

DRAWING LIST

| DWG NO. | TP FOLDER | MERIDIAN FOLDER | DWG TITLE |
|------------|-------------|-----------------|---|
| TP54974/2 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 220kV PART 1 (SWITCHYARD A) |
| TP54974/3 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 220kV PART 2 (SWITCHYARD A) |
| TP54974/4 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 220kV PART 3 (SWITCHYARD B) |
| TP54974/5 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 220kV FILTER BANK 3 (SWITCHYARD B) |
| TP54974/6 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 220kV FILTER BANK 4 (SWITCHYARD B) |
| TP54974/7 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 220kV FILTER BANK 5 (SWITCHYARD B) |
| TP54974/8 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 220kV FILTER BANK 6 (SWITCHYARD B) |
| TP54974/9 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 220kV FILTER BANK 7 (SWITCHYARD B) |
| TP54974/10 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 220/144/144kV T28 (HVDC POLE 2) (SWITCHYARD B) |
| TP54974/11 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 220/144/144kV T30 (HVDC POLE 3) (SWITCHYARD B) |
| TP54974/12 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 220/11kV T27 & T29 (SWITCHYARD B) |
| TP54974/13 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 11kV POLE 2 & POLE 3 PART 1 (SWITCHYARD B) |
| TP54974/14 | (BEN/2C1.1) | (B8/7g.1) | RELAY & INSTRUMENT DIAGRAM (OPERATING) - 11kV POLE 2 & POLE 3 PART 2 (SWITCHYARD B) |

REFERENCE DRAWINGS

| DWG NO. | TP FOLDER | MERIDIAN FOLDER | DWG TITLE |
|-----------|-------------|-----------------|--|
| TX25618 | (BEN/2C1.1) | (B8/7g.1) | POLE 2 SINGLE LINE DIAGRAM (OPERATING) |
| TX26047 | (BEN/2C1.1) | (B8/7g.1) | SWITCHYARD A 220 kV SINGLE LINE DIAGRAM (OPERATING) |
| TX26048/1 | (BEN/2C1.1) | (B8/7g.1) | SWITCHYARD B 220/114/11 kV SINGLE LINE DIAGRAM (OPERATING) |
| TX26048/2 | (BEN/2C1.1) | (B8/7g.1) | SWITCHYARD B 220 kV FILTER BANKS SINGLE LINE DIAGRAM (OPERATING) |
| TP74303 | (BEN/2C1.1) | (B8/7g.1) | SWITCHYARD B POLE 2 & POLE 3 11 kV SINGLE LINE DIAGRAM (OPERATING) |
| TP74318 | (BEN/2C1.1) | (B8/7g.1) | POLE 3 SINGLE LINE DIAGRAM (OPERATING) |
| TP54975/1 | (BEN/2C1.1) | (B8/7g.1) | BUS ZONE PROTECTION DWG LIST & EQUIPMENT LEGENDS (OPERATING) |
| XDN3670/1 | (BEN/2C1.1) | (B8/7g.1) | STATION RELAY & INSTRUMENT SINGLE LINE DIAGRAM (SYSTEM) - PART 1 |
| XDN3670/2 | (BEN/2C1.1) | (B8/7g.1) | STATION RELAY & INSTRUMENT SINGLE LINE DIAGRAM (SYSTEM) - PART 2 |

| 220kV VT SELECTION (MANUAL) | | | | | |
|-----------------------------|---------|--------------|--------------|--------------|--------------|
| RELAY/METER | VT MAIN | VT ALTERNATE | VT ALTERNATE | VT ALTERNATE | VT ALTERNATE |
| 220kV Bus Hz TD | VT3 | VT5 | VT9 | CVT562 | CVT582 |

| 220kV VT SELECTION (AUTOMATIC) | | | | | |
|--------------------------------|---------|--------------|--------------|--------------|--------------|
| RELAY/METER | VT MAIN | VT ALTERNATE | VT ALTERNATE | VT ALTERNATE | VT ALTERNATE |
| 220kV Indications | VT3 | VT5 | VT9 | CVT562 | CVT582 |

RELAY LEGEND

| | |
|-----------------|---|
| ARecl | Automatic reclose |
| ARecl(DdLn) | Dead line automatic reclose |
| Buch | Buchholz |
| Buch(Main) | Main tank buchholz |
| Buch(TCh) | Tap changer buchholz |
| BusPres | Busbar pressure |
| CablePres | Cable pressure |
| CapUBProt | Unbalanced capacitor protection |
| Close | Close |
| DC Control | DC control |
| DC TFR | DC transfer |
| DCEF(Ac) | Directional comparison earth fault accelerating |
| Dif | Differential |
| Dif(EF) | Earth fault differential |
| Dist(Ac) | Distance accelerating |
| Dist/DCEF | Distance and directional comparison earth fault |
| EF(Alarm) | Earth fault alarm |
| EF(DefT) | Definite time earth fault |
| EF(IT) | Inverse time earth fault |
| FItLoc | Fault locator |
| FIt(OC) | Filter overcurrent |
| FMR | Feeder management relay |
| HV | High voltage |
| ITrip(Rec) | Intertrip receive |
| ITrip(Send) | Intertrip send |
| LV | Low voltage |
| OC | Overcurrent |
| OC(CBFail) | Circuit breaker failure overcurrent |
| OC(DefT) | Definite time overcurrent |
| OC(EF) | Overcurrent and earth fault |
| OC(IT) | Inverse time overcurrent |
| OC(Inst) | Instantaneous overcurrent |
| OC(ZS) | Overcurrent lockout |
| Oil | Oil flow relay |
| OV | Thermal Overload |
| OV/OL | Overvoltage & overload |
| OV(DefT) | Definite time overvoltage |
| PrRel | Pressure relief |
| PrRel(Main) | Main tank pressure relief |
| PrRel(TCh) | Tap changer pressure relief |
| PWave | Point-on-wave closing |
| Rect(OC) | Rectifier overcurrent |
| ResV(BZ) | Bus zone residual voltage |
| Sig | Signalling |
| Start | Start |
| Synch | Synchronising |
| SyncPh | Synchrophasor |
| Temp(ET) | Earthing transformer temperature |
| Temp(Main) | Main transformer temperature |
| Temp(Oil) | Oil temperature |
| Temp(Vblg) | Valve building temperature |
| TimeDel(CBFail) | Circuit breaker failure time delay |
| Trip | Trip |
| Trip(BZ) | Bus zone trip |
| Trip(CBFail) | Circuit breaker failure trip |
| UB | Unbalance |
| UV | Undervoltage |
| UF(Alarm) | Underfrequency alarm |
| VReg | Voltage regulator |

SYMBOLS LEGEND

| | |
|--|--|
| | Digital indications (Amps) |
| | Digital indications (Watts, vars, amps) |
| | Digital indications (Watts, vars, amps, volts) |
| | |
| | Current transducer |
| | Frequency transducer |
| | Tap position indicator |
| | Winding temperature indicator |
| | Voltage transducer |
| | Revenue meter |
| | Ammeter |
| | Frequency meter |
| | Voltmeter |

CATEGORY 4
MUTUAL INTEREST DRAWING
MERIDIAN ENERGY LTD
FOLDER REF: B8/7g.1
SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

THIS SET OF DRAWINGS SUPERSEDES
70111-M1-610-001, 70111-M1-610-002
& 70111-M2-610-001

| REV | REVISION DESCRIPTION | CONSULTANT | | | | | | TP | | |
|-----|--|------------|-----|------|-----|-------|-----|-------|-----|-------|
| | | CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE |
| C.3 | AS BUILT: SYMBOLS LEGEND UPDATED | EDISON | | | IAT | 03/19 | ML | 03/19 | ML | 03/19 |
| D | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD | EDISON | | | IAT | 01/22 | ML | 01/22 | ML | 01/22 |
| B | AS BUILT: REVISIONS A & A.1 APPROVED | EDISON | | | IAT | 04/11 | ML | 04/11 | MN | 04/11 |
| C | AS BUILT: DRAWING LIST & RELAY LEGEND UPDATED | EDISON | | | IAT | 08/11 | ML | 08/11 | MN | 08/11 |
| C.1 | AS BUILT: DRAWING LIST & RELAY LEGEND UPDATED | EDISON | | | IAT | 03/15 | ML | 03/15 | ML | 03/15 |
| C.2 | AS BUILT: RELAY LEGEND UPDATED | EDISON | | | IAT | 12/18 | ML | 12/18 | ML | 12/18 |



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BENMORE SUBSTATION

RELAY & INSTRUMENT DIAGRAM (OPERATING)

DWG LIST & EQUIPMENT LEGENDS

TRANSPOWER PROJECT CODE
SLD/RID MANAGEMENT

FOLDER
BEN/2C1.1

DRAWING NUMBER
TP54974

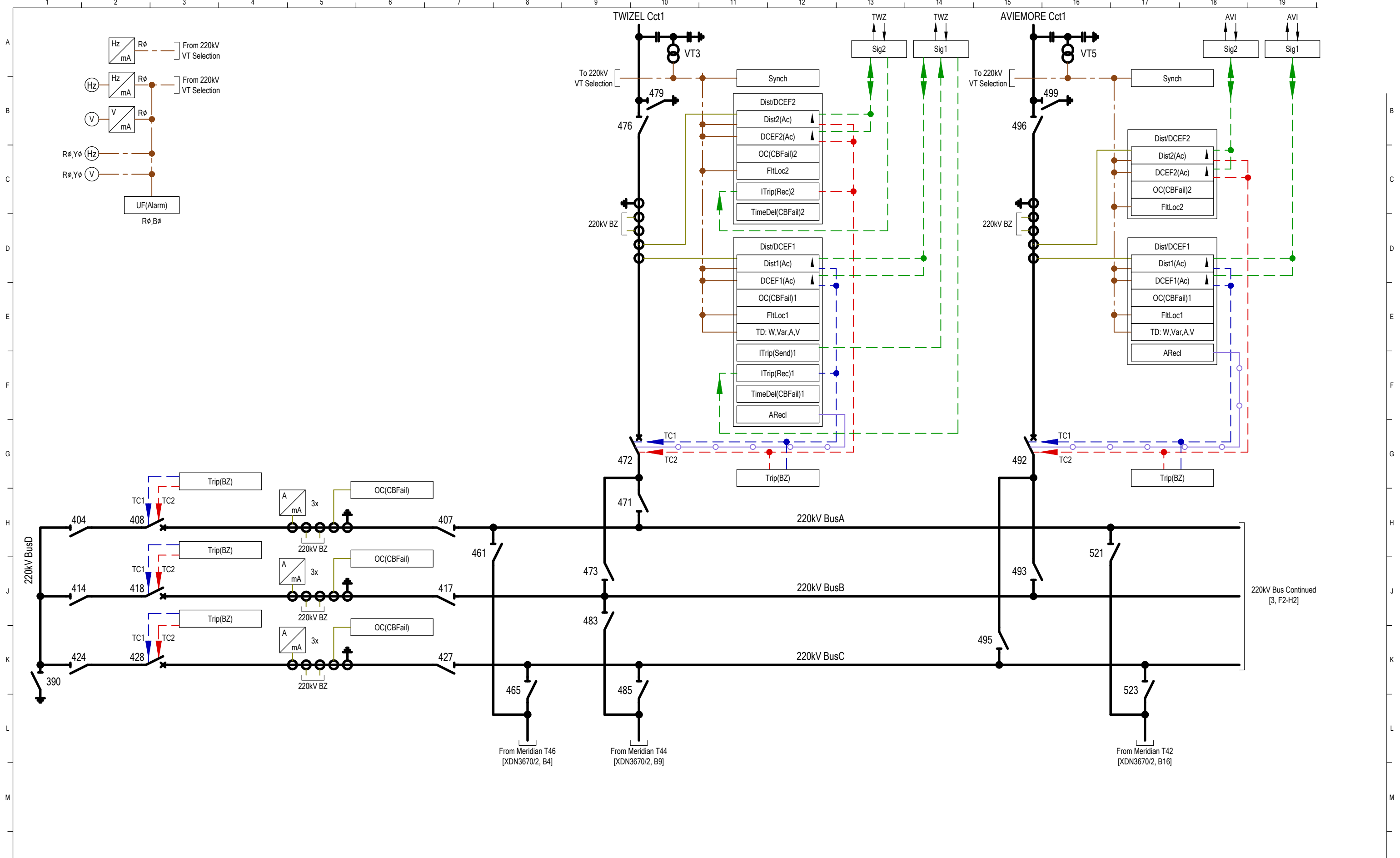
SHEET
1

REVISION
D

DRAWING CREATED BY:
EDISON
<https://www.edison.co.nz>

SCALE
N.T.S.

QREF: A1



CATEGORY 4
MUTUAL INTEREST DRAWING
MERIDIAN ENERGY LTD
FOLDER REF: 8879.1
SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

REFERENCE DRAWINGS
TP54974/1 (BEN/2C1.1) RELAY & INSTRUMENT DIAGRAM (OPERATING) DWG LIST & EQUIPMENT LEGENDS

| REV | REVISION DESCRIPTION |
|-----|--|
| C.3 | AS BUILT: VT3 & VT5 LABELS CORRECTED |
| C.4 | AS BUILT: TWZ Cct1 CB472 PROT UPDATED |
| C.5 | AS BUILT: NOTES UPDATED, TD'S REMOVED FROM CB472 & CB492 |
| D | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD |
| C.1 | AS BUILT: NOTE 2 ADDED |
| C.2 | AS BUILT: TITLE CHANGED, WHOLE SITE OVERVIEW |

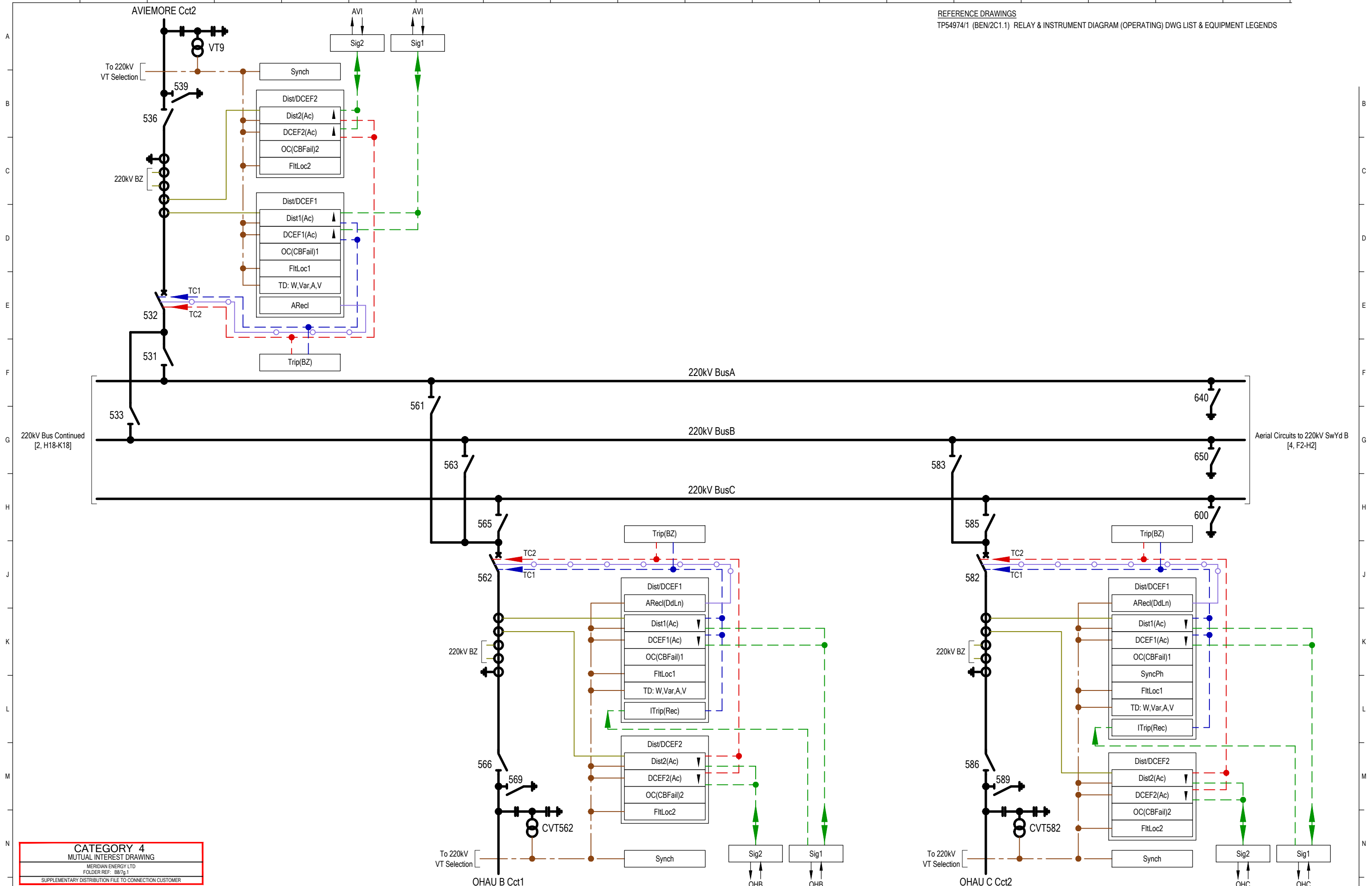
| CONSULTANT | | TP | | | | | | | | |
|------------|-----|------|-------|------|-------|------|-------|------|-------|------|
| CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | DATE |
| EDISON | | IAT | 03/17 | ML | 03/17 | ML | 03/17 | | | |
| EDISON | | IAT | 10/17 | ML | 10/17 | ML | 10/17 | | | |
| EDISON | | IAT | 03/19 | ML | 03/19 | ML | 03/19 | | | |
| EDISON | | IAT | 01/22 | ML | 01/22 | ML | 01/22 | DM | 01/22 | |
| EDISON | | IAT | 01/12 | ML | 01/12 | MN | 01/12 | | | |
| EDISON | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | | |



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BENMORE SUBSTATION
RELAY & INSTRUMENT DIAGRAM (OPERATING)
220kV PART 1
(SWITCHYARD A)

| TRANSPower PROJECT CODE | | FOLDER | |
|------------------------------------|--|-----------|----------|
| SLD/RID MANAGEMENT | | BEN/2C1.1 | |
| DRAWING NUMBER | | SHEET | REVISION |
| TP54974 | | 2 | D |
| DRAWING CREATED BY: | | SCALE | |
| EDISON https://www.edison.co.nz | | N.T.S. | |



CATEGORY 4
MUTUAL INTEREST DRAWING
MERIDIAN ENERGY LTD
FOLDER REF: 8879.1
SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

| REV | REVISION DESCRIPTION |
|-----|--|
| D.2 | AS BUILT: VT9 LABEL CORRECTED |
| D.4 | AS BUILT: SyncPh FUNCTION ADDED TO CB582 Dist/DCEF1, NOTES UPDATED, TD's REMOVED FROM CB532, CB562 & CB582 |
| E | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD |
| F | AS BUILT: ITrip(Rec) ADDED TO CB582 Dist/DCEF1 RELAY |
| G | AS BUILT: ITrip(Rec) ADDED TO CB562 Dist/DCEF1 RELAY |
| D.1 | AS BUILT: TITLE CHANGED, WHOLE SITE OVERVIEW |

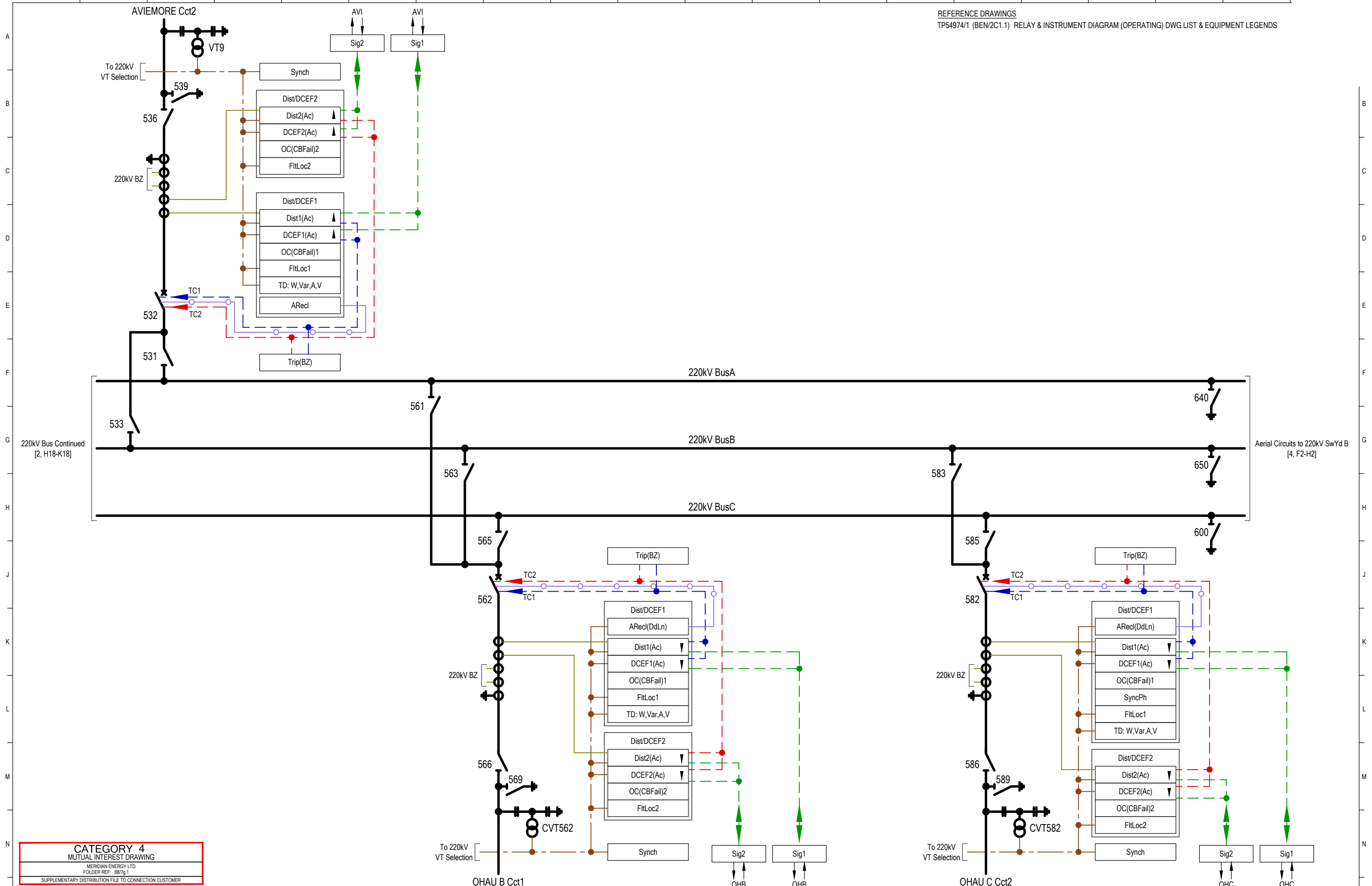
| CONSULTANT | | | | | | | | | | | |
|------------|-----|------|-------|------|-------|------|-------|------|-------|------|----|
| CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | DATE | TP |
| EDISON | | IAT | 03/17 | ML | 03/17 | ML | 03/17 | | | | |
| EDISON | | IAT | 03/19 | ML | 03/19 | ML | 03/19 | | | | |
| EDISON | | IAT | 01/22 | ML | 01/22 | ML | 01/22 | DM | 01/22 | | |
| EDISON | | IAT | 07/22 | ML | 07/22 | ML | 07/22 | GB | 07/22 | | |
| EDISON | | IAT | 09/22 | ML | 09/22 | ML | 09/22 | DM | 09/22 | | |
| EDISON | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | | | |



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BENMORE SUBSTATION
RELAY & INSTRUMENT DIAGRAM (OPERATING)
220kV PART 2
(SWITCHYARD A)

| TRANSPower PROJECT CODE | | FOLDER | |
|--------------------------|--|-----------|----------|
| SLD/RID MANAGEMENT | | BEN/2C1.1 | |
| DRAWING NUMBER | | SHEET | REVISION |
| TP54974 | | 3 | G |
| DRAWING CREATED BY: | | SCALE | |
| EDISON | | N.T.S. | |
| https://www.edison.co.nz | | | |



CATEGORY 4
MUTUAL INTEREST DRAWING
MERIDIAN ENERGY LTD
FOLDER REF: 887g.1
SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

| REV | REVISION DESCRIPTION |
|-----|--|
| D.2 | AS BUILT: VT9 LABEL CORRECTED |
| D.4 | AS BUILT: SyncPh FUNCTION ADDED TO CB582 Dist/DCEF1, NOTES UPDATED, TD's REMOVED FROM CB532, CB562 & CB582 |
| E | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD |
| C | AS BUILT: REVISIONS B & B.1 APPROVED |
| D | AS BUILT: PoleDisc REMOVED |
| D.1 | AS BUILT: TITLE CHANGED, WHOLE SITE OVERVIEW |

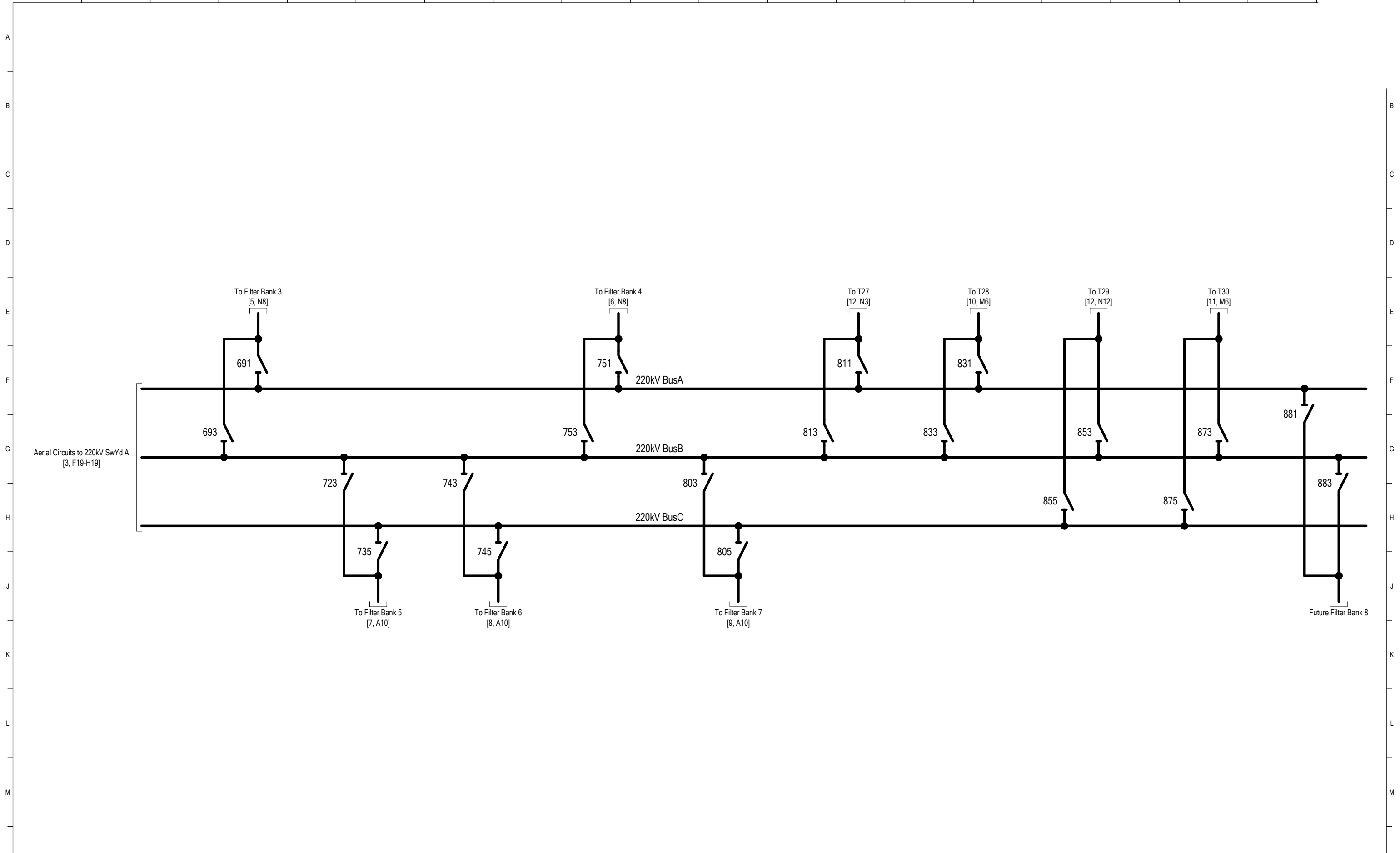
| CONSULTANT | | TP | |
|------------|-----|------|-------|
| CONSLT | DSN | DATE | DATE |
| EDISON | | IAT | 03/17 |
| EDISON | | IAT | 03/19 |
| EDISON | | IAT | 01/22 |
| EDISON | | IAT | 04/11 |
| EDISON | | IAT | 06/11 |
| EDISON | | IAT | 03/15 |



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BENMORE SUBSTATION
RELAY & INSTRUMENT DIAGRAM (OPERATING)
220kV PART 2
(SWITCHYARD A)

| | | | |
|--|--|---------------------|---------------|
| TRANSPower PROJECT CODE SLD/RID MANAGEMENT | | FOLDER BEN/2C1.1 | |
| DRAWING NUMBER TP54974 | | SHEET 3 | REVISION E |
| DRAWING CREATED BY: EDISON https://www.edison.co.nz | | SCALE N.T.S. | |



CATEGORY 4
MUTUAL INTEREST DRAWING
MERIDIAN ENERGY LTD
FOLDER REF: 8879.1
SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

REFERENCE DRAWINGS
TP54974/1 (BEN/2C1.1) RELAY & INSTRUMENT DIAGRAM (OPERATING) DWG LIST & EQUIPMENT LEGENDS

| REV | REVISION DESCRIPTION |
|-----|--|
| A | AS BUILT: DWG NOW CAT4 |
| B | AS BUILT: DRAWING REFERENCES UPDATED |
| B.1 | AS BUILT: TITLE CHANGED, WHOLE SITE OVERVIEW |
| C | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD |

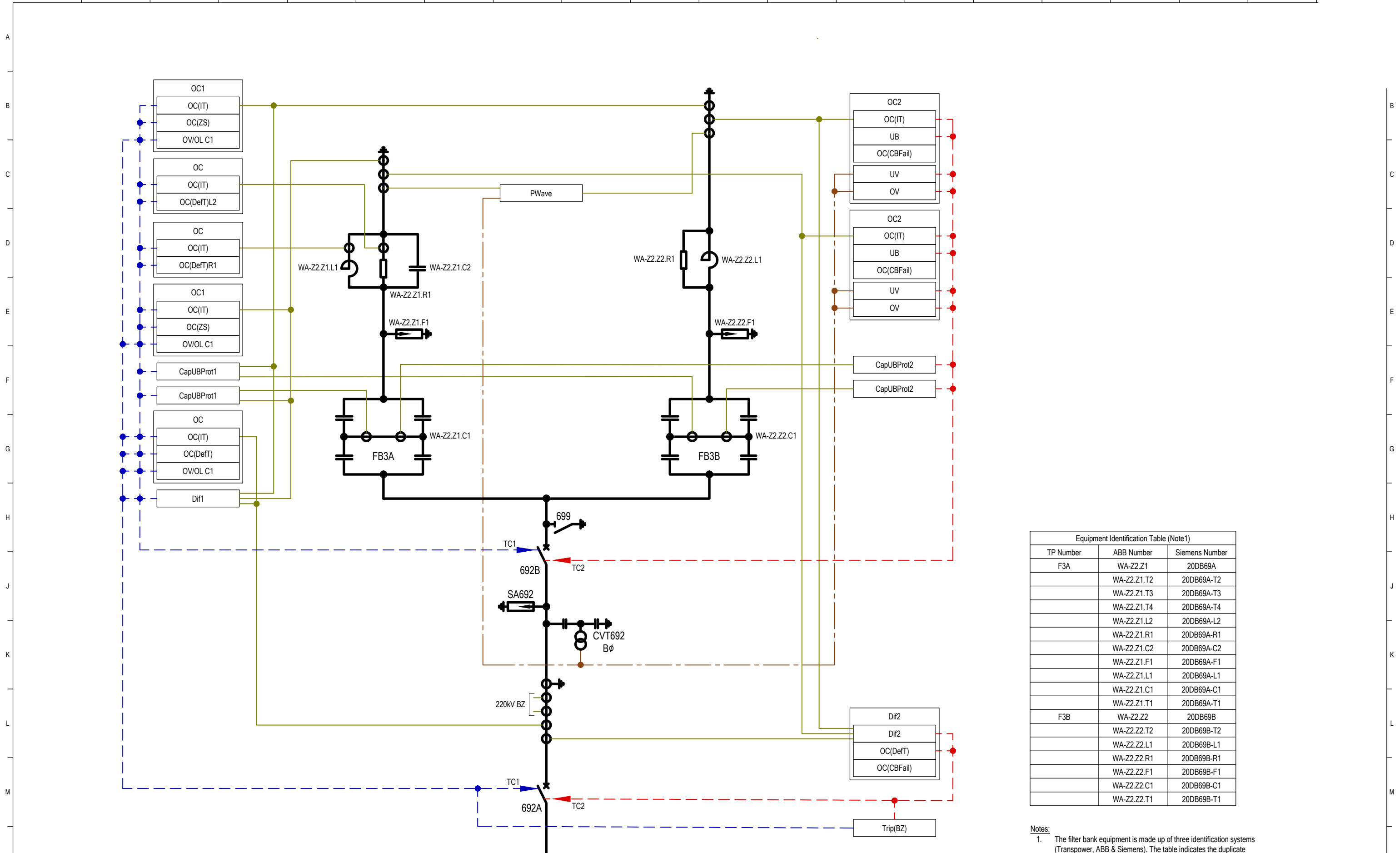
| CONSULTANT | | | | | | | | | | TP | |
|------------|-----|------|-----|-------|-----|-------|-----|-------|-----|-------|--|
| CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | DATE | |
| EDISON | | | IAT | 09/09 | ML | 09/09 | MN | 09/09 | EJ | 04/11 | |
| EDISON | | | IAT | 08/11 | ML | 08/11 | MN | 08/11 | | | |
| EDISON | | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | | |
| EDISON | | | IAT | 01/22 | ML | 01/22 | ML | 01/22 | DM | 01/22 | |



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BENMORE SUBSTATION
RELAY & INSTRUMENT DIAGRAM (OPERATING)
220kV PART 3
(SWITCHYARD B)

| | | | |
|--|--|----------------------------|----------------------|
| TRANSPOWER PROJECT CODE SLD/RID MANAGEMENT | | FOLDER BEN/2C1.1 | |
| DRAWING NUMBER TP54974 | | SHEET 4 | REVISION C |
| DRAWING CREATED BY: EDISON https://www.edison.co.nz | | SCALE N.T.S. | |



Equipment Identification Table (Note 1)

| TP Number | ABB Number | Siemens Number |
|-----------|-------------|----------------|
| F3A | WA-Z2.Z1 | 20DB69A |
| | WA-Z2.Z1.T2 | 20DB69A-T2 |
| | WA-Z2.Z1.T3 | 20DB69A-T3 |
| | WA-Z2.Z1.T4 | 20DB69A-T4 |
| | WA-Z2.Z1.L2 | 20DB69A-L2 |
| | WA-Z2.Z1.R1 | 20DB69A-R1 |
| | WA-Z2.Z1.C2 | 20DB69A-C2 |
| | WA-Z2.Z1.F1 | 20DB69A-F1 |
| | WA-Z2.Z1.L1 | 20DB69A-L1 |
| | WA-Z2.Z1.C1 | 20DB69A-C1 |
| F3B | WA-Z2.Z2 | 20DB69B |
| | WA-Z2.Z2.T2 | 20DB69B-T2 |
| | WA-Z2.Z2.L1 | 20DB69B-L1 |
| | WA-Z2.Z2.R1 | 20DB69B-R1 |
| | WA-Z2.Z2.F1 | 20DB69B-F1 |
| | WA-Z2.Z2.C1 | 20DB69B-C1 |
| | WA-Z2.Z2.T1 | 20DB69B-T1 |

Notes:
 1. The filter bank equipment is made up of three identification systems (Transpower, ABB & Siemens). The table indicates the duplicate identification where applicable. Refer to SLD for full annotation.

CATEGORY 4
 MUTUAL INTEREST DRAWING
 MERIDIAN ENERGY LTD
 FOLDER REF: 8879.1
 SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

| REV | REVISION DESCRIPTION | CONSULTANT | | | | | | | | | | TP | |
|-----|--|------------|-----|------|-----|-------|-----|-------|-----|-------|-----|-------|------|
| | | CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | | DATE |
| 0.1 | AS BUILT: T5 PROTECTION AMENDED, T4 & T6 REMOVED | EDISON | | | IAT | 04/08 | ML | 04/08 | MN | 04/08 | SD | 04/08 | |
| A | AS BUILT: DWG NOTW CAT4, NOTE 4 ADDED | EDISON | | | IAT | 09/09 | ML | 09/09 | MN | 09/09 | EJ | 04/11 | |
| B | AS BUILT: T5 REMOVED, T2 ADDED | EDISON | | | IAT | 08/11 | ML | 08/11 | MN | 08/11 | | | |
| B.1 | AS BUILT: CB1, CB3, CB12 & CB13 REMOVED | EDISON | | | IAT | 08/12 | ML | 08/12 | ML | 08/12 | | | |
| B.2 | AS BUILT: TITLE CHANGED, FILTER BANK 3 ADDED | EDISON | | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | | |
| C | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD | EDISON | | | IAT | 02/22 | ML | 02/22 | ML | 02/22 | DM | 02/22 | |

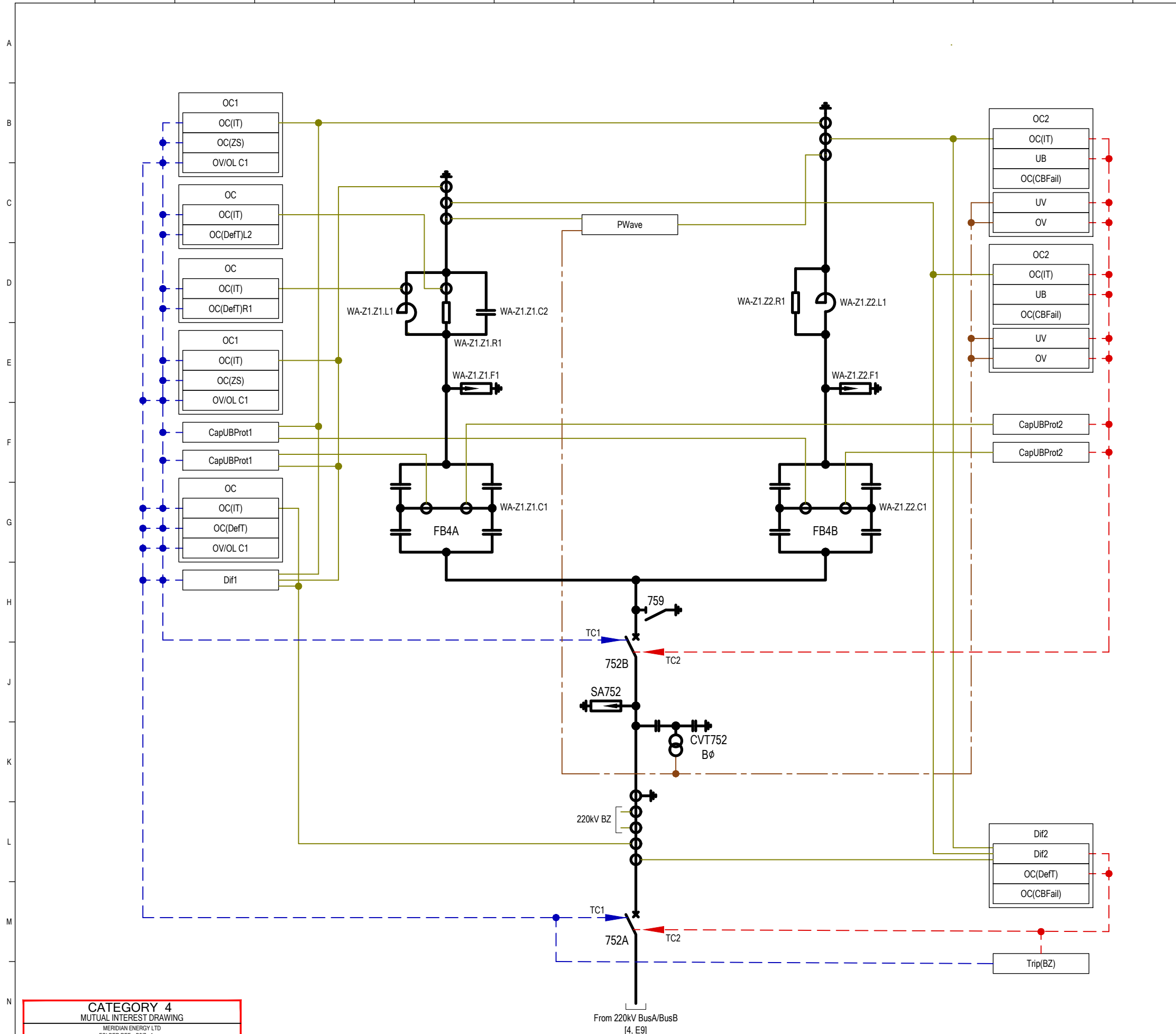


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BENMORE SUBSTATION
 RELAY & INSTRUMENT DIAGRAM (OPERATING)
 220kV FILTER BANK 3
 (SWITCHYARD B)

TRANSPOWER PROJECT CODE: TP54974/1 (BEN/2C1.1)
 SLD/RID MANAGEMENT
 DRAWING NUMBER: TP54974
 DRAWING CREATED BY: EDISON
<https://www.edison.co.nz>

FOLDER: BEN/2C1.1
 SHEET: 5
 REVISION: C
 SCALE: N.T.S.



Equipment Identification Table (Note 1)

| TP Number | ABB Number | Siemens Number |
|-----------|-------------|----------------|
| F4A | WA-Z1.Z1 | 20DB75A |
| | WA-Z1.Z1.T2 | 20DB75A-T2 |
| | WA-Z1.Z1.T3 | 20DB75A-T3 |
| | WA-Z1.Z1.T4 | 20DB75A-T4 |
| | WA-Z1.Z1.L2 | 20DB75A-L2 |
| | WA-Z1.Z1.R1 | 20DB75A-R1 |
| | WA-Z1.Z1.C2 | 20DB75A-C2 |
| | WA-Z1.Z1.F1 | 20DB75A-F1 |
| | WA-Z1.Z1.L1 | 20DB75A-L1 |
| | WA-Z1.Z1.C1 | 20DB75A-C1 |
| F4B | WA-Z1.Z2 | 20DB75B |
| | WA-Z1.Z2.T2 | 20DB75B-T2 |
| | WA-Z1.Z2.L1 | 20DB75B-L1 |
| | WA-Z1.Z2.R1 | 20DB75B-R1 |
| | WA-Z1.Z2.F1 | 20DB75B-F1 |
| | WA-Z1.Z2.C1 | 20DB75B-C1 |
| | WA-Z1.Z2.T1 | 20DB75B-T1 |
| | WA-Z1.Z2.T1 | 20DB75B-T1 |

Notes:
 1. The filter bank equipment is made up of three identification systems (Transpower, ABB & Siemens). The table indicates the duplicate identification where applicable. Refer to SLD for full annotation.

CATEGORY 4
 MUTUAL INTEREST DRAWING
 MERIDIAN ENERGY LTD
 FOLDER REF: 8879.1
 SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

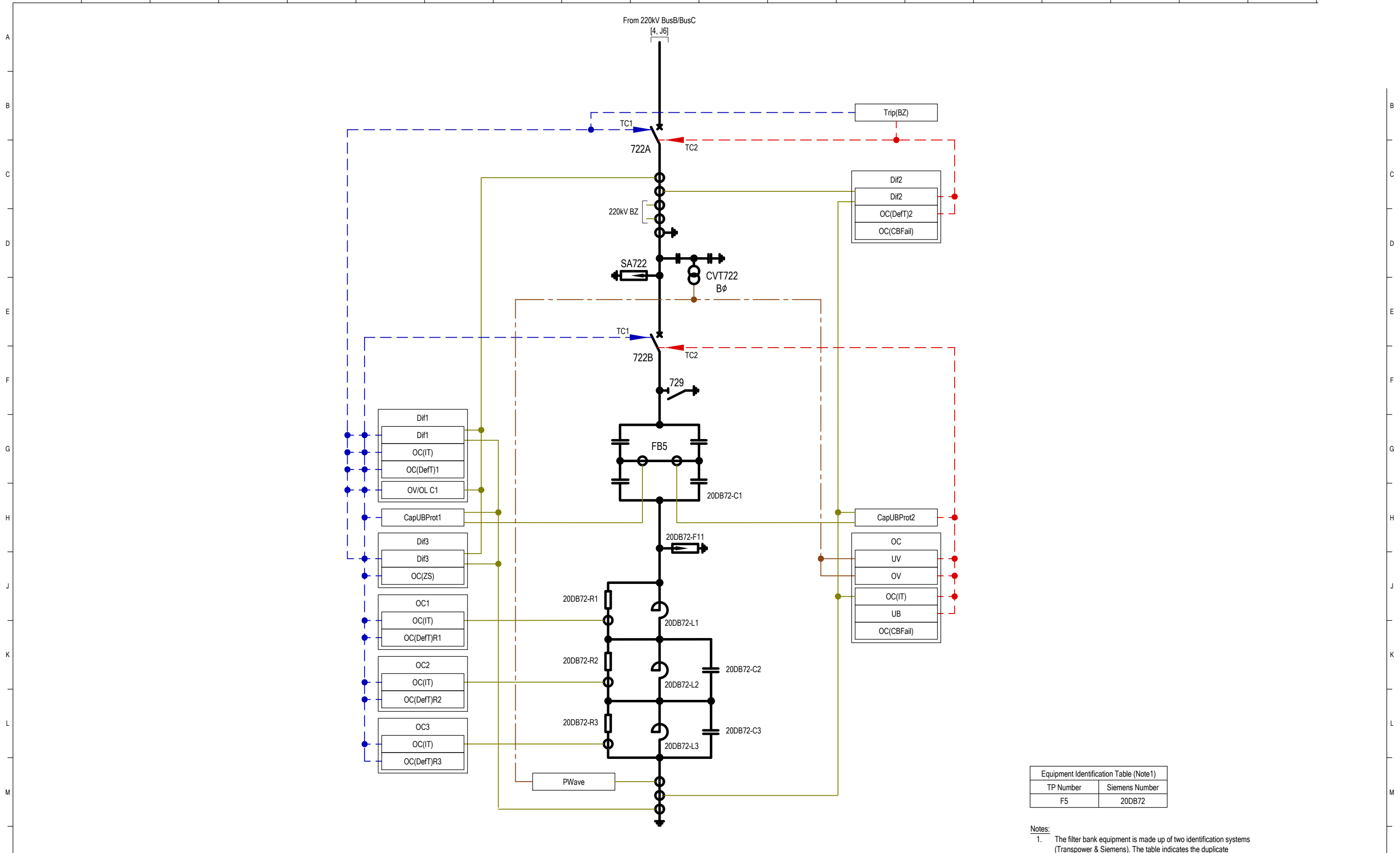
| REV | REVISION DESCRIPTION | CONSULTANT | | | | | | | | | | TP | |
|-----|--|------------|-----|------|-----|-------|-----|-------|-----|-------|-----|-------|-----|
| | | CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | DATE | APP |
| C.2 | AS BUILT: TITLE CHANGED, NOW FILTER BANK 4 | EDISON | | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | | |
| D | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD | EDISON | | | IAT | 02/22 | ML | 02/22 | ML | 02/22 | DM | 02/22 | |
| E | AS BUILT: CVT572 SUPPLY SHOWN | EDISON | | | IAT | 03/22 | ML | 03/22 | ML | 03/22 | GB | 03/22 | |
| B | AS BUILT: REVISIONS A & A.1 APPROVED | EDISON | | | IAT | 04/11 | ML | 04/11 | MN | 04/11 | EJ | 04/11 | |
| C | AS BUILT: TITLE CHANGED, SHEET 7 MOVED TO SHEET 6 | EDISON | | | IAT | 08/11 | ML | 08/11 | MN | 08/11 | | | |
| C.1 | AS BUILT: TITLE CHANGED, CB832 ADDED | EDISON | | | IAT | 01/13 | ML | 01/13 | MN | 01/13 | | | |

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BENMORE SUBSTATION
 RELAY & INSTRUMENT DIAGRAM (OPERATING)
 220kV FILTER BANK 4
 (SWITCHYARD B)

TRANSPower PROJECT CODE: TP54974/1 (BEN/2C1.1)
 SLD/RID MANAGEMENT
 DRAWING NUMBER: TP54974
 DRAWING CREATED BY: EDISON
<https://www.edison.co.nz>

FOLDER: BEN/2C1.1
 SHEET: 6
 REVISION: E
 SCALE: N.T.S.



CATEGORY 4
MUTUAL INTEREST DRAWING
MERIDIAN ENERGY LTD
FOLDER REF: 8879.1
SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

| Equipment Identification Table (Note1) | |
|--|----------------|
| TP Number | Siemens Number |
| F5 | 20DB72 |

Notes:
1. The filter bank equipment is made up of two identification systems (Transpower & Siemens). The table indicates the duplicate identification where applicable. Refer to SLD for full annotation.

REFERENCE DRAWINGS
TP54974/1 (BEN/2C1.1) RELAY & INSTRUMENT DIAGRAM (OPERATING) DWG LIST & EQUIPMENT LEGENDS

| REV | REVISION DESCRIPTION | CONSULTANT | | | | | | | | | | TP | | |
|-----|--|------------|-----|------|-----|-------|-----|-------|-----|-------|-----|-------|----|-------|
| | | CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | DATE | TP | DATE |
| A | AS BUILT: REVISION APPROVED | EDISON | | | IAT | 04/11 | ML | 04/11 | ML | 04/11 | ML | 04/11 | EJ | 04/11 |
| B | AS BUILT: TITLE CHANGED, FILTER BANK 5 ADDED | EDISON | | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | ML | 03/15 | | |
| C | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD | EDISON | | | IAT | 02/22 | ML | 02/22 | ML | 02/22 | ML | 02/22 | DM | 02/22 |

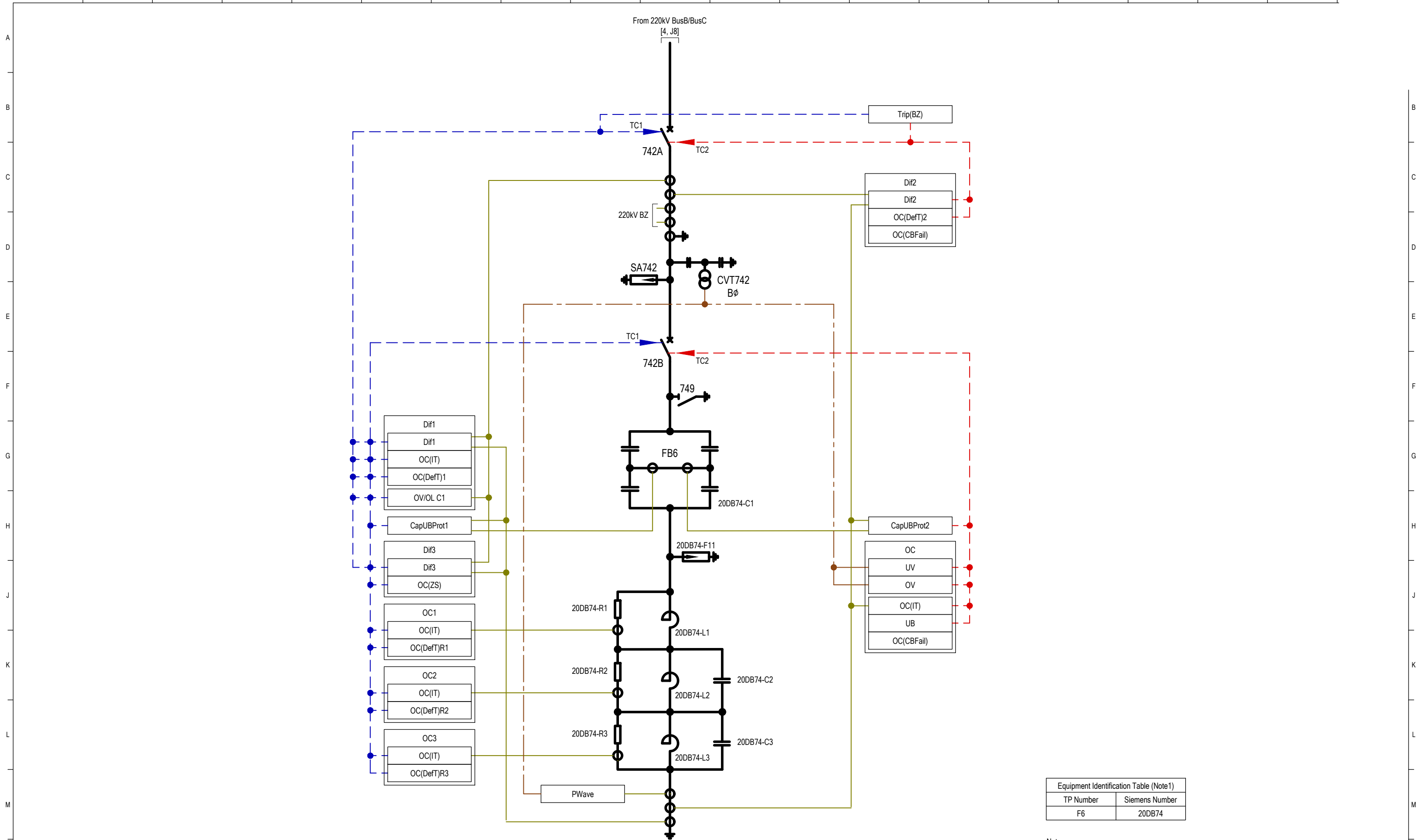


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BENMORE SUBSTATION
RELAY & INSTRUMENT DIAGRAM (OPERATING)
220kV FILTER BANK 5
(SWITCHYARD B)

| TRANSPOWER PROJECT CODE | | FOLDER | |
|---|---------|-----------------|----------|
| SLD/RID MANAGEMENT | TP54974 | BEN/2C1.1 | |
| DRAWING NUMBER | TP54974 | SHEET | REVISION |
| | | 7 | C |
| DRAWING CREATED BY: EDISON https://www.edison.co.nz | | SCALE N.T.S. | |

QREF: A1



CATEGORY 4
MUTUAL INTEREST DRAWING
MERIDIAN ENERGY LTD
FOLDER REF: 8879.1
SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

| Equipment Identification Table (Note1) | |
|--|----------------|
| TP Number | Siemens Number |
| F6 | 20DB74 |

Notes:
1. The filter bank equipment is made up of two identification systems (Transpower & Siemens). The table indicates the duplicate identification where applicable. Refer to SLD for full annotation.

REFERENCE DRAWINGS
TP54974/1 (BEN/2C1.1) RELAY & INSTRUMENT DIAGRAM (OPERATING) DWG LIST & EQUIPMENT LEGENDS

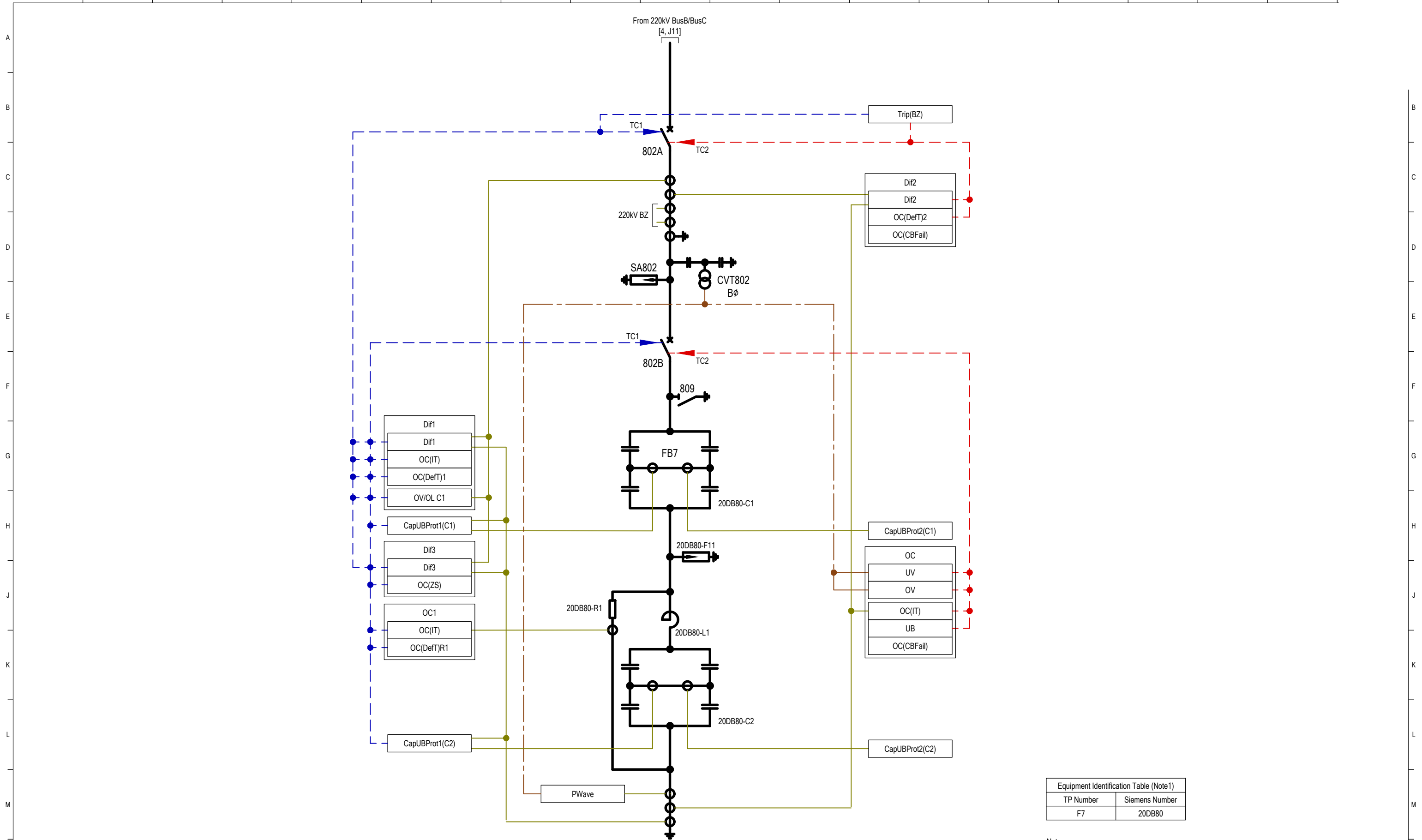
| REV | REVISION DESCRIPTION | CONSULTANT | | | | | | | | | | TP | | | |
|-----|--|------------|-----|------|-----|-------|-----|-------|-----|-------|-----|-------|------|--|--|
| | | CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | | DATE | | |
| - | AS BUILT: FIRST ISSUE OF DWG | EDISON | | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | | | | |
| A | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD | EDISON | | | IAT | 02/22 | ML | 02/22 | ML | 02/22 | DM | 02/22 | | | |



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BENMORE SUBSTATION
RELAY & INSTRUMENT DIAGRAM (OPERATING)
220kV FILTER BANK 6
(SWITCHYARD B)

| | | | |
|--------------------------|--|-----------|----------|
| TRANSPOWER PROJECT CODE | | FOLDER | |
| SLD/RID MANAGEMENT | | BEN/2C1.1 | |
| DRAWING NUMBER | | SHEET | REVISION |
| TP54974 | | 8 | A |
| DRAWING CREATED BY: | | SCALE | |
| EDISON | | N.T.S. | |
| https://www.edison.co.nz | | | |



| Equipment Identification Table (Note1) | |
|--|----------------|
| TP Number | Siemens Number |
| F7 | 20DB80 |

Notes:
 1. The filter bank equipment is made up of two identification systems (Transpower & Siemens). The table indicates the duplicate identification where applicable. Refer to SLD for full annotation.

REFERENCE DRAWINGS
 TP54974/1 (BEN/2C1.1) RELAY & INSTRUMENT DIAGRAM (OPERATING) DWG LIST & EQUIPMENT LEGENDS

CATEGORY 4
 MUTUAL INTEREST DRAWING
 MERIDIAN ENERGY LTD
 FOLDER REF: 887g.1
 SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

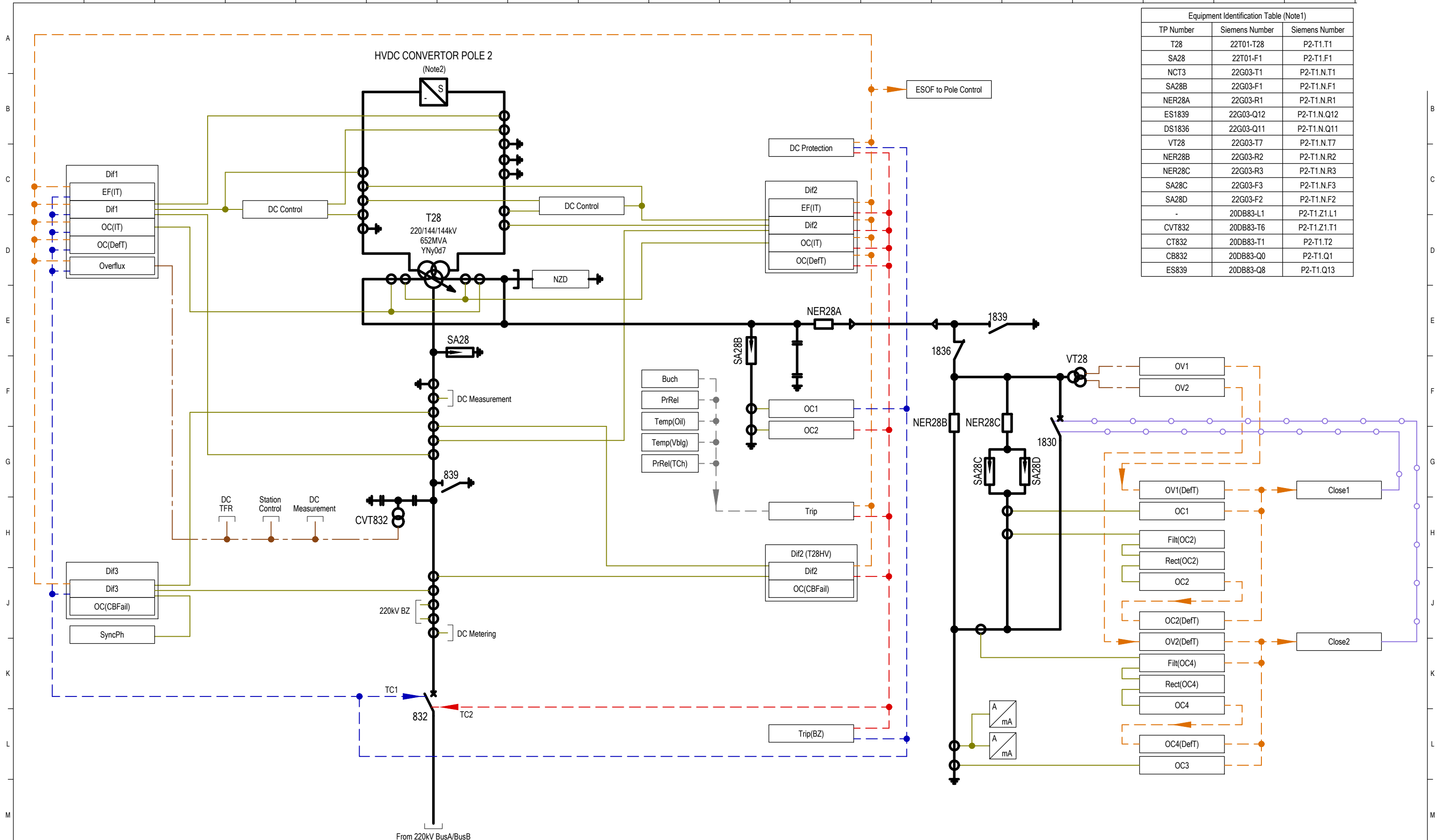
| REV | REVISION DESCRIPTION | CONSULTANT | | | | | | | | | | TP | | | |
|-----|--|------------|-----|------|-----|-------|-----|-------|-----|-------|-----|-------|------|--|--|
| | | CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | | DATE | | |
| - | AS BUILT: FIRST ISSUE OF DWG | EDISON | | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | | | | |
| A | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD | EDISON | | | IAT | 02/22 | ML | 02/22 | ML | 02/22 | DM | 02/22 | | | |



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BENMORE SUBSTATION
 RELAY & INSTRUMENT DIAGRAM (OPERATING)
 220kV FILTER BANK 7
 (SWITCHYARD B)

| | | | |
|--------------------------|--|-----------|----------|
| TRANSPOWER PROJECT CODE | | FOLDER | |
| SLD/RID MANAGEMENT | | BEN/2C1.1 | |
| DRAWING NUMBER | | SHEET | REVISION |
| TP54974 | | 9 | A |
| DRAWING CREATED BY: | | SCALE | |
| EDISON | | N.T.S. | |
| https://www.edison.co.nz | | | |



| Equipment Identification Table (Note1) | | |
|--|----------------|----------------|
| TP Number | Siemens Number | Siemens Number |
| T28 | 22T01-T28 | P2-T1.T1 |
| SA28 | 22T01-F1 | P2-T1.F1 |
| NCT3 | 22G03-T1 | P2-T1.N.T1 |
| SA28B | 22G03-F1 | P2-T1.N.F1 |
| NER28A | 22G03-R1 | P2-T1.N.R1 |
| ES1839 | 22G03-Q12 | P2-T1.N.Q12 |
| DS1836 | 22G03-Q11 | P2-T1.N.Q11 |
| VT28 | 22G03-T7 | P2-T1.N.T7 |
| NER28B | 22G03-R2 | P2-T1.N.R2 |
| NER28C | 22G03-R3 | P2-T1.N.R3 |
| SA28C | 22G03-F3 | P2-T1.N.F3 |
| SA28D | 22G03-F2 | P2-T1.N.F2 |
| - | 20DB83-L1 | P2-T1.Z1.L1 |
| CVT832 | 20DB83-T6 | P2-T1.Z1.T1 |
| CT832 | 20DB83-T1 | P2-T1.T2 |
| CB832 | 20DB83-Q0 | P2-T1.Q1 |
| ES839 | 20DB83-Q8 | P2-T1.Q13 |

CATEGORY 4
MUTUAL INTEREST DRAWING
MERIDIAN ENERGY LTD
FOLDER REF: 8879.1
SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

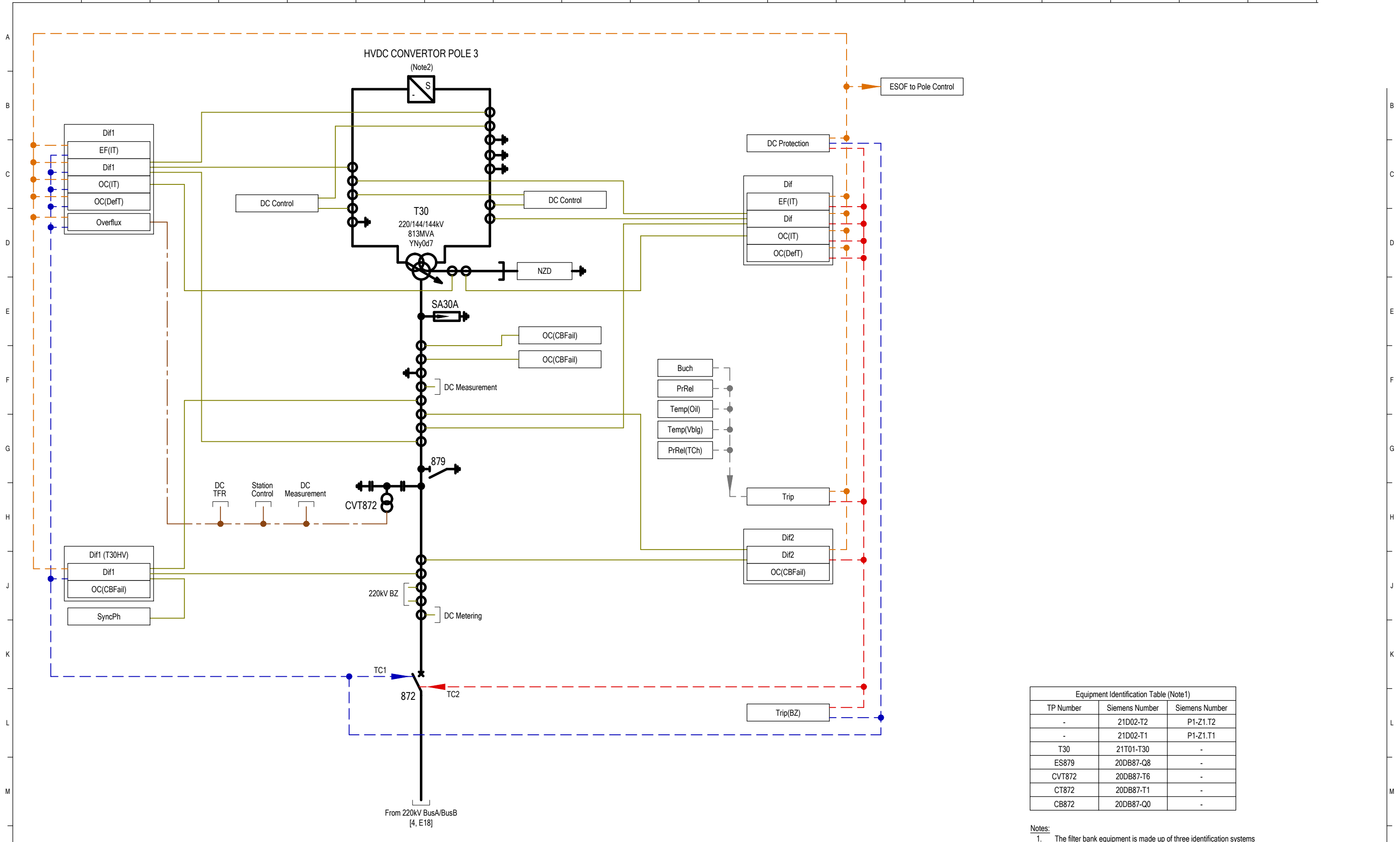
Notes:
1. The filter bank equipment is made up of three identification systems (Transpower, ABB & Siemens). The table indicates the duplicate identification where applicable. Refer to SLD for full annotation.
2. DC Equipment not shown for clarity.

REFERENCE DRAWINGS
TP54974/1 (BEN/2C1.1) RELAY & INSTRUMENT DIAGRAM (OPERATING) DWG LIST & EQUIPMENT LEGENDS

| REV | REVISION DESCRIPTION | CONSULTANT | | | | TP | | | | | | |
|-----|---|------------|-----|------|-----|-------|-----|-------|-----|-------|-----|-------|
| | | CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | DATE |
| - | AS BUILT: 1ST ISSUE OF DRAWING | EDISON | | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | |
| A | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD, NER28 ADDED | EDISON | | | IAT | 02/22 | ML | 02/22 | ML | 02/22 | DM | 02/22 |

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| | | | | | |
|--|--|--------------------------|--|-----------|--|
| BENMORE SUBSTATION | | TRANSPower PROJECT CODE | | FOLDER | |
| RELAY & INSTRUMENT DIAGRAM (OPERATING) | | SLD/RID MANAGEMENT | | BEN/2C1.1 | |
| 220/144/144kV T28 (HVDC POLE 2) | | DRAWING NUMBER | | SHEET | |
| (SWITCHYARD B) | | TP54974 | | 10 | |
| | | DRAWING CREATED BY: | | SCALE | |
| | | EDISON | | N.T.S. | |
| | | https://www.edison.co.nz | | A1 | |



| TP Number | Siemens Number | Siemens Number |
|-----------|----------------|----------------|
| - | 21D02-T2 | P1-Z1.T2 |
| - | 21D02-T1 | P1-Z1.T1 |
| T30 | 21T01-T30 | - |
| ES879 | 20DB87-Q8 | - |
| CVT872 | 20DB87-T6 | - |
| CT872 | 20DB87-T1 | - |
| CB872 | 20DB87-Q0 | - |

- Notes:
- The filter bank equipment is made up of three identification systems (Transpower, ABB & Siemens). The table indicates the duplicate identification where applicable. Refer to SLD for full annotation.
 - DC Equipment not shown for clarity.

REFERENCE DRAWINGS
 TP54974/1 (BEN/2C1.1) RELAY & INSTRUMENT DIAGRAM (OPERATING) DWG LIST & EQUIPMENT LEGENDS

CATEGORY 4
 MUTUAL INTEREST DRAWING
 MERIDIAN ENERGY LTD
 FOLDER REF: 88/7g.1
 SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

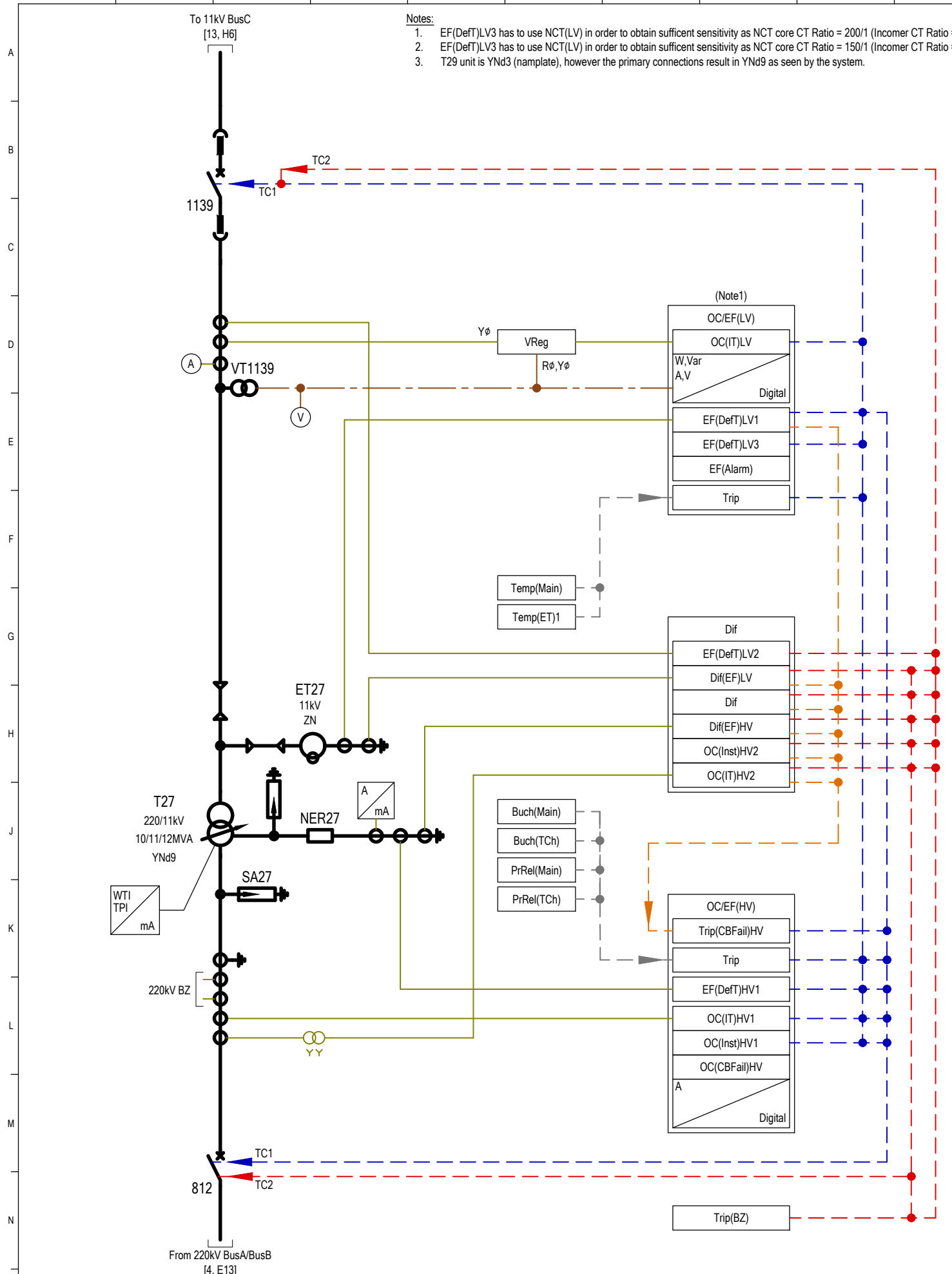
| REV | REVISION DESCRIPTION | CONSULTANT | | | | | | | | | | TP | |
|-----|--|------------|-----|------|-----|-------|-----|-------|-----|-------|-----|----|-------|
| | | CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | | DATE |
| - | AS BUILT: 1ST ISSUE OF DRAWING | EDISON | | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | | |
| A | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD, T30 ADDED, NER28 MOVED TO SHEET 10 | EDISON | | | IAT | 02/22 | ML | 02/22 | ML | 02/22 | DM | | 02/22 |



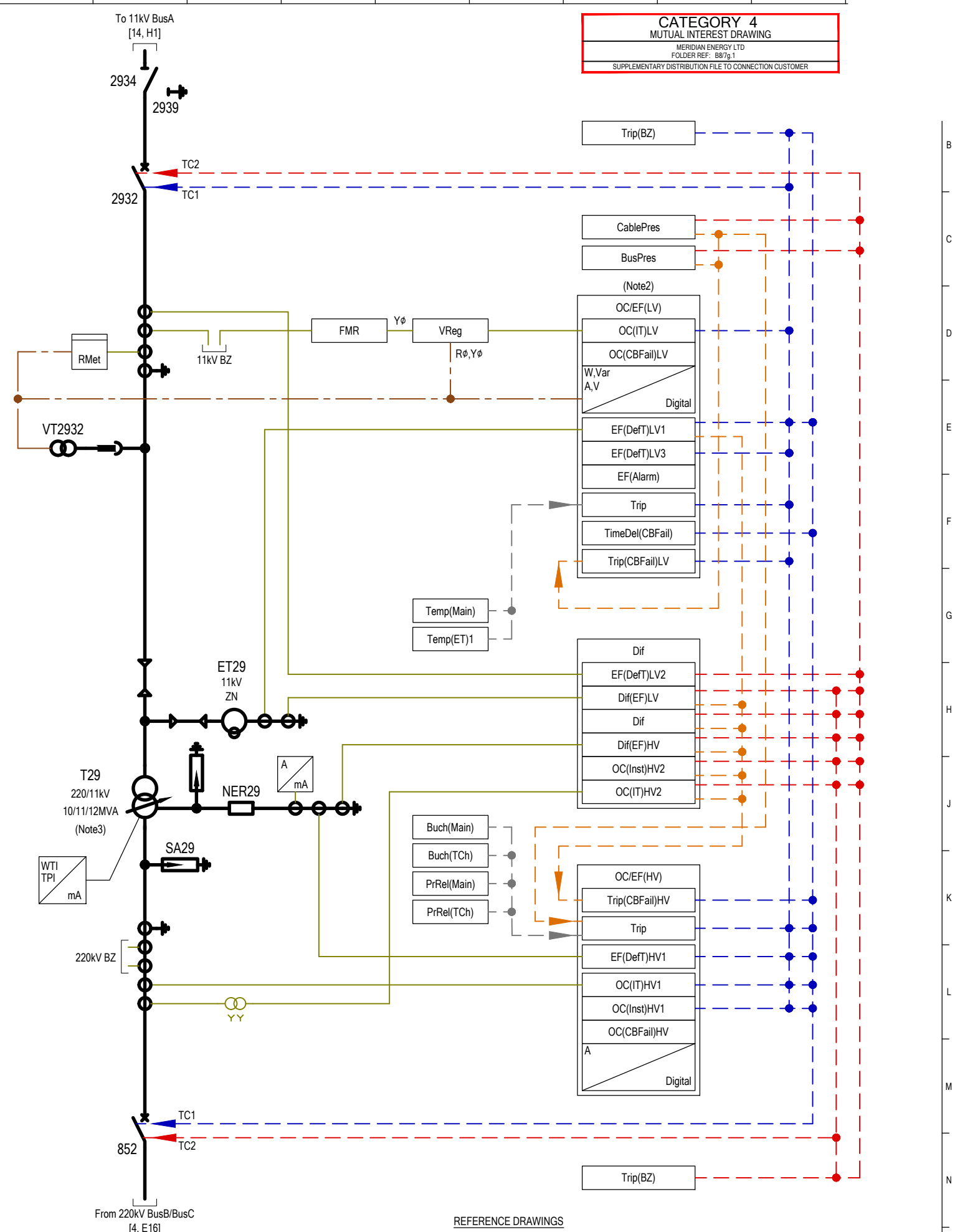
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BENMORE SUBSTATION
 RELAY & INSTRUMENT DIAGRAM (OPERATING)
 220/144/144kV T30 (HVDC POLE 3)
 (SWITCHYARD B)

| | | | |
|--------------------------|--|-----------|----------|
| TRANSPOWER PROJECT CODE | | FOLDER | |
| SLD/RID MANAGEMENT | | BEN/2C1.1 | |
| DRAWING NUMBER | | SHEET | REVISION |
| TP54974 | | 11 | A |
| DRAWING CREATED BY: | | SCALE | |
| EDISON | | N.T.S. | |
| https://www.edison.co.nz | | | |



Notes:
 1. EF(DefT)LV3 has to use NCT(LV) in order to obtain sufficient sensitivity as NCT core CT Ratio = 200/1 (Incomer CT Ratio = 600/1).
 2. EF(DefT)LV3 has to use NCT(LV) in order to obtain sufficient sensitivity as NCT core CT Ratio = 150/1 (Incomer CT Ratio = 400/1).
 3. T29 unit is YNd3 (namplate), however the primary connections result in YNd9 as seen by the system.



CATEGORY 4
 MUTUAL INTEREST DRAWING
 MERIDIAN ENERGY LTD
 FOLDER REF: B87g.1
 SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

| REV | REVISION DESCRIPTION | CONSULTANT | TP | | | | | | | | |
|--------|--|------------|-----|------|-------|------|-------|------|-------|------|-------|
| CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | DATE | |
| - | AS BUILT: 1ST ISSUE OF DRAWING | EDISON | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | |
| A | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD, T27 & T29 ADDED, T30 MOVED TO SHEET 11 | EDISON | | IAT | 01/22 | ML | 01/22 | ML | 01/22 | DM | 01/22 |

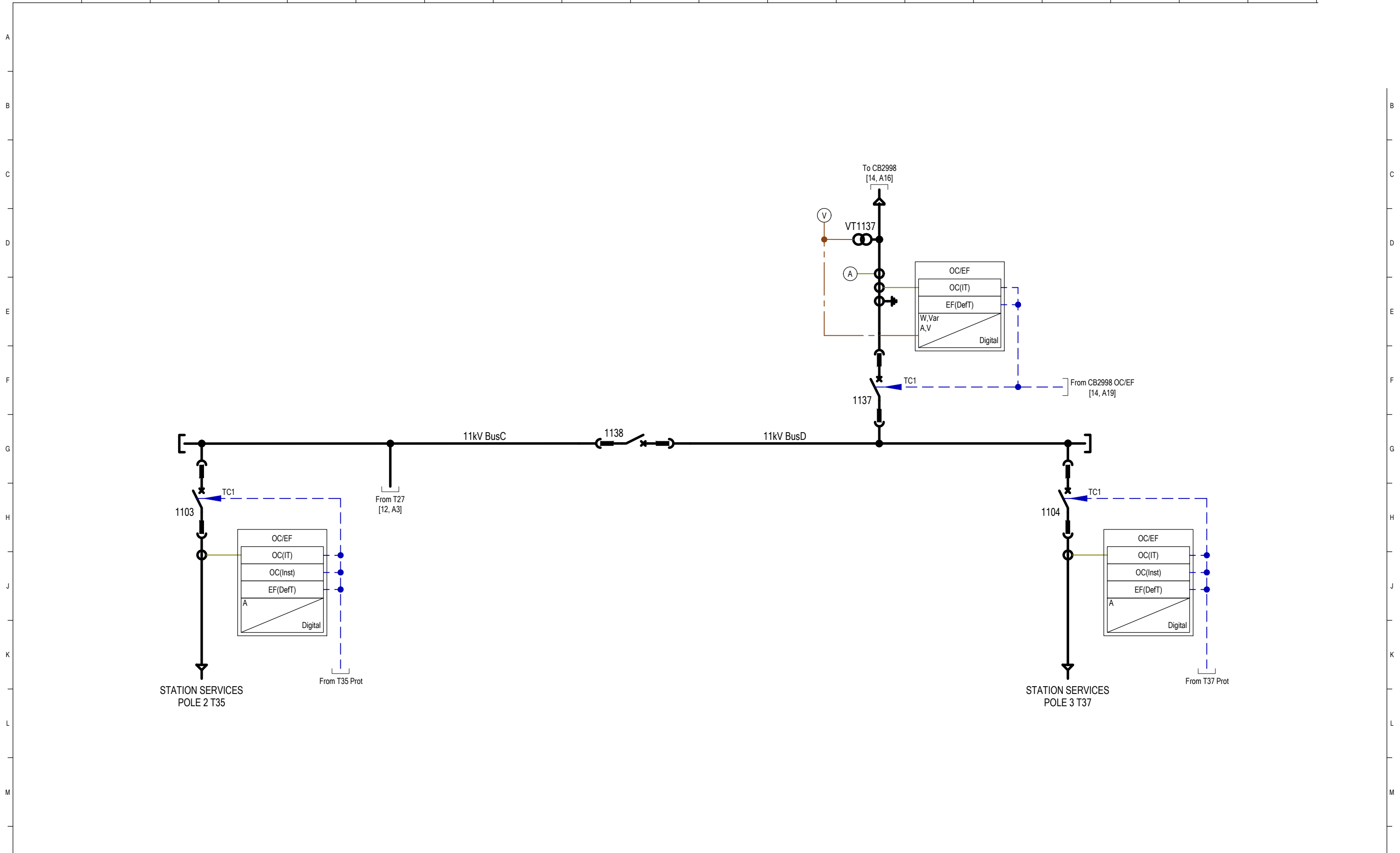


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BENMORE SUBSTATION
 RELAY & INSTRUMENT DIAGRAM (OPERATING)
 220/11kV T27 & T29
 (SWITCHYARD B)

REFERENCE DRAWINGS
 TP54974/1 (BEN/2C1.1) RELAY & INSTRUMENT DIAGRAM (OPERATING) DWG LIST & EQUIPMENT LEGENDS

| | |
|---|------------------------|
| TRANSPOWER PROJECT CODE SLD/RID MANAGEMENT | FOLDER BEN/2C1.1 |
| DRAWING NUMBER TP54974 | SHEET REVISION 12 A |
| DRAWING CREATED BY: EDISON https://www.edison.co.nz | SCALE N.T.S. |



CATEGORY 4
MUTUAL INTEREST DRAWING
MERIDIAN ENERGY LTD
FOLDER REF: 887g.1
SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER

| REV | REVISION DESCRIPTION | CONSULTANT | | | | | | | | | | TP | | |
|-----|--|------------|-----|------|-----|-------|-----|-------|-----|-------|-----|-------|--|--|
| | | CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | DATE | | |
| - | AS BUILT: 1ST ISSUE OF DRAWING | EDISON | | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | | | |
| 0.1 | AS BUILT: T27 & T29 RATINGS UPDATED, DS2934 & ES2939 ADDED | EDISON | | | IAT | 03/17 | ML | 03/17 | ML | 03/17 | | | | |
| 0.2 | AS BUILT: NOTES UPDATED, TD'S REMOVED FROM T27 & T29 | EDISON | | | IAT | 03/19 | ML | 03/19 | ML | 03/19 | | | | |
| A | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD, 11KV PART 1 ADDED, T27 & T30 MOVED TO SHEET 12 | EDISON | | | IAT | 01/22 | ML | 01/22 | ML | 01/22 | DM | 01/22 | | |

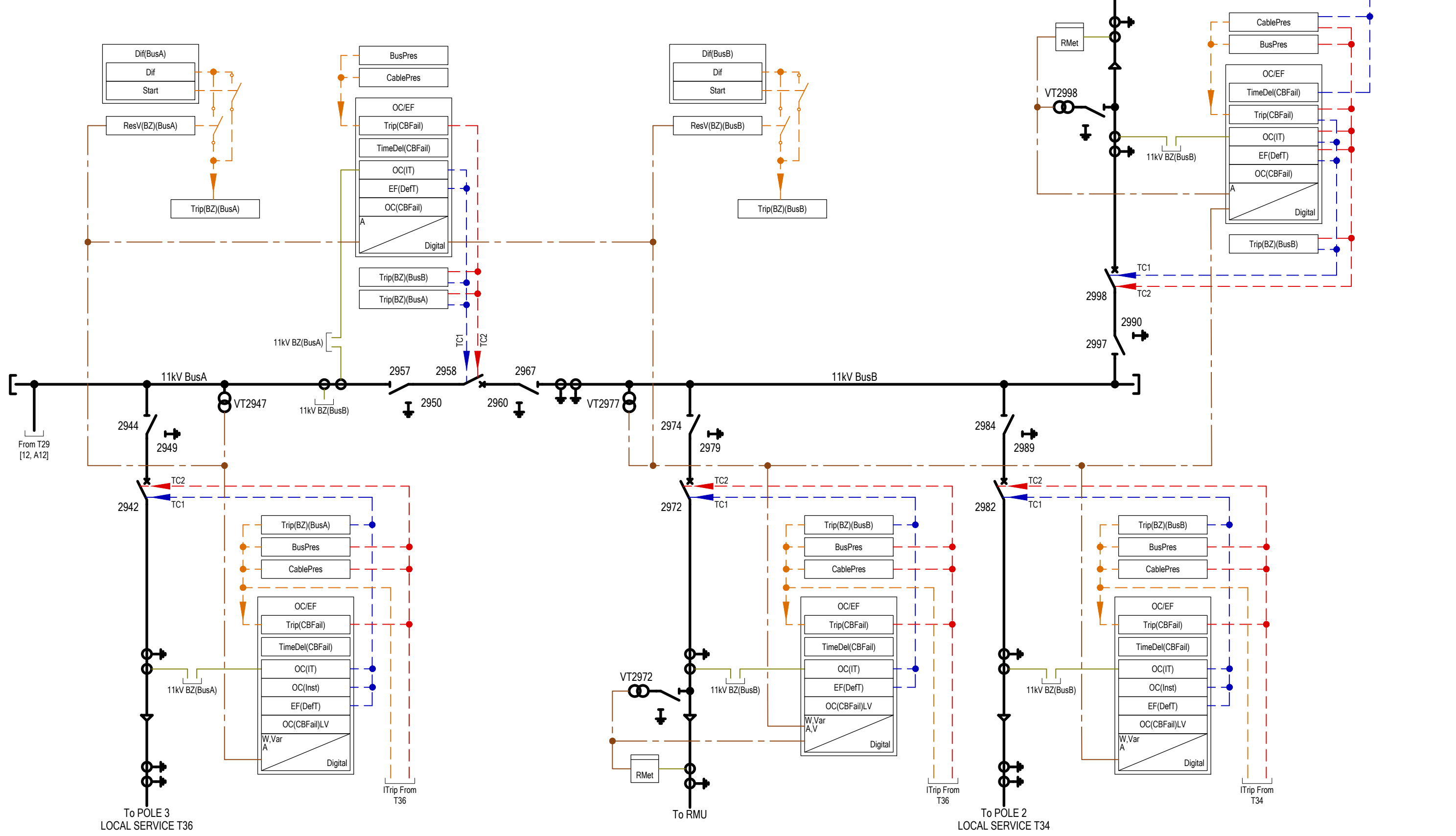


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REFERENCE DRAWINGS
TP54974/1 (BEN/2C1.1) RELAY & INSTRUMENT DIAGRAM (OPERATING) DWG LIST & EQUIPMENT LEGENDS

| | | | | | |
|---|--|--|--|-------------------------------|--|
| BENMORE SUBSTATION | | TRANSPower PROJECT CODE | | FOLDER | |
| RELAY & INSTRUMENT DIAGRAM (OPERATING) | | SLD/RID MANAGEMENT | | BEN/2C1.1 | |
| 11kV POLE 2 & POLE 3 PART 1 (SWITCHYARD B) | | DRAWING NUMBER TP54974 | | SHEET REVISION 13 A | |
| | | DRAWING CREATED BY: EDISON https://www.edison.co.nz | | SCALE N.T.S. | |

CATEGORY 4
MUTUAL INTEREST DRAWING
 MERIDIAN ENERGY LTD
 FOLDER REF: 887g.1
 SUPPLEMENTARY DISTRIBUTION FILE TO CONNECTION CUSTOMER



| REV | REVISION DESCRIPTION | CONSULTANT | | | | | | | | | | |
|-----|--|------------|-----|------|-------|------|-------|------|-------|------|-------|------|
| | | CONSLT | DSN | DATE | DRN | DATE | CHK | DATE | APP | DATE | APP | DATE |
| - | AS BUILT: 1ST ISSUE OF DRAWING | EDISON | | IAT | 03/15 | ML | 03/15 | ML | 03/15 | | | |
| 0.1 | AS BUILT: CB1103, CB1104 & CB1137 PROTECTION UPDATED | EDISON | | IAT | 09/18 | ML | 09/18 | ML | 09/18 | | | |
| A | AS BUILT: TITLE CHANGED, REDRAWN TO NEW RID STANDARD, 11kV PART 2 ADDED, 11kV PART 1 MOVED TO SHEET 13 | EDISON | | IAT | 02/22 | ML | 02/22 | ML | 02/22 | DM | 02/22 | |



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BENMORE SUBSTATION
 RELAY & INSTRUMENT DIAGRAM (OPERATING)
 11kV POLE 2 & POLE 3 PART 2
 (SWITCHYARD B)

| | | | |
|--------------------------|--|-----------|----------|
| TRANSPower PROJECT CODE | | FOLDER | |
| SLD/RID MANAGEMENT | | BEN/2C1.1 | |
| DRAWING NUMBER | | SHEET | REVISION |
| TP54974 | | 14 | A |
| DRAWING CREATED BY: | | SCALE | |
| EDISON | | N.T.S. | |
| https://www.edison.co.nz | | | |

QREF: A1