

<u>About Marline Engineering Newcastle</u> At Marline, we take a comprehensive approach when designing your new development.

With in-house electrical, mechanical and hydraulic engineers, Marline Engineering makes your engineering design needs a breeze. We are able to adjust, implement and create designs on AutoCAD and REVIT which makes it easy for contractors and builders to build our designs.

We advise you on the most affordable, practical and effective solutions and systems based on the site and legal factors.

As consulting engineers, Marline has also expanded the range of services to provide a wide range of building services disciplines including Air-conditioning, Electrical, Hydraulics, Fire Protection and Lift Services.

Marline has seen a huge amount of growth in the Energy sector. We provide services that go above and beyond the standard regulatory requirements and offer unique solutions to your Section J or JV3 Alternative solution reports. We also offer a fast NABERS and BEEC certification that ensures advertising for commercial properties are fully compliant with the CBD advertising rules and regulations.

With engineering consulting experience that dates back as far as 1975, we're one of the best engineering companies in Australia, and have developed the kind of projects that residential and commercial property developers benefit from.

Our Newcastle engineering firm continues to grow, however our team prides itself on every customer receiving the kind of high quality workmanship and personalised service that our company is known for.

To accommodate the expansion and demand for engineering services within Newcastle and throughout New South Wales, Marline Engineering has almost doubled the number of highly trained employees in the last five years.

Our engineering firm currently employs ten engineers, eight technical assistants and an office administrator. As a result, we continue to be leaders amongst engineering companies in Australia, with a large portfolio and a positive attitude.

PROJECT No: MN13203

CLIENT: CENTRAL DARLING SHIRE COUNCIL

> ARCHITECT: BARNSON

# Electrical Services VICTORY PARK CARAVAN PARK BARRIER HIGHWAY, WILCANNIA, NSW 2836

# **DRAWING SCHEDULE**

EL-00-000 EL-00-001 EL-00-002 EL-00-003	COVER SHEET LEGEND NOTES SITE RETICULATION
EL-10-001	POWER LAYOUT
EL-20-001	LIGHTING LAYOUT
EL-30-001	SINGLE LINE DIAGRAMS

# FOR CONSTRUCTION

**ELECTRICAL SERVICES** 

EL-00-000

RETICULATION			
	RETICULATION, CONDUIT AND/OR CABLING No. = REFER TO RETICULATION SCHEDULE		
———— E ————	ELECTRICAL CABLE / HD-uPVC CONDUIT (ORANGE)		
eE	EXISTING ELECTRICAL CABLE / CONDUIT		
c	COMMUNICATION CABLE / LD-uPVC CONDUIT (WHITE)		
<b>———</b> eC <b>—</b>	E — EXISTING COMMUNICATION CABLE / CONDUIT		
Security CABLE / LD-uPVC CONDUIT (WHITE)			
E	PRECAST CONCRETE PIT WITH TRAFFICABLE LIDS. PROVIDE DRAINAGE FROM PITS TO GRAVEL DRAIN OR STORMWATER SYSTEM - CO-ORDINATE WITH CIVIL/HYDRAULIC CONTRACTOR. ENSURE PITS ARE OF ADEQUATE SIZE WITH EASY ACCESS TO ALL CONDUITS. REFER TO SPECIFICATION AND DRAWINGS FOR PIT DETAILS C = COMMUNICATION PIT E = ELECTRICAL PIT		
Ē	EXISTING PIT		
	• SKIRTING DUCT (REFER TO ARCHITECTURAL DETAIL)		
	WALL DUCT (REFER TO ARCHITECTURAL DETAIL)		
	POWER CABLE LADDER (SIZE AS NOTED)		
	COMMUNICATION CABLE TRAY (SIZE AS NOTED)		

POWER		LIGHTING
	SUPPLY AUTHORITY SUBSTATION	×
PP	SUPPLY AUTHORITY POWER POLE	
Ρ	PRIVATE PILLAR	MS
MP	METERING PANEL	$\bowtie$
	NEW MAIN SWITCHBOARD (MSB)	PB
$\ge$	EXISTING MAIN SWITCHBOARD (MSB)	LSP
	EXISTING MAIN SWITCHBOARD (MSB) TO BE REMOVED	
	NEW DISTRIBUTION BOARD (DB)	R1
$\square$	EXISTING DISTRIBUTION BOARD (DB)	
	EXISTING DISTRIBUTION BOARD (DB) TO BE REMOVED	
	DISTRIBUTION BOARD OR SWITCHBOARD PROVIDED BY OTHER TRADES	
	SINGLE SWITCHED SOCKET OUTLET (10A UNLESS NOTED OTHERWISE)	
4	DOUBLE SWITCHED SOCKET OUTLET (10A UNLESS NOTED OTHERWISE)	
	DOUBLE SWITCHED SOCKET OUTLET C/W INTEGRAL DUAL USB OUTLETS	<b>0-</b> (E1)
≛	SINGLE PHASE CAPTIVE OUTLET, 3 PIN (RATING AS NOTED)	
<b>*</b>	THREE PHASE CAPTIVE OUTLET, 5 PIN (RATING AS NOTED)	
Ø	SINGLE PHASE PERMANENT CONNECTION TO HARDWIRED APPLIANCE (APPLIANCE PROVIDED BY OTHERS) CONTRACTOR TO PROVIDE ELECTRICAL CONNECTION C/W LOCAL ISOLATOR	
۶	THREE PHASE PERMANENT CONNECTION TO HARDWIRED	

APPLIANCE (APPLIANCE PROVIDED BY OTHERS) CONTRACTOR TO PROVIDE ELÈCTRICAL CONNECTION C/W LOCAL ISOLATOR

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# TING

ONE WAY LIGHT SWITCH 2W = TWO WAY LIGHT SWITCH INT =INTERMEDIATE LIGHT SWITCH D = DIMMABLE LIGHT SWITCH AOM = AUTO-OFF-MANUAL (3 POSITION) SWITCH CEILING MOUNTED MOTION SENSOR SURFACE MOUNTED MOTION SENSOR PHOTO CELL LIGHT SWITCH PANEL SWITCHING LIGHT FITTING REFERENCE - REFER TO TABLE BELOW R = RECESSED S = SURFACE MOUNTED D = DOWNLIGHT W = WALL LIGHT P = PENDANT LIGHT F = FLOOD LIGHT
SURFACE MOUNTED MOTION SENSOR PHOTO CELL LIGHT SWITCH PANEL SWITCHING 
PHOTO CELL LIGHT SWITCH PANEL SWITCHING LIGHT FITTING REFERENCE - REFER TO TABLE BELOW R = RECESSED S = SURFACE MOUNTED D = DOWNLIGHT W = WALL LIGHT P = PENDANT LIGHT F = FLOOD LIGHT
LIGHT SWITCH PANEL SWITCHING LIGHT FITTING REFERENCE - REFER TO TABLE BELOW R = RECESSED S = SURFACE MOUNTED D = DOWNLIGHT W = WALL LIGHT P = PENDANT LIGHT F = FLOOD LIGHT
SWITCHING — LIGHT FITTING REFERENCE - REFER TO TABLE BELOW R = RECESSED S = SURFACE MOUNTED D = DOWNLIGHT W = WALL LIGHT P = PENDANT LIGHT F = FLOOD LIGHT
<ul> <li>LIGHT FITTING REFERENCE - REFER TO TABLE BELOW</li> <li>R = RECESSED</li> <li>S = SURFACE MOUNTED</li> <li>D = DOWNLIGHT</li> <li>W = WALL LIGHT</li> <li>P = PENDANT LIGHT</li> <li>F = FLOOD LIGHT</li> </ul>
R = RECESSED $S = SURFACE MOUNTED$ $D = DOWNLIGHT$ $W = WALL LIGHT$ $P = PENDANT LIGHT$ $F = FLOOD LIGHT$
E = EXTERNAL POLE MOUNTED LIGHT
S1 24W LED SURFACE MOUNTED BATTEN, IP65, IK08,
4000K, 50,000 HRS LIFESPAN (L70), 5 YEAR WARRANTY. TYPE: GAMMA ILLUMINATION STORM G3 OR APPROVED EQUAL.
E1 LED POST TOP MOUNTED STREET LIGHT TO BE CONFIRMED.

# SINGLE LINE DIAGRAM

## BUSBAR CABLE OR WIRE (BROKEN LINES INDICATE EXISTING CABLE OR SWITCHWIRE) \_\_\_\_ SINGLE PHASE \_\_\_\_ THREE PHASE \_\_\_\_\_ ISOLATOR SWITCH - FAULT MAKE, LOAD BREAK -0 O-CIRCUIT BREAKER -0 ×-L = LOCKABLE TYPE <u>160A</u> 200A RCD = RESIDUAL CURRENT DEVICE INTEGRAL WITH CIRCUIT BREAKER (30mA U.N.O.) ST = SHUNT TRIP ATTACHED TO CIRCUIT BREAKER

UPPER VALUE = SET CURRENT/ LOWER VALUE = FRAME SIZE

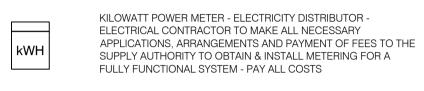
240V

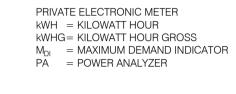
24V

POWER TRANSFORMER

# $\bigcirc$ CURRENT TRANSFORMER

FUSE







АОМ 

kWH

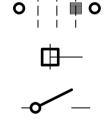
POWER FILTER

SURGE PROTECTION

TEE-OFF

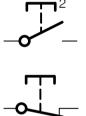
CONTACT/RELAY COIL

O ■ ! ! O THREE POSITION SELECTOR SWITCH (MANUAL/OFF/AUTO)



-O----- CONTACTOR CONTACTS NORMALLY CLOSED

CONTACTOR CONTACTS NORMALLY OPEN



NORMALLY OPEN PUSH BUTTON 2 = 2hr TIMER WITH RESET FACILITY = KEY OPERATED

NORMALLY CLOSED PUSH BUTTON

EARTH

# ABBREVIATIONS

MOUNTING HEIGHTS:		

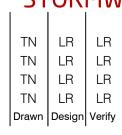


25mm MO = MOTORISED WINDOW MW = MICROWAVE OV = OVEN PDT = PENDANT SAN = SANITISER

SPR = SPRINKLER PUMP WM = WASHING MACHINE

А	14.10
3	29.09
2	29.07
1	06.07
Pov	

0.22 FOR CONSTRUCTION 9.22 100% ISSUE FOR REVIEW 7.22 FOR REVIEW 7.22 FOR REVIEW Rev Date Reason for Issue



— MECHANICAL —— ELECTRICAL —— HYDRAULIC —— FIRE —— ENERGY —— NABERS —— STORMWATER —— SECTION J —— BEEC — TN LR LR VICTORY PARK CARAVAN PARK TN LR LR TOILET AMENITIES BLOCK WILCANNIA

WILCANNIA

# CIRCUIT REFERENCE:

P = POWER, L = LIGHTS

DISTRIBUTION BOARD REF.

HWU = HOT WATER UNIT LM = LARGE ROCKER MECHANISM -

RH = RANGE HOOD RWR = RAIN WATER REUSE PUMP RV = ROOF VENTILATOR

SOL = SOLENOID VALVE

UW = UTENSIL WASHER

WO = WALL OVEN WP = WEATHERPROOF (IP56 MINIMUM)



-	1.	ERALNOTES THE CONTRACTOR, BY SUBMITTING A QUOTATION, SHALL BE DEEMED TO HAVE VISITED THE SITE AND REVIEWED ALL AVAILABLE DOCUMENTATION TO DETERMINE THE EXTENT OF WORK THAT WILL APPLY DURING THE CONTRACT PERIOD. NO VARIATION WILL BE ALLOWED THROUGH THE CONTRACTORS FAILURE TO INSPECT ALL AVAILABLE DOCUMENTATION AND THE BUILDING SITE AND ASCERTAIN THE EXTENT OF WORK THAT WILL APPLY THROUGHOUT THE CONTRACT PERIOD. UNFORSEEN DIFFICULTIES DUE TO THE NEGLECT OF THESE PRECAUTIONS SHALL NOT		MOLITION EXISTING ELI REMOVED AN IS TO REMAIN
:		RELIEVE THE ELECTRICAL TRADE FROM RESPONSIBILITY FOR THE FULL AND PROPER EXECUTION OF THESE WORKS. ALL MATERIALS, SUPPLIES AND ALL WORK DURING THE TENDER PERIOD INSTALLED SHALL COMPLY WITH THE CODES, STANDARDS, RULES AND REGULATIONS OF ALL STATUTORY	2.	TAKE EXTRE
		AUTHORITIES INCLUDING, BUT NOT LIMITED TO: - THE ELECTRICAL SERVICES SPECIFICATION - THE NATIONAL CONSTRUCTION CODE (BCA)	3.	WHERE A RE
		- AUSTRALIAN COMMUNICATIONS AND MEDIA AUTHORITY (ACMA) REGULATIONS - WORKPLACE HEALTH & SAFETY ACT, REGULATIONS AND CODES OF PRACTICE - AS/NZS 1125 CONDUCTORS IN INSULATED ELECTRIC CABLES AND FLEXIBLE CORDS - AS/NZS 1428 SERIES DESIGN FOR ACCESS AND MOBILITY		ALING AND LAE ALL SERVICE PILLOWS, ET
		- AS/NZS 1680 SERIES INTERIOR LIGHTING - AS 1939 DEGREES OF PROTECTION PROVIDED BY ENCLOSURES FOR ELECTRICAL EQUIPMENT	2.	SEAL ALL PE WALL BOXES
		<ul> <li>- AS 1940 STORAGE AND HANDLING OF FLAMMABLE AND COMBUSTIBLE LIQUIDS</li> <li>- AS/NZS 2053 NON METALLIC CONDUITS AND FITTINGS</li> <li>- AS/NZS 3000:2018 ELECTRICAL INSTALLATIONS (KNOWN AS THE AUSTRALIAN/NEW ZEALAND WIRING RULES).</li> </ul>	3.	SEAL ALL CC
		- AS/NZS 3008.1       ELECTRICAL INSTALLATIONS - SELECTION OF CABLES         - AS/NZS 3012       ELECTRICAL INSTALLATIONS - CONSTRUCTION AND DEMOLITION SITES	4.	STRUCTURA
		<ul> <li>AS/NZS 3013</li> <li>ELECTRICAL INSTALLATIONS - CLASSIFICATION OF THE FIRE AND MECHANICAL PERFORMANCE OF WIRING SYSTEM ELEMENTS</li> <li>AS/NZS 3017</li> <li>ELECTRICAL INSTALLATIONS- VERIFICATION GUIDELINES</li> <li>AS/NZS 3100</li> <li>APPROVAL AND TEST SPECIFICATION - GENERAL REQUIREMENTS FOR ELECTRICAL EQUIPMENT.</li> </ul>	5.	ALL SERVICE PERMANENT
		- AS/NZS 3111APPROVAL & TEST SPECIFICATION. MINIATURE OVER-CURRENT CIRCUIT-BREAKERS AS 3147PVC INSULATED ELEC. CABLES AND FLEX. CABLES FOR WORKING VOLTAGES OF 0.6/1KV		NDUIT:
		<ul> <li>AS/NZS 3190</li> <li>APPROVAL AND TEST SPECIFICATION - RESIDUAL CURRENT DEVICES (CURRENT-OPERATED EARTH-LEAKAGE DEVICES)</li> <li>AS/NZS 3760</li> <li>IN SERVICE SAFETY INSPECTION AND TESTING OF ELECTRICAL EQUIPMENT.</li> <li>AS 4072.1</li> <li>COMPONENTS FOR THE PROTECTION OF OPENINGS IN FIRE RESISTANT SEPARATING ELEMENTS - SERVICE PENETRATIONS AND</li> </ul>	1.	CONDUITS A 2053.7-2002,
		- AS/NZS 61439 SERIES CONTROL JOINTS. LOW VOLTAGE SWITCHGEAR AND CONTROL GEAR ASSEMBLIES	2.	ALL SURFAC
;		IN ADDITION, THE WORKS SHALL COMPLY WITH ANY OTHER CODE OR BODY HAVING JURISDICTION OVER THESE WORKS AND MENTIONED HEREIN. OBTAIN CURRENT VERSIONS OF ALL STANDARDS, SPECIFICATIONS, AND GUIDELINES PRIOR TO SUBMITTING TENDER PACKAGES. PAY ALL COSTS AND FEES AND SECURITY DEPOSITS ASSOCIATED WITH AUTHORITIES' APPROVALS, INCLUDING ANY PENALTY CHARGES AND/OR OVERTIME RATES ASSOCIATED WITH OUT OF HOURS WORK REQUIRED TO COMPLY WITH THE REQUIREMENTS OF THE SPECIFICATION.	3.	AND/OR VIBF
	4.	THE DRAWINGS ARE A GUIDE ONLY FOR THE LOCATION AND LAYOUT OF EQUIPMENT/SERVICES. CO-ORDINATE ALL EQUIPMENT ON SITE TO SUIT FURNITURE, STRUCTURE, AND ALL OTHER	4.	PROVIDE PV
		SERVICES. THE COMPLETE INSTALLATION SHALL BE OF FIRST QUALITY WORKMANSHIP COMPLYING TO THE RELEVANT STANDARDS AND TO THE APPROVAL OF THE CLIENT'S REPRESENTATIVE.	5.	PROVIDE ELE THE SIZE AN
	6.	THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER PROJECT DRAWINGS, SPECIFICATIONS AND CONTRACT DOCUMENTS. COORDINATE THE FINAL LOCATION OF ALL ITEMS WITH ALL OTHER TRADES PRIOR TO ANY INSTALLATION WORKS. WHERE A CONFLICT OF INFORMATION ARISES BETWEEN DRAWINGS AND SPECIFICATIONS. THE DOCUMENTATION INDICATING	6.	USE ONLY LA RADII OF THE
		THE DESIGN INTENT SHALL TAKE PRECEDENCE. CLIENT'S REPRESENTATIVE SHALL BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS. CONFIRM LOCATIONS AND POSITIONS OF ALL FITTINGS, OUTLETS AND EQUIPMENT WITH THE ARCHITECT/ SUPERINTENDENT PRIOR TO ORDERING. FAILURE TO DO SO SHALL RESULT WITH RELOCATING AND/OR REPLACING FITTINGS, OUTLETS AND EQUIPMENT AT THE DISCRETION OF THE ARCHITECT/CLIENT'S REPRESENTATIVE AT THE COST OF THE ELECTRICAL TRADE.	7.	CONDUIT SA TEMPERATU
		ALL ITEMS SHOWN ON THE PLANS ARE TO BE PROVIDED BY THE ELECTRICAL TRADE, UNLESS EXPLICITLY DETAILED OTHERWISE. PROVIDE ALL FIXTURES, FITTINGS, MOUNTING EQUIPMENT, SUPPORTS, BRACKETRY, HANGERS, FINISHES, AND ACCESSORIES NECESSARY TO COMPLETE THE INTENT OF THIS PROJECT. NOTE: 'PROVIDE' MEANS TO ORDER, SUPPLY, INSTALL, AND COMMISSION.	<u>CA</u> 1.	<u>BLING:</u> ALL CABLE S WITH AS/NZS REQUIREMEN
1		ALL EXISTING ELECTRICAL SERVICES ON SITE THAT HAVE NOT BEEN SHOWN ON THE PLANS ARE TO REMAIN UNLESS DETAILED OTHERWISE. CARRY OUT DETAILED SITE SURVEY PRIOR TO DEMOLITION AND EXCAVATION. IT IS THE RESPONSIBILITY OF THE ELECTRICAL TRADE TO ASCERTAIN THE EXISTENCE AND LOCATION OF EXISTING SERVICES. THE ELECTRICAL TRADE IS TO MAINTAIN ALL EXISTING SERVICES AND WHERE SHOWN, ADEQUATELY ISOLATE, DECOMMISSION, AND REMOVE ANYSERVICES MADE REDUNDANT BY THE SCOPE OF WORKS.	2. •	SUBCIRCUIT LIGHTING S
1	9.	MAINTAIN SEPARATION/SEGREGATION FROM LV POWER, COMMUNICATIONS, ELECTRONIC SECURITY AND FIRE SERVICES CABLING IN ACCORDANCE WITH AS/CA S009 AND AS/NZS 3000.	•	GENERAL F CONTROL ( FLEXIBLE C
		THE ELECTRICAL TRADE SHALL HAVE DUE REGARD FOR SITE OCCUPANTS AND ADJACENT PROPERTIES AND SHALL TAKE PRECAUTIONS TO MINIMIZE POTENTIALLY DISRUPTIVE OPERATIONS ON SITE. THE ELECTRICAL TRADE SHALL ALLOW FOR UNDERTAKING THESE WORKS OUT OF HOURS WHERE REQUIRED TO MINIMISE IMPACT. THE ELECTRICAL TRADE SHALL BE RESPONSIBLE FOR ANY DAMAGE AND FOR ANY CLAIMS THAT MAY ARISE AS A RESULT OF THEIR UNDERTAKING THE FULL SCOPE OF WORKS.	3.	SUPPORT AL
		REFER TO THE DETAILED ARCHITECTURAL STAGING AND DEMOLITION PLANS AND FOR CONSTRUCTION STAGING AND INCLUDE ANY ALLOWANCES TO MAINTAIN COMPLETE OPERABILITY OF THE SITE DURING EACH STAGE. PROVIDE A DETAILED SCHEDULE OF ALL ELECTRICAL WORKS IN LINE WITH THE ARCHITECTURAL STAGING PLAN TO THE SUPERINTENDENT AND CLIENT'S REPRESENTATIVE FOR APPROVAL PRIOR TO COMMENCING WORKS.		
		THE ELECTRICAL TRADE SHALL ASCERTAIN AND NOTIFY THE MAIN CONTRACTOR AT BOTH TENDER AND CONSTRUCTION STAGE, OF ANY BUILDERS WORKS REQUIRED TO COMPLETE THE ELECTRICAL INSTALLATION WORKS. THIS IS TO INCLUDE, BUT IS NOT LIMITED TO: OPENING, ACCESS PANELS, PLINTHS, SLABS, CHASES, PENETRATIONS, CUPBOARDS, FRAMING, TRENCHES, AND SUPPORTS. THE ELECTRICAL TRADE SHALL PROVIDE THE MAIN CONTRACTOR WITH A SET OF BUILDERS WORKS DRAWINGS WITHIN TWO WEEKS OF BEING REQUESTED TO DO SO AND WILL ALSO BE REQUIRED TO MARK OUT ON SITE THE EXACT LOCATION ON SITE.	5.	ALL FINAL SU BE GENERAL ONLY TO BE SECURELY F
	13. THE ELECTRICAL TRADE SHALL PROVIDE ON REQUEST AND AT NO EXTRA COST TO THE CLIENT, SAMPLES OF ALL EQUIPMENT, PLANT AND MATERIALS FOR APPROVAL BY THE CLIENT'S 1. REPRESENTATIVE. THE ELECTRICAL MAY BE REQUESTED TO FIT THESE ITEMS INTO A SAMPLE ROOM AS PART OF THE APPROVAL PROCESS.			WER: THE POWER
	14.	THE ELECTRICAL TRADE SHALL, WITHIN ONE WEEK OF BEING ENGAGED, SUBMIT TO THE CLIENT'S REPRESENTATIVE, A FULLY ITEMISED AND PRICED TENDER SCHEDULE (BILL OF QUANTITIES) WITH BROKEN DOWN ADDITION AND SUBTRACTION COSTS, UPON WHICH THE CONTRACTORS ESTIMATE HAS BEEN BASED ON. THE BILL OF QUANTITIES SHALL FORM THE BASIS FOR AGREEMENT OF MINOR VARIATIONS BY MEASUREMENT.		PROVIDE CIR LABELS. (CIR INSTALL NO I
		UNLESS OTHERWISE NOTED, THE ELECTRICAL TRADE SHALL PROVIDE ALL POWER AND CONTROLS CABLING AND ISOLATORS TO ALL PLANT NOMINATED FOR INSTALLATION BY OTHER		ALL SUB-CIR
		TRADES. SUPPLY AND INSTALLATION OF POWER AND CONTROLS WIRING FROM THE ISOLATOR TO THE PLANT IS TO BE BY OTHER TRADES UNLESS DIRECTED OTHERWISE.	5.	REFER TO AF
		WIRING IS INSTALLED IN CEILING SPACE, ATTACH TO STAINLESS STEEL CATENARY WIRE (OR CABLE TRAY WHERE DETAILED) AND FIX WITH TRIMMED CABLE TIES EVERY 500mm. CABLES SHALL NOT BE INSTALLED UNDER ON OR TOUCHING CEILING OR ROOF INSULATION. ALL CABLING INSTALLED IN CORE FILLED BLOCK WALLS OR INSULATED WALLS SHALL BE INSTALLED IN CONDUIT FOR THE FULL DISTANCE CABLING IS LOCATED WITHIN THE WALL. CONDUITS AND CABLING SHALL NOT BE INSTALLED INTO FIRE RATED CORE FILLED BLOCK WALLS. RUN SURFACE MOUNTED CONDUITS AND CABLING ONLY AT THE DIRECTION OF THE SITE SUPERVISOR.	6.	POWER OUT
	17.	ALL CABLE SIZES NOMINATED ON DRAWINGS ARE MINIMUM SIZES EXCLUDING DERATING FOR INSTALLATION FACTORS SUCH AS SPACING, ROUTING, ETC. FINAL SIZES TO BE IN ACCORDANCE		
		WITH AS/NZS 3008 AND AS/NZS 3017. CABLE SIZING CALCULATIONS SHALL HAVE THE APPLICABLE INSTALLATION DERATING FACTORS APPLIED. WALL AND CEILING CAVITY TEMPERATURES TO BE USED IN CABLE CALCULATIONS SHALL BE NO LESS THAN 50°C.	8.	ENSURE THE SITE/BUILDIN
	18.	SUBMIT FINAL CABLE SIZES TO SUPERINTENDENT FOR APPROVAL PRIOR TO ORDERING. VARIATIONS RESULTING FROM FAILURE TO COMPLY WITH THIS REQUIREMENT WILL BE REJECTED.		PROVIDE EAF
	1.	T <u>HING AND BONDING</u> SUPPLY AND INSTALL THE COMPLETE EARTHING SYSTEM FOR THE INSTALLATION INCLUDING ALL ELECTRODES, CABLING, CLAMPS, TEST-LINKS AND ALL ASSOCIATED ACCESSORIES AND EQUIPMENT IN ACCORDANCE WITH AS/NZS 3000 AND ANY OTHER RELEVANT STANDARD.		CLIPSAL 2000
	2.	LIGHTING FITTINGS, SOCKED OUTLETS AND FIXED TO APPLIANCES SHALL BE EARTHED BY MEANS OF THE EARTH CONDUCTOR WHICH FORMS PART OF THE RESPECTIVE CIRCUIT CABLING. BARE-EARTH CONNECTIONS ARE NOT ACCEPTABLE.	<u>SW</u> 1.	ITCHBOARDS: PROVIDE ALL DIAGRAMS F
;	3.	THE MECHANICAL AND HYDRAULICS SYSTEMS AS WELL AS ANY FIXTURES SHALL BE BONDED AND EARTHED IN THEIR ENTIRETY BY THE ELECTRICAL TRADE.	2.	UNLESS NOT IP RATING AS TO BE OPEN BOTTOM ENT
		RETICULATION	3	KEYED TO SU
		PROVIDE ALL ELECTRICAL AND COMMUNICATIONS CONDUITS OF SUFFICIENT SIZE AND QUANTITY AS REQUIRED TO SERVICE THE INSTALLATION. ALL SITE RETICULATION SERVICES SHALL BE COORDINATED WITH ALL OTHER TRADES, INCLUDING CIVIL AND STRUCTURAL. MINIMUM SEPARATION DISTANCES BETWEEN ALL IN-GROUND SERVICES SHALL BE MAINTAINED IN ACCORDANCE WITH AS/NZS 3000, AS/CA S009, AND AS/NZS 5601.		PROVIDE TYP RATING, PRC
		THE BOTTOM OF ALL EXCAVATIONS PRIOR TO CABLE/CONDUIT PLACEMENT SHALL BE COVERED TO A DEPTH OF AT LEAST 50MM WITH A LAYER OF SELECTED CLEAN SAND FILLING. A MINIMUM COVER OF 50MM OF CONSOLIDATED CLEAN SAND FILLING SHALL BE PROVIDED ACROSS THE EXCAVATION OVER THE TOP OF THE LARGEST CABLE/CONDUIT. MARKING TAPE WITH INDELIBLE LETTERING GIVING WARNING OF THE CORRESPONDING ELECTRICAL SERVICES BELOW SHALL BE PROVIDED AND LOCATED ALONG THE ENTIRE LENGTH OF THE EXCAVATION AT A DEPTH OF APPROXIMATELY 300MM FROM FINISHED GROUND LEVEL IN ACCORDANCE WITH AS/NZS 3000.	5.	NUMBER. CIF PROVIDE TRA MANUFACTU
		UNDERGROUND CABLE ROUTE MARKERS WHICH CONSIST OF A FLUSH TYPE WARNING PLATE AND DIRECTIONAL INDICATORS SHALL BE SUPPLIED AND INSTALLED FOR ALL EXTERNAL UNDERGROUND CABLING SYSTEMS AT ALL PITS AND ANY SIGNIFICANT CHANGES IN DIRECTION. NO SHARP EDGES SHALL BE PRESENT.	6.	PROVIDE SUI
		ALL PITS AND CONDUIT SYSTEMS SHALL BE DRAINED TO THE STORMWATER SYSTEM OR RUBBLE/SOAKAWAY POINTS UNDERGROUND, TO BE APPROVED BY THE SUPERINTENDENT. PROVIDE 50mm Ø DEDICATED DRAINAGE CONDUIT FROM EACH PIT. DRAINAGE CONDUITS TO BE FITTED WITH WIRE GAUZE AT UPPER END TO PREVENT FOREIGN OBJECTS FROM ENTERING CONDUIT.	7.	PROVIDE RCI AS/NZS 3000 - SINGLE/T\ - SINGLE PI
		THE LOCATION OF ALL CONDUITS AND PITS SHOWN IS INDICATIVE ONLY. THE FINAL LOCATIONS SHALL BE VERIFIED ON SITE WITH THE SUPERINTENDENT. CO-ORDINATE WITH SEWAGE, STORMWATER, GAS, AND ALL OTHER UNDERGROUND SERVICES PRIOR TO ANY INSTALLATION WORKS. A REASONABLE EFFORT MUST BE MADE TO LOCATE EXISTING SERVICES PRIOR TO EXCAVATION.		- THREE-PH - THREE-PH WHERE SELE

- 6. EXCAVATION AROUND EXISTING ACTIVE SERVICES IS TO BE COMPLETED BY HYDROVAC OR BY HAND ONLY.
- 7. PROVIDE REINSTATEMENT AND 'MAKE GOOD' WORKS TO ALL EXISTING AREAS AFFECTED BY THE EXCAVATION/TRENCHING WORKS. MAKE GOOD WORKS ARE TO MATCH THE EXISTING SERVICES AND ARE TO BE COMPLETED TO THE SATISFACTION AND APPROVAL OF THE CLIENT'S REPRESENTATIVE.
- SITE/BUILDING LOAD.



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# ELECTRICAL SERVICES NOTES

ECTRICAL EQUIPMENT, INFRASTRUCTURE, FIXINGS, AND ASSOCIATED CABLING WHICH IS MADE REDUNDANT WITHIN THE REFURBISHMENT AREA SHALL BE DISCONNECTED, ND DISPOSED OF. ALL REDUNDANT CABLING IS TO BE STRIPPED OUT BACK TO ITS SOURCE. PROVIDE ADDITIONAL SUPPORT AND SEGREGATION FOR ANY EXISTING CABLING THAT IN. REFER TO ARCHITECTURAL DRAWINGS FOR DEMOLITION PLAN AND DETAILS. EME CARE TO ENSURE THAT ALL CABLING AND OUTLETS WITHIN THE REFURBISHMENT AREA THAT SERVICE EQUIPMENT/AREAS OUTSIDE OF THE REFURBISHMENT ARE RETAINED. THE INSTALLATION OF EXISTING CABLING THAT IS TO REMAIN IS TO MATCH ALL NEW CABLING/INFRASTRUCTURE. EMOVED CIRCUIT ALSO SUPPLIES EQUIPMENT/OUTLET(S) OUTSIDE OF THE REFURBISHMENT AREA, PROVIDE A NEW CIRCUIT TO SERVICE THE EXISTING EQUIPMENT/OUTLET(S) PENETRATIONS THROUGH FIRE RATED ELEMENTS MUST BE FIRE SEALED AS PER BCA/NCC SECTION C3.15 (OR SPEC C3.15). PROVIDE REMOVABLE SEALING METHODS (FIRE C) IN LARGE PENETRATIONS TO ALLOW FOR INSTALLATION OF FUTURE SERVICES. NETRATIONS THROUGH ANY ACOUSTIC WITH AN APPROVED ACOUSTIC SEALANT TO MATCH THE ORIGINAL RATING OF THE PENETRATED BARRIER. PROVIDE ACOUSTIC RATED FOR ALL SERVICES/OUTLETS INSTALLED IN ACOUSTIC WALLS. ONDUITS, DUCTS, AND BUILDING ENTRY POINTS TO PREVENT THE INGRESS OF MOISTURE, DIRT, AND VERMIN. EXTERNAL ENVELOPE PENETRATIONS ARE TO BE SEALED TO MATCH AL ACOUSTIC/SMOKE/FIRE RATING PERFORMANCE OF THE PENETRATED BARRIER. MEMBERS AND CAST WALLS OR COLUMNS SHALL NOT BE CUT OR CHASED WITHOUT PRIOR WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER. ES SHALL BE COMPREHENSIVELY LABELED TO CLEARLY INDICATE THEIR FUNCTION. EACH ITEM OF EQUIPMENT SHALL BE NUMBERED AND TAGGED. ALL LABELLING IS TO BE OF A INDELLIBLE TYPE OF ENGRAVED TRAFFOLYTE OR SIMILAR. AND FITTINGS SHALL COMPLY WITH AS2052, AS/NZS 2053.1-2001, AS/NZS 2053.2-2001, AS/NZS 2053.3-1995, AS/NZS 2053.4-1995, AS/NZS 2053.5-2001, AS/NZS 2053.6-2001, AS/NZS AS/NZS 2053.8-1995 AND ANY OTHER APPLICABLE STANDARD. CE MOUNTED CONDUITS SHALL BE INSTALLED IN AN ORDERED MANNER PARALLEL TO WALLS, FLOORS AND CEILINGS AS APPLICABLE BUT ALL CONDUITS CAST IN CONCRETE ILL BE INSTALLED TO THE MOST SUITABLE DIRECT ROUTE. ALL CONDUITS LAID IN PLASTER OR IN WALL CHASES SHALL BE FIRMLY FIXED IN POSITION TO PREVENT MOVEMENT. RATION MOUNTED CABLING IS REQUIRED VIA EXTERNAL WALL/ROOF AREAS, CABLING MUST BE CONCEALED IN CONDUIT AND STEEL HAT SECTION FOR THE ENTIRE LENGTH OF CONDUIT. SECTION IS TO BE SEALED TO PREVENT THE INGRESS OF MOISTURE AND VERMIN AND IS TO BE PAINTED TO MATCH THE SURROUNDING WALL. THE INSTALLATION SHALL BE TO THE SATISFACTION AND APPROVAL OF THE CLIENT'S REPRESENTATIVE. /C COATED DRAW WIRES IN ALL CONDUITS. THE ENDS OF ALL DRAW WIRES SHALL BE SECURELY FIXED IN PLACE TO PREVENT ACCIDENTAL REMOVAL. ECTRICAL CONDUITS OF FLAT WALLED HEAVY-DUTY ORANGE PVC TYPE AND COMMUNICATIONS CONDUITS OF FLAT WALLED LIGHT DUTY WHITE PVC TYPE. PROVIDE CONDUITS OF ID QUANTITY SHOWN ON THE SITE PLAN(S). CORRUGATED CONDUIT OF ANY TYPE IS NOT ACCEPTABLE. ARGE RADIUS SWEEP BENDS FOR CHANGES IN DIRECTION AND TRANSITIONS TO VERTICAL RISES. ENSURE THAT CONDUIT BEND RADII ARE LARGER THAN THE MINIMUM BEND E CABLES INSTALLED. ADDLES SHALL BE SPACED A MAXIMUM OF 1200MM APART FOR METALLIC CONDUITS OR 1000MM APART FROM NON-METALLIC CONDUITS. IN AREAS SUBJECT TO HIGH AMBIENT JRES THE SADDLE SPACING FOR NON-METALLIC CONDUITS SHALL BE REDUCED TO 500MM. SIZES NOMINATED ON DRAWINGS ARE MINIMUM SIZES EXCLUDING DERATING FOR INSTALLATION FACTORS SUCH AS SPACING, ROUTING, ETC. FINAL SIZES TO BE IN ACCORDANCE 3 3008 AND AS/NZS 3017. SUBMIT FINAL CABLE SIZES TO SUPERINTENDENT FOR APPROVAL PRIOR TO ORDERING. VARIATIONS RESULTING FROM FAILURE TO COMPLY WITH THIS ENT WILL BE REJECTED. FMINIMUM CABLE SIZES (INCREASE SIZE WHERE NECESSARY FOR REASONS OF VOLTAGE DROP OR DERATING TO AS/NZS 3008.1 AND AS/NZS 3000): SUBCIRCUITS, INCLUDING EMERGENCY LIGHTING: 2.5mm<sup>2</sup> Cu POWER SUBCIRCUITS: 2.5mm<sup>2</sup> Cu CIRCUIT INCLUDING ALARMS, EWIS, ETC: 2.5mm<sup>2</sup> Cu CORDS: 30/0.25mm<sup>2</sup> Cu L CABLING IN CEILING SPACE ON CABLE TRAY AND/OR CATENARY WIRE. CATENARY SYSTEMS SHALL BE TIGHTLY INSTALLED WITH ENDS INCORPORATING TURN BUCKLES. VIRES SHALL BE OF THE APPROVED TYPE. NO MORE THAN SIX TPS CABLES SHALL BE SUPPORTED ON A SINGLE CATENARY CABLING SUPPORT SYSTEM. 3MAIN/SUBCIRCUIT SUPPLIES ARE PROVIDED FOR OTHER TRADES, THE ELECTRICAL CONTRACTOR IS TO LIAISE WITH THE APPROPRIATE TRADE AND CONFIRM RATINGS AND FINAL OF CABLE TERMINATIONS. UBCIRCUIT CABLING IS TO BE CONCEALED. ALL CABLING IN CEILING VOIDS IS TO BE FIXED CLEAR OF CEILING AND CEILING SUPPORTS. POWER FINAL SUBCIRCUIT CABLING IS TO LLY RUN CONCEALED IN STUD WALLS OR INSTALLED IN CONDUIT CAST INTO BUILDING STRUCTURE AS APPROPRIATE TO OUTLET LOCATIONS. SURFACE MOUNTED CABLING IS PROVIDED ON DIRECTION OF THE S.R, AND IS TO BE CONCEALED IN SURFACE MOUNTED CONDUIT PAINTED TO MATCH THE SURROUNDING SURFACE. CONDUIT IS TO BE IXED IN PLACE AND SEALED TO PREVENT THE INGRESS OF DUST. MOISTURE, AND VERMIN. R LAYOUT SHALL BE AS SHOWN ON THE DRAWING. ALLOW FOR LOCATIONS OF OUTLETS TO VARY UP TO 5m FOR DETAILED POSITION WITH NO EXTRA COST. RCUIT IDENTIFICATION TO ALL SOCKET OUTLETS, ISOLATORS AND LIGHT SWITCHES BY SCREW FIXED TRAFFOLYTE LABELS, DYMO OR OTHER APPROVED PERMANENT PRINTED RCUIT NUMBER AND DISTRIBUTION SWITCHBOARD WITH MATCHING NUMBERING SYSTEM AT DISTRIBUTION SWITCHBOARD. MORE THAN: 10 SINGLE OR 6 DOUBLE 10A OUTLETS PER CIRCUIT. OUTLETS OR EQUIPMENT RATED AT 15A OR ABOVE SHALL BE CONNECTED TO DEDICATED CIRCUITS. RCUITS (SINGLE OR MULTI-PHASE) ARE TO BE PROTECTED BY INDIVIDUAL 30mA COMBINED EARTH LEAKAGE/OVERLOAD BREAKERS. RCHITECTURAL DRAWINGS FOR EXACT LOCATION OF EQUIPMENT, APPLIANCES AND ASSOCIATED SOCKET OUTLETS AND TO ENSURE THERE ARE NO CONFLICTS WITH SWITCHES T OUTLETS. TLETS ARE TO BE SPACED 150mm FROM ADJACENT TELECOMMUNICATIONS OUTLETS. WHERE MULTIPLE SOCKET OUTLETS ARE LOCATED IN CLOSE PROXIMITY TO EACH OTHER O BE SPACED APART BY 20mm NG OUTLETS (CLIPSAL 413) ARE TO BE SECURED TO ROOF STRUCTURE. OUTLETS WILL NOT BE ACCEPTED SUSPENDED BY CABLING OR LAYING ON CEILINGS OR INSULATION. E ENTIRE BUILDING LOAD IS EVENLY BALANCED OVER THE THREE PHASES. CIRCUIT SCHEDULES INCLUDED ARE INDICATIVE ONLY AND DO NOT ACCOUNT FOR BALANCING OF THE NG LOAD. ARTH BONDING TO ALL METAL STRUCTURES AS REQUIRED BY AS/NZS 3000. ACCESSORIES, OUTLETS, APPLIANCES AND APPLIANCE CONNECTIONS COMPLETE WITH REQUIRED FIXINGS AND FASTENINGS, ALL OUTLETS AND LIGHT SWITCHES ARE TO BE 00 SERIES UNLESS NOTED OTHERWISE. . NEW MAIN AND DISTRIBUTION SWITCHBOARDS IN ACCORDANCE WITH THE CONTRACT DOCUMENTATION, ELECTRICAL SPECIFICATION, AND AS/NZS 3439. REFER TO SINGLE LINE FOR FURTHER DETAILS. TED OTHERWISE, DISTRIBUTION SWITCHBOARDS SHALL BE CUSTOM MADE OF FOLDED AND WELDED CONSTRUCTION, AND CONSTRUCTED OF 1.6mm ZINC-ANNEALED STEEL WITH SHOWN AND ELECTRIC ORANGE FINISH ESCUTCHEONS SHALL BE HINGED VIA LIET-OFF PINTLE HINGES AND FITTED WITH SLOTTED QUARTER-TURN LOCKS. ESCUTCHEONS ARE VED WITHOUT THE NECESSITY TO TURN OFF THE ASSOCIATED MAIN SWITCH. CIRCUIT BREAKERS, OR CONTROLS, SWITCHBOARDS ARE TO BE FRONT-CONNECTED. TOP AND TRY, WALL MOUNTED TYPES WITH FULL WIDTH/DEPTH DUCTS (FROM FLOOR TO CEILING) AND BE CONSTRUCTED WITH HDHC COPPER BUSBARS. PROVIDE A LOCKABLE HANDLE SUIT THE CLIENT'S PREFERRED SYSTEM ('E' KEY TYPE UNLESS DIRECTED OTHERWISE).

NIMUM 50% SPARE POLE CAPACITY AT PRACTICAL COMPLETION. PROVIDE ALL CONTACTORS, CONTROLS, RELAYS, AND ACCESSORIES REQUIRED TO SERVICE THE INSTALLATION. PED CIRCUIT SCHEDULES AND SCHEDULE CARD HOLDERS, WELDED TO THE REAR OF EACH SWITCHBOARD DOOR. PROVIDE THE FOLLOWING INFORMATION AS A MINIMUM: FAULT DSPECTIVE FAULT LEVEL; SUBMAINS SIZE, LENGTH, AND ORIGIN; AND FINAL SUB-CIRCUIT DESIGNATION, CIRCUIT PROTECTION, CABLE SIZE, NEUTRAL NUMBER, AND EARTH IRCUIT NUMBERS AND DESIGNATIONS SHOWN ARE INDICATIVE ONLY AND MUST BE AMENDED TO CLEARLY REFERENCE THE FINAL INSTALLATION.

AFFOLYTE WARNING LABELS TO EXTERNAL DOORS OF ALL SWITCHBOARDS TO AS 1319. LABELS TO INCLUDE AS A MINIMUM: SWITCHBOARD NAME, MANUFACTURER, URE DATE, IP RATING, AND CURRENT RATING.

JRGE PROTECTION EQUIPMENT ON EACH PHASE AND NEUTRAL AS SPECIFIED. SURGE DIVERTER AND ALL ASSOCIATED PROTECTION AND CABLING IS TO BE PROVIDED IN ICE WITH THE MANUFACTURER'S RECOMMENDATIONS.

CD/RCBO PROTECTION TO ALL FINAL CIRCUITS AS SHOWN AND IN ACCORDANCE WITH AS/NZS 3000. PROVIDE THE FOLLOWING RCD PROTECTION TYPES (RCD DEFINITIONS AS PER )) UNLESS DETAILED OTHERWISE: WO PHASE SUPPLIES FOR NON INVERTER CONTROLLED LOADS = TYPE AC OR TYPE A

HASE SUPPLIES FOR INVERTER CONTROLLED LOADS = TYPE A (HIGH IMMUNITY)

HASE SUPPLIES FOR NON INVERTER/VARIABLE SPEED CONTROLLED LOADS = TYPE A (HIGH IMMUNITY) OR TYPE B HASE SUPPLIES FOR INVERTER/VARIABLE SPEED CONTROLLED LOADS = TYPE B

ECTION OF TYPE A OVER TYPE AC RCD/RCBOs WILL NOT AFFECT THE CONTRACT PRICE, PROVIDE TYPE A RCD/RCBOs.

8. ALL CIRCUIT BREAKERS ARE TO BE OF A CONSISTENT MANUFACTURER/TYPE ACROSS THE SITE (NHP OR SCHNEIDER OR EQUAL). PROVIDE A FULL DISCRIMINATION/SELECTIVITY STUDY FOR THE PROPOSED CIRCUIT BREAKER SOLUTION.

WHERE DENOTED, ENSURE SWITCHBOARDS ARE OF A SUFFICIENT SIZE AND CONSTRUCTION TO BE HOUSED WITHIN DEDICATED SWITCH ROOMS, CUPBOARDS, AND ENCLOSURES. WHERE THE SWITCHBOARD CAN NOT BE CONTAINED WITHIN THE NOMINATED AREA, CO-ORDINATE WITH THE BUILDING TRADE AND ARCHITECT AS REQUIRED TO MODIFY THE SPATIAL ALLOWANCES FOR EACH SWITCHBOARD PRIOR TO ANY INSTALLATION WORKS

10. ENSURE THE ENTIRE BUILDING LOAD IS EVENLY BALANCED OVER THE THREE PHASES. CIRCUIT SCHEDULES INCLUDED ARE INDICATIVE ONLY AND DO NOT ACCOUNT FOR BALANCING OF THE

– MECHANICAL —— ELECTRICAL —— HYDRAULIC —— FIRE —— ENERGY —— NABERS —— STORMWATER —— SECTION J —— BEEC -

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Rev Date

14.10.22 FOR CONSTRUCTION 100% ISSUE FOR REVIEW FOR REVIEW FOR REVIEW Reason for Issue

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TOILET AMENITIES BLOCK **WILCANNIA** 

- ISSUES RELATING TO THE ALTERNATIVE LUMINAIRES.
- PROVIDE BLOCKOUTS IF REQUIRED FOR EXTERNAL LUMINAIRES.

- HANDOVER & DEFECTS LIABILITY PERIO

- BY THE CLIENT'S REPRESENTATIVE.
- GENERAL DESCRIPTION OF SYSTEMS. - MANUFACTURER'S DIRECTIONS.
- NORMAL OPERATING PROCEDURES - EMERGENCY OPERATING PROCEDURES. - ELECTRICAL AND CONTROL SYSTEMS DESCRIPTIONS.
- METHOD OF ADJUSTING SYSTEMS. - LIST OF EQUIPMENT INSTALLED WITH MANUFACTURERS' NAMES, ADDRESSES AND TELEPHONE NUMBERS. MAINTENANCE INSTRUCTIONS FOR EQUIPMENT AND SYSTEMS. - A COPY OF ALL TEST RESULTS.
- SYSTEM COMPLIANCE CERTIFICATION - 'AS CONSTRUCTED' DRAWINGS
- RESPONSIBLE FOR PROVISION OF REMEDIAL MEASURES.

# TESTING AND COMMISSIONING

- SHALL ALLOW FOR THESE WORKS TO BE CARRIED OUT BY AN INDEPENDENT COMMISSIONING SPECIALIS

LIGHTING 1. PROVIDE A COMPLETE AND OPERATIONAL LIGHTING SYSTEM; TESTED, AND COMMISSIONED.

THE LIGHTING LAYOUT SHALL BE AS SHOWN ON THE DRAWING. DO NOT SET-OUT LUMINAIRES OR ANY OTHER CEILING FIXTURES/EQUIPMENT FROM THE ELECTRICAL SERVICES DOCUMENTATION. REFER TO THE CO-ORDINATED ARCHITECTURAL DOCUMENTATION FOR EXACT POSITIONS. LUMINAIRES SHALL TAKE PRECEDENCE OVER ANY OTHER SERVICES. IF THERE IS A NEED TO CHANGE THE LOCATION OF A LUMINAIRE. OBTAIN WRITTEN APPROVAL FROM THE SUPERINTENDENT.

ALL ALTERNATIVE LUMINAIRES ARE TO BE APPROVED BY THE CLIENT'S REPRESENTATIVE, SUPERINTENDENT, AND ELECTRICAL ENGINEER PRIOR TO ORDERING. LIGHTING DESIGNS HAVE BEEN CARRIED OUT IN ACCORDANCE WITH THE BCA/NCC SECTIONS F4.4 & J6 AND THE AS/NZS 1680 SERIES. IF AMENDMENTS TO THE DESIGN ARE PROPOSED, PRIOR APPROVAL MUST BE OBTAINED FROM THE S.R. THE INSTALLED LAYOUT MUST COMPLY WITH THE BCA/NCC SECTIONS F4.4 & J6 AND THE AS/NZS 1680 SERIES. PROVISION OF ALTERNATIVE LUMINAIRES WILL VOID THE DESIGN CERTIFICATION PROVIDED BY MARI INF. THE FLECTRICAL TRADE WILL BE RESPONSIBLE FOR THE ALTERNATIVES AND FOR PROVIDING A DESIGN CERTIFICATION THAT THE ALTERNATIVE LIGHTING SYSTEM MEETS THE REQUIREMENTS OF THE BCA/NCC, THE AS/NZS 1680 SERIES, MARLINE WILL NOT BE HELD RESPONSIBLE FOR ANY FAILURES OR PERFORMANCE

PROVIDE ALL LUMINAIRES COMPLETE WITH LAMPS, ACCESSORIES, DRIVERS/CONTROL GEAR, LEADS, DIFFUSERS, GLANDS, MOUNTING BRACKETS, AND LIGHTING CONTROL EQUIPMENT.

5. INSTALL NO MORE THAN 15 x LIGHTING POINTS ON ONE 20A CIRCUIT BREAKER. PROVIDE CONTROLLERS AND CONTACTORS RATED TO THE CHARACTERISTIC OF THE CONTROLLED LOAD. ALL LIGHT SWITCHES SHALL BE 15A TYPE SUITABLE FOR FLUORESCENT OR LED LIGHTING CONTROL AND SHALL BE MOUNTED AT 1100mm AFFL UNLESS NOTED OTHERWISE. REFER TO ARCHITECTURAL DOCUMENTATION FOR FINAL POSITIONING OF ALL OUTLETS PRIOR TO ANY INSTALLATION WORKS.

6. LUMINAIRE CONTROL GEAR, DRIVERS, AND PLUG BASES ARE TO BE SECURED TO AND SUPPORTED FROM THE BUILDING STRUCTURE. CONTROL GEAR, DRIVERS, OR PLUG BASES WILL NOT BE ACCEPTED SUSPENDED BY CABLING OR LAYING ON CEILINGS OR INSULATION OR LUMINAIRE BODIES.

LIGHTING CONTROLS SHALL COMPLY WITH SECTION J6 AND SPECIFICATION J6 OF THE BCA/NCC. ALL PROVIDED LUMINAIRES ARE TO BE NATA CERTIFIED, RCM/EMC COMPLIANT, AND HAVE LIFESPAN TESTING DATA IN ACCORDANCE WITH LM-79, LM-80, ISTMT, AND TM21.

8. ALLOW TO REVISIT SITE ONE MONTH AFTER PRACTICAL COMPLETION TO CONFIRM TIMEOUT SETTINGS OF LIGHTING CONTROL SYSTEMS ARE SATISFACTORY OF THE CLIENT'S REPRESENTATIVE AND TO SUIT THE FACILITIES OPERATION. PROVIDE SYSTEM ADJUSTMENTS AND MODIFICATIONS TO SUIT SPECIFIC CLIENT REQUIREMENTS.

9. MULTI SWITCH POSITIONS SHALL BE GANGED UNDER ONE COVER PLATE, SWITCHES IN GANGED BOXES SHALL BE ARRANGED SIMILAR IN PLAN TO LIGHTING POINTS CONTROLLED.

GUARANTEE ALL WORK AND MATERIALS AS TO QUALITY, WORKMANSHIP, AND AGAINST DEFECTS FOR A PERIOD OF 12 MONTHS FROM THE DATE OF ISSUE OF THE 'CERTIFICATE OF PRACTICAL COMPLETION'. DURING THIS PERIOD, PROMPTLY REPLACE ALL DEFECTIVE EQUIPMENT, FIXTURES, AND MATERIALS AT NO ADDITIONAL COST. THIS INCLUDES ALL LABOUR AND COSTS NECESSARY FOR THE REMOVAL OF DEFECTIVE PARTS OF COMPONENTS AND OF INSTALLING AND TESTING REPLACEMENTS. PROMPTLY RESPOND TO ALL DEFECTS AND MAINTENANCE ISSUES WITH RAISED BY THE CLIENT OR SUPERINTENDENT DURING THE DEFECTS LIABILITY PERIOD.

THE CONTRACTOR WILL BE REQUIRED TO FULLY DEMONSTRATE AND TRAIN THE CLIENT'S STAFF ON THE OPERATION OF EACH INSTALLATION. THIS SHALL BE CARRIED OUT ONCE PRIOR TO HANDOVER AND ONCE ONE (1) MONTHS POST-HANDOVER IF REQUIRED. SPECIALIST SUB-CONTRACTORS/INSTALLERS SHALL BE IN ATTENDANCE.

3. THE ENTIRE INSTALLATION SHALL BE HANDED OVER TO THE CLIENT NEW, CLEAN AND FREE FROM ANY DAMAGE OR DEFECT.

4. PRIOR TO HAND OVER, THE ELECTRICAL TRADE SHALL SUBMIT TO THE CLIENT'S REPRESENTATIVE A COPY OF THE HEALTH AND SAFETY FILE, INSTALLATION OPERATION AND MAINTENANCE MANUALS, TESTING AND COMMISSIONING REPORTS, AND AS BUILT DRAWINGS FOR REVIEW AND APPROVAL. ONCE APPROVED, THE ELECTRICAL TRADE SHALL PROVIDE TO THE CLIENT, THREE HARD AND SOFT COPIES OF THESE DOCUMENTS. NEITHER PRACTICAL NOR FINAL COMPLETION WILL BE CERTIFIED UNTIL THESE DOCUMENTS HAVE BEEN APPROVED AND RECEIVED

UPON COMPLETION OF THE WORKS, AND PRIOR TO THE ISSUE OF THE NOTICE OF PRACTICAL COMPLETION, SUPPLY REVIEWED AND AMENDED (AS MAY HAVE BEEN REQUIRED) REPRODUCIBLE AS-CONSTRUCTED DRAWINGS, IN AutoCAD SHOWING THE COMPLETE SERVICES INSTALLATION "AS CONSTRUCTED". PROVIDE ONE (1) A3 SET OF THESE DRAWINGS, BOUND INTO THE OPERATING AND MAINTENANCE MANUAL TOGETHER WITH AN ELECTRONIC COPY OF AutoCAD AND PDF FILES ON USB STORAGE MEDIA.

6. SUPPLY THREE (3) HARD COPIES AND TWO (2) ELECTRONIC COPIES OF THE OPERATING AND MAINTENANCE MANUALS PRIOR TO THE DATE OF PRACTICAL COMPLETION. THE ELECTRONIC COPY SHALL BE IN PDF FORMAT, SINGLE FILE WITH SHOP DRAWINGS AND TESTING AND COMMISSIONING DATA INCLUDED. THESE MANUALS INCLUDE AS A MINIMUM:

ALSO INCLUDE: GUARANTEES, CERTIFICATES OF APPROVALS, PERFORMANCE AND TEST DATA SHEETS, COMMISSIONING RECORDS, MANUFACTURER'S TEST RESULTS, MANUFACTURER'S DIRECTIONS, ETC. RETAIN ANY MANUFACTURER'S DIRECTIONS ON SITE FOR REFERENCE AND LATER INCLUSION IN THE OPERATING AND MAINTENANCE MANUALS. REFER TO ELECTRICAL SPECIFICATION FOR FULL REQUIREMENTS FOR OPERATION AND MAINTENANCE MANUALS ALONG WITH MINIMUM TRAINING REQUIREMENTS.

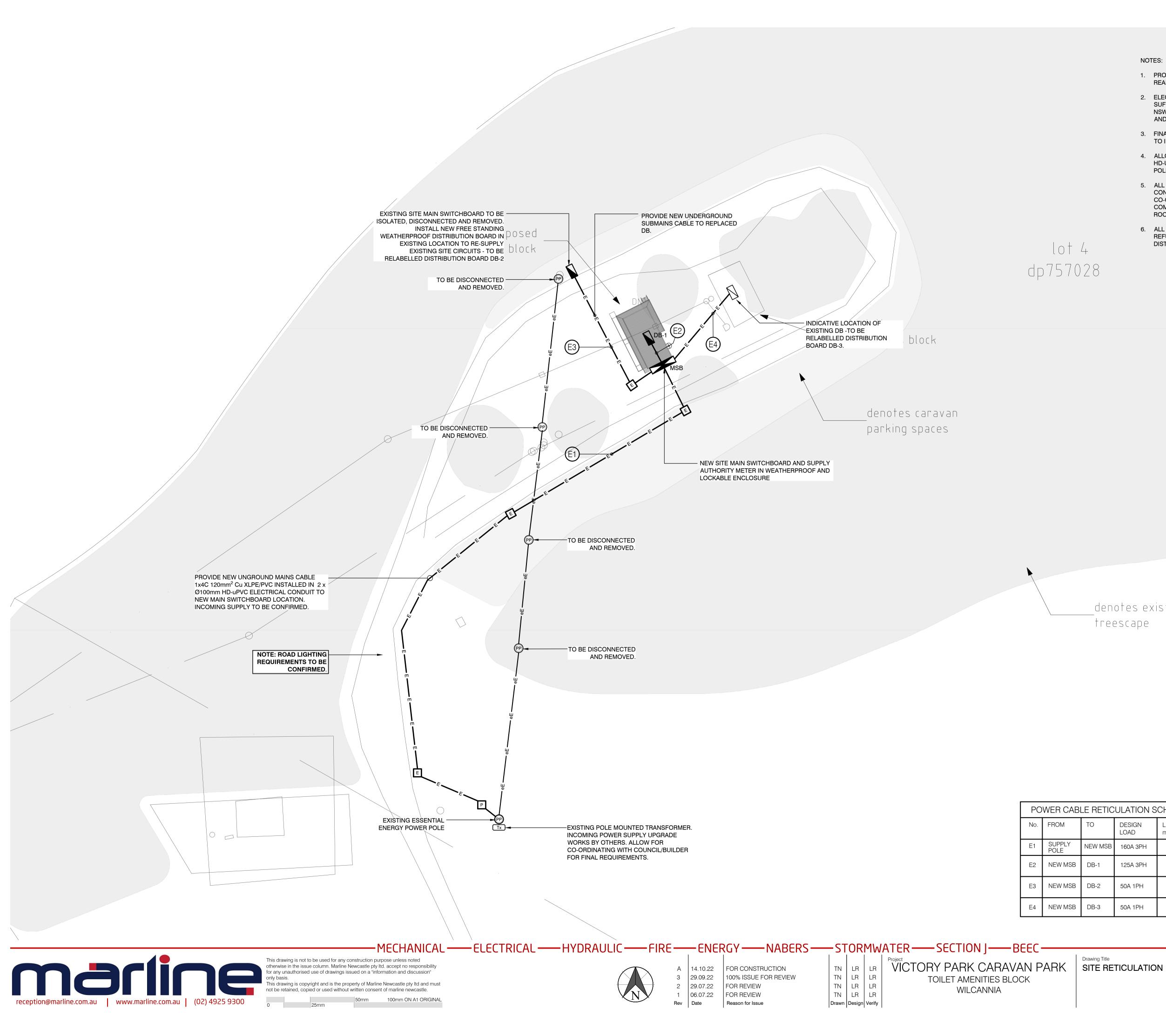
THE CONTRACTOR SHALL UNDERTAKE THERMAL IMAGING OF ALL SWITCHBOARDS PRIOR TO PRACTICAL COMPLETION AND AGAIN PRIOR TO THE END OF THE DEFECTS LIABILITY PERIOD. PROVIDE A REPORT PRESENTING THE RESULTS AND WHERE CABLE/JOINT/EQUIPMENT TEMPERATURES LIE OUTSIDE GENERALLY ACCEPTABLE OR SAFE VALUES, THE ELECTRICAL SHALL BE

UPON COMPLETION OF WORKS, CARRY OUT TESTING FOR THE WORKS COMPLETED AND PROVIDE ELECTRICAL CERTIFICATE OF TEST STATING THAT THE ELECTRICAL INSTALLATION. TO THE EXTENT IT IS AFFECTED BY THE ELECTRICAL WORK, HAS BEEN TESTED TO ENSURE THAT IT IS ELECTRICALLY SAFE AND IS IN ACCORDANCE WITH THE REQUIREMENTS OF THE AS/NZS 3000 AND ANY OTHER REQUIREMENTS APPLYING UNDER THE NSW WORK HEALTH AND SAFETY REGULATION 2017 TO THE ELECTRICAL INSTALLATION. THE ELECTRICAL TRADE

WHERE AN ITEM OF EQUIPMENT OR INSTALLATION FAILS A TEST OR THE DESIGN CONDITIONS ARE NOT MET. THE ELECTRICAL TRADE SHALL BE RESPONSIBLE FOR RECTIFICATION THE PROBLEM AND RECOMMISSIONING OF THE EQUIPMENT/INSTALLATION AS REQUIRED.

PROVIDE TEST REPORTS FOR ALL SYSTEMS, PROVIDE THE CLIENT WITH ALL TEST RESULTS, ROUND FOR REVIEW, THE CERTIFICATE OF PRACTICAL COMPLETION WILL ONLY BE SIGNED AFTER THE COMPLETE TEST REPORTS HAVE BEEN REVIEWED. INCLUDE A HARD AND SOFT COPY OF THE FULL TEST REPORTS IN THE OPERATION AND MAINTENANCE MANUALS..







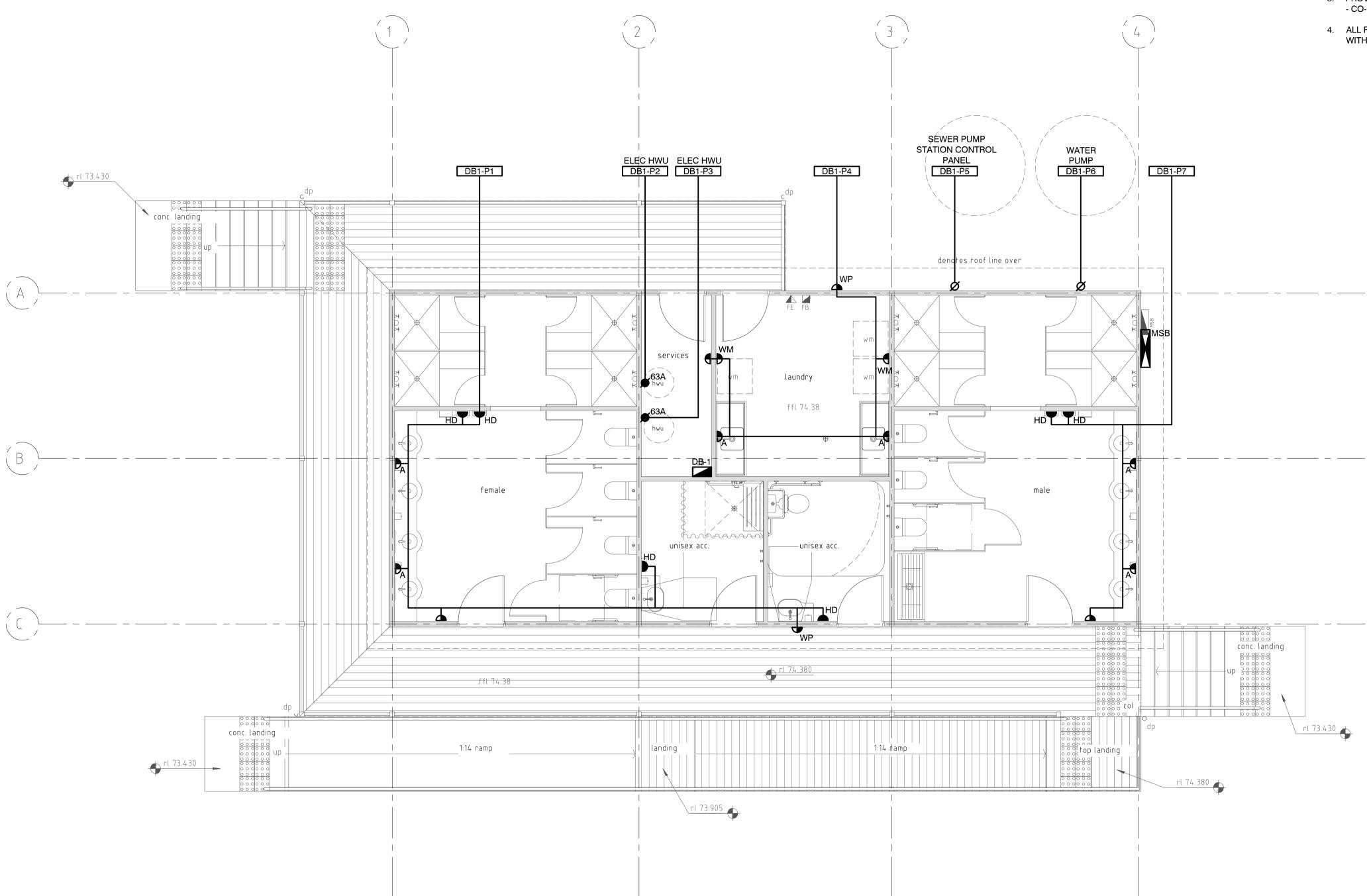
NOTES:

- 1. PROVIDE NEW SITE MSB INCLUDING SUPPLY AUTHORITY ACCESS FOR METER READING.
- 2. ELECTRICAL CONTRACTOR/BUILDER REQUIRED TO ARRANGE & PROVIDE SUFFICIENT SPACE FOR THE SITE MSB & INTERNAL DBs IN ACCORDANCE WITH NSW SERVICE & INSTALLATION RULES, SUPPLY AUTHORITY REQUIREMENTS AND AS 3000.
- 3. FINAL SITE RETICULATION TO BE COORDINATED WITH OTHER TRADES PRIOR TO INSTALLATION.
- 4. ALLOW FOR TRENCHING, CONDUITNG AND BACK FILLING WITH 32mm ORANGE HD-UPVC CONDUIT BURIED UNDERGROUND TO SERVICE EXTERNAL LIGHT POLES.LAYOUT TO BE CONFIRMED
- 5. ALL EXTERNAL LIGHTING IS TO BE PROVIDED WITH PE CELL & TIME CLOCK CONTROL. FINAL TIMING & PROGRAMMING OF THE SYSTEM IS TO BE CO-ORDINATED WITH THE CLIENT/OPERATOR PRIOR TO PRACTICAL COMPLETION. PROVIDE EXTERNAL LIGHTING OVERRRIDE SWITCH IN WATCH ROOM.
- 6. ALL EXISTING SUB-CIRCUITS THAT ARE NOT MADE REDUNDANT BY THE REFURBISHMENT ARE TO BE REDIRECTED AND RE-SUPPLIED FROM THE NEW DISTRIBUTION SWITCHBOARDS UNLESS NOTED OTHERWISE.

denotes existing treescape

E RETICULATION SCHEDULE			
ТО	DESIGN LOAD	LENGTH m	CABLE
NEW MSB	160A 3PH	190m	4 x 1C 120mm <sup>2</sup> XLPE/PVC/Cu IN 2 x Ø100 HD-uPVC CONDUIT
DB-1	125A 3PH	15m	1 x 4C 25mm <sup>2</sup> + 6mm <sup>2</sup> E XLPE/PVC/Cu IN 1 x Ø100 HD-uPVC CONDUIT
DB-2	50A 1PH	50m	1 x 2C 10mm <sup>2</sup> + 4mm <sup>2</sup> E XLPE/PVC/Cu IN 1 x Ø63 HD-uPVC CONDUIT
DB-3	50A 1PH	50m	4 x 1C 10mm <sup>2</sup> XLPE/PVC/Cu + E IN 1 x Ø63 HD-uPVC CONDUIT









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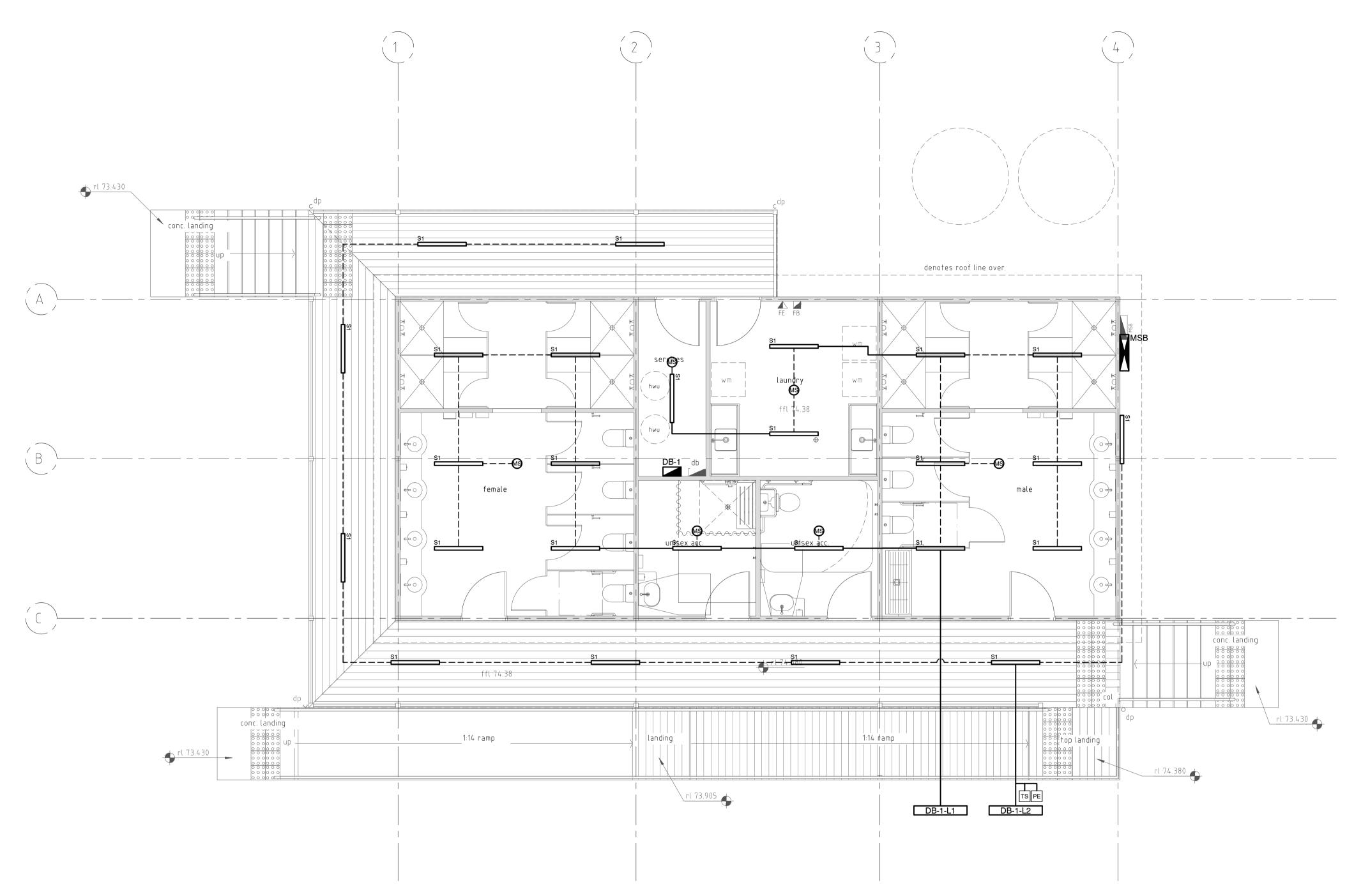
– MECHANICAL —— ELECTRICAL —— HYDRAULIC —— FIRE —— ENERGY —— NABERS —— STORMWATER —— SECTION J —— BEEC —

VICTORY PARK CARAVAN PARK TOILET AMENITIES BLOCK WILCANNIA

NOTES:

- 1. ELECTRICAL DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS. CONFIRM MOUNTING HEIGHTS AND LOCATIONS OF OUTLETS PRIOR TO INSTALLATION.
- 2. ALLOW FOR ALL NECESSARY CABLE LADDER, TRAY AND CANTENARY WIRE - CO-ORDINATE FINAL LOCATIONS WITH OTHER TRADES.
- 3. PROVIDE POWER TO MECHANICAL AND HYDRAULIC SERVICES - CO-ORDINATE WITH OTHER TRADES PRIOR TO INSTALLATION.
- 4. ALL FINAL CIRCUITS TO BE RCD PROTECTED IN ACCORDANCE WITH AS3000.





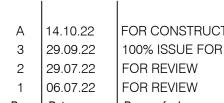


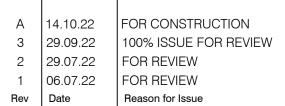


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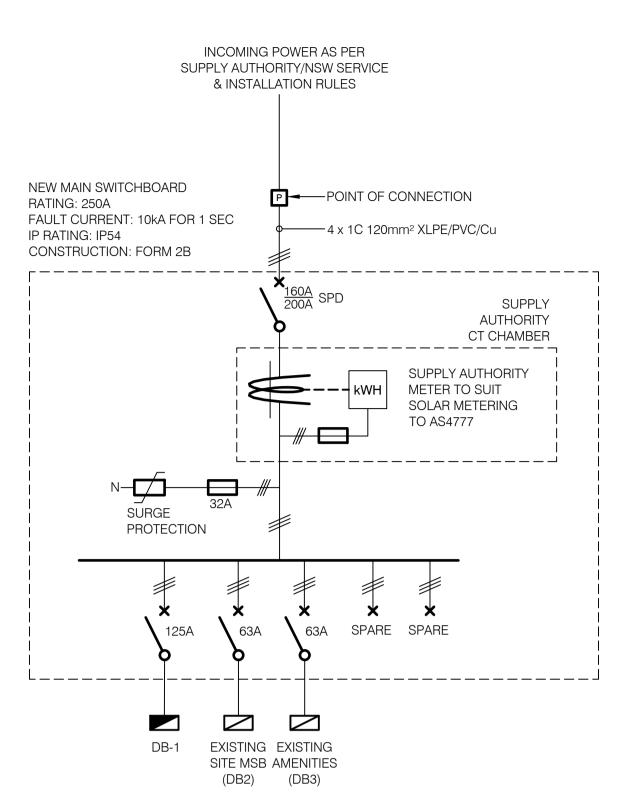
VICTORY PARK CARAVAN PARK TOILET AMENITIES BLOCK WILCANNIA

# NOTES:

- 1. FINAL LOCATIONS OF FITTINGS, SWITCHES & APPLIANCES TO BE CONFIRMED ON SITE PRIOR TO INSTALLATION.
- 2. ALL FINAL CIRCUITS SHALL BE RCD PROTECTED IN ACCORDANCE WITH AS 3000.
- 3. ALL EXTERNAL LIGHTING IS TO BE PROVIDED WITH PE CELL & TIME CLOCK CONTROL. FINAL TIMING & PROGRAMMING OF THE SYSTEM IS TO BE CO-ORDINATED WITH THE CLIENT/OPERATOR PRIOR TO PRACTICAL COMPLETION.







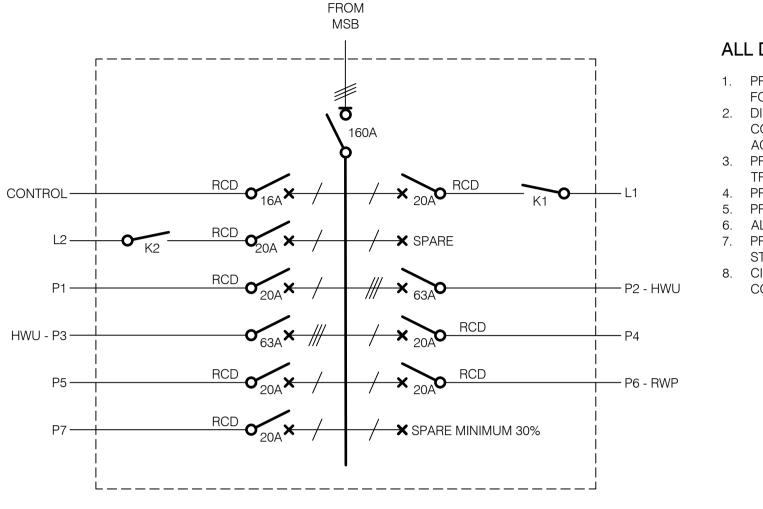
# PROPOSED MAIN SWITCHBOARD

- 1. PROVIDE ALL NEW MAIN AND DISTRIBUTION SWITCHBOARDS IN ACCORDANCE WITH THE CONTRACT DOCUMENTATION, ELECTRICAL SPECIFICATION, AND AS/NZS 61439.
- 2. SUBMIT MAIN SWITCHBOARD WORKSHOP DRAWINGS TO SUPPLY AUTHORITY FOR APPROVAL PRIOR TO MANUFACTURING.
- 3. SWITCHBOARD TO BE SIZED & COORDINATED TO ENSURE CLEARANCES ARE IN ACCORDANCE WITH AS/NZS 3000.
- 4. UNLESS NOTED OTHERWISE, DISTRIBUTION SWITCHBOARDS SHALL BE CUSTOM MADE OF FOLDED AND WELDED CONSTRUCTION, AND CONSTRUCTED OF 1.6mm ZINC-ANNEALED STEEL WITH IP RATING AS SHOWN AND ELECTRIC ORANGE FINISH. ESCUTCHEONS SHALL BE HINGED VIA LIFT-OFF PINTLE HINGES AND FITTED WITH SLOTTED QUARTER-TURN LOCKS. ESCUTCHEONS ARE TO BE OPENED WITHOUT THE NECESSITY TO TURN OFF THE ASSOCIATED MAIN SWITCH, CIRCUIT BREAKERS, OR CONTROLS. SWITCHBOARDS ARE TO BE FRONT-CONNECTED, TOP AND BOTTOM ENTRY, WALL MOUNTED TYPES WITH FULL WIDTH/DEPTH DUCTS (FROM FLOOR TO CEILING) AND BE CONSTRUCTED WITH HDHC COPPER BUSBARS. PROVIDE A LOCKABLE HANDLE KEYED TO SUIT THE CLIENT'S PREFERRED SYSTEM ('E' KEY TYPE UNLESS DIRECTED OTHERWISE).
- 5. PROVIDE MINIMUM 50% SPARE POLE CAPACITY AT PRACTICAL COMPLETION. PROVIDE ALL CONTACTORS, CONTROLS, RELAYS, AND ACCESSORIES REQUIRED TO SERVICE THE INSTALLATION.
- 6. PROVIDE TYPED CIRCUIT SCHEDULES AND SCHEDULE CARD HOLDERS, WELDED TO THE REAR OF EACH SWITCHBOARD DOOR. PROVIDE THE FOLLOWING INFORMATION AS A MINIMUM: FAULT RATING, PROSPECTIVE FAULT LEVEL; SUBMAINS SIZE, LENGTH, AND ORIGIN; AND FINAL SUB-CIRCUIT DESIGNATION, CIRCUIT PROTECTION, CABLE SIZE, NEUTRAL NUMBER, AND EARTH NUMBER. CIRCUIT NUMBERS AND DESIGNATIONS SHOWN ARE INDICATIVE ONLY AND MUST BE AMENDED TO CLEARLY REFERENCE THE FINAL INSTALLATION.
- 7. PROVIDE TRAFFOLYTE WARNING LABELS TO EXTERNAL DOORS OF ALL SWITCHBOARDS TO AS 1319. LABELS TO INCLUDE AS A MINIMUM: SWITCHBOARD NAME, MANUFACTURER, MANUFACTURE DATE, IP RATING, AND CURRENT RATING.
- 8. PROVIDE SURGE PROTECTION EQUIPMENT ON EACH PHASE AND NEUTRAL AS SPECIFIED. SURGE DIVERTER AND ALL ASSOCIATED PROTECTION AND CABLING IS TO BE PROVIDED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- 9. PROVIDE RCD/RCBO PROTECTION TO ALL FINAL CIRCUITS AS SHOWN AND IN ACCORDANCE WITH AS/NZS 3000. PROVIDE THE FOLLOWING RCD PROTECTION TYPES (RCD DEFINITIONS AS PER AS/NZS 3000) UNLESS DETAILED OTHERWISE:
  - SINGLE/TWO PHASE SUPPLIES FOR NON INVERTER CONTROLLED LOADS = TYPE AC OR TYPE A - SINGLE PHASE SUPPLIES FOR INVERTER CONTROLLED LOADS = TYPE A (HIGH IMMUNITY) - THREE-PHASE SUPPLIES FOR NON INVERTER/VARIABLE SPEED CONTROLLED LOADS = TYPE A (HIGH
- IMMUNITY) OR TYPE B - THREE-PHASE SUPPLIES FOR INVERTER/VARIABLE SPEED CONTROLLED LOADS = TYPE B WHERE SELECTION OF TYPE A OVER TYPE AC RCD/RCBOs WILL NOT AFFECT THE CONTRACT PRICE, PROVIDE TYPE A RCD/RCBOs
- 10. ALL CIRCUIT BREAKERS ARE TO BE OF A CONSISTENT MANUFACTURER/TYPE ACROSS THE SITE (NHP OR SCHNEIDER OR EQUAL). PROVIDE A FULL DISCRIMINATION/SELECTIVITY STUDY FOR THE PROPOSED CIRCUIT BREAKER SOLUTION. MAIN SERVICE PROTECTION DEVICE TO BE GRADED TO SUIT SUPPLY AUTHORITY PROTECTION.
- 11. WHERE DENOTED, ENSURE SWITCHBOARDS ARE OF A SUFFICIENT SIZE AND CONSTRUCTION TO BE HOUSED WITHIN DEDICATED SWITCH ROOMS, CUPBOARDS, AND ENCLOSURES. WHERE THE SWITCHBOARD CAN NOT BE CONTAINED WITHIN THE NOMINATED AREA, CO-ORDINATE WITH THE BUILDING TRADE AND ARCHITECT AS REQUIRED TO MODIFY THE SPATIAL ALLOWANCES FOR EACH SWITCHBOARD PRIOR TO ANY INSTALLATION WORKS.
- 12. ENSURE THE ENTIRE BUILDING LOAD IS EVENLY BALANCED OVER THE THREE PHASES. CIRCUIT SCHEDULES INCLUDED ARE INDICATIVE ONLY AND DO NOT ACCOUNT FOR BALANCING OF THE SITE/BUILDING LOAD.



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0 25mm 100mm ON A1 ORIGINAL 50mm

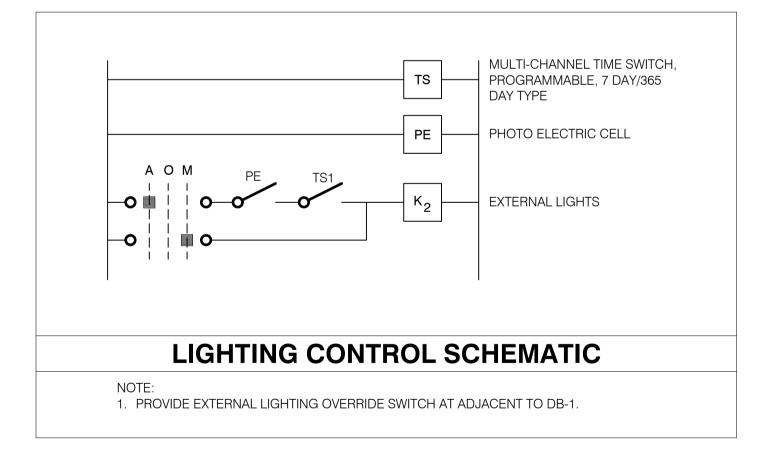


# FOR APPROVAL

FAULT CURRENT RATING: 6kA FOR 1 SEC IP RATING: IP42 CONSTRUCTION: FORM 1

RATING:160A

**DISTRIBUTION BOARD - DB-1** 





А	14.10.22
2	29.09.22
1	29.07.22
Rev	Date

FOR CONSTRUCTION 100% ISSUE FOR REVIEW FOR REVIEW Reason for Issue



– MECHANICAL —— ELECTRICAL —— HYDRAULIC —— FIRE —— ENERGY —— NABERS —— STORMWATER —— SECTION J —— BEEC –

VICTORY PARK CARAVAN PARK TOILET AMENITIES BLOCK WILCANNIA

# **ALL DISTRIBUTION BOARDS - NOTES**

1. PROVIDE DB C/W CONTROLS. PROVIDE DETAILS OF PROPOSED DB

2. DISTRIBUTION BOARD TO BE WALL MOUNTED AND TO BE SIZED &

CO-ORDINATED TO ENSURE CLEARANCES ARE MAINTAINED IN ACCORDANCE WITH AS/NZS 3000-2018. 3. PROVIDE ISOLATORS FOR EQUIPMENT PROVIDED BY OTHER

TRADES, CO-ORDINATE FINAL LOCATION WITH OTHER TRADES. 4. PROVIDE TYPED DB SCHEDULE.

5. PROVIDE 30% SPARE CAPACITY

6. ALL CABLING TO BE 2.5mm<sup>2</sup> UNLESS STATED OTHERWISE. PROVIDE EMERGENCY LIGHT TEST FACILITY COMPLETE WITH

STOP/ RESET, 2hr TIMER & RECORD BOOK 8. CIRCUITS INDICATIVE ONLY - FINAL CIRCUIT ARRANGEMENT TO BE

CONFIRMED FOLLOWING FINAL REVIEW.