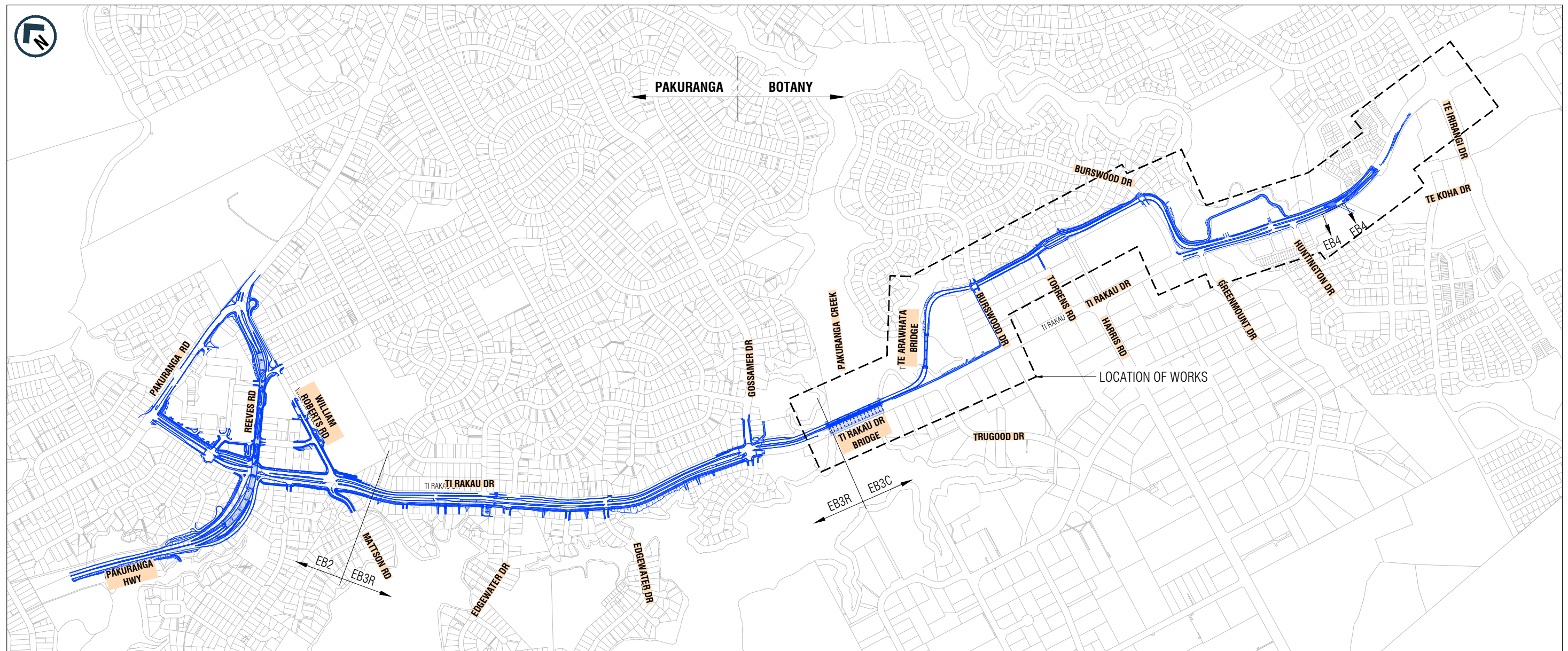


# EASTERN BUSWAY

## PAKURANGA TO BOTANY TOWN CENTRE

### PACKAGE 4LT-00

#### ZONE 4 LIGHTING



**LOCALITY PLAN**

Plot By: GKAMINSKA (10/6/2023 5:03:16 pm)

Filename: EB-2-D-4-LT-DG-000001.DWG

ORIGINAL SIZE  
A1

ORIGINAL IN COLOUR

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Designed	J. Yeoh	Checked	L. Young
Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
Date	06/10/2023		

Scale Bar

KEY PLAN



AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE  
EASTERN BUSWAY ALLIANCE  
(PAKURANGA TO BOTANY)



PACKAGE No. 4LT-00

NOT FOR CONSTRUCTION

Drawing Status		STAGE 1	
Horizontal Datum		NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum		2016 NEW ZEALAND	
A1 SCALE	N.T.S	A3 SCALE	N.T.S

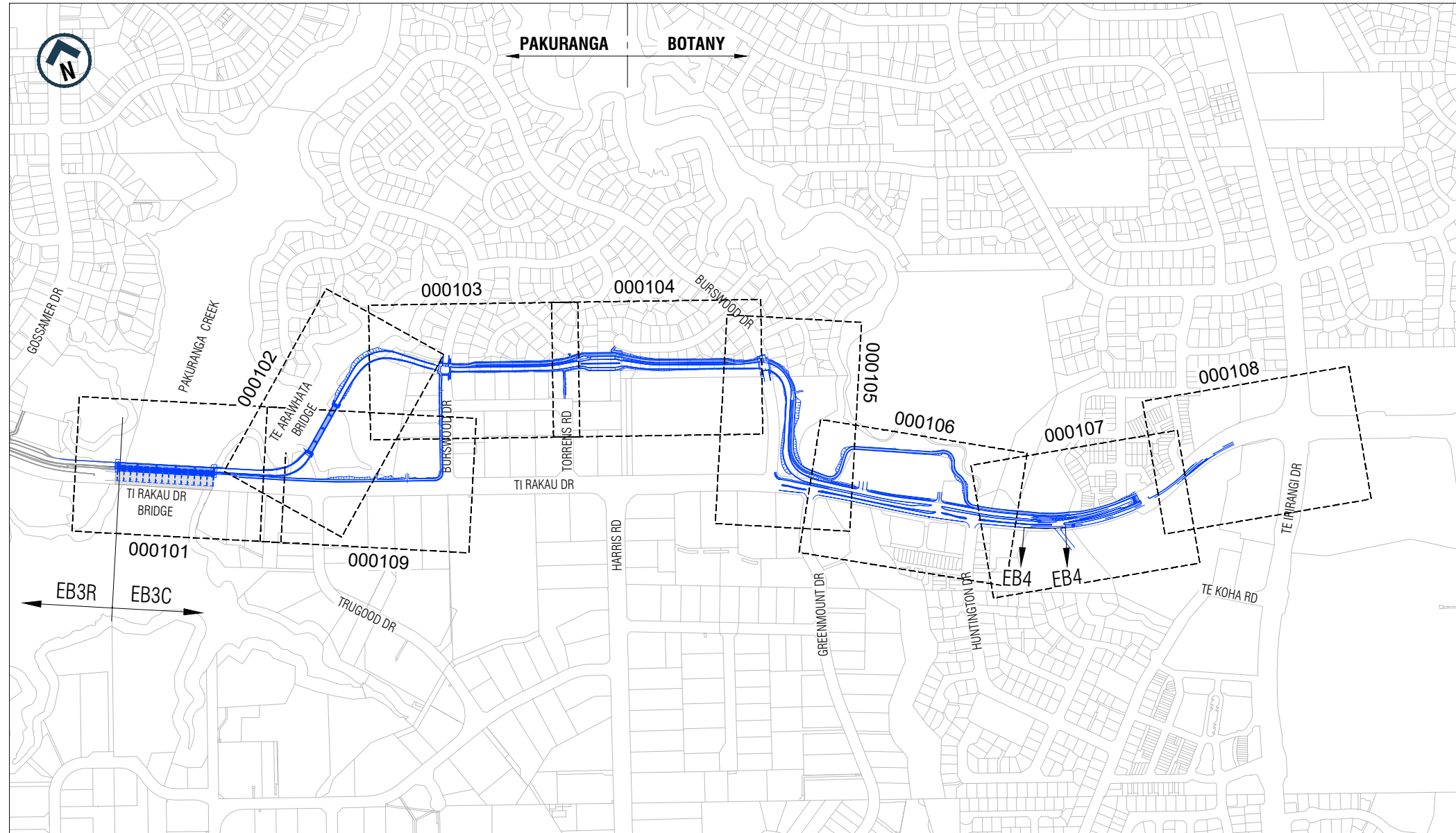
Design Package		LIGHTING	
Drawing Title		COVER SHEET AND LOCALITY PLAN	
Drawing Number		EB-2-D-4-LT-DG-000001	
Revision		A	

# EASTERN BUSWAY

## PAKURANGA TO BOTANY TOWN CENTRE

### PACKAGE 4LT-00

#### ZONE 4 LIGHTING



TI RAKAU DRIVE / BUSWAY

Filename: EB-2-D-4-LT-DG-000002.DWG Plot By: GKAMINSKA (10/06/2023 5:06:40 pm)

ORIGINAL SIZE A1

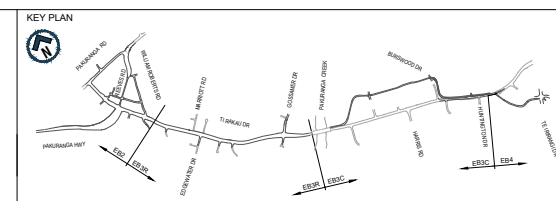
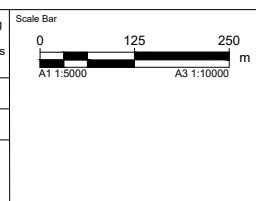
ORIGINAL IN COLOUR

PACKAGE No. 4LT-00

NOT FOR CONSTRUCTION

REV	DATE	DRAWN	REVISION DESCRIPTION
A	06/10/2023	G. Kaminska	ISSUED FOR STAGE 1 SUBMISSION

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Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
Date	06/10/2023		



AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE  
EASTERN BUSWAY ALLIANCE  
(PAKURANGA TO BOTANY)

STAGE 1	
Horizontal Datum NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum 2016 NEW ZEALAND	
A1 SCALE 1:5000	A3 SCALE 1:10000

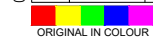
LIGHTING	
KEY PLAN	
Drawing Number	EB-2-D-4-LT-DG-000002
Revision	A

# ZONE 4 LIGHTING DRAWING INDEX

EB-2-D-4-LT-DG-000001	COVER SHEET AND LOCALITY PLAN
EB-2-D-4-LT-DG-000002	KEY PLAN
EB-2-D-4-LT-DG-000003	DRAWING INDEX
EB-2-D-4-LT-DG-000004	GENERAL LEGEND
EB-2-D-4-LT-DG-000005	GENERAL NOTES
<b>LIGHTING LAYOUT PLAN</b>	
EB-2-D-4-LT-DG-000101	TI RAKAU DRIVE - LIGHTING LAYOUT PLAN - SHEET 1 OF 9
EB-2-D-4-LT-DG-000102	BUSWAY - LIGHTING LAYOUT PLAN - SHEET 2 OF 9
EB-2-D-4-LT-DG-000103	BUSWAY - LIGHTING LAYOUT PLAN - SHEET 3 OF 9
EB-2-D-4-LT-DG-000104	BUSWAY - LIGHTING LAYOUT PLAN - SHEET 4 OF 9
EB-2-D-4-LT-DG-000105	BUSWAY - LIGHTING LAYOUT PLAN - SHEET 5 OF 9
EB-2-D-4-LT-DG-000106	TI RAKAU DRIVE - LIGHTING LAYOUT PLAN - SHEET 6 OF 9
EB-2-D-4-LT-DG-000107	TI RAKAU DRIVE - LIGHTING LAYOUT PLAN - SHEET 7 OF 9
EB-2-D-4-LT-DG-000108	TI RAKAU DRIVE - LIGHTING LAYOUT PLAN - SHEET 8 OF 9
EB-2-D-4-LT-DG-000109	TI RAKAU DRIVE - LIGHTING LAYOUT PLAN - SHEET 9 OF 9
<b>LIGHTING DETAILS</b>	
EB-2-D-4-LT-DG-000201	LIGHTING COLUMN DETAILS - SHEET 1 OF 4
EB-2-D-4-LT-DG-000202	LIGHTING COLUMN DETAILS - SHEET 2 OF 4
EB-2-D-4-LT-DG-000203	LIGHTING COLUMN DETAILS - SHEET 3 OF 4
EB-2-D-4-LT-DG-000205	LIGHTING COLUMN DETAILS - SHEET 4 OF 4
EB-2-D-4-LT-DG-000207	PAD FOUNDATION DETAILS - FOR 12m TALL LIGHTING POST
EB-2-D-4-LT-DG-000301	LIGHTING SCHEMATICS - TYPICAL FOR BRIDGE / - AMENITY LIGHTING

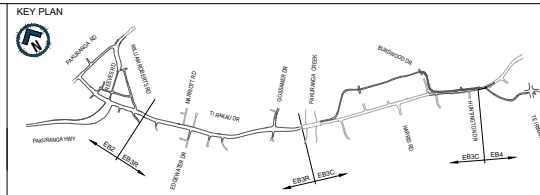
Filename: EB-2-D-4-LT-DG-000003.DWG Plot By: GKAMINSKA (9/11/2023 2:43:44 pm)

ORIGINAL SIZE  
A1



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Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
REV	DATE	DRAWN	REVISION DESCRIPTION
A	06/10/2023	G. Kaminska	ISSUED FOR STAGE 1 SUBMISSION

Scale Bar
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**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE  
EASTERN BUSWAY ALLIANCE  
(PAKURANGA TO BOTANY)**

Drawing Status		STAGE 1	
Horizontal Datum		NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum		2016 NEW ZEALAND	
A1 SCALE	N.T.S	A3 SCALE	N.T.S

Design Package		<b>LIGHTING</b>	
Drawing Title		DRAWING INDEX	
Drawing Number		EB-2-D-4-LT-DG-000003	
Revision		A	

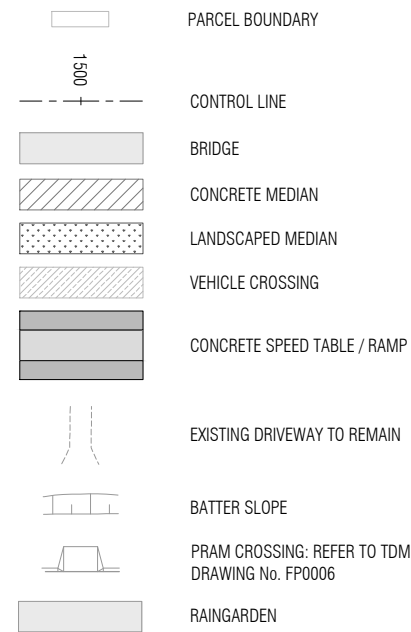
PACKAGE No. 4LT-00

NOT FOR CONSTRUCTION

**NOTE**

1. TRANSPOWER CLEARANCE ENVELOPE - MAXIMUM COLUMN HEIGHT WITHIN ENVELOPE TO BE 6m.

**ROAD GEOMETRY**



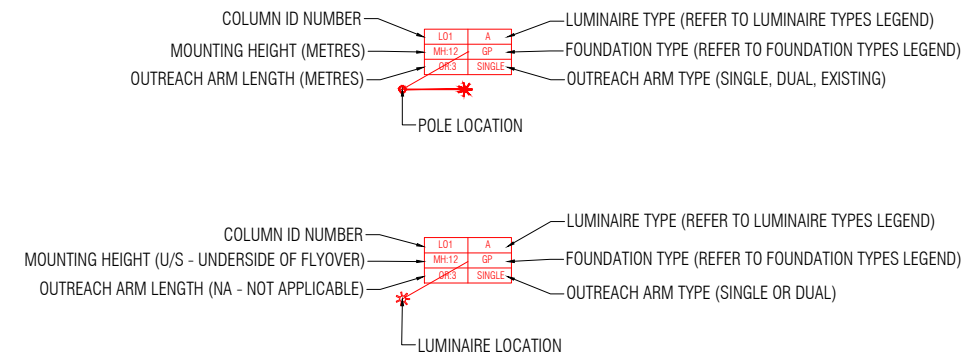
**LUMINAIRES TYPES**

- F TECHLIGHT AEC COMPASS 1 TP-UB 2W8 STU-M 4\_40-1M 22W SUPPLIED WITH BLACK DECORATIVE COLUMN
- I TECHLIGHT AEC ITALO 2 0F2H1 S05 4\_100-8M 220W
- K TECHLIGHT AEC ITALO 2 0F3 STE-S 4\_3-8M 98W
- K1 TECHLIGHT AEC ITALO 2 0F3 STE-S 4\_3-8M 98W WITH INTEGRAL BACKLIGHT SHIELD
- M NVC LIGHTING NEW ZEALAND TASMAN II-109-V-PL 109w
- S TECHLIGHT AEC ITALO 2 0F3 STE-S 4.7-5M 128W
- Z1 ENERGYLIGHT EWO\_IDSTANDARD\_2LED\_AP06\_4000K\_400MA 3.3W
- EX EXISTING LUMINAIRE TO REMAIN

**LIGHTING**

- V3 LIGHTING SUB CATEGORY
- NEW POLE AND LUMINAIRE
- NEW SURFACE MOUNTED LUMINAIRE
- NEW HANDRAIL LIGHTING
- EXISTING POLE TO REMAIN
- EXISTING POLE TO REMAIN, NEW LUMINAIRE TO BE FITTED
- EXISTING POLE AND LUMINAIRE TO BE RELOCATED
- EXISTING POLE AND LUMINAIRE TO BE REMOVED

**LIGHTING INSTALLATION DETAIL**



**FOUNDATION TYPE**

- GP GROUND PLANTED
- FB FLANGED BASE
- SURF SURFACE MOUNTED (UNDERSIDE OF FLYOVER)
- JUSP JOINT USE SIGNAL POLE
- JUMA JOINT USE MAST ARM
- PF PAD FOUNDATION
- EX EXISTING

**TRANSPOWER OHHV CLEARANCE ZONE**

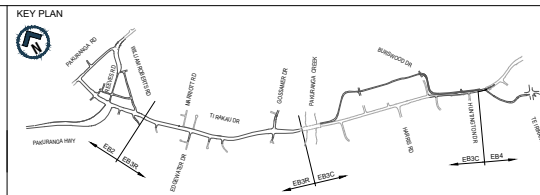


**UTILITIES**



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Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
Date	06/10/2023		

Scale Bar
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**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
**(PAKURANGA TO BOTANY)**

Drawing Status		<b>STAGE 1</b>	
Horizontal Datum		NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum		2016 NEW ZEALAND	
A1 SCALE	N.T.S	A3 SCALE	N.T.S

Design Package		<b>LIGHTING</b>	
Drawing Title		<b>GENERAL LEGEND</b>	
Drawing Number		EB-2-D-4-LT-DG-000004	
Revision		A	

PACKAGE No. 4LT-00

**NOT FOR CONSTRUCTION**

**SCOPE OF WORK :**

IN GENERAL THE CONSTRUCTOR SHALL ALLOW THE FOLLOWING UNDER THE SCOPE OF WORK:

- ALL WORKS DETAILED AND SHOWN ON THE DRAWINGS AND ANY WORKS NEEDED TO ACHIEVE THE INTENT OF THE DESIGN SHOWN.
- ALL RELATED CIVIL WORKS INCLUDING, BUT NOT LIMITED TO, TRENCHING, CONDUITS, BENDS, CABLE PITS AND LIDS, DRAW TAPES, SLABS AND POLE FOUNDATIONS.
- SUPPLY, INSTALLATION AND CONNECTION OF ALL HARDWARE, EQUIPMENT AND MATERIALS INCLUDING, BUT NOT LIMITED TO, POLES, BRACKETS, LUMINAIRES, ELECTRICAL CABLES, CABLE GUARDS, FUSES, FITTINGS AND ALL MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE AND COMMISSION THE ROAD LIGHTING INSTALLATION.
- EARTHING TO ALL ELECTRICAL EQUIPMENT AND LIGHTING COLUMNS.
- LIAISON WITH LOCAL UTILITY PROVIDERS (VECTOR) TO ALLOW FOR ALL LIGHTING COLUMNS AND LUMINAIRES POWER CONNECTIONS AS REQUIRED.
- LIAISON WITH ANY RELEVANT AUTHORITIES OR STAKEHOLDER IMPACTED BY THE SCOPE OF THE WORKS, AND OBTAINING OF ALL NECESSARY APPROVALS AND PERMITS FROM THE SAME WHERE REQUIRED.
- SURVEYING OF EXISTING AREA, LIGHTING COLUMNS AND POWER SUPPLIES.
- REMOVAL OF DECOMMISSIONED COLUMNS AND LUMINAIRES
- ALL NECESSARY TESTS AND DOCUMENTATION.
- ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFIC REQUIREMENTS OF THE SITE.

**GENERAL NOTES:**

- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF AUCKLAND TRANSPORT, THE REQUIREMENTS OF AS / NZS 3000:2018 AND AS / NZS 1158 SERIES, NZCEP 34, TRANSPOWER AND OTHER RELEVANT STANDARDS AS REQUIRED.
- ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH OCCUPATIONAL HEALTH AND SAFETY REGULATIONS, AND CURRENT STATUTORY CODES APPLICABLE TO THE SYSTEMS NOMINATED.
- THE CONSTRUCTOR SHALL LIAISE WITH ALL OTHER TRADES ON THE SITE AND COORDINATE THE ELECTRICAL INSTALLATION WHERE IT MAY AFFECTS OTHER TRADES.
- TRAFFOLYTE LABEL SHALL BE PROVIDED FOR ALL DISTRIBUTION BOARDS, OUTLETS, SWITCHES, ETC TO INDICATE REFERENCE AND/OR CIRCUIT REFERENCE.
- PROVIDE AND MAINTAIN TEMPORARY POWER SUPPLIES AND METERING DURING THE CONSTRUCTION PHASE. REMOVE SUCH TEMPORARY INSTALLATIONS ON COMPLETION OF THE WORKS.
- THE ELECTRICAL CONSTRUCTOR SHALL PROGRESSIVELY REMOVE FROM THE SITE ALL RUBBISH, DEBRIS, MATERIAL CUTTINGS AND OTHER REDUNDANT MATERIALS, WHICH RESULT FROM THE WORKS OF THE CONTRACT.
- ALL PRODUCT FINISHES INCLUDING COLOURS FOR ALL PRODUCTS SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS SUBJECT TO A FINAL CONFIRMATION BY AUCKLAND TRANSPORT PRIOR TO PLACING ANY ORDER BY THE CONSTRUCTOR.

**REGULATION AND STANDARDS:**

THE CONSTRUCTOR SHALL COMPLY WITH ALL RELEVANT STATUTES, STANDARDS, CODES AND REGULATIONS, INCLUDING:

- ELECTRICITY ACT 1997
- AUCKLAND TRANSPORT DESIGN MANUAL (TDM)
- ELECTRICITY (SAFETY) REGULATIONS 2010
- AS/NZS 3000 WIRING RULES
- LOCAL AUTHORITY BYLAWS, CONDITIONS AND STANDARDS
- NZ RADIO INTERFERENCE REGULATIONS AND INTERFERENCE NOTICES (RADIO AND TELEVISION)
- AS/NZS 1158: LIGHTING FOR ROADS AND PUBLIC SPACES
- AS/NZS 2053 CONDUITS AND FITTINGS FOR ELECTRICAL INSTALLATIONS
- NZS 5902: BUILDING AND CIVIL ENGINEERING DRAWING PRACTICE
- ELECTRICAL CODES OF PRACTICE (ECP) SERIES

**LIGHTING WORKS:**

- ALLOW FOR SUPPLY AND INSTALLATION OF ALL LIGHT FITTINGS INCLUDING ACCESSORIES, POLES, ETC AS THE PER THE DRAWINGS AND LUMINAIRES SCHEDULE.
- ALLOW FOR FINISHING COLOURS AS OUTLINED IN THE LUMINAIRES SCHEDULE.
- REFER TO TYPICAL POLE DETAILS FOR POLE MOUNTED LUMINAIRES.
- ALL POLES SHALL BE GROUND PLANTED TYPE UNLESS NOTED OTHERWISE.
- LIGHTS CONTROLLED VIA PHOTOCCELL RELAY SWITCH SHALL HAVE A SWITCH ON LEVEL BETWEEN 10-20 LUX.
- REDUNDANT EXISTING COLUMNS MAYBE RELOCATED/REUSED PROVIDED AUCKLAND TRANSPORT APPROVES.
- CALCULATIONS INCLUDE ILLUMINATION FROM ROAD LIGHTING ONLY. SPILL LIGHT FROM NEIGHBOURING RESIDENTIAL PROPERTIES MAY BE PRESENT.
- SPILL LIGHTING IS CALCULATED AT MAINTENANCE FACTOR OF 1 FOR NEW LUMINAIRES. WHERE SPILL LIGHTING IS AN ISSUE THE CONSTRUCTOR SHALL INSTALL FLAT INTEGRAL BACKLIGHT SHIELDS AS REQUIRED.
- MAINTENANCE FACTOR FOR LED LUMINAIRES HAS BEEN CALCULATED AT MF=0.624 ON V-CATEGORY PERFECTLITE CALCULATION, MF=0.80 ON P-CATEGORY PERFECTLITE CALCULATIONS, MF=0.80 IN AGI32 MODEL.

**LUMINAIRES:**

- PROVIDE LIGHTING LUMINAIRES AS SHOWN ON THE DESIGN DRAWINGS. REFER TO LIGHTING TYPICAL DETAILS FOR LUMINAIRE TYPES.
- ALL LUMINAIRES SHALL COMPLY WITH AUCKLAND TRANSPORT TDM.
- ALL NEW ROAD LIGHTING LUMINAIRES MUST BE FITTED AND SUPPLIED WITH A 5 OR 7-PIN NEMA SOCKET COMPLIANT WITH ANSI C136.4:2013 AND LIGHT POINT CONTROLLER (LPC) (NOMINALLY T-LIGHT LCU-GALAXY OR APPROVED EQUIVALENT).
- ALL AMENITY LIGHTING LUMINAIRES MUST BE FITTED AND SUPPLIED WITH A 5 or 7-PIN NEMA SOCKET COMPLIANT WITH ANSI C136.4:2013 AND A SHORTING CAP INSTALLED.
- TEMPORARY LIGHTING SHALL BE PROVIDED WHERE PERMANENT LIGHTING IS REMOVED ON 'IN-SERVICE' ROADS.
- WHERE NEMA SOCKET CAN NOT BE FITTING ON TO LUMINAIRES SUCH AS UNDERBRIDGE DECORATIVE LUMINAIRES, THE NEMA SOCKET SHALL BE INSTALLED ADJACENT TO EACH LUMINAIRE.

**COLUMNS:**

- ALL EXISTING REDUNDANT LIGHTING COLUMNS AND LUMINAIRES WITHIN EXTENT OF WORKS SHALL BE REMOVED AND DELIVERED TO AN APPROVED STORAGE OR REMOVED FROM SITE AND KEPT IN A SAFE STORAGE FOR UP TO 1 YEAR PENDING AUCKLAND TRANSPORT DECISION.
- LIGHTING COLUMNS SHALL BE IN ACCORDANCE WITH THE AUCKLAND TRANSPORT ROAD LIGHTING COLUMN SPECIFICATION, MANUFACTURED TO NZS 4676 AND OCTAGONAL TAPERED STEEL GALVANIZED TYPE AND SHALL COMPLY WITH TDM CHAPTER 12 - STREET LIGHTING AS REQUIRED.
- SYMPATHETIC POLE TYPE AND HEIGHTS CONSISTENT WITH EXISTING POLE TYPE AND HEIGHT SHALL BE SELECTED. POLES USED SHALL BE FROM AUCKLAND TRANSPORT'S APPROVED LIST OF LIGHTING COLUMNS FOUND IN THE LATEST VERSION OF TDM CHAPTER 12.
- ALL STREET LIGHT COLUMNS MUST COMPLY WITH THE TDM STREET LIGHTING COLUMN SPECIFICATION AND ASSESSMENT METHODOLOGY IN APPENDIX D. ALL COLUMNS USED IN DESIGN MUST BE ON THE TDM APPROVED LIST (APPENDIX H).
- EACH COLUMN SHALL BE EARTHED AS PER AUCKLAND TRANSPORT'S REQUIREMENTS, REFER TO TDM APPENDIX K2.
- WHERE EATHING ADJACENT TO THE COLUMN IS NOT PRACTICAL, THE LIGHTING COLUMNS SHALL BE DAISY CHAINED WITH AN EARTHING CONDUCTOR OF NO LESS THAN THE CROSS SECTIONAL AREA OF THE PHASE CONDUCTOR(S).
- LIGHTING COLUMNS SHALL BE COORDINATED ON SITE WITH ALL SERVICES AND LOCATED AT LEAST 2.0m FROM THE DRIP-LINE OF ANY TREE (BASED ON THE MATURE TREE EXPECTED GROWTH). THIS IS IN ACCORDANCE WITH CLAUSE 12.3.3 OF TDM CHAPTER 12. LIGHTING COLUMN LOCATIONS SHALL MEET THE REQUIREMENTS OF AUCKLAND TRANSPORT'S TDM CHAPTER 12 CLAUSE 12.4.2. LIGHTING COLUMNS SHALL HAVE A MINIMUM SET BACK OF 1.0m FROM THE CURB LINE.
- ALL SHEAR BASE TYPE COLUMNS MUST INCORPORATE IP68 PLUG AND SOCKET CONNECTIONS TO ENSURE THAT THE COLUMN DISCONNECTS FROM THE LIVE SUPPLY IN THE EVENT OF VEHICLE IMPACT OR SIMILAR OCCURRENCE (TRANSET AMERACE 65U OR EQUIVALENT).
- SHEAR BASE COLUMNS SHALL BE USED IN AREAS WITH SPEED LIMIT EQUAL TO OR GREATER THAN 70KM/H AND NOT PROTECTED BY WIRE ROPE OR CONCRETE BARRIER.
- ALL LIGHTING COLUMN OUTREACH ARMS SHALL BE PERPENDICULAR TO THE CARRIAGEWAY UNLESS NOTED OTHERWISE.
- LIGHTING COLUMNS AND OVERHEAD CLEARANCES SHALL BE AS PER NZCEP 34 AND TRANSPOWER REQUIREMENTS.
- POLE DETAILS SHOWN INCLUDING FOUNDATION DETAILS, ETC ARE INDICATIVE ONLY. THE CONSTRUCTOR SHALL LIAISE WITH THE POLE SUPPLIER TO CONFIRM A SPECIFIC DESIGN FOR EACH MAST TAKING INTO CONSIDERATION ALL WEIGHTS AND QUANTITIES, WIND LOAD, ETC.
- EACH COLUMN MUST BE INDIVIDUALLY NUMBERED AT TIME OF MANUFACTURE, TOGETHER WITH THE MONTH AND YEAR OF MANUFACTURE. IN ADDITION TO THE UNIQUE COLUMN NUMBER, A QR CODE MUST BE ATTACHED FOR EASY ON-SITE DATA ACCESS. THESE LABELS MUST BE POSITIONED ABOVE THE GEAR DOOR OR AT A HEIGHT OF 2M ABOVE GROUND.
- WHERE POSSIBLE LIGHTING COLUMNS SHALL BE COMBINED WITH TRAFFIC SIGNAL COLUMNS AS JUSP OR JUMA POLES.
- THE LOCATION AND LEVEL OF ALL UTILITIES IN THE VICINITY OF LIGHTING FOOTINGS MUST BE CHECKED BY THE CONSTRUCTOR FOR CONFLICT PRIOR TO CONSTRUCTION.

**POWER SUPPLY:**

- LIAISE WITH LOCAL UTILITY FOR NEW OR RELOCATED INSTALLATION.
- THE ELECTRICAL INSTALLER SHALL BE VECTOR APPROVED TO INSTALL ASSETS ON THE VECTOR NETWORK.
- FOR THIS PROJECT VECTOR SHALL SUPPLY POWER FOR ROAD LIGHTING TO AN AGREED LOCATION (TERMINATING AT A TUDS OR DISTRIBUTION BOARD) AND THE CONSTRUCTOR SHALL SUPPLY POWER FROM THE POINT OF SUPPLY TO THE ROAD LIGHTING.
- LIGHTING COLUMNS SHALL BE CIRCUITED SUCH THAT EVERY CONSECUTIVE COLUMN IS SUPPLIED ON A DIFFERENT PHASE.
- MINIMUM ROAD LIGHTING SUPPLY CABLE SIZE SHALL BE 1C 10mm<sup>2</sup> NEUTRAL SCREEN. CABLE SHALL BE BURIED IN DUCT. THE INTERNAL POLE WIRING BETWEEN THE TERMINAL BLOCKS AND THE LUMINAIRE SHALL BE CIRCULAR 2C 2.5mm<sup>2</sup> NEUTRAL SCREEN CABLE. POWER SUPPLY SHALL COMPLY WITH TDM.
- WHERE THE LUMINAIRE IS SUPPLIED WITH A WIELAND FLEX AND PLUG, THE INTERNAL COLUMN WIRING SHALL INSTEAD BE 3 CORE X 1.5 mm<sup>2</sup> COPPER WIELAND H05VV-F HEAVY DUTY CABLE - ROUND BLACK SHEATH, COMPLETE WITH A WIELAND SOCKET TO MATCH THE LUMINAIRE PLUG.
- WHERE 3 PHASE SUB-CIRCUITS ARE USED AND EACH PHASE IS PROTECTED VIA SEPARATE CIRCUIT BREAKER, PROVIDE ADDITIONAL 3 POLE 'LINKED' ISOLATOR ON THE OUTGOING SIDE OF THE SUPPLY LABELED AS 'MAINTENANCE ISOLATOR'.
- WHERE INSTALLED, DISTRIBUTION BOARDS SHALL BE MINIMUM OF 12TIPS (36 SINGLE POLE) IP54 AND HOUSED WITHIN A LOCKABLE AND APPROPRIATELY SIZED ROADSIDE CABINET. SEEK ENGINEERS FOR ROADSIDE CONSTRUCTION MATERIAL AND COLOUR.

**EARTHING:**

ALLOW FOR AN EARTHING ARRANGEMENT COMPRISING OF THE FOLLOWING PARTS:

- EARTH ELECTRODE USING 12mm DIAMETER NON-FERROUS SOLID HARD DRAW COPPER WITH HARDENED TIP DRIVEN FULLY INTO GROUND TO A MINIMUM DEPTH OF 1.8m COMPLETE WITH AN INSPECTION PIT EXPOSING THE TOP 150mm OF THE EARTH ELECTRODE. THE INSPECTION PITS SHALL BE COMPLETE WITH LID, BE CONSTRUCTED OF CELLULOSE FIBRE CEMENT OR GLASS REINFORCED PLASTIC AND INSTALLED FLUSH WITH SURROUNDING GROUND OR PAVEMENT. THE LID SHALL BE LABELED / ENGRAVED "EARTH ELECTRODE"
- MAIN EARTHING BAR LOCATED WITHIN THE FEEDER PILLAR AND WIRED TO THE EARTH ELECTRODE USING A 6mm<sup>2</sup> (MINIMUM) COPPER CABLE WITH OUTER PROTECTIVE INSULATION SHEATH.
- A LINKED MAIN NEUTRAL AND MAIN EARTH BAR ARRANGEMENT LOCATED INSIDE THE FEEDER PILLAR AND LIGHTING COLUMN.
- PROTECTIVE EARTHING CONDUCTORS TO ALL SUB-CIRCUITS AS REQUIRED.
- EARTHING OF FEEDER PILLAR METAL WORK.
- EQUIPOTENTIAL BONDING OF ANY OTHER CONDUCTIVE METAL VIA 4mm<sup>2</sup> (MINIMUM) INSULATED CONDUCTORS AND COMPRESSION TYPE OF BOLTED FIXINGS.
- FULL RECORDS OF EARTHING TEST MEASUREMENTS ARE TO BE MAINTAINED AND AVAILABLE FOR INSPECTION. THE TEST RESULTS SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
- EACH COLUMN SHALL BE EARTHED AS PER AUCKLAND TRANSPORT'S REQUIREMENTS, REFER TO TDM APPENDIX K2.
- WHERE EATHING ADJACENT TO THE COLUMN IS NOT PRACTICAL, THE LIGHTING COLUMNS SHALL BE DAISY CHAINED WITH AN EARTHING CONDUCTOR OF NO LESS THAN THE CROSS SECTIONAL AREA OF THE PHASE CONDUCTOR(S).

**DUCTS:**

- UNDERGROUND CABLE DUCTS SHALL COMPLY WITH THE REQUIREMENTS OF AS/NZS 3000.
- THE CONSTRUCTOR SHALL PROVIDE ALL SLEEVES, PIPE DUCTS, CONDUITS, ETC., REQUIRED FOR UNDERGROUND ENTRY TO COLUMNS.
- BENDS IN DUCTS SHALL HAVE INTERNAL RADIUS GREATER THAN 10 TIMES THE DIAMETER OF THE DUCT, OR AS DETAILED.
- AFTER THE INSTALLATION OF DUCTS THEY SHALL BE CLEANED, REMOVE ALL SHARP EDGES, DRAW WIRE INSERTED, AND THE ENDS PLUGGED WITH RAGS OR NEWSPAPER TO PREVENT THE INGRESS OF SILT BEFORE THE INSTALLATION OF CABLES.
- THE CONSTRUCTOR TO ALLOW FOR SWEEP BENDS AT T JUNCTIONS OF DUCT WORK.
- DUCTS SHALL NOT BE FILLED MORE THAN 60% OF ITS FULL CAPACITY AND ALL DUCT WORK MUST BE PROVIDED WITH DRAW WIRES FOR USE WITH ANY FUTURE WORKS.
- STREETLIGHTING DUCTS SHALL BE LABELLED "AT STREET LIGHTING" AT 1m INTERVALS.

**METERING:**

- THE CONSTRUCTOR SHALL ALLOW FOR INSTALLATION OF REVENUE METER (MEETING THE REQUIREMENTS OF THE ELECTRICITY SERVICE PROVIDER/RETAILER WHERE REQUIRED).
- THE ENERGY METER SHALL BE LOCATED INSIDE THE NEW MAIN SWITCHBOARD AS SHOWN ON THE SCHEMATIC DIAGRAM.

**TRENCHING:**

- TRENCHES SHALL BE OF SUFFICIENT DEPTH TO COMPLY WITH MINIMUM DEPTH AS/NZS 3000 CLAUSE 3.11.4.4.
- AFTER CABLES HAVE BEEN INSTALLED, TESTED, PROTECTED, AND APPROVAL IS GRANTED TO PROCEED, TRENCHES SHALL BE BACKFILLED WITH MATERIAL REMOVED FROM THE TRENCH, AND COMPACTED TO AT LEAST THE SAME STATE AS THE ADJACENT GROUND. ALL STONES OR OTHER NON-CLAY MATERIAL LARGER THAN 65mm PARTICLE SIZE SHALL BE REMOVED FROM THE BACKFILL MATERIAL BEFORE PLACING IN THE TRENCH FOR COMPACTION.
- BACKFILLING SHALL BE DONE IN 100mm THICK LAYERS, HAND RAMMING THE FIRST TWO LAYERS, FOLLOWED BY POWER CONSOLIDATION. COMPLETE BACKFILLING AND CONSOLIDATION AND FINISH TO MATCH THE ADJACENT SURFACE.
- THE CONSTRUCTOR SHALL:
  - REINSTATE TO PREVIOUS EXISTING STANDARD ALL PREVIOUSLY FINISHED GROUND SURFACES, INCLUDING RE-GRASSING, RESEALING OR REPAIR TO CONCRETE (WHERE APPLICABLE).
  - RECORD THE EXACT LOCATIONS OF ALL UNDERGROUND CABLES ON THE FINAL AS-BUILT DRAWINGS.
  - GIVING EXACT DEPTHS AND DIMENSIONS FROM READILY IDENTIFIABLE BUILDINGS OR LANDMARKS.

**WIRING, CABLING:**

- ALL WIRING AND CABLING SHALL BE IN ACCORDANCE WITH AS/NZS 3000, THE DETAILS SHOWN ON THE DRAWINGS AND ANY ADDITIONAL REQUIREMENTS SET OUT BELOW.
- MINIMUM CABLE SPACING FROM OTHER SERVICES SHALL BE AS REQUIRED BY THE SERVICE OWNER OR AS FOLLOW, WHICHEVER HAS THE GREATEST VALUE)
  - MV OR LV 150mm MINIMUM
  - HV 1M MINIMUM
  - WATER OR GAS 200mm MINIMUM
  - COMMS 300mm MINIMUM (WHERE PRACTICALLY POSSIBLE)
- METHOD OF WIRING SHALL USE THE TYPE AND CABLE SIZES SPECIFIED IN THE RELEVANT SCHEMATICS.
- ALL CABLE IDENTIFICATION SHALL INCORPORATE PLASTIC LABEL TAGS TO ALL CABLES AT THE POINT OF ENTRY INTO THE DISTRIBUTION PILLAR TO IDENTIFY THE DESTINATION SERVED, SIZE AND TYPE OF CABLE.
- CABLES SHALL BE ENCLOSED OR INSTALLED TO SUIT THE CATEGORIES PERMITTED BY AS/NZS 3000.
- MECHANICAL PROTECTION SHALL BE PROVIDED TO ALL CABLES LAID DIRECT IN TRENCHES.
- ANY CABLE NOT INSTALLED IN A WIRING ENCLOSURE SHALL BE LAID ON A BED OF NOT LESS THAN 50mm OF SAND OR FRIABLE SOIL FREE OF SHARP STONES AND COVERED BY NOT LESS THAN 50mm OF THE SAME MATERIAL.
- ALL AT LIGHTING DUCTING SHALL BE LABELED "AUCKLAND TRANSPORT LIGHTING CIRCUITS" AT LEAST EVERY 0.5M FOR IDENTIFICATION.

**APPROVED MANUFACTURERS:**

- PROPOSED CABLE PITS SHALL BE ACO POLYCRETE PITS RANGE OR ANY APPROVED EQUIVALENT.
- LV SWITCHGEAR COMPONENTS SHALL BE FROM ANY OF THE FOLLOWING MAKES/BRANDS:
  - SCHNEIDER ELECTRIC
  - EATON
  - ABB
- CONDUITS SHALL BE FROM THE FOLLOWING MAKES/BRANDS (METALLIC AND NON-METALLIC): CLIPSLAP RANGE
- CABLES SHALL BE FROM ANY OF THE FOLLOWING MAKES/BRANDS:
  - NEXANS
  - OLEX
  - TRICAB
- THE CONSTRUCTOR SHALL PROVIDE A PROPOSAL FOR THE FOLLOWING ITEMS:
  - CABLE PITS RATED FOR VEHICULAR DRIVEOVER
  - FEEDER PILLARS

**COMPLETION AND DOCUMENTATION:**

- INSPECTION, TESTING AND COMMISSIONING WORKS SHALL BE CARRIED OUT AS PER AUCKLAND COUNCIL/AUCKLAND TRANSPORT REQUIREMENTS, RELEVANT STANDARDS AND REGULATIONS SUCH AS AS/NZS 3000 AND MANUFACTURER'S RECOMMENDATIONS. COPIES OF SUCH TESTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.
- THE CONSTRUCTOR SHALL ENSURE THAT ALL OUTSTANDING DEFECTS TO BE LIMITED TO MINOR ITEMS WHICH DO NOT EFFECT OPERATIONAL REQUIREMENTS OF THE SYSTEM AS DICTATED BY AUSTRALIAN AND NEW ZEALAND STANDARDS AND THAT ALL SYSTEMS AND EQUIPMENT ARE IN WORKING ORDER AS DEMONSTRATED BY PRELIMINARY OPERATION AND TESTING.
- THE CONSTRUCTOR SHALL PROVIDE A CERTIFICATE OF ELECTRICAL SAFETY ON COMPLETION OF THE WORKS.
- SUBMISSION OF AS-BUILT DOCUMENTS SHALL BE THE RESPONSIBILITY OF THE CONSTRUCTOR. IDEALLY THE AS-BUILT RECORDS SHALL INCLUDE THE FOLLOWING:
  - PLANS SHOWING ALL SIZE, LOCATIONS, DEPTHS OF IN-GROUND CABLES AND CONDUITS. IDEALLY THE SAME PLAN WILL INDICATE MAIN DISTRIBUTION POINTS AND POWER POINTS LOCATIONS (WHERE APPLICABLE).
  - LOCATIONS AND ALL LIGHT FITTINGS INCLUDING TYPE AND FEEDING CIRCUIT WITH AN ACCURACY OF ±1.0m ALL DRAWINGS SHALL BE PREPARED AND SUBMITTED IN BOTH PDF & CAD FORMAT.
- A COMPLETE SET OF THE FOLLOWING DOCUMENTS SHALL BE SUBMITTED FOR RECORD KEEPING AS PART OF FINAL COMPLETION. SUBMISSION WILL BE IN BOTH HARDCOPY AND SOFTCOPY FORMATS WHICH WOULD INCLUDE:
  - ALL SYSTEMS TEST RESULTS
  - SUPPLIERS DECLARATION OF CONFORMITY AND SUPPLIERS TEST CERTIFICATES SUBMITTED FOR REVIEW
  - CERTIFICATE OF COMPLIANCE
  - AS-INSTALLED DRAWINGS IN PDF & CAD FORMATS

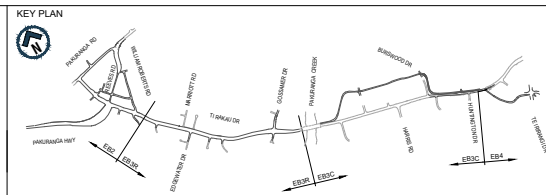
**CONSTRUCTOR RESPONSIBILITY:**

- THE CONSTRUCTOR SHALL ENSURE THAT ALL LIGHTING CONSTRUCTION WORKS, INCLUDING INSTALLATION, MEETS THE INTENTION OF THE DESIGN CRITERIA HIGHLIGHTED ABOVE. ANY CHANGE TO THE LOCATION OF THE POLES DUE TO ANY CIRCUMSTANCES (FOR EXAMPLE RESTRICTIONS DUE TO SITE CONDITIONS) MUST BE REPORTED TO THE ENGINEER WITH A PROPOSED SOLUTION FOR REVIEW AND APPROVAL.
- THE CONSTRUCTOR SHALL VERIFY THE EXACT LOCATION AND EXTENT OF ALL UNDERGROUND SERVICES WITH THE APPROPRIATE UTILITY AUTHORITY PRIOR TO EXCAVATION.
- THE CONSTRUCTOR SHALL ALLOW FOR ACCOMMODATING DELIVERY TIMES WITH THE OVERALL PROJECT PROGRAM TO ENSURE THAT SPECIFIED ITEMS ARE RECEIVED AT SITE ON TIME.
- ANY DEVIATIONS FROM THE ENGINEER/DESIGNED SOLUTION WILL NOT BE ACCEPTED UNLESS APPROVED IN WRITING BY THE ENGINEER.

Plot By: RUBY CRUZ 1 (10/6/2023 4:53:43 pm)

ORIGINAL SIZE A1  
Filename: EB-2-D-4-LT-DG-000005.DWG

This drawing is confidential and shall only be used for the purpose of this project. The signing of this title block confirms the design and drafting of this project have been prepared and checked in accordance with the Alliance quality assurance system to ISO 9001. Printed copies of this document are UNCONTROLLED. Do not scale from this drawing			
Designed	J. Yeoh	Checked	L. Young
Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones		
Date	06/10/2023	Approver Signature	



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
**(PAKURANGA TO BOTANY)**

Drawing Status		Horizontal Datum		Vertical Datum	
STAGE 1		NZGD 2000 MOUNT EDEN CIRCUIT		2016 NEW ZEALAND	
A1 SCALE	N.T.S	A3 SCALE	N.T.S		

Design Package		Drawing Title		Drawing Number		Revision	
LIGHTING		GENERAL NOTES		EB-2-D-4-LT-DG-000005		A	

**PACKAGE No. 4LT-00**

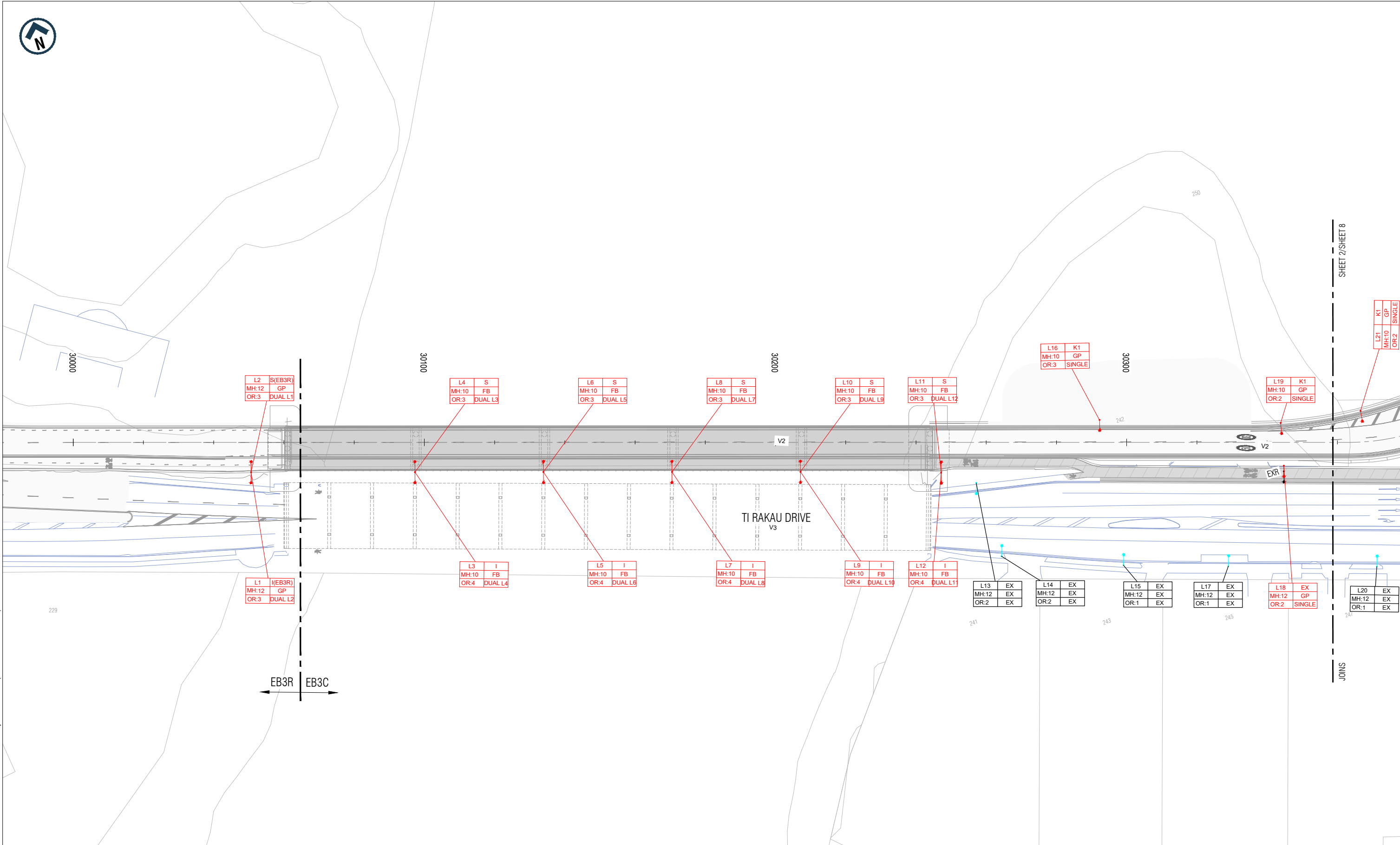
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Filename: EB-2-D-4-LT-DG-00101-000110.DWG  
Plot By: GKAMINSKA (10/10/2023 11:39:29 am)

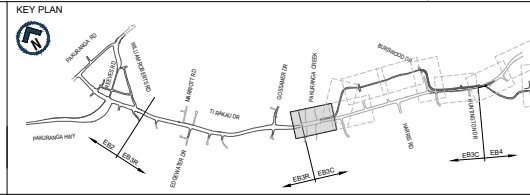
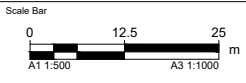
ORIGINAL SIZE  
A1



**NOTES**

- DO NOT SCALE OFF THESE DRAWINGS.
- ALL DIMENSIONS AND DISTANCES ARE IN METRES UNLESS STATED OTHERWISE.
- REFER TO DRAWING EB-2-D-4-LT-DG-000004 FOR GENERAL LEGEND AND EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.

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Designed	J. Yeoh	Checked	L. Young
Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
REV	DATE	DRAWN	REVISION DESCRIPTION
A	06/10/2023	G. Kaminska	ISSUED FOR STAGE 1 SUBMISSION



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
**(PAKURANGA TO BOTANY)**

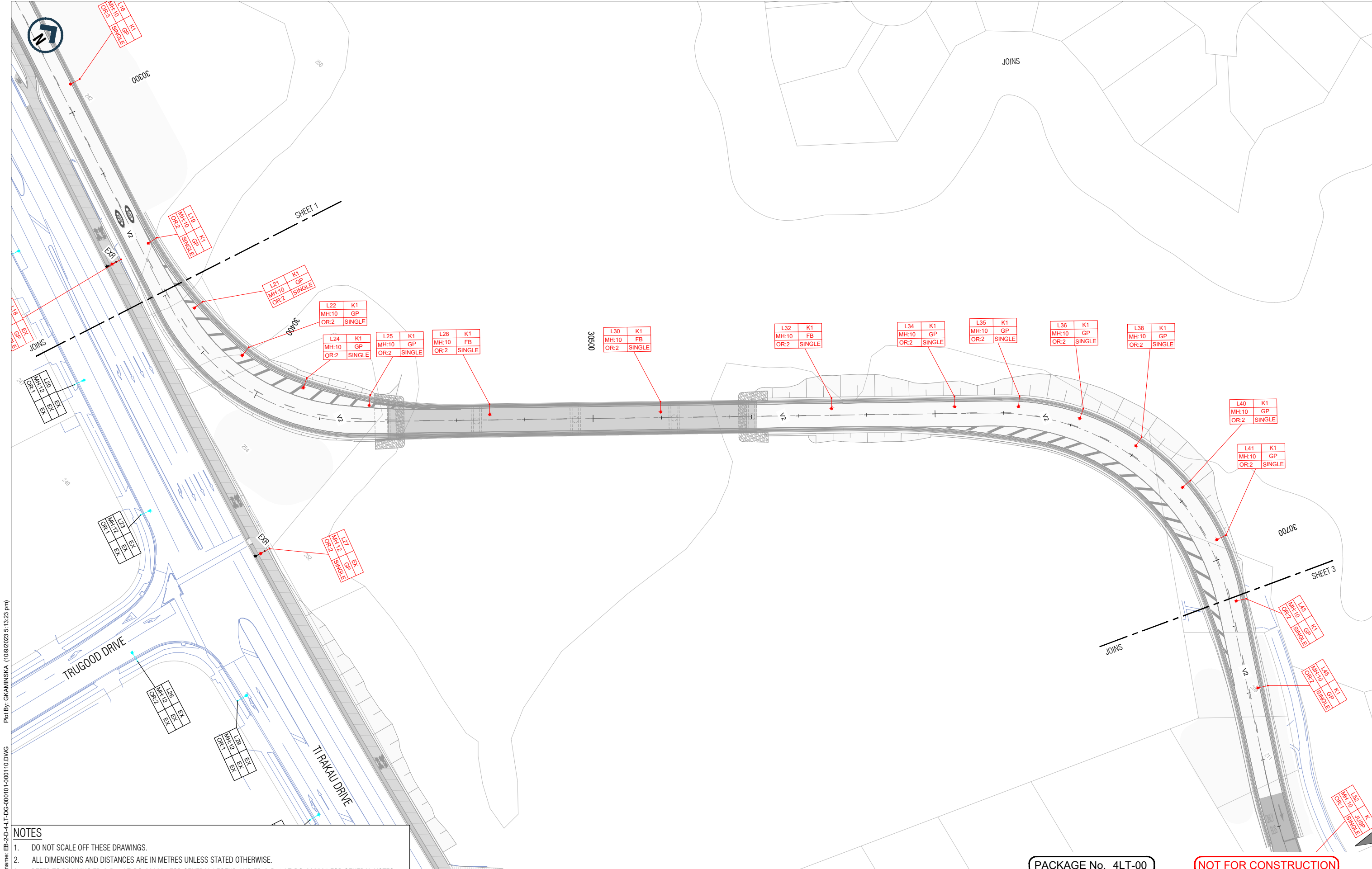
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Horizontal Datum		NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum		2016 NEW ZEALAND	
A1 SCALE	1:500	A3 SCALE	1:1000

Design Package		<b>LIGHTING</b>	
Drawing Title		TI RAKAU DRIVE LIGHTING LAYOUT PLAN SHEET 1 OF 9	
Drawing Number		EB-2-D-4-LT-DG-000101	
Revision		A	

PACKAGE No. 4LT-00

NOT FOR CONSTRUCTION





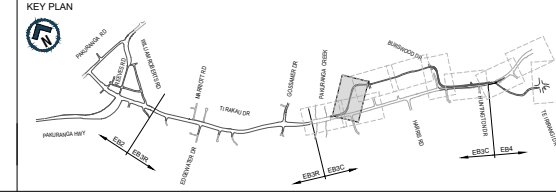
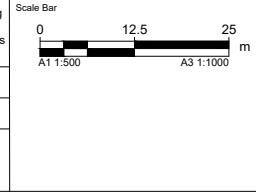
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- NOTES**
- DO NOT SCALE OFF THESE DRAWINGS.
  - ALL DIMENSIONS AND DISTANCES ARE IN METRES UNLESS STATED OTHERWISE.
  - REFER TO DRAWING EB-2-D-4-LT-DG-000004 FOR GENERAL LEGEND AND EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.

PACKAGE No. 4LT-00

NOT FOR CONSTRUCTION

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Designed	J. Yeoh	Checked	L. Young
Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
Date	06/10/2023		



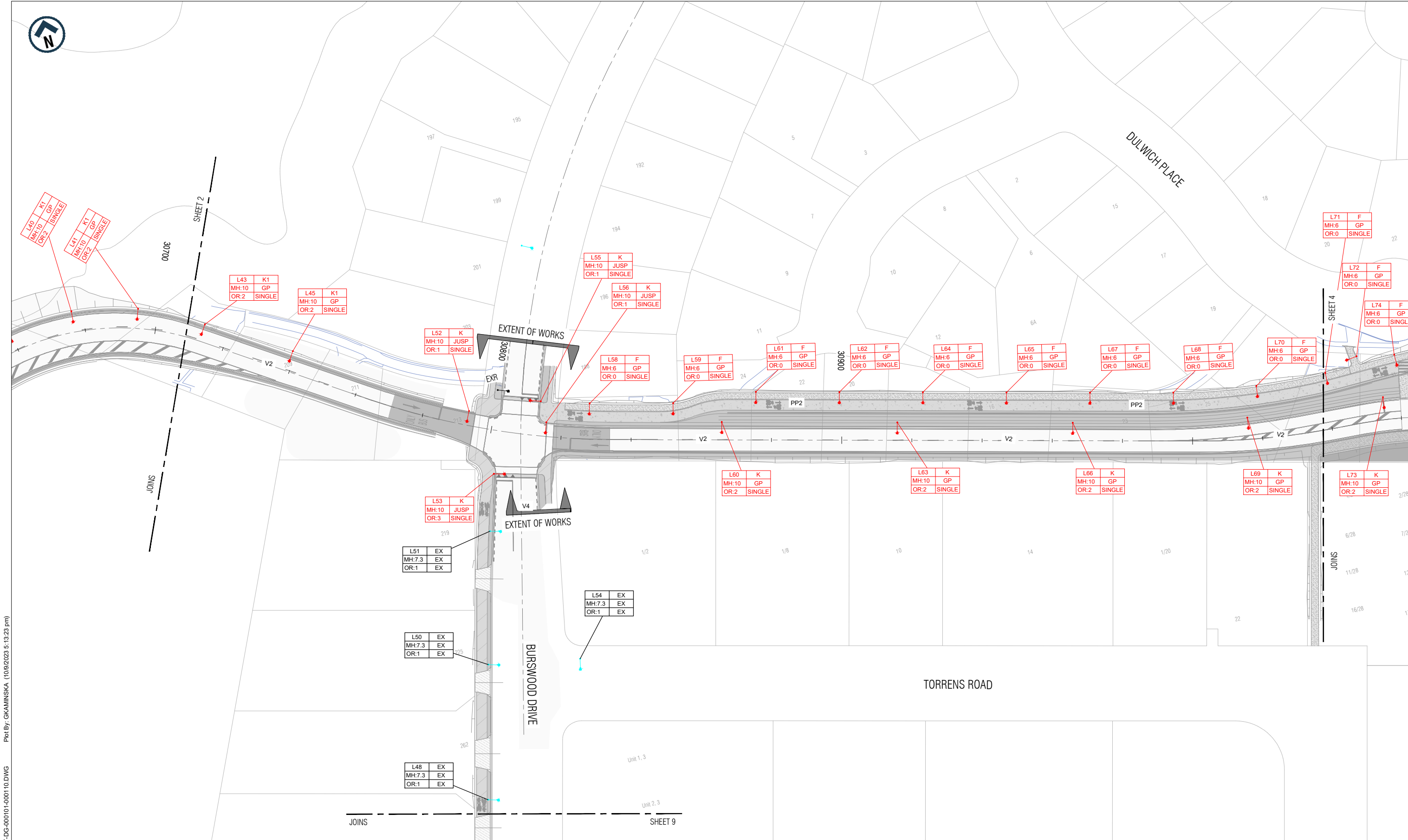
**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
**(PAKURANGA TO BOTANY)**

Drawing Status		STAGE 1	
Horizontal Datum		NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum		2016 NEW ZEALAND	
A1 SCALE	1:500	A3 SCALE	1:1000

Design Package		<b>LIGHTING</b>	
Drawing Title		BUSWAY LIGHTING LAYOUT PLAN	
		SHEET 2 OF 9	
Drawing Number		EB-2-D-4-LT-DG-000102	
Revision		A	

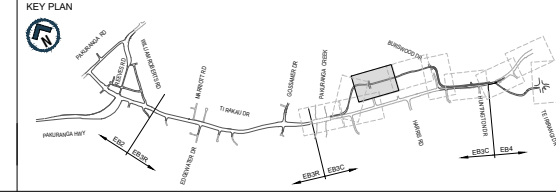
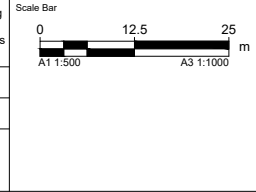
ORIGINAL SIZE A1





- NOTES**
- DO NOT SCALE OFF THESE DRAWINGS.
  - ALL DIMENSIONS AND DISTANCES ARE IN METRES UNLESS STATED OTHERWISE.
  - REFER TO DRAWING EB-2-D-4-LT-DG-000004 FOR GENERAL LEGEND AND EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.

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Designed	J. Yeoh
Checked	L. Young
Drawn	G. Kaminska
Checked	A. Kanaris
Approved	S. Jones
Date	06/10/2023
Approver Signature	



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
**(PAKURANGA TO BOTANY)**

Drawing Status	
STAGE 1	
Horizontal Datum	
NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum	
2016 NEW ZEALAND	
A1 SCALE	1:500
A3 SCALE	1:1000

Design Package	
LIGHTING	
Drawing Title	
BUSWAY LIGHTING LAYOUT PLAN	
SHEET 3 OF 9	
Drawing Number	
EB-2-D-4-LT-DG-000103	
Revision	A

ORIGINAL SIZE A1

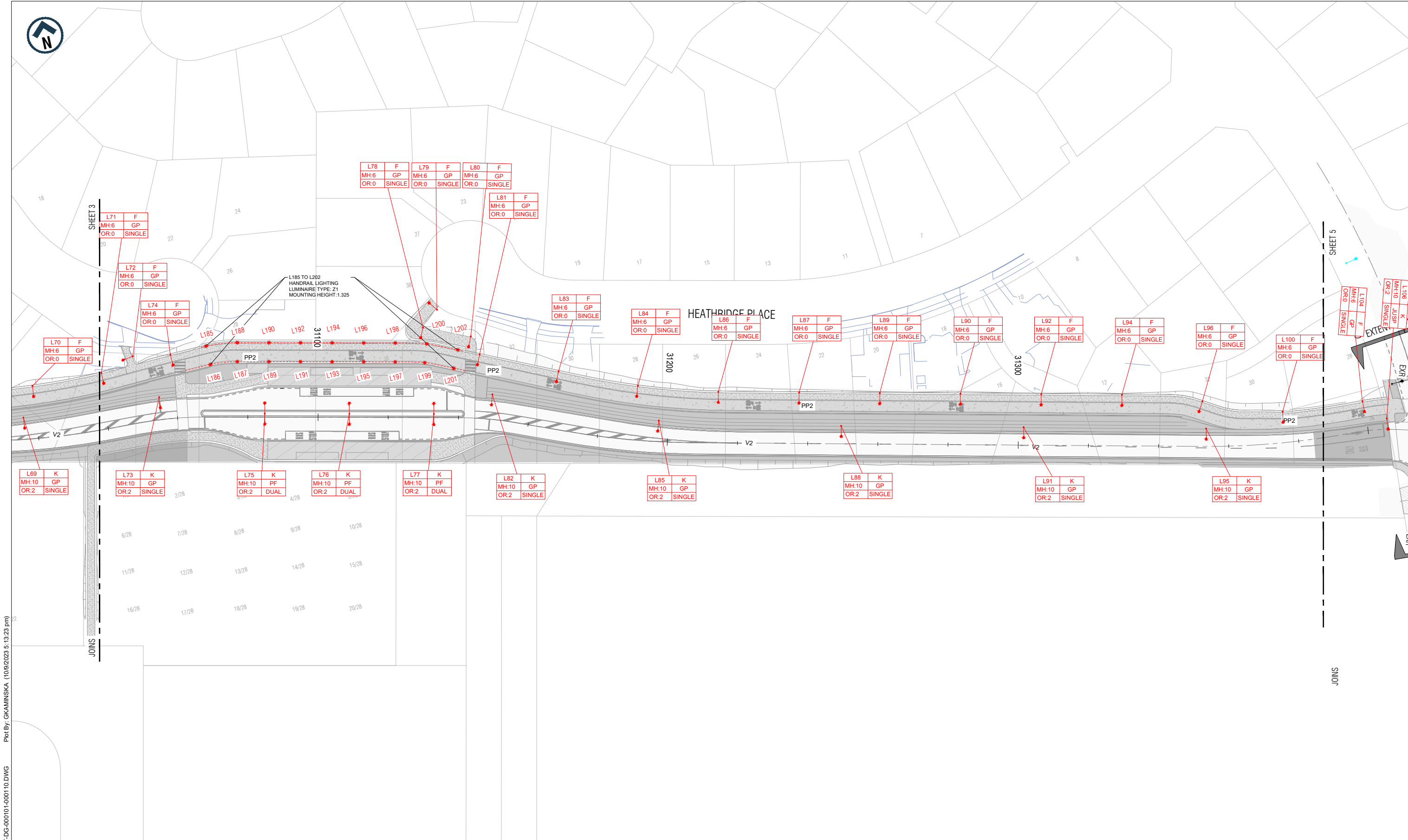
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PACKAGE No. 4LT-00

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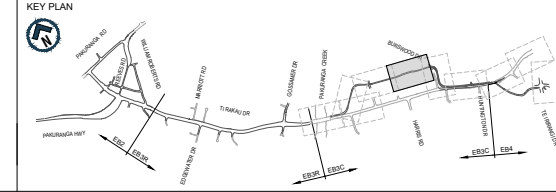
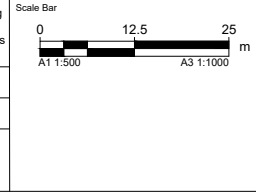


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 Plot By: GKAMINSKA (10/9/2023 5:13:23 pm)  
 ORIGINAL SIZE A1  
 ORIGINAL IN COLOUR

- NOTES**
- DO NOT SCALE OFF THESE DRAWINGS.
  - ALL DIMENSIONS AND DISTANCES ARE IN METRES UNLESS STATED OTHERWISE.
  - REFER TO DRAWING EB-2-D-4-LT-DG-000004 FOR GENERAL LEGEND AND EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.

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Designed	J. Yeoh	Checked	L. Young
Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
Date	06/10/2023		



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
**(PAKURANGA TO BOTANY)**

Drawing Status		STAGE 1	
Horizontal Datum		NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum		2016 NEW ZEALAND	
A1 SCALE	1:500	A3 SCALE	1:1000

Design Package		<b>LIGHTING</b>	
Drawing Title		BUSWAY LIGHTING LAYOUT PLAN	
		SHEET 4 OF 9	
Drawing Number		EB-2-D-4-LT-DG-000104	
Revision		A	

PACKAGE No. 4LT-00

NOT FOR CONSTRUCTION

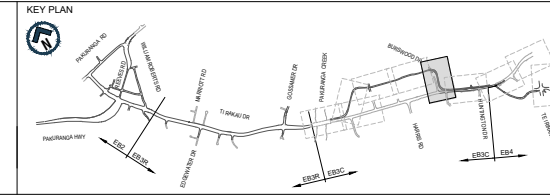
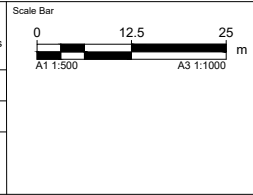


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Plot By: GKAMINSKA (10/9/2023 5:13:23 pm)

ORIGINAL SIZE  
A1

- NOTES**
- DO NOT SCALE OFF THESE DRAWINGS.
  - ALL DIMENSIONS AND DISTANCES ARE IN METRES UNLESS STATED OTHERWISE.
  - REFER TO DRAWING EB-2-D-4-LT-DG-000004 FOR GENERAL LEGEND AND EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.

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Designed	J. Yeoh	Checked	L. Young
Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
Date	06/10/2023		



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
 (PAKURANGA TO BOTANY)

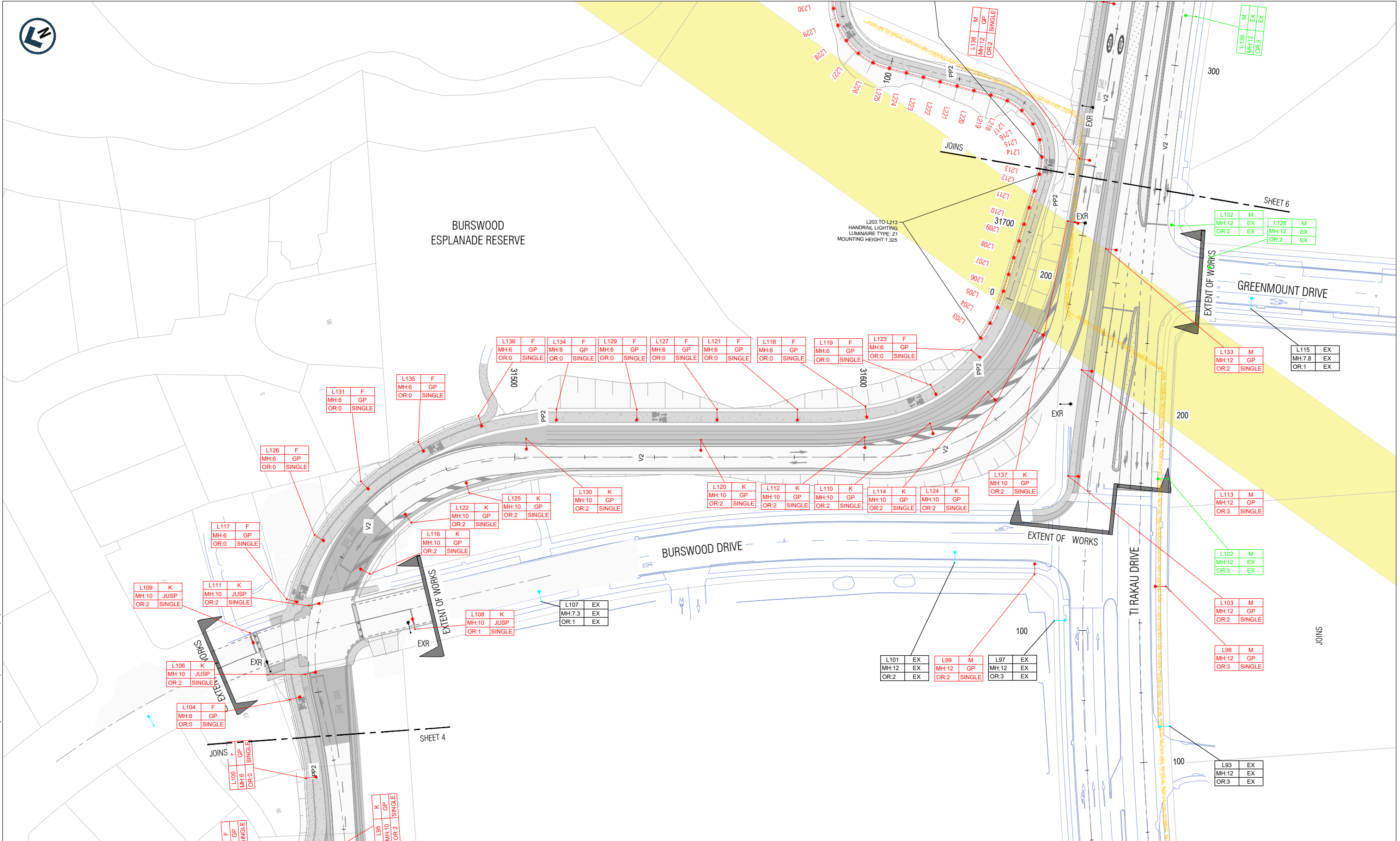
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<b>STAGE 1</b>	
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Vertical Datum	2016 NEW ZEALAND
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A3 SCALE	1:1000

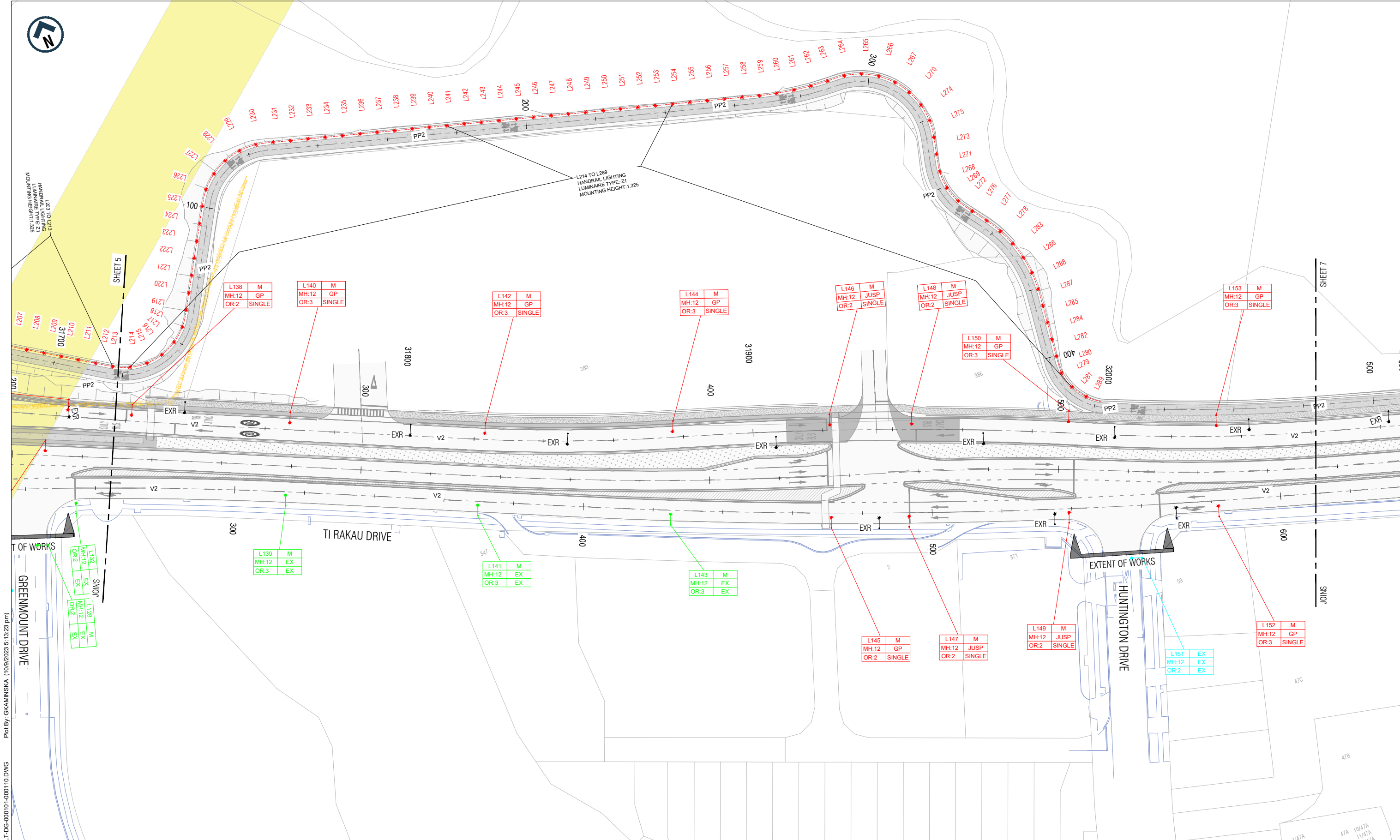
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<b>LIGHTING</b>	
<b>BUSWAY LIGHTING LAYOUT PLAN</b>	
<b>SHEET 5 OF 9</b>	
Drawing Number	EB-2-D-4-LT-DG-000105
Revision	A

REV	DATE	DRAWN	REVISION DESCRIPTION
A	06/10/2023	G. Kaminska	ISSUED FOR STAGE 1 SUBMISSION



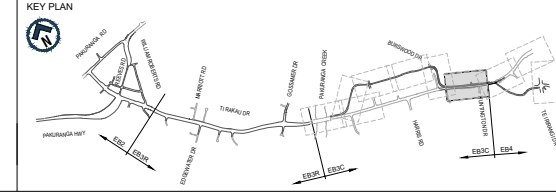
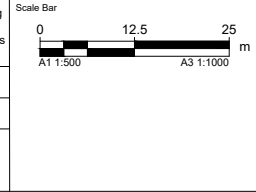
ORIGINAL IN COLOUR





- NOTES**
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  - ALL DIMENSIONS AND DISTANCES ARE IN METRES UNLESS STATED OTHERWISE.
  - REFER TO DRAWING EB-2-D-4-LT-DG-000004 FOR GENERAL LEGEND AND EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.

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Designed	J. Yeoh	Checked	L. Young
Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
Date	06/10/2023		



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
 (PAKURANGA TO BOTANY)

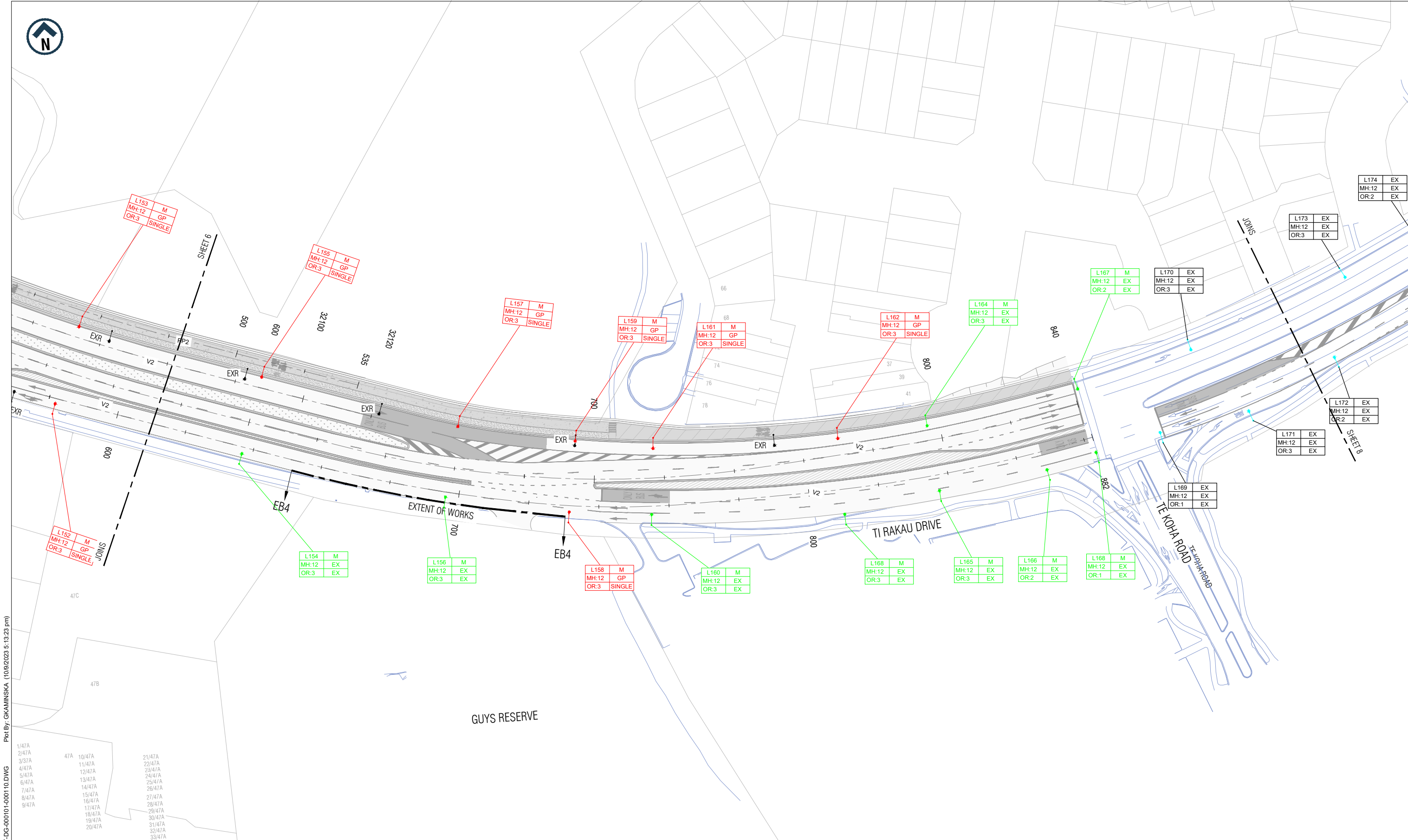
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<b>STAGE 1</b>	
Horizontal Datum	NZGD 2000 MOUNT EDEN CIRCUIT
Vertical Datum	2016 NEW ZEALAND
A1 SCALE	1:500
A3 SCALE	1:1000

<b>NOT FOR CONSTRUCTION</b>	
<b>LIGHTING</b>	
TI RAKAU DRIVE LIGHTING LAYOUT PLAN SHEET 6 OF 9	
Drawing Number	EB-2-D-4-LT-DG-000106
Revision	A

ORIGINAL SIZE A1



Filename: EB-2-D-4-LT-DG-000101-000110.DWG  
 Plot By: GKAMINSKA (10/09/2023 5:13:23 pm)



Filename: EB-2-D-4-LT-DG-000101-000110.DWG  
 Plot By: GKAMINSKA (10/9/2023 5:13:23 pm)

- 1/47A
- 2/47A
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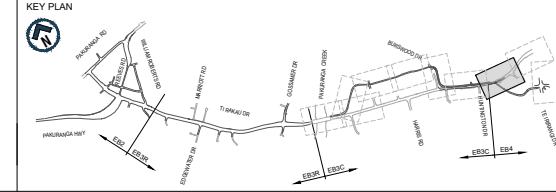
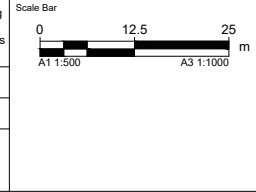
**NOTES**

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- REFER TO DRAWING EB-2-D-4-LT-DG-000004 FOR GENERAL LEGEND AND EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.

ORIGINAL SIZE  
A1

REV	DATE	DRAWN	REVISION DESCRIPTION
A	06/10/2023	G. Kaminska	ISSUED FOR STAGE 1 SUBMISSION

Designed	J. Yeoh	Checked	L. Young
Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones		
Date	06/10/2023		
Approver Signature			



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
 (PAKURANGA TO BOTANY)

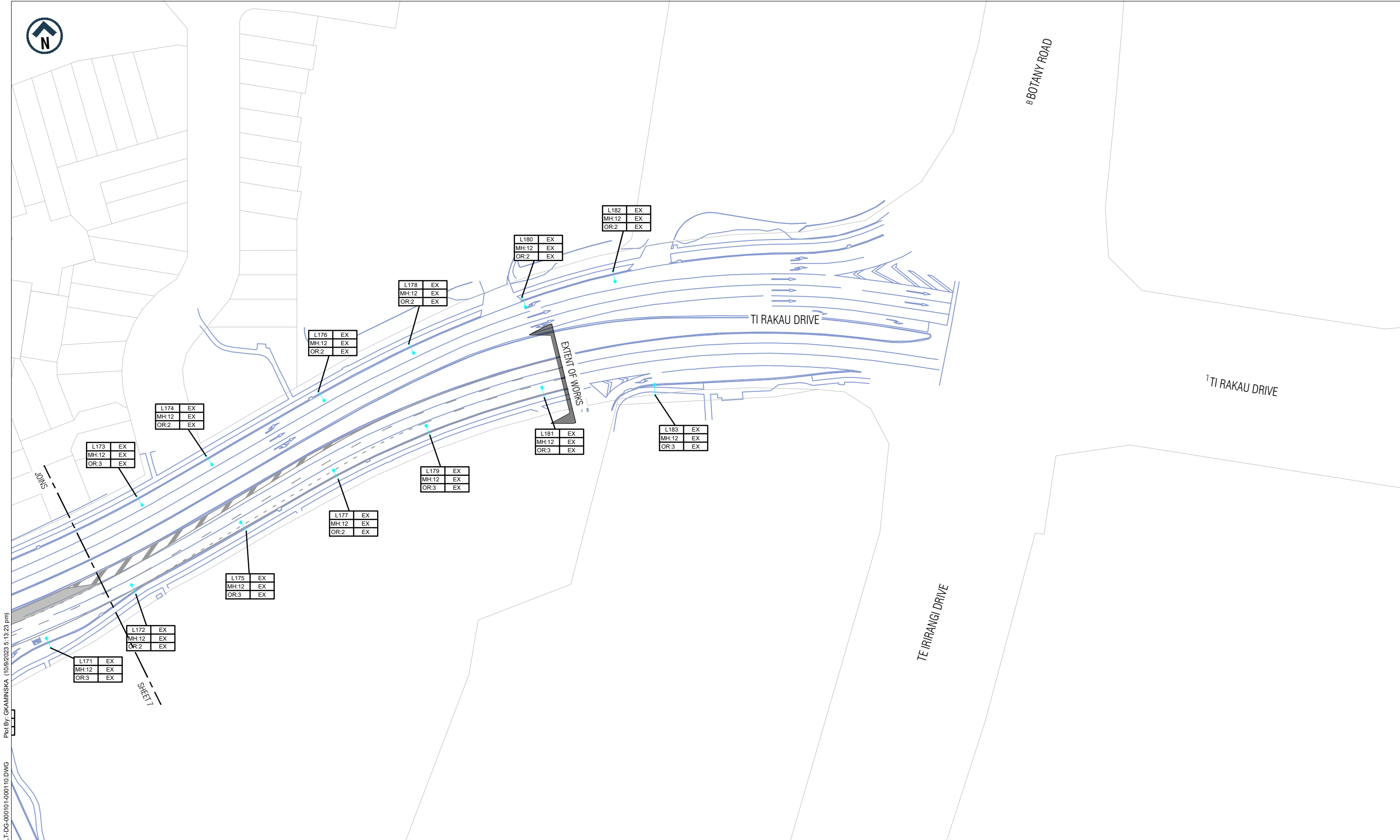
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Vertical Datum		2016 NEW ZEALAND	
A1 SCALE	1:500	A3 SCALE	1:1000

Design Package		<b>LIGHTING</b>	
Drawing Title		TI RAKAU DRIVE LIGHTING LAYOUT PLAN SHEET 7 OF 9	
Drawing Number		EB-2-D-4-LT-DG-000107	
Revision		A	

PACKAGE No. 4LT-00

NOT FOR CONSTRUCTION



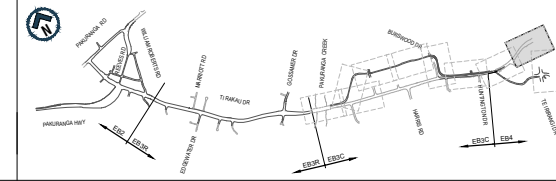
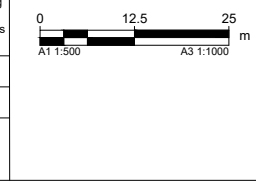


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- NOTES**
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  - ALL DIMENSIONS AND DISTANCES ARE IN METRES UNLESS STATED OTHERWISE.
  - REFER TO DRAWING EB-2-D-4-LT-DG-000004 FOR GENERAL LEGEND AND EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.

REV	DATE	DRAWN	REVISION DESCRIPTION
A	06/10/2023	G. Kaminska	ISSUED FOR STAGE 1 SUBMISSION

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Designed	J. Yeoh	Checked	L. Young
Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
Date	06/10/2023		



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
**(PAKURANGA TO BOTANY)**

Drawing Status		<b>STAGE 1</b>	
Horizontal Datum		NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum		2016 NEW ZEALAND	
A1 SCALE	1:500	A3 SCALE	1:1000

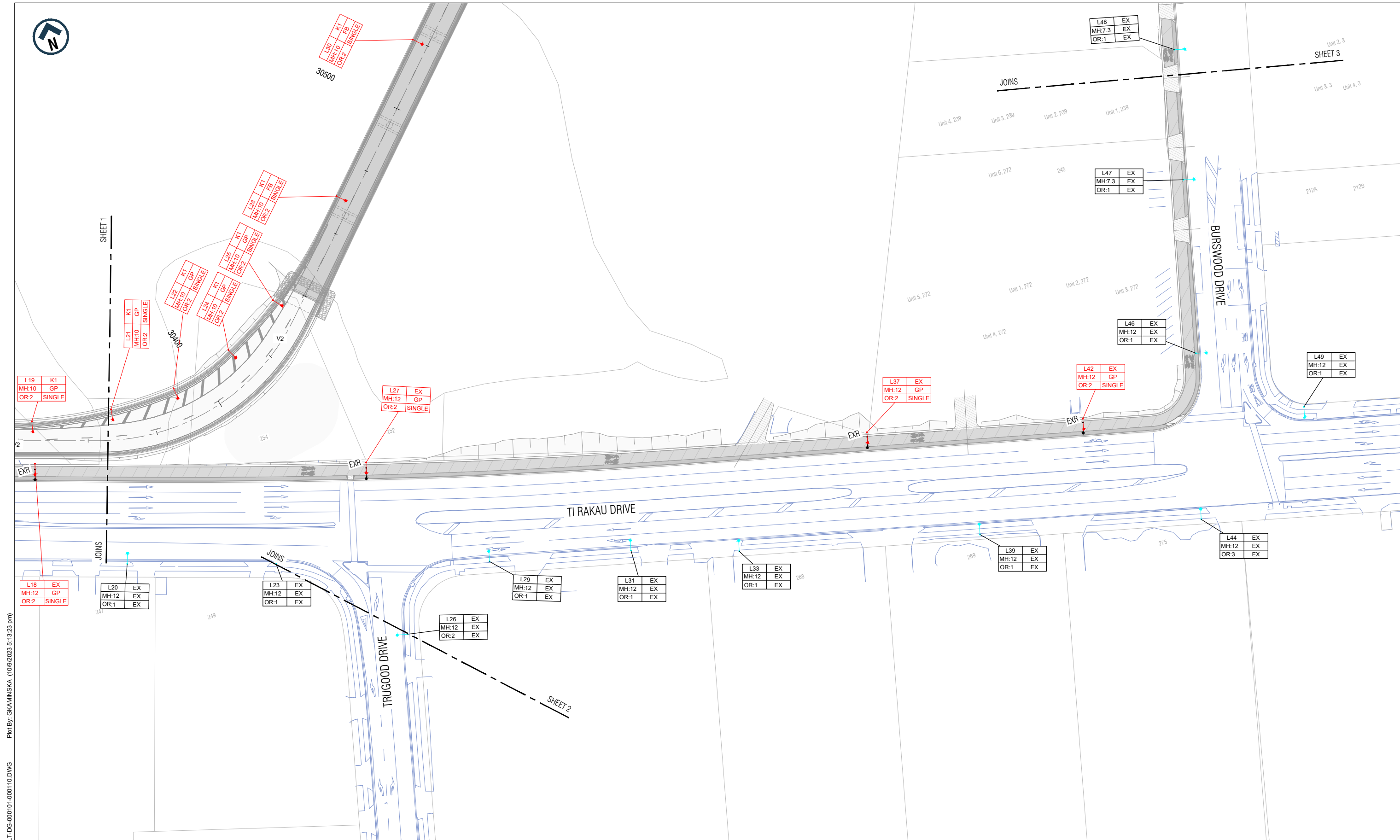
Design Package		<b>LIGHTING</b>	
Drawing Title		TI RAKAU DRIVE LIGHTING LAYOUT PLAN SHEET 8 OF 9	
Drawing Number		EB-2-D-4-LT-DG-000108	
Revision		A	

PACKAGE No. 4LT-00

NOT FOR CONSTRUCTION

ORIGINAL SIZE A1





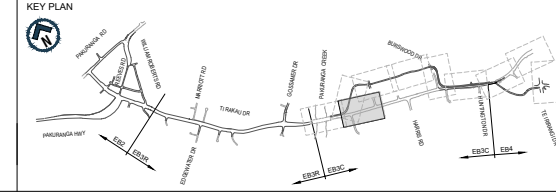
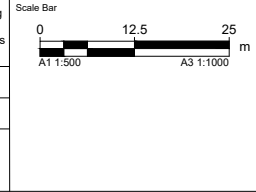
Filename: EB-2-D-4-LT-DG-000101-000110.DWG  
 Plot By: GKAMINSKA (10/9/2023 5:13:23 pm)

**NOTES**

- DO NOT SCALE OFF THESE DRAWINGS.
- ALL DIMENSIONS AND DISTANCES ARE IN METRES UNLESS STATED OTHERWISE.
- REFER TO DRAWING EB-2-D-4-LT-DG-000004 FOR GENERAL LEGEND AND EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.

ORIGINAL SIZE  
**A1**

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Checked	L. Young
Drawn	G. Kaminska
Checked	A. Kanaris
Approved	S. Jones
Date	06/10/2023
Approver Signature	



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
**(PAKURANGA TO BOTANY)**

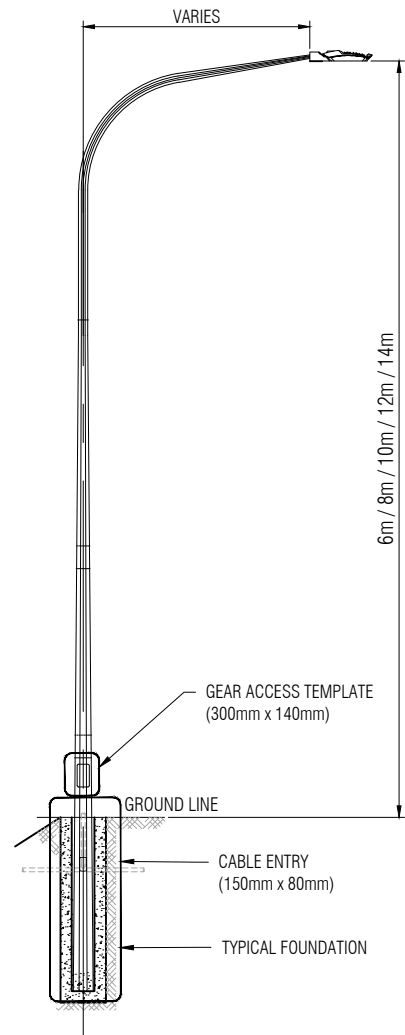
Drawing Status	
STAGE 1	
Horizontal Datum	
NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum	
2016 NEW ZEALAND	
A1 SCALE	1:500
A3 SCALE	1:1000

Design Package	
LIGHTING	
Drawing Title	
TI RAKAU DRIVE LIGHTING LAYOUT PLAN SHEET 9 OF 9	
Drawing Number	
EB-2-D-4-LT-DG-000109	
Revision	A

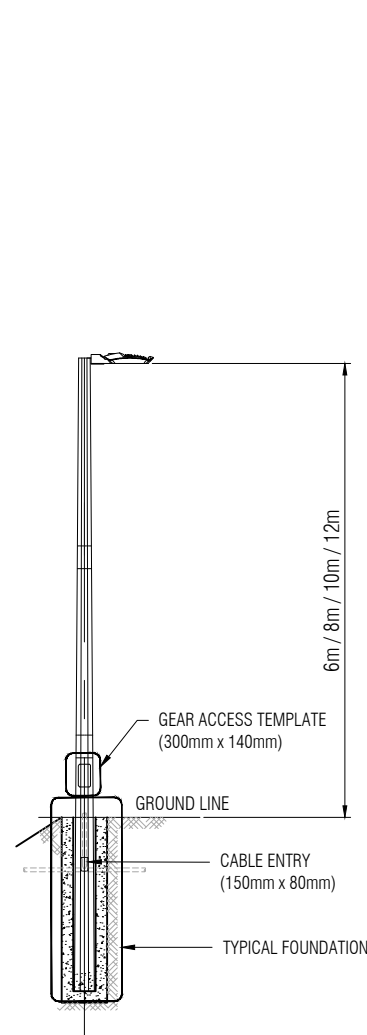
PACKAGE No. 4LT-00

NOT FOR CONSTRUCTION

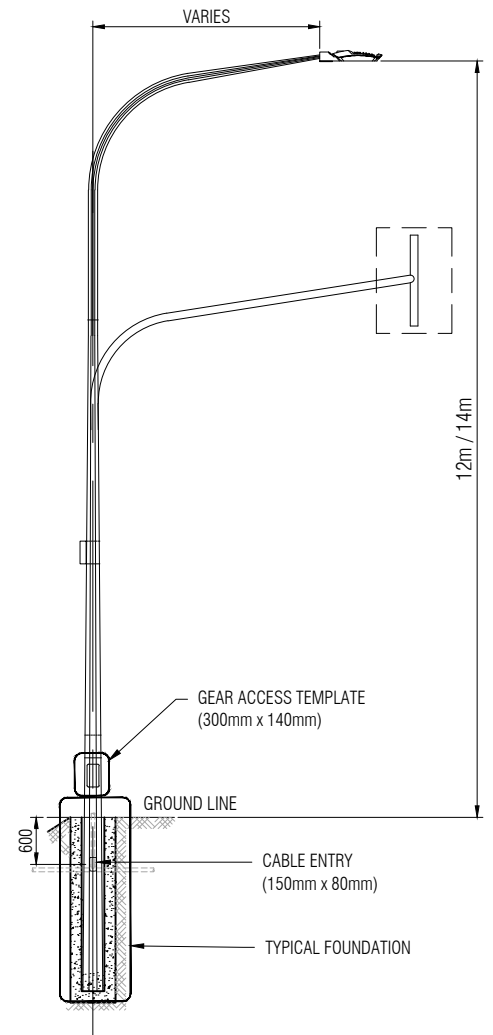




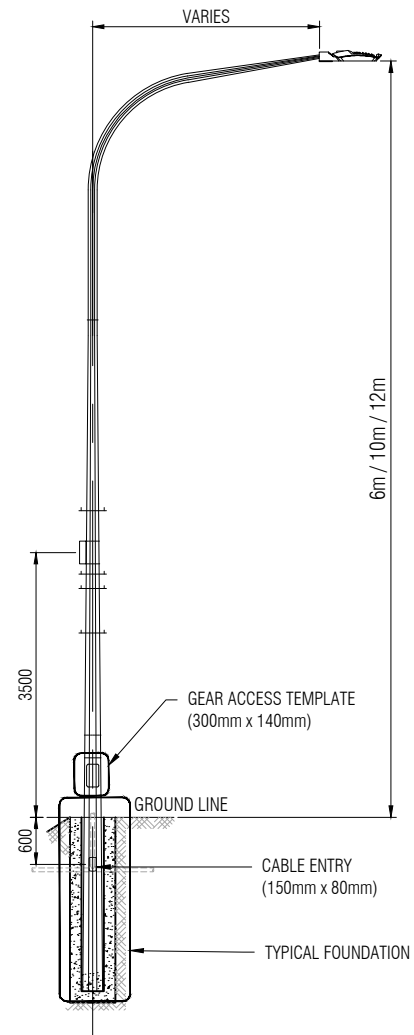
**1 | GROUND PLANT WITH OUTREACH**  
TYPICAL LIGHTING DETAIL



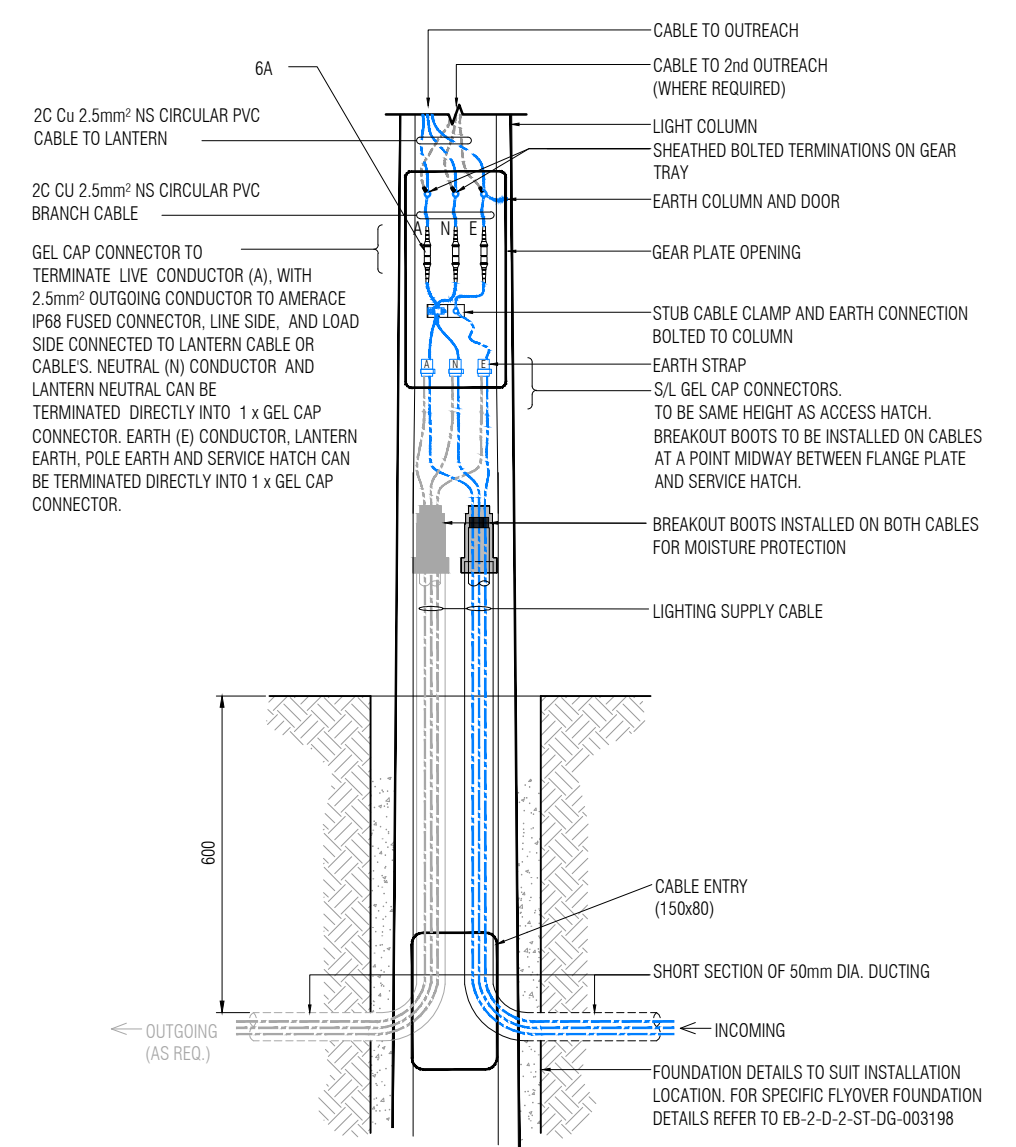
**2 | GROUND PLANT - NO OUTREACH**  
TYPICAL LIGHTING DETAIL



**3 | DETAIL - JUMA COLUMN**  
TYPICAL LIGHTING DETAIL



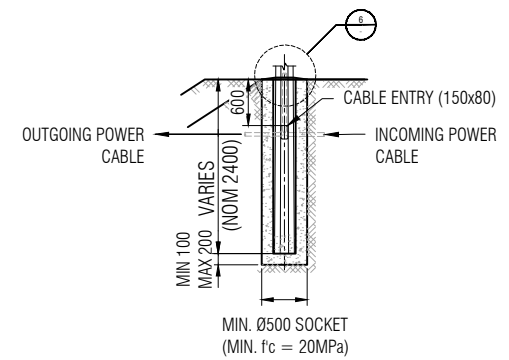
**4 | DETAIL - JUSP COLUMN**  
TYPICAL LIGHTING DETAIL



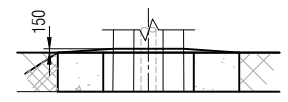
**7 | DETAIL - TYPICAL POWER INSTALLATION, 3 WIRE WITH REMOTE EARTH**  
FLYOVER AND SEART CENTRAL BARRIER LIGHT COLUMNS

**NOTES**

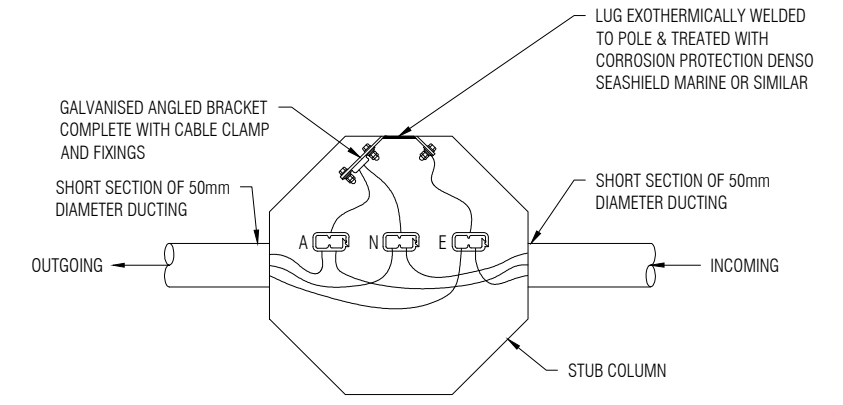
- SPECIFIC COLUMN HEIGHT, OUTREACH AND LUMINAIRE DETAILS ARE LOCATED IN THE LIGHTING SCHEDULE (REFER TO DWG EB-2-D-4-LT-DG-000401 TO EB-2-D-4-LT-DG-000405).
- POLE MANUFACTURER TO PROVIDE SPECIFIC FOOTING DESIGNS. NOMINAL EMBEDMENT DEPTH 2.4m.
- DESIGN PARAMETERS SHALL BE VERIFIED AT SITE BEFORE CONSTRUCTION OF POLE FOUNDATION.
- DO NOT SCALE OFF THESE DRAWINGS.
- ALL DIMENSIONS AND DISTANCES ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- REFER TO DRAWING EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.



**5 | DETAIL - TYPICAL LIGHTING**



**6 | DETAIL - TYPICAL GROUT**



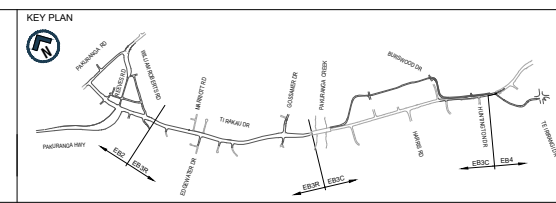
**8 | DETAIL - CABLE CLAMP AND EARTH CONNECTION**  
BOLTED TO STUB COLUMN

PACKAGE No. 4LT-00

NOT FOR CONSTRUCTION

Filename: EB-2-D-4-LT-DG-000201-000301.DWG Plot By: RUBY CRUZ1 (10/6/2023 4:54:03 pm)

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Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones		
Date	06/10/2023	Approver Signature	



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
**(PAKURANGA TO BOTANY)**

Drawing Status		STAGE 1	
Horizontal Datum		NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum		2016 NEW ZEALAND	
A1 SCALE	N.T.S	A3 SCALE	N.T.S

Design Package		<b>LIGHTING</b>	
Drawing Title		LIGHTING COLUMN DETAILS LIGHTING TYPICAL DRAWING SHEET 1 OF 4	
Drawing Number		EB-2-D-4-LT-DG-000201	
Revision		A	

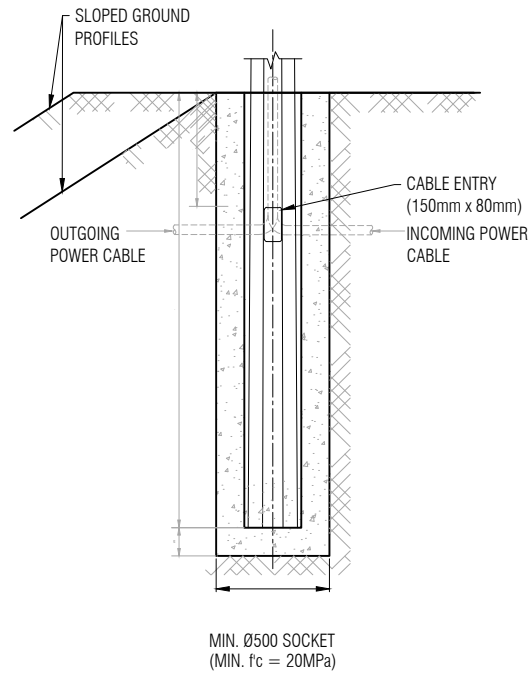
A1

REV	DATE	DRAWN	REVISION DESCRIPTION
A	06/10/2023	G. Kaminska	ISSUED FOR STAGE 1 SUBMISSION

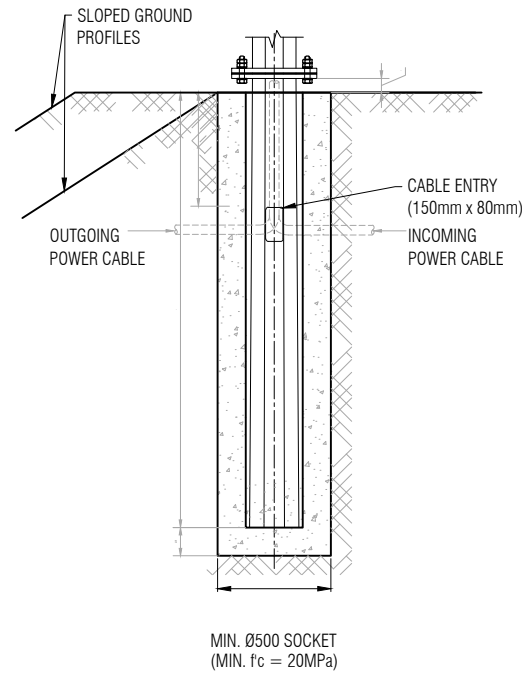




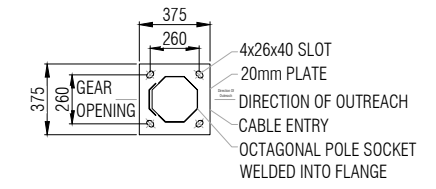




**10 | TYPICAL GROUND PLANT**  
TYPICAL LIGHTING DETAIL



**11 | TYPICAL FLANGE BASE**  
TYPICAL LIGHTING DETAIL

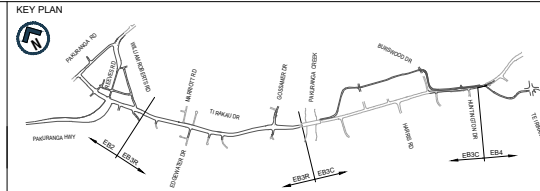


**12 | DETAIL - FLANGE BASE**

**NOTES**

- DO NOT SCALE OFF THESE DRAWINGS.
- ALL DIMENSIONS AND DISTANCES ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- REFER TO DRAWING EB-2-D-4-LT-DG-000004 FOR GENERAL LEGEND AND EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.

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Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
REV	DATE		
A	06/10/2023	G. Kaminska	ISSUED FOR STAGE 1 SUBMISSION



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
EASTERN BUSWAY ALLIANCE  
(PAKURANGA TO BOTANY)

Drawing Status		STAGE 1	
Horizontal Datum		NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum		2016 NEW ZEALAND	
A1 SCALE	N.T.S	A3 SCALE	N.T.S

Design Package		<b>LIGHTING</b>	
Drawing Title		LIGHTING COLUMN DETAILS LIGHTING TYPICAL DRAWING SHEET 3 OF 4	
Drawing Number		EB-2-D-4-LT-DG-000203	
Revision		A	

PACKAGE No. 4LT-00

**NOT FOR CONSTRUCTION**

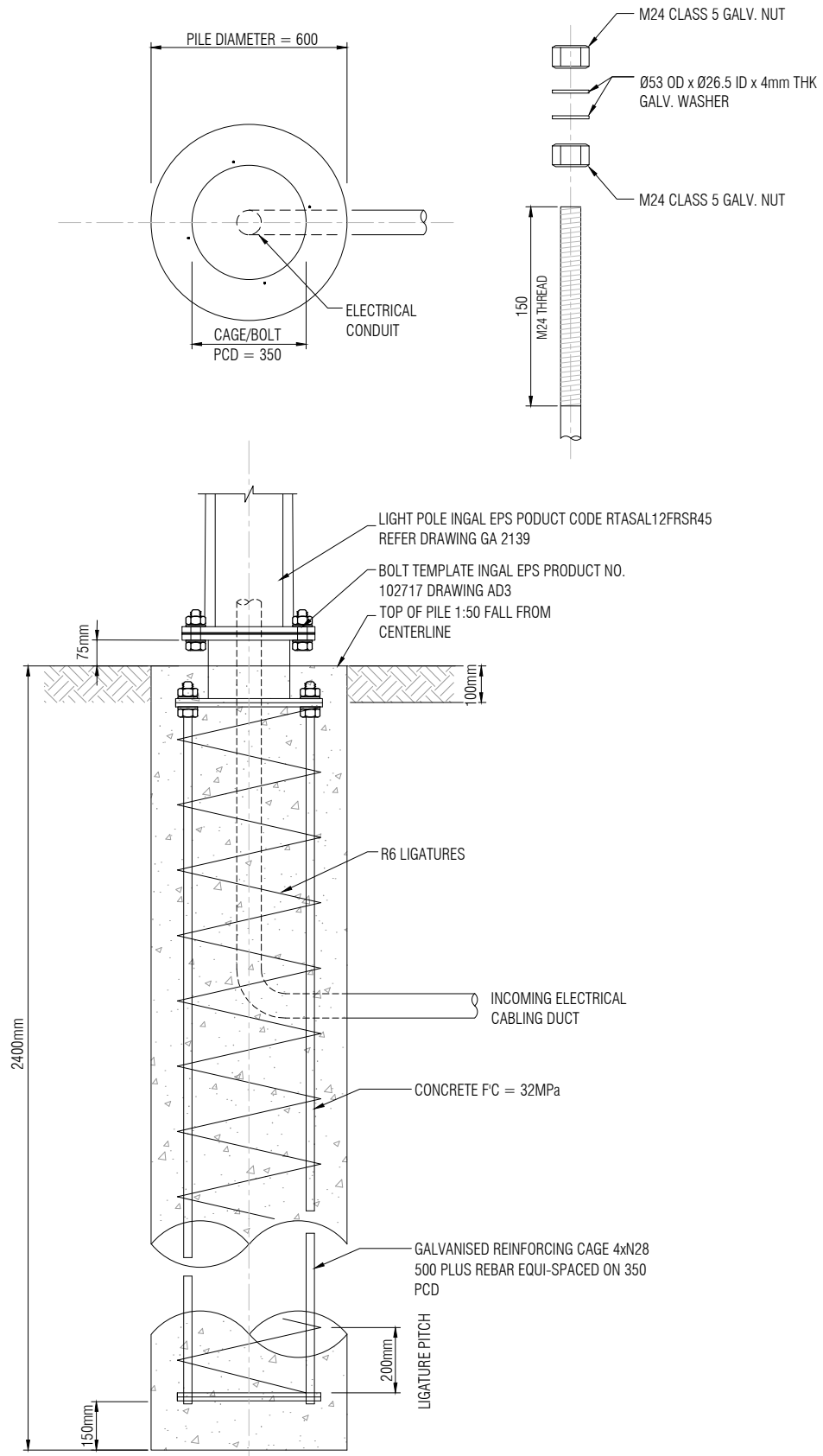
Filename: EB-2-D-4-LT-DG-00001-000301.DWG

A1 ORIGINAL SIZE

ORIGINAL IN COLOUR

**NOTES**

1. TYPICAL FOUNDATION DETAILS SHOWN ONLY. CONTRACTOR TO REFER TO INGALEPS RECOMMENDED PILE FOUNDATION DETAILS FOR SPECIFIED POLE.
2. REFER TO INGALEPS PRODUCT NO. X4M243502400 DRAWING GA 2582 FOR COMBINED HOLDING DOWN BOLTS AND REINFORCING CAGE.
3. DESIGN PARAMETERS SHALL BE VERIFIED AT SITE BEFORE CONSTRUCTION OF POLE FOUNDATION.
4. DO NOT SCALE OFF THESE DRAWINGS.
5. ALL DIMENSIONS AND DISTANCES ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
6. REFER TO DRAWING EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.



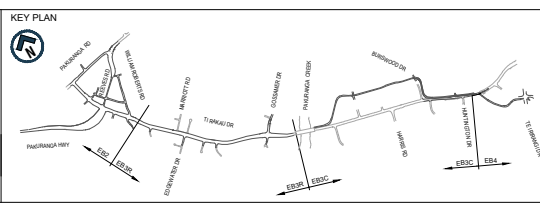
**15 PILE POLE FOUNDATION**  
AS REQUIRED TO SUIT INSTALLATION CONDITIONS

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Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
Date	06/10/2023		



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
**(PAKURANGA TO BOTANY)**

Drawing Status		STAGE 1	
Horizontal Datum		NZGD 2000 MOUNT EDEN CIRCUIT	
Vertical Datum		2016 NEW ZEALAND	
A1 SCALE	N.T.S	A3 SCALE	N.T.S

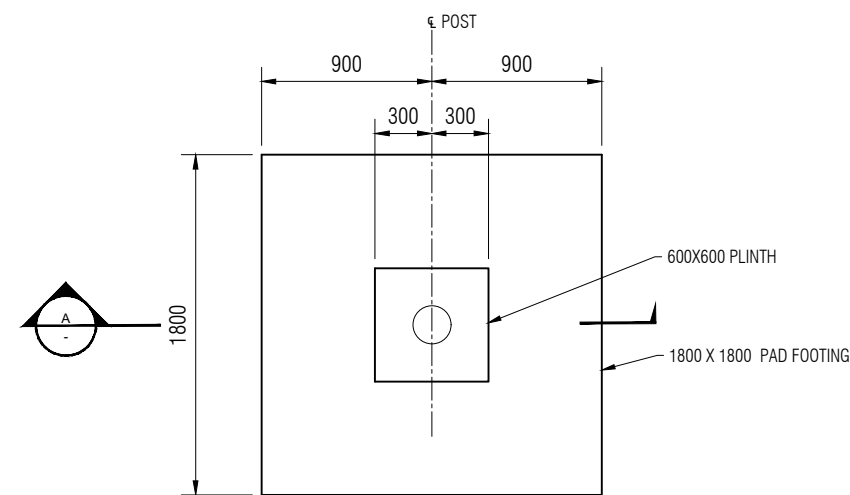
Design Package		<b>LIGHTING</b>	
Drawing Title		LIGHTING COLUMN DETAILS LIGHTING TYPICAL DRAWING SHEET 4 OF 4	
Drawing Number		EB-2-D-4-LT-DG-000205	
Revision		A	

**NOTES**

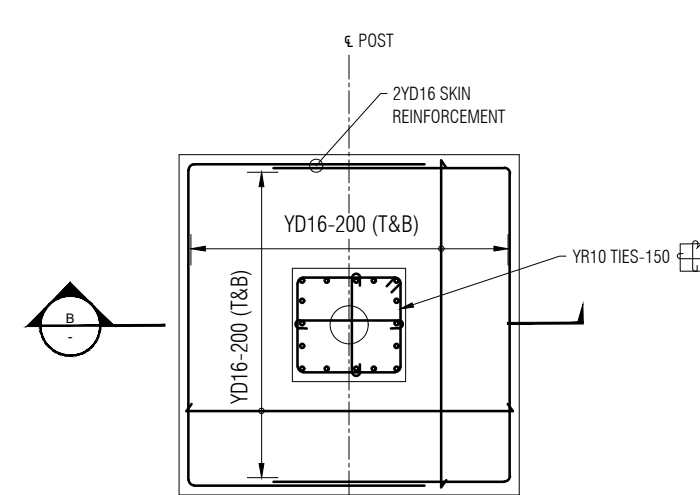
1. ALL DIMENSIONS ARE IN mm
2. CONCRETE GRADE 40MPa
3. MAXIMUM WATER/CEMENT RATIO SHALL BE 0.45
4. MINIMUM COVER TO REINFORCEMENT 75mm
5. ALL REINFORCING BARS SHALL BE MICRO ALLOY, SEISMIC GRADE 500, DUCTILITY CLASS E TO AS/NZS 4671
6. ALL LAP LENGTHS SHALL BE MINIMUM 50 X DIAMETER OF THE BAR UNO
7. BARS SHALL HAVE A MINIMUM BEND DIAMETER OF 5 X DIAMETER OF BAR
8. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH CONCRETE SPECIFICATION EB-2-D-0-SP-100001
9. SURFACE FINISH: F1 TO NZS 3114:1987
10. MAXIMUM SLOPE OF GROUND SURFACE WITHIN 5m OF COLUMN BASE TO BE 1V:8H
11. NO EXCAVATION ALLOWED WITHIN 3M OF COLUMN FOOTING WITHOUT ENGINEER'S APPROVAL
12. FOUNDATION DESIGNED TO:
  - 12.1. AS/NZS 1170, AS/NZS 4676 AND NZS 3101
  - 12.2. DESIGN LIFE 50 YEARS
  - 12.3. IMPORTANCE LEVEL 2
  - 12.4. WEIGHT OF LUMINAIRE 15kg
  - 12.5. DIAMETER OF POLE : 300mm

**GEOTECHNICAL NOTES**

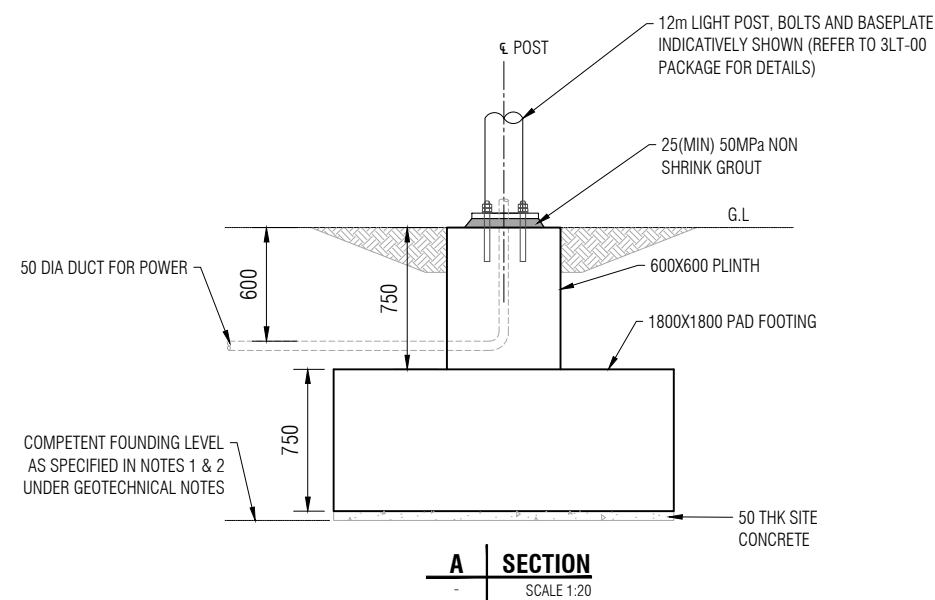
1. SUBGRADE TO BE INSPECTED AND TESTED. MINIMUM UNDRAINED SHEAR STRENGTH OF 30kPa REQUIRED FOR COHESIVE MATERIAL. MINIMUM 3 BLOWS/ 100mm DCP TEST RESULT FOR COHESIONLESS MATERIAL. MATERIAL THAT DOES NOT MEET STRENGTH REQUIREMENTS TO BE DEEMED UNSUITABLE.
2. ANY ORGANIC MATERIAL OR UNSUITABLE MATERIAL (AS DEFINED IN NOTE 1) IS TO BE EXCAVATED AND REPLACED WITH GAP40 AND BI-AXIAL GEOGRID (DURAGRID X OR APPROVED EQUIVALENT) 100mm ABOVE SUBGRADE LEVEL.
3. MAXIMUM EXCAVATION TO BE 600mm BELOW FOUNDATION LEVEL.
4. GAP40 TO BE PLACED IN 150mm LOOSE LAYERS AND COMPACTED TO 95% MDD.



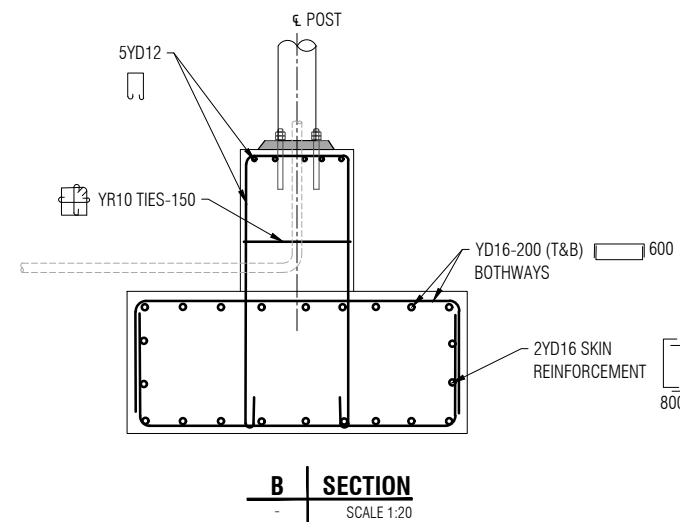
**1 PLAN - PAD FOUNDATION DETAILS FOR 12m TALL LIGHTING POST**  
SCALE 1:20



**2 PLAN - PAD FOUNDATION REINFORCEMENT**  
SCALE 1:20



**A SECTION**  
SCALE 1:20



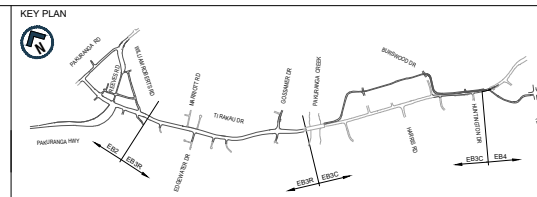
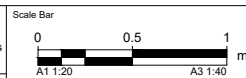
**B SECTION**  
SCALE 1:20

Plot By: RUBY CRUZ1 (10/6/2023 4:54:03 pm)

Filename: EB-2-D-4-LT-DG-000201-000301.DWG

ORIGINAL SIZE  
A1

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Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
REV	DATE	DRAWN	REVISION DESCRIPTION
A	06/10/2023	G. Kaminska	ISSUED FOR STAGE 1 SUBMISSION



**AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE**  
**EASTERN BUSWAY ALLIANCE**  
**(PAKURANGA TO BOTANY)**

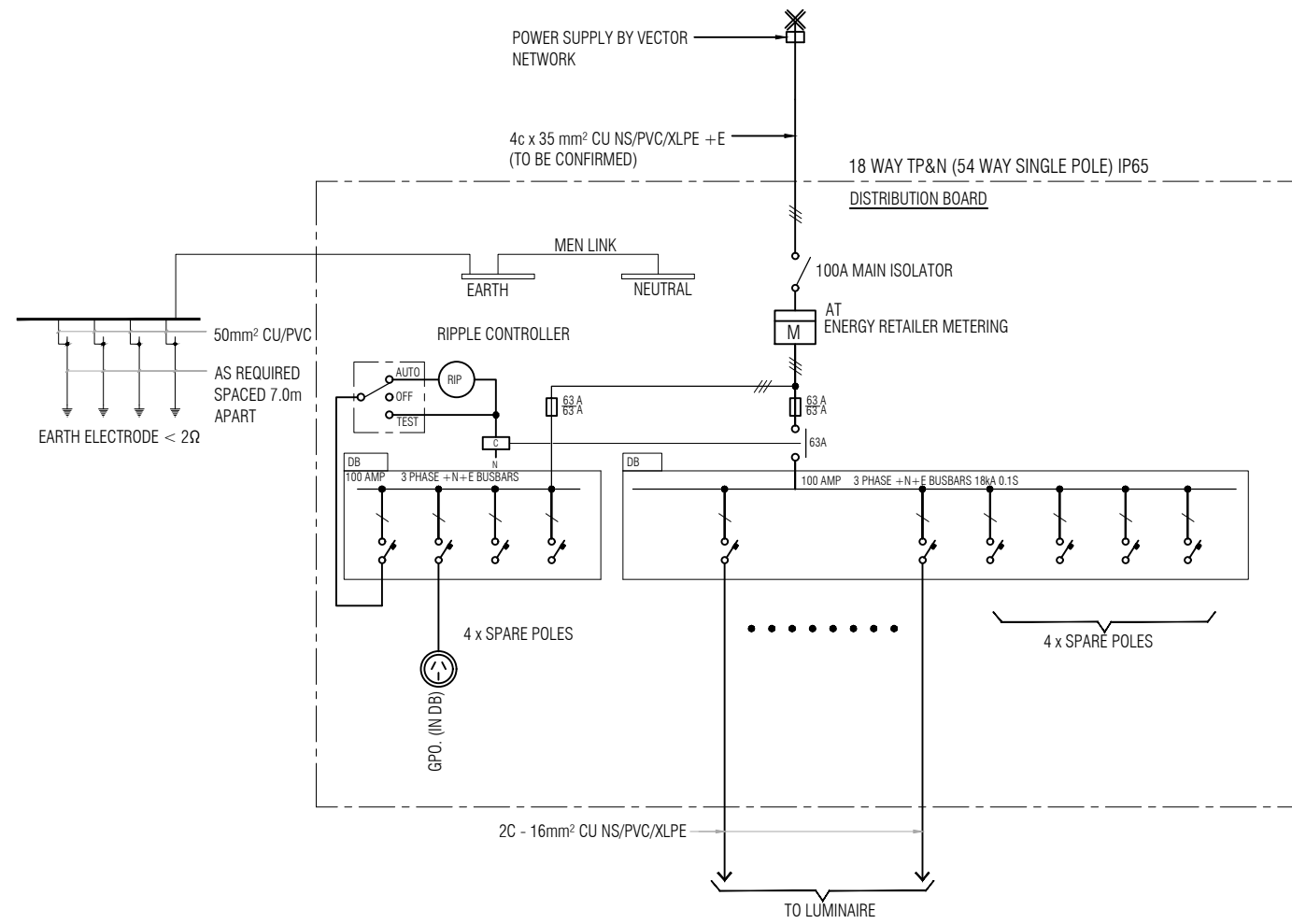
Drawing Status		Design Package	
STAGE 1		LIGHTING	
Horizontal Datum		Drawing Title	
NZGD 2000 MOUNT EDEN CIRCUIT		LIGHTING COLUMN DETAILS PAD FOUNDATION DETAILS FOR 12m TALL LIGHTING POST	
Vertical Datum		Drawing Number	
2016 NEW ZEALAND		EB-2-D-4-LT-DG-000207	
A1 SCALE	1:20	A3 SCALE	1:40

Revision	
	A

PACKAGE No. 4LT-00

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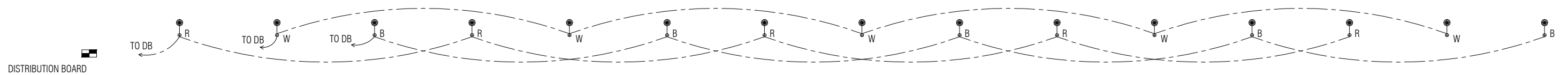
ORIGINAL IN COLOUR



18 | TYPICAL DISTRIBUTION BOARD - SCHEMATIC DIAGRAM

NOTES

1. LIAISE AND COORDINATE WITH LOCAL POWER AUTHORITY VECTOR FOR POWER SUPPLY, CONNECTION AND RIPPLE CONTROL SIGNAL FOR EACH DB.
2. NOMINAL CABLE SIZE IS SHOWN BETWEEN LOCAL POWER AUTHORITY AND DISTRIBUTION BOARDS. BIGGER CABLE SIZE MAYBE REQUIRED FOR GREATER CABLE RUNS. CONSULT WITH ENGINEER PRIOR TO ORDERING CABLING.
3. EACH DB SHALL BE IP65, 18WAY TP&N (54 WAY SINGLE POLE) FORM 1 INSTALLED WITHIN A ROADSIDE MONTROSE BOX.
4. FOR EXACT NUMBER OF CIRCUITS REFER TO LIGHTING LAYOUT DRAWINGS.
5. SWITCH GEAR SHALL BE ADEQUATELY RATED FOR THE EXPECTED SHORT CIRCUIT CURRENT MINIMUM 20kA.
6. ALL MCB'S SHALL BE 20A TYPE B UNLESS NOTED OTHERWISE
7. TAIL DOWN CABLES FROM LUMINAIRE TO POLE BASE SHALL BE 3C 2.5mm² CU CIRCULAR TPS OR GREATER AS NECESSARY AT EACH LIGHTING COLUMN. CABLES SHALL BE SEPARATE FOR EACH LANTERN.
8. USE NEUTRAL SCREEN FOR EARTH.
9. GPOS SHALL BE PROTECTED WITH 30mA R.C.B.O
10. EACH LIGHTING CIRCUIT LENGTH SHALL NOT EXCEED 800m.
11. MAXIMUM NUMBER OF LUMINAIRES SHALL BE NO MORE THEN 4 PER CIRCUIT FOR LONGER RUNS.
12. DO NOT SCALE OFF THESE DRAWINGS.
13. REFER TO DRAWING EB-2-D-4-LT-DG-000005 FOR GENERAL NOTES.



19 | TYPICAL CIRCUITRY

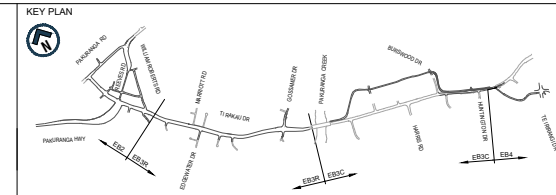
Filename: EB-2-D-4-LT-DG-000201-000301.DWG

A1 ORIGINAL SIZE

ORIGINAL IN COLOUR

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Drawn	G. Kaminska	Checked	A. Kanaris
Approved	S. Jones	Approver Signature	
REV	DATE	DRAWN	REVISION DESCRIPTION
A	06/10/2023	G. Kaminska	ISSUED FOR STAGE 1 SUBMISSION

Scale Bar
KEY PLAN



AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE  
EASTERN BUSWAY ALLIANCE  
(PAKURANGA TO BOTANY)

PACKAGE No. 4LT-00

NOT FOR CONSTRUCTION

Drawing Status		STAGE 1		Design Package	
Horizontal Datum		NZGD 2000 MOUNT EDEN CIRCUIT		Drawing Title	
Vertical Datum		2016 NEW ZEALAND		LIGHTING SCHEMATICS TYPICAL FOR BRIDGE / AMENITY LIGHTING	
A1 SCALE	1:500	A3 SCALE	1:1000	Drawing Number	EB-2-D-4-LT-DG-000301
					Revision
					A