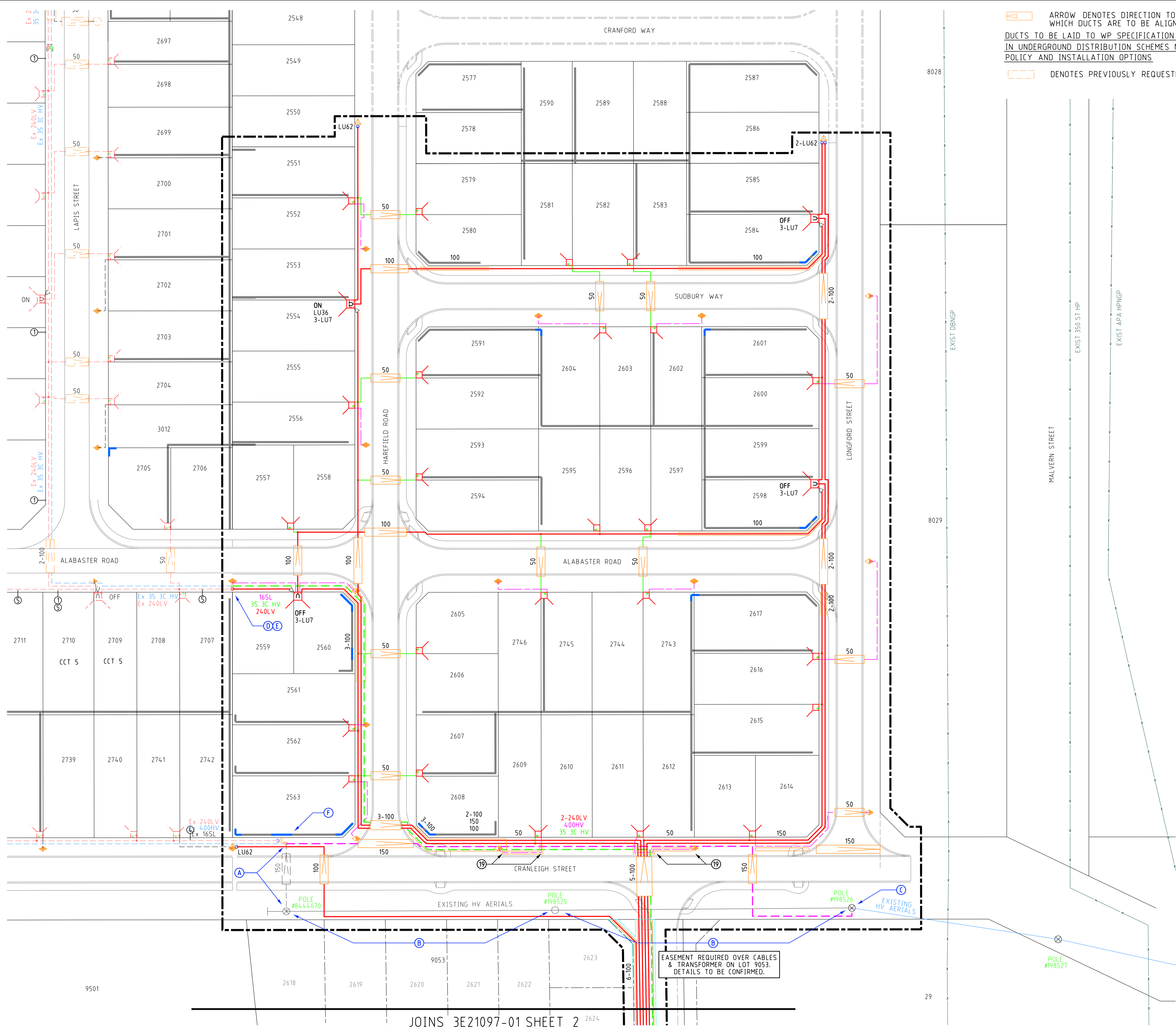


CONTRACTOR NOTES:

- DRAWING TO BE READ IN CONJUNCTION WITH CONTRACT DRAWINGS AND SPECIFICATIONS.
- ALL WORKS TO BE COMPLETED IN LINE WITH WESTERN POWER POLICIES, INCLUDING THE UDS, WADCM, DDC, DSM, DCSE, UCIM AND EARTHING FAQ. ALL MATERIALS USED MUST BE APPROVED WESTERN POWER MATERIALS.
- VERIFY ALL MATERIAL QUANTITIES AGAINST SITE CONDITIONS PRIOR TO QUOTATION AND ADVISE ELECTRICAL CONSULTANTS OF ANY VARIATIONS.
- SHOW CAUTION IN PROXIMITY TO EXISTING ASSETS. ALWAYS REFER TO CURRENT OBYD DRAWINGS. POTHOLE TO LOCATE IF NECESSARY. PROTECT SERVICES AS REQUIRED. DO NOT ENCROACH MINIMUM APPROACH DISTANCES FOR UNDERGROUND OR OVERHEAD ASSETS.
- LIAISE WITH WESTERN POWER AS REQUIRED. ORGANISE PRE-HANDOVER INSPECTION AND ENERGISATION SCHEDULE WITH ELECTRICAL SUPERINTENDENT/INSPECTOR PRIOR TO COMPLETION OF WORKS.
- CONTRACTOR TO COMPLETE & PROVIDE AS CONSTRUCTED PACKAGE AS PER UDS. ENGAGE 3E CONSULTING ENGINEERS TO DRAFT WP COMPLIANT CAD AS CON DRAWINGS. INCLUDE 3E'S COSTS FOR DRAFTING AS CON DRAWINGS IN TENDER PRICE. MAINTAIN AND PROVIDE COMPLETE, CLEAR & LEGIBLE RED-LINE AS CONSTRUCTED DRAWING MARK-UPS TO 3E CONSULTING ENGINEERS.
- MAKE ALLOWANCE FOR TERRACING OF CABLES WHERE REQUIRED, INCLUDING FOR ROAD CROSSINGS.
- CLEAN BEDDING SAND TO BE IMPORTED FOR CABLE TRENCHES WHERE EXISTING MATERIALS DO NOT MEET WP REQUIREMENTS.
- PLAN CABLE RUNS TO LIMIT THE NUMBER OF STRAIGHT JOINTS.
- COMMENCE LAYING CABLES FROM THE TRANSFORMER, SWITCHGEAR OR UNIVERSAL PILLAR.
- ALL CABLES LAID NEXT TO RETAINING WALLS TO BE IN CONDUIT. EXTEND CONDUIT 2m PAST WALL ON STRAIGHT SECTIONS.
- INSTALL HEATSHRINK "END CAP" AT ALL CABLE ENDS.
- INSTALL HEATSHRINK GLOVES ON ALL LV CABLE TERMINATION ENDS.
- STREETLIGHT POLES MUST NOT BE INSTALLED IN FOOTPATHS. PEG LOCATIONS PRIOR TO INSTALL AND NOTIFY 3E OF CLASHES IN ADVANCE.
- ERECT LIGHT POLES ONLY AFTER NEARBY EXISTING OVERHEAD POWERLINES ARE REMOVED, WHERE NOTED.
- BORE UNDER EXISTING ROADS.
- CONTRACTOR TO LEAVE SUFFICIENT CABLE COILED AT ALL INTERFACE POINTS (INCLUDING JOINTS, PILLAR TERMINATIONS & POLE TERMINATIONS) TO ALLOW WP TO COMPLETE INTERFACE WORKS. INSTALL END CAPS TO PROTECT CABLE. CONTRACTOR TO BRING NEW CABLE ADJACENT TO EXISTING CABLE AND POT-HOLE TO EXPOSE EXISTING CABLES FOR WP AT HANDOVER.
- HV FEEDER CABLES TO BE INSTALLED AT DEPTHS SHOWN IN TRENCH CROSS SECTIONS TO ALLOW FOR CLEARANCES TO OTHER AND FUTURE CABLES.
- CONTRACTOR TO INSTALL SL CABLE ON 2.7m ALIGNMENT IN HD CONDUIT

WESTERN POWER SCOPE OF WORKS

- A WP TO COST TO CUT EXISTING 400HV CABLE AT LOT 2563 AS SHOWN AND REMOVE/ABANDON REDUNDANT CABLE TO POLE #8444670.
- B WP TO COST TO REMOVE ALL AERIAL ASSETS BETWEEN POLE #8444670 AND POLE #198526. POLE #8444670 TO BE REMOVED. WP INSTALL HV TERM SELF SUPPORTING POLE AS REQUIRED AND CARRY OUT ALL ASSOCIATED WORKS.
- C WP TO COST TO TERMINATE NEW 400HV CABLE TO EXISTING POLE #198526. WP TO SUPPLY TERMINATION AND CARRY OUT ALL ASSOCIATED WORKS.
- D WP TO COST TO CARRY OUT REMOVAL OF EXISTING SEALED END AND STRAIGHT JOINT NEW 240LV CABLE TO EXISTING 240LV CABLE. WP TO EXCAVATE AND BACKFILL JOINT BAY AND SUPPLY JOINT.
- E WP TO COST TO CARRY OUT REMOVAL OF EXISTING SEALED END AND STRAIGHT JOINT NEW 35 3C HV CABLE TO EXISTING 35 3C HV CABLE. WP TO EXCAVATE AND BACKFILL JOINT BAY AND SUPPLY JOINT.
- F WP TO COST TO STRAIGHT JOINT NEW 400HV CABLE TO EXISTING 400HV CABLE. WP TO EXCAVATE AND BACKFILL JOINT BAY AND SUPPLY JOINT.



ARROW DENOTES DIRECTION TO PEG WITH WHICH DUCTS ARE TO BE ALIGNED
 DUCTS TO BE LAID TO WP SPECIFICATION AS OUTLINED IN UNDERGROUND DISTRIBUTION SCHEMES MANUAL - POLICY AND INSTALLATION OPTIONS
 DENOTES PREVIOUSLY REQUESTED DUCTS

LEGEND

SCHEME BOY:
 RETAINING WALL
 RETAINING WALL EXTRA FOOTING
 RESTRICTED ZONE
 EASEMENT

HV CABLES
 CN53 - 400mm2 (3X1c)
 CN49 - 240mm2 (3X1c)
 CN48 - 185mm2 (3X1c)
 CN50 - 95mm2 (3X1c)
 CN51 - 50mm2 (1c)
 CN46 - 35mm2 (3X1c)
 CN47 - 35mm2 (1c)
 EXISTING HV CABLES (SIZE AND TYPE INDICATED)

LV-SL CABLES
 CN45 - 240mm2 (1x3c)
 CN44 - 185mm2 (1x3c)
 CN43 - 120mm2 (1x3c)
 CN42 - 25mm2 (1x3c)
 CN41 - 16mm2 SL (1c)
 40 C PILOT
 EXISTING LV CABLES (SIZE AND TYPE INDICATED)

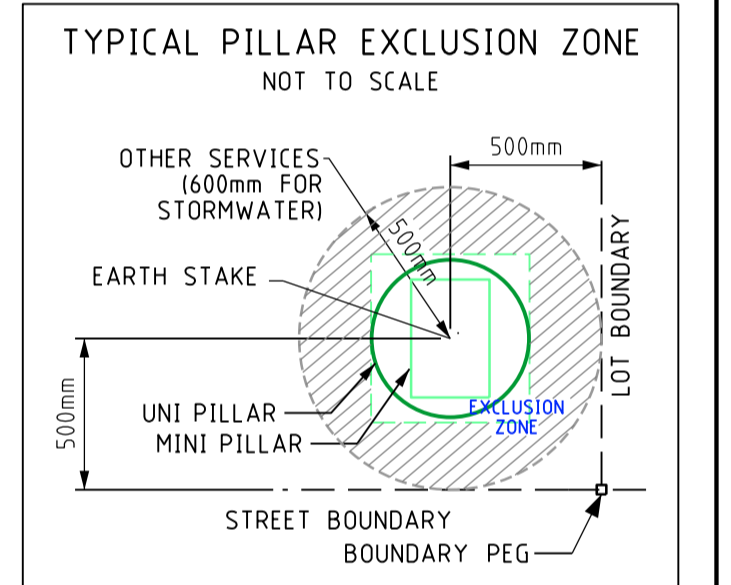
STREET LIGHTS EXISTING
 42W CFL, 70W HPS, 150W MH, 20W LED TE, 80W MV, 150W HPS, 150W MH, 53W LED TE, 125W MV, 250W HPS, 250W MH, 80W LED TE, 250W HPS AERODROME, 160W LED SE, 170W LED SE

LEGEND DEFINES TYPE & WATTAGE - NOT COLOUR

PILLARS / PITS / ETC
 MINI (WORKING END), UNIVERSAL, MINI, LINK, STANDARD WP MARKER POST, CUSTOM FOOTPATH CABLE MARKER PLATE, CONDUIT / POLY PIPE, UMS PIT, CONCRETE HW CABLE PIT, B/D - TYPE, 100/200AMP CUTOFF, SERVICED UNCLEARED DE-ENERGISED LOT

TRANSFORMER EXISTING **SWITCHGEAR**

AERIAL CONDUCTORS AND POLES
 NEW POLE (ANY TYPE AS INDICATED)
 EXISTING POLE (ANY TYPE AS INDICATED)
 HV LV EXISTING AERIAL CONDUCTORS (SIZE AND TYPE INDICATED)



REV	DESCRIPTION	DATE	DRWN	CHKD
A	ISSUED TO CLIENT FOR COMMENT	01.10.2021	TM	VH

3E CONSULTING ENGINEERS PTY LTD
 Electrical Engineering Excellence

Suite 1, Level 2, Condar Tower
 22 St George's Tce, Perth WA 6000
 PO Box 3184, East Perth WA 6892
 Tel: 08 6314 9000 Email: admin@3ecee.com.au

This document is the property of 3E Consulting Engineers Pty Ltd and may only be used in accordance with the terms of engagement for which it was commissioned. Unauthorised use of this document is prohibited. Any modification to this drawing will be subject to further technical input.

PRELIMINARY NOT FOR CONSTRUCTION

WORKING IN THE VICINITY OF EXISTING OVERHEAD DISTRIBUTION OR TRANSMISSION LINES
 REFER TO "WORKSAFE" REGULATION 344

THE LOCATION OF EXISTING SERVICES IS APPROXIMATE ONLY. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN. ALWAYS REFER TO CURRENT DATA DRAWINGS, CONFORM ASSET LOCATIONS ON SITE BEFORE COMMENCEMENT OF WORK.
 REFER TO "WORKSAFE REGULATION 321"

Scale 1:500 @ A1 Original Paper Size
 Base File Date 30.08.2021 H. Datum PCG94
 Designed: TM Drawn: TM Checked: JH Appr: JH
 Western Power Reference No. MS018382 WAPC No. 160731
 Local Authority CITY OF SWAN
 Civil Consultant TABEC

ST LEONARDS ESTATE, DAYTON - STAGE 1V
 51 RESIDENTIAL LOTS ELECTRICAL NETWORK

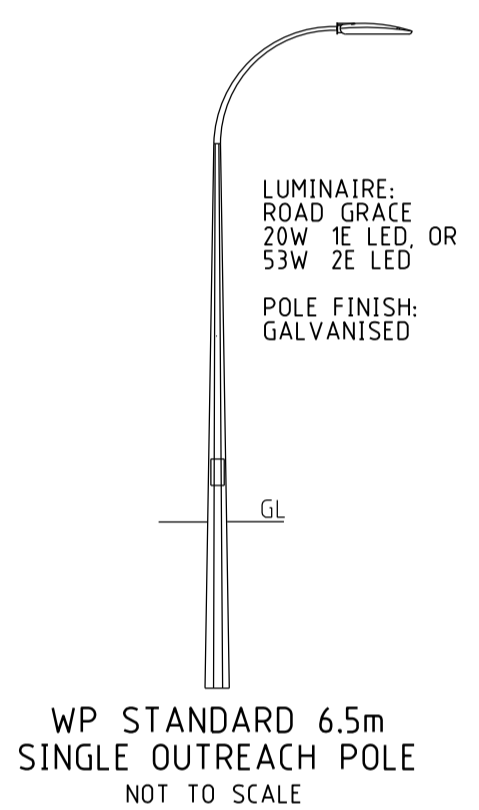
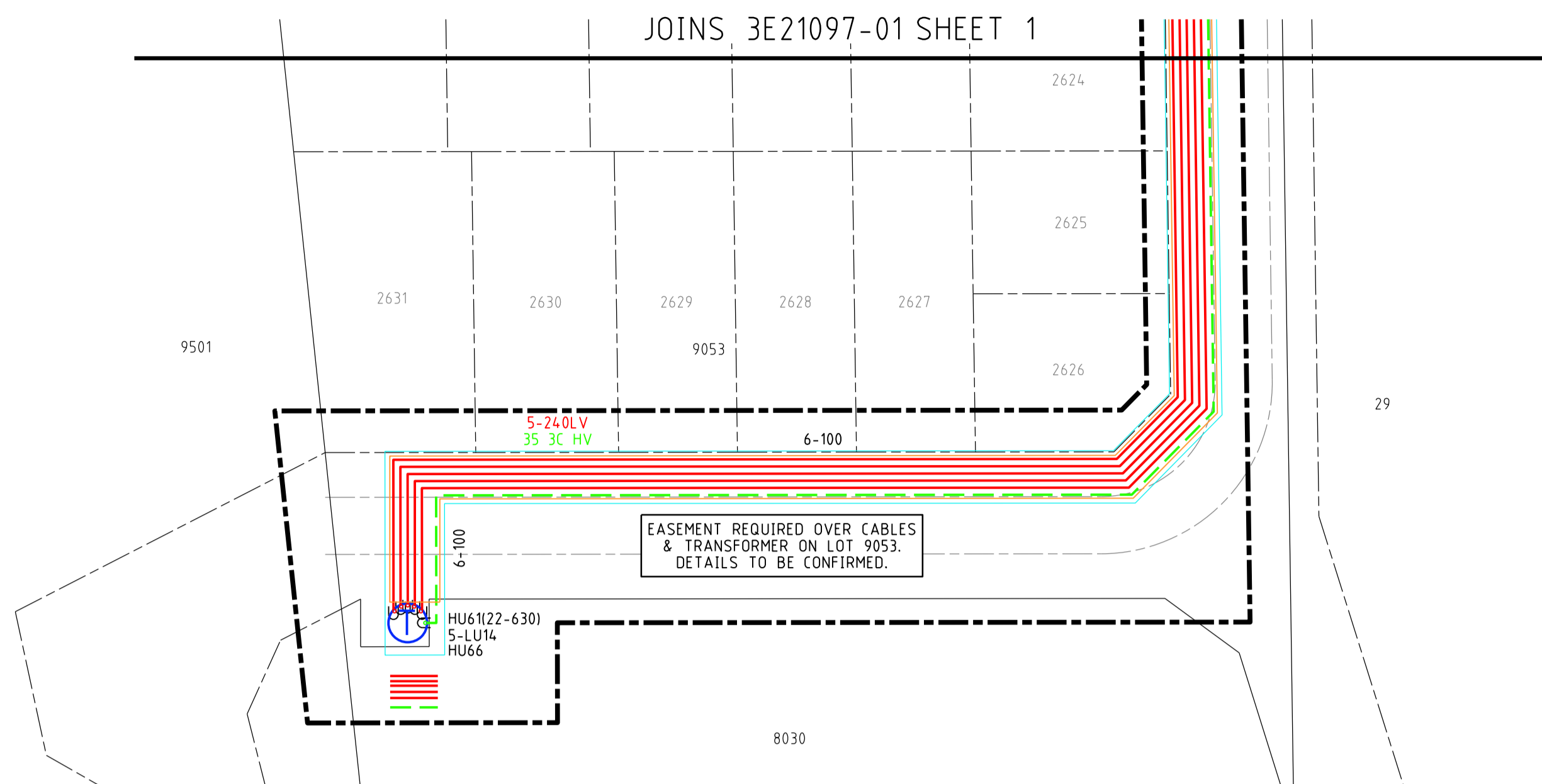
Sheet 01 of 2 3E Drawing Number 3E21097-01 Revision A

CONTRACTOR NOTES:

- DRAWING TO BE READ IN CONJUNCTION WITH CONTRACT DRAWINGS AND SPECIFICATIONS.
- ALL WORKS TO BE COMPLETED IN LINE WITH WESTERN POWER POLICIES, INCLUDING THE UDS, WADCM, DDC, DSM, DCSE, UCIM AND EARTHING FAQ. ALL MATERIALS USED MUST BE APPROVED WESTERN POWER MATERIALS.
- VERIFY ALL MATERIAL QUANTITIES AGAINST SITE CONDITIONS PRIOR TO QUOTATION AND ADVISE ELECTRICAL CONSULTANTS OF ANY VARIATIONS.
- SHOW CAUTION IN PROXIMITY TO EXISTING ASSETS. ALWAYS REFER TO CURRENT OBYD DRAWINGS. POTHOLE TO LOCATE IF NECESSARY. PROTECT SERVICES AS REQUIRED. DO NOT EXCEED MINIMUM APPROACH DISTANCES FOR UNDERGROUND OR OVERHEAD ASSETS.
- LIAISE WITH WESTERN POWER AS REQUIRED. ORGANISE PRE-HANDOVER INSPECTION AND ENERGISATION SCHEDULE WITH ELECTRICAL SUPERINTENDENT/INSPECTOR PRIOR TO COMPLETION OF WORKS.
- CONTRACTOR TO COMPLETE & PROVIDE AS CONSTRUCTED PACKAGE AS PER UDS. ENGAGE 3E CONSULTING ENGINEERS TO DRAFT WP COMPLIANT CAD AS CON DRAWINGS. INCLUDE 3E'S COSTS FOR DRAFTING AS CON DRAWINGS IN TENDER PRICE. MAINTAIN AND PROVIDE COMPLETE, CLEAR & LEGIBLE RED-LINE AS CONSTRUCTED DRAWING MARK-UPS TO 3E CONSULTING ENGINEERS.
- MAKE ALLOWANCE FOR TERRACING OF CABLES WHERE REQUIRED, INCLUDING FOR ROAD CROSSINGS.
- CLEAN BEDDING SAND TO BE IMPORTED FOR CABLE TRENCHES WHERE EXISTING MATERIALS DO NOT MEET WP REQUIREMENTS.
- PLAN CABLE RUNS TO LIMIT THE NUMBER OF STRAIGHT JOINTS.
- COMMENCE LAYING CABLES FROM THE TRANSFORMER, SWITCHGEAR OR UNIVERSAL PILLAR.
- ALL CABLES LAID NEXT TO RETAINING WALLS TO BE IN CONDUIT. EXTEND CONDUIT 2m PAST WALL ON STRAIGHT SECTIONS.
- INSTALL HEATSHRINK "END CAP" AT ALL CABLE ENDS.
- INSTALL HEATSHRINK GLOVES ON ALL LV CABLE TERMINATION ENDS.
- STREETLIGHT POLES MUST NOT BE INSTALLED IN FOOTPATHS. PEG POLES LOCATIONS PRIOR TO INSTALL AND NOTIFY 3E OF CLASHES IN ADVANCE.
- ERECT LIGHT POLES ONLY AFTER NEARBY EXISTING OVERHEAD POWERLINES ARE REMOVED, WHERE NOTED.
- BORE UNDER EXISTING ROADS.
- CONTRACTOR TO LEAVE SUFFICIENT CABLE COILED AT ALL INTERFACE POINTS (INCLUDING JOINTS, PILLAR TERMINATIONS & POLE TERMINATIONS) TO ALLOW WP TO COMPLETE INTERFACE WORKS. INSTALL END CAPS TO PROTECT CABLE. CONTRACTOR TO BRING NEW CABLE ADJACENT TO EXISTING CABLE AND POT-HOLE TO EXPOSE EXISTING CABLES FOR WP AT HANDOVER.
- HV FEEDER CABLES TO BE INSTALLED AT DEPTHS SHOWN IN TRENCH CROSS SECTIONS TO ALLOW FOR CLEARANCES TO OTHER AND FUTURE CABLES.
- CONTRACTOR TO INSTALL SL CABLE ON 2.7m ALIGNMENT IN HD CONDUIT.

WESTERN POWER SCOPE OF WORKS

- A** WP TO COST TO CUT EXISTING 400HV CABLE AT LOT 2563 AS SHOWN AND REMOVE/ABANDON REDUNDANT CABLE TO POLE #8444670.
- B** WP TO COST TO REMOVE ALL AERIAL ASSETS BETWEEN POLE #8444670 AND POLE #198526. POLE #8444670 TO BE REMOVED. WP INSTALL HV TERM SELF SUPPORTING POLE AS REQUIRED AND CARRY OUT ALL ASSOCIATED WORKS.
- C** WP TO COST TO TERMINATE NEW 400HV CABLE TO EXISTING POLE #198526. WP TO SUPPLY TERMINATION AND CARRY OUT ALL ASSOCIATED WORKS.
- D** WP TO COST TO CARRY OUT REMOVAL OF EXISTING SEALED END AND STRAIGHT JOINT NEW 240LV CABLE TO EXISTING 240LV CABLE. WP TO EXCAVATE AND BACKFILL JOINT BAY AND SUPPLY JOINT.
- E** WP TO COST TO CARRY OUT REMOVAL OF EXISTING SEALED END AND STRAIGHT JOINT NEW 35 3C HV CABLE TO EXISTING 35 3C HV CABLE. WP TO EXCAVATE AND BACKFILL JOINT BAY AND SUPPLY JOINT.
- F** WP TO COST TO STRAIGHT JOINT NEW 400HV CABLE TO EXISTING 400HV CABLE. WP TO EXCAVATE AND BACKFILL JOINT BAY AND SUPPLY JOINT.

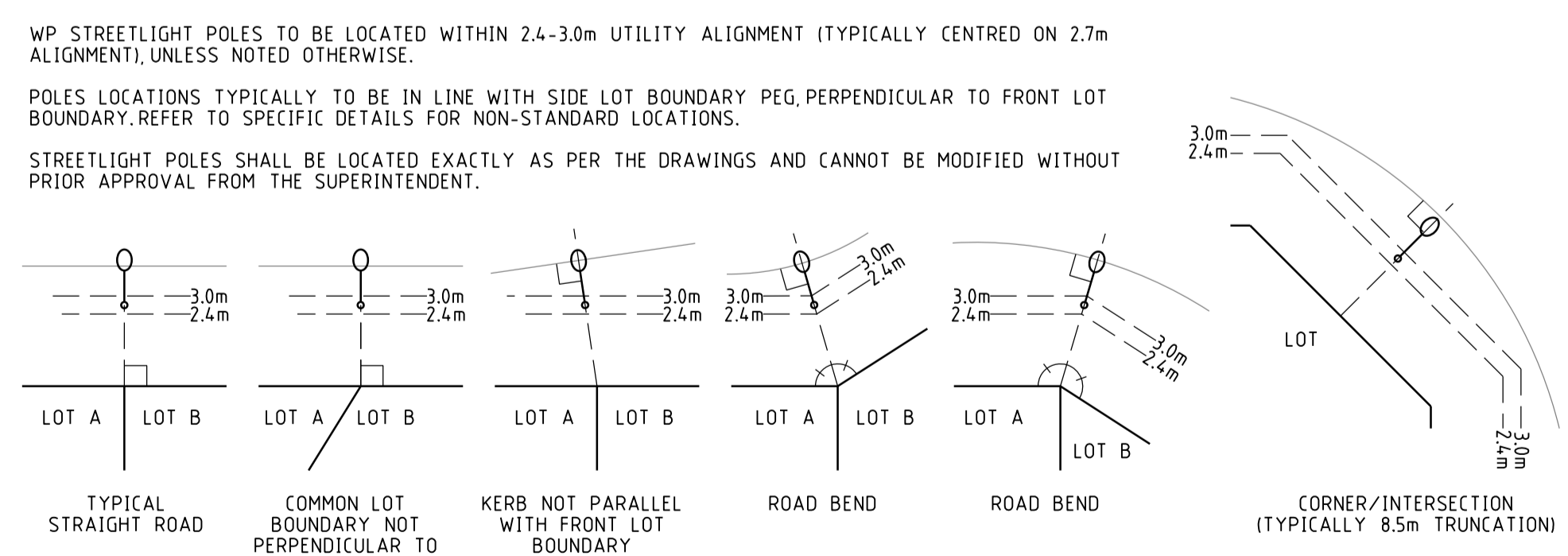


NOTE:
 6.5m STANDARD SINGLE OUTREACH POLE WITH ROAD GRACE 20W LED 1E LUMINAIRE TO BE GALVANISED
 6.5m STANDARD SINGLE OUTREACH POLE WITH ROAD GRACE 53W LED 2E LUMINAIRE TO BE GALVANISED
 ALL STREETLIGHT CABLE TO BE IN CONDUIT IF OUTSIDE WP ALIGNMENT.

NOTE: ALL UNMETERED SUPPLIES (INCLUDING CUSTOMER AND WESTERN POWER STREETLIGHTING ASSETS)

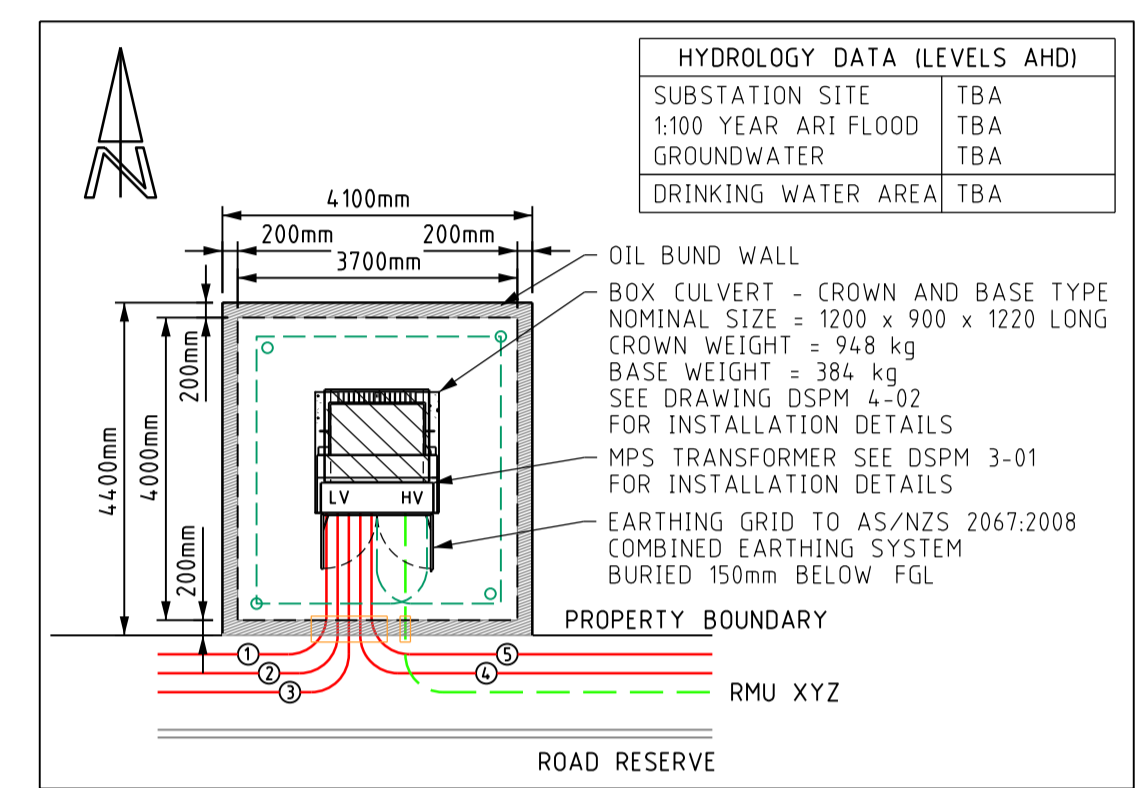
TYPE OF EQUIPMENT	NO OF UNITS	UNIT WATTAGE	TOTAL WATTAGE	DAILY HRS OPERATION	WP Asset Yes / No
6.5m WP STANDARD POLE + ROAD GRACE 20W LED 1E (3000KI) LUMINAIRE	8	20W	160W	DUSK/DAWN	YES
6.5m WP STANDARD POLE + ROAD GRACE 53W LED 2E (3000KI) LUMINAIRE	7	53W	371W	DUSK/DAWN	YES

NOTE: ALL UNMETERED SUPPLIES and STREETLIGHTS MUST BE INCLUDED IN DESIGN DRAWING



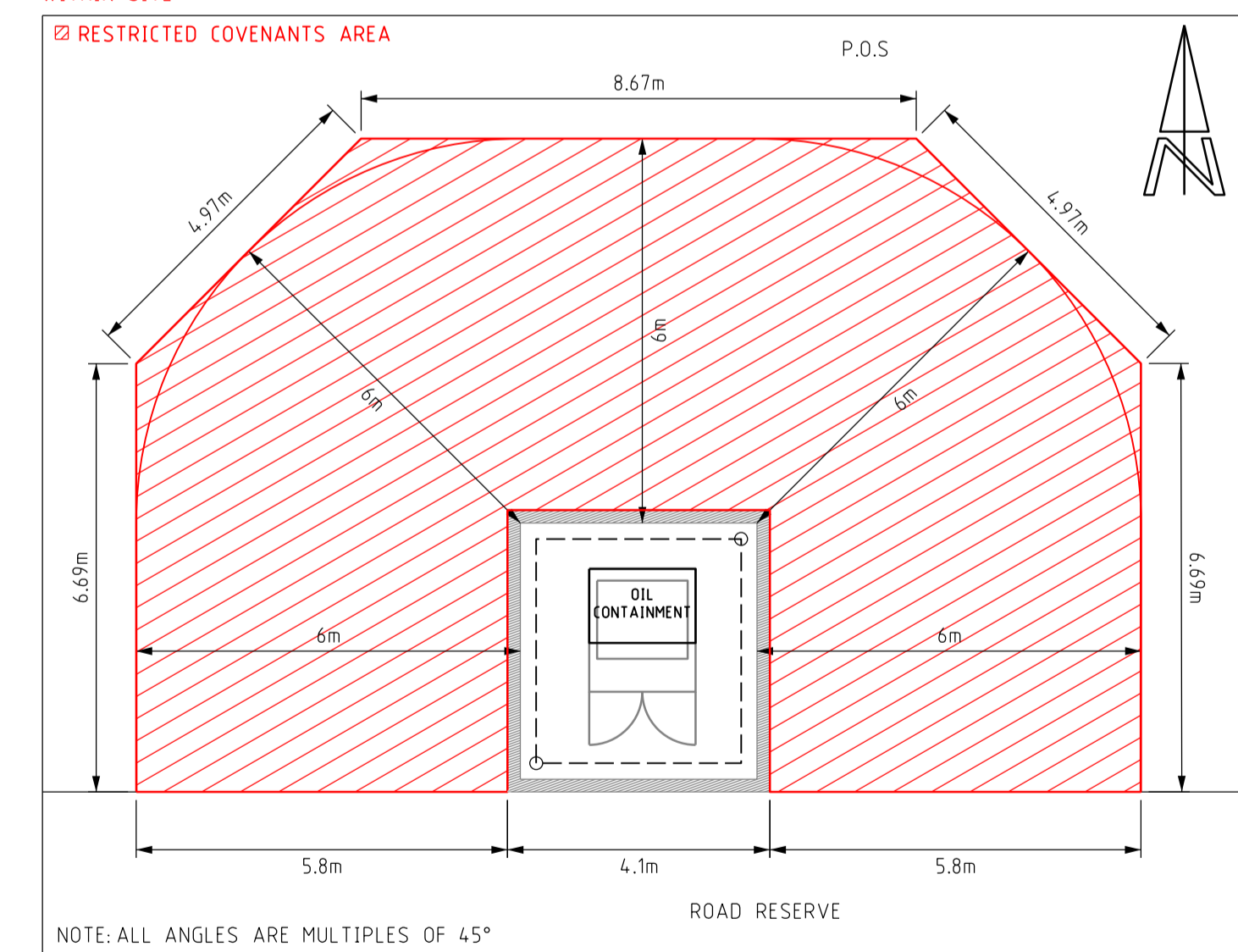
TYPICAL STREETLIGHT POLE LOCATIONS NOT TO SCALE

SUBSTATION SITE REQUIREMENTS:
 THE SUBSTATION SITE MUST BE INCORPORATED AS AN EXTENSION OF ROAD RESERVE OR POS.
 THE CONTRACTOR MUST CONSTRUCT THE SUBSTATION SITE IN LINE WITH THE CIVIL DESIGN AND WP'S REQUIREMENTS INCLUDING, BUT NOT LIMITED TO: EXCAVATING AND BACKFILLING WITH APPROPRIATE MATERIALS PROVIDING APPROVED SURFACE TREATMENTS AND MINIMUM EARTHING REQUIREMENTS.
 THE SUBSTATION LOCATION HAS BEEN CHOSEN AND DESIGNED TO MEET SPECIFIC REQUIREMENTS INCLUDING: NETWORK CIVIL EARTHING & EPR BUILDING FIRE CLEARANCES AND NOISE REQUIREMENTS. DO NOT MODIFY ANY ASPECT OF THE SUBSTATION OR THE SUBSTATION SITE INCLUDING EARTHING WITHOUT PRIOR APPROVAL OF THE SUPERINTENDENT AND ELECTRICAL ENGINEER.
 REFER TO THE LATEST VERSIONS OF WP'S UDS, WADCM, DSM, DDC AND EARTHING FAQ DOCUMENTS FOR DETAILS OF REQUIREMENTS.



TYPICAL 22kV SUBSTATION DETAIL WITH 630kVA MPS TRANSFORMER LOCATED ON POS 8030 NOT TO SCALE

129BA RESTRICTED COVENANTS REQUIRED ON LOTS ADJACENT TO SUBSTATION SITE, AS SHOWN BELOW, FOR FIRE SEPARATION AS PER UDS MANUAL AND DISTRIBUTION SUBSTATION MANUAL. COVENANTS NOT REQUIRED WHERE SUBSTATION SITE IS INSTALLED WITH SUITABLE FIRE RATED ENCLOSURE TO CONTAIN FIRE RISK WITHIN SITE.



TYPICAL 630kVA MPS TRANSFORMER RESTRICTED FIRE COVENANTS DETAIL SCALE 1:100

LEGEND

SCHEME BOY:
 RETAINING WALL
 RETAINING WALL EXTRA FOOTING
 RESTRICTED ZONE
 EASEMENT

HV CABLES
 CN53 - 400mm2 (3X1c)
 CN49 - 240mm2 (3X1c)
 CN48 - 185mm2 (3X1c)
 CN50 - 95mm2 (3X1c)
 CN51 - 50mm2 (1c)
 CN46 - 35mm2 (3X1c)
 CN47 - 35mm2 (1c)

EXISTING HV CABLES (SIZE AND TYPE INDICATED)

LV-SL CABLES
 CN45 - 240mm2 (1X3c)
 CN44 - 185mm2 (1X3c)
 CN43 - 120mm2 (1X3c)
 CN42 - 25mm2 (1X3c)
 CN41 - 16mm2 SL (1c)
 40 C PILLOT

EXISTING LV CABLES (SIZE AND TYPE INDICATED)

STREET LIGHTS EXISTING
 42W CFL, 70W HPS, 150W HPS, 150W MH, 250W HPS, 250W HPS AERODROME
 20W LED TL, 53W LED 3L, 33W LED 4L, 80W LED 4L, 160W LED 4L, 170W LED 4L

LEGEND DEFINES TYPE & WATTAGE - NOT COLOUR

PILLARS / PITS / ETC
 MINI (WORKING END), UNIVERSAL, MINI, LINK, STANDARD WP MARKER POST, CUSTOM FOOTPATH CABLE MARKER PLATE, CONDUIT / POLY PIPE, UMS PIT, CONCRETE HV CABLE PIT, P/B - TYPE, TRAFFICABLE LID RATING, 100/200AMP C/OUT, SERVICED UNCLEARED DE-ENERGISED LOT

TRANSFORMER EXISTING SWITCHGEAR
 T, S

AERIAL CONDUCTORS AND POLES
 NEW POLE (ANY TYPE AS INDICATED)
 EXISTING POLE (ANY TYPE AS INDICATED)
 HV, LV, EXISTING AERIAL CONDUCTORS (SIZE AND TYPE INDICATED)

REV	DESCRIPTION	DATE	DRWN	CHKD
A	ISSUED TO CLIENT FOR COMMENT	01.10.2021	TM	VH

3E CONSULTING ENGINEERS PTY LTD
 Electrical Engineering Excellence

Suite 1, Level 2, Condar Tower
 22 St George's Tce, Perth WA 6000
 PO Box 3184, East Perth WA 6892
 Tel: 08 6314 9000 Email: admin@3ecec.com.au

This document is the property of 3E Consulting Engineers Pty Ltd and may only be used in accordance with the terms of engagement for which it was commissioned. Unauthorised use of this document is prohibited. Any modification to this drawing will be subject to further technical input.

PRELIMINARY NOT FOR CONSTRUCTION

WORKSAFE REGULATION 344
 IF WORKING IN THE VICINITY OF EXISTING OVERHEAD DISTRIBUTION OR TRANSMISSION LINES:
 REFER TO "WORKSAFE" REGULATION 344

WORKSAFE REGULATION 321
 THE LOCATION OF EXISTING SERVICES IS APPROXIMATE ONLY. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN. ALWAYS REFER TO CURRENT LEGITIMATE DRAWINGS FOR ASSESSMENT OF THE LOCATION OF SERVICES PRIOR TO COMMENCEMENT OF WORK.
 REFER TO "WORKSAFE" REGULATION 321

Scale 1:500 @ A1 Original Paper Size
 Base File Date 30.08.2021 H. Datum PCG94
 Designed: TM Drawn: TM Checked: JH Appr: JH
 Western Power Reference No. MS018382 WAPC No. 160731
 Local Authority CITY OF SWAN
 Civil Consultant TABEC

ST LEONARDS ESTATE, DAYTON - STAGE 1V
 51 RESIDENTIAL LOTS ELECTRICAL NETWORK

Sheet 01 of 2
 3E Drawing Number 3E21097-01
 Revision A