

ELECTRICAL NOTES

GENERAL CONDITIONS

THIS DRAWING IS A SUMMARY OF THE GENERAL REQUIREMENTS FOR THE PROJECT, THE CONTRACTOR SHALL REFER TO THE TECHNICAL SPECIFICATION FOR FURTHER DETAILED INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FULLY UNDERSTAND THE WORKS PRIOR TO SUBMISSION OF TENDERS. THE CONTRACTOR MUST CONDUCT ALL SURVEYS AND INSPECTIONS NECESSARY TO UNDERSTAND THE WORKS OUTLINED IN THE DRAWINGS AND OTHER ASSOCIATED DOCUMENTATION. THE CONTRACTOR IS TO MAKE ALLOWANCES IN THE SERVICES FOR ALL ASPECTS COVERED UNDER THIS SPECIFICATION AND COORDINATE THE LOCATION OF ALL ELECTRICAL EQUIPMENT/SERVICES WITH OTHER TRADES, STRUCTURES, AND ALL OTHER SERVICES.

SCOPE OF WORK

THE SCOPE OF WORK INCLUDES THE SUPPLY, DELIVERY, INSTALLATION, TESTING, COMMISSIONING AND DEFECT RECTIFICATION WORK OF THE FOLLOWING SYSTEMS AND EQUIPMENT AND AS SHOWN ON THE ELECTRICAL SERVICES DRAWINGS AND SPECIFICATION. SUPPLY ALL THE REQUIRED MATERIALS UNLESS OTHERWISE SPECIFIED. THE ELECTRICAL CONTRACTOR SHALL ALLOW FOR ANY INCIDENTAL ITEMS THAT HAVE BEEN OMITTED TO PROVIDE A COMPLETE WORKING SYSTEM INCLUSIVE OF:

- SWITCHBOARDS
- LIGHTING AND ASSOCIATED WIRING
- POWER AND ASSOCIATED WIRING
- COORDINATION OF LIGHTING POLE, FOOTING, CROSSARM ETC

ENVIRONMENTAL CONDITIONS

THE EQUIPMENT SUPPLIED BY THE CONTRACTOR SHALL BE SUITABLE FOR CONTINUOUS OPERATION IN AN INDOOR OR OUTDOOR ENVIRONMENT AS APPLICABLE. THE CONTRACTOR IS WHOLLY RESPONSIBLE FOR ENSURING THAT THE EQUIPMENT SUPPLIED UNDER THIS CONTRACT SHALL BE CAPABLE OF DELIVERING CONTINUOUS FULL RATED LOAD UNDER THE SITE CONDITIONS LISTED BELOW:

MAXIMUM AMBIENT TEMPERATURE	45°C
MINIMUM AMBIENT TEMPERATURE	-5°C
RELATIVE HUMIDITY	80% (MAX), 10% (MIN)
ALTITUDE	1000m (NOT EXCEEDING)

REGULATIONS, STANDARDS AND CODES

ALL MATERIALS, SUPPLIES AND ALL WORK INSTALLED SHALL COMPLY WITH THE CURRENT CODES, STANDARDS, RULES AND REGULATIONS OF ALL STANDARD AUTHORITIES INCLUDING, BUT NOT NECESSARILY LIMITED TO:

- NATIONAL CONSTRUCTION CODE 2019
- AS/NZS 3000, AS/NZS 3008 (LV POWER RETICULATION)
- AS 3017 ELECTRICAL INSTALLATIONS - TESTING GUIDELINES
- AS 61439 (LV SWITCHBOARDS)
- AS 2560.2.3 FOOTBALL (ALL CODES) LIGHTING
- AS 4282 CONTROL OF OBTRUSIVE LIGHTING
- VICTORIAN BUILDING REGULATIONS
- VICTORIAN SUPPLY AND INSTALLATION RULES (VSIR)

MAKE ALL APPLICATIONS AND PAY ALL FEES REQUIRED TO COMPLY WITH RELEVANT AUTHORITY AND REGULATORY REQUIREMENTS INCLUDING METERING COSTS, BUILDING PERMITS AND SELF-CERTIFICATION COSTS FOR ELECTRICAL AND COMMUNICATION SYSTEMS, AND ALL WORKS REQUIRED FOR BUILDING PERMIT APPROVAL.

INSPECTION AND LOCATION OF SERVICES

THE LOCATION AND MOUNTING HEIGHTS OF THE SERVICES SHOWN ON THE DRAWING/S ARE APPROXIMATE ONLY. FINAL LOCATIONS AND MOUNTING HEIGHTS SHALL BE DETERMINED ON SITE TO SUIT THE PRINCIPAL/CLIENT AND TO PROVIDE OPTIMUM OPERATING PERFORMANCE AND FUNCTIONALITY.

THE CONTRACTOR IS TO BE FULLY INFORMED OF THE CONTRACT WORK BY INSPECTION OF THE SITE AND BY OTHER MEANS CONSIDERED NECESSARY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING FROM SITE ALL REQUIRED INFORMATION TO ALLOW THE NEW INSTALLATION TO BE COMPLETE AND CONSTRUCTIBLE. THIS INCLUDES, BUT IS NOT LIMITED TO EXISTING EQUIPMENT LOCATIONS, SITE ACCESS LIMITATIONS, SUITABLE CABLE ROUTES AND ROUTE LENGTHS. THE CONTRACTOR SHALL ALLOW TO RECONNECT ALL EXISTING EQUIPMENT, WHERE THAT EQUIPMENT IS NOT BEING REPLACED OR REMOVED. UNFORESEEN DIFFICULTIES DUE TO NEGLIGENCE OF THIS PRECAUTION SHALL IN NO WAY RELIEVE THE RESPONSIBILITY FOR FULL PROPER EXECUTION OF THE WORKS.

WORKMANSHIP

ALL PERSONNEL SHALL BE APPROPRIATELY SKILLED AND LICENSED FOR THEIR PARTICULAR TASKS, AND ALL WORK SHALL BE IN ACCORDANCE WITH ACCEPTABLE TRADE PRACTICES FOR WORKS OF THIS KIND. LICENSES SHALL SATISFY THE REQUIREMENTS OF THE STATE OR TERRITORY AUTHORITY HAVING JURISDICTION OVER THE WORKS.

ALL WORKMANSHIP AND MATERIALS SHALL BE OF A HIGH INDUSTRY STANDARD USING NEW MATERIALS. ANY MATERIALS OR WORKMANSHIP, WHICH ARE CONSIDERED INFERIOR OR NON-CONFORMING, SHALL BE REPLACED AT THE CONTRACTOR COST.

ASSOCIATED WORK/CO-ORDINATION

CO-ORDINATE ELECTRICAL REQUIREMENTS WITH MAIN CONTRACTOR AND ALL OTHER TRADES. BECOME FULLY INFORMED OF THE CONTRACT WORK BY INSPECTION OF THE SITE AND BY OTHER MEANS CONSIDERED NECESSARY. UNFORESEEN DIFFICULTIES DUE TO NEGLIGENCE OF THIS PRECAUTION SHALL IN NO WAY RELIEVE THE RESPONSIBILITY FOR FULL PROPER EXECUTION OF THE WORKS. NO CLAIM FOR ADDITIONAL WORK ARISING FROM NEGLIGENCE OF A THOROUGH INSPECTION WILL BE APPROVED.

TESTING AND COMMISSIONING

SUPPLY ALL NECESSARY LABOUR AND ASSISTANCE FOR TESTING, LIGHTING MEASUREMENT TEST (IN ACCORDANCE WITH VICTORIA GOVERNMENT COMMUNITY SPORTING FACILITY LIGHTING GUIDE) LOAD BALANCING, OPERATING AND ADJUSTING THE SYSTEM AND EQUIPMENT, CERTIFICATE OF COMPLIANCE AND FOR FULLY INSTRUCTING THE CLIENT OR ITS REPRESENTATIVE IN THE OPERATION OF THE SYSTEM AND EQUIPMENT. PROVIDE FULL OPERATORS MANUAL COMPLETE WITH AS-BUILT DRAWINGS AND ALL TESTS RESULTS.

THE CONTRACTOR SHALL CARRY OUT TESTING AND COMMISSIONING OF THE NEW LIGHTING SYSTEM INCLUSIVE OF:

- NIGHT TIME COMMISSIONING TO TEST OPERATION AND FUNCTIONALITY OF LUMINAIRES.
 - RECORDING AND PROVIDING PRINCIPAL OF FIELD OF PLAY HORIZONTAL ILLUMINANCE LEVELS AT ALL SWITCHING LEVELS (TRAINING AND COMPETITION) IN ACCORDANCE WITH AS2560 SERIES
 - ONE NIGHT OF SPORTSLIGHTING COMMISSIONING FOR FINAL ADJUSTMENT OF LUMINAIRE AMING TO ACHIEVE COMPLIANCE AND TO INCREASE PERFORMANCE IN ACCORDANCE WITH AS2560 SERIES ILLUMINANCE AND UNIFORMITY REQUIREMENTS.
- IN ADDITION, AS PART OF COMMISSIONING THE CONTRACTOR SHALL TAKE HIGH RESOLUTION PHOTOS (MIN. 4MP) CLEARLY DETAILING:

- LOCALITY AND POSITION OF LIGHTING POLE FOOTINGS
- LIGHTING POLE FOOTING EXCAVATION PRIOR TO CAGE/REO INSTALLATION
- LIGHTING POLE FOOTING PRIOR TO CONCRETE POUR
- REPRESENTATIVE PHOTOS OF UNDERGROUND CONDUIT INSTALLATION SHOWING NUMBER/SIZE CONDUITS INSTALLED AND BURY DEPTH
- PRIOR STANDING EACH LIGHT TOWER, A PHOTO OF EACH LIGHTING POLE HEADMAST INSTALLATION SHOWING ALL INSTALLED LUMINAIRES AND THEIR CONNECTION.S
- CLOSE UP OF LUMINAIRE MOUNTING TO HEADMAST
- CLOSE UP OF ARMoured CONDUIT CONNECTION BETWEEN LUMINAIRE AND HEADMAST
- INSIDE EACH ACCESS PANEL SHOWING SWITCHGEAR AND DRIVER INSTALLATIONS
- FINAL INSTALLATION OF SWITCHGEAR AND CONTROL PANEL INSTALLATIONS

CABLE SUPPORT AND PROTECTION

- CABLES SHALL BE ADEQUATELY SUPPORTED ALONG THEIR ENTIRE LENGTH TO THE APPROVAL OF THE SUPERINTENDENT. SUPPORTS SHALL BE INSTALLED AT MAXIMUM INTERVALS OF 1000 MM AND AT LESSER INTERVALS WHERE REQUIRED TO PREVENT UNDUE SAGGING. CABLES IN VERTICAL RUNS SHALL BE SUPPORTED EVERY 600 MM.

- WHERE NOT INSTALLED ON CABLE TRAY, CABLES SHALL BE SADDLED TO CONCRETE MASONRY OR STEELWORK OR CLIPPED BY CABLE CLAMPS TO UNISTRUT CHANNELS. CHANNELS SHALL BE OF SUFFICIENT WIDTH TO ACCOMMODATE ALL CABLES IN THE RUN PLUS A 20% SPARE CAPACITY.

- STRUCTURAL STEELWORK SHALL NOT BE DRILLED, WELDED OR CUT TO FACILITATE CABLE INSTALLATION WITHOUT THE SUPERINTENDENT'S WRITTEN PERMISSION.

CABLES

CABLES SHALL COMPLY WITH AS/NZS 5000.1 'ELECTRIC CABLES - POLYMERIC INSULATED - FOR WORKING VOLTAGES UP TO AND INCLUDING 0.6/1 KV'. UNLESS OTHERWISE INDICATED ALL CABLES SHALL HAVE STRANDED COPPER CONDUCTORS.

ALL CABLING AND WIRING SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE APPLICABLE STANDARDS, IN PARTICULAR AS 3000 AND AS 3008.

CABLING SHALL BE OF THE SIZE REQUIRED TO MEET THE CURRENT RATING AND VOLTAGE DROP REQUIREMENTS OF AS/NZS 3000 AND AS/NZS 3008 FOR THE ACTUAL CIRCUIT LOADING AND METHOD OF INSTALLATION, OR AS SPECIFIED.

CABLE INSTALLATION:

UPON DELIVERY OF THE CABLE DRUMS, THEY SHALL BE VISUALLY INSPECTED FOR DAMAGE INCURRED DURING TRANSPORT OR STORAGE. THE SEAL ON THE INNER AND OUTER CABLE END SHALL BE EXAMINED AND THE CONDITION OF ARMOURING, SERVING OR SHEATH INSPECTED FOR DAMAGE, CORROSION OR LEAKAGE OF IMPREGNATING OIL. ANY DAMAGE DISCOVERED SHALL BE REPORTED TO THE SUPERINTENDENT.

DURING INSTALLATION CABLES SHALL BE HANDLED WITH DUE CARE. WHEN PULLING CABLES, ANY WINCH USED SHALL HAVE AUTOMATIC TENSION LIMITERS AND THE TENSION SHALL NOT EXCEED THAT SPECIFIED BY THE MANUFACTURERS FOR THE PARTICULAR CABLE AND CONDITIONS OF INSTALLATION. WINCHING ROPES SHALL BE ATTACHED TO THE CABLE ARMOUR WITH STEEL MESH SLEEVES AND CARE SHALL BE TAKEN THAT CABLE

SHEATHS ARE NOT DAMAGED IN ANY WAY.

CABLES SHALL NOT BE BENT TO A RADIUS LESS THAN THAT RECOMMENDED BY THE MANUFACTURER.

SHOULD ANY DAMAGE OCCUR TO ANY PART OF A CABLE (INCLUDING SERVING) DURING HANDLING OR INSTALLATION, THE SUPERINTENDENT SHALL BE INFORMED AND WORK SHALL ONLY PROCEED AFTER HIS INSPECTION AND AUTHORISATION TO CONTINUE HAS BEEN GIVEN.

CUT-OFFS AND JOINTING:

DURING INSTALLATION, ALL CABLES SHALL BE CUT FROM DRUMS IN SUCH A MANNER THAT CUT-OFFS ARE A MINIMUM AND ANY SURPLUS CABLE REMAINING IS IN A SINGLE LENGTH.

CABLES SHALL BE INSTALLED IN CONTINUOUS LENGTHS.

CABLE GLANDS:

CABLE GLANDS SHALL BE OF AN APPROVED WEATHERPROOF TYPE OF A TYPE THAT IS CONSISTENT WITH THE IP RATING OF THE ENCLOSURE.

AS A MINIMUM, GLANDS IN GENERAL AREAS SHALL BE CONSTRUCTED FROM:

- CABLES UP TO 25MM OVERALL DIA: NYLON OR PVC
- CABLES LARGER THAN 25MM OVERALL DIA: NICKEL-PLATED BRASS

NICKEL-PLATED BRASS GLANDS SHALL NOT BE USED IN CONJUNCTION WITH ALUMINIUM ALLOY BOXES OR ALUMINIUM GLAND PLATES.

DAMAGE AND REINSTATEMENT:

ANY DAMAGE TO CIVIL WORKS OR STEEL, INCLUDING PAINTWORK CAUSED BY ELECTRICAL INSTALLATION WORK SHALL BE MADE GOOD BY THE CONTRACTOR.

AFTER ERECTION ALL HOLES IN FLOORS AND WALLS AND IN CABLE PIPES THROUGH WHICH PASS CABLES, CONDUITS OR EARTH BARS SHALL BE SEALED. ALL PENETRATIONS SHALL BE SEALED WITH A FIRE RESISTANT TWO PART EXPANDING SILICON RUBBER. THE CONTRACTOR SHALL ENSURE THAT ALL PENETRATIONS ARE FIRE, WEATHER AND RODENT PROOF.

UNDERGROUND ELECTRICAL INSTALLATION

TRENCHING:

ALL TRENCHES, UNLESS OTHERWISE DIRECTED BY THE SUPERINTENDENT, SHALL BE EXCAVATED IN GROUND AS FOUND ALONG THE LINE AND TO THE DEPTHS AND WIDTHS SHOWN ON THE DRAWINGS. FINAL LOCATIONS OF UNDERGROUND INFRASTRUCTURE TO BE SURVEYED AND ALIGNMENTS SHALL BE ACCURATELY PRESENTED IN AS-BUILT DRAWINGS

THE LINE OF THE TRENCH MUST BE KEPT PERFECTLY STRAIGHT AND PARALLEL TO THE PLANNED ALIGNMENT. THE BOTTOM MUST BE KEPT LEVEL ACROSS THE TRENCH AND THE SIDES AS NEAR THE VERTICAL AS IS PRACTICABLE. ANY CAVITIES IN THE BOTTOM OF THE TRENCH MUST BE FILLED WITH SELECTED STONE FREE MATERIAL, PROPERLY COMPACTED TO THE PROPER GRADE.

THE CONTRACTOR SHALL TAKE CARE TO ERECT SHORING AS NECESSARY TO EFFECTIVELY PREVENT THE SIDES OF THE TRENCH FROM RUNNING OR FALLING INTO THE EXCAVATION AND TO KEEP TRENCHES FREE FROM WATER DURING ALL CABLE/CONDUIT LAYING OPERATIONS. SPOIL FROM THE TRENCH EXCAVATION NOT REQUIRED FOR BACKFILL IN THE TRENCH SHALL BE MOUNDED ABOVE THE BACKFILLED TRENCH. WHERE ELECTRICAL TRENCHES ARE TO BE EXCAVATED ACROSS SPORTING FIELD OF PLAY, THE CONTRACTOR SHALL ENSURE THAT THE BACKFILL DOES NOT INTERFERE WITH SPORTING PLAY SURFACES AND SUB-SURFACES.

THE CONTRACTOR SHALL TAKE EVERY PRECAUTION THAT IS NECESSARY FOR THE PROTECTION FROM INJURY OF ALL EXISTING DRAIN PIPES, ELECTRIC AND COMMUNICATIONS CONDUITS AND OTHER EXISTING WORKS AND SERVICES WHEREVER MET WITH, OR WHICH ARE ADJACENT TO THE WORK, AND TO AVOID DAMAGING SUCH DRAINS, CONDUITS OR SERVICE CONNECTIONS OR ANY FITTINGS ATTACHED THERETO.

THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE KEEPING CLEAN AND THE MAINTENANCE OF THE TRENCHES IN GOOD ORDER AND CONDITION BETWEEN THE TIME OF EXCAVATION AND LAYING AND SHALL OBTAIN THE SUPERINTENDENT'S APPROVAL BEFORE COMMENCING TO LAY CABLES.

INSTALLATION:

ALL CABLES SHALL BE INSTALLED IN THE PRESENCE OF THE SUPERINTENDENT OR ITS REPRESENTATIVE AND THE CONTRACTOR SHALL GIVE A MINIMUM OF 48 HOURS NOTICE OF INTENTION TO PULL THE CABLES. ANY CABLES NOT INSTALLED TO THE ABOVE REQUIREMENTS MAY BE REQUIRED TO BE EXCAVATED AND RELAID. AFTER THE EXCAVATION HAS BEEN COMPLETED AND APPROVED THE TRENCH SHALL BE CLEARED OF ALL SHARP OBJECTS AND A FOUNDATION LAYER OF STONE-FREE BEDDING MATERIAL SHALL BE PLACED.

CABLE DRUMS SHALL BE ARRANGED SO THAT THE CABLE IS ALWAYS PULLED FROM THE TOP OF THE DRUM USING SUITABLE SHOTTERS, HOOKS OR CUMALONGS AND A SWIVEL TO PREVENT DAMAGE TO THE CABLE. THE CABLE SHALL BE PULLED JUST FAST ENOUGH TO KEEP THE DRUM ROTATING SMOOTHLY AND SUDDEN STOPPING SHALL BE AVOIDED. WHEN PULLING CABLES INTO TRENCHES, ROLLERS SHALL BE SPACED TO PREVENT THE CABLE DRAGGING ON THE GROUND. AT BENDS AN ASSEMBLY OF ROLLERS AND SKIDS OR ROLLERS AND ANGLE ROLLERS SHALL BE USED AND THE CABLE SHALL NOT BE BENT TO LESS THAN 15 TIMES OD. ALL CHANGES IN DIRECTION OR GRADE SHALL BE IN EASY STAGES.

PITS:

CABLE PITS SHALL CONSIST OF HIGH DENSITY POLYETHYLENE PITS WITH CONCRETE/STEEL LIDS, UNLESS OTHERWISE INDICATED. PITS, LIDS AND THE METHOD OF INSTALLATION SHALL BE SUITABLE FOR THE ANTICIPATED WHEEL LOADINGS IN THE AREA IN WHICH THEY ARE INSTALLED OR SHOWN IN THE DRAWINGS, WHICHEVER IS GREATER. LIDS TO ELECTRICAL PITS SHALL BE MARKED 'ELECTRICAL'. LIDS FOR COMMUNICATIONS PITS SHALL BE MARKED 'COMMUNICATIONS'.

CONTRACTORS DOCUMENTATION

THE CONTRACTOR SHALL DEVELOP THE FOLLOWING DOCUMENTATION AS PART OF THE WORK AND SUBMIT TO SITE SUPERINTENDENT DOCUMENTATION IN A COMPLETE CONSOLIDATED SET. THROUGHOUT THE PROGRESS OF THE WORKS THE CONTRACTOR SHALL MAINTAIN RECORDS OF ANY CHANGE TO ITS DOCUMENTATION WHICH MAY HAVE BEEN APPROVED FOR CONSTRUCTION PURPOSES SUCH THAT ON COMPLETION OF THE WORKS ACCURATE 'AS CONSTRUCTED' INFORMATION IS AVAILABLE.

AS-CONSTRUCTION DRAWINGS

PROVIDE A FULL SET AND A 'DWG' (AUTOCAD LATEST VERSION) DISK OF AS-BUILT DRAWINGS, TO THE SATISFACTION OF THE SUPERINTENDENT, WITHIN 7 DAYS OF PRACTICAL COMPLETION. THE AS BUILT DRAWINGS SHALL COMPREHENSIVELY REFLECT DETAILS OF ALL INSTALLED SYSTEMS AND COMPONENTS, AS DETAILED IN THE SCOPE OF WORK.

OPERATION AND MAINTENANCE MANUALS

PROVIDE TWO SETS OF OPERATION AND MAINTENANCE MANUALS, THE AIM OF THESE BEING TO PROVIDE A DETAILED UNDERSTANDING OF THE ITEMS OF EQUIPMENT, TESTS RESULTS AND ITS OPERATION. AN AID FOR TRAINING OF OPERATORS, A REFERENCE FOR FAULT DIAGNOSIS AND A FRAMEWORK FOR PREVENTIVE AND BREAKDOWN MAINTENANCE THE MANUALS SHALL INCLUDE AS A MINIMUM.

NAME, ADDRESS, TELEPHONE NUMBERS, EMAIL ADDRESS AND WEB PAGE ADDRESS OF THE MANUFACTURER AND SUPPLIER OF ITEMS OF EQUIPMENT INSTALLED, TOGETHER WITH CATALOGUE LIST NUMBERS. INCLUDE DETAILS FOR ALL CONSULTANTS AND CONTRACTORS INVOLVED IN THE DESIGN AND CONSTRUCTION PHASE.

TECHNICAL DESCRIPTION AND MODES OF OPERATION OF THE SYSTEMS INSTALLED.

PRODUCT LITERATURE FOR THE SYSTEMS INSTALLED AND CONTACT DETAILS FOR SUPPLIERS AND MANUFACTURERS OF THESE SYSTEMS.

CONTROL AND SWITCHING SEQUENCES AND FLOW DIAGRAMS FOR THE SYSTEM INSTALLED, INCLUDING SAFETY FEATURES. ALSO PROVIDE INSTRUCTIONS FOR FOR OPERATING AND ADJUSTING CONTROL SYSTEMS.

MANUFACTURER'S OPERATIONAL AND SAFETY LITERATURE, AS APPROPRIATE.

EMERGENCY MAINTENANCE PROCEDURES, INCLUDING TELEPHONE NUMBERS FOR EMERGENCY SERVICES AND AFTER HOURS CONTACTS FOR SUPPLIERS AND CONTRACTORS AND PROCEDURE FOR FAULT FINDING.

STATUTORY CERTIFICATES OF COMPLIANCE FOR ALL ELECTRICAL AND COMMUNICATION WORK, COPIES OF MANUFACTURER'S WARRANTIES.



CERTIFICATES FROM AUTHORITIES AND UTILITIES, PRODUCT CERTIFICATION, COPIES OF TEST CERTIFICATES, ETC.

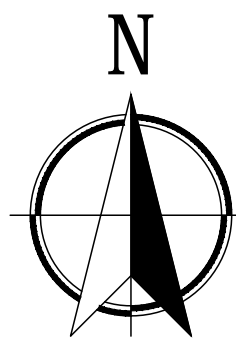
COMMISSIONING PHOTOS

AS-BUILT DRAWINGS, SYSTEM SCHEMATICS, ETC.

INSPECTION AND TEST PLANS, TEST SHEETS AND COMMISSIONING RECORDS.

PRELIMINARY

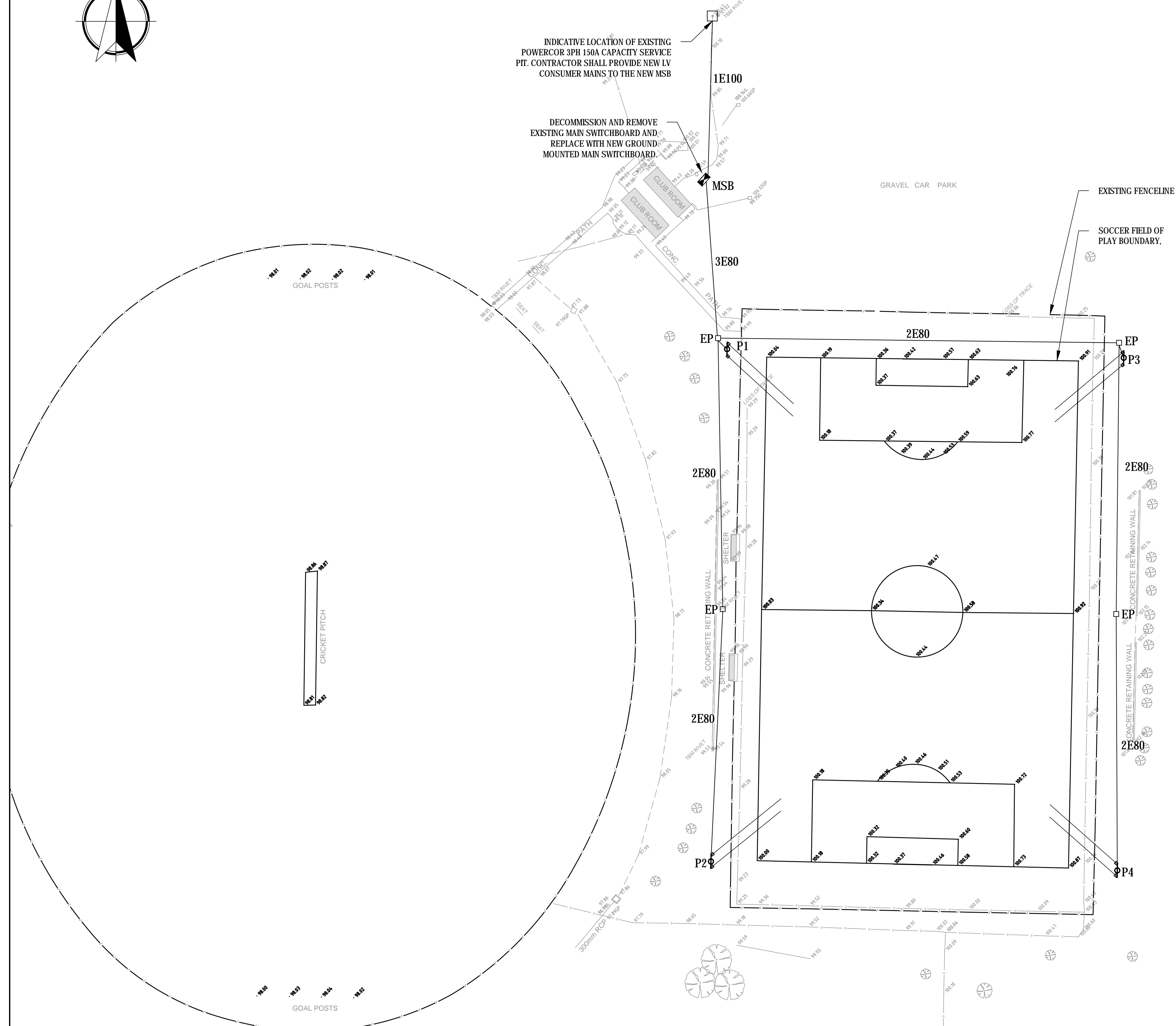
A	SCHEMATIC DESIGN	22/06/20	RO	HKS	 <p>HARRIS KMON SOLUTIONS DARWIN, GEELONG, CAIRNS admin@hksolutions.com.au www.hksolutions.com.au</p>	 <p>CITY OF GREATER GEELONG</p>	CITY OF GREATER GEELONG ESTUARY RESERVE SOCCER FIELD LIGHTING ELECTRICAL AND LIGHTING SERVICES			
	GENERAL NOTES		-							
No.	DESCRIPTION	DATE	INIT.	DEPT/COMPANY.			SHEET No.	DRAWING No.	AMEND.	SHEET SIZE
	AMENDMENTS						- OF -	20098-E01	A	A1



ESTUARY BOULEVARD

INDICATIVE LOCATION OF EXISTING POWERCOR 3PH 150A CAPACITY SERVICE PIT. CONTRACTOR SHALL PROVIDE NEW LV CONSUMER MAINS TO THE NEW MSB

DECOMMISSION AND REMOVE EXISTING MAIN SWITCHBOARD AND REPLACE WITH NEW GROUND MOUNTED MAIN SWITCHBOARD



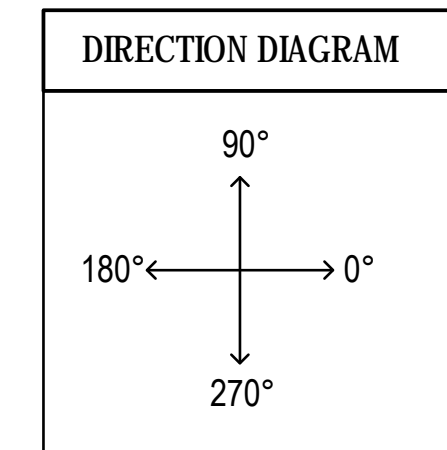
SITE LAYOUT PLAN
SCALE 1:500 AT ORIGINAL SIZE

LEGEND:

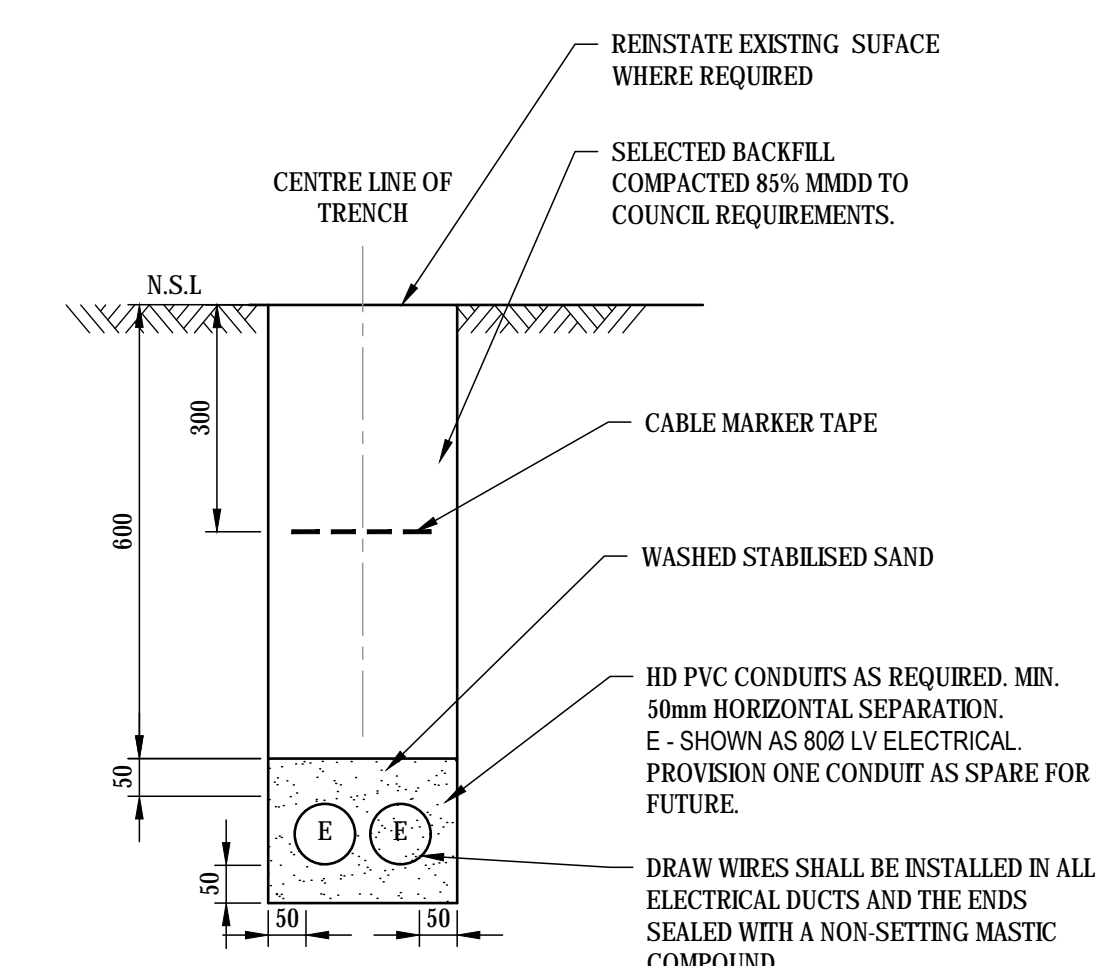
- nE80 BURIED HD PVC ELECTRICAL CONDUITS INSTALLED WITH DRAW WIRE IN ACCORDANCE WITH TYPICAL CABLE TRENCH SECTION DETAIL AND AS/NZS3000.
- n DENOTES QUANTITY OF CONDUITS.
- E DENOTES ELECTRICAL ORANGE HD PVC NUMBER DENOTES DIA OF CONDUIT
- FOR EXAMPLE:
2E80 2 x 80 DIA ELECTRICAL HD PVC CONDUITS
- EP 710L x 710W x 660D POLYETHYLENE PIT WITH AS3996 CLASS B PIT LID IN OTHER AREAS. ALL LIDS SCRIBED WITH 'ELECTRICAL'. TYPE: ACO TYPE 77 OR APPROVED EQUIVALENT.
- MSB ELECTRICAL SWITCHBOARD
- MSB DENOTES NEW MAIN SWITCHBOARD
- Px 25m LIGHTING POLE STRUCTURE INCLUSIVE OF POLE, LED LUMINAIRES, FOOTING AND CROSSARM. CONTRACTOR TO DESIGN, CONSTRUCT AND CERTIFY LIGHTING POLE STRUCTURE AND FOOTING. REFER SCHEDULES ON DRAWING E03 AND E05 FOR INFORMATION ON LUMINAIRES AND POLE GENERAL ARRANGEMENT RESPECTIVELY.

NOTES

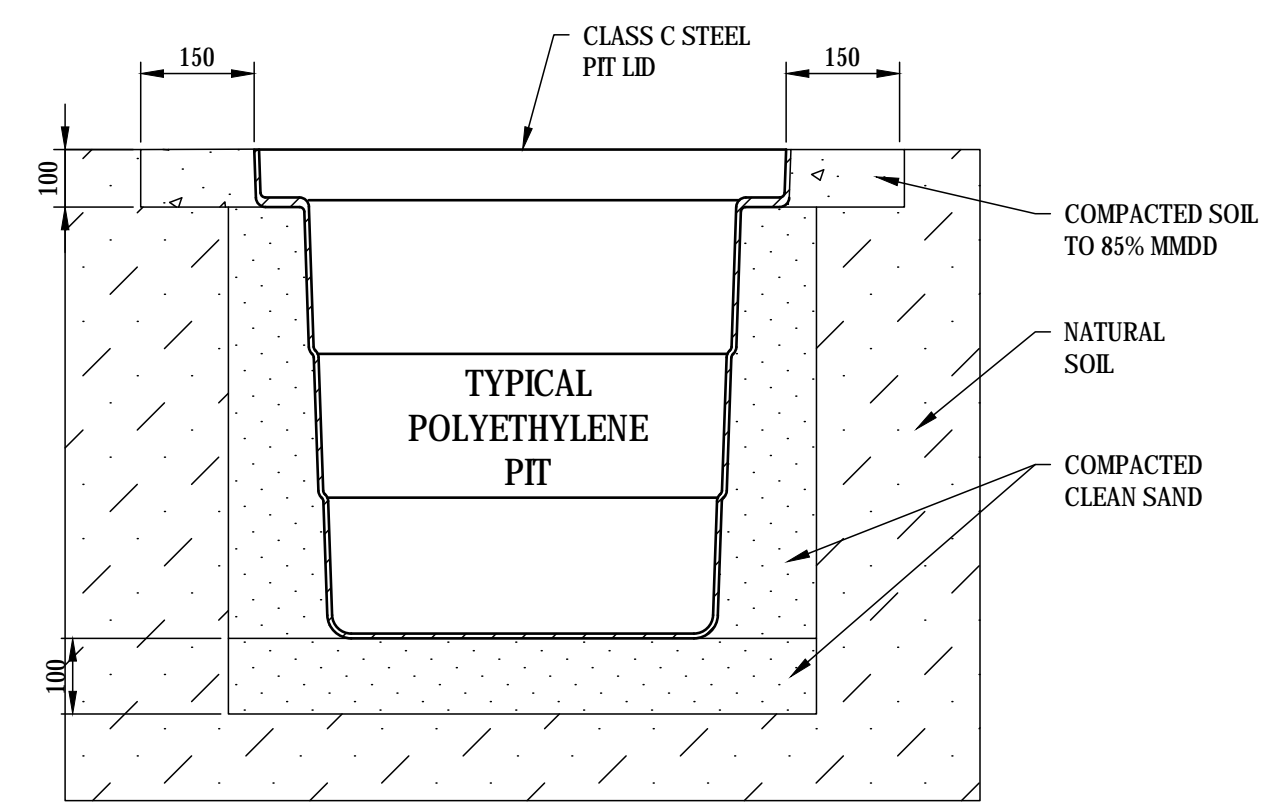
1. CONTRACTOR SHALL PROVIDE ALTERNATIVE DIRECTIONAL BORING SOLUTION OF EQUIVALENT PERFORMANCE AND ECONOMIC VALUE TO TRADITIONAL TRENCH EXCAVATION AND BACKFILL SOLUTION.
2. THE CONTRACTOR SHALL PRECISELY ORIENTATE IN ACCORDANCE WITH THE DIRECTION DIAGRAM DETAIL. ORIENTATION MAY NOT ALIGN PRECISELY WITH TRUE NORTH.



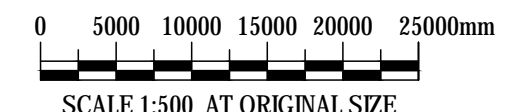
LIGHTING POLE SCHEDULE			
POLE ID	POLE HEIGHT	XARM QTY	XARM ORIENTATION (NOTE 2)
1	25m	1	90°
2	25m	1	90°
3	25m	1	90°
4	25m	1	90°



TYPICAL CABLE TRENCH SECTION
NTS



TYPICAL CABLE PIT DETAIL
NOT TO SCALE



WARNING
BEWARE OF UNDERGROUND SERVICES
CHECK WITH ALL RELEVANT AUTHORITIES AND CARRY OUT SITE INSPECTIONS TO DETERMINE THE LOCATION OF ALL EXISTING SERVICES PRIOR TO STARTING ANY EXCAVATIONS

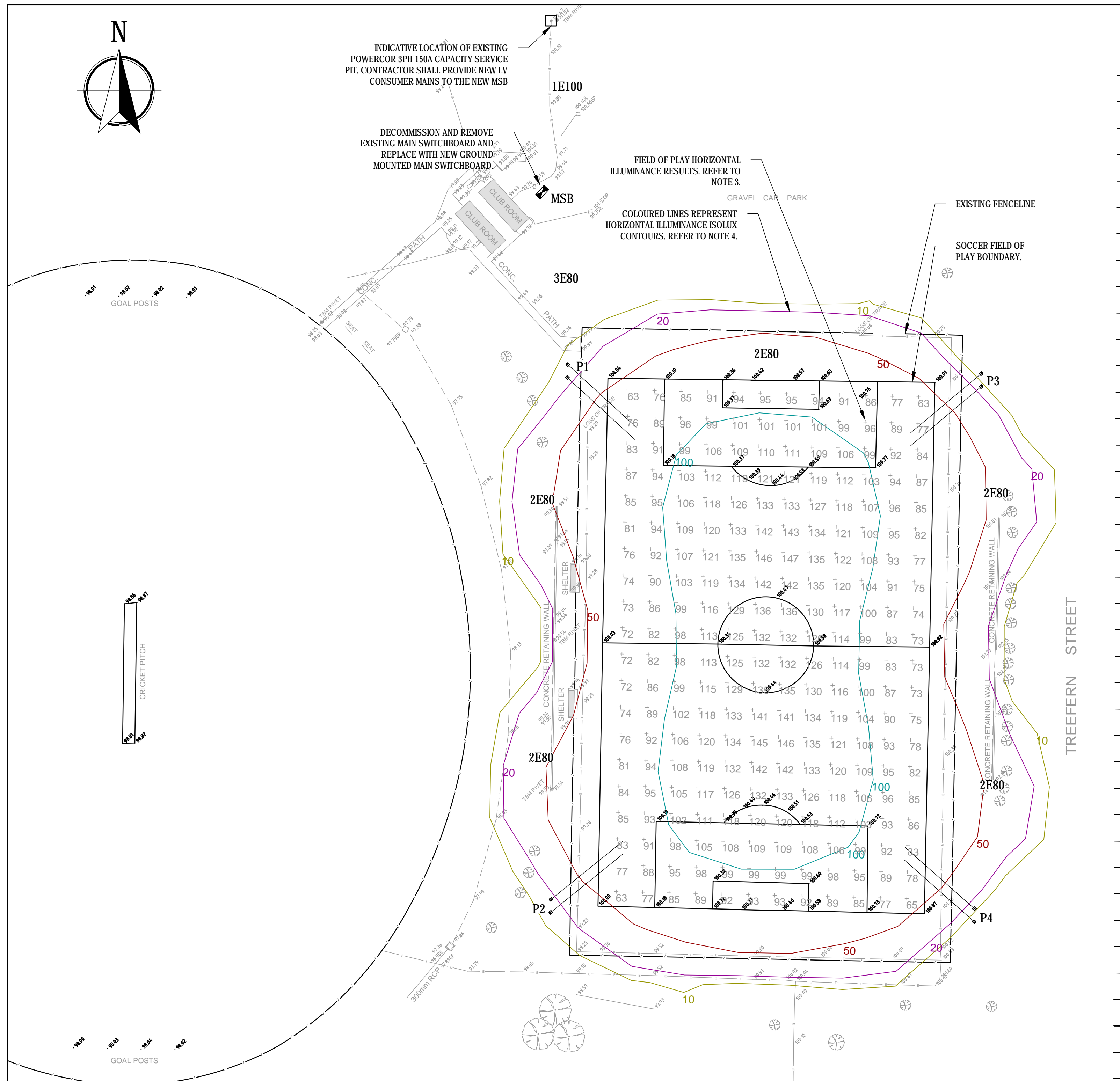
PRELIMINARY

No.	DESCRIPTION	DATE	INIT.	DEPT./COMPANY.
A	SCHEMATIC DESIGN	22/06/20	RO	HKS
AMENDMENTS				

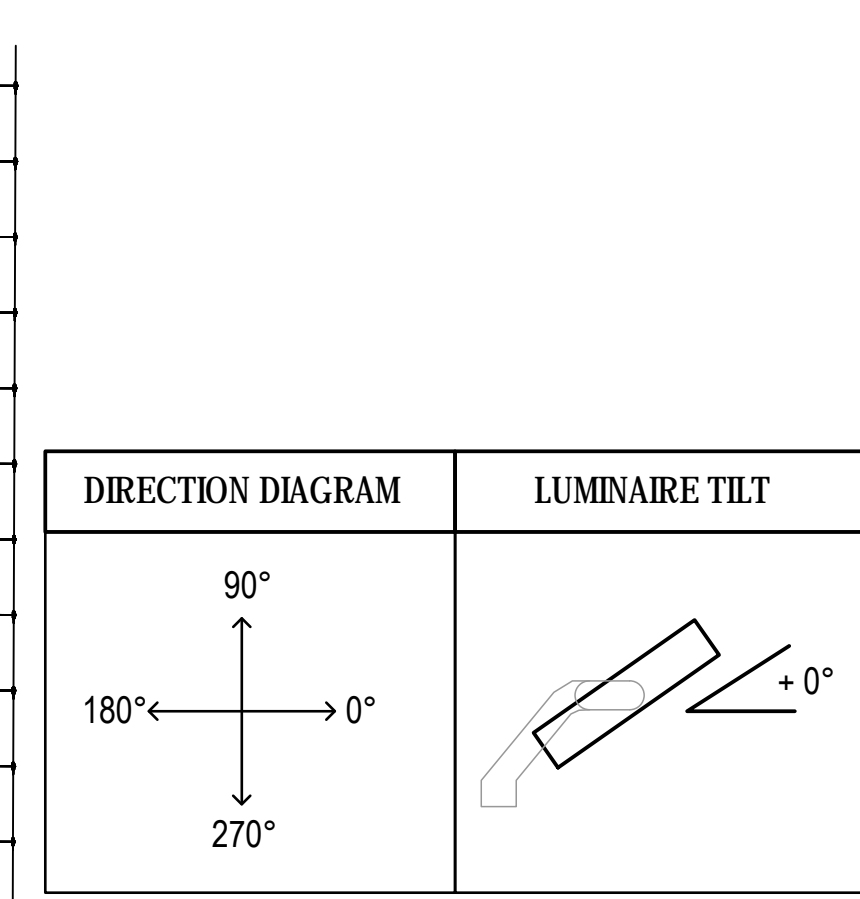
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DRAWN	CHECKED
DATE -	DATE -
DESIGNED	CHECKED
DATE -	DATE -
PROJECT MANAGER	AUTHORISED
DATE -	DATE -

CITY OF GREATER GEELONG ESTUARY RESERVE SOCCER FIELD LIGHTING ELECTRICAL AND LIGHTING SERVICES ELECTRICAL CABLE SUPPORT SYSTEMS PLAN			
SHEET No.	DRAWING No.	AMEND.	SHEET SIZE
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**FIELD OF PLAY LIGHTING PLAN
AND CALCULATION SUMMARY**
SCALE 1:500 AT ORIGINAL SIZE



GREY DENOTES FUTURE 150 LUX PERFORMANCE LEVEL. LIGHTING POLE STRUCTURES AND FOUNDATIONS SHALL CONSIDER THESE LUMINAIRES AS PART OF ITS STRUCTURAL DESIGN.

OBTRUSIVELIGHT_RES_BOUNDARY 1 (NOTE 2)

NOTES

1. THE CONTRACTOR SHALL ALLOW FOR FINAL MEASUREMENT AND RECORDING OF HORIZONTAL ILLUMINANCE AND UNIFORMITIES ON MAIN OVAL PPA IN ACCORDANCE WITH 2560.2.3 LIGHTING TECHNICAL PARAMETERS 100 LUX PERFORMANCE LEVEL. AS PART OF LIGHTING MEASUREMENTS THE CONTRACTOR SHALL ALLOW FOR ON-SITE NIGHT AIMING OF LUMINAIRES TO PROVIDE TUNING AND IMPROVEMENTS TO LIGHTING PERFORMANCE AND REDUCTION OF LIGHTING SPILL AS PART OF ITS COMMISSIONING.
2. OBTRUSIVE LIGHTING BOUNDARY SEGMENT WAS ASSESSED AT PROPERTY BOUNDARIES IN ACCORDANCE WITH AS4282 2019 ZONE 'A3' USING SOFTWARE ACR2. OBTRUSIVE LIGHTING WAS ASSESSED WITH 20m HIGH VERTICAL PLANE GRID (5M HORIZONTAL 2m VERTICAL POINT GRID SPACING) ALONG THE IDENTIFIED PROPERTY BOUNDARIES IN COMPLIANCE WITH AS4282-2019.
3. FIELD OF PLAY (PPA) CALCULATED POINTS ARE HORIZONTAL ILLUMINANCE AT GROUND LEVEL. CALCULATED POINTS SHOWN ARE FOR AFL COMPETITION PERFORMANCE LEVEL OF 100 LUX IN ACCORDANCE WITH AS2560.2.3. A LED LUMINAIRE MAINTENANCE FACTOR OF 0.85 WAS UTILISED.
4. ISOLUX LINES ARE CALCULATED HORIZONTAL ILLUMINANCE VALUES AND SHOWN AT GROUND LEVEL.
5. ORIENTATION MAY NOT ALIGN PRECISELY WITH TRUE NORTH. REFER TO DIRECTION DIAGRAM FOR ORIENTATION. THE CONTRACTOR SHALL PRECISELY ORIENTATE IN ACCORDANCE WITH THE DIRECTION DIAGRAM.
6. TILT SHALL BE IN ACCORDANCE TO LUMINAIRE TILT DIAGRAM. THE CONTRACTOR SHALL CALIBRATE LUMINAIRE TILT 0 DEGREE ANGLE AS LEVEL AND IN ACCORDANCE TO MANUFACTURERS REQUIREMENTS.
7. CONTRACTOR SHALL ENGAGE AN INDEPENDENT EXPERIENCED AND COMPETENT PERSON WITH EXPERIENCE IN THE INSTALLATION AND AIMING OF THE SPECIFIED LUMINAIRES TO UNDERTAKE FINAL LUMINAIRE AIMING AND LIGHTING SURVEY. ALL AIMING SHALL BE UNDERTAKEN USING THE PROPRIETARY AIMING EQUIPMENT AND PROCESS SPECIFIED BY THE LUMINAIRE MANUFACTURER. IMPROPER AIMING SHALL BE RECTIFIED BY THE CONTRACTOR AT NO FURTHER COST.

LUMINAIRE TYPE AND AIMING SCHEDULE

LUMINAIRE ID'S	MODEL	HEADMAST POSITION (REFER DRG E05)	OPTICS	TILT (NOTE 6)	ORIENTATION (NOTE 5)	CONTROL GROUP
L1-1	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 1	A35-NB+BL	35°	317°	100 LUX
L1-2	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 2	A35-NB+BL	35°	317°	150 LUX
L1-3	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 3	A35-NB+BL	35°	317°	100 LUX
L2-1	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 1	A35-NB+BL	35°	39°	100 LUX
L2-2	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 2	A35-NB+BL	35°	39°	150 LUX
L2-3	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 3	A35-NB+BL	35°	39°	100 LUX
L3-1	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 1	A35-NB+BL	35°	220°	100 LUX
L3-2	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 2	A35-NB+BL	35°	220°	150 LUX
L3-3	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 3	A35-NB+BL	35°	220°	100 LUX
L4-1	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 1	A35-NB+BL	35°	139°	100 LUX
L4-2	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 2	A35-NB+BL	35°	139°	150 LUX
L4-3	3PH 400V PHILLIPS OPTIVISION BVP527 OUT T30 50K	POS. 3	A35-NB+BL	35°	139°	100 LUX

FIELD OF PLAY CALCULATION SUMMARY

APPLICABLE STANDARD: AS2560.2.3:2007
LEVEL OF PLAY: AMATUER CLUB COMPETITION 100 LUX
LUMINAIRE LLF: 0.85

SEGMENT LABEL	CALC TYPE	UNITS	AVG	MAX	MIN	U1 (MIN/AVG)	U2 (MIN/MAX)
PPA_AFL_OVAL	HORIZONTAL ILLUMINANCE	LUX	104.02	147	63	0.61	0.43

OBTRUSIVE LIGHTING CALCULATION SUMMARY

APPLICABLE STANDARD: AS/NZS 4282:2019
ENVIRONMENTAL ZONE: A3
CONDITIONS: NON-CURFEW L1
LUMINAIRE LLF: 1.0

SEGMENT LABEL	CALC TYPE	UNITS	CALC MAX	AS4282 LIMIT	AS4282 COMPLIANT?
OBTRUSIVELIGHT_RES_BOUNDARY 1	LUMINOUS INTENSITY	Cd	8,300	12,500	YES
	VERTICAL ILLUMINANCE	LUX	1	10	YES

0 5000 10000 15000 20000 25000mm
SCALE 1:500 AT ORIGINAL SIZE

PRELIMINARY

A	SCHEMATIC DESIGN	22/06/20	RO	HKS
No.	DESCRIPTION	DATE	INIT.	DEPT/COMPANY.
AMENDMENTS				

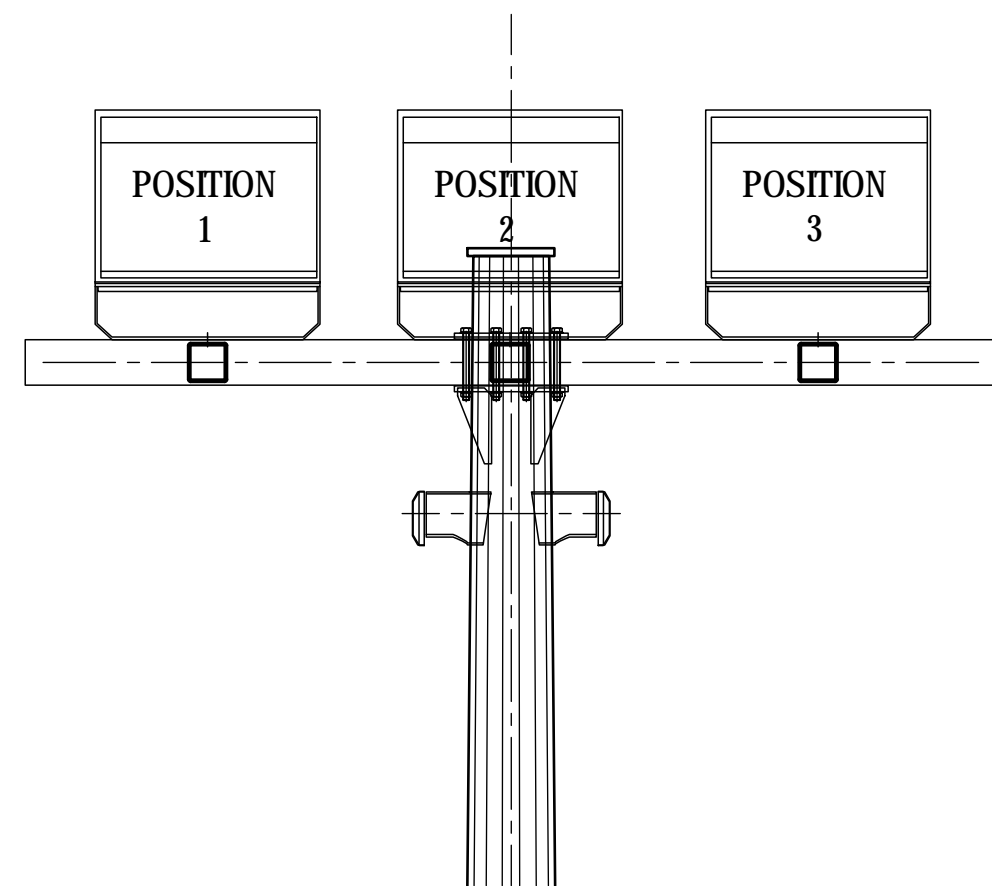


DRAWN	CHECKED
DATE	DATE
DESIGNED	CHECKED
DATE	DATE
PROJECT MANAGER	AUTHORISED
DATE	DATE

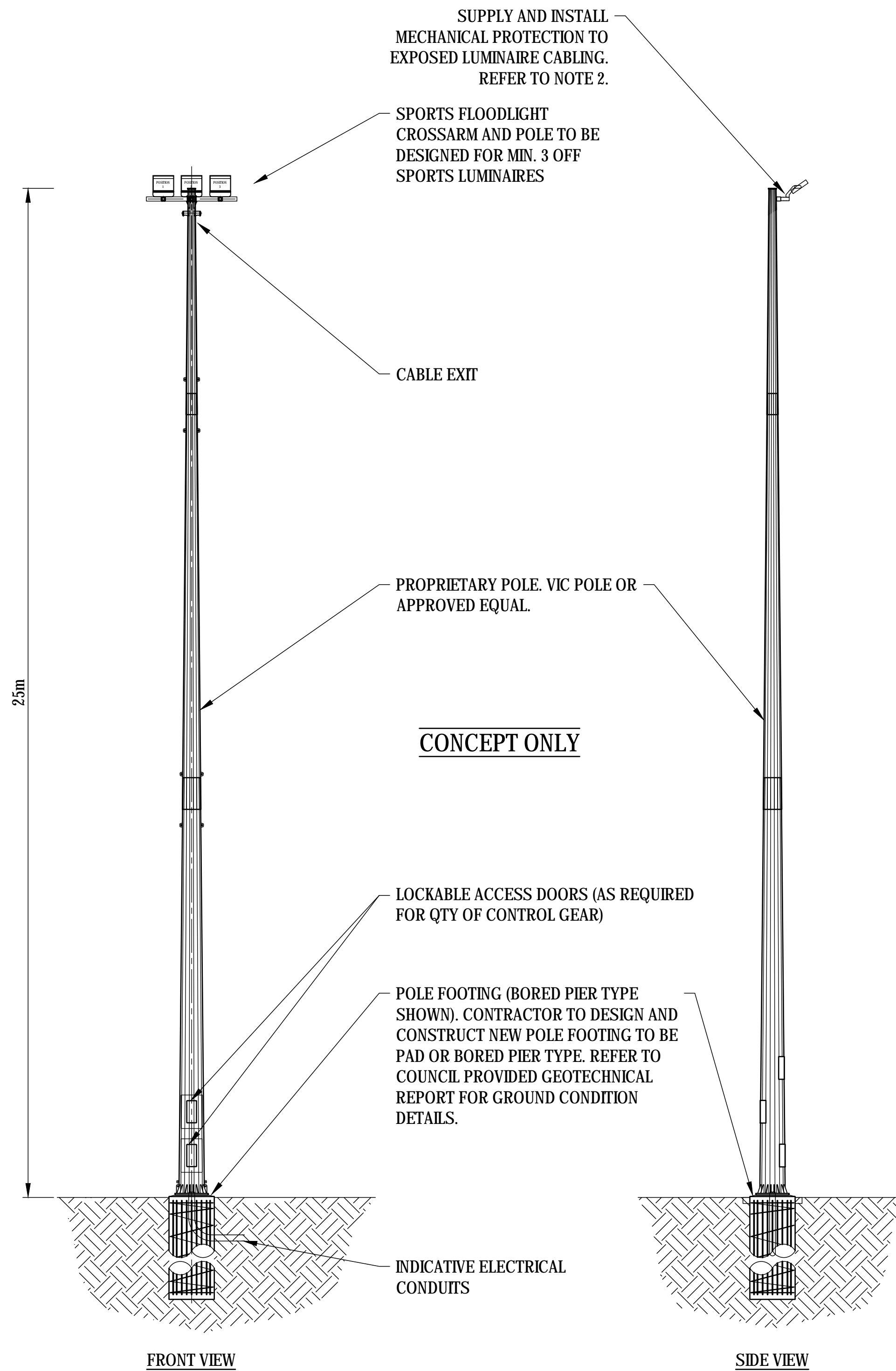


CITY OF GREATER GEELONG
ESTUARY RESERVE SOCCER FIELD LIGHTING
ELECTRICAL AND LIGHTING SERVICES
**FIELD OF PLAY LIGHTING - 100 LUX
CALCULATION SUMMARY**

SHEET No.	DRAWING No.	AMEND.	SHEET SIZE
- OF -	20098-E03	A	A1



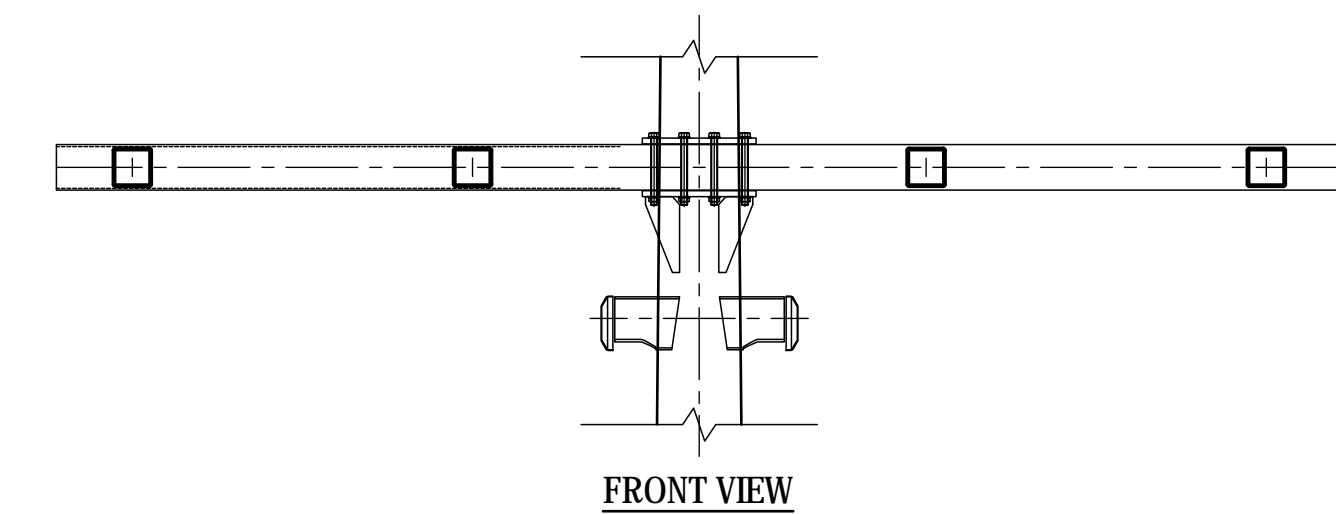
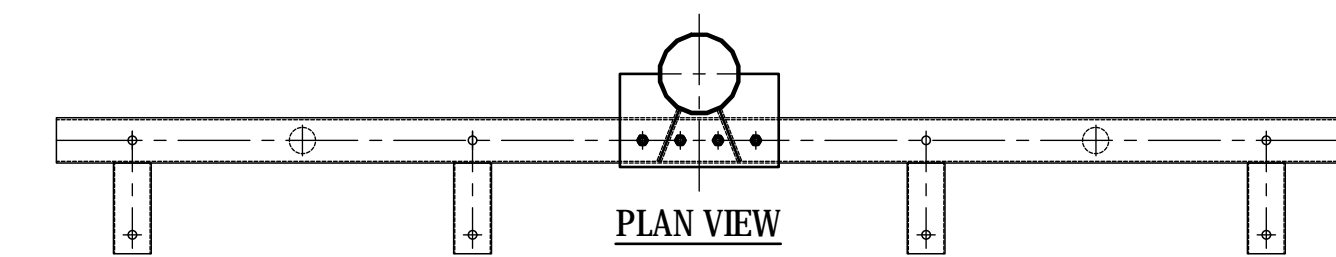
**TYPICAL AFL POLE HEADMAST
LUMINAIRE POSITION**
(LOOKING FRONT ON AT POLE)



CONCEPT ONLY

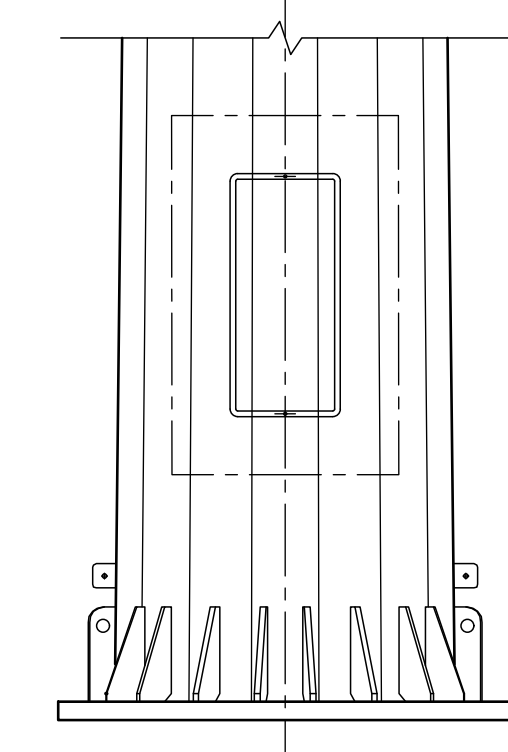
INDICATIVE LIGHTING POLE DETAIL
NOT TO SCALE

- NOTES:**
1. POLE HEADFRAME TO BE DESIGNED TO CAUSE NO LIGHTING INTERFERENCE OR SHADOWING FROM ADJACENT LUMINAIRES (INSTALLED AND FUTURE). COORDINATE LUMINAIRE HEADFRAME MOUNTING RECOMMENDATIONS WITH LUMINAIRE SUPPLIER.
 2. SUPPLY AND INSTALL FLEXIBLE STEEL CONDUIT (ANACONDA OR APPROVED EQUAL) ON ALL EXPOSED SECTIONS OF LIGHTING CABLE FROM LIGHTING POLE STRUCTURE TO LUMINAIRES. COORDINATE WITH LIGHTING POLE SUPPLIER AND PROVIDE ALL NECESSARY WEATHERPROOF CONNECTIONS AND ACCESSORIES TO PREVENT WATER AND DUST INGRESS INTO LUMINAIRE AND POLE STRUCTURE.
 3. CONCEPT GENERAL ARRANGEMENTS SHOWN ONLY, THE CONTRACTOR SHALL ENSURE SHOP DRAWINGS TO BE SUBMITTED FOR ACCEPTANCE PRIOR TO MANUFACTURE.
 4. FINAL EQUIPMENT SELECTION TO BE SUITABLE FOR APPLICATION



**INDICATIVE LIGHTING POLE
CROSS-ARM DETAIL**
NOT TO SCALE

CONCEPT ONLY



**INDICATIVE LIGHTING POLE BASE
DETAIL**
NOT TO SCALE

PRELIMINARY

A	SCHEMATIC DESIGN	22/06/20	RO	HKS
No.	DESCRIPTION	DATE	INIT.	DEPT./COMPANY.
AMENDMENTS				

HARRIS KMON SOLUTIONS
DARWIN, GEELONG, CAIRNS
admin@hksolutions.com.au
www.hksolutions.com.au

DRAWN	CHECKED
DATE -	DATE -
DESIGNED	CHECKED
DATE -	DATE -
PROJECT MANAGER	AUTHORISED
DATE -	DATE -

CITY OF GREATER GEELONG ESTUARY RESERVE SOCCER FIELD LIGHTING ELECTRICAL AND LIGHTING SERVICES	
SPORTS LIGHTING POLE GENERAL ARRANGEMENT	
SHEET No. - OF -	AMEND. SHEET SIZE 20098-E05 A A1