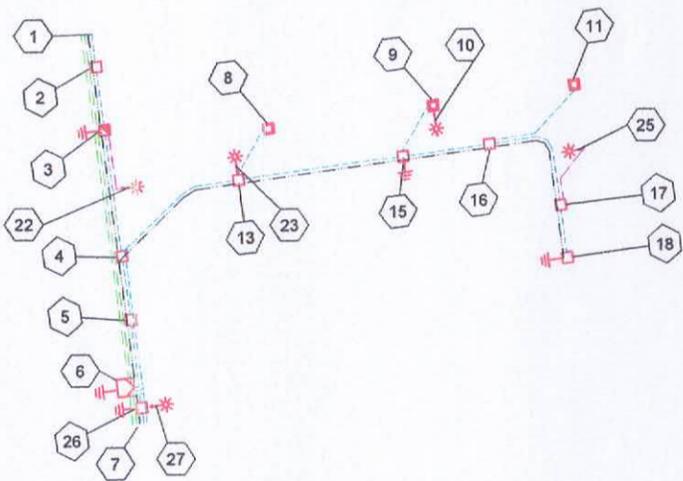


SITE PLAN



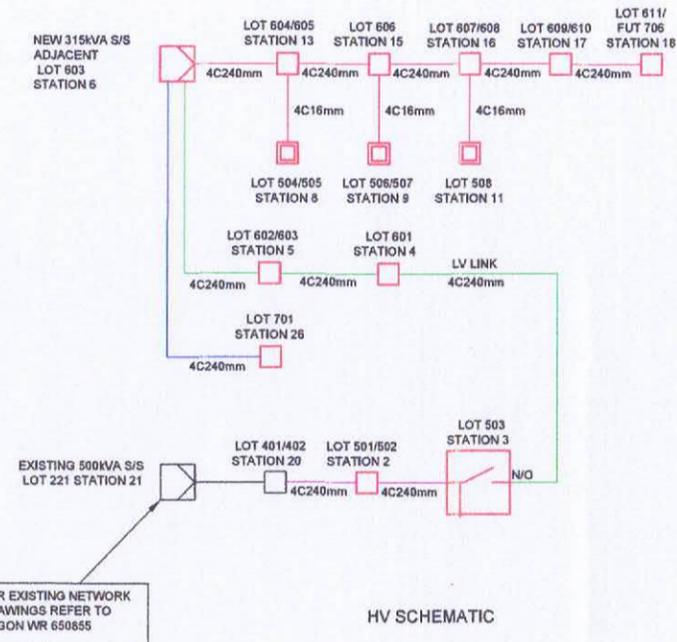
CONDUIT SCHEMATIC



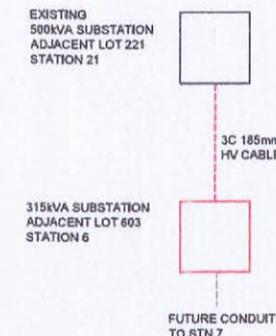
WORKPLAN NOTES

- FOR STANDARD UNDERGROUND DUCT SECTIONS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWINGS 5168.
- STANDARD TRENCH ALIGNMENT IS 0.5 TO MIDPOINT OF FIRST CONDUIT AND 1.0 METRE OFF PROPERTY ALIGNMENT SUBJECT TO LOCATION OF OTHER SERVICES. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5165 SHEETS 1 & 4, AND DRAWING 5228 FOR TRENCHES WITH NBNC CONDUITS.
- STREETLIGHT POLE FOOTINGS SHALL BE LOCATED PERPENDICULAR TO THE KERB, AT THE PROLONGATION OF THE SIDE PROPERTY BOUNDARY, UNLESS DETAILED OTHERWISE. WHERE DIMENSIONS ARE SHOWN THEY TAKE PRECEDENCE OVER GRID COORDINATES.
- ALL CONDUITS SHALL BE CONTINUOUS UNLESS DETAILS OTHERWISE.
- FOR STANDARD UDC CONSTRUCTION PRACTICES REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWINGS 5022, 5085 AND 5124.
- INSTALLATION OF PADMOUNT SUBSTATION REQUIRED IN LOT 603, STATION 6. PADMOUNT SITE 4.0m x 6.0m.
- DEVELOPER SHALL INSTALL PLINTH AND CONCRETE SURROUND. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWINGS 5117, 5118 AND 775498.
- INSTALL PADMOUNTED SUBSTATION EARTHING - COMMON EARTH ARRANGEMENT. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5123.
- THERE ARE 3x80W MV MAXI URBAN MINOR ROAD, 2x150W HPS SYLVANIA ROADSTER AEROSCREEN MAJOR ROAD STREETLIGHTS ON RATE 2.
- STREETLIGHT DESIGN TO AS1158 CATEGORY P3 TO BAUMAN WAY AND P4 TO KENDRICK CIRCUIT.
- MINOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 1200mm FOR MINOR STREETLIGHTS. REFER TO LIGHTING CONSTRUCTION MANUAL DRAWING 1-6-4-1 & 2. CENTRELINE OF STREETLIGHT POLE SHALL BE 0.9m FROM THE KERB INVERT.
- MAJOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 2250mm FOR MAJOR STREETLIGHTS. REFER TO LIGHTING CONSTRUCTION MANUAL DRAWING 1-5-8-1 TO 9 FOR SBM FOOTINGS AND 1-5-6-1 & 2 FOR BPM FOOTINGS. FOR ALL FOOTPATHS, CENTRELINE OF STREETLIGHT SHALL BE 1.2m FROM THE INVERT OF KERB AND CHANNEL.
- THE LIGHTING DESIGN INCLUDES AN ALLOWANCE FOR CONSTRUCTION TOLERANCE OF LIGHT POLES SUCH THAT ANY STREETLIGHT CAN BE POSITIONED UP TO A MAXIMUM OF ±350mm LONGITUDINALLY FROM THE POSITION SHOWN AND UP TO 100mm MAXIMUM FURTHER AWAY FROM KERB EDGE, INCLUDING POLES WITH GRID COORDINATES, AND STILL MAINTAIN COMPLIANCE.
- CONFIRM ALL CONDUIT AND CABLE LENGTHS PRIOR TO INSTALLATION.
- WHERE SHOWN, SUPPLY AND INSTALL 35mm sq ANNEALED BARE Cu EARTH AT BOTTOM OF TRENCH, IN NATURAL SOIL, BELOW BEDDING SAND, LOCATED A MINIMUM OF 50mm HORIZONTALLY TOWARDS PROPERTY BOUNDARY FROM CONDUITS (HV OR LV) INSTALLED ON PROPERTY BOUNDARY SIDE OF TRENCH. COIL 2m OF CABLE AT SPECIFIED STATIONS IN THE CONDUIT DUCTING SCHEDULE AND ALL REQUIRED JOINTS FOR CONNECTION BY ELECTRICAL CONTRACTOR.
- IN ACCORDANCE WITH ELECTRICAL SAFETY ACT, A SAFETY OBSERVER MUST BE PRESENT AT ALL TIMES WHEN WORKING IN THE VICINITY OF ENERGIZED CABLES. CONTACT ERGON ENERGY ON 131046.
- ELECTRONIC CABLE MARKERS (ECM'S) ARE TO BE SUPPLIED BY ERGON ENERGY AND ARE REQUIRED AT ENDS OF ALL SPARE CONDUITS AND AT ALL CABLE JOINTS. ECM'S SHALL BE PLACED 150mm ABOVE THE LINE OF CONDUIT FOR CABLE JOINTS AND 100mm ABOVE THE LINE OF CONDUIT FOR SPARE CONDUITS. ECM'S ARE RECOVERABLE AND SHALL BE REMOVED AND RETURNED TO ERGON ENERGY WHEN ALL SPARE CONDUIT ENDS ARE REMOVED FROM A LOCATION.
- WHERE NOTED ON DRAWING CONCRETE COVER SHALL BE INSTALLED ABOVE CONDUIT, WHERE CONDUIT BURIAL DEPTH IS LESS THAN THAT SPECIFIED IN UNDERGROUND CONSTRUCTION MANUAL DRAWING 5163. FOR FOOTPATHS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5016. FOR ROAD CROSSINGS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5017.
- SUPPLY AND INSTALL EXTRA CONDUIT BENDS TO ACHIEVE INCREASED BURIAL DEPTH AT ROAD CROSSINGS. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5022.
- INSTALL PILLAR OFFSET FROM PROPERTY BOUNDARY IN ACCORDANCE WITH DRAWING 5198.

LV SCHEMATIC



HV SCHEMATIC



FINAL AS
CONSTRUCTED

Changes Yes / No

Electrical Contractor: Civex Pty Ltd

Name: DAVID HANE

Ph: 07 32873697

Signature: *[Signature]*

Date: 4-6-2013

FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES: YES/NO

ELECTRICAL CONTRACTOR

NAME: _____

SIGNATURE: _____

DATE: _____

CIVIL RPEQ

NAME: _____

RPEQ No: _____

SIGNATURE: _____

DATE: _____

| Code | Date | Description | Revised | Code | Date | Description | Approved |
|------|----------|-----------------------|---------|------|------|-------------|----------|
| A | 20/11/12 | FOR CONSTRUCTION | AD | | | | |
| 3 | 08/10/12 | UPDATE WORKPLAN NOTES | AD | | | | |
| 2 | 20/09/12 | AMALGAMATION OF LOTS | AD | | | | |
| 1 | 06/08/12 | FOR APPROVAL | AD | | | | |

CLIENT:
URBAN LAND DEVELOPMENT AUTHORITY

PO BOX 2202
BRISBANE QLD 4001
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CIVIL ENGINEER
BORNHURST AND WARD
CONSULTING ENGINEERS

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spa
consulting engineers

Suite 7/132 Collins Avenue, Edge Hill QLD 4870
Tel: (07) 4032 3311 Fax: (07) 4032 5633
PO Box 6649 North Cairns QLD 4870
Email Address: admin@spaconsulting.com.au
A business unit of SPA Consulting Engineers (07) 4032 3311

| LEGEND | | SUBSTATION | | COMMERCIAL/ INDUSTRIAL PILLAR | |
|--------|------------------------------------|------------|---------------------|-------------------------------|-------------------------------|
| --- | CABLE EXISTING | □ | SUBSTATION | □ | COMMERCIAL/ INDUSTRIAL PILLAR |
| --- | CABLE PLANNED | ✓ | HV ISOLATING DEVICE | □ | DISTRIBUTION CABINET |
| --- | CABLE RECOVER | | LV ISOLATING DEVICE | ✱ | STREETLIGHT |
| --- | LIGHTING DUCT | □ | NORMAL PILLAR | ⊕ | EARTH |
| --- | 35mm sq ANNEALED BARE COPPER EARTH | □ | CROSS ROAD PILLAR | ⊙ | POLE |
| --- | EQUIPMENT EXISTING | □ | LINKING PILLAR | | |
| --- | EQUIPMENT RECOVER | | | | |
| --- | EQUIPMENT PLANNED | | | | |

| Drawing Title | | Date | Scale |
|--|--------------------|-------------|-----------|
| UDA BAUMAN WAY STAGE 5 & 6 UDC UG ELECTRICAL RETICULATION SITE PLAN AND SCHEMATIC DIAGRAMS | | AUGUST 2012 | 1:1000@A1 |
| Project Description | | Drawn | AD |
| UDA BAUMAN WAY BLACKWATER STAGE 5 & 6 (OLD STAGE 3) | | Approved | JE |
| ERGON Project Number | SPA Drawing Number | Revision | |
| 650859 | 2090-E01 | A | |

| CONDUIT DUCTING SCHEDULE | | | | | | | |
|--------------------------|--------|-----------------|------------------------------|------------|-----------------------|---|---|
| STN FROM | STN TO | ACTION | CONSTRUCTION CODE | LENGTH (m) | No. of LENGTHS / DRUM | BENDS (Degrees/ Radius(mm) x No.) | Remarks |
| 1 | 2 | INSTALL - CIVIL | C100L | 10 | 1.7 | 45/1200x1 | LOCATE EXISTING CAPPED LV CONDUIT AT STN 1 AND CONNECT TO NEW. |
| 2 | 3 | INSTALL - CIVIL | C100L | 18 | 3.0 | 45/1200x2 | |
| 3 | 22 | INSTALL - CIVIL | C40H | 20 | 5.0 | 90/300x2 90/600x1 | |
| 4 | 3 | INSTALL - CIVIL | C100L | 36 | 6.0 | 45/1200x2 | |
| 4 | 18 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 167 | 0.7 | | COIL 2.0M AT STN 4 AND STN 18 AND LOOP AT STN 15 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| 5 | 4 | INSTALL - CIVIL | C100L | 18 | 3.0 | 45/1200x2 | |
| 6 | 1 | INSTALL - CIVIL | C125L | 103 | 17.2 | 90/1000x1 60/1000x1 | LOCATE EXISTING CAPPED HV CONDUIT AT STN 1 AND CONNECT TO NEW. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 6 | 5 | INSTALL - CIVIL | C100L | 19 | 3.2 | 90/1000x1 45/1200x1 | REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 6 | 13 | INSTALL - CIVIL | C100L | 81 | 13.5 | 90/1000x1 45/1200x1 45/1830x1 15/1830x6 | CONCRETE ENCASEMENT REQUIRED AT STORMWATER CROSSING. REFER TO NOTE 18. CONDUIT TO EXTEND 1.0M PAST BOUNDARY TOWARD LOT 601 BEFORE CROSSING ROAD TO CO-ORDINATE WITH NBN CO. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 6 | 26 | INSTALL - CIVIL | C100L | 4 | 0.7 | 90/1000x1 45/1200x1 | REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 7 | 1 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 105 | 0.4 | | LEAVE AT THE BOTTOM OF TRENCH AT STN 7 AND STN 1 AND LOOP AT STN 3 4 AND 6 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| 7 | 1 | INSTALL - CIVIL | C125L | 107 | 17.8 | | LOCATE EXISTING CAPPED HV CONDUIT AT STN 1 AND CONNECT TO NEW. CAP HV CONDUIT AT STN 7. |
| 7 | 6 | INSTALL - CIVIL | C125L | 8 | 1.3 | 90/1000x1 60/1000x1 | CAP HV CONDUIT AT STN 7 AND STN 6. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 7 | 6 | INSTALL - CIVIL | C100L | 8 | 1.3 | 90/1000x1 | CAP LV CONDUIT AT STN 7. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 9 | 10 | INSTALL - CIVIL | C40H | 3 | 0.8 | 90/300x2 | |
| 13 | 8 | INSTALL - CIVIL | C100L | 19 | 3.2 | 90/450x2 15/1830x2 | |
| 13 | 15 | INSTALL - CIVIL | C100L | 48 | 8.0 | 45/1200x2 | |
| 13 | 23 | INSTALL - CIVIL | C40H | 3 | 0.8 | 90/300x2 | |
| 15 | 9 | INSTALL - CIVIL | C100L | 19 | 3.2 | 90/450x2 15/1830x2 | |
| 15 | 16 | INSTALL - CIVIL | C100L | 24 | 4.0 | 45/1200x2 | |
| 16 | 11 | INSTALL - CIVIL | C100L | 35 | 5.8 | 90/450x2 45/1830x1 15/1830x2 | |
| 16 | 17 | INSTALL - CIVIL | C100L | 36 | 6.0 | 45/1200x2 45/1830x1 15/1830x2 | |
| 17 | 18 | INSTALL - CIVIL | C100L | 15 | 2.5 | 45/1200x2 | |
| 17 | 25 | INSTALL - CIVIL | C40H | 19 | 4.8 | 90/300x2 90/600x1 | |
| 26 | 7 | INSTALL - CIVIL | C100L | 3 | 0.5 | 45/1200x1 | CAP LV CONDUIT AT STN 7. |
| 26 | 27 | INSTALL - CIVIL | C40H | 3 | 0.8 | 90/300x2 | |

| UNDERGROUND CABLE SCHEDULE | | | | | | | |
|----------------------------|--------|---------|---------|-------------------|--------------|--------------|--|
| STN FROM | STN TO | ACTION | VOLTAGE | CONSTRUCTION CODE | ROUTE LENGTH | CABLE LENGTH | REMARKS |
| 2 | 3 | INSTALL | 415V | LV-240C4/673 | 18 | 22 | |
| 3 | 22 | INSTALL | 240V | LVI-4CU2NS/1671 | 20 | 25 | |
| 4 | 3 | INSTALL | 415V | LV-240C4/673 | 36 | 40 | LV LINK |
| 5 | 4 | INSTALL | 415V | LV-240C4/673 | 18 | 22 | |
| 6 | 5 | INSTALL | 415V | LV-240C4/673 | 19 | 26 | |
| 6 | 13 | INSTALL | 415V | LV-240C4/673 | 81 | 88 | |
| 6 | 26 | INSTALL | 415V | LV-240C4/673 | 4 | 11 | |
| 9 | 10 | INSTALL | 240V | LVI-4CU2NS/1671 | 3 | 8 | |
| 13 | 8 | INSTALL | 415V | LV-16CUC4/614 | 19 | 23 | |
| 13 | 15 | INSTALL | 415V | LV-240C4/673 | 48 | 52 | |
| 13 | 23 | INSTALL | 240V | LVI-4CU2NS/1671 | 3 | 8 | |
| 15 | 9 | INSTALL | 415V | LV-16CUC4/614 | 19 | 23 | |
| 15 | 16 | INSTALL | 415V | LV-240C4/673 | 24 | 28 | |
| 16 | 11 | INSTALL | 415V | LV-16CUC4/614 | 35 | 39 | |
| 16 | 17 | INSTALL | 415V | LV-240C4/673 | 36 | 40 | |
| 17 | 18 | INSTALL | 415V | LV-240C4/673 | 15 | 19 | |
| 17 | 25 | INSTALL | 240V | LVI-4CU2NS/1671 | 19 | 24 | |
| 20 | 2 | INSTALL | 415V | LV-240C4/673 | 36 | 40 | FINAL TERMINATION AT STN 20 BY ERGON ENERGY. |
| 21 | 6 | INSTALL | 22kV | 22-1857/1834 | 222 | 232 | FINAL TERMINATION AT STN 21 BY ERGON ENERGY. |
| 26 | 27 | INSTALL | 240V | LVI-4CU2NS/1671 | 3 | 8 | |

| PUBLIC LIGHTING SCHEDULE | | | | | | | |
|--------------------------|------------|----------|-------------------|--------|------------------------------------|---------------------|---------|
| STN NO | SITE LABEL | ACTION | CONSTRUCTION CODE | RATE | TARIFF OWNER | MOUNTING HEIGHT (m) | REMARKS |
| 10 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 22 | | INSTALL | SL S150CA | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | |
| 23 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 25 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 27 | | INSTALL | SL S150CA | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | |
| 28 | | EXISTING | | | | | |

**FINAL AS
CONSTRUCTED**

Changes Yes/No /

Electrical Contractor: Civex Pty Ltd

Name: *Dao Hnie*

Ph: 07 32873697

Signature: *[Signature]*

Date: 4-6-2013

FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES: YES/NO

ELECTRICAL CONTRACTOR

NAME: _____

SIGNATURE: _____

DATE: _____

CIVIL RPEQ

NAME: _____

RPEQ No: _____

SIGNATURE: _____

DATE: _____

| Code | Date | Description | Revised | Code | Date | Description | Approved |
|------|----------|----------------------|---------|------|------|-------------|----------|
| A | 20/11/12 | FOR CONSTRUCTION | AD | | | | |
| 2 | 20/09/12 | AMALGAMATION OF LOTS | AD | | | | |
| 1 | 06/08/12 | FOR APPROVAL | AD | | | | |

CLIENT: URBAN LAND DEVELOPMENT AUTHORITY

PO BOX 2202 BRISBANE QLD 4001 Ph: (07) 3624 4133 Fax: _____

CIVIL ENGINEER BORNHURST AND WARD CONSULTING ENGINEERS

LEVEL 4, 67 ASTOR TERRACE SPRING HILL QLD 4000 Ph: (07) 3013 4899 Fax: _____



| LEGEND | | SUBSTATION | | COMMERCIAL/ INDUSTRIAL PILLAR | |
|--|------------------------|-----------------------|---------------------------------|-------------------------------|------------------|
| --- HV DUCT | --- CABLE EXISTING | □ SUBSTATION | □ COMMERCIAL/ INDUSTRIAL PILLAR | □ DISTRIBUTION CABINET | □ STREETLIGHT |
| --- LV DUCT | --- CABLE PLANNED | ✓ HV ISOLATING DEVICE | □ HV ISOLATING DEVICE | □ EARTH | □ POLE |
| --- LIGHTING DUCT | --- CABLE RECOVER | □ LV ISOLATING DEVICE | □ NORMAL PILLAR | □ CROSS ROAD PILLAR | □ LINKING PILLAR |
| --- 35mm sq ANNEALED BARE COPPER EARTH | --- EQUIPMENT EXISTING | □ EQUIPMENT EXISTING | □ EQUIPMENT RECOVER | | |
| | --- EQUIPMENT PLANNED | | | | |

| Drawing Title | | Date | Scale | Drawn | Approved |
|---|--|----------------------|--------------------|----------|----------|
| UDA BAUMAN WAY STAGE 5 & 6 UDC UG ELECTRICAL RETICULATION SCHEDULES | | AUGUST 2012 | NTS | AD | JE |
| Project Description | | ERGON Project Number | SPA Drawing Number | Revision | |
| UDA BAUMAN WAY BLACKWATER STAGE 5 & 6 (OLD STAGE 3) | | 650859 | 2090-E02 | A | |

FINAL AS CONSTRUCTED

Changes Yes / NO

Electrical Contractor: Civex Pty Ltd

Name: DAVID HANE

Ph: 07 32873697

Signature: [Signature]

Date: 4-6-2013

| STN NO | SITE LABEL | POLE ALIGNMENT | POLE SETTING DEPTH | ACTION | CONSTRUCTION CLASS | CONSTRUCTION CODE | DRAWING NUMBER | POSITION ON POLE | REMARKS |
|--------|------------|----------------|--------------------|-----------------|------------------------------|------------------------|----------------|------------------|--|
| 2 | 10352246 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | |
| 3 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 3 | 10352246 | | | INSTALL | PILLAR | LV PL2/6S/240 | 5042 | | |
| 4 | 10352247 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | |
| 5 | 10352248 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | |
| 6 | | | | INSTALL | EARTH | E PM22/COM | 5123 | | |
| 6 | | | | INSTALL | HV CABLE TERMINATION | 22 CTC/FGA/185T | 5044 | | |
| 6 | | | | INSTALL | LV CABLE TERMINATION | LV CT PM22/240 | 5087 | | LV TERMINATION FOR STN 6 TO STN 5 CABLE. |
| 6 | | | | INSTALL | LV CABLE TERMINATION | LV CT PM22/240 | 5087 | | LV TERMINATION FOR STN 6 TO STN 26 CABLE. |
| 6 | | | | INSTALL | LV CABLE TERMINATION | LV CT PM22/240 | 5087 | | LV TERMINATION FOR STN 6 TO STN 13 CABLE. |
| 6 | 10352244 | | | INSTALL | SUBSTATION FOUNDATION | PMRF 22/41/8 | 5118 | | |
| 6 | 601672 | | | INSTALL | SUBSTATION INC HV SWITCHGEAR | PMR 22/3/41 FGA 21 | 5105 | | |
| 8 | 10352250 | | | INSTALL | PILLAR | LV PX6/16CU | 5041 | | |
| 9 | 10352251 | | | INSTALL | PILLAR | LV PX6S/16CU | 5041 | | |
| 10 | 10352258 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | |
| 11 | 10352252 | | | INSTALL | PILLAR | LV PX6/16CU | 5041 | | |
| 13 | 10352253 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | |
| 15 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 15 | 10352254 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | |
| 16 | 10352255 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 607. REFER TO NOTE 20. |
| 17 | 10352296 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 610. REFER TO NOTE 20. |
| 18 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 18 | 10352257 | | | INSTALL | PILLAR | LV PN1/6/240 | 5025 | | INSTALL PILLAR OFFSET TOWARDS LOT FUTURE 706. REFER TO NOTE 20. |
| 20 | | | | EXISTING | EARTH | | | | |
| 20 | | | | EXISTING | PILLAR | | | | |
| 20 | | | | INSTALL - ERGON | PILLAR UPGRADE | LV PNU1-2/240 | 5074 | | ERGON ENERGY TO UPGRADE TO TWO-WAY PILLAR. |
| 21 | | | | EXISTING | EARTH | | | | |
| 21 | | | | INSTALL - ERGON | HV CABLE TERMINATION | 22 CTC/FGA/185T | 5044 | | HV TERMINATION FOR STN 21 TO STN 6 CABLE. |
| 21 | | | | EXISTING | SUBSTATION FOUNDATION | | | | |
| 21 | | | | EXISTING | SUBSTATION INC HV SWITCHGEAR | | | | |
| 22 | 10352262 | | | INSTALL | POLE | SL BPM/105/1 30/UG C11 | 1-5-6-1 & 2 | | INSTALL POLE 0.5M OFFSET FROM PROPERTY BOUNDARY TOWARD LOT 503 FOR CO-ORDINATION WITH WATER. |
| 23 | 10352259 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | |
| 25 | 10352260 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | INSTALL POLE 2.90M FROM THE EDGE OF ADJACENT CAR PARK. |
| 26 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 26 | 10352249 | | | INSTALL | PILLAR | LV PN1/6S/240 | 5025 | | TO BE UPGRADED TO TWO-WAY PILLAR IN FUTURE STAGE. |
| 27 | 10352261 | | | INSTALL | POLE | SL BPM/105/1 30/UG C11 | 1-5-6-1 & 2 | | |
| 28 | | | | EXISTING | POLE | | | | |

FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES: YES/NO

ELECTRICAL CONTRACTOR

NAME: _____

SIGNATURE: _____

DATE: _____

CIVIL RPEQ

NAME: _____

RPEQ No: _____

SIGNATURE: _____

DATE: _____

| Code | Date | Description | Revised | Code | Date | Description | Approved |
|------|----------|----------------------|---------|------|------|-------------|----------|
| B | 14/12/12 | SITE LABELS ADDED | AD | | | | |
| A | 20/11/12 | FOR CONSTRUCTION | AD | | | | |
| 2 | 20/09/12 | AMALGAMATION OF LOTS | AD | | | | |
| 1 | 06/08/12 | FOR APPROVAL | AD | | | | |

CLIENT: URBAN LAND DEVELOPMENT AUTHORITY

PO BOX 2202
BRISBANE QLD 4001
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CIVIL ENGINEER
BORNHURST AND WARD
CONSULTING ENGINEERS
LEVEL 4, 67 ASTOR TERRACE
SPRING HILL QLD 4000
Ph: (07) 3013 4699 Fax



LEGEND

--- CABLE EXISTING
--- CABLE PLANNED
--- CABLE RECOVER
--- LIGHTING DUCT
--- 35mm sq ANNEALED BARE COPPER EARTH

--- HV DUCT
--- LV DUCT

--- EQUIPMENT EXISTING
--- EQUIPMENT RECOVER
--- EQUIPMENT PLANNED

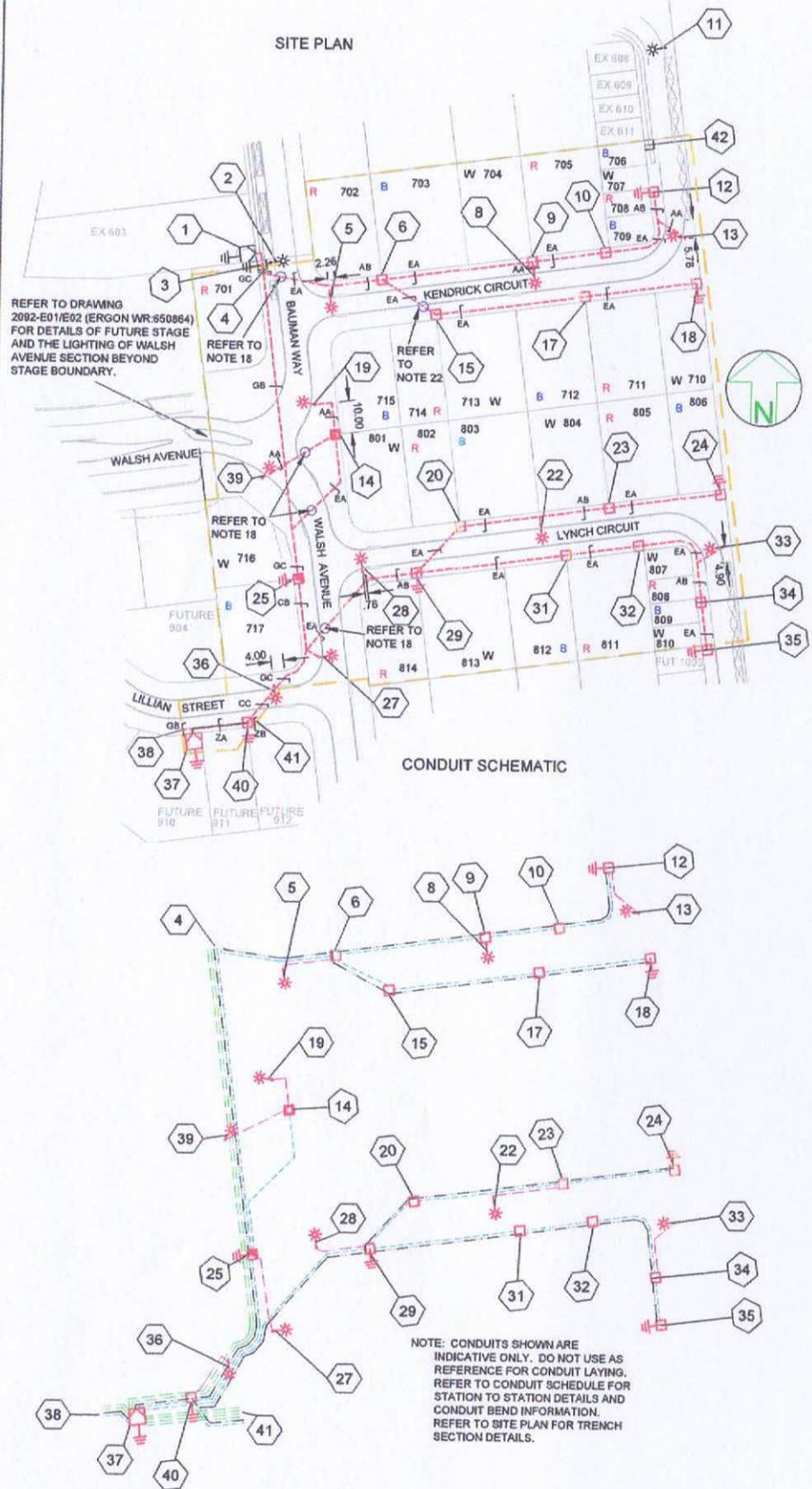
□ SUBSTATION
✓ HV ISOLATING DEVICE
| LV ISOLATING DEVICE
□ NORMAL PILLAR
□ CROSS ROAD PILLAR
□ LINKING PILLAR

□ COMMERCIAL/ INDUSTRIAL PILLAR
□ DISTRIBUTION CABINET
* STREETLIGHT
⊕ EARTH
⊙ POLE

Drawing Title
UDA BAUMAN WAY STAGE 5 & 6
UDC UG ELECTRICAL RETICULATION
CONSTRUCTION SCHEDULE

Project Description
UDA BAUMAN WAY
BLACKWATER STAGE 5 & 6 (OLD STAGE 3)

| | |
|----------------------|-------------|
| Date | AUGUST 2012 |
| Scale | NTS |
| Drawn | AD |
| Approved | JE |
| ERCON Project Number | 650859 |
| SPA Drawing Number | 2090-E03 |
| Revision | B |



REFER TO DRAWING 2092-E01/E02 (ERGN WR 650864) FOR DETAILS OF FUTURE STAGE AND THE LIGHTING OF WALSH AVENUE SECTION BEYOND STAGE BOUNDARY.

REFER TO NOTE 18

REFER TO NOTE 22

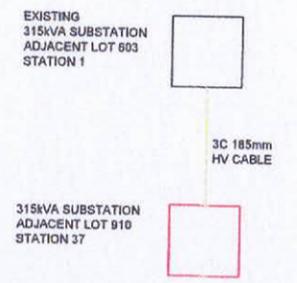
REFER TO NOTE 18

REFER TO NOTE 18

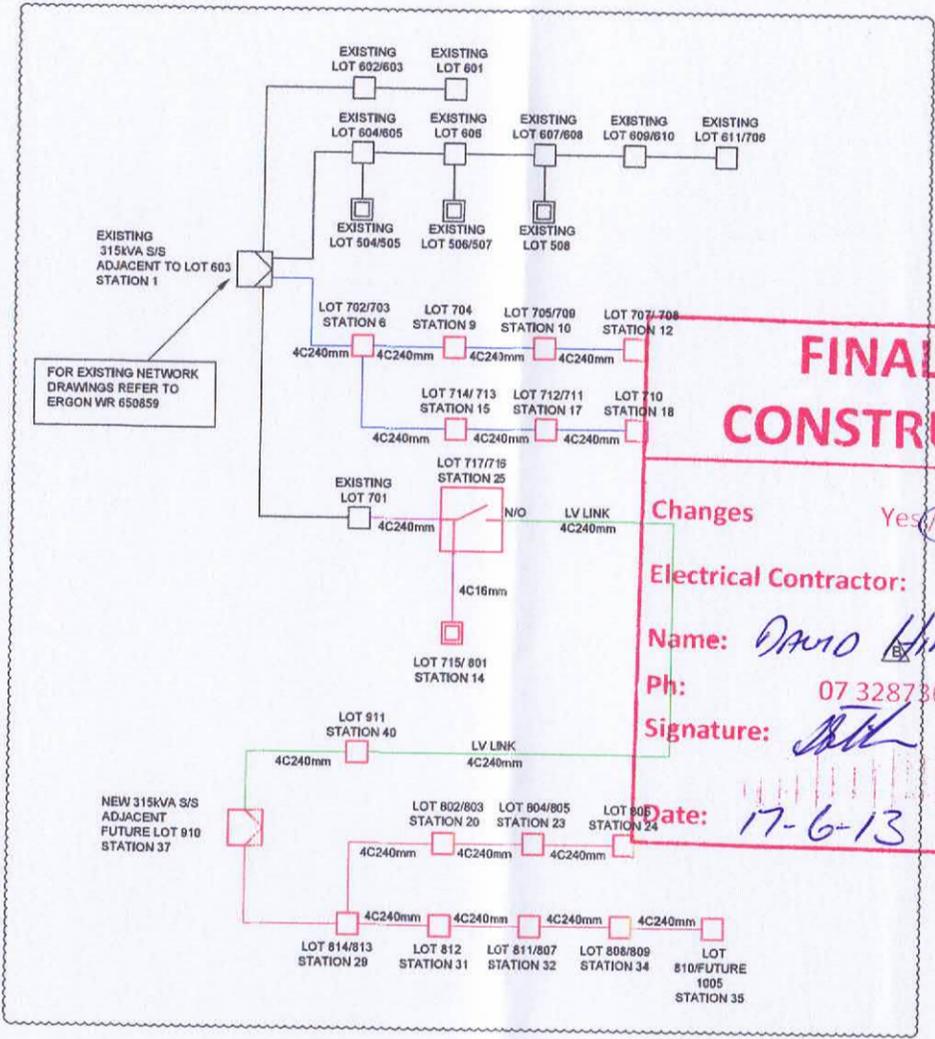
CONDUIT SCHEMATIC

NOTE: CONDUITS SHOWN ARE INDICATIVE ONLY. DO NOT USE AS REFERENCE FOR CONDUIT LAYING. REFER TO CONDUIT SCHEDULE FOR STATION TO STATION DETAILS AND CONDUIT BEND INFORMATION. REFER TO SITE PLAN FOR TRENCH SECTION DETAILS.

HV SCHEMATIC



LV SCHEMATIC



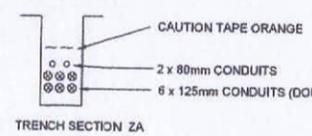
FINAL AS CONSTRUCTED

Changes Yes/No
 Electrical Contractor: Civex Pty Ltd
 Name: *DAMO HINE*
 Ph: 07 32873697
 Signature: *[Signature]*
 Date: 17-6-13

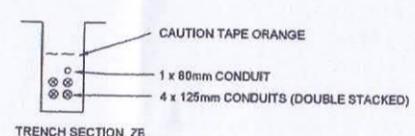
WORKPLAN NOTES

- FOR STANDARD UNDERGROUND DUCT SECTIONS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5166.
- STANDARD TRENCH ALIGNMENT IS 0.5 TO THE CENTRELINE OF THE FIRST CONDUIT TO 1.0 METRE OFF PROPERTY ALIGNMENT SUBJECT TO LOCATION OF OTHER SERVICES. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5165 SHEETS 1 & 4, AND DRAWING 5228 FOR TRENCHES WITH NBINC CONDUITS.
- STREETLIGHT POLE FOOTINGS SHALL BE LOCATED PERPENDICULAR TO THE KERB, AT THE PROLONGATION OF THE SIDE PROPERTY BOUNDARY, UNLESS DETAILED OTHERWISE. WHERE DIMENSIONS ARE SHOWN THEY TAKE PRECEDENCE OVER GRID COORDINATES.
- ALL CONDUITS SHALL BE CONTINUOUS UNLESS DETAILS OTHERWISE.
- FOR STANDARD UDC CONSTRUCTION PRACTICES REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWINGS 5022, 5065 AND 5124.
- INSTALLATION OF PADMOUNT SUBSTATION REQUIRED IN LOT 810, STATION 37. PADMOUNT SITE 4.0m x 6.0m.
- DEVELOPER SHALL INSTALL PLINTH AND CONCRETE SURROUND. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWINGS 5117 AND 5118.
- INSTALL PADMOUNTED SUBSTATION EARTHING - COMMON EARTH ARRANGEMENT. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5123.
- THERE ARE 7x80W MV MAXI URBAN MINOR ROAD, 3x150W HPS SYLVANIA ROADSTER AEROSCREEN MAJOR ROAD STREETLIGHTS ON RATE 2.
- STREETLIGHT DESIGN TO AS1158 CATEGORY P3 TO BAUMAN WAY AND WALSH AVENUE (20mmRR) AND P4 TO KENDRICK CIRCUIT AND LYNCH CIRCUIT.
- MINOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 1200mm FOR MINOR STREETLIGHTS. REFER TO LIGHTING CONSTRUCTION MANUAL DRAWING 1-6-4-1 & 2. CENTRELINE OF STREETLIGHT POLE SHALL BE 0.9m FROM THE KERB INVERT.
- MAJOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 2250mm FOR MAJOR STREETLIGHTS. REFER TO LIGHTING CONSTRUCTION MANUAL DRAWING 1-5-6-1 & 2 FOR BPM FOOTINGS. FOR ALL FOOTPATHS, CENTRELINE OF STREETLIGHT SHALL BE 1.2m FROM THE INVERT OF KERB AND CHANNEL.
- THE LIGHTING DESIGN INCLUDES AN ALLOWANCE FOR CONSTRUCTION TOLERANCE OF LIGHT POLES SUCH THAT ANY STREETLIGHT CAN BE POSITIONED UP TO A MAXIMUM OF ±350mm LONGITUDINALLY FROM THE POSITION SHOWN AND UP TO 100mm MAXIMUM FURTHER AWAY FROM KERB EDGE, INCLUDING POLES WITH GRID COORDINATES, AND STILL MAINTAIN COMPLIANCE.
- CONFIRM ALL CONDUIT AND CABLE LENGTHS PRIOR TO INSTALLATION.
- WHERE SHOWN, SUPPLY AND INSTALL 35mm sq ANNEALED BARE Cu EARTH AT BOTTOM OF TRENCH, IN NATURAL SOIL, BELOW BEDDING SAND, LOCATED A MINIMUM OF 50mm HORIZONTALLY TOWARDS PROPERTY BOUNDARY FROM CONDUITS (HV OR LV) INSTALLED ON PROPERTY BOUNDARY SIDE OF TRENCH. COIL 2m OF CABLE AT SPECIFIED STATIONS IN THE CONDUIT DUCTING SCHEDULE AND ALL REQUIRED JOINTS FOR CONNECTION BY ELECTRICAL CONTRACTOR.
- IN ACCORDANCE WITH ELECTRICAL SAFETY ACT, A SAFETY OBSERVER MUST BE PRESENT AT ALL TIMES WHEN WORKING IN THE VICINITY OF ENERGIZED CABLES. CONTACT ERGN ENERGY ON 131046.
- ELECTRONIC CABLE MARKERS (ECM'S) ARE TO BE SUPPLIED BY ELECTRICAL CONTRACTOR AND ARE REQUIRED AT ENDS OF ALL SPARE CONDUITS AND AT ALL CABLE JOINTS. ECM'S SHALL BE PLACED 150mm ABOVE THE LINE OF CONDUIT FOR CABLE JOINTS AND 100mm ABOVE THE LINE OF CONDUIT FOR SPARE CONDUITS. ECM'S ARE RECOVERABLE AND SHALL BE REMOVED AND RETURNED TO ERGN ENERGY WHEN ALL SPARE CONDUIT ENDS ARE REMOVED FROM A LOCATION.
- WHERE NOTED ON DRAWING CONCRETE COVER SHALL BE INSTALLED ABOVE CONDUIT, WHERE CONDUIT BURIAL DEPTH IS LESS THAN THAT SPECIFIED IN UNDERGROUND CONSTRUCTION MANUAL DRAWING 5163. FOR FOOTPATHS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5016. FOR ROAD CROSSINGS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5017.
- SUPPLY AND INSTALL EXTRA CONDUIT BENDS TO ACHIEVE INCREASED BURIAL DEPTH AT ROAD CROSSINGS. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5022.
- INSTALL PILLAR OFFSET FROM PROPERTY BOUNDARY IN ACCORDANCE WITH DRAWING 5196.
- ZA DENOTES TRENCH SECTION - 6 x HV CONDUITS AND 2 x LV CONDUITS.
- WHERE NOTED ON DRAWING, CONDUIT TO BE ROUTED UNDER STORMWATER PIPE.
- ZB DENOTES TRENCH SECTION - 4 x HV CONDUITS AND 1 x LV CONDUIT.

'Z' TRENCH SECTIONS



'Z' TRENCH SECTIONS



FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES: YES/NO

ELECTRICAL CONTRACTOR
 NAME: *DAMO HINE (CIVEX)*
 SIGNATURE: *[Signature]*
 DATE: 17-6-13

CIVIL CONTRACTOR
 NAME: _____
 SIGNATURE: _____
 DATE: _____

| Code | Date | Description | Revised | Code | Date | Description |
|------|----------|--|---------|------|------|-------------|
| B | 11/04/13 | ADD EXISTING STNS TO LV SCHEMATIC FOR CONSTRUCTION | AD | | | |
| A | 15/01/13 | MOVE STN 12 AND STN 34 | AD | | | |
| 4 | 15/01/13 | 2 EXTRA HV CONDUITS ADDED | AD | | | |
| 3 | 14/11/12 | 2 EXTRA HV CONDUITS ADDED | AD | | | |
| 2 | 20/09/12 | MODIFIED AS PER LOT AMALGAMATION | SW | | | |
| 1 | 15/08/12 | FOR APPROVAL | AD | | | |

CLIENT: URBAN LAND DEVELOPMENT AUTHORITY

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CIVIL ENGINEER
 BORNHURST AND WARD
 CONSULTING ENGINEERS
 LEVEL 4, 67 ASTOR TERRACE
 SPRING HILL QLD 4000
 Ph: (07) 3013 4899 Fax: _____

spa
 consulting engineers
 Suite 7/132 Collins Avenue, Edge Hill QLD 4870
 Tel: (07) 4032 3311 Fax: (07) 4032 5633
 PO Box 664N North Calma QLD 4870
 Email Address: admin@spaconsltd.com.au
 A member of SPA Consulting Engineers (02) Ph: 02 8766 8488

LEGEND

- CABLE EXISTING
- CABLE PLANNED
- CABLE RECOVER
- EQUIPMENT EXISTING
- EQUIPMENT RECOVER
- EQUIPMENT PLANNED
- HV DUCT
- LV DUCT
- LIGHTING DUCT
- 35mm sq ANNEALED BARE COPPER EARTH

- SUBSTATION
- ✓ HV ISOLATING DEVICE
- I LV ISOLATING DEVICE
- NORMAL PILLAR
- CROSS ROAD PILLAR
- LINKING PILLAR
- COMMERCIAL/ INDUSTRIAL PILLAR
- DISTRIBUTION CABINET
- * STREETLIGHT
- ⊥ EARTH
- ⊙ POLE

Drawing Title
 UDA BAUMAN WAY STAGE 7 & 8
 UDC UG ELECTRICAL RETICULATION
 SITE PLAN AND SCHEMATIC DIAGRAMS

Project Description
 UDA BAUMAN WAY
 BLACKWATER STAGE 7 & 8 (OLD STAGE 4)

| Date | Scale | Drawn | Approved | ERGN Project Number | SPA Drawing Number | Revision |
|-------------|-----------|-------|----------|---------------------|--------------------|----------|
| AUGUST 2012 | 1:1000@A1 | AD | JE | 650862 | 2091-E01 | B |

| STN NO | SITE LABEL | POLE ALIGNMENT | POLE SETTING DEPTH | ACTION | CONSTRUCTION CLASS | CONSTRUCTION CODE | DRAWING NUMBER | POSITION ON POLE | REMARKS |
|--------|------------|----------------|--------------------|-----------------|------------------------------|-----------------------|----------------|------------------|--|
| 1 | | | | EXISTING | EARTH | | | | |
| 1 | | | | INSTALL - ERGON | HV CABLE TERMINATION | 22 CTC/FGA/185T | 5044 | | HV TERMINATION FOR STN 1 TO STN 37 CABLE. |
| 1 | | | | INSTALL - ERGON | LV CABLE TERMINATION | LV CT PM22/240 | 5087 | | LV TERMINATION FOR STN 1 TO STN 8 CABLE. |
| 1 | | | | EXISTING | SUBSTATION FOUNDATION | | | | |
| 1 | | | | EXISTING | SUBSTATION INC HV SWITCHGEAR | | | | |
| 2 | | | | EXISTING | POLE | | | | |
| 3 | | | | EXISTING | EARTH | | | | |
| 3 | | | | EXISTING | PILLAR | | | | POS LOT 701. |
| 3 | | | | INSTALL - ERGON | PILLAR UPGRADE | LV PNU1-2/240 | 5074 | | TO BE UPGRADED TO TWO-WAY PILLAR BY ERGON ENERGY. |
| 5 | 10441219 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | INSTALL POLE 2.26M OFFSET FROM PROPERTY BOUNDARY TRUNCATION. |
| 6 | 10441206 | | | INSTALL | PILLAR | LV PN3/6S/240 | 5027 | | |
| 8 | 10441224 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | |
| 9 | 10441205 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | |
| 10 | 10441204 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 705. REFER TO NOTE 20. |
| 11 | | | | EXISTING | POLE | | | | |
| 12 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 12 | 10441203 | | | INSTALL | PILLAR | LV PN1/6S/240 | 5025 | | INSTALL PILLAR OFFSET TOWARDS LOT 708. REFER TO NOTE 20. |
| 13 | 10441220 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | INSTALL POLE OFFSET 5.78M FROM EDGE OF CAR PARK. ADDITIONAL 32AMP STREETLIGHT FUSE REQUIRED. |
| 14 | 10441202 | | | INSTALL | PILLAR | LV PX/6S/16CU | 5041 | | |
| 15 | 10441207 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | |
| 17 | 10441208 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | |
| 18 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 18 | 10441209 | | | INSTALL | PILLAR | LV PN1/6/240 | 5025 | | INSTALL PILLAR OFFSET TOWARDS LOT 710. REFER TO NOTE 20. |
| 19 | 10441226 | | | INSTALL | POLE | SL BPM/105/1 30UG C11 | 1-5-6-1 & 2 | | INSTALL POLE OFFSET 10.0M TOWARDS LOT 715. |
| 20 | 10441212 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | |
| 22 | 10441221 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | |
| 23 | 10441211 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | |
| 24 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 24 | 10441210 | | | INSTALL | PILLAR | LV PN1/6/240 | 5025 | | INSTALL PILLAR OFFSET TOWARDS LOT 806. REFER TO NOTE 20. |
| 25 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 25 | 10441201 | | | INSTALL | PILLAR | LV PL2/6S/240 | 5042 | | |
| 27 | 10441228 | | | INSTALL | POLE | SL BPM/105/1 30UG C11 | 1-5-6-1 & 2 | | INSTALL POLE PERPENDICULAR TO PROPERTY BOUNDARY TRUNCATION. |
| 28 | 10441222 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | INSTALL POLE OFFSET 0.78 FROM PROPERTY BOUNDARY TRUNCATION. |
| 29 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 29 | 10441213 | | | INSTALL | PILLAR | LV PN3/6S/240 | 5027 | | |
| 31 | 10441214 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | |
| 32 | 10441215 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 811. REFER TO NOTE 20. |
| 33 | 10441225 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | INSTALL POLE OFFSET 4.90M FROM EDGE OF CAR PARK. |
| 34 | 10441216 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 809. REFER TO NOTE 20. |
| 35 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 35 | 10441217 | | | INSTALL | PILLAR | LV PN1/6/240 | 5025 | | INSTALL PILLAR OFFSET TOWARDS FUTURE LOT 1005. REFER TO NOTE 20. |
| 36 | 10441223 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | INSTALL POLE OFFSET 4.0M FROM PROPERTY BOUNDARY TRUNCATION. |
| 37 | | | | INSTALL | EARTH | E PM22/COM | 5123 | | |
| 37 | | | | INSTALL | HV CABLE TERMINATION | 22 CTC/FGA/185T | 5044 | | HV TERMINATION FOR STN 37 TO STN 1 CABLE. |
| 37 | | | | INSTALL | LV CABLE TERMINATION | LV CT PM22/240 | 5087 | | LV TERMINATION FOR STN 37 TO STN 29 CABLE. |
| 37 | | | | INSTALL | LV CABLE TERMINATION | LV CT PM22/240 | 5087 | | LV TERMINATION FOR STN 37 TO STN 40 CABLE. |
| 37 | 10441200 | | | INSTALL | SUBSTATION FOUNDATION | PMRF 22/41/8 | 5118 | | |
| 37 | 803708 | | | INSTALL | SUBSTATION INC HV SWITCHGEAR | PMR 22/3/41 FGA 21 | 5105 | | |
| 39 | 10441227 | | | INSTALL | POLE | SL BPM/105/1 30UG C11 | 1-5-6-1 & 2 | | INSTALL LIGHT POLE PERPENDICULAR TO BAUMAN WAY CENTRE LINE. |
| 40 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 40 | 10441218 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | TO BE UPGRADED TO THREE-WAY PILLAR IN FUTURE STAGE. |
| 42 | | | | EXISTING | PILLAR | | | | POS LOT 706. |

| STN NO | SITE LABEL | ACTION | CONSTRUCTION CODE | RATE | TARIFF OWNER | MOUNTING HEIGHT (m) | REMARKS |
|--------|------------|----------|-------------------|--------|------------------------------------|---------------------|---------|
| 2 | | EXISTING | | | | | |
| 5 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 8 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 11 | | EXISTING | | | | | |
| 13 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 19 | | INSTALL | SL S150CA | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | |
| 22 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 27 | | INSTALL | SL S150CA | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | |
| 28 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 33 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 36 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 39 | | INSTALL | SL S150CA | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | |

**FINAL AS
CONSTRUCTED**

Changes Yes No

Electrical Contractor: **Civex Pty Ltd**

Name: *David Hine*

Ph: **07 32873697**

Signature: *[Signature]*

Date: **17-6-13**

FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES: YES

ELECTRICAL CONTRACTOR

NAME: *DAVID HINE (CIVEX)*

SIGNATURE: *[Signature]*

DATE: **17-6-13**

CIVIL CONTRACTOR

NAME: _____

SIGNATURE: _____

DATE: _____

| Code | Date | Description | Revised | Code | Date | Description | Approved |
|------|----------|----------------------------------|---------|------|------|-------------|----------|
| B | 11/04/13 | SITE LABELS ADDED | AD | | | | |
| A | 15/01/13 | FOR CONSTRUCTION | AD | | | | |
| 3 | 15/01/13 | ADDED NOTES TO STN 12 AND STN 34 | AD | | | | |
| 2 | 20/09/12 | MODIFIED AS PER LOT AMALGAMATION | SW | | | | |
| 1 | 15/08/12 | FOR APPROVAL | AD | | | | |

CLIENT:
URBAN LAND DEVELOPMENT AUTHORITY

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CIVIL ENGINEER
BORNHURST AND WARD
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spa
consulting engineers

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Email Address - admin@spaconslting.com.au
A business unit of SPA Consulting Engineers (Pty) Ltd. U.S. 1/16 441418

| LEGEND | | | |
|--------|------------------------------------|---|-------------------------------|
| ----- | CABLE EXISTING | □ | SUBSTATION |
| ----- | CABLE PLANNED | ✓ | HV ISOLATING DEVICE |
| ----- | CABLE RECOVER | I | LV ISOLATING DEVICE |
| ----- | EQUIPMENT EXISTING | □ | NORMAL PILLAR |
| ----- | EQUIPMENT RECOVER | □ | CROSS ROAD PILLAR |
| ----- | EQUIPMENT PLANNED | □ | LINKING PILLAR |
| ----- | 35mm sq ANNEALED BARE COPPER EARTH | □ | COMMERCIAL/ INDUSTRIAL PILLAR |
| ----- | | □ | DISTRIBUTION CABINET |
| ----- | | □ | STREETLIGHT |
| ----- | | □ | EARTH |
| ----- | | ○ | POLE |

| Drawing Title | Date | AUGUST 2012 |
|--|--------------------|-------------|
| UDA BAUMAN WAY STAGE 7 & 8 UDC UG ELECTRICAL RETICULATION SCHEDULES (1 of 2) | Scale | NTS |
| Project Description | Drawn | AD |
| UDA BAUMAN WAY BLACKWATER STAGE 7 & 8 (OLD STAGE 4) | Approved | JE |
| ERDGN Project Number | BPA Drawing Number | Revision |
| 650862 | 2091-E02 | B |

| Rev Date | CONDUIT DUCTING SCHEDULE | | | | | | | |
|----------|--------------------------|--------|-----------------|------------------------------|------------|-----------------------|---|---|
| 16-05-12 | STN FROM | STN TO | ACTION | CONSTRUCTION CODE | LENGTH (m) | No. of LENGTHS / DRUM | BENDS (Degrees/ Radius(mm) x No.) | Remarks |
| | 4 | 6 | INSTALL - CIVIL | C100L | 39 | 6.5 | 45/1200x1 45/1830x1 15/1830x5 | LOCATE EXISTING CAPPED LV CONDUIT AT STN 4 AND CONNECT TO NEW. CONCRETE ENCASEMENT REQUIRED AT STORMWATER CROSSING. REFER TO NOTE 18. |
| | 4 | 12 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 143 | 0.6 | | LEAVE AT THE BOTTOM OF TRENCH AT STN 4 AND COIL 2.0M AT STN 12 AND LOOP AT STN 6 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| | 4 | 25 | INSTALL - CIVIL | C100L | 97 | 16.2 | 45/1200x1 15/1830x4 | LOCATE EXISTING CAPPED LV CONDUIT AT STN 4 AND CONNECT TO NEW. |
| | 4 | 37 | INSTALL - CIVIL | C125L | 171 | 28.5 | 90/1000x1 60/1000x1 45/1830x2 30/1830x3 15/1830x4 | LOCATE EXISTING CAPPED HV CONDUIT AT STN 4 AND CONNECT TO NEW. CAP AT STN 37. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| | 4 | 37 | INSTALL - CIVIL | C125L | 171 | 28.5 | 90/1000x1 60/1000x1 45/1830x2 30/1830x3 15/1830x4 | LOCATE EXISTING CAPPED HV CONDUIT AT STN 4 AND CONNECT TO NEW. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| | 6 | 5 | INSTALL - CIVIL | C40H | 19 | 4.8 | 90/300x2 90/600x1 | |
| | 6 | 9 | INSTALL - CIVIL | C100L | 48 | 8.0 | 45/1200x2 | |
| | 6 | 15 | INSTALL - CIVIL | C100L | 21 | 3.5 | 45/1200x2 15/1830x4 | CONDUIT TO BE ROUTED UNDER STORMWATER PIPE. REFER TO NOTE 22. |
| | 9 | 8 | INSTALL - CIVIL | C40H | 3 | 0.8 | 90/300x2 | |
| | 9 | 10 | INSTALL - CIVIL | C100L | 24 | 4.0 | 45/1200x2 | |
| | 10 | 12 | INSTALL - CIVIL | C100L | 36 | 6.0 | 45/1200x2 45/1830x1 30/1830x1 15/1830x1 | |
| | 12 | 13 | INSTALL - CIVIL | C40H | 19 | 4.8 | 90/300x2 90/600x1 | |
| | 14 | 19 | INSTALL - CIVIL | C40H | 16 | 4.0 | 90/300x2 90/600x1 | |
| | 14 | 39 | INSTALL - CIVIL | C40H | 27 | 6.8 | 90/300x2 | CONCRETE ENCASEMENT REQUIRED AT STORMWATER CROSSING. REFER TO NOTE 18. |
| | 15 | 17 | INSTALL - CIVIL | C100L | 48 | 8.0 | 45/1200x2 | |
| | 17 | 18 | INSTALL - CIVIL | C100L | 36 | 6.0 | 45/1200x2 | |
| | 18 | 6 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 91 | 0.4 | | COIL 2.0M AT STN 6 AND STN 18 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| | 20 | 23 | INSTALL - CIVIL | C100L | 48 | 8.0 | 45/1200x2 | |
| | 23 | 22 | INSTALL - CIVIL | C40H | 25 | 6.3 | 90/300x2 90/600x1 | |
| | 23 | 24 | INSTALL - CIVIL | C100L | 36 | 6.0 | 45/1200x2 | |
| | 25 | 14 | INSTALL - CIVIL | C100L | 51 | 8.5 | 90/450x2 45/1830x2 15/1830x3 | CONCRETE ENCASEMENT REQUIRED AT STORMWATER CROSSING. REFER TO NOTE 18. |
| | 25 | 27 | INSTALL - CIVIL | C40H | 27 | 6.8 | 90/300x2 90/600x1 | |
| | 29 | 20 | INSTALL - CIVIL | C100L | 21 | 3.5 | 45/1200x2 15/1830x2 | |
| | 29 | 24 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 91 | 0.4 | | COIL 2.0M AT STN 24 AND STN 29 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| | 29 | 28 | INSTALL - CIVIL | C40H | 18 | 4.5 | 90/300x2 90/600x1 | |
| | 29 | 31 | INSTALL - CIVIL | C100L | 48 | 8.0 | 45/1200x2 | |
| | 31 | 32 | INSTALL - CIVIL | C100L | 24 | 4.0 | 45/1200x2 | |
| | 32 | 34 | INSTALL - CIVIL | C100L | 33 | 5.5 | 45/1200x2 45/1830x1 30/1830x1 15/1830x1 | |
| | 34 | 33 | INSTALL - CIVIL | C40H | 19 | 4.8 | 90/300x2 90/600x1 | |
| | 34 | 35 | INSTALL - CIVIL | C100L | 18 | 3.0 | 45/1200x2 | |
| | 35 | 40 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 198 | 0.8 | | COIL 2.0M AT STN 35 AND STN 40 AND LOOP AT STN 29 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| | 37 | 29 | INSTALL - CIVIL | C100L | 94 | 15.7 | 90/1000x1 45/1200x1 30/1830x5 15/1830x7 | CONCRETE ENCASEMENT REQUIRED AT STORMWATER CROSSING. REFER TO NOTE 18. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| | 37 | 38 | INSTALL - CIVIL | C125L | 3 | 0.5 | 90/1000x1 60/1000x1 | CAP HV CONDUIT AT STN 38 AND STN 37. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| | 37 | 38 | INSTALL - CIVIL | C100L | 3 | 0.5 | 90/1000x1 | CAP LV CONDUIT AT STN 38 AND STN 37. |
| | 37 | 38 | INSTALL - CIVIL | C125L | 3 | 0.5 | 90/1000x1 60/1000x1 | CAP HV CONDUIT AT STN 38 AND STN 37. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| | 37 | 40 | INSTALL - CIVIL | C100L | 16 | 3.0 | 90/1000x1 45/1200x1 | REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| | 37 | 41 | INSTALL - CIVIL | C125L | 20 | 3.3 | 90/1000x1 60/1000x1 | CAP HV CONDUIT AT STN 41 AND STN 37. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| | 37 | 41 | INSTALL - CIVIL | C125L | 20 | 3.3 | 90/1000x1 60/1000x1 | CAP HV CONDUIT AT STN 41 AND STN 37. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| | 37 | 41 | INSTALL - CIVIL | C125L | 20 | 3.3 | 90/1000x1 60/1000x1 | CAP HV CONDUIT AT STN 41 AND STN 37. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| | 40 | 4 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 151 | 0.6 | | LEAVE AT THE BOTTOM OF TRENCH AT STN 4 AND COIL 2.0M AT STN 40 AND LOOP AT STN 25 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| | 40 | 25 | INSTALL - CIVIL | C100L | 53 | 8.8 | 45/1200x2 30/1830x3 15/1830x5 | |
| | 40 | 36 | INSTALL - CIVIL | C40H | 14 | 3.5 | 90/300x2 | |
| | 40 | 41 | INSTALL - CIVIL | C100L | 3 | 0.5 | 45/1200x1 | CAP LV CONDUIT AT STN 41. |
| | 41 | 38 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 24 | 0.1 | | LEAVE AT THE BOTTOM OF TRENCH AT STN 38 AND STN 41 AND LOOP AT STN 37 AND STN 40 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |

| Rev Date | UNDERGROUND CABLE SCHEDULE | | | | | | | |
|----------|----------------------------|--------|---------|---------|-------------------|--------------|--------------|---|
| 11-6-12 | STN FROM | STN TO | ACTION | VOLTAGE | CONSTRUCTION CODE | ROUTE LENGTH | CABLE LENGTH | REMARKS |
| | 1 | 6 | INSTALL | 415V | LV-240C4673 | 46 | 53 | FINAL TERMINATION AT STN 1 BY ERGON ENERGY. |
| | 1 | 37 | INSTALL | 22kV | 22-185T/1834 | 177 | 167 | FINAL TERMINATION AT STN 1 BY ERGON ENERGY. |
| | 3 | 25 | INSTALL | 415V | LV-240C4673 | 101 | 105 | FINAL TERMINATION AT STN 3 BY ERGON ENERGY. |
| | 6 | 5 | INSTALL | 240V | LVI-4CU2NS/1671 | 19 | 24 | |
| | 6 | 9 | INSTALL | 415V | LV-240C4673 | 48 | 52 | |
| | 6 | 15 | INSTALL | 415V | LV-240C4673 | 21 | 26 | |
| | 9 | 8 | INSTALL | 240V | LVI-4CU2NS/1671 | 3 | 8 | |
| | 9 | 10 | INSTALL | 415V | LV-240C4673 | 24 | 28 | |
| | 10 | 12 | INSTALL | 415V | LV-240C4673 | 36 | 40 | |
| | 12 | 13 | INSTALL | 240V | LVI-4CU2NS/1671 | 19 | 24 | |
| | 14 | 19 | INSTALL | 240V | LVI-16CU2NS/1672 | 16 | 21 | |
| | 14 | 39 | INSTALL | 240V | LVI-16CU2NS/1672 | 27 | 32 | |
| | 15 | 17 | INSTALL | 415V | LV-240C4673 | 48 | 52 | |
| | 17 | 18 | INSTALL | 415V | LV-240C4673 | 36 | 40 | |
| | 20 | 23 | INSTALL | 415V | LV-240C4673 | 48 | 52 | |
| | 23 | 22 | INSTALL | 240V | LVI-4CU2NS/1671 | 25 | 30 | |
| | 23 | 24 | INSTALL | 415V | LV-240C4673 | 36 | 40 | |
| | 25 | 14 | INSTALL | 415V | LV-16CUC4/614 | 51 | 55 | |
| | 25 | 27 | INSTALL | 240V | LVI-16CU2NS/1672 | 27 | 32 | |
| | 29 | 20 | INSTALL | 415V | LV-240C4673 | 21 | 25 | |
| | 29 | 28 | INSTALL | 240V | LVI-4CU2NS/1671 | 18 | 23 | |
| | 29 | 31 | INSTALL | 415V | LV-240C4673 | 48 | 52 | |
| | 31 | 32 | INSTALL | 415V | LV-240C4673 | 24 | 28 | |
| | 32 | 34 | INSTALL | 415V | LV-240C4673 | 33 | 37 | |
| | 34 | 33 | INSTALL | 240V | LVI-4CU2NS/1671 | 19 | 24 | |
| | 34 | 35 | INSTALL | 415V | LV-240C4673 | 18 | 22 | |
| | 37 | 29 | INSTALL | 415V | LV-240C4673 | 94 | 101 | |
| | 37 | 40 | INSTALL | 415V | LV-240C4673 | 18 | 25 | |
| | 40 | 25 | INSTALL | 415V | LV-240C4673 | 53 | 60 | LV LINK CABLE. |
| | 40 | 36 | INSTALL | 240V | LVI-4CU2NS/1671 | 14 | 19 | |

FINAL AS
CONSTRUCTED

Changes Yes/No Yes No

Electrical Contractor: **Civex Pty Ltd**

Name: *David Hine*

Ph: 07 32873697

Signature: *[Signature]*

Date: 17-6-13

FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES: YES NO

ELECTRICAL CONTRACTOR
NAME: *David Hine (Civex)*
SIGNATURE: *[Signature]*
DATE: 17-6-13

CIVIL CONTRACTOR
NAME: _____
SIGNATURE: _____
DATE: _____

| Code | Date | Description | Revised | Code | Date | Description | Approved |
|------|----------|----------------------------------|---------|------|------|-------------|----------|
| A | 15/01/13 | FOR CONSTRUCTION | AD | | | | |
| 4 | 15/01/13 | CHANGE TO CABLE SIZES | AD | | | | |
| 3 | 14/11/12 | 2 EXTRA HV CONDUITS ADDED | AD | | | | |
| 2 | 20/09/12 | MODIFIED AS PER LOT AMALGAMATION | SW | | | | |
| 1 | 15/08/12 | FOR APPROVAL | AD | | | | |

CLIENT:
URBAN LAND DEVELOPMENT AUTHORITY

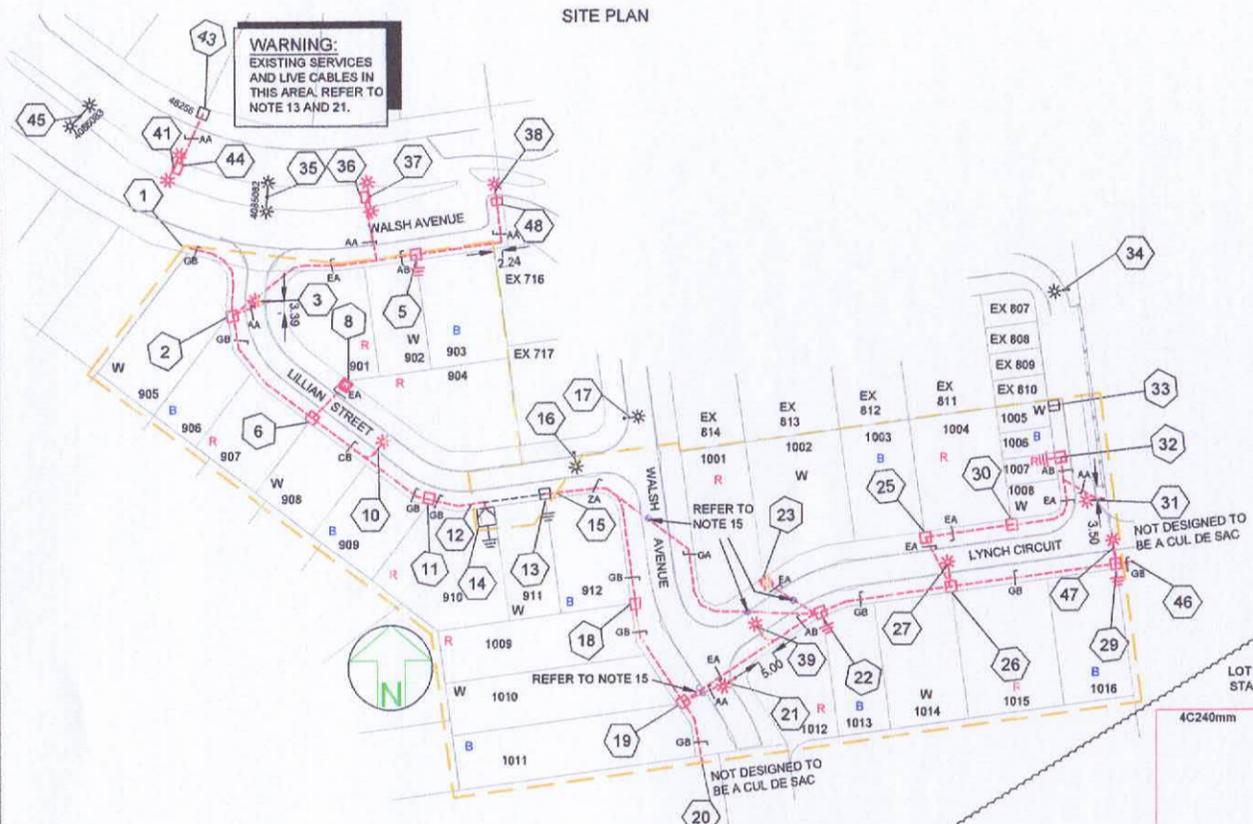
PO BOX 2202
BRISBANE QLD 4001
Ph: (07) 3524 4133

CIVIL ENGINEER
BORNHURST AND WARD
CONSULTING ENGINEERS
LEVEL 4, 67 ASTOR TERRACE
SPRING HILL QLD 4000
Ph: (07) 3013 4600



| LEGEND | |
|--------|------------------------------------|
| ----- | CABLE EXISTING |
| ----- | CABLE PLANNED |
| ----- | CABLE RECOVER |
| ----- | EQUIPMENT EXISTING |
| ----- | EQUIPMENT RECOVER |
| ----- | EQUIPMENT PLANNED |
| ----- | HV DUCT |
| ----- | LV DUCT |
| ----- | LIGHTING DUCT |
| ----- | 35mm sq ANNEALED BARE COPPER EARTH |
| □ | SUBSTATION |
| ✓ | HV ISOLATING DEVICE |
| | LV ISOLATING DEVICE |
| □ | NORMAL PILLAR |
| □ | CROSS ROAD PILLAR |
| □ | LINKING PILLAR |
| □ | COMMERCIAL/ INDUSTRIAL PILLAR |
| □ | DISTRIBUTION CABINET |
| * | STREETLIGHT |
| → | EARTH |
| ⊙ | POLE |

| Drawing Title | | Date |
|--|--|--------------|
| UDA BAUMAN WAY STAGE 7 & 8 UDC UG ELECTRICAL RETICULATION SCHEDULES (2 of 2) | | AUGUST 2012 |
| Project Description | | Scale: HTS |
| UDA BAUMAN WAY BLACKWATER STAGE 7 & 8 (OLD STAGE 4) | | Drawn: AD |
| ERSON Project Number: 650862 | | Approved: JE |
| SPA Drawing Number: 2091-E03 | | Revision: A |



**FINAL AS
CONSTRUCTED**

Changes Yes / No

Electrical Contractor: Civex Pty Ltd

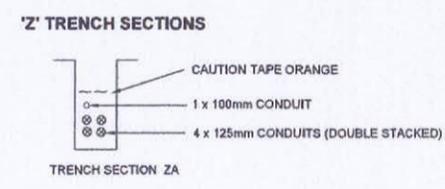
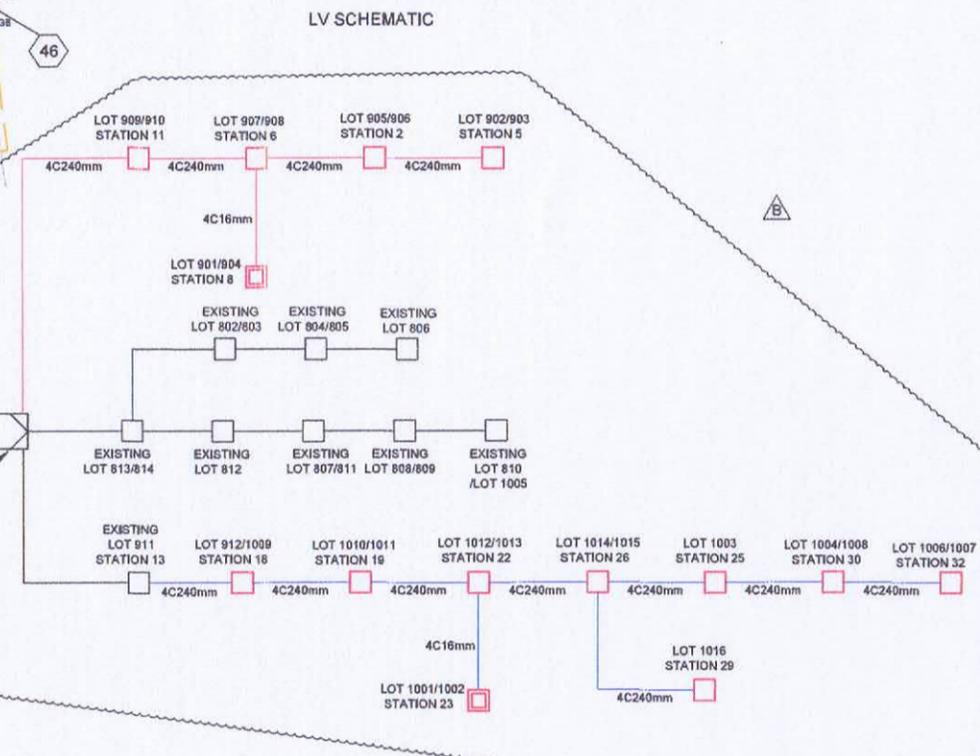
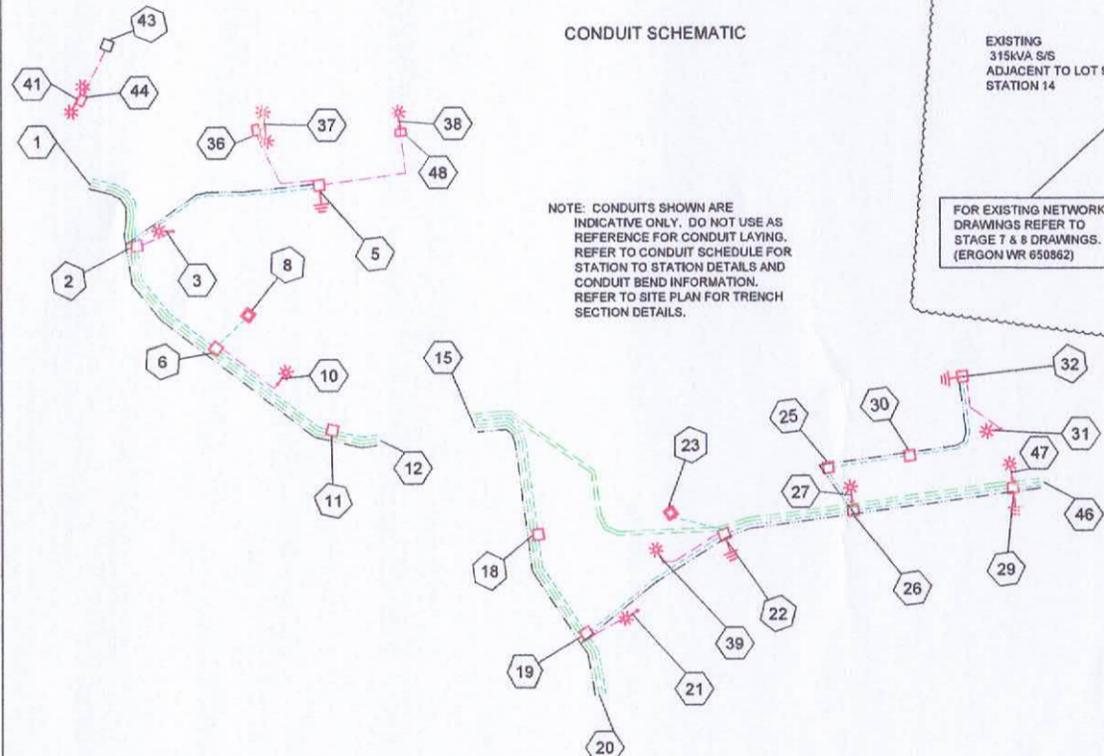
Name: *David Hine*

Ph: 07 32873697

Signature: *[Signature]*

Date: 18-6-2013

- WORKPLAN NOTES**
- FOR STANDARD UNDERGROUND DUCT SECTIONS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5168.
 - STANDARD TRENCH ALIGNMENT IS 0.5 TO THE MIDPOINT OF THE FIRST CONDUIT AND 1.0 METRES OFF PROPERTY ALIGNMENT SUBJECT TO LOCATION OF OTHER SERVICES. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5165 SHEETS 1 & 4, AND DRAWING 5228 FOR TRENCHES WITH NBNC CONDUITS.
 - STREETLIGHT POLE FOOTINGS SHALL BE LOCATED PERPENDICULAR TO THE KERB, AT THE PROLONGATION OF THE SIDE PROPERTY BOUNDARY, UNLESS DETAILED OTHERWISE. WHERE DIMENSIONS ARE SHOWN THEY TAKE PRECEDENCE OVER GRID COORDINATES.
 - ALL CONDUITS SHALL BE CONTINUOUS UNLESS DETAILS OTHERWISE.
 - FOR STANDARD UDC CONSTRUCTION PRACTICES REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWINGS 5022, 5085 AND 5124.
 - THERE ARE 6 x 80W MV MAXI URBAN MINOR ROAD, 2 x S150C DOUBLE OUTREACH SYLVANIA ROADSTER, 1 x S150C SINGLE OUTREACH SYLVANIA ROADSTER AND 1 x S150CA SYLVANIA ROADSTER AEROSCREEN SINGLE OUTREACH MAJOR STREETLIGHTS ON RATE 2.
 - STREETLIGHT DESIGN TO AS1158 CATEGORY P3 TO WALSH AVENUE (20m ROAD RESERVE) AND P4 TO LYNCH CIRCUIT AND LILLIAN STREET AND V5 TO WALSH AVENUE (40m ROAD RESERVE).
 - MINOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 1200mm FOR MINOR STREETLIGHTS. REFER TO LIGHTING CONSTRUCTION MANUAL DRAWING 1-6-4-1 & 2. CENTRELINE OF STREETLIGHT POLE SHALL BE 0.9m FROM THE KERB INVERT.
 - MAJOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 2250mm FOR MAJOR STREETLIGHTS. REFER TO LIGHTING CONSTRUCTION MANUAL DRAWING 1-5-9-1 to 9 FOR SBM FOOTINGS AND 1-5-6-1 & 2 FOR BPM FOOTINGS. FOR ALL FOOTPATHS, CENTRELINE OF STREETLIGHT SHALL BE 1.2m FROM THE INVERT OF KERB AND CHANNEL UNLESS LOCATED IN MEDIAN.
 - THE LIGHTING DESIGN INCLUDES AN ALLOWANCE FOR CONSTRUCTION TOLERANCE OF LIGHT POLES SUCH THAT ANY STREETLIGHT CAN BE POSITIONED UP TO A MAXIMUM OF 350mm LONGITUDINALLY FROM THE POSITION SHOWN AND UP TO 100mm MAXIMUM FURTHER AWAY FROM KERB EDGE, INCLUDING POLES WITH GRID COORDINATES, AND STILL MAINTAIN COMPLIANCE.
 - CONFIRM ALL CONDUIT AND CABLE LENGTHS PRIOR TO INSTALLATION.
 - WHERE SHOWN, SUPPLY AND INSTALL 35mm sq ANNEALED BARE Cu EARTH AT BOTTOM OF TRENCH, IN NATURAL SOIL, BELOW BEDDING SAND, LOCATED A MINIMUM OF 50mm HORIZONTALLY TOWARDS PROPERTY BOUNDARY FROM CONDUITS (HV OR LV) INSTALLED ON PROPERTY BOUNDARY SIDE OF TRENCH. COIL 2m OF CABLE AT SPECIFIED STATIONS IN THE CONDUIT DUCTING SCHEDULE AND ALL REQUIRED JOINTS FOR CONNECTION BY ELECTRICAL CONTRACTOR.
 - IN ACCORDANCE WITH ELECTRICAL SAFETY ACT, A SAFETY OBSERVER MUST BE PRESENT AT ALL TIMES WHEN WORKING IN THE VICINITY OF ENERGIZED CABLES. CONTACT ERGON ENERGY ON 131046.
 - ELECTRONIC CABLE MARKERS (ECM'S) ARE TO BE SUPPLIED BY ELECTRICAL CONTRACTOR AND ARE REQUIRED AT ENDS OF ALL SPARE CONDUITS AND AT ALL CABLE JOINTS. ECM'S SHALL BE PLACED 150mm ABOVE THE LINE OF CONDUIT FOR CABLE JOINTS AND 100mm ABOVE THE LINE OF CONDUIT FOR SPARE CONDUITS. ECM'S ARE RECOVERABLE AND SHALL BE REMOVED AND RETURNED TO ELECTRICAL CONTRACTOR WHEN ALL SPARE CONDUIT ENDS ARE REMOVED FROM A LOCATION.
 - WHERE NOTED ON DRAWING CONCRETE COVER SHALL BE INSTALLED ABOVE CONDUIT, WHERE CONDUIT BURIAL DEPTH IS LESS THAN THAT SPECIFIED IN UNDERGROUND CONSTRUCTION MANUAL DRAWING 5163. FOR FOOTPATHS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5016. FOR ROAD CROSSINGS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5017.
 - SUPPLY AND INSTALL EXTRA CONDUIT BENDS TO ACHIEVE INCREASED BURIAL DEPTH AT ROAD CROSSINGS. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5022.
 - INSTALL PILLAR OFFSET FROM PROPERTY BOUNDARY IN ACCORDANCE WITH DRAWING 5196.
 - ELECTRICAL CONDUITS TO BE ROUTED AROUND NBNC PITS. REFER TO NBNC DRAWINGS 2092-T01 FOR PIT LAYOUT DRAWINGS.
 - ZA DENOTES TRENCH SECTION - 4 x HV CONDUITS AND 1 x LV CONDUIT.
 - CONTRACTOR SHALL NOT INSTALL LIGHTING PITS AT THE BOTTOM OF DRAINS, VEHICLE PATHS, ROADWAYS, DRIVEWAYS, DRAIN INVERTS, BIKEWAYS, RAMPS, PEDESTRIAN ALIGNMENTS, WHEELCHAIR ACCESS OR PATHWAYS. WHERE PITS ARE INSTALLED IN MEDIAN, PITS SHALL BE OFFSET FROM THE CENTRE OF THE MEDIAN TO PREVENT INSTALLATION IN THE BOTTOM OF DRAIN AND TO ALLOW CONDUIT TO PASS BY THE LIGHT FOOTING.
 - CONTRACTOR TO NOTE EXISTING SERVICES IN THE AREA. POTHOLING AND VACUUM EXTRACTION REQUIRED TO LOCATE EXISTING SERVICES PRIOR TO INSTALLATION OF NEW CONDUITS, LIGHT FOOTINGS.



FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES: YES/NO

ELECTRICAL CONTRACTOR
NAME: *David Hine (Civex)*
SIGNATURE: *[Signature]*
DATE: *18-6-2013*

CIVIL CONTRACTOR
NAME: _____
SIGNATURE: _____
DATE: _____

| Code | Date | Description | Revised | Code | Date | Description | Approved |
|------|----------|-----------------------------------|---------|------|------|-------------|----------|
| B | 11/04/13 | ADD EXISTING STNS TO LV SCHEMATIC | AD | | | | |
| A | 15/01/13 | FOR CONSTRUCTION | AD | | | | |
| 4 | 15/01/13 | UPDATED WORKPLAN NOTES | AD | | | | |
| 3 | 21/11/12 | FOR APPROVAL | AD | | | | |
| 2 | 21/09/12 | AMALGAMATION OF LOTS-PRELIM | AD | | | | |
| 1 | 22/08/12 | PRELIMINARY | AD | | | | |

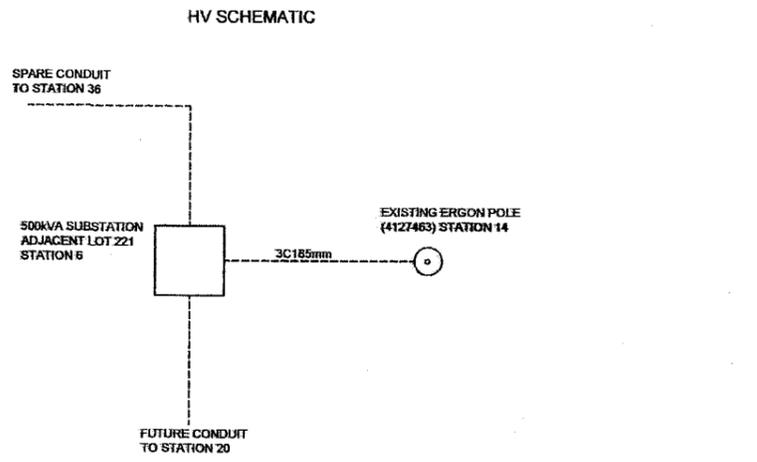
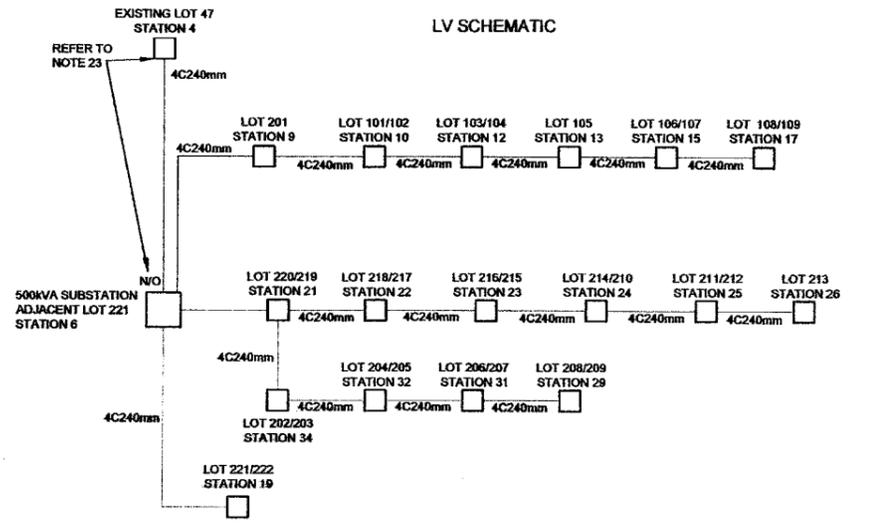
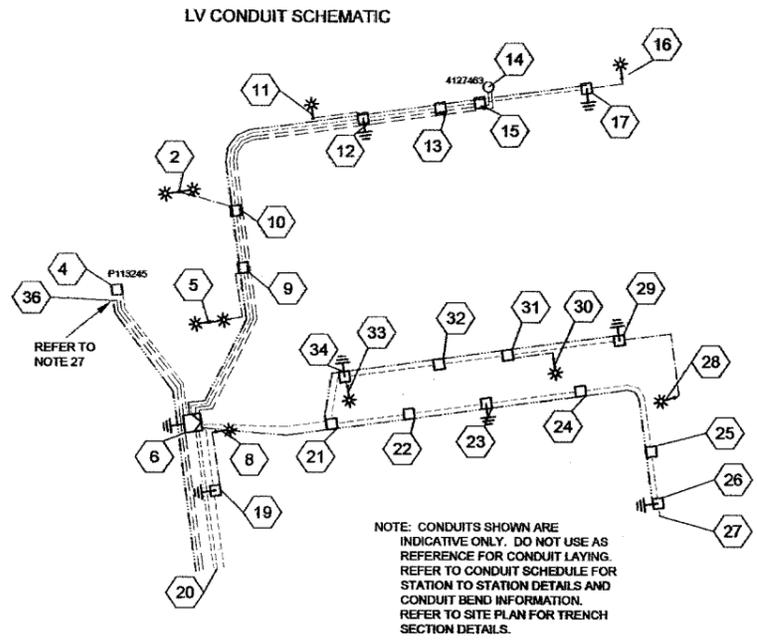
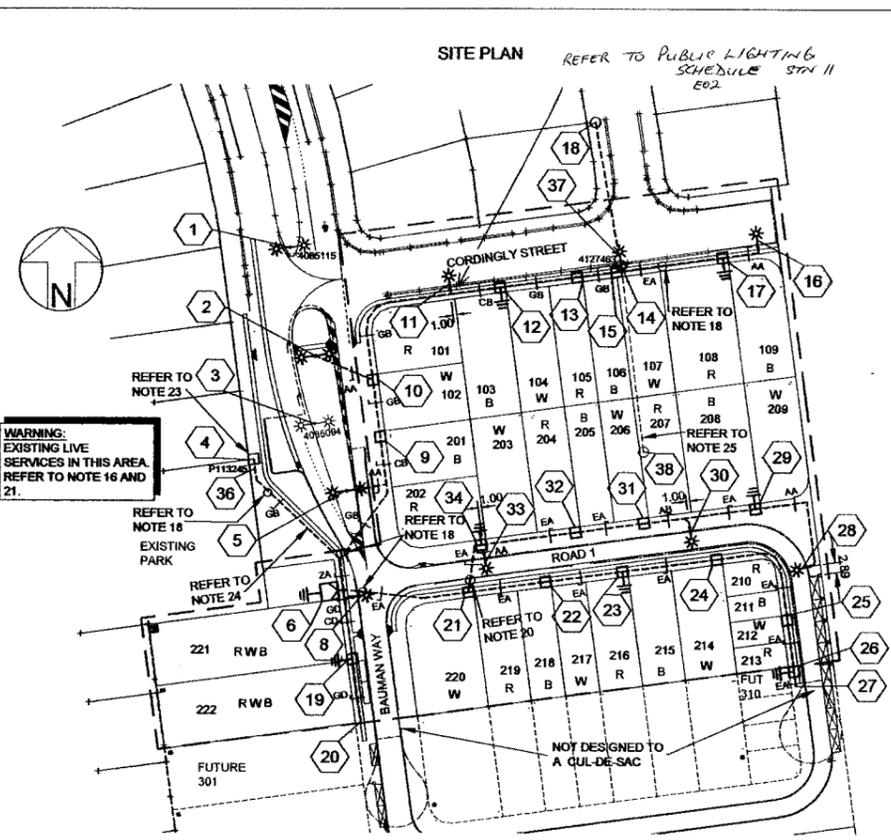
spa
consulting engineers

Suite 7/132 Collins Avenue, Edge Hill QLD 4870
Tel: (07) 4032 3311 Fax: (07) 4032 5633
PO Box 604N North Cairns QLD 4870
Email Address: admin@spaconsltd.com.au
A business unit of SPA Consulting Engineers QLD Pty Ltd. A.C.N. 298441418

LEGEND

| | | |
|--|-----------------------|---------------------------------|
| --- CABLE EXISTING | □ SUBSTATION | □ COMMERCIAL/ INDUSTRIAL PILLAR |
| --- CABLE PLANNED | ✓ HV ISOLATING DEVICE | □ DISTRIBUTION CABINET |
| --- LV DUCT | LV ISOLATING DEVICE | * STREETLIGHT |
| --- LIGHTING DUCT | □ NORMAL PILLAR | ⊕ EARTH |
| --- 35mm sq ANNEALED BARE COPPER EARTH | □ CROSS ROAD PILLAR | ⊙ POLE |
| --- EQUIPMENT EXISTING | □ LINKING PILLAR | |
| --- EQUIPMENT RECOVER | | |
| --- EQUIPMENT PLANNED | | |

| Drawing Title | Date | Scale | Drawn | Approved |
|---|----------------------|--------------------|----------|----------|
| UDA BAUMAN WAY STAGE 9 & 10 UDC UG ELECTRICAL RETICULATION SITE PLAN AND SCHEMATIC DIAGRAMS | AUGUST 2012 | 1:1000@A1 | AD | JE |
| Project Description | ERGON Project Number | SPA Drawing Number | Revision | |
| UDA BAUMAN WAY BLACKWATER STAGE 9 & 10 (OLD STAGE 5) | 650864 | 2092-E01 | B | |



WORKPLAN NOTES

- FOR STANDARD UNDERGROUND DUCT SECTIONS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5168.
- STANDARD TRENCH ALIGNMENT IS 0.5 TO 1.0 METRES OFF PROPERTY ALIGNMENT SUBJECT TO LOCATION OF OTHER SERVICES. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5165 SHEETS 2 & 9, AND DRAWING 5228 FOR TRENCHES WITH NBNCs CONDUITS.
- STREETLIGHT POLE FOOTINGS SHALL BE LOCATED PERPENDICULAR TO THE KERB, AT THE PROLONGATION OF THE SIDE PROPERTY BOUNDARY, UNLESS DETAILED OTHERWISE. WHERE DIMENSIONS ARE SHOWN THEY TAKE PRECEDENCE OVER GRID COORDINATES.
- ALL CONDUITS SHALL BE CONTINUOUS UNLESS DETAILS OTHERWISE.
- FOR STANDARD UDC CONSTRUCTION PRACTICES REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWINGS 5022, 5085 AND 5124.
- INSTALLATION OF 1 x PADMOUNT SUBSTATION REQUIRED ADJACENT TO LOT 221, STATION 6. PADMOUNT SITE 4.0m x 6.0m.
- DEVELOPER SHALL INSTALL PLINTH AND CONCRETE SURROUND. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWINGS 5117 & 5118.
- INSTALL PADMOUNTED SUBSTATION EARTHING - COMMON EARTH ARRANGEMENT. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5123.
- THERE ARE 4x80W MV MAXI URBAN MINOR ROAD, 2 x S150C DOUBLE OUTREACH SYLVANIA ROADSTER, 1 x S150C SYLVANIA ROADSTER SINGLE OUTREACH AND 1 x S150CA SYLVANIA ROADSTER AEROSCREEN SINGLE OUTREACH MAJOR STREET LIGHTS.
- STREETLIGHT DESIGN TO AS1158 CATEGORY V5 FOR BAUMAN WAY WITH 40m ROAD RESERVE, P3 FOR BAUMAN WAY WITH 18m ROAD RESERVE AND P4 FOR ALL OTHER ROADS.
- MINOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 1200mm FOR MINOR STREETLIGHTS. REFER TO LIGHTING CONSTRUCTION MANUAL DRAWING 1-6-4-1 & 2. CENTRELINE OF STREETLIGHT POLE SHALL BE 0.9m FROM THE KERB INVERT.
- MAJOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 2250mm FOR MAJOR STREETLIGHTS. REFER TO LIGHTING CONSTRUCTION MANUAL DRAWING 1-5-9-1 to 9 FOR SBM FOOTINGS AND 1-5-6-1 & 2 FOR BPM FOOTINGS. FOR ALL FOOTPATHS, CENTRELINE OF STREETLIGHT SHALL BE 1.2m FROM THE INVERT OF KERB AND CHANNEL OR CENTRED ON THE MEDIAN FOR DOUBLE OUTREACH POLES. THIS DIMENSION TAKES PRECEDENCE OVER CO ORDINATES PROVIDED.
- THE LIGHTING DESIGN INCLUDES AN ALLOWANCE FOR CONSTRUCTION TOLERANCE OF LIGHT POLES SUCH THAT ANY STREETLIGHT CAN BE POSITIONED UP TO A MAXIMUM OF ±350mm LONGITUDINALLY FROM THE POSITION SHOWN AND UP TO 100mm MAXIMUM FURTHER AWAY FROM KERB EDGE, INCLUDING POLES WITH GRID COORDINATES, AND STILL MAINTAIN COMPLIANCE.
- CONFIRM ALL CONDUIT AND CABLE LENGTHS PRIOR TO INSTALLATION.
- WHERE SHOWN, SUPPLY AND INSTALL 35mm sq ANNEALED BARE Cu EARTH AT BOTTOM OF TRENCH, IN NATURAL SOIL, BELOW BEDDING SAND, LOCATED A MINIMUM OF 50mm HORIZONTALLY TOWARDS PROPERTY BOUNDARY FROM CONDUITS (HV OR LV) INSTALLED ON PROPERTY BOUNDARY SIDE OF TRENCH. COIL 2m OF CABLE AT EACH STATION AND ALL REQUIRED JOINTS FOR CONNECTION BY ELECTRICAL CONTRACTOR.
- IN ACCORDANCE WITH ELECTRICAL SAFETY ACT, A SAFETY OBSERVER MUST BE PRESENT AT ALL TIMES WHEN WORKING IN THE VICINITY OF ENERGIZED CABLES. CONTACT ERGON ENERGY ON 131046.
- ELECTRONIC CABLE MARKERS (ECMS) ARE TO BE SUPPLIED BY ERGON ENERGY AND ARE REQUIRED AT ENDS OF ALL SPARE CONDUITS AND AT ALL CABLE JOINTS. ECMS SHALL BE PLACED 150mm ABOVE THE LINE OF CONDUIT FOR CABLE JOINTS AND 100mm ABOVE THE LINE OF CONDUIT FOR SPARE CONDUITS. ECMS ARE RECOVERABLE AND SHALL BE REMOVED AND RETURNED TO ERGON ENERGY WHEN ALL SPARE CONDUIT ENDS ARE REMOVED FROM A LOCATION.
- SUPPLY AND INSTALL CONCRETE COVER ABOVE CONDUIT, WHERE CONDUIT BURIAL DEPTH IS LESS THAN THAT SPECIFIED IN UNDERGROUND CONSTRUCTION MANUAL DRAWING 5163. FOR ROAD CROSSINGS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5016. FOR ROAD CROSSINGS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5017.
- SUPPLY AND INSTALL EXTRA CONDUIT BENDS TO ACHIEVE INCREASED BURIAL DEPTH AT ROAD CROSSINGS. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5022.
- ELECTRICAL CONDUITS ARE REQUIRED TO BE INSTALLED UNDERNEATH STORMWATER PIPES. SEPARATION FROM BOTTOM OF STORMWATER PIPE TO THE TOP OF ERGON CONDUIT TO BE NOT LESS THAN 100mm.
- CONTRACTOR TO NOTE EXISTING SERVICES IN THE AREA. POT-HOLING AND VACUUM EXTRACTION REQUIRED TO LOCATE EXISTING SERVICES PRIOR TO INSTALLATION OF NEW CONDUITS, LIGHT FOOTINGS.
- INSTALL PILLAR OFFSET FROM PROPERTY BOUNDARY IN ACCORDANCE WITH DRAWING 5196.
- CONDUIT RUN TO INCLUDE POLYMERIC COVER AND CABLE WARNING PLAQUES WHERE CONDUIT OUT OF ERGON ALIGNMENT. CONDUIT RUN DIRECT TO REDUCE BENDS TO ALLOW CABLES TO BE PULLED THROUGH ROUTE.
- EXISTING OVERHEAD AND UNDERGROUND SERVICES WITHIN THE STAGE AREA ARE BEING RELOCATED AS PART OF A SEPARATE ERGON ENERGY PROJECT WR-631860. CONTRACTOR SHALL CO-ORDINATE THE CONSTRUCTION PROGRAM AND WITH ERGON REGARDING THESE RELOCATION WORKS.
- '2A' DENOTES TRENCH SECTION WITH 4 X HV CONDUITS AND 2 X LV CONDUITS.
- SPARE HV CONDUITS TO STAGE BOUNDARY TO PROVIDE HV CONNECTION TO POLE ON MACDONALD CRESCENT.

FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES: YES/NO

ELECTRICAL CONTRACTOR

NAME: CIVEX Pty LTD
 SIGNATURE: [Signature]
 DATE: 29/10/12

CIVIL CONTRACTOR

NAME: CIVEX Pty LTD
 SIGNATURE: [Signature]
 DATE: 29/10/12

| Code | Date | Description | Revised | Code | Date | Description | Approved |
|------|----------|--|---------|------|------|-------------|----------|
| A | 14/08/12 | FOR CONSTRUCTION | | BV | | | |
| 3 | 28/06/12 | NOTE 27 ADDED | | AD | | | |
| 2 | 19/06/12 | PILLAR STN 4 UPDATED, STN 37 AND AND 7 REMOVED | | BV | | | |
| 1 | 22/03/12 | FOR APPROVAL | | SW | | | |

CLIENT: URBAN LAND DEVELOPMENT AUTHORITY

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 BRISBANE QLD 4001
 Ph: (07) 3224 4133 Fax:

CIVIL ENGINEER
 BORNHORST AND WARD
 CONSULTING ENGINEERS
 LEVEL 4, 67 ASTOR TERRACE
 SPRING HILL, QLD 4000
 Ph: (07) 3013 4699 Fax:

spa
 consulting engineers
 Suite 7/132 Collins Avenue, Edge Hill QLD 4870
 Tel: (07) 4032 3311 Fax: (07) 4032 5833
 PO Box 864N North Cairns QLD 4870
 Email Address: mail@spaconsltd.com.au
 Accredited with 25 Design and Drafting Pty Ltd. 2008-2010/2011

LEGEND

| | | |
|--|-----------------------|---------------------------------|
| ----- CABLE EXISTING | □ SUBSTATION | □ COMMERCIAL/ INDUSTRIAL PILLAR |
| ----- CABLE PLANNED | ✓ HV ISOLATING DEVICE | □ DISTRIBUTION CABINET |
| ----- CABLE RECOVER | LV ISOLATING DEVICE | ✱ STREETLIGHT |
| ----- LIGHTING DUCT | □ NORMAL PILLAR | — — EARTH |
| ----- 35mm sq ANNEALED BARE COPPER EARTH | □ CROSS ROAD PILLAR | ⊙ POLE |
| | □ LINKING PILLAR | |

| Drawing Title | Date |
|--|------------|
| UDA BAUMAN WAY STAGE 1 UDC UG ELECTRICAL RETICULATION SITE PLAN AND SCHEMATIC DIAGRAMS | MARCH 2012 |
| Project Description | Scale |
| UDA BAUMAN WAY BLACKWATER | 1:1000@A1 |
| ERGON Project Number | Drawn |
| 650855 | SW |
| SPA Drawing Number | Approved |
| 2088-E01 | JE |
| Revision | |
| A | |

| CONDUIT DUCTING SCHEDULE | | | | | | | |
|--------------------------|--------|-----------------|------------------------------|------------|-----------------------|---|---|
| STN FROM | STN TO | ACTION | CONSTRUCTION CODE | LENGTH (m) | No. of LENGTHS / DRUM | BENDS (Degrees/Radius(mm) x No.) | Remarks |
| 6 | 4 | INSTALL - CIVIL | C100L | 49 | 8.2 | 90/1000x1 45/1200x2 45/1830x2 30/1830x2 15/1830x5 | CONCRETE COVER AT STORMWATER CROSSING. REFER TO NOTE 18. |
| 6 | 9 | INSTALL - CIVIL | C100L | 46 | 8.0 | 45/1200x2 45/1830x1 15/1830x5 | CONCRETE COVER AT STORMWATER CROSSING. REFER TO NOTE 18. |
| 6 | 14 | INSTALL - CIVIL | C125L | 165 | 27.5 | 45/1830x2 30/1830x4 15/1830x4 | CAP CONDUIT AT STATION 14 AND 6. |
| 6 | 19 | INSTALL - CIVIL | C100L | 21 | 3.5 | 90/1000x1 45/1200x1 | REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 6 | 21 | INSTALL - CIVIL | C100L | 38 | 6.3 | 90/1000x1 45/1200x1 15/1830x5 | CONCRETE COVER AT STORMWATER CROSSING. REFER TO NOTE 18. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 6 | 26 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 168 | 0.7 | | COIL 2.0M OF CABLE AT STN 6 AND 26 AND LOOP 2.0M OF CABLE AT STN 21 AND 23 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| 6 | 36 | INSTALL - CIVIL | C125L | 49 | 8.2 | 90/1000x1 90/1000x1 45/1830x2 15/1830x5 | CAP CONDUIT AT STATION 36 AND 6. CONCRETE COVER AT STORMWATER CROSSING. REFER TO NOTE 18 AND 27. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 9 | 5 | INSTALL - CIVIL | C40H | 22 | 5.5 | 90/300x2 90/600x1 | CONDUIT TO FOLLOW ALIGNMENT AND CROSS ROAD PERPENDICULAR TO PROPERTY BOUNDARY. |
| 9 | 10 | INSTALL - CIVIL | C100L | 17 | 2.8 | 45/1200x2 | |
| 10 | 2 | INSTALL - CIVIL | C40H | 18 | 4.5 | 90/300x2 | |
| 10 | 12 | INSTALL - CIVIL | C100L | 59 | 9.8 | 45/1200x2 30/1830x2 15/1830x2 | |
| 12 | 11 | INSTALL - CIVIL | C40H | 18 | 4.5 | 90/300x2 | |
| 12 | 13 | INSTALL - CIVIL | C100L | 23 | 3.8 | 45/1200x2 | |
| 13 | 15 | INSTALL - CIVIL | C100L | 12 | 2.0 | 45/1200x2 | |
| 14 | 6 | INSTALL - CIVIL | C125L | 165 | 27.5 | 90/1000x1 90/1000x1 45/1830x2 30/1830x4 15/1830x4 | REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 15 | 17 | INSTALL - CIVIL | C100L | 31 | 5.2 | 45/1200x2 15/1830x4 | CONCRETE COVER AT STORMWATER CROSSING. REFER TO NOTE 18. |
| 17 | 6 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 180 | 0.8 | | COIL 2.0M OF CABLE AT STN 6 AND 17 AND LOOP 2.0M OF CABLE AT STN 12 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| 17 | 16 | INSTALL - CIVIL | C40H | 12 | 3.0 | 90/300x2 90/600x1 | |
| 18 | 8 | INSTALL - CIVIL | C40H | 20 | 5.0 | 90/300x2 90/600x1 | |
| 19 | 20 | INSTALL - CIVIL | C100L | 22 | 3.7 | 45/1200x1 | CAP CONDUIT AT STATION 20. |
| 20 | 6 | INSTALL - CIVIL | C125L | 41 | 6.8 | 90/1000x1 90/1000x1 | CAP CONDUIT AT STATION 6 AND 20. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 20 | 6 | INSTALL - CIVIL | C100L | 41 | 6.8 | 90/1000x1 | CAP CONDUIT AT STATION 6 AND 20. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 20 | 6 | INSTALL - CIVIL | C100L | 41 | 6.8 | 90/1000x1 | CAP CONDUIT AT STATION 6 AND 20. REFER TO DRAWING 5142 FOR CONDUITS AT SUBSTATION. |
| 20 | 36 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 89 | 0.4 | | COIL 2.0M OF CABLE AT STATION 20. LOOP AT STATION 6 AND 19. |
| 20 | 36 | INSTALL - CIVIL | C125L | 84 | 14.0 | 45/1830x2 30/1830x2 15/1830x5 | CAP CONDUIT AT STATION 36 AND 20. CONCRETE COVER AT STORMWATER CROSSING. REFER TO NOTE 18 AND 27. |
| 21 | 22 | INSTALL - CIVIL | C100L | 23 | 3.6 | 45/1200x2 | |
| 21 | 29 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 95 | 0.4 | | COIL 2.0M OF CABLE AT STN 21 AND 29 AND LOOP 2.0M OF CABLE AT STN 34 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| 21 | 34 | INSTALL - CIVIL | C100L | 18 | 2.7 | 45/1200x2 45/1830x2 15/1830x5 | CONDUIT TO FOLLOW ERGON ALIGNMENT FOR 1.0M TOWARD LOT 202 PRIOR TO CROSSING THE ROAD TO AVOID M&N CO. P.T. INSTALL CONDUIT UNDERNEATH STORMWATER. REFER TO NOTE 20. |
| 22 | 23 | INSTALL - CIVIL | C100L | 23 | 3.8 | 45/1200x2 | |
| 23 | 24 | INSTALL - CIVIL | C100L | 28 | 4.7 | 45/1200x2 | |
| 24 | 25 | INSTALL - CIVIL | C100L | 37 | 6.2 | 45/1200x2 45/1830x1 30/1830x2 | |
| 25 | 26 | INSTALL - CIVIL | C100L | 15 | 2.5 | 45/1200x2 | |
| 26 | 27 | INSTALL - CIVIL | C100L | 6 | 1.0 | 45/1200x1 | CAP CONDUIT AT STATION 27. |
| 29 | 28 | INSTALL - CIVIL | C40H | 36 | 8.8 | 90/300x2 90/600x1 | |
| 31 | 29 | INSTALL - CIVIL | C100L | 33 | 5.5 | 45/1200x2 | |
| 31 | 30 | INSTALL - CIVIL | C40H | 15 | 3.8 | 90/300x2 90/600x2 | |
| 32 | 31 | INSTALL - CIVIL | C100L | 20 | 3.3 | 45/1200x2 | |
| 34 | 32 | INSTALL - CIVIL | C100L | 28 | 4.7 | 45/1200x2 | |
| 34 | 33 | INSTALL - CIVIL | C40H | 3 | 0.8 | 90/300x2 | |

| UNDERGROUND CABLE SCHEDULE | | | | | | | |
|----------------------------|--------|---------|---------|-------------------|--------------|--------------|---|
| STN FROM | STN TO | ACTION | VOLTAGE | CONSTRUCTION CODE | ROUTE LENGTH | CABLE LENGTH | REMARKS |
| 6 | 4 | INSTALL | 415V | LV-240CA/673 | 49 | 56 | FINAL TERMINATION AT STATION 4 BY ERGON ENERGY. |
| 6 | 9 | INSTALL | 415V | LV-240CA/673 | 48 | 55 | |
| 6 | 19 | INSTALL | 415V | LV-240CA/673 | 21 | 26 | |
| 6 | 21 | INSTALL | 415V | LV-240CA/673 | 38 | 42 | |
| 9 | 5 | INSTALL | 240V | LV-16CU2NS/1672 | 22 | 27 | |
| 9 | 10 | INSTALL | 415V | LV-240CA/673 | 17 | 21 | |
| 10 | 2 | INSTALL | 240V | LV-16CU2NS/1672 | 18 | 23 | |
| 10 | 12 | INSTALL | 415V | LV-240CA/673 | 59 | 63 | |
| 12 | 11 | INSTALL | 240V | LV-16CU2NS/1672 | 18 | 23 | |
| 12 | 13 | INSTALL | 415V | LV-240CA/673 | 23 | 27 | |
| 13 | 15 | INSTALL | 415V | LV-240CA/673 | 12 | 16 | |
| 14 | 6 | INSTALL | 22kV | 22-185T1834 | 165 | 190 | COIL CABLE AT BASE OF ERGON POLE FOR FINAL TERMINATION BY ERGON ENERGY AT STATION 14. |
| 15 | 17 | INSTALL | 415V | LV-240CA/673 | 31 | 35 | |
| 17 | 16 | INSTALL | 240V | LV-16CU2NS/1671 | 12 | 17 | |
| 19 | 8 | INSTALL | 240V | LV-16CU2NS/1672 | 20 | 25 | |
| 21 | 22 | INSTALL | 415V | LV-240CA/673 | 23 | 27 | |
| 21 | 34 | INSTALL | 415V | LV-240CA/673 | 16 | 20 | |
| 22 | 23 | INSTALL | 415V | LV-240CA/673 | 23 | 27 | |
| 23 | 24 | INSTALL | 415V | LV-240CA/673 | 28 | 32 | |
| 24 | 25 | INSTALL | 415V | LV-240CA/673 | 37 | 41 | |
| 25 | 26 | INSTALL | 415V | LV-240CA/673 | 15 | 19 | |
| 29 | 28 | INSTALL | 240V | LV-16CU2NS/1671 | 35 | 40 | |
| 31 | 29 | INSTALL | 415V | LV-240CA/673 | 33 | 37 | |
| 31 | 30 | INSTALL | 240V | LV-16CU2NS/1671 | 15 | 20 | |
| 32 | 31 | INSTALL | 415V | LV-240CA/673 | 20 | 24 | |
| 34 | 32 | INSTALL | 415V | LV-240CA/673 | 28 | 32 | |
| 34 | 33 | INSTALL | 240V | LV-16CU2NS/1671 | 3 | 8 | |

| PUBLIC LIGHTING SCHEDULE | | | | | | | | | | |
|--------------------------|------------|-----------------|-------------------|--------|------------------------------------|---------------------|--------------|---------------|---------|---|
| STN NO | SITE LABEL | ACTION | CONSTRUCTION CODE | RATE | OWNER | MOUNTING HEIGHT (m) | POLE EASTING | POLE NORTHING | BEARING | REMARKS |
| 1 | 4085115 | EXISTING | | | | | | | | |
| 1 | | EXISTING | | | | | | | | |
| 2 | | INSTALL | SL S150C | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | 3319.125 | 91573.028 | 81 | |
| 2 | | INSTALL | SL S150C | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | 3319.125 | 91573.028 | 262 | |
| 3 | | RECOVER - ERGON | | | | | 3319.03795 | | 262 | ERGON TO RECOVER EXISTING LIGHTS |
| 5 | | INSTALL | SL S150C | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | 3328.36 | 91534.065 | 81 | |
| 5 | | INSTALL | SL S150C | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | 3328.36 | 91534.065 | 262 | |
| 8 | | INSTALL | SL S150CA | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | 3330.22898 | 91503.3464 | 81 | |
| 11 | | INSTALL | SL S150C | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | 3358.04806 | 91592.0231 | 354 | LIGHT INSTALL AT 8.9m FROM INVERT OF KERB DUE TO EXISTING |
| 16 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | | | | |
| 28 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | | | | |
| 30 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | | | | |
| 33 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | | | | |
| 37 | | INSTALL - ERGON | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | | | | EXISTING M80D TO BE RECOVERED BY ERGON AND REPLACED WITH NEW M80D |

FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES YES/NO

ELECTRICAL CONTRACTOR
 NAME: CIVEX PTY LTD
 SIGNATURE: [Signature]
 DATE: 29/10/12

CIVIL CONTRACTOR
 NAME: CIVEX PTY LTD
 SIGNATURE: [Signature]
 DATE: 29/10/12

| Code | Date | Description | Revised | Code | Date | Description |
|------|----------|---|---------|------|------|-------------|
| A | 14/08/12 | FOR CONSTRUCTION | | BV | | |
| 4 | 28/08/12 | NOTE 27 ADDED, COUNCIL REFERENCE UPDATED | | AD | | |
| 3 | 19/06/12 | PILLAR STN 4 UPDATED, STN 35 AND 7 REMOVED, STN 8 FED FROM STN 19 | | BV | | |
| 2 | 10/04/12 | FOR APPROVAL - SUB CONDUITS MOD | | BV | | |
| 1 | 22/03/12 | FOR APPROVAL | | SW | | |

CLIENT: URBAN LAND DEVELOPMENT AUTHORITY

PO BOX 2202 BRISBANE, QLD, 4001 Ph: (07) 3024 4133

CIVIL ENGINEER BORNHORST AND WARD CONSULTING ENGINEERS

LEVEL 4, 67 ASTOR TERRACE SPRING HILL, QLD, 4000 Ph: (07) 30314699



| LEGEND | |
|--------|------------------------------------|
| ----- | CABLE EXISTING |
| ----- | CABLE PLANNED |
| ----- | CABLE RECOVER |
| ----- | EQUIPMENT EXISTING |
| ----- | EQUIPMENT RECOVER |
| ----- | EQUIPMENT PLANNED |
| ----- | HV DUCT |
| ----- | LV DUCT |
| ----- | LIGHTING DUCT |
| ----- | 35mm sq ANNEALED BARE COPPER EARTH |
| □ | SUBSTATION |
| ✓ | HV ISOLATING DEVICE |
| I | LV ISOLATING DEVICE |
| □ | NORMAL PILLAR |
| □ | CROSS ROAD PILLAR |
| □ | LINKING PILLAR |
| □ | COMMERCIAL/ INDUSTRIAL PILLAR |
| ☒ | DISTRIBUTION CABINET |
| ☒ | STREETLIGHT |
| ⊖ | EARTH |
| ⊙ | POLE |

| Drawing Title | | Date |
|--|--|------------|
| UDA BAUMAN WAY STAGE 1 UDC UG ELCTRICAL RETICULATION SCHEDULES | | MARCH 2012 |
| Project Description | | Scale |
| UDA BAUMAN WAY BLACKWATER | | N.T.S. |
| ERGON Project Number | | Drawn |
| 850855 | | SW |
| SPA Drawing Number | | Approved |
| 2088-E02 | | JE |
| Revision | | |
| A | | |

Rev Date: 11-5-12

CONSTRUCTION SCHEDULE

| STN NO | SITE LABEL | POLE ALIGNMENT | POLE SETTING DEPTH | ACTION | CONSTRUCTION CLASS | CONSTRUCTION CODE | DRAWING NUMBER | POSITION ON POLE | REMARKS |
|--------|------------|----------------|--------------------|----------|------------------------------|----------------------|----------------|------------------|---|
| 1 | 4085115 | | | EXISTING | POLE | | | | |
| 2 | 4085094 | | | INSTALL | POLE | SL BPM/10S/2 30UG CH | 1-5-6-1 & 2 | | |
| 4 | | | | EXISTING | PILLAR | | | | EXISTING PILLAR |
| 4 | | | | INSTALL | PILLAR UPGRADE | LV PN2/3/240 | 5074 | | ERGON ENERGY TO UPGRADE TO THREE WAY PILLAR |
| 5 | 10289399 | | | INSTALL | POLE | SL BPM/10S/2 30UG CH | 1-5-6-1 & 2 | | |
| 6 | | | | INSTALL | EARTH | E PM22/COM | 5123 | | |
| 6 | | | | INSTALL | HV CABLE TERMINATION | 22 CTC/FGA/185T | 5044 | | HV CABLE TERMINATION FOR STATION 14 TO 6. |
| 6 | | | | INSTALL | LV CABLE TERMINATION | LV CT PM22/240 | 5087 | | LV CABLE TERMINATION FOR STATIONS 6 TO 7. |
| 6 | | | | INSTALL | LV CABLE TERMINATION | LV CT PM22/240 | 5087 | | LV CABLE TERMINATION FOR STATION 6 TO 21. |
| 6 | | | | INSTALL | LV CABLE TERMINATION | LV CT PM22/240 | 5087 | | LV CABLE TERMINATION FOR STATIONS 8 TO 19. |
| 6 | 10289390 | | | INSTALL | SUBSTATION FOUNDATION | PMRF 22/4/8 | 5118 | | |
| 6 | 599151 | | | INSTALL | SUBSTATION INC HV SWITCHGEAR | PMR 22/5/41 FGA 31 | 5105 | | |
| 8 | 10289400 | | | INSTALL | POLE | SL BPM/10S/1 30UG CH | 1-5-6-1 & 2 | | |
| 9 | 10289382 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 201. REFER TO NOTE 22. |
| 10 | 10289383 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 102. REFER TO NOTE 22. |
| 11 | 10289398 | | | INSTALL | POLE | SL BPM/10S/1 45UG CH | 1-5-6-1 & 2 | | OFFSET 1.0M FROM PROPERTY BOUNDARY TO CO-ORDINATE WITH DRIVEWAY ACCESS. |
| 12 | | | | INSTALL | EARTH | E MEN/PIL | 5065 | | |
| 12 | 10289384 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 103. REFER TO NOTE 22. |
| 13 | 10289385 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 105. REFER TO NOTE 22. |
| 14 | 4127485 | | | EXISTING | POLE | | | | EXISTING ERGON POLE. STATION 14 POLE TERMINATION. INSTALL ERGON FINAL TERMINATION AT STATION 14 BY ERGON ENERGY. |
| 15 | 10289396 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | |
| 16 | 10289404 | | | INSTALL | POLE | SL BPM/7S/1 15 CI | 1-6-4-1 & 2 | | INSTALL LIGHT POLE OFFSET 900MM FROM EDGE OF KERB ON PROPERTY BOUNDARY TRUNCATION OF LOT 109. |
| 17 | | | | INSTALL | EARTH | E MEN/PIL | 5065 | | |
| 17 | 10289387 | | | INSTALL | PILLAR | LV PN1/6S/240 | 5025 | | INSTALL PILLAR OFFSET TOWARDS LOT 108. REFER TO NOTE 22. |
| 18 | | | | EXISTING | POLE | | | | EXISTING ERGON POLE. |
| 19 | | | | INSTALL | EARTH | E MEN/PIL | 5065 | | |
| 19 | 10289398 | | | INSTALL | PILLAR | LV PN1/6S/240 | 5025 | | TO BE UPGRADED TO TWO WAY IN FUTURE STAGE. |
| 21 | 10289389 | | | INSTALL | PILLAR | LV PN3/6S/240 | 5027 | | INSTALL PILLAR OFFSET TOWARDS LOT 220. REFER TO NOTE 22. |
| 22 | 10289390 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 219. REFER TO NOTE 22. |
| 23 | | | | INSTALL | EARTH | E MEN/PIL | 5065 | | |
| 23 | 10289381 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 216. REFER TO NOTE 22. |
| 24 | 10289391 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 214. REFER TO NOTE 22. |
| 25 | 10289392 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 212. REFER TO NOTE 22. |
| 26 | | | | INSTALL | EARTH | E MEN/PIL | 5065 | | |
| 26 | 10289393 | | | INSTALL | PILLAR | LV PN1/6S/240 | 5025 | | INSTALL PILLAR OFFSET TOWARDS LOT 310. REFER TO NOTE 22. PILLAR TO BE UPGRADED TO TWO WAY PILLAR IN FUTURE STAGE. |
| 28 | 10289403 | | | INSTALL | POLE | SL BPM/7S/1 15 CI | 1-6-4-1 & 2 | | INSTALL POLE OFFSET 2.89M FROM THE EDGE OF ADJACENT CAR PARK. |
| 29 | | | | INSTALL | EARTH | E MEN/PIL | 5065 | | |
| 29 | 10289394 | | | INSTALL | PILLAR | LV PN1/6S/240 | 5025 | | INSTALL PILLAR OFFSET TOWARDS LOT 208. REFER TO NOTE 22. |
| 30 | 10289402 | | | INSTALL | POLE | SL BPM/7S/1 15 CI | 1-6-4-1 & 2 | | OFFSET 1M FROM PROPERTY BOUNDARY TO CO-ORDINATE WITH DRIVEWAY ACCESS. |
| 31 | 10289395 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 208. REFER TO NOTE 22. |
| 32 | 10289396 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 202. REFER TO NOTE 22. |
| 33 | 10289401 | | | INSTALL | POLE | SL BPM/7S/1 15 CI | 1-6-4-1 & 2 | | OFFSET 1M FROM PROPERTY BOUNDARY TO CO-ORDINATE WITH DRIVEWAY ACCESS. |
| 34 | | | | INSTALL | EARTH | E MEN/PIL | 5065 | | |
| 34 | 10289397 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 202. REFER TO NOTE 22. |
| 38 | | | | EXISTING | POLE | | | | REFER TO NOTE 25. |

FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES: YES NO

ELECTRICAL CONTRACTOR

NAME: CIVEX PTY LTD

SIGNATURE: [Signature]

DATE: 29/10/12

CIVIL CONTRACTOR

NAME: CIVEX PTY LTD

SIGNATURE: [Signature]

DATE: 29/10/12

| Code | Date | Description | Revised | Code | Date | Description | Approved |
|------|----------|--|---------|------|------|-------------|----------|
| B | 18/10/12 | SITE LABELS ADDED | | AD | | | |
| A | 14/08/12 | FOR CONSTRUCTION | | BV | | | |
| 2 | 19/06/12 | PILLAR STN 4 UPDATED, STN 35 AND 7 REMOVED | | BV | | | |
| 1 | 22/03/12 | FOR APPROVAL | | SW | | | |

CLIENT:
URBAN LAND DEVELOPMENT AUTHORITY

PO BOX 2202
BRISBANE, QLD, 4001
Ph (07) 3024 4133 Fax

CIVIL ENGINEER
BORNHORST AND WARD
CONSULTING ENGINEERS
LEVEL 4, 67 ASTOR TERRACE
SPRING HILL, QLD, 4000
Ph (07) 30314090 Fax



LEGEND

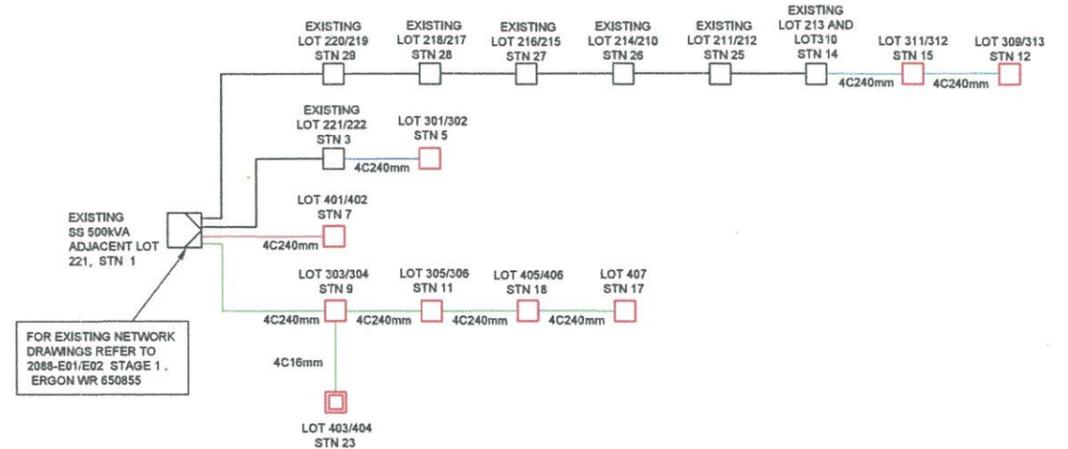
| | | | | | |
|-------|------------------------------------|-------------------------------------|---------------------|-------------------------------------|-------------------------------|
| ----- | CABLE EXISTING | <input type="checkbox"/> | SUBSTATION | <input type="checkbox"/> | COMMERCIAL/ INDUSTRIAL PILLAR |
| ----- | CABLE PLANNED | <input checked="" type="checkbox"/> | HV ISOLATING DEVICE | <input checked="" type="checkbox"/> | DISTRIBUTION CABINET |
| ----- | CABLE RECOVER | | LV ISOLATING DEVICE | -* | STREETLIGHT |
| ----- | EQUIPMENT EXISTING | <input type="checkbox"/> | NORMAL PILLAR | - | EARTH |
| ----- | EQUIPMENT RECOVER | <input checked="" type="checkbox"/> | CROSS ROAD PILLAR | ⊙ | POLE |
| ----- | EQUIPMENT PLANNED | <input checked="" type="checkbox"/> | LINKING PILLAR | | |
| ----- | 35mm sq ANNEALED BARE COPPER EARTH | | | | |

| Date | March 2012 |
|--|----------------------|
| Scale | N.T.S |
| Drawn | SW |
| Approved | JE |
| Project Description | ERGON Project Number |
| UDA BAUMAN WAY STAGE 1 UDC UG ELCTRICAL RETICULATION CONSTRUCTION SCHEDULE | SPA Drawing Number |
| UDA BAUMAN WAY BLACKWATER | Revision |
| 650855 | 2088-E03 B |

SITE PLAN



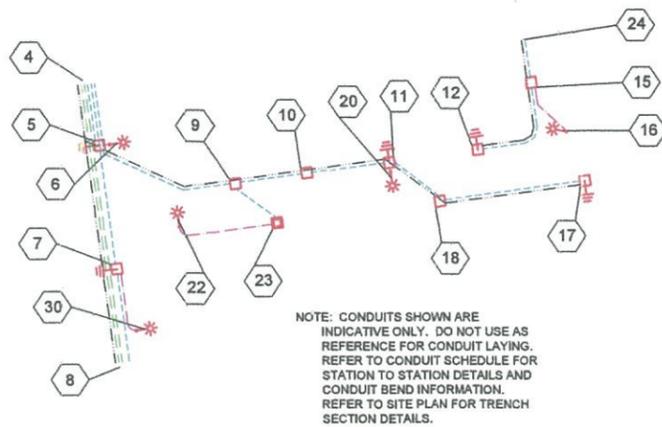
LV SCHEMATIC



WORKPLAN NOTES

- FOR STANDARD UNDERGROUND DUCT SECTIONS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5168.
- STANDARD TRENCH ALIGNMENT IS 0.5 TO 1.0 METRES OFF PROPERTY ALIGNMENT SUBJECT TO LOCATION OF OTHER SERVICES. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5165 AND DRAWING 5228 FOR TRENCHES WITH NBNC CONDUITS.
- STREETLIGHT POLE FOOTINGS SHALL BE LOCATED PERPENDICULAR TO THE KERB, AT THE PROLONGATION OF THE SIDE PROPERTY BOUNDARY, UNLESS DETAILED OTHERWISE. WHERE DIMENSIONS ARE SHOWN THEY TAKE PRECEDENCE OVER GRID COORDINATES.
- ALL CONDUITS SHALL BE CONTINUOUS UNLESS DETAILS OTHERWISE.
- FOR STANDARD UDC CONSTRUCTION PRACTICES REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWINGS 5022, 5085 AND 5124.
- THERE ARE 3x80W MV MAXI URBAN MINOR ROAD AND 2x150W HPS SYLVANIA ROADSTER AEROSCREEN MAJOR ROAD STREETLIGHTS ON RATE 2.
- STREETLIGHT DESIGN TO AS1158 CATEGORY P3 TO BAUMAN WAY AND P4 TO PENROSE CIRCUIT.
- MINOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 1200mm FOR MINOR STREETLIGHTS. REFER TO LIGHTING CONSTRUCTION MANUAL DRAWING 1-6-4-1 & 2. CENTRELINE OF STREETLIGHT SHALL BE 0.9m FROM KERB INVERT.
- MAJOR STREETLIGHTS - THE DEVELOPER SHALL SUPPLY AND INSTALL STREETLIGHT BASES. FOUNDATION DEPTH IS 2250mm FOR MAJOR STREETLIGHTS. REFER TO LIGHTING CONSTRUCTION MANUAL DRAWING 1-5-9-1 TO 9 FOR SBM FOOTINGS AND 1-5-8-1 & 2 FOR BPM FOOTINGS. FOR ALL FOOTPATHS, CENTRELINE OF STREETLIGHT SHALL BE 1.2m FROM THE INVERT OF KERB AND CHANNEL.
- THE LIGHTING DESIGN INCLUDES AN ALLOWANCE FOR CONSTRUCTION TOLERANCE OF LIGHT POLES SUCH THAT ANY STREETLIGHT CAN BE POSITIONED UP TO A MAXIMUM OF ±350mm LONGITUDINALLY FROM THE POSITION SHOWN AND UP TO 100mm MAXIMUM FURTHER AWAY FROM KERB EDGE, INCLUDING POLES WITH GRID COORDINATES, AND STILL MAINTAIN COMPLIANCE.
- CONFIRM ALL CONDUIT AND CABLE LENGTHS PRIOR TO INSTALLATION.
- WHERE SHOWN, 35mm sq ANNEALED BARE Cu EARTH SHALL BE INSTALLED AT BOTTOM OF TRENCH, IN NATURAL SOIL, BELOW BEDDING SAND, LOCATED A MINIMUM OF 50mm HORIZONTALLY TOWARDS PROPERTY BOUNDARY FROM CONDUITS (HV OR LV) INSTALLED ON PROPERTY BOUNDARY SIDE OF TRENCH. COIL 2m OF CABLE AT EACH STATION IDENTIFIED IN THE CONDUIT SCHEDULE REMARKS AND ALL REQUIRED JOINTS FOR CONNECTION BY ELECTRICAL CONTRACTOR.
- IN ACCORDANCE WITH ELECTRICAL SAFETY ACT, A SAFETY OBSERVER MUST BE PRESENT AT ALL TIMES WHEN WORKING IN THE VICINITY OF ENERGIZED CABLES. CONTACT ERGON ENERGY ON 131046.
- ELECTRONIC CABLE MARKERS (ECM'S) ARE TO BE SUPPLIED BY ERGON ENERGY AND ARE REQUIRED AT ENDS OF ALL SPARE CONDUITS AND AT ALL CABLE JOINTS. ECM'S SHALL BE PLACED 150mm ABOVE THE LINE OF CONDUIT FOR CABLE JOINTS AND 100mm ABOVE THE LINE OF CONDUIT FOR SPARE CONDUITS. ECM'S ARE RECOVERABLE AND SHALL BE REMOVED AND RETURNED TO ERGON ENERGY WHEN ALL SPARE CONDUIT ENDS ARE REMOVED FROM A LOCATION.
- WHERE NOTED ON DRAWING CONCRETE COVER SHALL BE INSTALLED ABOVE CONDUIT, WHERE CONDUIT BURIAL DEPTH IS LESS THAN THAT SPECIFIED IN UNDERGROUND CONSTRUCTION MANUAL DRAWING 5163. FOR FOOTPATHS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5016. FOR ROAD CROSSINGS REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5017.
- EXTRA CONDUIT BENDS SHALL BE INSTALLED TO ACHIEVE INCREASED BURIAL DEPTH AT ROAD CROSSINGS. REFER TO UNDERGROUND CONSTRUCTION MANUAL DRAWING 5022.
- INSTALL PILLAR OFFSET FROM PROPERTY BOUNDARY IN ACCORDANCE WITH DRAWING 5196.
- WHERE NOTED ON DRAWING CONDUIT TO BE ROUTED UNDER THE STORMWATER PIPE.

CONDUIT SCHEMATIC



NOTE: CONDUITS SHOWN ARE INDICATIVE ONLY. DO NOT USE AS REFERENCE FOR CONDUIT LAYING. REFER TO CONDUIT SCHEDULE FOR STATION TO STATION DETAILS AND CONDUIT BEND INFORMATION. REFER TO SITE PLAN FOR TRENCH SECTION DETAILS.

FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES: YES/NO YES

ELECTRICAL CONTRACTOR
NAME: Civex Pty Ltd
SIGNATURE: [Signature]
DATE: 27-2-13

CIVIL CONTRACTOR
NAME: Civex Pty Ltd
SIGNATURE: [Signature]
DATE: 27-2-13

| Code | Date | Description | Revised | Code | Date | Description | Approved |
|------|----------|----------------------|---------|------|------|-------------|----------|
| A | 25/09/12 | FOR CONSTRUCTION | AD | | | | |
| 2 | 30/08/12 | AMALGAMATION OF LOTS | AD | | | | |
| 1 | 27/06/12 | FOR APPROVAL | AD | | | | |

| | |
|--|---|
| CLIENT: URBAN LAND DEVELOPMENT AUTHORITY | PO BOX 2202 BRISBANE QLD 4001 Ph: (07) 3224 4133 |
| CIVIL ENGINEER BORNHURST AND WARD CONSULTING ENGINEERS | LEVEL 4, 57 ASTOR TERRACE SPRING HILL QLD 4000 Ph: (07) 3013 4999 |

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| LEGEND | |
|--|---------------------------------|
| ----- CABLE EXISTING | □ SUBSTATION |
| ----- CABLE PLANNED | ✓ HV ISOLATING DEVICE |
| ----- CABLE RECOVER | □ LV ISOLATING DEVICE |
| ----- EQUIPMENT EXISTING | □ NORMAL PILLAR |
| ----- EQUIPMENT RECOVER | □ CROSS ROAD PILLAR |
| ----- EQUIPMENT PLANNED | □ LINKING PILLAR |
| ----- LIGHTING DUCT | □ COMMERCIAL/ INDUSTRIAL PILLAR |
| ----- 35mm sq ANNEALED BARE COPPER EARTH | □ DISTRIBUTION CABINET |
| | * STREETLIGHT |
| | ⊥ EARTH |
| | ○ POLE |

| | | |
|--|--------------------------------|---------------|
| Drawing Title | Date | JUNE 2012 |
| UDA BAUMAN WAY STAGE 3 & 4 UDC UG ELECTRICAL RETICULATION SITE PLAN AND SCHEMATIC DIAGRAMS | Scale | 1:1000@A1 |
| Project Description | Drawn | AD |
| UDA BAUMAN WAY BLACKWATER | Approved | JE |
| ERGON Project Number 650857 | SPA Drawing Number 2089-E01 | Revision A |

| CONSTRUCTION SCHEDULE | | | | | | | | | |
|-----------------------|------------|----------------|--------------------|-----------------|------------------------------|-----------------------|----------------|------------------|---|
| STN NO | SITE LABEL | POLE ALIGNMENT | POLE SETTING DEPTH | ACTION | CONSTRUCTION CLASS | CONSTRUCTION CODE | DRAWING NUMBER | POSITION ON POLE | REMARKS |
| 1 | | | | EXISTING | EARTH | | | | |
| 1 | | | | INSTALL - ERGON | LV CABLE TERMINATION | LV CT PM22/240 | 5087 | | LV TERMINATION FOR STN 7 TO STN 1 CABLE. |
| 1 | | | | INSTALL - ERGON | LV CABLE TERMINATION | LV CT PM22/240 | 5087 | | LV TERMINATION FOR STN 9 TO STN 1 CABLE. |
| 1 | | | | EXISTING | SUBSTATION FOUNDATION | | | | |
| 1 | | | | EXISTING | SUBSTATION INC HV SWITCHGEAR | | | | |
| 2 | | | | EXISTING | POLE | | | | |
| 3 | | | | EXISTING | EARTH | | | | |
| 3 | | | | EXISTING | PILLAR | | | | |
| 3 | | | | INSTALL - ERGON | PILLAR UPGRADE | LV PNU1-2/240 | 5074 | | TO BE UPGRADED TO TWO WAY PILLAR. |
| 5 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 5 | 10359607 | | | INSTALL | PILLAR | LV PN1/6S/240 | 5025 | | |
| 6 | 10359612 | | | INSTALL | POLE | SL BPM/105/1 30/UG C1 | 1-5-6-1 & 2 | | |
| 7 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 7 | 10359608 | | | INSTALL | PILLAR | LV PN1/6S/240 | 5025 | | TO BE UPGRADED TO TWO-WAY PILLAR IN FUTURE. |
| 9 | 10359606 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | |
| 11 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 11 | 10359602 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | |
| 12 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 12 | 10359601 | | | INSTALL | PILLAR | LV PN1/6/240 | 5025 | | INSTALL PILLAR OFFSET TOWARDS LOT 306. REFER TO NOTE 17. |
| 13 | | | | EXISTING | POLE | | | | |
| 14 | | | | EXISTING | EARTH | | | | |
| 14 | | | | EXISTING | PILLAR | | | | |
| 14 | | | | INSTALL - ERGON | PILLAR UPGRADE | LV PNU1-2/240 | 5074 | | TO BE UPGRADED TO TWO WAY PILLAR. |
| 15 | 10359600 | | | INSTALL | PILLAR | LV PN2/6S/240 | 5026 | | INSTALL PILLAR OFFSET TOWARDS LOT 308. REFER TO NOTE 17. |
| 16 | 10359609 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | INSTALL POLE 5.78M FROM THE EDGE OF ADJACENT CAR PARK. |
| 17 | | | | INSTALL | EARTH | E MEN/PIL | 5085 | | |
| 17 | 10359603 | | | INSTALL | PILLAR | LV PN1/6/240 | 5025 | | INSTALL PILLAR OFFSET TOWARDS LOT 407. REFER TO NOTE 17. |
| 18 | 10359604 | | | INSTALL | PILLAR | LV PN2/6/240 | 5026 | | |
| 20 | 10359610 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | |
| 22 | 10359611 | | | INSTALL | POLE | SL BPM/75/1 15 CI | 1-6-4-1 & 2 | | INSTALL POLE PERPENDICULAR TO PROPERTY BOUNDARY TRUNCATION. |
| 23 | 10359605 | | | INSTALL | PILLAR | LV PX/8S/16CU | 5041 | | |
| 25 | | | | EXISTING | PILLAR | | | | |
| 26 | | | | EXISTING | PILLAR | | | | |
| 27 | | | | EXISTING | EARTH | | | | |
| 27 | | | | EXISTING | PILLAR | | | | |
| 28 | | | | EXISTING | PILLAR | | | | |
| 29 | | | | EXISTING | PILLAR | | | | |
| 30 | 10359613 | | | INSTALL | POLE | SL BPM/105/1 30/UG C1 | 1-5-6-1 & 2 | | |

| CONDUIT DUCTING SCHEDULE | | | | | | | |
|--------------------------|--------|-----------------|------------------------------|------------|-----------------------|---|--|
| STN FROM | STN TO | ACTION | CONSTRUCTION CODE | LENGTH (m) | No. of LENGTHS / DRUM | BENDS (Degrees/ Radius(mm) x No.) | Remarks |
| 4 | 5 | INSTALL - CIVIL | C100L | 18 | 3.0 | 45/1200x1 | LOCATE EXISTING CONDUIT AT STN 4 AND CONNECT TO NEW. |
| 4 | 7 | INSTALL - CIVIL | C100L | 54 | 9.0 | 45/1200x1 | LOCATE EXISTING CONDUIT AT STN 4 AND CONNECT TO NEW. |
| 4 | 8 | INSTALL - CIVIL | C125L | 80 | 13.3 | | LOCATE EXISTING HV CONDUIT AT STN 4 AND CONNECT TO NEW. CAP CONDUIT AT STN 8. |
| 4 | 8 | INSTALL - CIVIL | C125L | 80 | 13.3 | | LOCATE EXISTING HV CONDUIT AT STN 4 AND CONNECT TO NEW. CAP CONDUIT AT STN 8. |
| 4 | 9 | INSTALL - CIVIL | C100L | 62 | 10.3 | 45/1200x1 45/1830x1 30/1830x1 15/1830x6 | LOCATE EXISTING CONDUIT AT STN 4 AND CONNECT TO NEW. CONCRETE COVER REQUIRED AT STORMWATER CROSSING. REFER TO NOTE 15. |
| 5 | 6 | INSTALL - CIVIL | C40H | 3 | 0.8 | 90/300x2 | |
| 5 | 17 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 133 | 0.5 | | COIL 2.0M AT STN 17 AND STN 5 AND LOOP 2.0M AT STN 11 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| 7 | 8 | INSTALL - CIVIL | C100L | 27 | 4.5 | 45/1200x1 | CAP LV CONDUIT AT STN 8. |
| 7 | 30 | INSTALL - CIVIL | C40H | 20 | 5.0 | 90/300x2 90/600x1 | |
| 8 | 4 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 80 | 0.3 | | LEAVE AT BOTTOM OF TRENCH AT STN 4 AND 8 AND LOOP AT STN 5 AND 7 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| 9 | 11 | INSTALL - CIVIL | C100L | 45 | 7.5 | 45/1200x2 | |
| 9 | 23 | INSTALL - CIVIL | C100L | 19 | 3.2 | 90/450x2 15/1830x2 | |
| 11 | 18 | INSTALL - CIVIL | C100L | 18 | 3.0 | 45/1200x2 15/1830x2 | |
| 11 | 20 | INSTALL - CIVIL | C40H | 3 | 0.8 | 90/300x2 | |
| 15 | 12 | INSTALL - CIVIL | C100L | 36 | 6.0 | 45/1200x2 45/1830x1 30/1830x1 15/1830x1 | |
| 15 | 16 | INSTALL - CIVIL | C40H | 22 | 5.5 | 90/300x2 90/600x1 | |
| 18 | 17 | INSTALL - CIVIL | C100L | 43 | 7.2 | 45/1200x2 | |
| 23 | 22 | INSTALL - CIVIL | C40H | 32 | 8.0 | 90/300x2 90/600x1 | |
| 24 | 12 | INSTALL - CIVIL | 35mm2 ANNEALED BARE Cu EARTH | 46 | 0.2 | | COIL 2.0M AT STN 12 AND LEAVE AT THE BOTTOM OF TRENCH AT STN 24 FOR CONNECTION BY ELECTRICAL CONTRACTOR. |
| 24 | 15 | INSTALL - CIVIL | C100L | 13 | 2.2 | 45/1200x1 | LOCATE EXISTING CONDUIT AT STN 24 AND CONNECT TO NEW. |

| UNDERGROUND CABLE SCHEDULE | | | | | | | |
|----------------------------|--------|---------|---------|-------------------|--------------|--------------|--|
| STN FROM | STN TO | ACTION | VOLTAGE | CONSTRUCTION CODE | ROUTE LENGTH | CABLE LENGTH | REMARKS |
| 1 | 7 | INSTALL | 415V | LV-240C4/673 | 94 | 96 | FINAL TERMINATION BY ERGON ENERGY AT STN 1. |
| 1 | 9 | INSTALL | 415V | LV-240C4/673 | 102 | 106 | FINAL TERMINATION BY ERGON ENERGY AT STN 1. |
| 3 | 5 | INSTALL | 415V | LV-240C4/673 | 36 | 40 | FINAL TERMINATION BY ERGON ENERGY AT STN 3. |
| 5 | 6 | INSTALL | 240V | LVI-4CU2NS/1671 | 3 | 8 | |
| 7 | 30 | INSTALL | 240V | LVI-4CU2NS/1671 | 20 | 25 | |
| 9 | 11 | INSTALL | 415V | LV-240C4/673 | 45 | 49 | |
| 9 | 23 | INSTALL | 415V | LV-16CUC4/614 | 19 | 23 | |
| 11 | 18 | INSTALL | 415V | LV-240C4/673 | 18 | 22 | |
| 11 | 20 | INSTALL | 240V | LVI-4CU2NS/1671 | 3 | 8 | |
| 14 | 15 | INSTALL | 415V | LV-240C4/673 | 15 | 19 | FINAL TERMINATION BY ERGON ENERGY AT STN 14. |
| 15 | 12 | INSTALL | 415V | LV-240C4/673 | 36 | 40 | |
| 15 | 16 | INSTALL | 240V | LVI-4CU2NS/1671 | 22 | 27 | |
| 18 | 17 | INSTALL | 415V | LV-240C4/673 | 41 | 45 | |
| 23 | 22 | INSTALL | 240V | LVI-4CU2NS/1671 | 32 | 37 | |

| PUBLIC LIGHTING SCHEDULE | | | | | | | |
|--------------------------|------------|----------|-------------------|--------|------------------------------------|---------------------|---------|
| STN NO | SITE LABEL | ACTION | CONSTRUCTION CODE | RATE | TARIFF OWNER | MOUNTING HEIGHT (m) | REMARKS |
| 2 | | EXISTING | | | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | |
| 6 | | INSTALL | SL S150CA | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | |
| 13 | | EXISTING | | | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 16 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 20 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 22 | | INSTALL | SL M80D | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 7.5 | |
| 30 | | INSTALL | SL S150CA | RATE 2 | CENTRAL HIGHLANDS REGIONAL COUNCIL | 10.5 | |

FOR CONSTRUCTION

ON COMPLETION, MARK UP THIS PRINT CLEARLY WITH ALL FINAL CHANGES AND RETURN TO SPA

CHANGES: YES/NO

ELECTRICAL CONTRACTOR

NAME: Cwex Pty Ltd

SIGNATURE: [Signature]

DATE: 27-2-13

CIVIL CONTRACTOR

NAME: Cwex Pty Ltd

SIGNATURE: [Signature]

DATE: 27-2-13

| Code | Date | Description | Revised | Code | Date | Description | Approved |
|------|----------|--------------------------------|---------|------|------|-------------|----------|
| B | 08/11/12 | SITE LABELS AND LIGHTS UPDATED | AD | | | | |
| A | 25/09/12 | FOR CONSTRUCTION | AD | | | | |
| 2 | 30/08/12 | AMALGAMATION OF LOTS | AD | | | | |
| 1 | 27/06/12 | FOR APPROVAL | AD | | | | |

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A business unit of SPA Consulting Engineers (QLD) Pty Ltd. (15044641)

LEGEND

- CABLE EXISTING
- CABLE PLANNED
- CABLE RECOVER
- EQUIPMENT EXISTING
- EQUIPMENT RECOVER
- EQUIPMENT PLANNED
- HV DUCT
- LV DUCT
- LIGHTING DUCT
- 35mm sq ANNEALED BARE COPPER EARTH

- SUBSTATION
- ✓ HV ISOLATING DEVICE
- | LV ISOLATING DEVICE
- NORMAL PILLAR
- CROSS ROAD PILLAR
- LINKING PILLAR

- COMMERCIAL/ INDUSTRIAL PILLAR
- DISTRIBUTION CABINET
- * STREETLIGHT
- EARTH
- POLE

Drawing Title
**UDA BAUMAN WAY STAGE 3 & 4
UDC UG ELECTRICAL RETICULATION
SCHEDULES**

Project Description
**UDA BAUMAN WAY
BLACKWATER**

| Date | June 2012 |
|----------------------|--------------------|
| Scale | NTS |
| Drawn | AD |
| Approved | JE |
| ERGON Project Number | SPA Drawing Number |
| 650857 | 2089-E02 |
| Revision | B |

