

# 1407 PACIFIC HIGHWAY WARRAWEE

## HYDRAULIC AND FIRE SERVICES

### GENERAL NOTES

- ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE BUILDING CODE OF AUST., LOCAL SUPPLY AUTHORITIES REGULATIONS, AS3500 AND ANY OTHER RELEVANT STANDARD.
- THE CONTRACTOR SHALL PROVIDE COORDINATED 'SHOP DRAWINGS' OR DRAWINGS 'FOR CONSTRUCTION' TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO THE CONSTRUCTION OF ANY HYDRAULIC SERVICES WORKS. THE DRAWINGS SHALL CLEARLY NOMINATE AND DIMENSION THE EXACT SIZE AND LOCATION OF ALL STRUCTURAL PENETRATIONS AND DETAIL THE POSITION AND LEVEL OF ALL HYDRAULIC SERVICES PIPEWORK IN RELATION TO THE STRUCTURE AND OTHER SERVICES.
- ALL HYDRAULIC DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE RELEVANT AND MOST RECENT ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, FIRE AND LANDSCAPING DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL ADVISE THE SUPERINTENDENT IMMEDIATELY OF ANY TECHNICAL OR COORDINATION ISSUES THAT MAY ARISE.
- THE LOCATION AND LEVELS OF EXISTING SERVICES SHOWN ARE APPROXIMATE ONLY AND SHALL BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCING WORKS. THE CONTRACTOR SHALL ADVISE THE SUPERINTENDENT IMMEDIATELY OF ANY DISCREPANCIES THAT MAY PREVENT CONSTRUCTION OF THE WORKS GENERALLY AS PER THE DRAWINGS.
- THE CONTRACTOR SHALL TAKE ALL REASONABLE CARE WHEN EXCAVATING NEAR EXISTING SERVICE AND SHALL FOLLOW THE RELEVANT SERVICE AUTHORITIES GUIDELINES FOR EXCAVATION NEAR EXISTING SERVICES. IF THERE IS ANY DOUBT AS TO THE ACTUAL LOCATION OF AN EXISTING SERVICE, THEN THE CONTRACTOR SHALL CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO ANY EXCAVATION WORK COMMENCING.
- ALL LEVELS REFER TO AUSTRALIAN HEIGHT DATUM (AHD) UNLESS NOTED OTHERWISE.
- THE CONTRACTOR SHALL ALLOW FOR ALL SURVEY AND SETOUT REQUIRED TO INSTALL THE WORKS. 'WORK AS EXECUTED' SURVEY AND DRAWINGS OF ANY STORMWATER DRAINAGE AND ON-SITE STORMWATER DETENTION MUST BE PREPARED AND SIGNED BY A REGISTERED SURVEYOR.
- THE CONTRACTOR SHALL ALLOW TO MAKE ALL APPLICATIONS AND PAY ALL ASSOCIATED FEES RELATING TO ROAD OPENING, AS REQUIRED, TO THE SATISFACTION OF THE GOVERNING ROAD AUTHORITY. THE CONTRACTOR SHALL ALSO ALLOW FOR THE PREPARATION OF TRAFFIC CONTROL PLANS AND PROVISION OF TRAFFIC CONTROL AS MAY BE REQUIRED.
- UPON PRACTICAL COMPLETION OF THE WORKS, THE CONTRACTOR SHALL:
  - PROVIDE 'WORK AS EXECUTED' DRAWINGS OF THE COMPLETED WORKS.
  - PROVIDE COPIES OF ALL TEST RESULTS AND CERTIFICATES RELATING TO THE INSTALLATION OF THE WORKS.
  - PROVIDE MANUFACTURERS SPECIFICATIONS AND MANUALS FOR INSTALLED PLANT ITEMS, COMPONENTS, ETC.
  - TRANSFER ALL WARRANTIES FOR INSTALLED PLANT ITEMS, COMPONENTS, ETC., TO THE PRINCIPAL.

### GAS SUPPLY

- THE CONTRACTOR SHALL MAKE ALL APPLICATIONS AND PAY ALL ASSOCIATED FEES AND LIAISE WITH THE LOCAL GAS SUPPLY AUTHORITY FOR A GAS UTILITY SERVICE SUPPLY CONNECTION TO BE SUPPLIED TO A PATH BOX 225mm OUTSIDE THE PROPERTY BOUNDARY IN THE FOOTWAY. THE CUSTOMER SERVICE METER SET AND THE CUSTOMER PIPING SYSTEM SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.
- INSTALLATION MATERIALS AND JOINTING SYSTEM SHALL COMPLY WITH AS5601 AND IN COMPLIANCE WITH THE LOCAL SUPPLY AUTHORITIES GAS FITTING RULES.
- ALL PIPE WORK SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH AS5601.
- GAS METERS WITH PULSE OUTPUT AND SHALL BE INSTALLED IN COMMON AREA AND HOT WATER PLANT LOCATIONS (AS SHOWN ON THE DRAWINGS) AND CONNECTED TO THE MDL BOARD. TYPICAL ALL UNITS.
- AIR FLOW PRESSURE SWITCH SHALL BE INSTALLED IN FAN FORCED FLUE AND INTERLOCKED WITH HOT WATER PLANT TO PREVENT THE FLOW OF GAS TO THE BURNERS WHEN THE FAN IS NOT OPERATING. EACH APPLIANCE SHALL BE FITTED WITH A SAFETY SHUT-OFF SYSTEM IN ACCORDANCE WITH AS5601.

### SANITARY PLUMBING

- ALL VENTS SHALL BE OFFSET WITHIN THE ROOF SPACE AS REQUIRED A MINIMUM OF 600mm FROM EAVES.
- ALL PIPE PENETRATIONS AT WALLS SHALL BE FITTED WITH A PUDDLE FLANGE AND MADE GOOD TO ENSURE WATER TIGHTNESS.
- ALL PIPE PENETRATIONS THROUGH CONCRETE STRUCTURAL ELEMENTS SHALL BE COORDINATED AND WHERE POSSIBLE CAST-IN PRIOR TO THE PLACEMENT OF CONCRETE. THE CONTRACTOR SHALL NOT CUT OR MOVE ANY STEEL REINFORCING BARS TO SUIT A PIPE PENETRATION UNLESS APPROVED IN WRITING BY THE SUPERINTENDENT AND OR THE PROJECTS STRUCTURAL ENGINEER.
- ALL CORE HOLE LOCATIONS SHALL BE APPROVED IN WRITING BY THE SUPERINTENDENT AND OR THE PROJECTS STRUCTURAL ENGINEER PRIOR TO THE COMMENCEMENT OF ANY CORING ACTIVITIES.
- ALL PIPE WORK SHALL BE ACOUSTICALLY INSULATED TO ACHIEVE THE MINIMUM STC REQUIREMENT OR BETTER AS PER THE CURRENT BUILDING CODE OF AUSTRALIA. THE CONTRACTOR SHALL SUBMIT IN WRITING AND SEEK APPROVAL FROM THE PRINCIPAL CERTIFYING AUTHORITY FOR THE INTENDED METHOD TO BE USED FOR ACHIEVING THE STC REQUIREMENTS PRIOR TO THE SUPPLY AND INSTALLATION OF THE ACOUSTIC TREATMENT.

### HYDRAULIC SERVICE MATERIALS

- POTABLE WATER SUPPLY
  - SMALLER THAN DN100 SHALL BE COPPER TUBING TYPE B TO AS 1432 UNLESS NOTED OTHERWISE.
- FIRE HYDRANT WATER SUPPLY
  - DN100 OR LARGER SHALL BE DUCTILE IRON CEMENT LINED (DICL) PIPE CLASS K9 TO AS2280 WITH POLYETHYLENE SLEEVING WHEN INSTALLED IN GROUND AND ROLLED GROOVE GALV. IRON ABOVE GROUND.
- GAS SUPPLY
  - SMALLER THAN DN100 SHALL BE COPPER TUBING TYPE B TO AS 1432 UNLESS NOTED OTHERWISE.
- HOT WATER SUPPLY
  - SMALLER THAN DN100 SHALL BE COPPER TUBING TYPE B TO AS 1432 UNLESS NOTED OTHERWISE. ALL HOT WATER FLOW AND RETURN LINES SHALL BE INSULATED WITH 25mm THERMOTEC 4 - ZERO OR EQUAL.
- SANITARY DRAINAGE
  - DN225 OR SMALLER SHALL BE UPVC PIPE CLASS SN4 TO AS1260 WITH SOLVENT WELD JOINTS (EXCEPT WHERE EXPANSION JOINTS ARE REQUIRED) UNLESS NOTED OTHERWISE.
- SANITARY PLUMBING
  - ALL PIPES SHALL BE UPVC PIPE TYPE SWV TO AS1415 WITH SOLVENT WELD JOINTS (EXCEPT WHERE EXPANSION JOINTS ARE REQUIRED) UNLESS NOTED OTHERWISE.
- HOT WATER LAGGING
  - 25mm THERMOTEC 4-ZERO. OR KEMLAG AS SPECIFIED.
- FIRE HOSE REEL SERVICE
  - COPPER TUBE TYPE B, AS1432.

### FIRE SEALING OF PENETRATIONS

- PENETRATIONS THROUGH CONCRETE SLABS SHALL BE SEALED TO PROVIDE A MINIMUM TWO HOUR FRL TO AS1530.
- PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE SEALED TO PROVIDE A MINIMUM TWO HOUR FRL TO AS530.
- THE CONTRACTOR SHALL SUBMIT IN WRITING AND SEEK APPROVAL FROM THE PRINCIPAL CERTIFYING AUTHORITY FOR THE INTENDED METHODS TO BE USED FOR FIRE SEALING PENETRATIONS PRIOR TO THEIR SUPPLY AND INSTALLATION.
- WHERE UPVC PIPES PENETRATE CONCRETE SLABS OR FIRE RATED WALLS, THEY SHALL BE PROVIDED WITH AN APPROVED FIRE RATED COLLAR HAVING THE SAME FIRE RATING OR GREATER THAN THE ELEMENT BEING PENETRATED.
- WHERE SERVICES OTHER THAN UPVC PENETRATE CONCRETE OR MASONARY BUILDING ELEMENTS, SEAL ANY GAPS BETWEEN THE SERVICES AND THE ELEMENT WITH AN APPROVED SILICON FIRE-STOP FOAM HAVING THE SAME FIRE RATING OR GREATER THAN THE ELEMENT BEING PENETRATED.

### WATER SUPPLY

- THE CONTRACTOR SHALL MAKE ALL APPLICATIONS AND PAY ALL ASSOCIATED FEES AND CHARGES TO THE LOCAL SUPPLY AUTHORITY TO ENABLE CONNECTION OF THE WATER SUPPLY TO THE AUTHORITIES WATER MAIN.
- THE CONTRACTOR SHALL MAKE ALL APPLICATIONS AND PAY ALL ASSOCIATED FEES AND CHARGES TO THE LOCAL SUPPLY AUTHORITY TO ENABLE THE INSTALLATION OF ANY WATER SUPPLY PUMP-SETS FOR THE WATER SUPPLY SERVICE.
- ALL PIPE WORK SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH AS3500.

### FIRE HYDRANT SERVICE

- THE CONTRACTOR SHALL MAKE ALL APPLICATIONS AND PAY ALL ASSOCIATED FEES AND CHARGES TO THE LOCAL SUPPLY AUTHORITY TO ENABLE CONNECTION OF THE FIRE HYDRANT SERVICE TO THE AUTHORITIES WATER MAIN.
- THE CONTRACTOR SHALL MAKE ALL APPLICATIONS AND PAY ALL ASSOCIATED FEES AND CHARGES TO THE LOCAL SUPPLY AUTHORITY TO ENABLE THE INSTALLATION OF ANY FIRE SERVICE.M
- ALL PIPE WORK SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH AS3500 AND AS2419.1.
- FABRICATE BOOSTER VALVE ASSEMBLY IN ACCORDANCE WITH AS2419.1-2005 REQUIREMENTS. COMPLETE WITH NOTICE OF TESTING / WORKING PRESSURE.

### STORMWATER NOTES:

- PIPES DN375 AND LARGER TO BE STEEL REINFORCED CONCRETE PIPES CLASS 2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS U.N.O.
- PIPES DN300 AND SMALLER SHALL BE GRADE SH (SEWER GRADE) UPVC WITH RUBBER RING JOINTS.
- EQUIVALENT STRENGTH FIBRE REINFORCED CONCRETE PIPES MAY BE USED UP TO DN450.
- PIPES FOR SUB-SOIL DRAINS SHALL BE SLOTTED 100MM DIAMETER CLASS 1000 WRAPPED IN GEOFABRIC, U.O.N, COMPLYING WITH THE REQUIREMENTS OF AS 2439.
- PRECAST PITS, WHERE ALLOWED, AND THE INSITU BASE SHALL COMPLY WITH THE REQUIREMENT OF THE MANUFACTURER.
- ALL MILD STEEL FIXTURES INCLUDING GRATES, FRAMES, STEP IRONS, LADDERS, ETC., SHALL BE HOT DIP GALVANISED. GALVANISING SHALL COMPLY WITH THE REQUIREMENTS OF AS 1214 OR AS 1650, AS APPROPRIATE.
- GEOFABRIC FILTER SHALL BE PERMEABLE, NON-WOVEN FABRIC MANUFACTURED FROM A POLYMER SUCH AS POLYPROPYLENE OR POLYESTER OF MASS NOT LESS THAN 135GM2.
- THE MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:
  - CONCRETE AND FRC PIPES: EXTERNAL PIPE DIAMETER PLUS 400MM.
  - UPVC PIPE: EXTERNAL DIAMETER OF PIPE PLUS 200MM.
  - SUBSOIL PIPE: 250MM.
- ALL PIPES SHALL BE PLACED CENTRALLY WITHIN THE TRENCH WITH EQUAL CLEARANCE EACH SIDE.
- PIPE BEDDING MATERIAL SHALL BE CLEAN COARSE RIVER SAND WITH DEPTH AS FOLLOWS:
  - CONCRETE AND FRC PIPES: 100MM (175MM IN ROCK)
  - UPVC PIPE: 75MM (100MM IN ROCK)
  - SUBSOIL DRAINS: 50MM
- ALL PIPES SHALL BE BACKFILLED WITH GRANULAR MATERIAL SUCH AS QUARRY FINES OR COARSE RIVER SAND TO A MINIMUM OF 150MM ABOVE THE PIPE. THE GRANULAR MATERIAL SHALL BE PLACED IN 150MM THICK MAXIMUM LAYERS AND COMPACTED TO ACHIEVE A DENSITY INDEX (ID) OF 70%. FREQUENCIES OF COMPACTION TESTS FOR TRENCHES SHALL BE 1 TEST PER 2 LAYERS PER 40 LINEAR METRE.
- BACKFILL THE REMAINDER OF THE TRENCH ABOVE THE SAND TO SUBGRADE LEVEL WITH TRENCH MATERIAL. PLACE AND COMPACT MATERIALS IN LAYERS NOT EXCEEDING 150MM LOOSE THICKNESS. MATERIAL LOWER THAN 500MM BELOW SUBGRADE LEVEL SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY. THE TOP 500MM BELOW PAVEMENT SUBGRADE LEVELS SHALL BE COMPACTED TO AT LEAST 100% STANDARD MAXIMUM DRY DENSITY.
- FILTER MATERIAL FOR SUBSOIL SHALL BE COARSE SAND OR CRUSHED STONE COMPLYING WITH ONE OF THE GRADINGS IN THE TABLE BELOW. WHERE NOTED ON THE DRAWINGS THE 7MM CRUSHED ROCK FILTER MATERIAL SHALL BE ENCLOSED WITHIN FILTER FABRIC SHEET AS SPECIFIED. FILTER MATERIAL SHALL BE PLACED IN 250MM LAYERS AND COMPACTED TO DENSITY INDEX (ID) OF 60%.

| AS SIEVE SIZE (mm) | SAND   | 7mm ROCK |
|--------------------|--------|----------|
| 9.5                | 100    | 100      |
| 6.7                | -      | 75-100   |
| 4.75               | 90-100 | 20-55    |
| 2.36               | 75-100 | 0-15     |
| 1.18               | 50-90  |          |
| 0.6                | 20-60  |          |
| 0.3                | 10-30  |          |
| 0.15               | 2-10   |          |
| 0.075              | 0-3    | 0-2      |
- UNLESS OTHERWISE DETAILED OR PERMITTED, THE MINIMUM GRADE OF ALL PIPE WORKS SHALL BE 1.0%.

### HYDRAULIC SERVICES MATERIAL ABBREVIATIONS

|      |                                       |
|------|---------------------------------------|
| Cu   | COPPER PIPE                           |
| DICL | DUCTILE IRON CEMENT LINED PIPE        |
| GMS  | GALVANISED MILD STEEL PIPE            |
| HDPE | HIGH DENSITY POLYETHYLENE PIPE        |
| RC   | REINFORCED CONCRETE PIPE              |
| UPVC | UNPLASTICISED POLYVINYL CHLORIDE PIPE |

### HOT WATER

- THE CONTRACTOR SHALL MAKE ALL APPLICATIONS AND PAY ALL ASSOCIATED FEES AND CHARGES TO THE LOCAL GAS SUPPLY AUTHORITY FOR CONNECTION OF HOT WATER PLANT.
- ALL PIPE WORK SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH AS3500.
- ALL HOT WATER FLOW AND RETURN LINES SHALL BE INSULATED WITH 25mm THERMOTEC 4 - ZERO OR EQUAL.
- METER DATA LOGGER (MDL) PANELS TO EQUAL THE NUMBER OF HOT, COLD AND GAS METERS INSTALLED. MDL PANELS TO BE UTILISED TO FULL CAPACITY (MAX. 32 METERS PER PANEL). THE CONTRACTOR SHALL INSTALL A TELEPHONE LINE TO THE VICINITY OF THE MDL PANEL WITH ALL ONGOING COSTS TO BE BOURNE BY THE BODY CORPORATE. COORDINATE ALL MDL REQUIREMENTS WITH ESC.

### SEWER DRAINAGE

- THE CONTRACTOR SHALL MAKE ALL APPLICATIONS AND PAY ALL ASSOCIATED FEES AND CHARGES TO THE LOCAL SUPPLY AUTHORITY TO ENABLE CONNECTION OF THE SITE SANITARY DRAINAGE TO THE AUTHORITIES RETICULATION SEWER MAIN.
- THE CONTRACTOR SHALL PROVIDE AND REMOVE ON COMPLETION ALL TIMBERING AND SHORING AS NECESSARY TO CONSTRUCT THE PIPEWORK.
- ALL PIPE WORK SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH AS3500.
- DRAINS UNDER STRUCTURES SHALL BE RETESTED AS REQUIRED BY THE LOCAL SUPPLY AUTHORITY, PLUMBING AND DRAINAGE INSPECTOR OR THE SUPERINTENDENT.
- WHERE THE CLEARANCE FROM THE TOP OF PIPE WORK TO THE UNDERSIDE OF A FOOTING IS LESS THAN 150mm THEN THE CONTRACTOR SHALL INSTALL AN 80mm COMPRESSIBLE MATERIAL OVER THE PIPE WORK.
- AN INSPECTION OPENING SHALL BE PROVIDED AT:
  - THE PROPERTY BOUNDARY (OR BOUNDARY TRAP IF REQUIRED).
  - EACH WATER CLOSET OR BRANCH
  - MAXIMUM 30m INTERVALS ALONG DRAINS
  - IMMEDIATELY UPSTREAM AND DOWNSTREAM OF ALL JUMP-UPS
  - DRAINS EXITING FROM UNDER A BUILDING OR STRUCTURE
  - ANY LOCATION ALONG A DRAIN THAT MAY BE DIFFICULT FOR A PLUMBER TO ACCESS IN FUTURE FOR MAINTENANCE PURPOSES
- ALL DRAINS SHALL BE SUPPORTED ON FIRM GROUND. UPON EXCAVATION TO THE REQUIRED LEVELS, IF SOFT OR WATER CHARGED GROUND IS ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT IMMEDIATELY AND AWAIT FURTHER DIRECTION PRIOR TO PROCEEDING WITH ANY PIPE LAYING.

### ABBREVIATIONS

### LEVELS

|     |                      |
|-----|----------------------|
| FFL | FINISH FLOOR LEVEL   |
| FSL | FINISH SURFACE LEVEL |
| IL  | INVERT LEVEL         |
| RL  | REDUCED LEVEL        |
| HL  | HIGH LEVEL           |
| L/L | LOW LEVEL            |

### FIXTURES

|     |                       |
|-----|-----------------------|
| HT  | HOSE TAP              |
| SHR | SHOWER                |
| B   | BASIN                 |
| SK  | SINK                  |
| FW  | FLOOR WASTE           |
| WC  | WATER CLOSET          |
| ORG | OVERFLOW RELIEF GULLY |
| TD  | TUNDISH               |
| TTD | TRAPPED TUNDISH       |
| LT  | LAUNDRY TUB           |
| BTH | BATH                  |
| CT  | COOK TOP              |
| WM  | WASHING MACHINE       |
| AV  | AIR ADMITTANCE VALVE  |
| BV  | BACK VENT             |
| RWP | RAIN WATER PIPE       |
| CIS | CAST IN SLAB          |
| PDO | PLANTER DRAIN OUTLET  |

### PIPES

|          |                        |
|----------|------------------------|
| VP       | VENT PIPE              |
| RV       | RELIEF VENT            |
| GWV      | GREASE WASTE VENT      |
| CV       | CHAMBER VENT           |
| SST      | SINGLE STACK           |
| AD       | AERIAL DRAINAGE        |
| FVM      | FULLY VENTED           |
| MODIFIED |                        |
| HWR      | HOT WATER RETURN       |
| CW       | COLD WATER             |
| NPCW     | NON-POTABLE COLD WATER |
| WW       | WARM WATER             |
| FH       | FIRE HYDRANT           |
| SW       | STORMWATER             |
| SRM      | SEWER RISING MAIN      |
| DTU      | DRAINAGE TURN UP       |

| DRAWING INDEX          |   |     |
|------------------------|---|-----|
| DRAWING NO.            | DRAWING TITLE                             | REV |
| ACE160721.HYD.CC - H00 | COVER SHEET, NOTES AND LEGEND             | C   |
| ACE160721.HYD.CC - H01 | DRAINAGE SERVICES BASEMENT LEVEL          | C   |
| ACE160721.HYD.CC - H02 | DRAINAGE SERVICES GROUND LEVEL            | C   |
| ACE160721.HYD.CC - H03 | DRAINAGE SERVICES LEVEL 1                 | C   |
| ACE160721.HYD.CC - H04 | DRAINAGE SERVICES LEVEL 2                 | C   |
| ACE160721.HYD.CC - H05 | DRAINAGE SERVICES ROOF LEVEL              | C   |
| ACE160721.HYD.CC - H11 | FIRE, WATER & GAS SERVICES BASEMENT LEVEL | C   |
| ACE160721.HYD.CC - H12 | FIRE, WATER & GAS SERVICES GROUND LEVEL   | C   |
| ACE160721.HYD.CC - H13 | FIRE, WATER & GAS SERVICES LEVEL 1        | C   |
| ACE160721.HYD.CC - H14 | FIRE, WATER & GAS SERVICES LEVEL 2        | C   |
| ACE160721.HYD.CC - H15 | FIRE, WATER & GAS SERVICES ROOF LEVEL     | C   |

### PIPE FITTINGS

|  |                                     |  |                           |  |                              |
|--|-------------------------------------|--|---------------------------|--|------------------------------|
|  | BOUNDRY TRAP                        |  | DUAL CHECK VALVE          |  | DUAL FIRE HYDRANT            |
|  | DROPPER                             |  | STOP VALVE                |  | FLOOR WASTE                  |
|  | END CAP                             |  | CHECK VALVE               |  | REDUCED PRESSURE ZONE DEVICE |
|  | DIRECTION OF FLOW                   |  | CLEAR OUT                 |  | FIRE BRIGADE BOOSTER VALVE   |
|  | OVERFLOW RELIEF GULLY               |  | TEMPERING VALVE           |  | TUNDISH                      |
|  | HOSE TAP                            |  | THERMOSTATIC MIXING VALVE |  | MONITOR VALVE                |
|  | IN-DUCT MICRO FLAP (LOW LEVEL VENT) |  | BALANCING VALVE           |  | FIRE HOSE REEL               |
|  | METER (GAS/WATER)                   |  | CLEAN OUT                 |  | RAINWATER OUTLET             |
|  | PUMP                                |  | SEWER MAINTENANCE HOLE    |  | RAINWATER OUTLET             |
|  | GAS REGULATOR                       |  | FIRE HYDRANT              |  | SPRINKLER PIPE               |
|  | RISER                               |  |                           |  |                              |

NOT FOR CONSTRUCTION

| Issue | Description                        | Date       | Drawn | Design | Checked |
|-------|------------------------------------|------------|-------|--------|---------|
| C     | ISSUE FOR CC                       | 28/03/2017 | SSA   | WW     | JAB     |
| B     | ISSUE FOR REVIEW                   | 14/03/2017 | SSA   | WW     | JAB     |
| A     | PRELIMINARY ISSUE FOR COORDINATION | 03/11/2016 | SSA   | WW     | JAB     |

1 0 1cm at full size 10cm 20cm

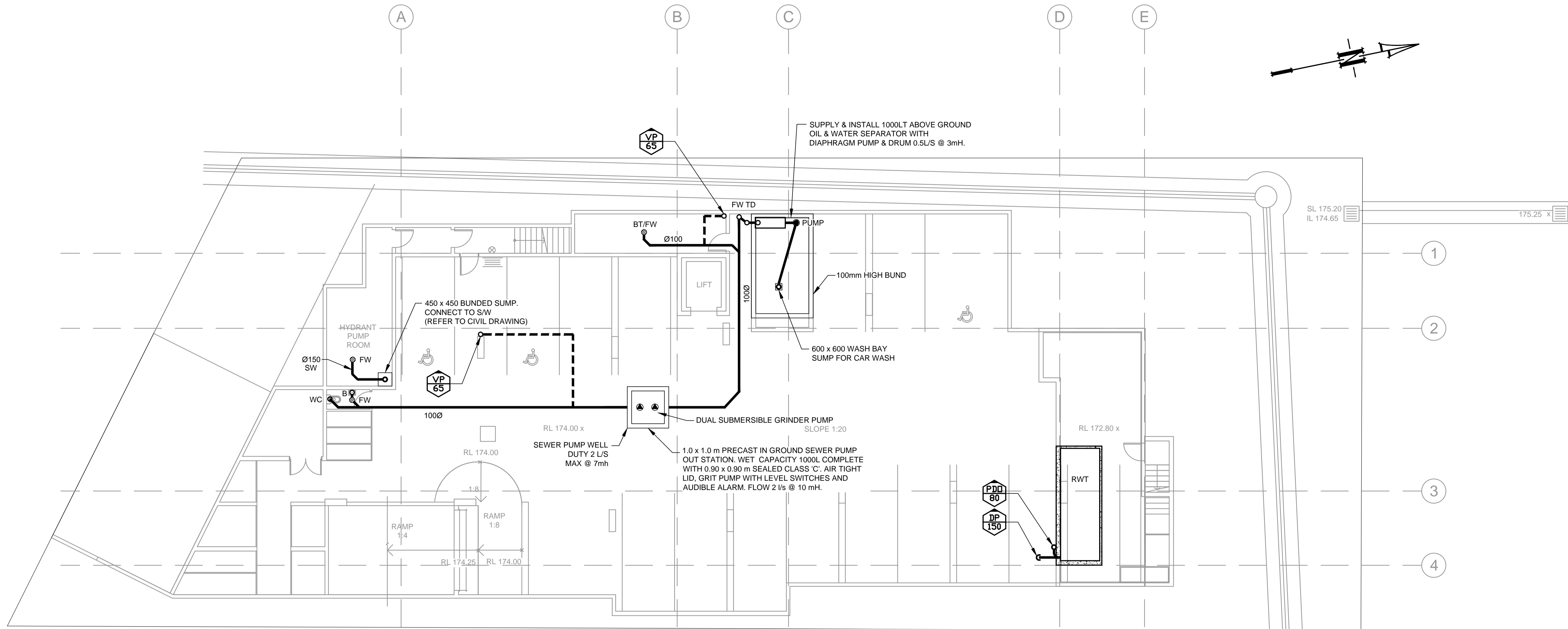
|           |   |
|-----------|---|
| Architect | <b>BAINI DESIGN</b><br>ABN 51 068 732 593<br>Office 2 / Level 4, 25-33 Old Northern Road<br>Baulkham Hills, NSW 2153<br>PHONE : +61 2 9639 1674 |
|-----------|---|

|         |                            |
|---------|----------------------------|
| Scale   |                            |
| Council | <b>Ku-Ring-Gai Council</b> |

|  |  |
|--|--|
|  | <b>AUSTRALIAN CONSULTING ENGINEERS.</b><br>PTY LTD - A.C.N. 084 059 941<br>SHOP 2-41 CONCORD RD NORTH STRATHFIELD NSW 2137<br>PH: (02) 9763 1500 FX: (02) 9763 1515<br>EMAIL: info@acceng.com.au |
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|         |   |
|---------|---|
| Project | <b>1407 PACIFIC HIGHWAY WARRAWEE<br/>HYDRAULIC AND FIRE<br/>ENGINEERING PLANS</b> |
|---------|---|

|               |   |             |                  |          |     |       |   |
|---------------|---|-------------|------------------|----------|-----|-------|---|
| Drawing Title | <b>COVER SHEET,<br/>NOTES AND LEGENDS</b> |             |                  |          |     |       |   |
| Scale         | A1  | Project No. | ACE160721.HYD.CC | Dwg. No. | H00 | Issue | C |

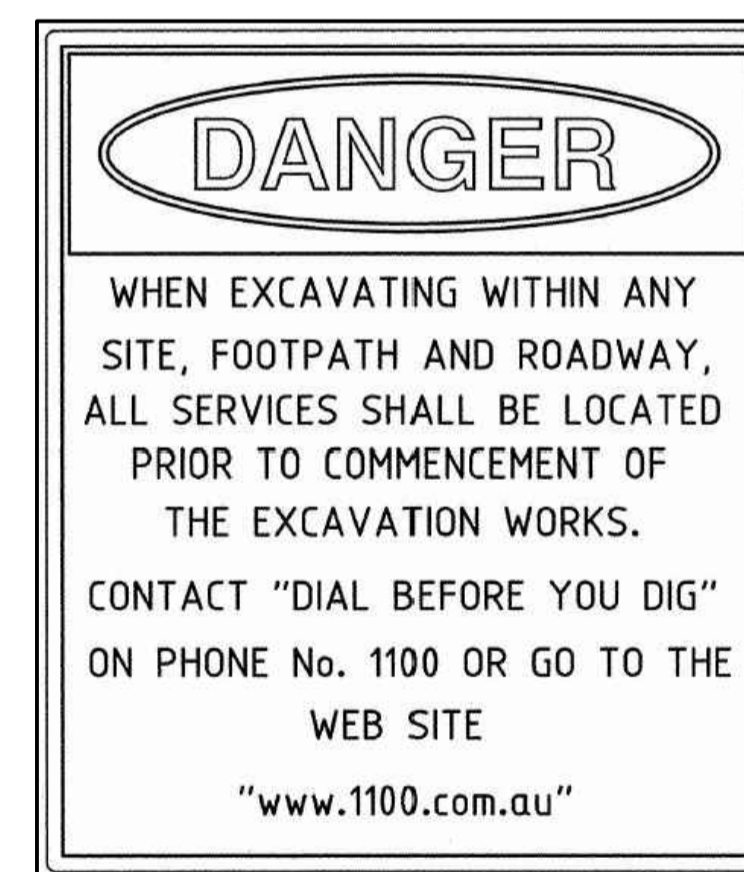


**LEGEND**

- RISER
- SERVICE TYPE
- SERVICE SIZE
- DROPPER
- EXISTING WATER MAIN
- EXISTING GAS MAIN
- EXISTING SEWER MAIN
- SANITARY PLUMBING
- SEWER RISING MAIN
- VENT PIPE
- STORMWATER
- SUBSOIL DRAINAGE

**NOTES:**

1. THIS PLAN SHALL BE READ IN CONJUNCTION WITH THE LATEST SET OF ARCHITECTURAL DRAWINGS.
2. LOCATION OF ALL DENOTES SLAB PENETRATION
3. ALL SEWER PIPE SIZES 100mm U.N.O.
4. FOR ALL AERIAL DRAINAGE - MIN. PIPE SIZE IS 65mm.
5. ALL SHOWER FLOOR WASTES TO BE 100/50 POT GULLIES (IF SUPPLYING FLOOR WASTES) AND 100/65 IF DRAINING DIRECT TO DRAINAGE.
6. ALL FLOOR WASTE RECEIVING DISCHARGE FROM LAUNDRY TUB TO HAVE A SUD'S STOPPER FITTED TO THE FLOOR WASTE UNDER THE GRATE.
7. ALL SERVICES SHOWN ARE UNDER FLOOR SLAB (OUT OF STRATA), U.N.O.
8. ALL PIPEWORK SHALL BE INSTALLED TO COMPLY AUSTRALIAN STANDARD AS/NZS 3500.



**BASEMENT PUMP OUT FAILURE WARNING SIGN**

SIGN SHALL BE PLACED IN A CLEAR AND VISIBLE LOCATION WHERE VEHICLES ENTER THE BASEMENT

COLOURS:  
"WARNING" = RED  
BORDER AND OTHER LETTERING = BLACK

**CONFINED SPACE DANGER SIGN**

A) A CONFINED SPACE DANGER SIGN SHALL BE POSITIONED IN A LOCATION AT ALL ACCESS POINTS, SUCH THAT IT IS CLEARLY VISIBLE TO PERSONS PROPOSING TO ENTER THE BELOW GROUND TANK/S CONFINED SPACE.

B) MINIMUM DIMENSIONS OF THE SIGN - 300mm x 450mm (LARGE ENTRIES, SUCH AS DOORS) - 250mm x 180mm (SMALL ENTRIES SUCH AS GRATES & MANHOLES)

C) THE SIGN SHALL BE MANUFACTURED FROM COLOUR BONDED ALUMINUM OR POLYPROPYLENE

D) SIGN SHALL BE AFFIXED USING SCREWS AT EACH CORNER OF THE SIGN

COLOURS:  
"DANGER" & BACKGROUND = WHITE  
ELLIPTICAL AREA = RED  
RECTANGLE CONTAINING ELLIPSE = BLACK  
BORDER AND OTHER LETTERING = BLACK

NOT FOR CONSTRUCTION

| Issue | Description                        | Date       | Drawn | Design | Checked |
|-------|------------------------------------|------------|-------|--------|---------|
| C     | ISSUE FOR CC                       | 28/03/2017 | SSA   | WW     | JAB     |
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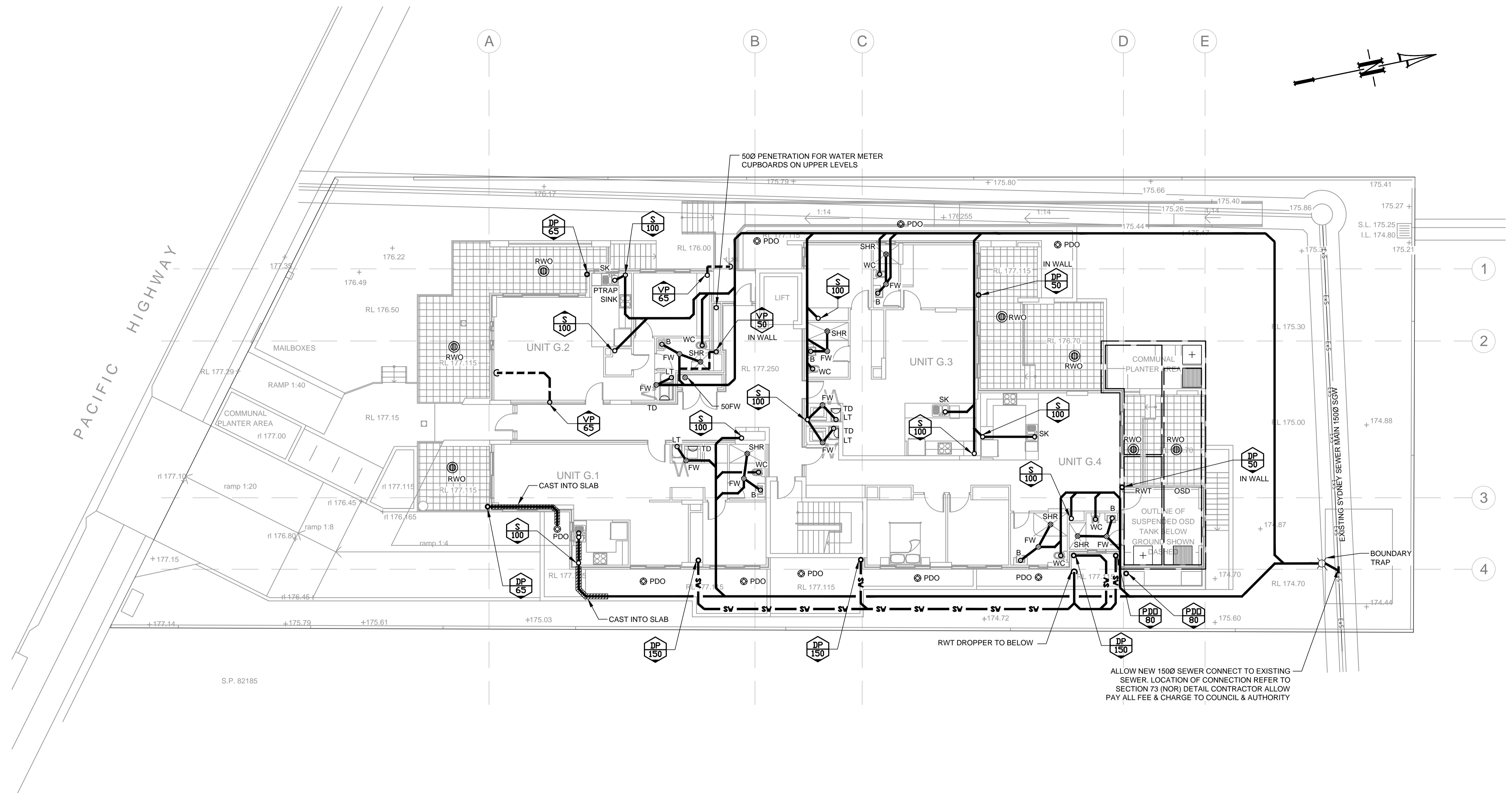
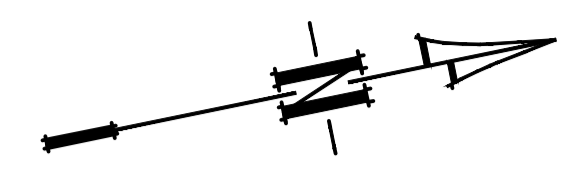
Architect  
**BAINI DESIGN**  
ABN 51 068 732 593  
Office 2 / Level 4, 25-33 Old Northern Road  
Baulkham Hills, NSW 2153  
PHONE : +61 2 9639 1674

Scale  
0 2 4 6 m  
SCALE 1:100 @ A1  
Council  
**Ku-Ring-Gai Council**

**AUSTRALIAN CONSULTING ENGINEERS.**  
AUSTRALIAN CONSULTING ENGINEERS.  
PTY LTD - A.C.N. 084 059 941  
SHOP 2-41 CONCORD RD NORTH STRATHFIELD NSW 2137  
PH: (02) 9763 1500 FX: (02) 9763 1515  
EMAIL: info@aceeng.com.au

Project  
**1407 PACIFIC HIGHWAY WARRAWEE  
HYDRAULIC AND FIRE  
ENGINEERING PLANS**

Drawing Title  
**DRAINAGE SERVICES  
BASEMENT LEVEL**  
Scale A1 Project No. Dwg. No. Issue  
1:100 ACE160721.HYD.CC H01 C



**LEGEND**

- RISER
- SERVICE TYPE
- SERVICE SIZE
- DROPPER
- EXISTING WATER MAIN
- EXISTING GAS MAIN
- EXISTING SEWER MAIN
- SANITARY PLUMBING
- SEWER RISING MAIN
- VENT PIPE
- STORMWATER
- SUBSOIL DRAINAGE

**NOTES:**

1. THIS PLAN SHALL BE READ IN CONJUNCTION WITH THE LATEST SET OF ARCHITECTURAL DRAWINGS.
2. LOCATION OF ALL DENOTES SLAB PENETRATION
3. ALL SEWER PIPE SIZES 100mm U.N.O.
4. FOR ALL AERIAL DRAINAGE - MIN. PIPE SIZE IS 65mm.
5. ALL SHOWER FLOOR WASTES TO BE 100/50 POT GULLIES (IF SUPPLYING FLOOR WASTES) AND 100/65 IF DRAINING DIRECT TO DRAINAGE.
6. ALL FLOOR WASTE RECEIVING DISCHARGE FROM LAUNDRY TUB TO HAVE A SUD'S STOPPER FITTED TO THE FLOOR WASTE UNDER THE GRATE.
7. ALL SERVICES SHOWN ARE UNDER FLOOR SLAB (OUT OF STRATA), U.N.O.
8. ALL PIPEWORK SHALL BE INSTALLED TO COMPLY AUSTRALIAN STANDARD AS/NZS 3500.

NOT FOR CONSTRUCTION

| Issue | Description                        | Date       | Drawn | Design | Checked |
|-------|------------------------------------|------------|-------|--------|---------|
| C     | ISSUE FOR CC                       | 28/03/2017 | SSA   | WW     | JAB     |
| B     | ISSUE FOR REVIEW                   | 14/03/2017 | SSA   | WW     | JAB     |
| A     | PRELIMINARY ISSUE FOR COORDINATION | 03/11/2016 | SSA   | WW     | JAB     |

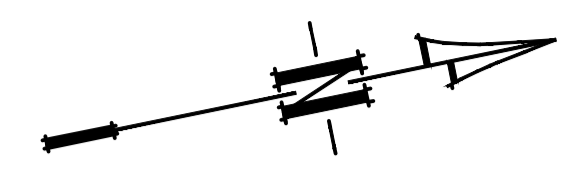
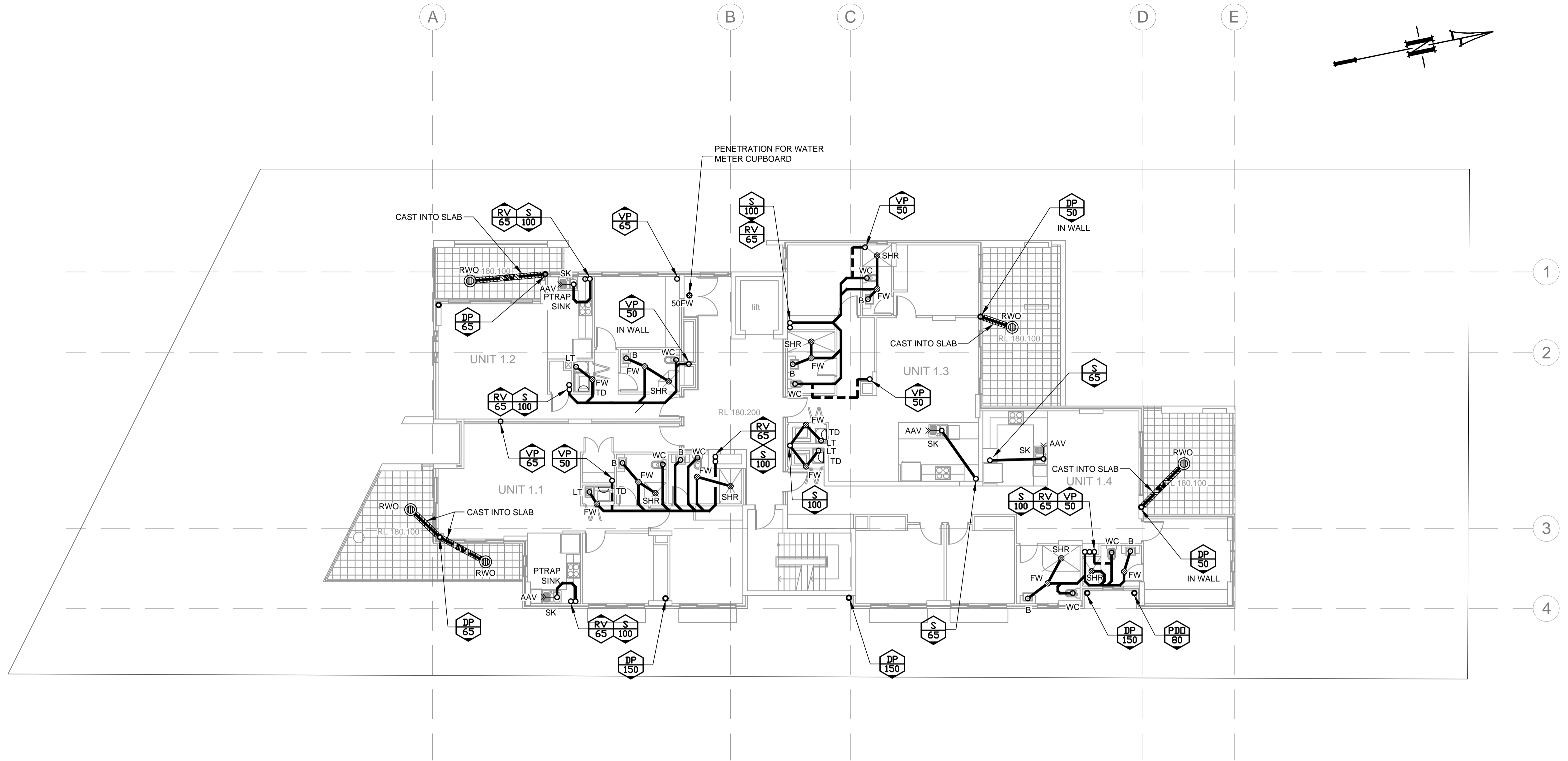
Architect  
**BAINI DESIGN**  
 ABN 51 068 732 593  
 Office 2 / Level 4, 25-33 Old Northern Road  
 Baulkham Hills, NSW 2153  
 PHONE : +61 2 9639 1674

Scale  
  
 SCALE 1:100 @ A1  
 Council  
**Ku-Ring-Gai Council**

**AUSTRALIAN CONSULTING ENGINEERS.**  
 AUSTRALIAN CONSULTING ENGINEERS.  
 PTY LTD - A.C.N. 084 059 941  
 SHOP 2-41 CONCORD RD NORTH STRATHFIELD NSW 2137  
 PH: (02) 9763 1500 FX: (02) 9763 1515  
 EMAIL: info@aceeng.com.au

Project  
**1407 PACIFIC HIGHWAY WARRAWEE**  
**HYDRAULIC AND FIRE**  
**ENGINEERING PLANS**

Drawing Title  
**DRAINAGE SERVICES**  
**GROUND LEVEL**  
 Scale A1 Project No. Dwg. No. Issue  
 1:100 ACE160721.HYD.CC H02 C



**LEGEND**

- RISER
- SERVICE TYPE
- SERVICE SIZE
- DROPPER
- EXISTING WATER MAIN
- EXISTING GAS MAIN
- EXISTING SEWER MAIN
- SANITARY PLUMBING

**NOTES:**

1. THIS PLAN SHALL BE READ IN CONJUNCTION WITH THE LATEST SET OF ARCHITECTURAL DRAWINGS.
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7. ALL SERVICES SHOWN ARE UNDER FLOOR SLAB (OUT OF STRATA), U.N.O.
8. ALL PIPEWORK SHALL BE INSTALLED TO COMPLY AUSTRALIAN STANDARD AS/NZS 3500.

NOT FOR CONSTRUCTION

| Issue | Description                        | Date       | Drawn | Design | Checked |
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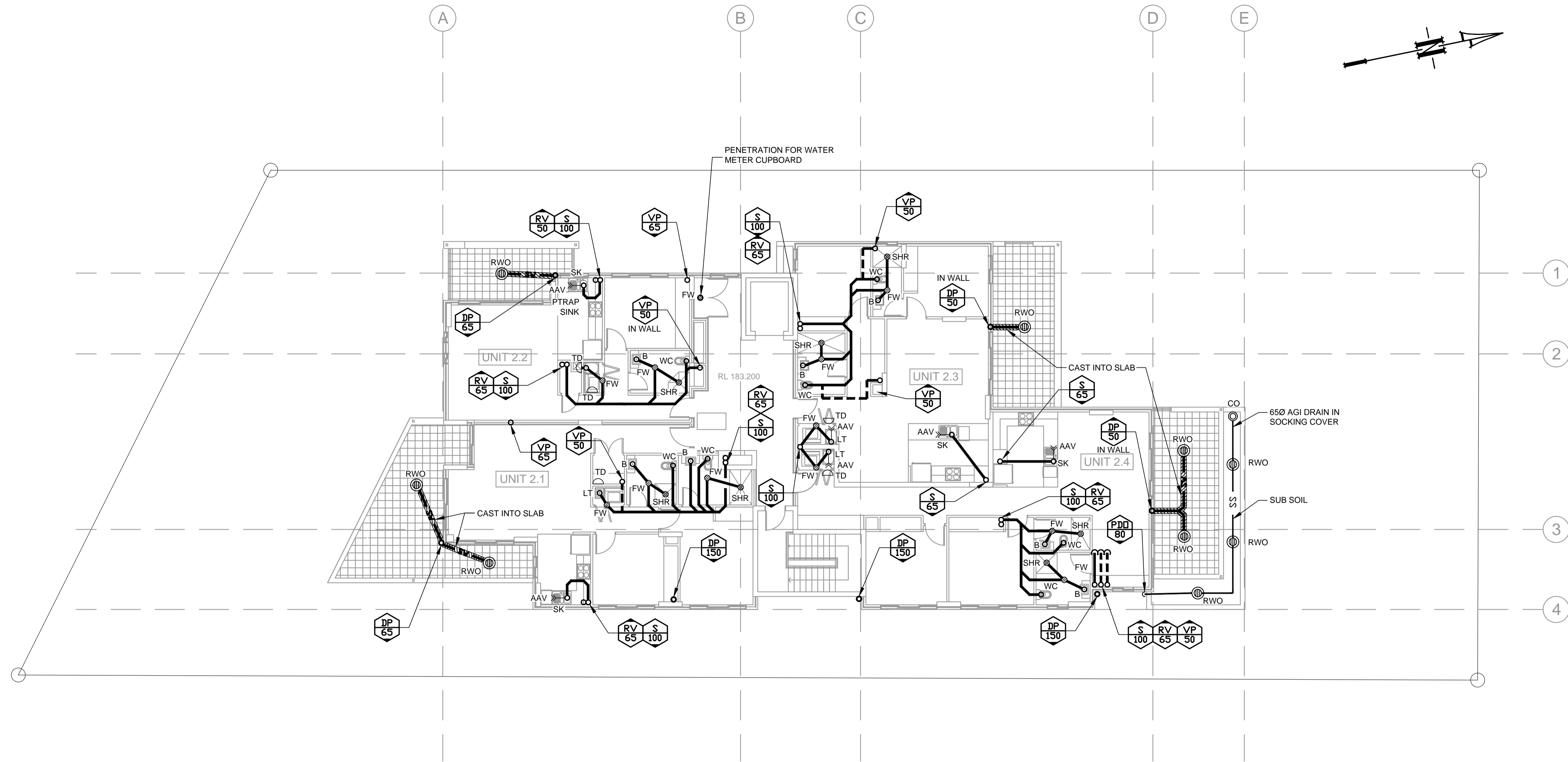
**Architect**  
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 ABN 51 068 732 593  
 Office 2 / Level 4, 25-33 Old Northern Road  
 Baulkham Hills, NSW 2153  
 PHONE : +61 2 9639 1674

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 AUSTRALIAN CONSULTING ENGINEERS PTY LTD - A.C.N. 084 059 941  
 SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2137  
 PH: (02) 9763 1500 FX: (02) 9763 1515  
 EMAIL: info@aceeng.com.au

Project  
**1407 PACIFIC HIGHWAY WARRAWEE  
 HYDRAULIC AND FIRE  
 ENGINEERING PLANS**

| Drawing Title                              |    |                  |          |
|--|----|------------------|----------|
| <b>DRAINAGE SERVICES<br/>LEVEL 1 LEVEL</b> |    |                  |          |
| Scale                                      | A1 | Project No.      | Dwg. No. |
| 1:100                                      |    | ACE160721.HYD.CC | H03      |
|  |    |                  | Issue    |
|  |    |                  | C        |



**LEGEND**

- RISER
- SERVICE TYPE
- SERVICE SIZE
- DROPPER
- EXISTING WATER MAIN
- EXISTING GAS MAIN
- EXISTING SEWER MAIN
- SANITARY PLUMBING

**NOTES:**

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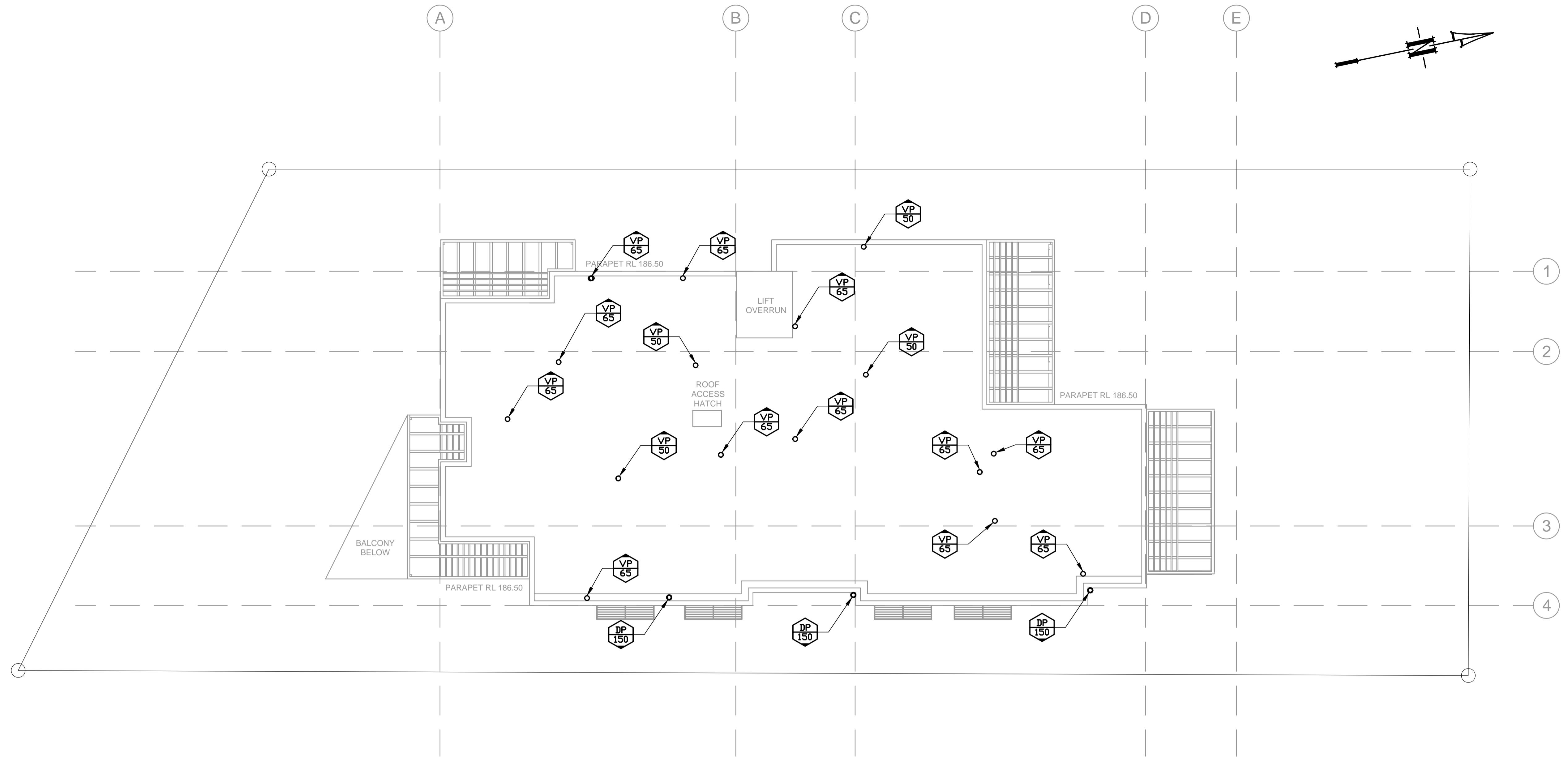
**BAINI DESIGN**  
 ABN 51 068 732 593  
 Office 2 / Level 4, 25-33 Old Northern Road  
 Baulkham Hills, NSW 2153  
 PHONE : +61 2 9639 1674

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**Ku-Ring-Gai Council**

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 SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2137  
 PH: (02) 9763 1500 FX: (02) 9763 1515  
 EMAIL: info@aceeng.com.au

Project  
**1407 PACIFIC HIGHWAY WARRAWEE  
 HYDRAULIC AND FIRE  
 ENGINEERING PLANS**

| Drawing Title                              |  | Scale | Project No.      | Dwg. No. | Issue |
|--|--|-------|------------------|----------|-------|
| <b>DRAINAGE SERVICES<br/>LEVEL 2 LEVEL</b> |  | 1:100 | ACE160721.HYD.CC | H04      | C     |



**LEGEND**

- RISER
- SERVICE TYPE
- SERVICE SIZE
- DROPPER
- EXISTING WATER MAIN
- EXISTING GAS MAIN
- EXISTING SEWER MAIN
- SANITARY PLUMBING
- SEWER RISING MAIN
- VENT PIPE
- STORMWATER
- SUBSOIL DRAINAGE

**NOTES:**

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8. ALL PIPEWORK SHALL BE INSTALLED TO COMPLY AUSTRALIAN STANDARD AS/NZS 3500.

NOT FOR CONSTRUCTION

| Issue | Description                        | Date       | Drawn | Design | Checked |
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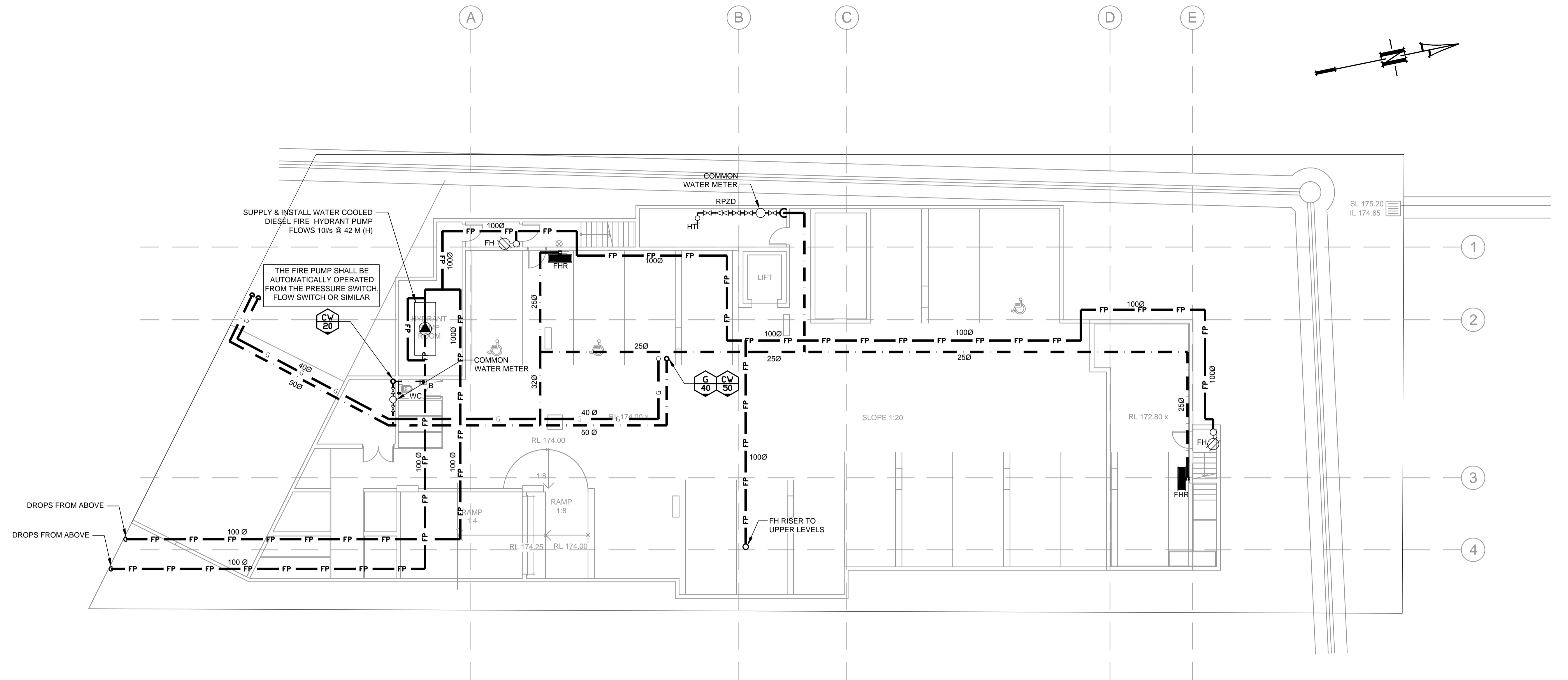
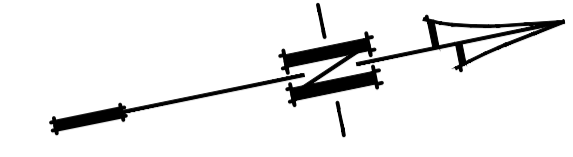
**Architect**  
**BAINI DESIGN**  
 ABN 51 068 732 593  
 Office 2 / Level 4, 25-33 Old Northern Road  
 Baulkham Hills, NSW 2153  
 PHONE : +61 2 9639 1674

Scale  
  
 SCALE 1:100 @ A1  
 Council  
**Ku-Ring-Gai Council**

**AUSTRALIAN CONSULTING ENGINEERS.**  
 AUSTRALIAN CONSULTING ENGINEERS PTY LTD - A.C.N. 084 059 941  
 SHOP 2-41 CONCORD RD NORTH STRATHFIELD NSW 2137  
 PH: (02) 9763 1500 FX: (02) 9763 1515  
 EMAIL: info@aceeng.com.au

Project  
**1407 PACIFIC HIGHWAY WARRAWEE  
 HYDRAULIC AND FIRE  
 ENGINEERING PLANS**

| Drawing Title                           |    |                  |          |
|---|----|------------------|----------|
| <b>DRAINAGE SERVICES<br/>ROOF LEVEL</b> |    |                  |          |
| Scale                                   | A1 | Project No.      | Dwg. No. |
| 1:100                                   |    | ACE160721.HYD.CC | H05      |
|   |    |                  | Issue    |
|   |    |                  | C        |



**LEGEND**

- RISER
- SERVICE TYPE
- SERVICE SIZE
- DROPPER
  
- POTABLE COLD WATER
- FIRE PROTECTION COLD WATER
- HOT WATER
- HOT WATER RETURN
- GAS SERVICE

**NOTES:**

1. THIS PLAN SHALL BE READ IN CONJUNCTION WITH THE LATEST SET OF ARCHITECTURAL DRAWINGS.
2. LOCATION OF ALL DENOTES SLAB PENETRATION
3. HOT WATER PIPEWORK SHALL BE FITTED WITH KEMLAG INSULATION IN MASONRY WALLS ONLY.
4. ELECTRICAL CONTRACTOR TO CONNECT ALL MDL WIRING BACK TO NOMINATED MDL PANELS, TYPICAL FOR ALL RESIDENTIAL. ALLOW TO CO-ORDINATE.
5. ALL PRESSURE SERVICES SHOWN ARE WITHIN FLOORS (WITHIN STRATA), U.N.O.
6. ALLOW TO RETICULATE HOT AND COLD WATER TO ALL FIXTURES, ALL UNITS.
7. ALL PIPEWORK SHALL BE INSTALLED TO COMPLY AUSTRALIAN STANDARD AS/NZS 3500.
8. ALL HOT AND COLD WATER PIPEWORK 20mm UNO. BRANCHES TO INDIVIDUAL FIXTURES LESS THAN 2m TO BE 15mm.
9. ALLOW TO RETICULATE GAS TO COOK TOPS.
10. LOCATE ALL RINNAI EXTERNAL INFINITY 26 CONTINUOUS FLOW GAS HOT WATER UNIT IN BALCONY, FLUING TO STANDARDS REQUIREMENTS.

NOT FOR CONSTRUCTION

| Issue | Description                        | Date       | Drawn | Design | Checked |
|-------|------------------------------------|------------|-------|--------|---------|
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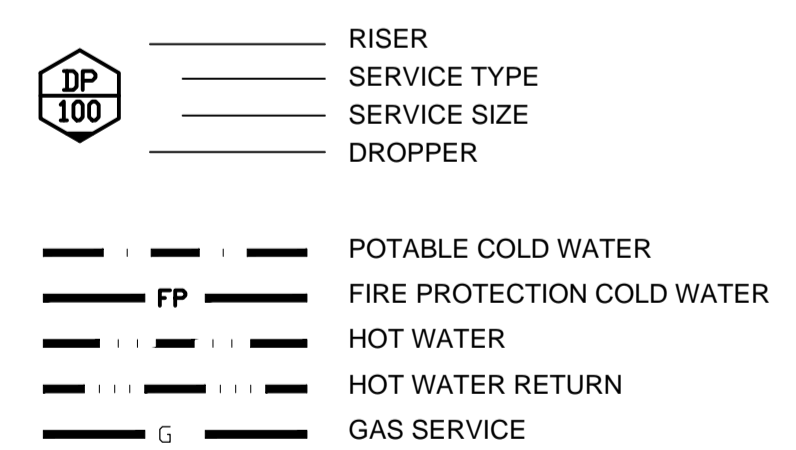
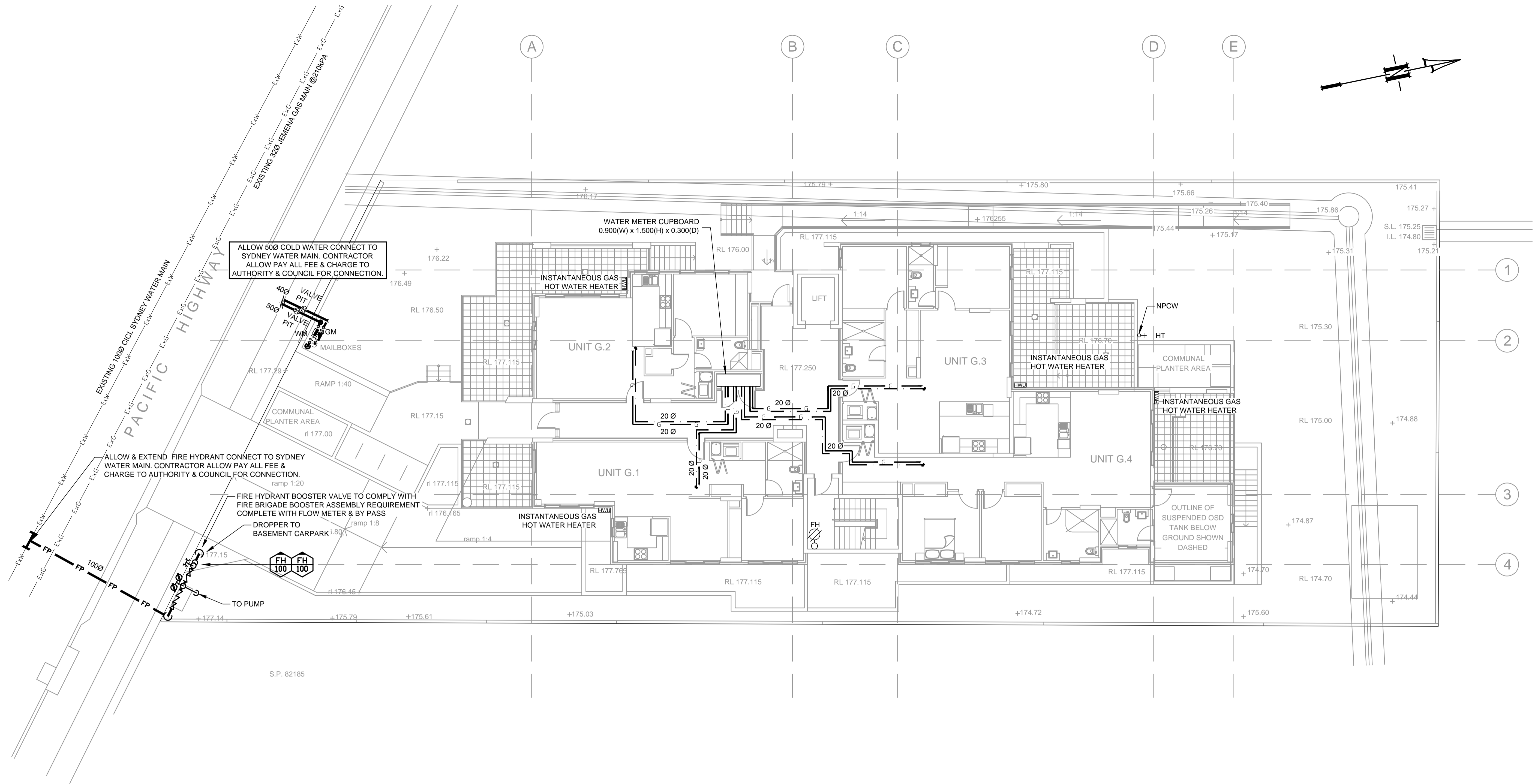
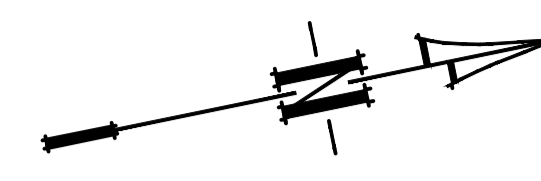
**BAINI DESIGN**  
 ABN 51 068 732 593  
 Office 2 / Level 4, 25-33 Old Northern Road  
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Scale  
  
 SCALE 1:100 @ A1  
 Council  
**Ku-Ring-Gai Council**

**AUSTRALIAN CONSULTING ENGINEERS.**  
 AUSTRALIAN CONSULTING ENGINEERS.  
 P T Y L T D - A . C . N . 0 8 4 0 5 9 9 4 1  
 SHOP 2-41 CONCORD RD NORTH STRATHFIELD NSW 2137  
 PH: (02) 9763 1500 FX: (02) 9763 1515  
 EMAIL: info@aceeng.com.au

Project  
**1407 PACIFIC HIGHWAY WARRAWEE  
 HYDRAULIC AND FIRE  
 ENGINEERING PLANS**

| Drawing Title  |  | Scale | A1 | Project No.      | Dwg. No. | Issue |
|--|--|-------|----|------------------|----------|-------|
| <b>FIRE, WATER &amp; GAS SERVICES BASEMENT LEVEL</b> |  | 1:100 |    | ACE160721.HYD.CC | H11      | C     |



**NOTES:**

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- ELECTRICAL CONTRACTOR TO CONNECT ALL MDL WIRING BACK TO NOMINATED MDL PANELS. TYPICAL FOR ALL RESIDENTIAL. ALLOW TO CO-ORDINATE.
- ALL PRESSURE SERVICES SHOWN ARE WITHIN FLOORS (WITHIN STRATA), U.N.O.
- ALLOW TO RETICULATE HOT AND COLD WATER TO ALL FIXTURES, ALL UNITS.
- ALL PIPEWORK SHALL BE INSTALLED TO COMPLY AUSTRALIAN STANDARD AS/NZS 3500.
- ALL HOT AND COLD WATER PIPEWORK 20mm UNO, BRANCHES TO INDIVIDUAL FIXTURES LESS THAN 2m TO BE 15mm.
- ALLOW TO RETICULATE GAS TO COOK TOPS.
- LOCATE ALL RINNAI EXTERNAL INFINITY 26 CONTINUOUS FLOW GAS HOT WATER UNIT IN BALCONY, FLUING TO STANDARDS REQUIREMENTS.

NOT FOR CONSTRUCTION

| Issue | Description                        | Date       | Drawn | Design | Checked |
|-------|------------------------------------|------------|-------|--------|---------|
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 ABN 51 068 732 593  
 Office 2 / Level 4, 25-33 Old Northern Road  
 Baulkham Hills, NSW 2153  
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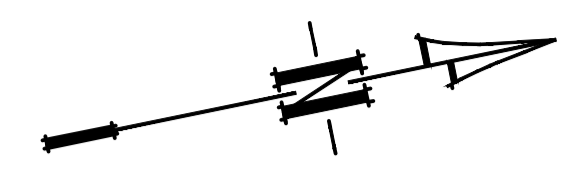
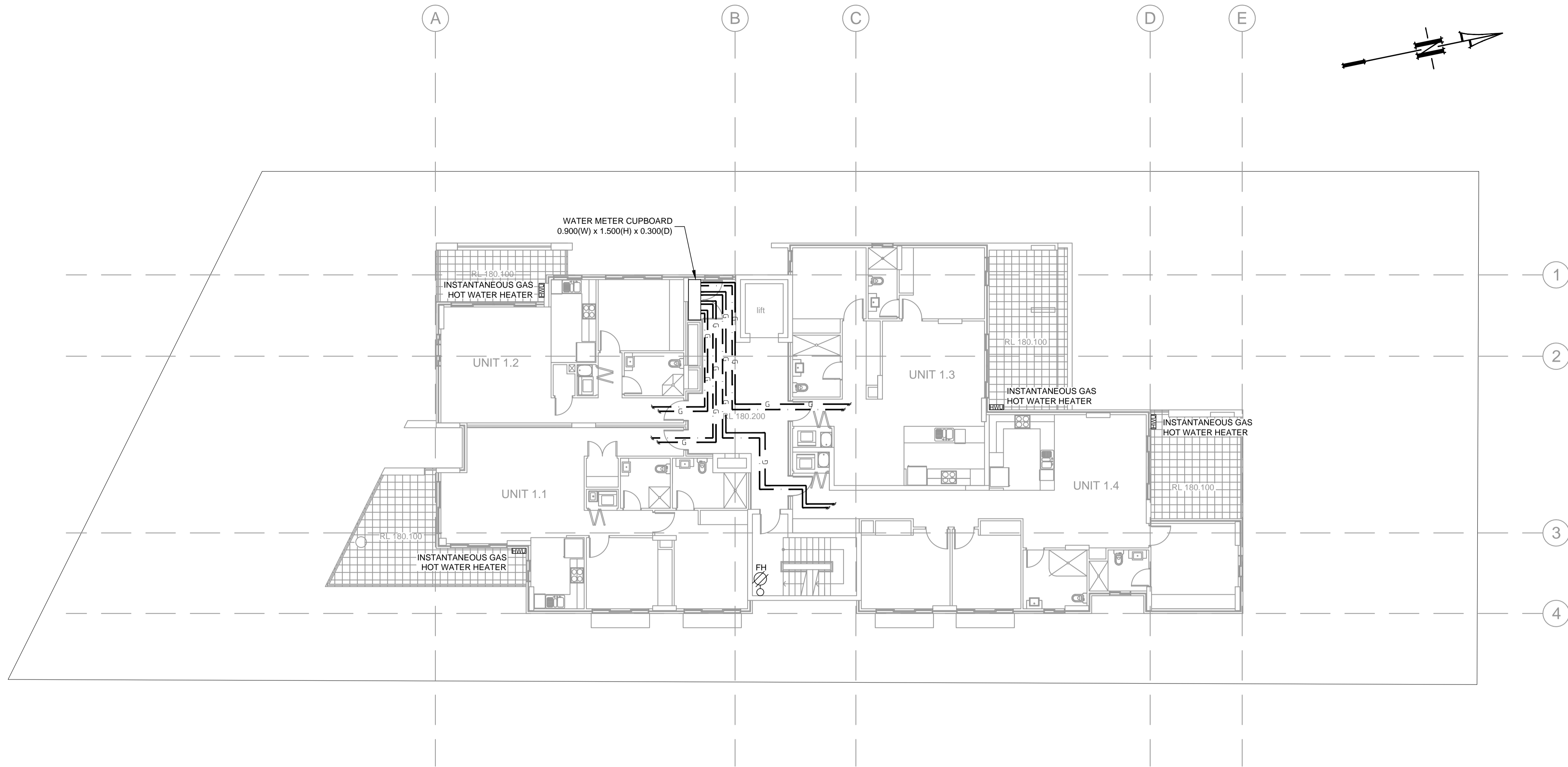
Scale  
 0 2 4 6 m  
 SCALE 1:100 @ A1  
 Council  
**Ku-Ring-Gai Council**

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 AUSTRALIAN CONSULTING ENGINEERS. PTY LTD - A.C.N. 084 059 941  
 SHOP 2-41 CONCORD RD NORTH STRATHFIELD NSW 2137  
 PH: (02) 9763 1500 FX: (02) 9763 1515  
 EMAIL: info@aceeng.com.au

Project  
**1407 PACIFIC HIGHWAY WARRAWEE  
 HYDRAULIC AND FIRE  
 ENGINEERING PLANS**

| Drawing Title  |  | Scale | A1 | Project No.      | Dwg. No. | Issue |
|--|--|-------|----|------------------|----------|-------|
| <b>FIRE, WATER &amp; GAS SERVICES<br/>GROUND LEVEL</b> |  | 1:100 |    | ACE160721.HYD.CC | H12      | C     |





**LEGEND**

- RISER
- SERVICE TYPE
- SERVICE SIZE
- DROPPER
- POTABLE COLD WATER
- FIRE PROTECTION COLD WATER
- HOT WATER
- HOT WATER RETURN
- GAS SERVICE

**NOTES:**

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9. ALLOW TO RETICULATE GAS TO COOK TOPS.
10. LOCATE ALL RINNAI EXTERNAL INFINITY 26 CONTINUOUS FLOW INSTANTANEOUS GAS HOT WATER UNIT IN BALCONY, FLUING TO STANDARDS REQUIREMENTS.

NOT FOR CONSTRUCTION

| Issue | Description                        | Date       | Drawn | Design | Checked |
|-------|------------------------------------|------------|-------|--------|---------|
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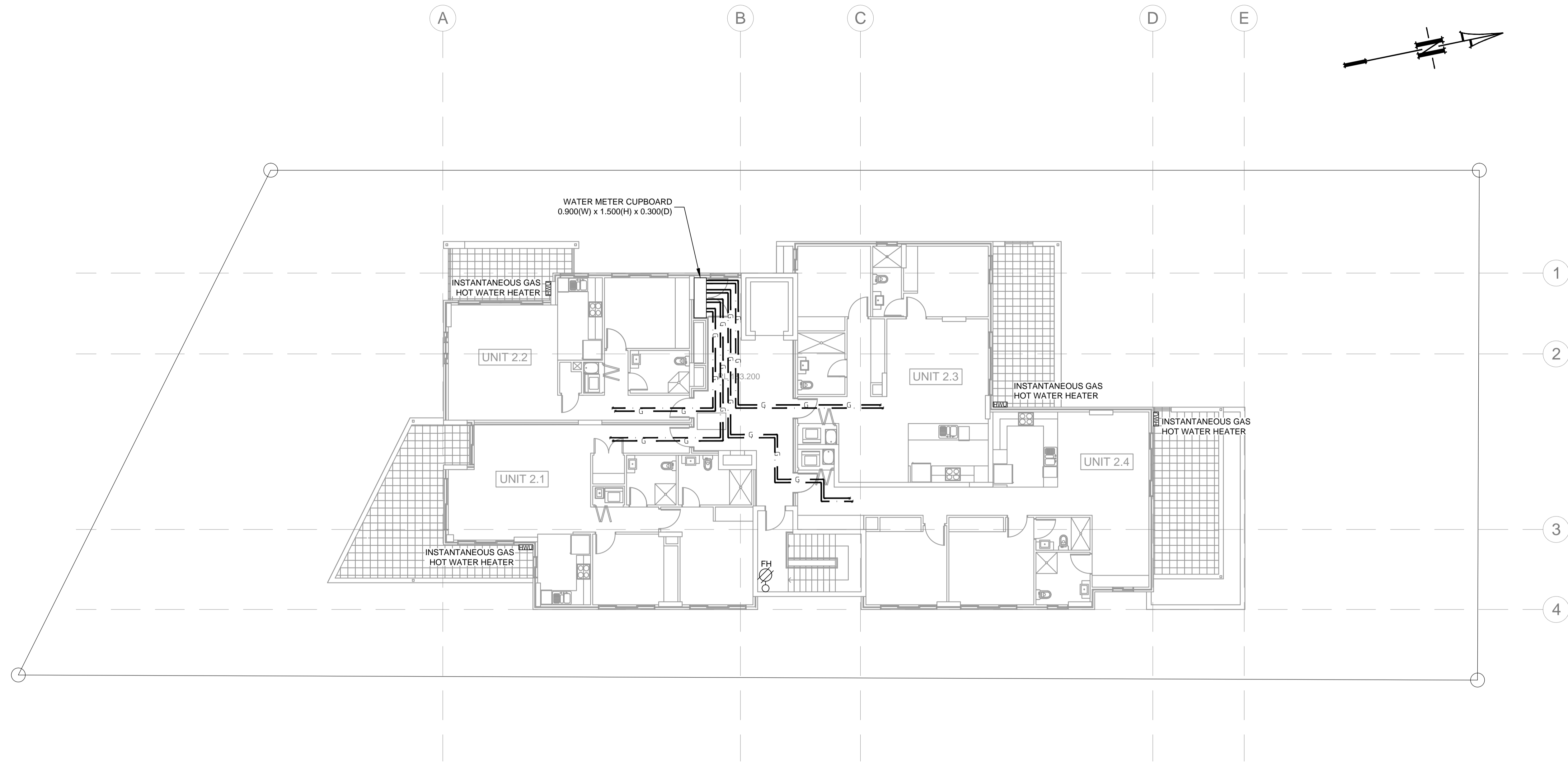
**Architect**  
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 ABN 51 068 732 593  
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Scale  
  
 SCALE 1:100 @ A1  
 Council  
**Ku-Ring-Gai Council**

**AUSTRALIAN CONSULTING ENGINEERS.**  
 AUSTRALIAN P T Y L T D - A . C . N . 0 8 4 0 5 9 9 4 1  
 SHOP 2-41 CONCORD RD NORTH STRATHFIELD NSW 2137  
 PH: (02) 9763 1500 FX: (02) 9763 1515  
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Project  
**1407 PACIFIC HIGHWAY WARRAWEE**  
**HYDRAULIC AND FIRE**  
**ENGINEERING PLANS**

| Drawing Title                                 |  | Scale | Project No.      | Dwg. No. | Issue |
|---|--|-------|------------------|----------|-------|
| <b>FIRE, WATER &amp; GAS SERVICES LEVEL 1</b> |  | 1:100 | ACE160721.HYD.CC | H13      | C     |



**LEGEND**

- RISER
- SERVICE TYPE
- SERVICE SIZE
- DROPPER
- POTABLE COLD WATER
- FIRE PROTECTION COLD WATER
- HOT WATER
- HOT WATER RETURN
- GAS SERVICE

**NOTES:**

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9. ALLOW TO RETICULATE GAS TO COOK TOPS.
10. LOCATE ALL RINNAI EXTERNAL INFINITY 26 CONTINUOUS FLOW INSTANTANEOUS GAS HOT WATER UNIT IN BALCONY, FLUING TO STANDARDS REQUIREMENTS.

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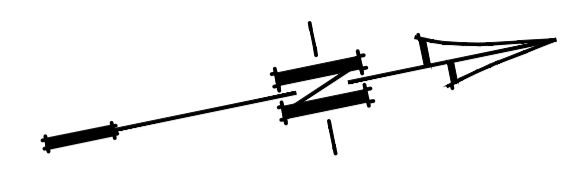
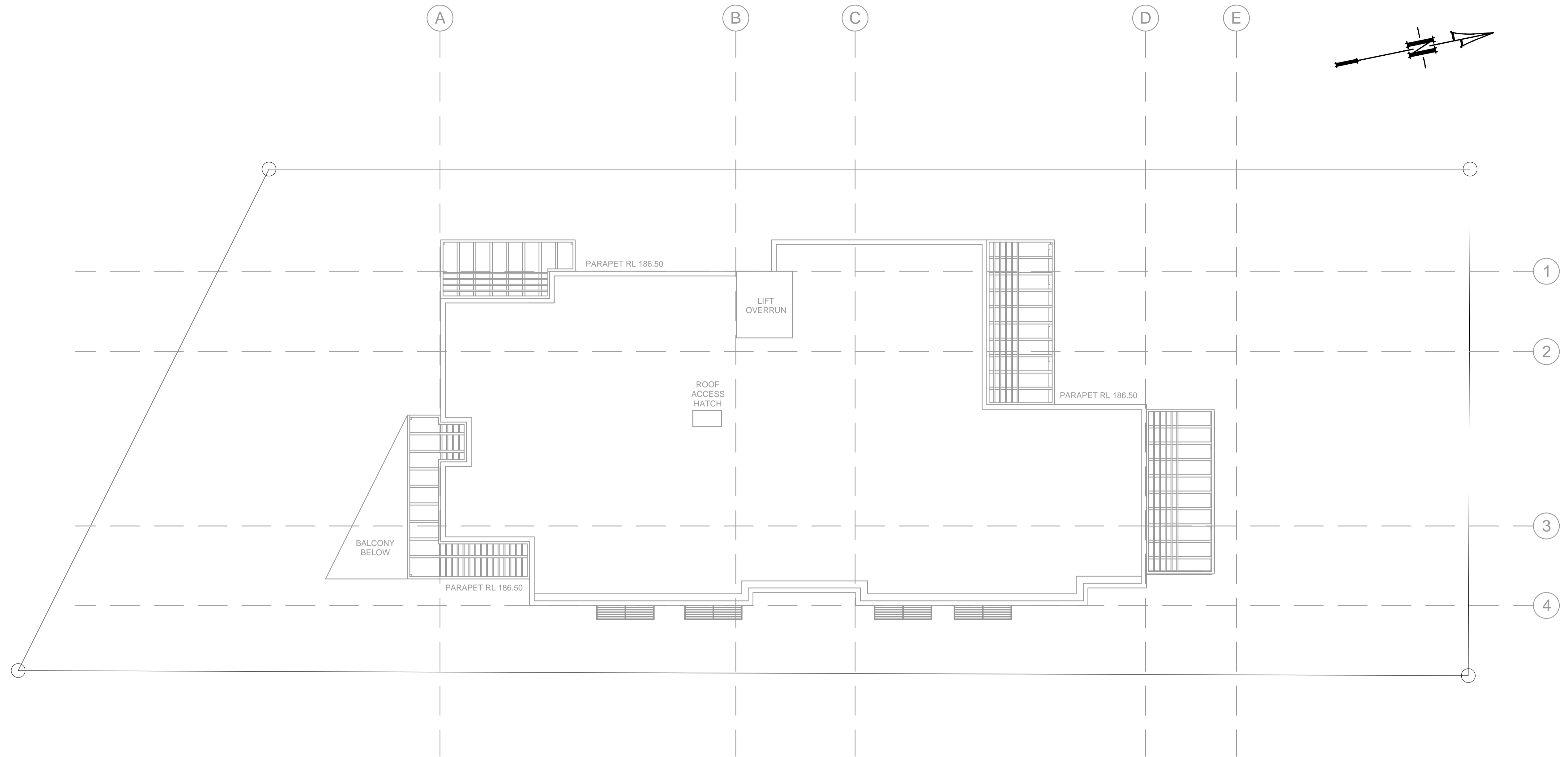
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 PTY LTD - A.C.N. 084 059 941  
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Project  
**1407 PACIFIC HIGHWAY WARRAWEE  
 HYDRAULIC AND FIRE  
 ENGINEERING PLANS**

| Drawing Title                                     |  | Scale | A1 | Project No.      | Dwg. No. | Issue |
|---|--|-------|----|------------------|----------|-------|
| <b>FIRE, WATER &amp; GAS SERVICES<br/>LEVEL 2</b> |  | 1:100 |    | ACE160721.HYD.CC | H14      | C     |



**LEGEND**

- RISER
- SERVICE TYPE
- SERVICE SIZE
- DROPPER
- EXISTING WATER MAIN
- EXISTING GAS MAIN
- EXISTING SEWER MAIN
- POTABLE COLD WATER
- FIRE PROTECTION COLD WATER
- NON-POTABLE COLD WATER
- HOT WATER
- HOT WATER RETURN
- WARM WATER
- GAS SERVICE
- SANITARY PLUMBING
- SEWER RISING MAIN
- VENT PIPE
- STORMWATER
- LIFT PUMP POWER SUPPLY
- SUBSOIL DRAINAGE

**NOTES:**

1. THIS PLAN SHALL BE READ IN CONJUNCTION WITH THE LATEST SET OF ARCHITECTURAL DRAWINGS.
2. LOCATION OF ALL DENOTES SLAB PENETRATION
3. ALL SEWER PIPE SIZES 100mm U.N.O.
4. FOR ALL AERIAL DRAINAGE - MIN. PIPE SIZE IS 65mm.
5. ALL SHOWER FLOOR WASTES TO BE 100/50 POT GULLIES (IF SUPPLYING FLOOR WASTES) AND 100/65 IF DRAINING DIRECT TO DRAINAGE.
6. ALL FLOOR WASTE RECEIVING DISCHARGE FROM LAUNDRY TUB TO HAVE A SUD'S STOPPER FITTED TO THE FLOOR WASTE UNDER THE GRATE.
7. PROVIDE A GAS BALL VALVE AT THE BASE OF EVERY MAIN RISER.
8. HOT WATER PIPEWORK SHALL BE FITTED WITH KEMLAG INSULATION.
9. ELECTRICAL CONTRACTOR TO CONNECT ALL MDL WIRING BACK TO NOMINATED MDL PANELS. TYPICAL FOR ALL RESIDENTIAL & COMMERCIAL. ALLOW TO CO-ORDINATE.
10. ALL PRESSURE SERVICES SHOWN ARE UNDER FLOOR SLAB (SAME AS SEWER), U.N.O.
11. ALLOW TO RETICULATE HW & CW TO ALL FIXTURES, ALL UNITS.
12. ALL PIPEWORK SHALL BE INSTALLED TO COMPLY AUSTRALIAN STANDARD AS 3500.
13. ALL HW & CW PIPEWORK 20mm UNO, BRANCHES TO INDIVIDUAL FIXTURES LESS THAN 2m TO BE 15mm.
14. ALLOW TO RETICULATE GAS TO COOK TOPS.

NOT FOR CONSTRUCTION

| Issue | Description                        | Date       | Drawn | Design | Checked |
|-------|------------------------------------|------------|-------|--------|---------|
| C     | ISSUE FOR CC                       | 28/03/2017 | SSA   | WW     | JAB     |
| B     | ISSUE FOR REVIEW                   | 14/03/2017 | SSA   | WW     | JAB     |
| A     | PRELIMINARY ISSUE FOR COORDINATION | 03/11/2016 | SSA   | WW     | JAB     |

**BAINI DESIGN**  
 ABN 51 068 732 593  
 Office 2 / Level 4, 25-33 Old Northern Road  
 Baulkham Hills, NSW 2153  
 PHONE : +61 2 9639 1674

Scale  
  
 SCALE 1:100 @ A1  
 Council  
**Ku-Ring-Gai Council**

**AUSTRALIAN CONSULTING ENGINEERS.**  
 AUSTRALIAN CONSULTING ENGINEERS.  
 P T Y L T D - A . C . N . 0 8 4 0 5 9 9 4 1  
 SHOP 2-41 CONCORD RD NORTH STRATHFIELD NSW 2137  
 PH: (02) 9763 1500 FX: (02) 9763 1515  
 EMAIL: info@aceeng.com.au

Project  
**1407 PACIFIC HIGHWAY WARRAWEE HYDRAULIC AND FIRE ENGINEERING PLANS**

| Drawing Title                                    |                  |             |          |
|--|------------------|-------------|----------|
| <b>FIRE, WATER &amp; GAS SERVICES ROOF LEVEL</b> |                  |             |          |
| Scale  | A1               | Project No. | Dwg. No. |
| 1:100  | ACE160721.HYD.CC | H15         | C        |