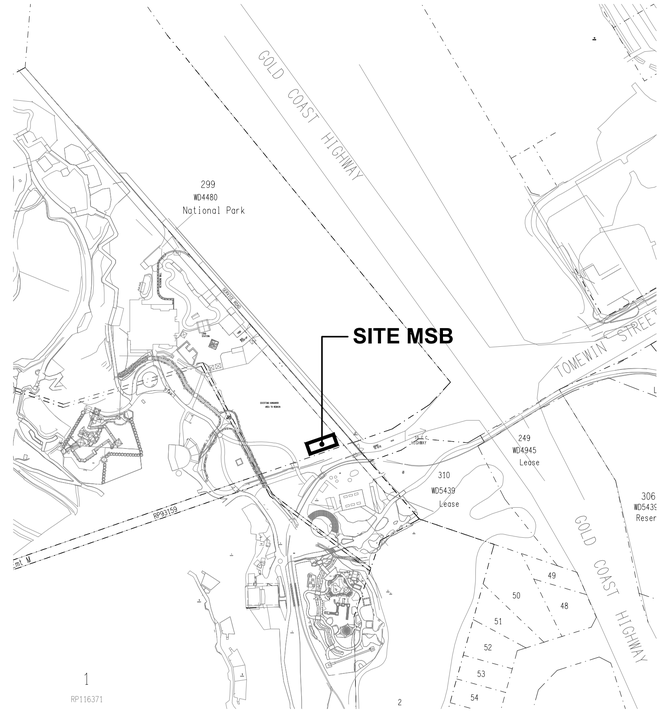
A	-	AMP CURRENT RATING
AB	-	MOUNT ABOVE BENCH.
AFFL	-	ABOVE FINISHED FLOOR LEVEL.
BB	-	MOUNT BELOW BENCH.
CEIL	-	MOUNT ON CEILING.
C/W	-	COMPLETE WITH.
MCB	-	MINIATURE CIRCUIT BREAKER.
MCCB	-	MOULDED CASE CIRCUIT BREAKER.
MSB	-	MAIN SWITCHBOARD.
N	-	NEON / LED INDICATOR WHEN ON.
NTS	-	NOT TO SCALE.
QDC	-	QUEENSLAND DEVELOPMENT CODE.
RCBO	-	CIRCUIT BREAKER C/W AN INTEGRAL 30mA RESIDUAL CURRENT DEVICE.
RCD	-	CIRCUIT PROTECTED VIA A 30mA RESIDUAL CURRENT DEVICE.
UNO	-	UNLESS NOTED OTHERWISE.
WP	-	WEATHERPROOF TO IP56 UNO.
500	-	NUMBER DENOTES MOUNTING HEIGHT AFFL.

LEGEND

- ELECTRICAL SWITCHBOARD.
- ELECTRICAL CONTROL PANEL BY OTHERS.
- CIRCUIT BREAKER.
- LOAD BREAK NON-AUTO ISOLATOR.
- CONTACT.
- MECHANICAL INTERFACE.
- SINGLE PHASE.
- THREE PHASE.
- AUTHORITY CTs.
- GC — GENERATOR CONTROLLER.
- M1 — REVENUE METER.
- M2 — MULTI-FUNCTION METER C/W DEMAND OUTPUT TO THE GENERATOR CONTROLLER.
- M3 — MULTI-FUNCTION METER C/W DEMAND OUTPUT TO THE GENERATOR CONTROLLER.

LEGEND

- PFR — PHASE FAILURE RELAY.
- ISOLATOR.
- WP — IP54 10A SINGLE POWER OUTLET.
- WP — IP54 10A DOUBLE POWER OUTLET.
- IP56 ONE-WAY LIGHT SWITCH.
- IP56 TWO-WAY LIGHT SWITCH.
- N — IP56 ONE-WAY LIGHT SWITCH C/W LED INDICATOR WHEN LIGHTS ARE ON.
- L1 — IP65 1200 LONG BATTEN C/W NON-MAINTAINED EMERGENCY PACK.
- L2 — IP65 1200 LONG BATTEN.



LOCATION PLAN

SITE MSB
SCALE 1:2000

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ENERGEX ACCEPTANCE

NAME .....
OFFICE .....
SIGNED .....
DATE / /

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REV:	DESCRIPTION:	DATE:
B	CONSTRUCTION	18/01/2024

ELECTRICAL DESIGN GROUP BRISBANE PTY LTD
ACN 092 710 793

TRADING AS:
ELECTRICAL DESIGN GROUP

CULVERT INSPECTION REQUIRED BEFORE TRANSFORMER IS DELIVERED - 5 BUSINESS DAYS PRIOR NOTICE NEEDED.
CONTACT _____ PH: _____ EMAIL: _____

TRANSFORMER WILL NOT BE ENERGISED UNTIL ALL REQUIREMENTS ARE MET.

ELECTRICAL DESIGN GROUP
ELECTRICAL BUILDING SERVICES CONSULTANTS
BRISBANE GOLD COAST

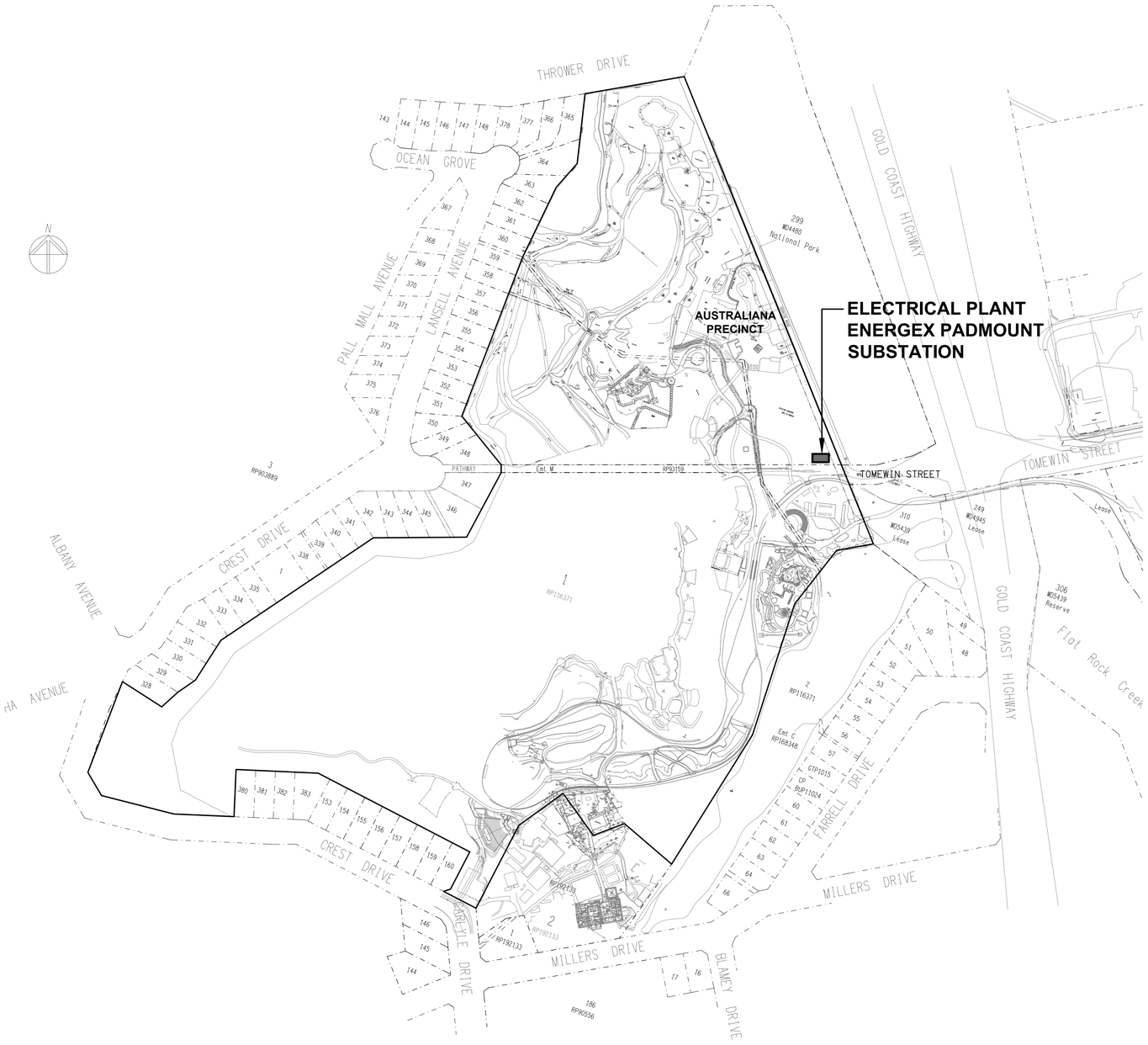
P.O.Box 15, Sherwood Q.4075
Phone: (07) 3278 4375
Email: brisbane@edg.net.au
Web: www.edg.net.au

PROJECT:
CURRUMBIN WILDLIFE SANCTUARY
SITE MSB

28 TOMEWIN STREET, CURRUMBIN, QUEENSLAND

DRAWING:
ELECTRICAL SERVICES
LEGEND & NOTES

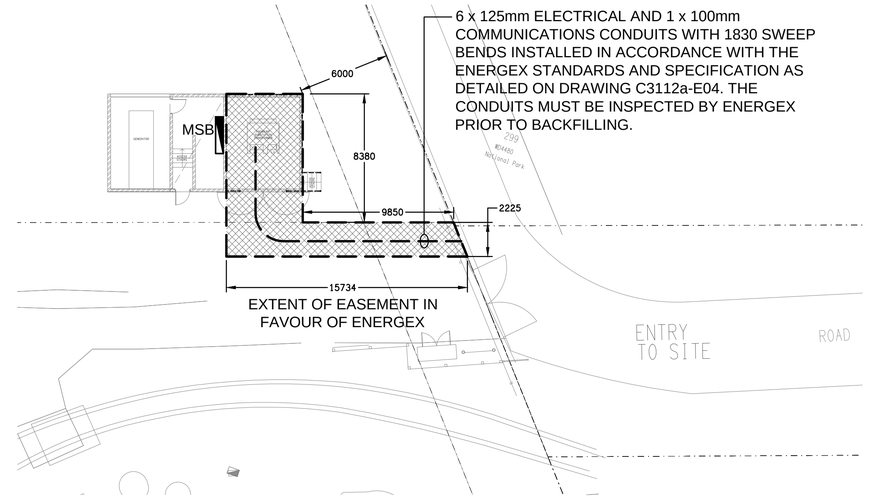
SCALE:	AT	PROJECT NO:	DRAWING NO:	REVISION:
1:2000	A1	C3112a	E01	B



SITE PLAN

ELECTRICAL PLANT

SCALE 1: 2000



DETAILED PLAN

ENERGEX EASEMENT

SCALE 1: 200

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ENERGEX ACCEPTANCE

NAME .....

OFFICE .....

SIGNED .....

DATE / /

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REV:	DESCRIPTION:	DATE:
D	CONSTRUCTION	18/01/2024

ELECTRICAL DESIGN GROUP BRISBANE PTY LTD
ACN 092 710 793

TRADING AS:
ELECTRICAL DESIGN GROUP

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- 5 BUSINESS DAYS PRIOR NOTICE NEEDED.
CONTACT _____ PH: _____ EMAIL: _____

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ELECTRICAL DESIGN GROUP
ELECTRICAL BUILDING SERVICES CONSULTANTS
BRISBANE GOLD COAST
P.O.Box 15, Sherwood Q.4075
Phone: (07) 3278 4375
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Web: www.edg.net.au

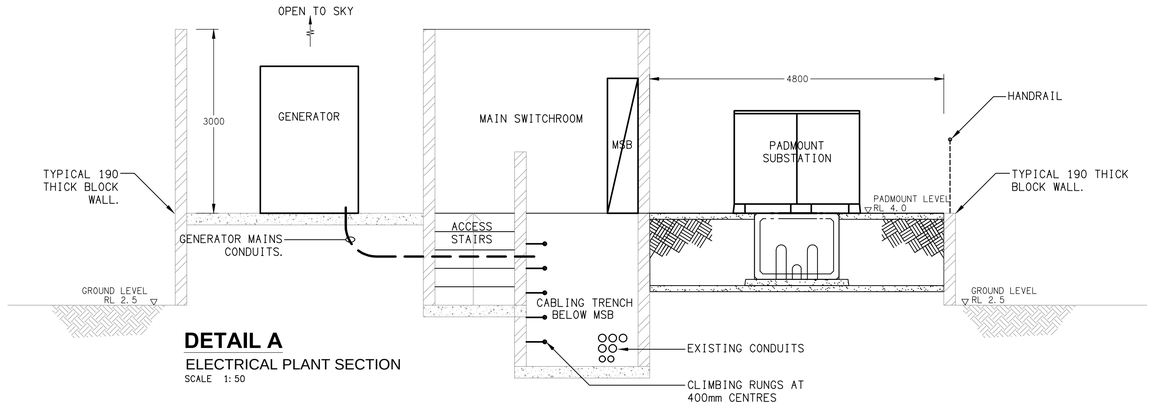
PROJECT:
CURRUMBIN WILDLIFE SANCTUARY
SITE MSB

28 TOMEWIN STREET, CURRUMBIN, QUEENSLAND

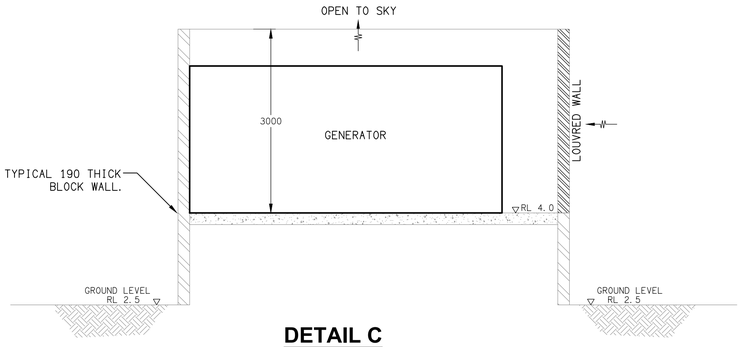
DRAWING:
ELECTRICAL SERVICES
SITE PLAN
ENERGEX EASEMENT

SCALE: AS SHOWN AT A1

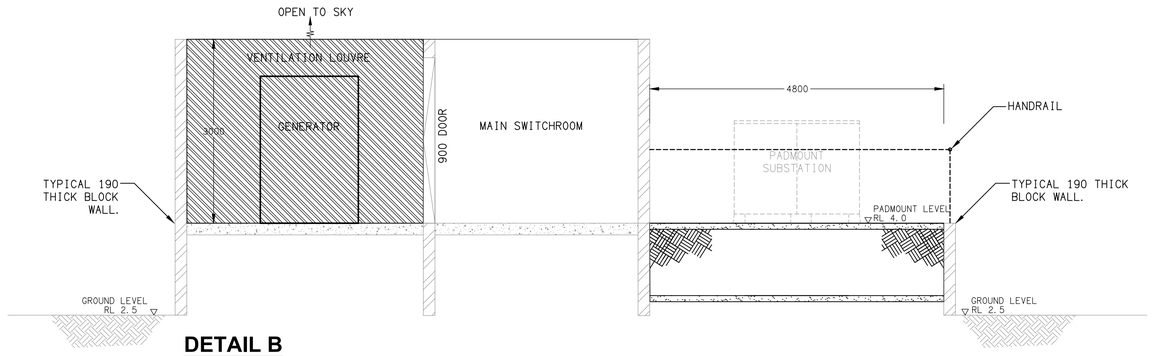
PROJECT NO:	DRAWING NO:	REVISION:
C3112a	E02	D



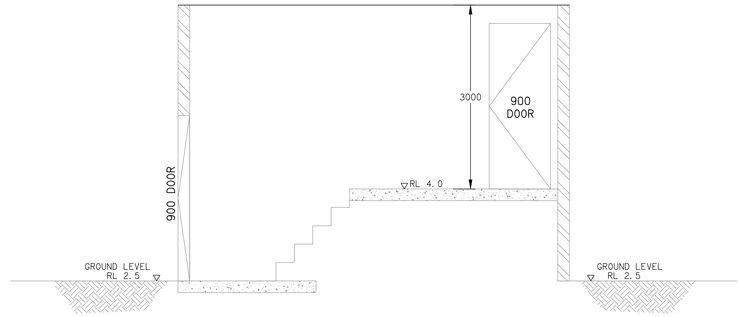
DETAIL A
ELECTRICAL PLANT SECTION
SCALE 1:50



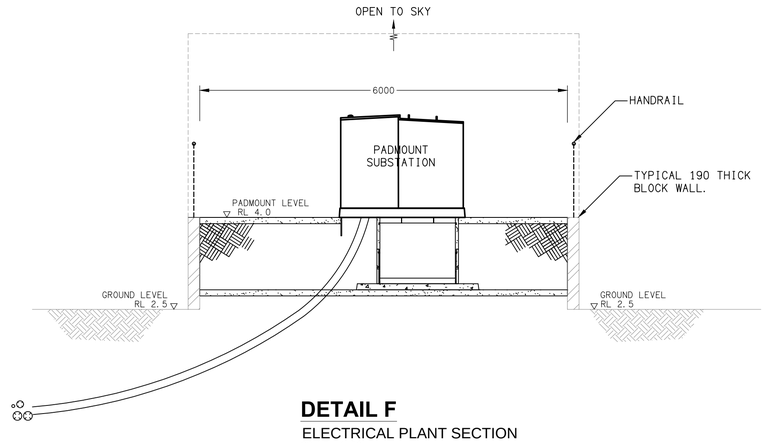
DETAIL C
ELECTRICAL PLANT SECTION
SCALE 1:50



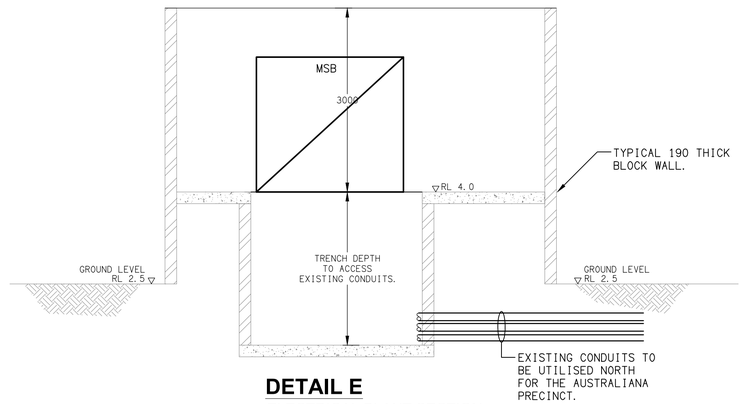
DETAIL B
ELECTRICAL PLANT SECTION
SCALE 1:50



DETAIL D
ELECTRICAL PLANT SECTION
SCALE 1:50



DETAIL F
ELECTRICAL PLANT SECTION
SCALE 1:50



DETAIL E
ELECTRICAL PLANT SECTION
SCALE 1:50

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ENERGEX ACCEPTANCE Energex

NAME .....

OFFICE .....

SIGNED .....

DATE / /

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REV:	DESCRIPTION:	DATE:
D	CONSTRUCTION	18/01/2024

ELECTRICAL DESIGN GROUP BRISBANE PTY LTD
ACN 092 710 793

TRADING AS:
ELECTRICAL DESIGN GROUP

CULVERT INSPECTION REQUIRED BEFORE TRANSFORMER IS DELIVERED
- 5 BUSINESS DAYS PRIOR NOTICE NEEDED.
CONTACT _____ PH: _____ EMAIL: _____

TRANSFORMER WILL NOT BE ENERGISED UNTIL ALL REQUIREMENTS ARE MET.

ELECTRICAL DESIGN GROUP
ELECTRICAL BUILDING SERVICES CONSULTANTS
BRISBANE GOLD COAST

P.O.Box 15, Sherwood Q.4075
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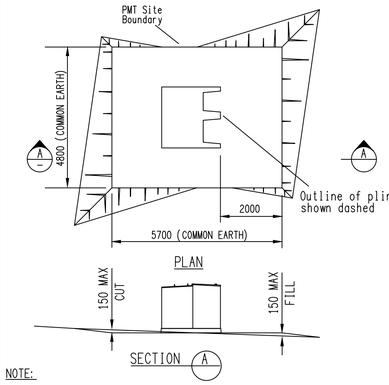
Email: brisbane@edg.net.au
Web: www.edg.net.au

PROJECT:
CURRUMBIN WILDLIFE SANCTUARY
SITE MSB

28 TOMEWIN STREET, CURRUMBIN, QUEENSLAND

DRAWING:
ELECTRICAL SERVICES
ELECTRICAL PLANT SECTIONS

SCALE:	AT	PROJECT NO:	DRAWING NO:	REVISION:
1:50	A1	C3112a	E03	D



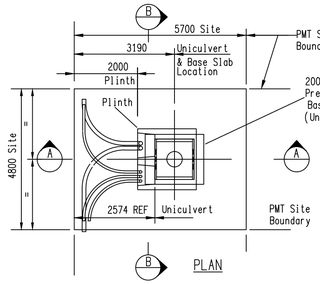
NOTE:

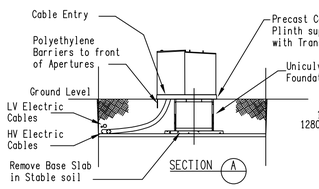
1. ENERGEX's padmount clearance zone shall be levelled and surrounding area graded to ensure no water ponding.
2. No services other than the ENERGEX's electric cables shall pass through this substation site.
3. Clear access to the transformer shall be maintained for ENERGEX's personnel and heavy equipment.
4. After installation is complete the site surface is to be finished with a concrete slab.
5. Mature landscaping (including trees, sprinklers etc.) shall not encroach onto the substation site.
6. Cut and fill levels greater than 150mm will require a Civil RPEQ certified design to ensure levels, compaction standards, drainage have been considered, Sites requiring retaining walls shall be designed in accordance with C3-2.6.

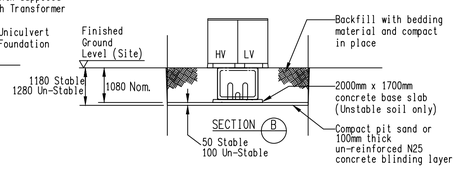
SITE PREPARATION DETAIL

REQUIRED TASKS	DATE COMPLETED YES	DATE COMPLETED NO	CHECKED BY
CUSTOMER RESPONSIBILITIES			
24 HOUR ACCESS PROVIDED.			
PADMOUNTED SUBSTATION SITE IS LEVEL.			
PADMOUNTED SUBSTATION SITE SIZE - 5.7M x 4.8M			
RETAINING WALLS (INCL. RPEQ APPROVAL IF REQUIRED).			
PADMOUNTED SUBSTATION SITE IS CLEAR OF ALL SERVICES.			
CORRECT FOUNDATION INSTALLED.			
CONDUITS ARE INSTALLED (INCLUDING BUNGS & DRAW WIRES)			
CONDUITS TRENCHES BACKFILLED & COMPACTED.			
FENCES INSTALLED.			
HAVE 2000mm DEDICATED CLEAR ZONE IN FRONT OF PLINTH.			
CUSTOMER RESPONSIBILITIES PRIOR TO COMMISSIONING			
SITE BACKFILLED & COMPACTED (INCLUDING UNDER PLINTH)			
BOUNDARY SURROUND & SITE SURFACE CONCRETED.			
AREA SUITABLY DRAINED (NO PONDING)			
SITE CLEANED-UP NEATLY.			

NOTE. × if applicable.



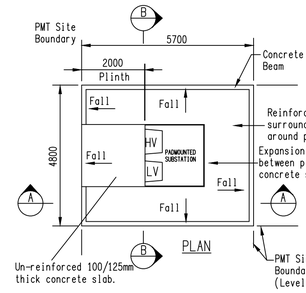




NOTES:

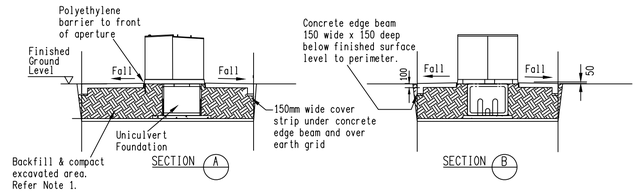
1. Foundation design details are as follows:
   - Unstable soils are soft clay to sandy gravel with a soil strength 50 - 150 kPa. These soil types REQUIRE a base slab as shown.
   - Stable soils are very stiff clay to shale/rock with soil strength of 150KPa or higher. These soil types DO NOT REQUIRE a base slab.
2. Lift uniculvert & base slab separately with 4 x 1.3t Reid Swiftlift lifting eyes.
3. Position top face of Uniculvert at finished ground level. (refer Civil Constructions drawings)
4. Installed Uniculvert shall be level.
5. If deep excavation is required under transformer cabinet and in front of foundation, plinth front edge shall be propped while excavation remains open.
6. Foundation Components:
   1 x Uniculvert (Stock Code 19959)
   2 x End Walls (Stock Code 19959)
   1 x Base Slab (Stock Code 19960)
   Uniculvert and End Walls come assembled with a Layer of Preformed Sealant to the perimeter of the Uniculvert End and between the Mating Surfaces.
7. Only remove minimum Knockout Area required to pass Conduits (Max. Conduit 150mm Nom. Dia.) or Cables through uniculvert void by tapping out Concrete.
8. Seal between conduits/cables and concrete end wall at knockout interface by grouting with high strength sand and cement grout after conduit installation to prevent entry of vermin and backfill ingress to uniculvert void.
9. Excavate to property boundaries to facilitate installation of earth grid.
10. Consumers mains (where present) shall not cross HV mains or run back under transformer.

FOUNDATION DETAIL



NOTE:

1. Backfill excavated area with crusher dust, deco or pit sand and compact in place. Ensuring that only pit sand is used around direct laid cables.
2. Reinforced concrete surround slab:
   a) 100/125mm thick slab;
   b) 11 TM trench mesh reinforcement in centre of slab;
   c) 25 MPa grade concrete;
   d) Finish by wood float or by nylon broom.
3. The top face of the concrete surround slab shall be 25mm above the final surface level (when turf is laid).
4. The concrete slab is to slope away from plinth falling at a slope of 1 in 25.
5. Cable apertures through the precast concrete plinth shall be backfilled to 50mm from the top of plinth. A 30mm deep layer of 1:16 ratio weak mix concrete shall be placed to seal aperture.
6. The surface of the surround slab may be finished with a stencil pattern surface to match the surrounding pavements of the development. (Use Textcrete or equivalent product. Construct to supplier's specifications.)



REINSTATEMENT DETAIL

Cable conduit shall be of the following type;

125mm Dia UPVC Light Duty Rigid Pressure pipe to AS/NZS2053. Conduit bends shall have a Minimum radius of 1830mm.

The conduits shall be laid in a straight line with sealed joints. Should any deviation be required in conduit route, 1830mm radius bends shall be used. Bends shall not be greater than 30 degrees. Cable pits shall be used for greater deviations. Refer to ENERGEX Planner for details.

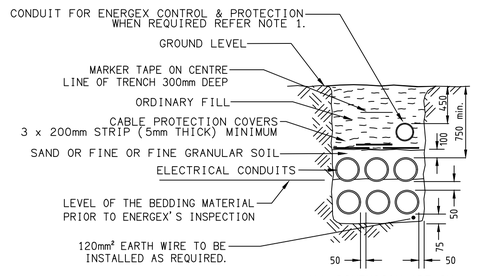
The conduits shall have 750mm minimum cover and shall be bedded on compacted sand or fine granular soil free of rocks. The socket ends of conduits shall finish 150mm beyond the R.P. alignment and shall have 750mm min cover below finished footpath level at the R.P. alignment. A bellmouth shall be provided where the conduits terminate in the substation wall or wall of a substation trench. A 2.5mm plastic coated steel draw wire or 6mm braided Polypropylene Rope "BORAL KA10850" shall be installed in each conduit (1kN min. breaking strength).

Because of the physical distortion likely in large groups of buried UPVC conduits, High Density conduits shall be used for groups of more than 6 conduits. Conduits shall be 125mm or 150mm as specified by ENERGEX and shall be supplied and installed by the developer. Conduits shall be securely sealed by builder to prevent ingress of dirt until cable installation by ENERGEX and then resealed by ENERGEX.

ENERGEX may need to install an earth wire and earth rods in conduit trenches from the substation site.

Electricity Supply Conduits and Cables shall have polymeric cable protection covers placed 100mm above the top conduit face of the electricity supply conduits and cables. Cable protection cover strips shall be lapped when placed together; 100mm minimum along the longitudinal axis, 40mm minimum along the traverse axis and shall extend 40mm minimum past the external edges of the conduit/cable bank.

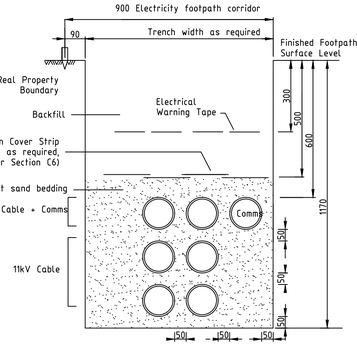
Polymeric cable protection cover shall be a minimum of 5mm thick as described in Australian Standard; AS/NZS 4702 for Polymeric Cable Protection Covers.



NOTE

1. INSTALL A NEW COMMUNICATIONS CONDUIT OF MINIMUM SIZE, 100mm LD PVC WHITE CONDUIT,

TYPICAL TRENCH CROSS SECTION FOR ENERGEX CONDUITS IN PRIVATE PROPERTY



Notes:
(1) Energex Communication conduit to be 100mm white located top kerbside.
(2) Power cable conduits to be 125mm orange, light duty.
(3) Separation for conduits - 50mm minimum, up to 160mm desirable.
(3) Increased cover required for road crossings.
(4) Select Backfill and Pit sand bedding complying with ENERGEX UDCM Section C2
(5) For de-rating factors for cables in duct bank, refer to the Plant Rating Manual

11KV NETWORK

TYPICAL CROSS SECTION - 11KV AND C&I (FOOTPATH ON PUBLIC FOOTPATHS)

NOTES

1. CABLE CONDUIT SHALL BE OF THE FOLLOWING TYPE: LIGHT DUTY ELECTRICAL CONDUIT TO AS/NZS 2053. CONDUIT BENDS SHALL HAVE A MINIMUM RADIUS OF 1830mm.
2. CONDUITS SHALL BE 125mm ORANGE FOR ELECTRICAL AND 100MM WHITE (LOCATED TOP KERBSIDE) AS SPECIFIED BY ENERGEX AND SHALL BE SUPPLIED AND INSTALLED BY THE DEVELOPER OR ENERGEX. CONDUITS SHALL BE SECURELY SEALED TO PREVENT INGRESS OF DIRT UNTIL CABLE INSTALLATION AND THEN RESEALED.
3. EACH CONDUIT TO BE FITTED WITH A 6mm BRAID POLYPROPYLENE DRAW ROPE TO PULL IN HAULAGE ROPE. (MINIMUM BREAKING STRENGTH OF 1.0kN.)
4. ENERGEX MAY NEED TO INSTALL AN EARTH WIRE AND EARTH RODS IN CONDUIT TRENCHES FROM THE SUBSTATION SITE.
5. ELECTRICITY SUPPLY CONDUITS AND CABLES SHALL HAVE POLYMERIC CABLE PROTECTION COVER STRIPS PLACED 100mm ABOVE THE TOP CONDUIT FACE OF THE ELECTRICITY SUPPLY CONDUITS AND CABLES. CABLE PROTECTION COVER STRIP SHALL BE LAPPED WHEN PLACED TOGETHER; 100mm MINIMUM ALONG THE LONGITUDINAL AXIS, 40mm MINIMUM ALONG THE TRAVERSE AXIS AND SHALL EXTEND 40mm MINIMUM PAST THE EXTERNAL EDGES OF THE CONDUIT/CABLE BANK.
6. POLYMERIC CABLE PROTECTION COVER SHALL BE A MINIMUM OF 5mm THICK AS DESCRIBED IN THE AUSTRALIAN STANDARD; AS4702 FPR POLYMETRIC CABLE PROTECTION COVERS.
7. REDUCED CONDUIT SEPARATION MAY BE ACCEPTED TO AVOID SPECIFIC OBSTACLES
8. MIN. DEPTHS SHOWN ARE THOSE DEPTHS REQUIRED BY CODE OF PRACTICE, WORKS (MINOR ROADS) AND DMR (ARTERIAL ROADS).

Note

ENERGEX will not commision the transformer until the transformer site has been completed to ENERGEX specifications (including the concrete surround).

ENERGEX specifications for construction of the transformer site and installation of conduits on private property are available at the following web address.
https://swp.energex.com.au/service_providers/technical_docs/asp/technical_documents.asp

Underground Distribution Construction Manual 00305 v16
Section C1 - Conduits
Section C2 - Excavations & Reinstatements
Section C3 - Padmount Transformer Sites

Commercial and Industrial Substations Manual 00293 v11
Section 14 - Drawing 11040-A4-14-33 Sht 2

The site contractor is to refer all substation construction queries to their electrical consultant.

ENERGEX ACCEPTANCE

NAME .....

OFFICE .....

SIGNED .....

DATE / /

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REV:	DESCRIPTION:	DATE:
B	CONSTRUCTION	18/01/2024

ELECTRICAL DESIGN GROUP BRISBANE PTY LTD
ACN 092 710 793

TRADING AS:
ELECTRICAL DESIGN GROUP

USE FIGURED DIMENSIONS IN PREFERENCE TO SCALE.

ALL DIMENSIONS TO BE VERIFIED ONSITE.

CULVERT INSPECTION REQUIRED BEFORE TRANSFORMER IS DELIVERED - 5 BUSINESS DAYS PRIOR NOTICE NEEDED.
CONTACT _____ PH: _____ EMAIL: _____

TRANSFORMER WILL NOT BE ENERGISED UNTIL ALL REQUIREMENTS ARE MET.

ELECTRICAL DESIGN GROUP
ELECTRICAL BUILDING SERVICES CONSULTANTS
BRISBANE GOLD COAST
P.O.Box 15, Sherwood Q.4075
Phone: (07) 3278 4375
Email: brisbane@edg.net.au
Web: www.edg.net.au

PROJECT:
CURRUMBIN WILDLIFE SANCTUARY
SITE MSB

28 TOMEWIN STREET, CURRUMBIN, QUEENSLAND

DRAWING:
ELECTRICAL SERVICES
ENERGEX PADMOUNT SUBSTATION STANDARD DETAILS

SCALE:	PROJECT NO:	DRAWING NO:	REVISION:
NOT TO SCALE AT A1	C3112a	E04	B

ENERGEX SPECIFICATION

1.0 INTRODUCTION

This specification caters for padmounted transformer stations on customers premises within property and not fronting road reserve.

Padmounted transformer foundations to be built according to site sketch and design standards contained in this document.

It is the responsibility of the customer's consultant to ensure that the information contained herein is passed on to the relevant contractors.

2.0 NEGOTIATIONS BETWEEN ENERGEX AND CUSTOMER

1. An application is made to ENERGEX giving information with regards to the size and type of load, site plans and drawings, and the location of the required supply.

2. If a substation is required, the substation site is agreed upon by ENERGEX and the customer.

3. ENERGEX accepts a site sketch detailing the substation construction details, specification, standard drawings (An RPEQ approved drawing may be required for structural plans).

4. ENERGEX prepares a Network Connection Contract with a request for payment (if required). Customer to accept Network Connection Contract and returns with any payment required.

5. Customer excavates PMT site, installs foundation and conduit trenches.

6. Customer leaves PMT site and conduit trench open for ENERGEX inspection as required..

7. ENERGEX inspects PMT site and conduit installation.

8. ENERGEX installs earthing and PMT cubicle

9. Customer installs their LV consumers mains

10. Customer reinstates PMT surface with concrete apron surround

11. ENERGEX energizes substation providing that:

    a. Customer responsibilities are fulfilled.
    b. All payments have been received (including storage fee if applicable).
    c. ENERGEX has a signed Network Connection Contract.
    d. ENERGEX easements secured (if required).

3.0 BUILDING GENERAL

3.1 Building Services: -

No services other than ENERGEX's electric lines and approved parts of the customer's electrical mains shall pass through or under the substation area.

3.2 Workmanship: -

Building work shall be completed in a neat tradesman like manner and shall be as detailed on the drawings.

3.3 Construction: -

All civil construction works must be undertaken in accordance with the requirements specified in ENERGEX Work Category Specification WCS61 "Underground Civil Construction".

The padmounted transformer site shall be prepared by the customer.
An access area of 4800mm x 5700mm is required for cabling, earthing, installation and safe operation of apparatus. Proposed overhangs must be approved by Energex & be greater than 5.0m above padmount site.

The transformer site shall be above the local flood level (Q100/DFL which ever is higher) with the top of the concrete plinth 25mm above the finished yard level.
Cable apertures through the precast concrete plinth shall be backfilled to 50mm from the top of plinth.

The concrete slab is to slope away from plinth falling at a slope of 1 in 25.

The transformer site shall be level ±25mm with a maximum cut and fill of ±150 mm and shall be concreted in accordance with ENERGEX Underground Distribution Construction Manual Sect C3.

Concrete filled 140mm OD 5.6mm thick galvanised steel pipes may be required outside the site for protection from vehicles in car parks, etc. Refer to ENERGEX Underground Distribution Construction Manual Section C3.

For a steep sloping site a retaining wall and guard rail will be required to be constructed by the customer. Refer to ENERGEX Underground Distribution Construction Manual.

4.00 ACCESS

4.1 Personnel: -

ENERGEX's staff shall have access to the substation at all times without having to enter security areas. The onus will be on the customer to maintain said access 24 hours a day, 7 days a week.

A minimum of 2.0 metres of clear access shall be provided in front of the substation cabinet. This will provide a safe working platform and access around the lockable doors when opened for emergency operations.

4.2 Heavy Equipment - Stable Ground Sites: -

Padmounted transformers are hauled by flat bed trucks and "Franna" style mobile cranes.

Any access or manoeuvring area which will be used for the purpose of off loading or loading transformers should be constructed to take a minimum loading of 31 tonnes in all weather conditions.

The headroom along the access route is required to be 5.0m with no obstructions over the crane manoeuvring area. The width of access required for reasonably straight routes should be increased on bends and in the manoeuvring area near the substation equipment access door required for the off loading of the transformer from the truck by the mobile

Any reinstatement which may be necessary in the event of damage to concrete slab, paving tiles or road surfaces etc. is the responsibility of the owner of the property.

5.00 CABLE CONDUITS

All conduits, associated fittings and bends shall comply with the requirements of AS/NZS 2053 as specified by ENERGEX and shall be supplied and installed by the developer.
Conduits shall be securely sealed by builder to prevent ingress of dirt until cable installation by ENERGEX and then resealed by ENERGEX. All above ground conduits shall be U.V. stabalised.

Refer to ENERGEX Underground Distribution Construction Manual for details of conduit installation within the padmount transformer site.

Each conduit to be fitted with a 6mm braided polypropylene draw rope.

ENERGEX may need to install an earth wire and earth rods in conduit trenches from the substation site.

Polymeric cable protection cover shall be placed over all conduits and cables outside the electricity footpath alignment. To provide protection, electricity supply conduits and cables shall have polymetric cable protection covers placed 100mm above the top conduit face of the electricity supply conduits and cables. Cable protection covers shall be lapped when placed together; 100mm minimum along the logitudinal axis, 40mm minimum along the transverse axis and shall extend 40mm minimum past the external edges of the conduit/cable bank.

Polymeric cable protection cover shall be a minimum of 5mm thick as described in Australian Standard; AS/NZS 4702 for Polymeric Cable Protection Covers.
The supply of polymeric cable protection covers and marked plastic warning tape shall be the responsibility of the developer and they shall be manufactured and supplied in accordance with the ENERGEX Underground Distribution Construction Manual Section C6.

6.00 EARTHING

An earthing system consisting of driven earth rods, a continuous earth ring around the substation connecting the rods and earthing tails connected to ENERGEX equipment and gates will be installed by ENERGEX. The earthing system may be required to be extended into cable trenches adjoining the transformer site.

The builder shall notify ENERGEX's works co-ordinator one week prior to trench and site foundation excavation to allow the installation of the earthing system and location of the earthing tails for equipment earthing.

7.00 CUSTOMER'S CABLES

Where supply is made available from the LV busbars of the transformer, the customer shall supply all connectors, stainless steel bolts, nuts, washers, cable cleats and supports and connect to the terminals as directed by ENERGEX.

Where supply is made available from a circuit of a low voltage distribution board, the customer shall supply all connectors, stainless steel bolts, nuts, washers and connect to the terminals as directed by ENERGEX.

Under no circumstances shall the customer cabling pass though or under the padmounted transformer culvert, nor the culvert end wall "knock-out" sections be removed.

8.00 UNDERGROUND CABLE PITS

Refer to ENERGEX Underground Distribution Construction Manual Section C5 for concrete pits.

9.0 EASEMENTS

The builder/developer is to provide Energex initially with a written undertaking that the easements will granted so that the project may proceed during the design process. Easement shall cover the HV cable route, substation site and remote earth grid area (if applicable). The ENERGEX newtwork will not be commissioned until all the required easements have been registered.

The developer/builder is required to grant the easements as noted on the Easement/Site Plans referred to by Energex in the Network Connection Contract prior to the supply being made available.

All costs associated with the registering, surveying, document perpetration etc shall be bourne by the builder/developer.

The builder/developer shall Liaise with Energex's property department in relation to ensuring that all necessary documentation is completed. Contact Energex Property on propertyenquiries@energex.com.au including your project reference number.

The following general details will apply:
- all documents shall be acceptable to the Department of Natural Resources
- The grantee should be shown as "Energex Limited (ACN 078 849 055)"
- refer to Memorandum No 708346714 for underground electricity (memorandum is registered with Natural Resources)

The builder/developer will forward the document to Energex for review and execution. Energex will then return the documents to the builder/developer for registration with The department of Natural Resources.

The builder/developer is to return a copy of the Registration Confirmation Statement to Energex.

All private services easements must be registered prior to supply being made available to the future development sites.

10.0 RETAINING WALLS / FENCES

Retaining walls shall be installed where a change in ground level of 300mm or more occurs within 2000mm of the substation clearance zone. Fences shall be installed for:
- Residential areas (Typically 1200mm high)
- Sloping sites (either front to back or left-right).

Fences and Retaining walls shall be constructed to ENERGEX standards to satisfy minimum clearance zones of common earth configurations. Refer to section C3-1 for retaining wall construction notes. Alternative designs to those provided in this manual will require a Civil Engineer's Certification.

Safety fences shall comply with the requirements of the Workplace Health and Safety Act, AS1657 and AS1926 and all amendments.
Metal retaining wall fences shall be used in CMEN areas. (Refer UDCM C3.1 Sheet 6)

All retaining walls and safety fencing on private property shall be maintained by the owner at no cost to Energex.

All fencing materials shall be galvanised or finished in an equally durable manner. All chainwire and support wires shall be PVC coated and coloured black or green.

All elevated areas shall be provided with toe boards and infill type fencing.

11.00 ENERGEX COMMUNICATION CONDUIT

Conduit
ENERGEX communication conduit shall be white, Medium Duty (MD), UPVC to AS/NZS 2053, Energex Technical Specification TS270 and AS1345. Conduit couplings shall comply with all the above requirements.

Tracer/Draw Rope
The electricity communications conduit when installed shall be fitted with a continuous metallic tracer/draw rope suitable for passing an electricity current through to accurately identify the conduit.

Installation
ENERGEX communication conduit installation:
100mm conduit shall be located adjacent to the top Low Voltage conduits on the kerb side of the trench, between the LV conduits and any Public Lighting conduit.

ENERGEX ACCEPTANCE

NAME .....

OFFICE .....

SIGNED .....

DATE / /

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REV:	DESCRIPTION:	DATE:
B	CONSTRUCTION	18/01/2024

CULVERT INSPECTION REQUIRED BEFORE TRANSFORMER IS DELIVERED
- 5 BUSINESS DAYS PRIOR NOTICE NEEDED.
CONTACT _____ PH: _____ EMAIL: _____

TRANSFORMER WILL NOT BE ENERGISED UNTIL ALL REQUIREMENTS ARE MET.

ELECTRICAL DESIGN GROUP
ELECTRICAL BUILDING SERVICES CONSULTANTS
BRISBANE GOLD COAST

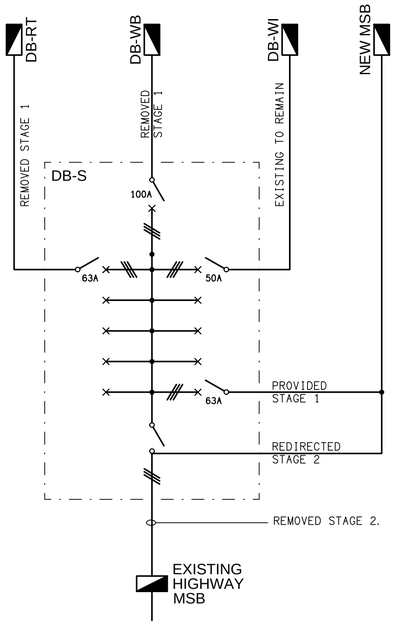
P.O.Box 15, Sherwood Q.4075
Phone: (07) 3278 4375
Email: brisbane@edg.net.au
Web: www.edg.net.au

PROJECT:
CURRUMBIN WILDLIFE SANCTUARY
SITE MSB

28 TOMEWIN STREET, CURRUMBIN, QUEENSLAND

DRAWING:
ELECTRICAL SERVICES
ENERGEX PADMOUNT SUBSTATION STANDARD NOTES

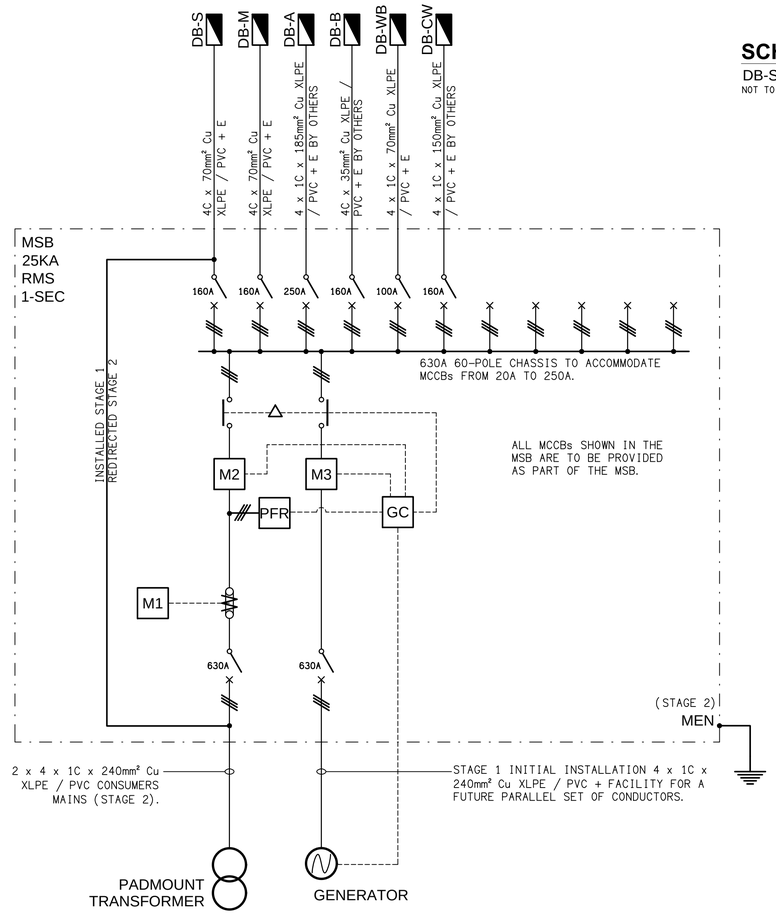
SCALE:	PROJECT NO:	DRAWING NO:	REVISION:
NOT TO SCALE AT A1	C3112a	E05	B



SCHEMATIC

DB-S CONFIGURATION

NOT TO SCALE



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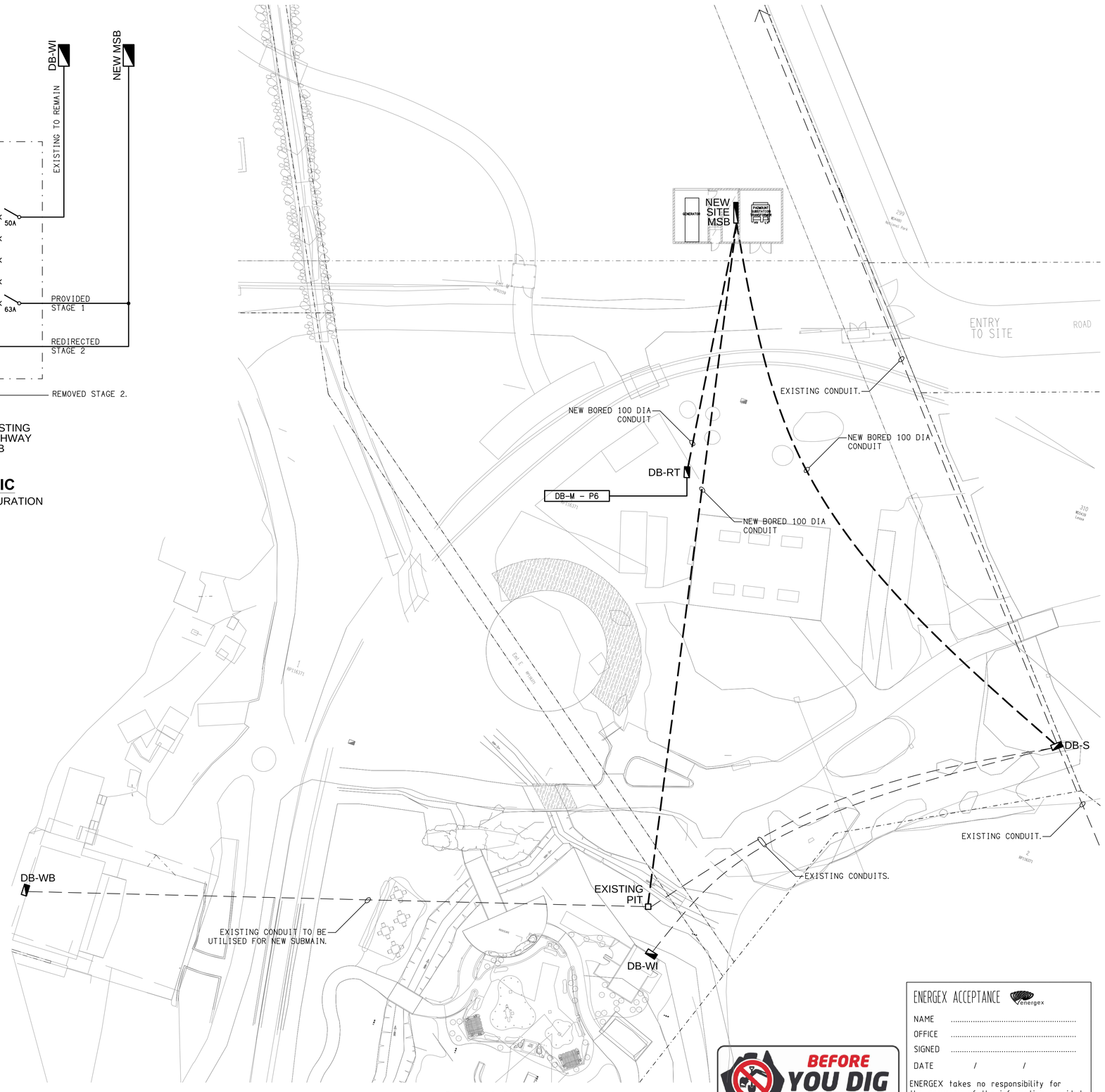
MSB CONFIGURATION

NOT TO SCALE



SITE PLAN

CONDUIT ROUTES

SCALE 1:250

ENERGEX ACCEPTANCE

NAME .....

OFFICE .....

SIGNED .....

DATE / /

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REV:	DESCRIPTION:	DATE:
C	CONSTRUCTION	18/01/2024

ELECTRICAL DESIGN GROUP BRISBANE PTY LTD
ACN 092 710 793

TRADING AS:
ELECTRICAL DESIGN GROUP

CULVERT INSPECTION REQUIRED BEFORE TRANSFORMER IS DELIVERED
- 5 BUSINESS DAYS PRIOR NOTICE NEEDED.
CONTACT _____ PH: _____ EMAIL: _____

TRANSFORMER WILL NOT BE ENERGISED UNTIL ALL REQUIREMENTS ARE MET.

ELECTRICAL DESIGN GROUP
ELECTRICAL BUILDING SERVICES CONSULTANTS
BRISBANE GOLD COAST

P.O.Box 15, Sherwood Q.4075
Phone: (07) 3278 4375
Email: brisbane@edg.net.au
Web: www.edg.net.au

PROJECT:
CURRUMBIN WILDLIFE SANCTUARY
SITE MSB

28 TOMEWIN STREET, CURRUMBIN, QUEENSLAND

DRAWING:
ELECTRICAL SERVICES
SITE CONDUIT PLAN & POWER SCHEMATICS

SCALE: 1:250 AT A1

PROJECT NO:	DRAWING NO:	REVISION:
C3112a	E06	C

NOTES:

1. FLOOD LEVEL RL 3.4 AHD.

2. PADMOUNT SUBSTATION RL 4.0 AHD.

3. ROAD RL 2.5 AHD.

4. FOR ALL ENERGEX RELATED CONSTRUCTION QUERIES THE ELECTRICAL DESIGN GROUP ON 0418 893 338 IS THE FIRST POINT OF CALL.

5. THE BUILDING WITHIN 4m OF THE PADMOUNT SUBSTATION IS PROTECTED BY A FRL 120/120/120 BARRIER.

6. THERE ARE NO HYDRANTS WITHIN 0m OF THE PADMOUNT SUBSTATION AS PER THE REQUIREMENTS OF AS2419.1.

7. THERE ARE NO TELSTRA / NBN PITS OR PILLARS WITHIN 2m OF THE PADMOUNT SUBSTATION.

8. THE GENERATOR AND FUEL TANK ARE TO BE INSTALLED IN ACCORDANCE WITH AS 1940.

9. THE SUBSTATION SITE LOCATION COMPLIES WITH THE HAZARDOUS AREA CLEARANCE REQUIREMENTS OF AS/NZS1940.

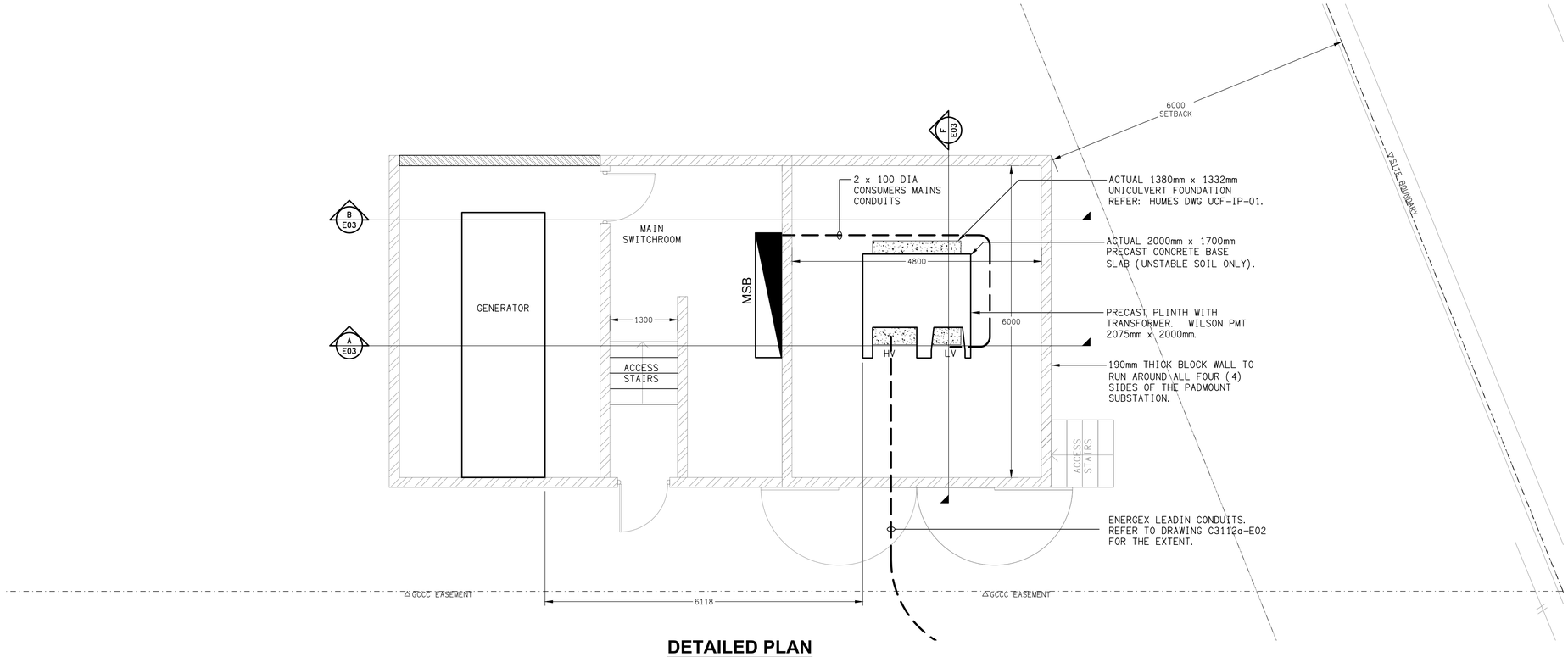
10. THERE ARE NO GAS SERVICES WITHIN 20M OF THE PADMOUNT SUBSTATION SITE AS PER THE REQUIREMENTS OF AS/NZS 5601.1.

11. THE PADMOUNT SUBSTATION IS NOT LOCATED WITHIN 20M OF A SWIMMING POOL. 12. CIVIL RPEQ CERTIFICATION (FORM 15) WILL BE PROVIDED FOR THE DESIGN OF ALL RETAINING WALLS.

13. CIVIL RPEQ CERTIFICATION (FORM 16) WILL BE PROVIDED TO CERTIFY ALL CIVIL CONSTRUCTION WORKS PROVIDED BY THE CUSTOMER.

14. THE ELECTRICAL PLANT STRUCTURE AND COMPONENTS ARE TO BE INSTALLED IN ACCORDANCE WITH THE NCC BCA 2022.

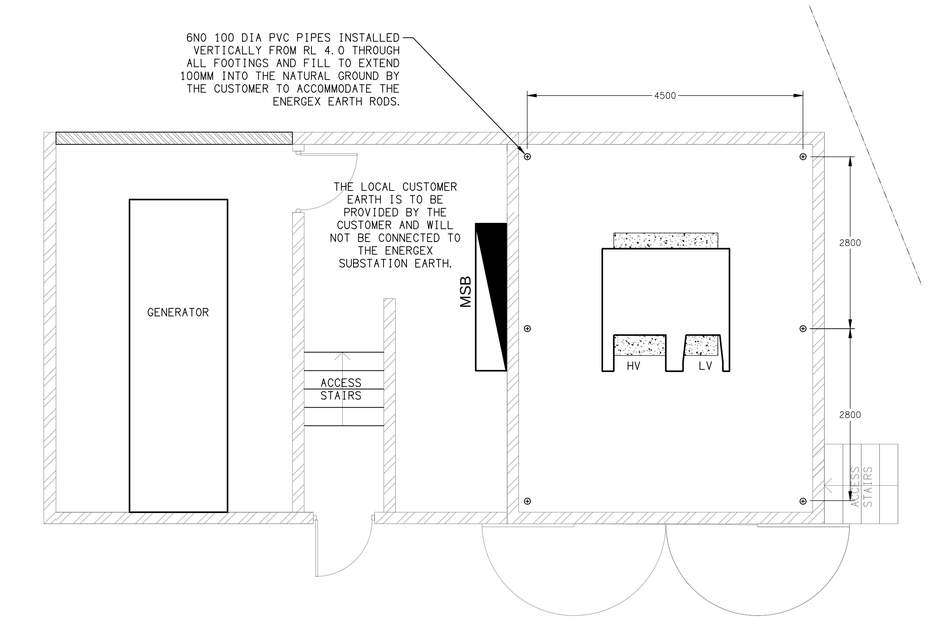
15. THE PADMOUNT SITE MUST BE INSPECTED BY ENERGEX AND HANDED OVER TO ENERGEX AT LEAST 6 WEEKS PRIOR TO THE SUPPLY DATE.



DETAILED PLAN

ELECTRICAL PLANT

SCALE 1:50



DETAILED PLAN

EARTHING ARRANGEMENTS

SCALE 1:50

NOTES:

1. DO NOT RUN ANY PRIVATE SERVICES CABLING THROUGH THE CULVERT.

2. BACKFILLING OF THE PADMOUNT SITE AFTER THE ENERGEX WORKS ARE COMPLETE IS TO BE BY THE CUSTOMER. THE BACKFILLING IS TO BE COMPACTED BEFORE THE FINAL RESTORATION OF THE CONCRETE SURROUND BY THE CUSTOMER AS PER THE ENERGEX SPECIFICATIONS.

3. A 2M WIDE SECTION OF THE CONCRETE SURROUND IN FRONT OF THE TRANSFORMER IS TO BE UN-REINFORCED SECTIONED WITH CONSTRUCTION JOINTS FOR EASY REMOVAL.

ENERGEX ACCEPTANCE

NAME .....

OFFICE .....

SIGNED .....

DATE / /

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REV:	DESCRIPTION:	DATE:
B	CONSTRUCTION	18/01/2024

ELECTRICAL DESIGN GROUP BRISBANE PTY LTD
ACN 092 710 793

TRADING AS:
ELECTRICAL DESIGN GROUP

USE FIGURED DIMENSIONS IN PREFERENCE TO SCALE.

ALL DIMENSIONS TO BE VERIFIED ONSITE.

CULVERT INSPECTION REQUIRED BEFORE TRANSFORMER IS DELIVERED - 5 BUSINESS DAYS PRIOR NOTICE NEEDED.
CONTACT _____ PH: _____ EMAIL: _____

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ELECTRICAL DESIGN GROUP
ELECTRICAL BUILDING SERVICES CONSULTANTS
BRISBANE GOLD COAST

P.O.Box 15, Sherwood Q.4075
Phone: (07) 3278 4375
Email: brisbane@edg.net.au
Web: www.edg.net.au

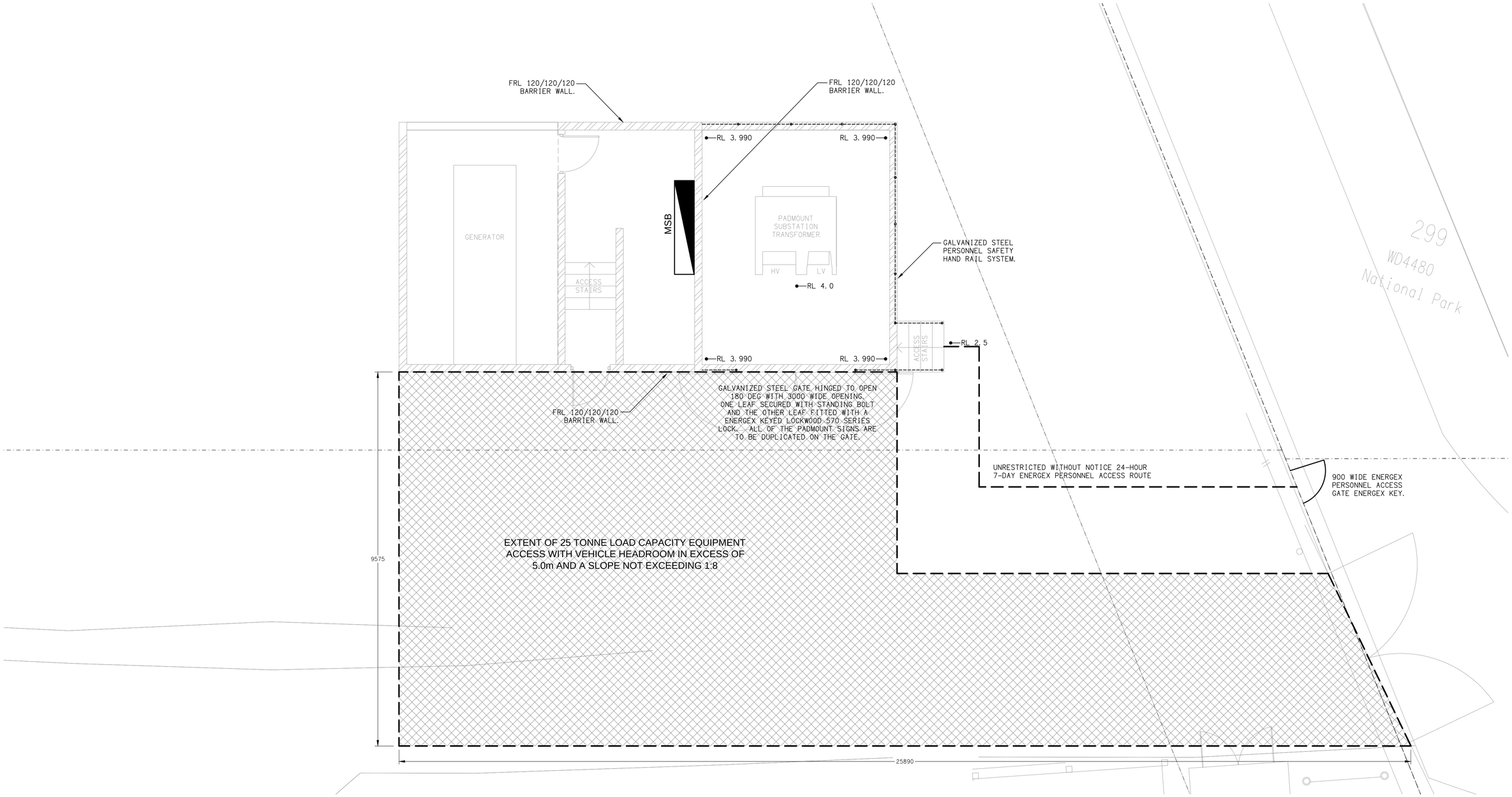
PROJECT:
CURRUMBIN WILDLIFE SANCTUARY
SITE MSB

28 TOMEWIN STREET, CURRUMBIN, QUEENSLAND

DRAWING:
ELECTRICAL SERVICES
ENERGEX REQUIREMENTS

SCALE: AS SHOWN AT A1

PROJECT NO:	DRAWING NO:	REVISION:
C3112a	E07	B



DETAILED PLAN

ENERGEX ACCESS

SCALE 1: 50

ENERGEX ACCEPTANCE

NAME .....

OFFICE .....

SIGNED .....

DATE / /

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REV:	DESCRIPTION:	DATE:
B	CONSTRUCTION	18/01/2024

ELECTRICAL DESIGN GROUP BRISBANE PTY LTD
ACN 092 710 793

TRADING AS:
ELECTRICAL DESIGN GROUP

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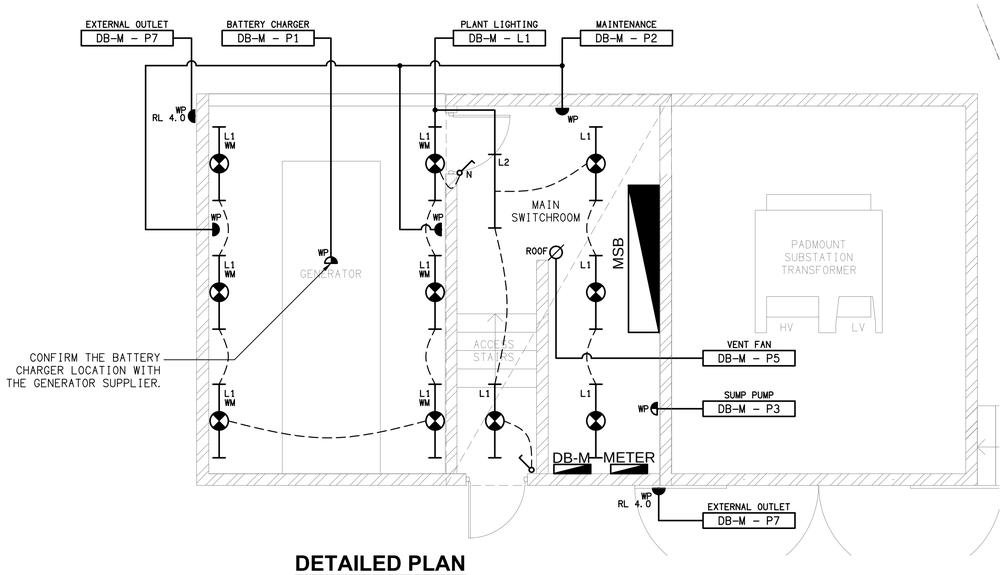
PROJECT:
CURRUMBIN WILDLIFE SANCTUARY
SITE MSB

28 TOMEWIN STREET, CURRUMBIN, QUEENSLAND

DRAWING:
ELECTRICAL SERVICES
ENERGEX ACCESS
EXTENT OF BARRIER WALL

SCALE: 1:50 AT A1

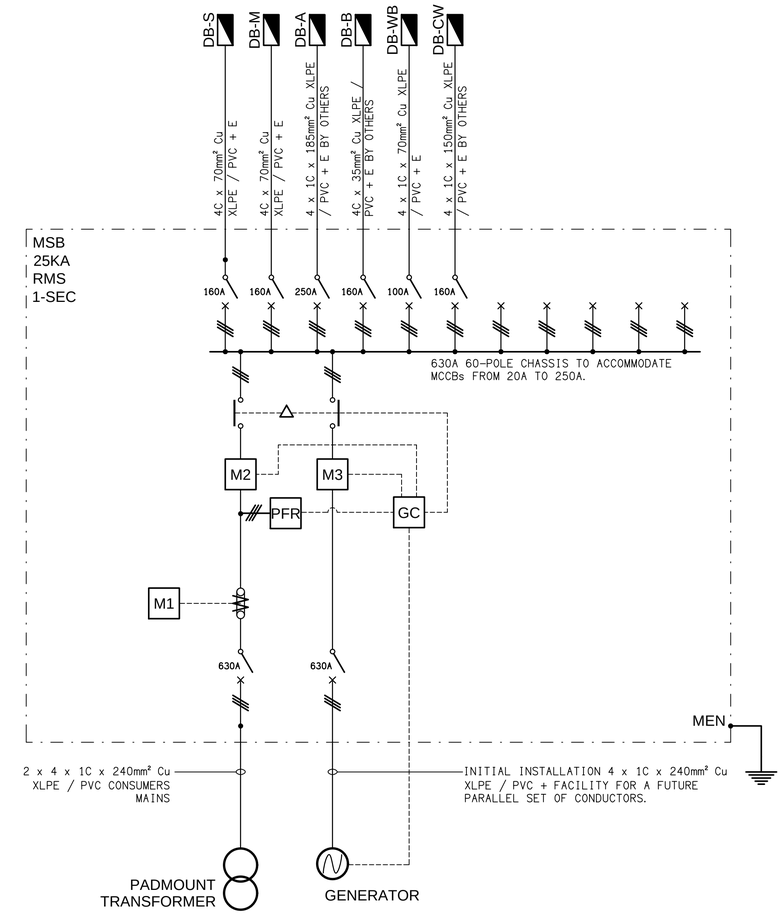
PROJECT NO:	DRAWING NO:	REVISION:
C3112a	E08	B



DETAILED PLAN

ELECTRICAL SERVICES PLAN

SCALE 1:50



SCHEMATIC

MAIN SWITCHBOARD

NOT TO SCALE

DETAILED PLAN

DIMENSIONED LAYOUT

SCALE 1:50

ENERGEX ACCEPTANCE

NAME .....

OFFICE .....

SIGNED .....

DATE / /

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B	CONSTRUCTION	18/01/2024

ELECTRICAL DESIGN GROUP BRISBANE PTY LTD
ACN 092 710 793

TRADING AS:
ELECTRICAL DESIGN GROUP

USE FIGURED DIMENSIONS IN PREFERENCE TO SCALE.

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PROJECT:
CURRUMBIN WILDLIFE SANCTUARY
SITE MSB

28 TOMEWIN STREET, CURRUMBIN, QUEENSLAND

DRAWING:
ELECTRICAL SERVICES
CUSTOMER ELECTRICAL WORKS

SCALE:	PROJECT NO:	DRAWING NO:	REVISION:
AS SHOWN AT A1	C3112a	E09	B