# PROPOSED DWELLING

at: 44 KOOLOORA AVE, FRESHWATER

for: STEWART HOUSE

Architect: BREWSTER HJORTH ARCHITECTS

Prepared By:

Consulting Engineers
STRUCTURAL - CIVIL - STORMWATER - REMEDIAL
A.C.N. 076 121 616 A.B.N. 24 076 121 616
**Sydney:** Ph: (02) 9984 7000 Fax: (02) 9984 7444
Suite 207, 30 Fisher Road Dee Why N.S.W. 2099
**Gold Coast:** Ph: (07) 5631 4744
Unit 8, 1726 Gold Coast Highway Burleigh Heads QLD 4220
E : nb@nbconsulting.com.au W : www.nbconsulting.com.au


DRAWING SCHEDULE:

STORMWATER DRAWINGS
D01 - STORMWATER MANAGEMENT DRAINAGE PLAN - SHEET 1
D02 - STORMWATER MANAGEMENT DRAINAGE PLAN - SHEET 2
D03 - STORMWATER MANAGEMENT DRAINAGE PLAN - SHEET 3
D04 - SECTIONS & DETAILS - SHEET 1

D10 - SEDIMENT AND EROSION CONTROL PLAN

ISSUED FOR D.A. SUBMISSION ONLY NOT FOR CONSTRUCTION

NB Consulting Engineers

200273

ISSUE A - 09/09/2020

## STORMWATER NOTES:

1 - ALL PIPES TO BE 100mm ϕ UNLESS NOTED OTHERWISE.
2 - ALL PIPES TO BE uPVC TO AS 1254-2002 UNLESS NOTED OTHERWISE.
3 - ALL PIPES TO BE LAYED AT 1 % MINIMUM GRADE UNLESS NOTED OTHERWISE.
4 - ALL PIPES SHALL BE LAID ON A 75mm SAND BED, COMPACTED TO 100% S.M.D.D. BELOW PAVEMENTS.
( NO COMPACTION REQUIRED BELOW LANDSCAPING )
COVER TO SURFACE FROM TOP OF PIPE TO BE 300mm MINIMUM.
BACKFILL TO BE ADEQUATELY CONSOLIDATED AROUND PIPES BY METHOD OF RAMMING AND WATERING IN. TRENCHES TO BE FILLED WITH GRANULAR MATERIAL AS SPECIFIED.
5 - ALL DOWN PIPES TO BE 100mm ϕ UNLESS NOTED OTHERWISE.
6 - DOWN PIPE LOCATIONS ARE INDICATIVE ONLY. LOCATIONS TO BE CONFIRMED WITH ARCHITECT PRIOR TO COMMENCEMENT WITH WORK.
7 - PROVIDE CLEANING EYES AT ALL DOWNPIPES.
8 - ALL PITS TO BE CAST INSITU OR, IF PRECAST, APPROVED BY ENGINEER. CAST INSITU PITS TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH 1 N12 TOP TIE UNLESS NOTED OTHERWISE. CAST INSITU PITS GREATER THAN 1000 DEEP TO BE MINIMUM 900x600 AND TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH N12 AT 300 EACH WAY UNLESS NOTED OTHERWISE.
9 - ALL PITS GREATER THAN 1000mm DEEP SHALL HAVE STEP IRONS AS PER COUNCIL STANDARDS.
10 - ALL WORK TO BE IN ACCORDANCE WITH LOCAL COUNCIL STANDARDS AND SPECIFICATIONS.
11 - PRIOR TO COMMENCING ANY SITE WORKS THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL MEASURES TO APPROVED SEDIMENT AND EROSION CONTROL PLAN, EPA GUIDELINES AND COUNCIL SPECIFICATIONS. ALL MEASURES TO REMAIN IN PLACE UNTIL COMPLETION AND STABILIZATION OF THE SITE TO COUNCIL SATISFACTION.
12 - ALL LEVELS SHOWN ARE TO AHD
13 - ENSURE THAT ALL PITS AND STORMWATER PIPES ARE LOCATED CLEAR FROM TREE ROOT SYSTEMS.
14 - ALL EXISTING EARTHENWARE PIPES TO BE UPGRADED TO uPVC.
15 - ALL WORKS TO BE IN ACCORDANCE WITH AS 3500-2003 NATIONAL PLUMBING DRAINAGE CODE PART 3 - STORMWATER DRAINAGE.
16. - UNLESS NOTED OTHERWISE, SUB-SOIL DRAINS ARE TO BE INSTALLED IN ACCORDANCE WITH AS3500.3 ALONGSIDE WALLS THAT IMPEDE THE NATURAL FLOW OF GROUNDWATER. THIS MAY ALSO INVOLVE TRENCHING INTO THE CLAY OR ROCK SUBGRADE TO DIRECT GROUNDWATER AWAY FROM STRUCTURES.
17. - IF NOT INDICATED ON PLANS, PROVIDE LEAF CATCHERS TO ALL DOWNPIPES.
18. - ORIFICE PLATE MUST BE INSTALLED PRIOR TO INSTALLATION OF THE ROOF DRAINAGE SYSTEM AND CONNECTION OF THE SITE STORMWATER SYSTEM TO THE ONSITE DETENTION TANK.

## PUMP OUT NOTES:

1. TO ENSURE THAT SEEPAGE WATER IS NOT BEING PUMPED CONTINUALLY OUT TO THE STREET, THE PUMPS IN THE BASEMENT SHALL BE ADJUSTED TO PERMIT STORAGE IN THE BASEMENT PIPE SYSTEM (REFER DETAIL FOR RL) PRIOR TO THE PUMPS CUTTING IN. THE PUMPS SHOULD THEN DISCHARGE ALL WATER SO THAT ONLY MINIMAL WATER IS LEFT OVER THE PUMP INTAKE AS REQUIRED BY THE MANUFACTURER.
2. THE PUMPS SHALL OPERATE ALTERNATELY TO RL INDICATED ON DETAILS, WITH BOTH PUMPS OPERATING IN UNISON AT RL INDICATED ON DETAILS, (WITH ALARM) IF THE WATER LEVEL CONTINUES TO RISE ABOVE THE MAXIMUM WATER LEVEL AFTER THE FIRST PUMP HAS COME ON. THE LOW AREA OF THE BASEMENT TO BE SIGN POSTED TO PERMIT ADDITIONAL STORAGE VOLUME (UP TO 200mm IN DEPTH) DURING A MAJOR STORM EVENT.
3. ALL WORKS TO BE IN ACCORDANCE WITH AS 3500-3.2:1998 SECTION 9 PUMPED SYSTEMS
4. PUMPS SHALL BE IN DUPLICATE. THE MAXIMUM CAPACITY OF EACH PUMP SHALL BE SELECTED SO THAT THE CAPACITY OF THE SYSTEM RECEIVING THE DISCHARGE IS NOT EXCEEDED. THE PUMP CONTROLS SHALL BE SET UP TO ENABLE ALTERNATE PUMP OPERATION AT EACH START. IN THE EVENT THAT A PUMP FAILS TO OPERATE WHEN THE WATER LEVEL IN THE WET WELL REACHES THE PUMP START, THE OTHER PUMP SHALL BE ACTIVATED AND A VISIBLE ALARM INITIATED. IN THE EVENT THAT BOTH PUMPS FAIL TO OPERATE AN AUDIBLE ALARM SHALL BE INITIATED.
5. PUMPING EQUIPMENT SHALL BE SECURELY FIXED TO THE WET WELL USING CORROSION RESISTANT FIXINGS.
6. PUMPS SHALL BE FITTED WITH A GATE VALVE AND NON-RETURN VALVE ON THE DELIVERY SIDE OF EACH PUMP.
7. PUMPS SHALL HAVE FLANGES OR UNIONS INSTALLED TO FACILITATE REMOVAL.
8. PUMPS SHALL BE CONTROLLED SO AS TO LIMIT THE NUMBER OF STARTS PER HOUR TO WITHIN THE CAPACITY OF THE ELECTRICAL MOTORS AND EQUIPMENT, AND SHALL, AS FAR AS PRACTICABLE, EMPTY THE CONTENTS OF THE WET WELL AT EACH OPERATION.
9. THE REQUIRED PUMPING RATE SHALL BE CALCULATED BASED ON AN ASSESSMENT OF THE EXPECTED INFLOW AND, WHERE APPROPRIATE, THE ALLOWABLE DISCHARGE RATE.

## RAINWATER RE-USE TANKS:

1. CONSIDERING THE ROOF CATCHMENT AREA, LOCATION OF PROPERTY, INTENDED USE OF RAINWATER AND GARDEN SIZE WE RECOMMEND PROVIDING A RAINWATER TANK FOR USE AS PER BASIX REQUIREMENTS, SYDNEY WATER AND NSW HEALTH REQUIREMENTS FOR NON DRINKING USE ONLY AS PER BASIX REQUIREMENTS.
2. THE TANKS PROVIDED WILL REDUCE PRESSURE ON COUNCIL'S STORMWATER INFRASTRUCTURE.
3. REFERENCES:
COOMBES P.J. & KUCZERA G. (2001), "RAINWATER TANK DESIGN FOR WATER SUPPLY & STORMWATER MANAGEMENT." STORMWATER INDUSTRY ASSOCIATION REGIONAL CONFERENCE.
PATRICK DUPONT & STEVE SHACKLE, "RAINWATER"
AUSTRALIAN GOVERNMENT (2004), "GUIDANCE ON USE OF RAINWATER TANKS"
4. ALL CONNECTIONS TO PLUMBING AND RAINWATER TANKS TO BE IN ACCORDANCE WITH SYDNEY WATERS' GUIDE "INSTALLING A RAINWATER TANK" AVAILABLE AT www.sydneywater.com.au
5. PROVIDE A DUAL SUPPLY SYSTEM AND BACKFLOW PREVENTION SYSTEM IN ACCORDANCE WITH 'BASIX-DESIGN GUIDE FOR SINGLE DWELLINGS' BY NSW DEPARTMENT OF INFRASTRUCTURE, PLANING AND NATURAL RESOURCES.
6. IF NOT SPECIFIED ON PLANS, THE FIRST FLUSH SYSTEM IS TO HAVE A MINIMUM SIZE OF 20L PER 100m2 OF ROOF CATCHMENT AREA PRIOR TO ENTERING THE RAINWATER TANK. INDIVIDUAL SITE ANALYSIS IS REQUIRED IN HEAVILY POLLUTED AREAS TO DETERMINE IF LARGER VOLUMES OF FIRST FLUSH RAINWATER ARE TO BE DIVERTED. IF IN DOUBT, CHECK WITH LOCAL HEALTH AUTHORITIES.
7. SCREENED DOWNPIPE RAINWATER HEAD OR OTHER SUITABLE LEAF AND DEBRIS DEVICE TO BE INSTALLED ON EACH DOWNPIPE. SCREEN MESH TO BE 4-6mm AND DESIGNED TO BE SELF-CLEANING.
8. FIRST FLUSH DEVICES, OR APPROVED ALTERNATIVE, TO BE INSTALLED WITH AN AUTOMATED DIVERSION AND DRAINAGE SYSTEM, THAT IS, NO MANUAL DIVERSION AND DRAINAGE VALVES. REFER TYPICAL FLUSH OUT PIT FOR DETAILS.
9. BEFORE PURCHASING MATERIALS OR PAINT TO BE USED ON ROOF CATCHMENT AREAS, THE MANUFACTURER'S RECOMMENDATIONS ON LABELS AND BROCHURES FOR RAINWATER TANK SUITABILITY TO BE READ AND ADHERED TO.
10. PRE-STORAGE PITS FOR UNDERGROUND RAINWATER STORAGE TANKS AND FLUSH OUT PITS MAY ASSIST IN LIMITING SILT, AND PREVENT VERMIN, INSECTS (INCLUDING MOSQUITOES) AND DEBRIS FROM ENTERING THE RAINWATER STORAGE AREA.
11. BUILDER/PLUMBER TO ENSURE THE INSTALLATION OF THE RAINWATER TANK SYSTEM IS IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND THE RAINWATER TANK DESIGN AND INSTALLATION HANDBOOK - HB 230-2008. IF IN DOUBT CONTACT ENGINEER.
12. RAINWATER TANK TO BE WATER PROOFED IN ACCORDANCE WITH HB 230-200B

**NOTE: DRAINAGE LINE INDICATIVE ONLY**
DRAINAGE LINE LOCATIONS ARE INDICATIVE ONLY AND MAY VARY DUE TO CONSTRAINTS. IF IN DOUBT CONTACT THE ENGINEER.

**NOTE: EXISTING SERVICES**
CONTRACTOR TO LOCATE ALL EXISTING SERVICES PRIOR TO EXCAVATION AND NOTIFY ENGINEER OF ANY POTENTIAL CLASHES WITH THE PROPOSED DRAINAGE.

**NOTE: SUBSOIL DRAINAGE**
ALL SUBSOIL DRAINAGE TO BE INSTALLED AS REQUIRED IN ACCORDANCE WITH AS3500.3.

**NOTE: EXISTING STORMWATER SYSTEM**
EXISTING STORMWATER SYSTEM TO BE UTILISED WHERE ADEQUATE AND UPGRADED AS REQUIRED IN ACCORDANCE WITH AS3500.3.

**NOTE: CHARGED SYSTEM**
ALL PIPE WORK IN CHARGED SYSTEM TO BE 100mm ϕ uPVC PRESSURE OR SEWER GRADE PIPES WITH ALL JOINTS PRESSURE SEALED TO 500mm ABOVE TOP WATER LEVEL OF OSD TANK.

## NORTHERN BEACHES COUNCIL (WARRINGAH AREA) ON SITE DETENTION SYSTEM CALCULATION SHEET

ADDRESS: 44 KOOLOORA AVENUE, FRESHWATER

SITE STORMWATER DISPOSAL METHOD

(IN ACCORDANCE WITH WARRINGAH COUNCIL PL 850 WATER MANAGEMENT POLICY)

STEP 1: DIRECT CONNECTION TO COUNCIL STORMWATER SYSTEM

SITE DETAILS

| | | |
|---|---|---|
| TOTAL SITE AREA | 573.3 $m^2$ | |
| PRE DEVELOPMENT IMPERVIOUS AREA | 311 $m^2$ | ( 54% IMPERVIOUS ) |
| POST DEVELOPMENT IMPERVIOUS AREA | 292 $m^2$ | ( 51% IMPERVIOUS ) |
| REDUCTION | 19 $m^2$ | |

OSD REQUIREMENT

THE SUBJECT SITE IS LOCATED AT THE BOTTOM OF THE FRESHWATER CATCHMENT AND IS FLOOD AFFECTED, THEREFORE OSD IS NOT RECOMMENDED FOR THIS DEVELOPMENT

PERMITTED SITE DISCHARGE

| | |
|---|---|
| PSD | N/A - DIRECT CONNECTION TO COUNCIL STORMWATER SYSTEM |

SITE STORAGE REQUIREMENT

| | |
|---|---|
| OSD VOLUME REQUIRED | NIL |
| RAINWATER 'BASIX' REQUIRED | 5.0 $m^3$ (5.0 $m^3$ PROVIDED) |
| FLOOD STORAGE REQUIRED (REFER TO FLOOD RISK REPORT BY NBCE) | 87.60 $m^3$ (95.15 $m^3$ PROVIDED) |

OUTLET CONTROL

| | |
|---|---|
| METHOD OF DISCHARGE | DIRECT CONNECTION TO COUNCIL STORMWATER SYSTEM |

## LEGEND

| | |
|---|---|
| (O) | DENOTES PIPE OVER |
| (U) | DENOTES PIPE UNDER |
| DP | 100mm ϕ DOWNPIPE TO BE DIRECTED TO RWT VIA A CHARGED SYSTEM |
| DP | 100mm ϕ DOWNPIPE TO BE DIRECTED TO BOUNDARY PIT |
| | STORMWATER PIPE FLOW DIRECTION |
| | STORMWATER PIPE FALL DIRECTION |
| PIT | STORMWATER PIT |
| | 50mm ϕ uPVC STORMWATER PIPE CAST INTO SLAB |
| GDI | GDI - 150 WIDE x 150 MIN DEEP GRATED DRAIN, REFER DETAILS |
| FDI | 200x200 FLOOR DRAIN |
| RWT | RAINWATER TANK REFER DETAILS. |
| FRT | FLOOD RETENTION TANK |

**NOTE:** ALL DRAINAGE LINES ARE INDICATIVE ONLY. LOCATION MAY VARY DUE TO CONSTRAINTS.

## NOTES:

1. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION IF THE ISSUE DATE PRECEDES THE ISSUE DATE ON THE ARCHITECTURAL DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.
4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: D01.

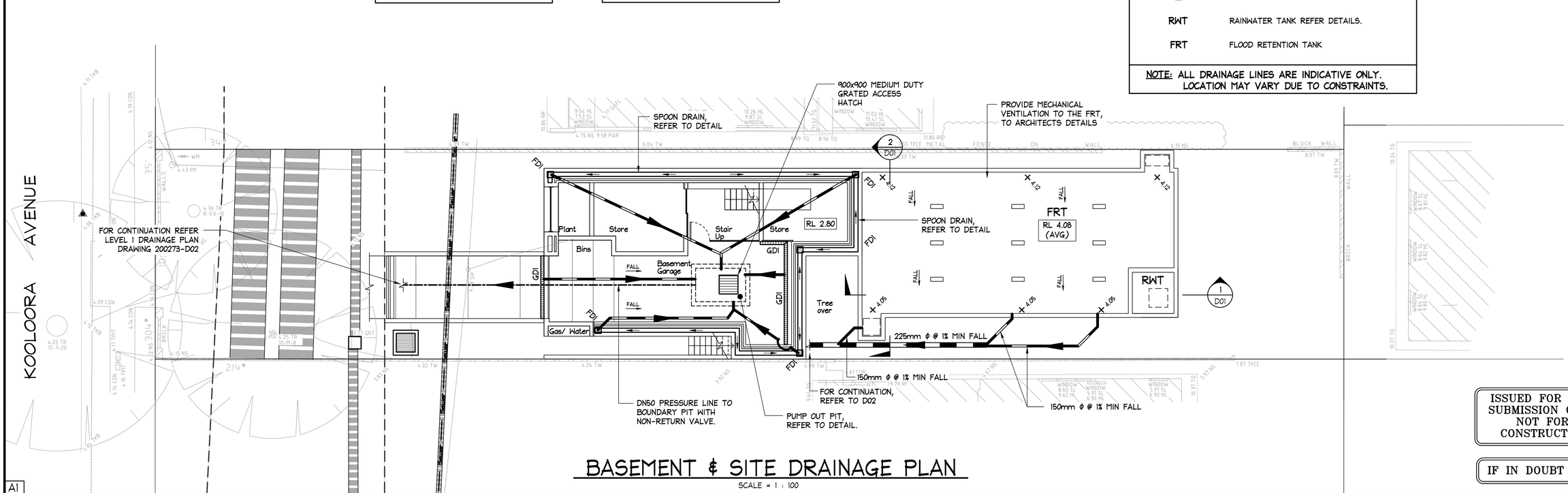
www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG

NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE

DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

CARELESS DIGGING CAN:
- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCONVENIENCE USERS OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND DAMAGES CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESS
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGE IS REPAIRED

MINIMISE YOUR RISK AND DIAL BEFORE YOU DIG. - TEL. 1100




## BASEMENT & SITE DRAINAGE PLAN

SCALE = 1 : 100

ISSUED FOR D.A. SUBMISSION ONLY NOT FOR CONSTRUCTION

IF IN DOUBT ASK

NB Consulting Engineers

A1

| Date: | Issue: | Description: | By: | Review: |
|---|---|---|---|---|
| 09/09/2020 | A | ISSUED FOR DA SUBMISSION ONLY - NOT FOR CONSTRUCTION | D.K. | M.W. |

DOCUMENT CERTIFICATION
Date :
Rick G Wray
BE(Civil),CPEng,MIEAust.,NER.,RPEQ: 08293.
(Director NB Consulting Engineers)



NB Consulting Engineers
STRUCTURAL - CIVIL - STORMWATER - REMEDIAL
A.C.N. 076 121 616 A.B.N. 24 076 121 616
**Sydney:** Ph: (02) 9984 7000 Fax: (02) 9984 7444
Suite 207, 30 Fisher Road Dee Why N.S.W. 2099
**Gold Coast:** Ph: (07) 5631 4744
Unit 8, 1726 Gold Coast Highway Burleigh Heads QLD 4220
E : nb@nbconsulting.com.au W : www.nbconsulting.com.au

| | | | |
|---|---|---|---|
| Architect: BREWSTER HJORTH ARCHITECTS | Project: PROPOSED DWELLING AT 44 KOOLOORA AVE, FRESHWATER | Date: SEP 2020 | Design: C.F. / Drawn: D.K. |
| Client: STEWART HOUSE | Drawing Title: STORMWATER MANAGEMENT DRAINAGE PLAN - SHEET 1 | Job No: 200273 | Drawing No: D01 / Issue: A |

## LEGEND

| | |
|---|---|
| (O) | DENOTES PIPE OVER |
| (U) | DENOTES PIPE UNDER |
| | HATCHING DENOTES AREAS FOR ATLANTIS DRAINAGE CELLS TO BE INSTALLED TO MANUFACTURERS SPECIFICTIONS |
| DP1 | 100mm ϕ DOWNPIPE TO BE DIRECTED TO RWT VIA A CHARGED SYSTEM |
| DP2 | 100mm ϕ DOWNPIPE TO BE DIRECTED TO BOUNDARY PIT |
| | STORMWATER PIPE FLOW DIRECTION |
| | STORMWATER PIPE FALL DIRECTION |
| PIT | STORMWATER PIT |
| ========== | 50mm ϕ uPVC STORMWATER PIPE CAST INTO SLAB |
| GD2, GD3, GD3 | GD1 - 150 WIDE x 100 MIN DEEP GRATED DRAIN, REFER DETAILS<br>GD2 - 100 WIDE x 100 MIN DEEP GRATED DRAIN, REFER DETAILS<br>GD3 - STORMTECH 65AG S/S SLIM LINE GRATED DRAIN. REFER TO MANUFACTURERS DETAILS |
| =:=:=:=:=:= | SUSPENDED ϕ100 PIPE OR UNLESS NOTED OTHERWISE (U.N.O.) |
| RWT | RAINWATER TANK REFER DETAILS |

NOTE: ALL DRAINAGE LINES ARE INDICATIVE ONLY. LOCATION MAY VARY DUE TO CONSTRAINTS.

**BALCONY/TERRACE OVERFLOW NOTE**

BUILDER TO PROVIDE A MINIMUM 100mm WIDE x 30mm HIGH OR 50mm DIA OVERFLOW FOR EVERY 6m² OF EXPOSED TERRACE/BALCONY AREA. THE FULL OVERFLOW DEPTH MUST BE LOCATED BELOW THE ADJACENT INTERNAL FLOOR LEVEL TO PROTECT AGAINST INCIDENTAL FLOODING DUE TO A BLOCKED FLOOR OUTLET. TO COMPLY WITH AS3500.3 & NCC.

**NOTE: DRAINAGE LINE INDICATIVE ONLY**

DRAINAGE LINE LOCATIONS ARE INDICATIVE ONLY AND MAY VARY DUE TO CONSTRAINTS. IF IN DOUBT CONTACT THE ENGINEER.

## NOTES:

1. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION IF THE ISSUE DATE PRECEDES THE ISSUE DATE ON THE ARCHITECTURAL DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.
4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: D01.

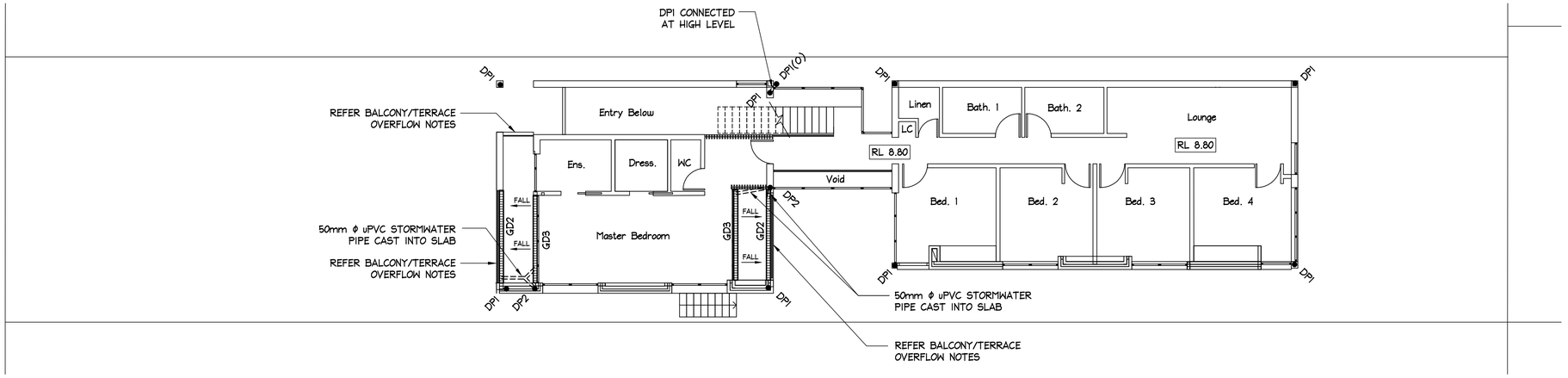
www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG

NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE

DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

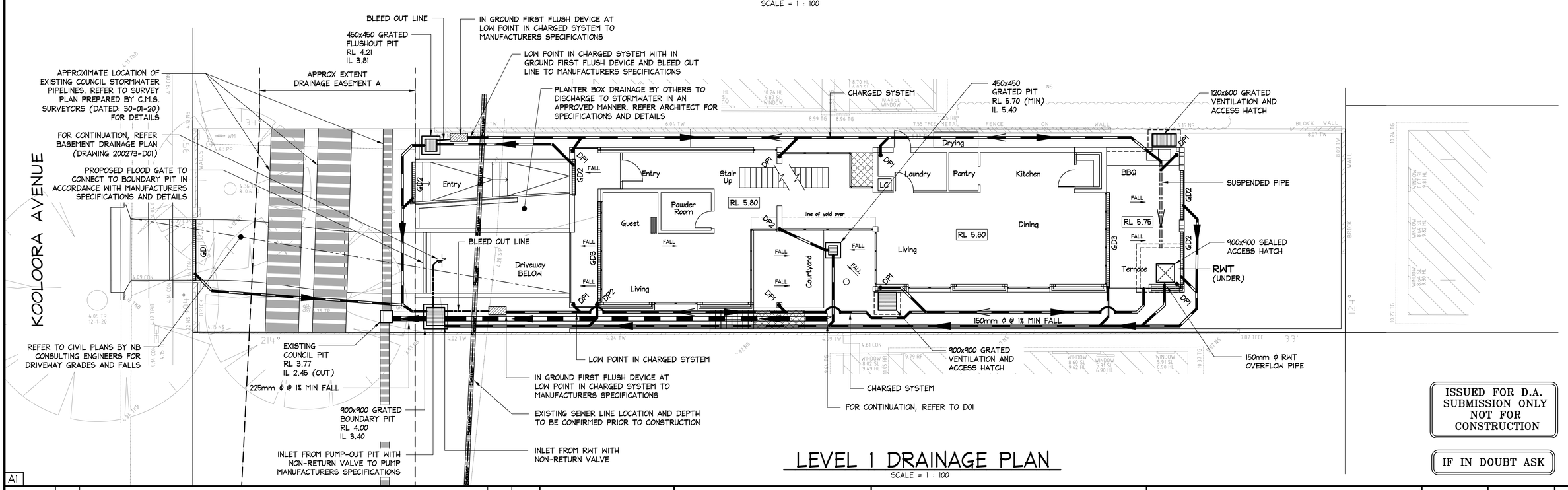
CARELESS DIGGING CAN:
- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCONVENIENCE USERS OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND DAMAGES CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESS
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGE IS REPAIRED

MINIMISE YOUR RISK AND DIAL BEFORE YOU DIG. - TEL. 1100




## LEVEL 2 DRAINAGE PLAN

SCALE = 1 : 100




## LEVEL 1 DRAINAGE PLAN

SCALE = 1 : 100

ISSUED FOR D.A. SUBMISSION ONLY NOT FOR CONSTRUCTION

IF IN DOUBT ASK

A1

| Date: | Issue: | Description: | By: | Review: |
|---|---|---|---|---|
| 09/09/2020 | A | ISSUED FOR DA SUBMISSION ONLY - NOT FOR CONSTRUCTION | D.K. | M.W. |

DOCUMENT CERTIFICATION
Date :
Rick G Wray
BE(Civil),CPEng,MIEAust.,NER.,RPEQ: 08293.
(Director NB Consulting Engineers)



NB Consulting Engineers
STRUCTURAL - CIVIL - STORMWATER - REMEDIAL
A.C.N. 076 121 616 A.B.N. 24 076 121 616
**Sydney:** Ph: (02) 9984 7000 Fax: (02) 9984 7444
Suite 207, 30 Fisher Road Dee Why N.S.W. 2099
**Gold Coast:** Ph: (07) 5631 4744
Unit 8, 1726 Gold Coast Highway Burleigh Heads QLD 4220
E : nb@nbconsulting.com.au W : www.nbconsulting.com.au

| | | | | |
|---|---|---|---|---|
| Architect: BREWSTER HJORTH ARCHITECTS | Project: PROPOSED DWELLING AT 44 KOOLOORA AVE, FRESHWATER | Date: SEP 2020 | Design: C.F. | Drawn: D.K. |
| Client: STEWART HOUSE | Drawing Title: STORMWATER MANAGEMENT DRAINAGE PLAN - SHEET 2 | Job No: 200273 | Drawing No: D02 | Issue: A |

NB Consulting Engineers

## LEGEND

| | |
|---|---|
| (O) | DENOTES PIPE OVER |
| (U) | DENOTES PIPE UNDER |
| DP1 ● | 100mm ϕ DOWNPIPE TO BE DIRECTED TO RWT VIA A CHARGED SYSTEM |
| DP2 ● | 100mm ϕ DOWNPIPE TO BE DIRECTED TO BOUNDARY PIT |
| BGI | BOX GUTTER, REFER DETAILS |
| SPR | SPREADER TO SUIT DOWNPIPE |

**NOTE:** ALL DRAINAGE LINES ARE INDICATIVE ONLY. LOCATION MAY VARY DUE TO CONSTRAINTS.

**NOTE: BOX GUTTERS**

ALL BOX GUTTER SYSTEMS SHOWN ON THESE PLANS ARE TO BE INSTALLED STRICTLY IN ACCORDANCE WITH THE ASSOCIATED DETAILS. IF ANY CHANGE TO THE BOX GUTTER CONFIGURATION IS PROPOSED, NOTIFY THE ENGINEER FOR RE-DESIGN. IF THE INSTALLED BOX GUTTER DOES NOT STRICTLY COMPLY WITH OUR DESIGN, CERTIFICATION OF THE HYDRAULIC SYSTEM MAY BE REFUSED.

## NOTES:

1. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION IF THE ISSUE DATE PRECEDES THE ISSUE DATE ON THE ARCHITECTURAL DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.
4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: D01.

www.dialbeforeyoudig.com.au

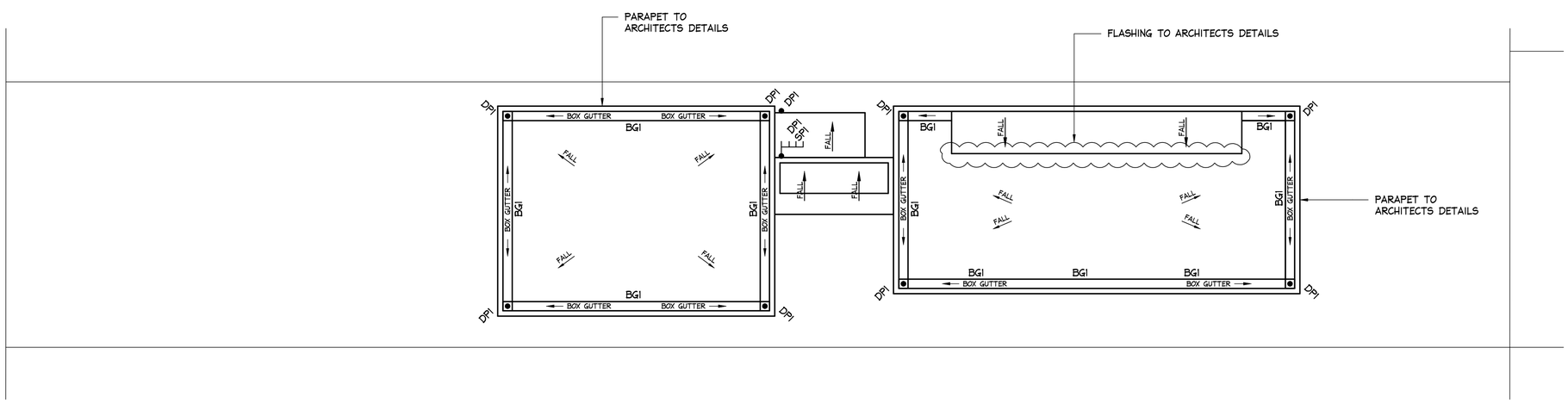
DIAL 1100 BEFORE YOU DIG

NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE

DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

CARELESS DIGGING CAN:
- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCONVENIENCE USERS OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND DAMAGES CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESS
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGE IS REPAIRED

MINIMISE YOUR RISK AND DIAL BEFORE YOU DIG. – TEL. 1100




# UPPER ROOF LEVEL DRAINAGE PLAN

SCALE = 1 : 100

ISSUED FOR D.A. SUBMISSION ONLY NOT FOR CONSTRUCTION

IF IN DOUBT ASK

NB Consulting Engineers

A1

| Date: | Issue: | Description: | By: | Review: |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| 09/09/2020 | A | ISSUED FOR DA SUBMISSION ONLY - NOT FOR CONSTRUCTION | D.K. | M.W. |

DOCUMENT CERTIFICATION

Date :

Rick G Wray .....

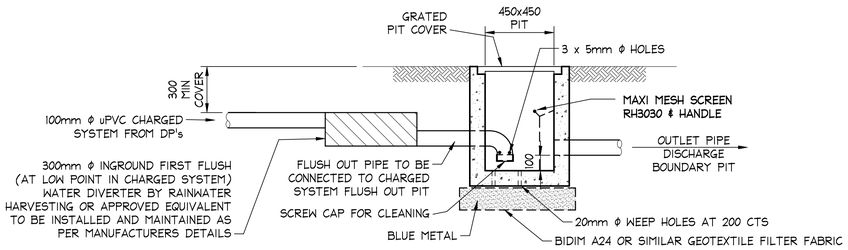
BE(Civil),CPEng,MIEAust.,NER.,RPEQ: 08293.

(Director NB Consulting Engineers)



NB Consulting Engineers
STRUCTURAL - CIVIL - STORMWATER - REMEDIAL
A.C.N. 076 121 616 A.B.N. 24 076 121 616
**Sydney:** Ph: (02) 9984 7000 Fax: (02) 9984 7444
Suite 207, 30 Fisher Road Dee Why N.S.W. 2099
**Gold Coast:** Ph: (07) 5631 4744
Unit 8, 1726 Gold Coast Highway Burleigh Heads QLD 4220
E : nb@nbconsulting.com.au W : www.nbconsulting.com.au

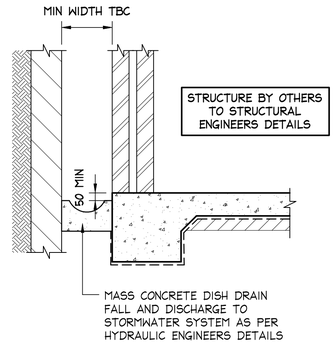
| | | | | |
|---|---|---|---|---|
| Architect: BREWSTER HJORTH ARCHITECTS | Project: PROPOSED DWELLING AT 44 KOOLOORA AVE, FRESHWATER | Date: SEP 2020 | Design: C.F. | Drawn: D.K. |
| Client: STEWART HOUSE | Drawing Title: STORMWATER MANAGEMENT DRAINAGE PLAN - SHEET 3 | Job No: 200273 | Drawing No: D03 | Issue: A |




PRECAST OR CAST INSITU PIT REFER STORMWATER NOTES

## 450x450 CHARGED SYSTEM FLUSH OUT PIT DETAIL

SCALE = 1 : 20

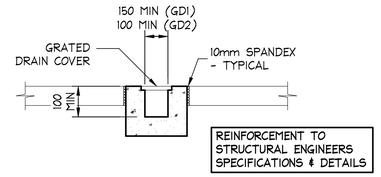



## TYPICAL SPOON DRAIN DETAIL

SCALE = 1 : 20

**BALCONY/TERRACE OVERFLOW NOTE**

BUILDER TO PROVIDE A MINIMUM 100mm WIDE x 30mm HIGH OR 50mm DIA OVERFLOW FOR EVERY 6m² OF EXPOSED TERRACE/BALCONY AREA. THE FULL OVERFLOW DEPTH MUST BE LOCATED BELOW THE ADJACENT INTERNAL FLOOR LEVEL TO PROTECT AGAINST INCIDENTAL FLOODING DUE TO A BLOCKED FLOOR OUTLET. TO COMPLY WITH AS3500.3 & NCC.




OR PRECAST GRATED DRAIN ALTERNATE POLYPROPYLENE DRAIN BY MANUFACTURER

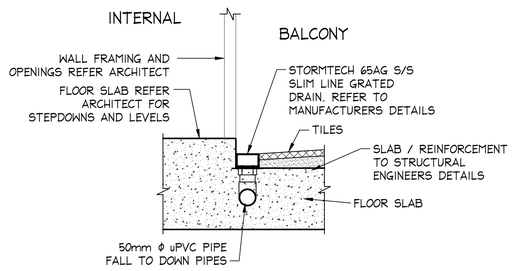
## TYPICAL GRATED DRAIN 'GD1/GD2'

SCALE = 1 : 20

**NOTES:**

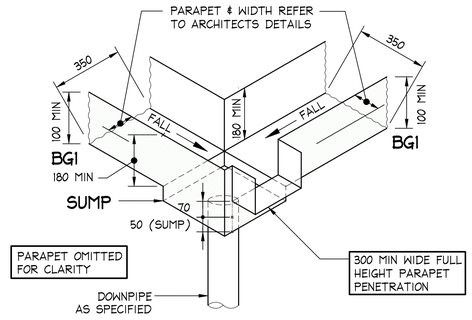
1. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION IF THE ISSUE DATE PRECEDES THE ISSUE DATE ON THE ARCHITECTURAL DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.
4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: D01.






## TYPE 'GD3' GRATED DRAIN DETAIL

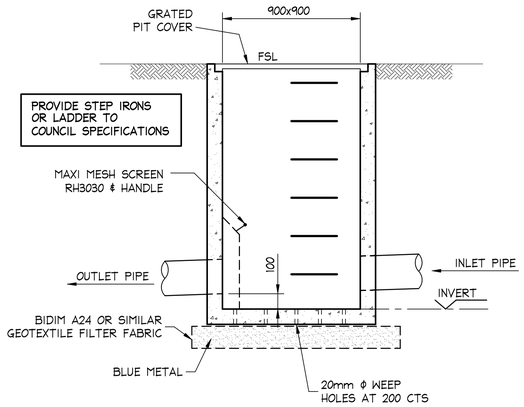
SCALE = 1 : 10




**NOTE**: BOX GUTTER TO HAVE A MINIMUM DEPTH OF 100mm AT HIGH POINT AND TO HAVE A 0.5% MIN FALL

## BOX GUTTER 'BG1' DETAIL

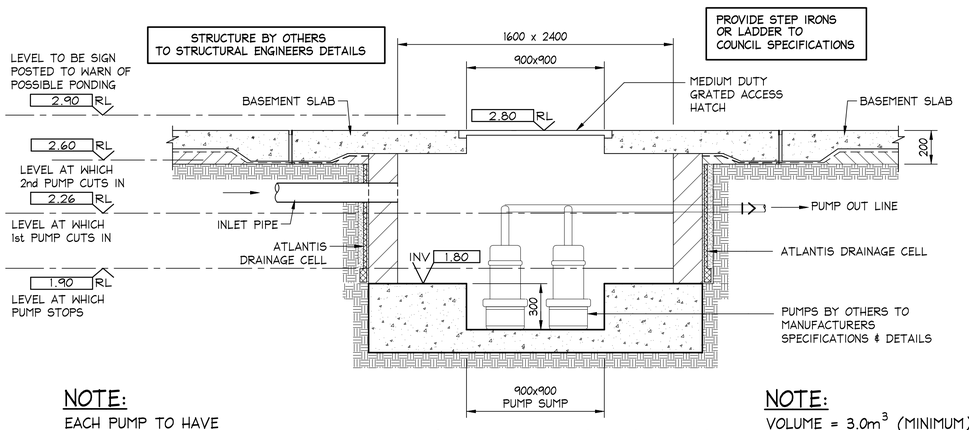
SCALE = NTS




PRECAST OR CAST INSITU PIT
REFER STORMWATER NOTES
ALTERNATE POLYPROPYLENE PIT BY MANUFACTURER

## 900x900 BOUNDARY PIT DETAIL

SCALE = 1 : 20




**NOTE:**
EACH PUMP TO HAVE A MINIMUM CAPACITY OF 5 l/s.

## EMERGENCY PUMP OUT PIT DETAIL

SCALE = 1 : 20

**NOTE:**
VOLUME = 3.0m³ (MINIMUM)
NOTE: SIZED FOR DRIVEWAY RUNOFF ONLY

**BASEMENT PUMPING WELL**

PROVIDE TWO CENTRIFUGAL DRAINAGE SUMP PUMPS WITH SINGLE-PHASE ELECTRIC MOTOR CAPABLE OF DISCHARGING 5.0 L/s EACH AGAINST A TOTAL HEAD OF (1.6 m) WITH 10 STARTS PER HOUR MAXIMUM. CLASS 1 ZONE 2 CERTIFIED PUMPS FOR HAZARDOUS AREAS ARE REQUIRED SWITCHING SHALL PROVIDE FOR ALTERNATIVE OPERATION OF THE PUMPS, HIGH LEVEL SWITCH ON/OFF, 2ND PUMP, AND A RED LIGHT ALARM PLACED PERMANENTLY IN THE BASEMENT AREA ACTIVATED BY HIGH LEVEL SWITCH ON.

BASEMENT HOLDING TANK
AREA DRAINING TO THE GARAGE PUMPING = 25 m ²(DRIVEWAY TO THE BASEMENT)
STORAGE MUST BE PROVIDED FOR A BLACKOUT OF AT LEAST 2HRS, THE 10 YEAR ARI STORM RUNOFF IS:

Q = F x C x I x A
= 1/3600 x 0.9 x 40.4 x 25
= 0.25 L/s

VOLUME ACCUMULATED (10 YEAR ARI, 2 HOUR STORM):

$V_{10/120}$ = (0.25L/s x 2hrs x 3600s)/1000
= 1.82 m³

VOLUME PUMPED IN 30 MINS:

$PC_{30}$ = (5.0L/s x 0.5hrs x 3600s)/1000
= 9.00 m³

VOLUME PUMPED IN 5 MINS:

$PC_5$ = (5.0L/s x 0.083hrs x 3600s)/1000
= 1.50 m³

DESIGN WET WELL STORAGE CAPACITY
= $V_{10/120}$ - $PC_{30}$ = -7.18 m³
= 3.00 m³ (MIN)

ISSUED FOR D.A. SUBMISSION ONLY NOT FOR CONSTRUCTION

IF IN DOUBT ASK

NB Consulting Engineers

A1

| Date: | Issue: | Description: | By: | Review: |
|---|---|---|---|---|
| 09/09/2020 | A | ISSUED FOR DA SUBMISSION ONLY - NOT FOR CONSTRUCTION | D.K. | M.W. |

DOCUMENT CERTIFICATION
Date :
Rick G Wray
BE(Civil),CPEng,MIEAust.,NER.,RPEQ: 08293.
(Director NB Consulting Engineers)

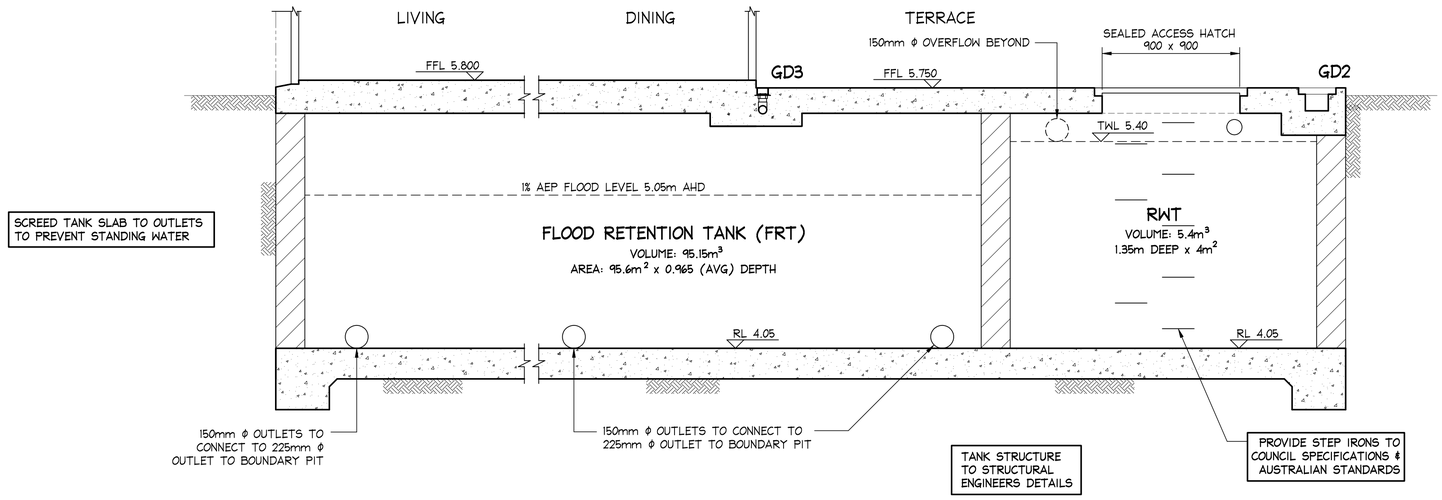

NB Consulting Engineers
STRUCTURAL - CIVIL - STORMWATER - REMEDIAL
A.C.N. 076 121 616 A.B.N. 24 076 121 616
**Sydney:** Ph: (02) 9984 7000 Fax: (02) 9984 7444
Suite 207, 30 Fisher Road Dee Why N.S.W. 2099
**Gold Coast:** Ph: (07) 5631 4744
Unit 8, 1726 Gold Coast Highway Burleigh Heads QLD 4220
E : nb@nbconsulting.com.au W : www.nbconsulting.com.au

| | |
|---|---|
| Architect: | BREWSTER HJORTH ARCHITECTS |
| Client: | STEWART HOUSE |
| Project: | PROPOSED DWELLING AT 44 KOOLOORA AVE, FRESHWATER |
| Drawing Title: | SECTIONS & DETAILS - SHEET 1 |
| Date: | SEP 2020 |
| Design: | C.F. |
| Drawn: | D.K. |
| Job No: | 200273 |
| Drawing No: | D04 |
| Issue: | A |

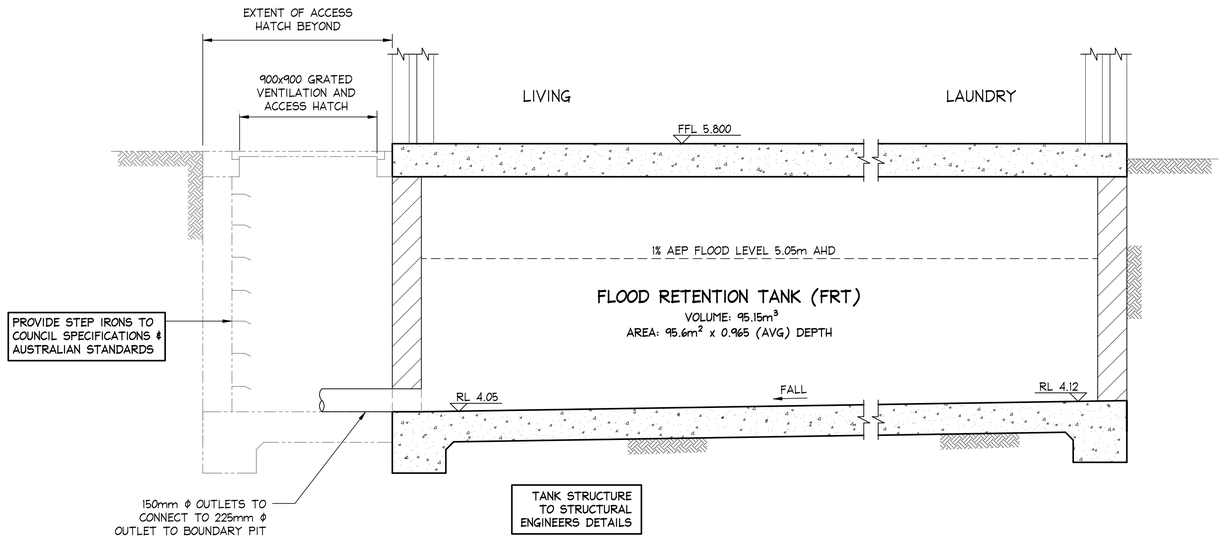
## NOTES:

1. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION IF THE ISSUE DATE PRECEDES THE ISSUE DATE ON THE ARCHITECTURAL DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.
4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: D01.






SECTION 1 / D01
SCALE = 1:20




SECTION 2 / D01
SCALE = 1:20

ISSUED FOR D.A. SUBMISSION ONLY NOT FOR CONSTRUCTION

IF IN DOUBT ASK

NB Consulting Engineers

A1

| Date: | Issue: | Description: | By: | Review: |
|---|---|---|---|---|
| 09/09/2020 | A | ISSUED FOR DA SUBMISSION ONLY - NOT FOR CONSTRUCTION | D.K. | M.W. |

DOCUMENT CERTIFICATION
Date :
Rick G Wray .....
BE(Civil),CPEng,MIEAust.,NER.,RPEQ: 08293.
(Director NB Consulting Engineers)



NB Consulting Engineers
STRUCTURAL - CIVIL - STORMWATER - REMEDIAL
A.C.N. 076 121 616 A.B.N. 24 076 121 616
**Sydney:** Ph: (02) 9984 7000 Fax: (02) 9984 7444
Suite 207, 30 Fisher Road Dee Why N.S.W. 2099
**Gold Coast:** Ph: (07) 5631 4744
Unit 8, 1726 Gold Coast Highway Burleigh Heads QLD 4220
E : nb@nbconsulting.com.au W : www.nbconsulting.com.au

| | |
|---|---|
| Architect: | BREWSTER HJORTH ARCHITECTS |
| Client: | STEWART HOUSE |
| Project: | PROPOSED DWELLING AT 44 KOOLOORA AVE, FRESHWATER |
| Drawing Title: | SECTIONS & DETAILS - SHEET 2 |
| Date: | SEP 2020 |
| Design: | C.F. |
| Drawn: | D.K. |
| Job No: | 200273 |
| Drawing No: | D05 |
| Issue: | A |

## GENERAL NOTES :

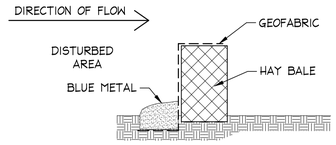
1. CONSTRUCTION VEHICLES ARE TO LEAVE AND ENTER THE SITE OVER AN ALL WEATHER SURFACE CONSISTING OF COURSE CRUSHED STONE OR BLUE METAL CONSTRUCTED WITHIN THE FRONT SETBACK AREA OPPOSITE THE EXISTING FOOTPATH CROSSING UNLESS NOTED OTHERWISE.
2. EXCAVATION MACHINERY ARE TO BE UNLOADED AND LOADED UPON THIS ALL WEATHER SURFACE. CONCRETE PUMPS AND TRUCKS WILL ALSO UTILISE THE ALL WEATHER SURFACE FOR THEIR OPERATIONS.
3. MATERIALS WILL BE UNLOADED UPON THE ALL WEATHER SURFACE WITHIN THE FRONT SETBACK AREA BY MEANS OF CRANES MOUNTED ON THE BACK OF DELIVERY TRUCKS OR UNLOADED BY HAND. IT IS NOT ENVISAGED THAT A MOBILE CRANE WILL BE REQUIRED DURING THE CONSTRUCTION PROCESS.
4. SOME STOCKPILING OF TOPSOIL REMOVED FROM THE BUILDING AREA MAY BE STORED ON THE SITE DURING THE CONSTRUCTION WITHIN THE PROPERTY IN AN AREA ENCLOSED WITHIN THE SEDIMENT CONTROL FENCING.
5. ALL EXCAVATED & CONSTRUCTION MATERIALS, SHED, SKIP BINS, TEMPORARY WATER CLOSETS, SPOIL AND EQUIPMENT, ETC SHALL BE KEPT WITHIN THE PROPERTY. NO VEHICLES OR MACHINES SHALL BE KEPT WITHIN THE PROPERTY. NO VEHICLES OR MACHINES SHALL STAND ON COUNCIL FOOTPATHS FOR LARGE LENGTHS OF TIME.
6. ALL RUBBISH & RECYCLABLE MATERIAL SHALL BE STOCKPILED IN WASTE BINS IN THE AREA NOMINATED ON THE SITE PLAN WITHIN THE SITE BOUNDARY. PUBLIC PROPERTY SHALL BE KEPT FREE OF RUBBISH AND RECYCLABLES AT ALL TIMES ANY WASTE MATERIALS SHALL BE REGULARLY COLLECTED FROM THE SITE AND DISPOSED OF IN AN APPROPRIATE FASHION.
7. ANY BUILDING / DEMOLITION WORKS INVOLVING ASBESTOS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT STANDARDS.
8. VEHICLES LEAVING THE SITE WILL DO SO VIA THE ALL WEATHER BALLAST DRIVEWAY MADE OF COURSE AGGREGATE OR SIMILAR LOCATED WITHIN THE FRONT SETBACK AREA OF THE DEVELOPMENT. ANY DIRT OR MATERIAL DEPOSITED ON THE ROAD RESERVE OR ROADWAY IS TO BE PROMPTLY CLEANED.
9. ANY EXCAVATED AREA REQUIRED SUPPORT WILL BE UNDERTAKEN BY THE OWNER USING STRUCTURALLY APPROVED RETAINING STRUCTURES.
10. ADEQUATE SAFETY SIGNAGE MUST BE ERECTED IN A PROMINENT POSITION ON THE WORK SITE, WARNING OF UNAUTHORISED ENTRY TO WORK SITE AND INTENDING DANGERS.
11. SAFETY FENCES SHALL BE PROVIDED AROUND ALL BOUNDARIES UNLESS A CONTINUOUS STRUCTURALLY ADEQUATE FENCE PRESENTLY EXISTS. THE FENCING SHALL BE ADEQUATE TO RESTRICT PUBLIC ACCESS TO THE SITE WHEN BUILDING WORK IS NOT IN PROGRESS OR THE SITE IS UNOCCUPIED.
12. NOISE LEVELS SHALL NOT EXCEED COUNCIL REGULATION LEVELS. BUILDING AND DEMOLITION WORKS SHALL ONLY BE CARRIED OUT BETWEEN HOURS AND DAYS SPECIFIED BY COUNCIL.
13. GEOTEXTILE FABRIC SHALL BE PLACED ON THE INSIDE OF THE SITE FENCING PRIOR TO SITE DISTURBANCE TO PREVENT SEDIMENT WASHING FROM CLEARED AND DISTURBED AREAS OF THE SITE INTO THE STORMWATER SYSTEM DURING CONSTRUCTION UNCONTAMINATED RUNOFF FROM CLEARED OR DISTURBED AREAS IS TO BE DIRECTED TO A TEMPORARY SILT ARRESTOR PIT THAT SHALL BE PROVIDED WITHIN THE SITE AT THE STREET BOUNDARY PROCESSING SITE STORMWATER BEFORE IT IS DISCHARGED TO THE STREET DRAINAGE SYSTEM OR WATERCOURSE.
14. ALL TOP SOIL STRIPPED & STOCKPILED ON SITE IS TO BE BE PLACED IN NOMINATED AREAS ON PLAN. ALL DISTURBED AREAS ARE TO BE STABILISED UPON THE COMPLETION OF BUILDING WORKS.
15. ALL SEDIMENT CONTROL STRUCTURES ARE TO BE CONTINUALLY MAINTAINED DURING CONSTRUCTION AND INSPECTED FOR STRUCTURAL DAMAGE AFTER EACH RAINFALL EVENT, WITH TRAPPED SEDIMENT BEING REMOVED TO THE TOPSOIL STOCKPILE.
16. WHERE THERE IS THE POTENTIAL OF SITE EROSION TO PRODUCE EXCESSIVE SEDIMENT RUNOFF SUITABLE GEOTEXTILE BARRIERS SHALL BE PLACED TO ALLEVIATE THE RISK ACCORDINGLY. BARE SURFACES SHALL BE KEPT MOIST TO REDUCE DUST LEVELS. GEOTEXTILE FABRIC LOCATED ON THE INSIDE OF FENCES SHALL ALSO BE UTILISED FOR DUST CONTROL WHERE NECESSARY.

## SCHEDULE OF WORKS:

1. SILT FENCE AND ASSOCIATED WORKS INCLUDING INTERCEPTOR DRAIN IS TO BE INSTALLED BEFORE THE COMMENCEMENT OF ANY EXCAVATION.
2. CUTS TO BE EXECUTED TO THE REQUIRED LEVEL USING CONVENTIONAL EXCAVATION MACHINERY. INITIALLY THE DEPTH OF FILL/CLAY IS TO BE ESTABLISHED TO ENSURE NEIGHBOURING PROPERTIES ARE NOT ADVERSELY AFFECTED. EARTH BATTERS TO BE A MAXIMUM SLOPE OF 1.0 m VERT. TO 1.7 m HORIZ. (AS PER GEOTECHNICAL REPORT). ANY BATTERS GREATER THAN 1.0 m VERT. TO 1.7 m HORIZ. ARE TO BE ADEQUATELY SHORED IN ACCORDANCE WITH THE ENGINEERS DETAILS AND INSTRUCTIONS.
3. ANY PERMANENT RETAINING STRUCTURE IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ENGINEERS DETAILS AND INSTRUCTIONS.
4. ALL PERMANENT RETAINING STRUCTURES ARE TO BE COMPLETED WITH MINIMUM DELAY FOLLOWING EXCAVATION.

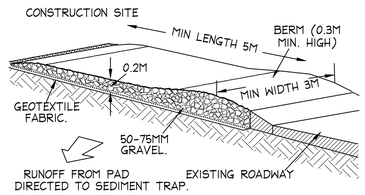
## NOTES:

1. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSPECTED AND MAINTAINED DAILY BY SITE MANAGER.
2. MINIMISE DISTURBED AREAS'
3. ALL STOCKPILES TO BE CLEAR FROM DRAINS, GUTTERS AND FOOTPATHS.
4. DRAINAGE IS TO BE CONNECTED TO STORMWATER SYSTEM AS SOON AS POSSIBLE.
5. ROADS AND FOOTPATH TO BE SWEPT DAILY.




## HAY BALE DETAIL

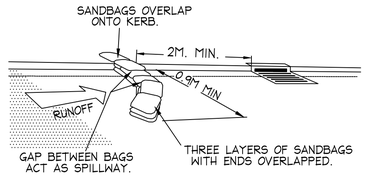
SCALE = N.T.S.




## TYPICAL TEMPORARY CONSTRUCTION ENTRY/EXIT DETAIL

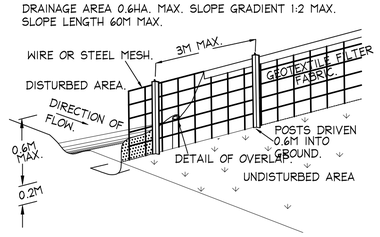
### CONSTRUCTION NOTES:

1. STRIP TOPSOIL AND LEVEL SITE.
2. COMPACT SUBGRADE.
3. COVER AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
4. CONSTRUCT 200mm THICK PAD OVER GEOTEXTILE USING ROADBASE or 30mm AGGREGATE. MINIMUM LENGTH 15 METRES OR TO BUILDING ALIGNMENT. MINIMUM WIDTH 3 METRES.
5. CONSTRUCT HUMP IMMEDIATELY WITHIN BOUNDARY TO DIVERT WATER TO A SEDIMENT FENCE or OTHER SEDIMENT TRAP.
6. OR CONSTRUCT A CATTLE GRID LOCATED AT ANY POINT WHERE TRAFFIC ENTERS OF LEAVES THE SITE.




## SANDBAG DRAINAGE PIT SEDIMENT TRAP

SCALE = N.T.S.




## SEDIMENT FENCE

### CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND, 3 METRES APART.
3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC.
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES or AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.

## NOTES:

1. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION IF THE ISSUE DATE PRECEDES THE ISSUE DATE ON THE ARCHITECTURAL DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.

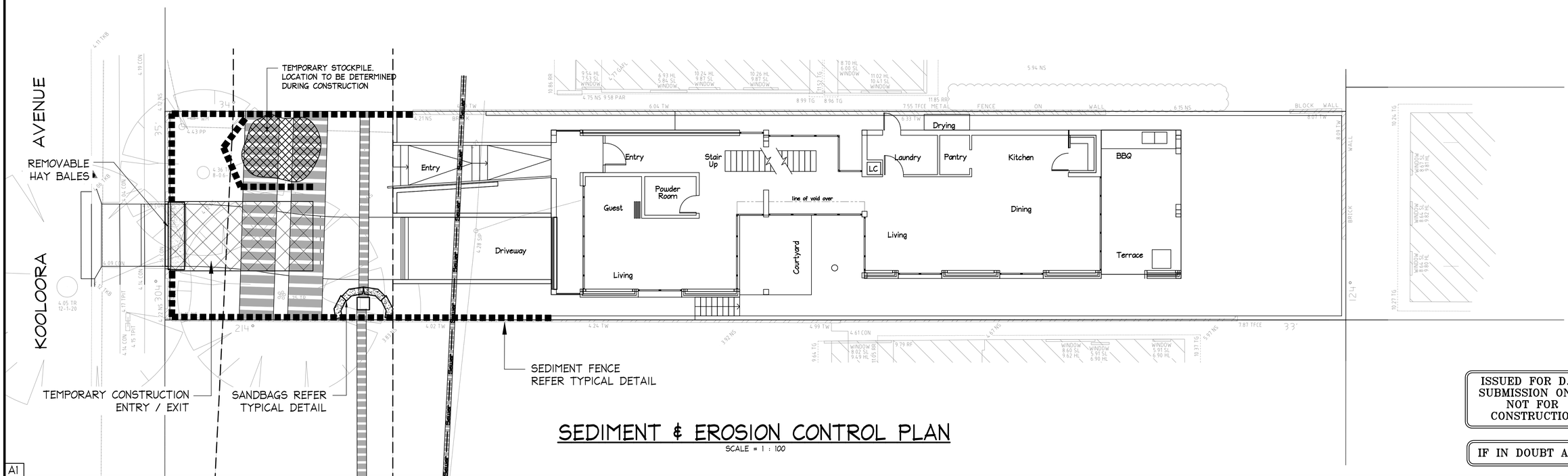
www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG

NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE

DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

CARELESS DIGGING CAN:
- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCONVENIENCE USERS OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND DAMAGES CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESS
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGE IS REPAIRED

MINIMISE YOUR RISK AND DIAL BEFORE YOU DIG. - TEL. 1100




## SEDIMENT & EROSION CONTROL PLAN

SCALE = 1 : 100

ISSUED FOR D.A. SUBMISSION ONLY NOT FOR CONSTRUCTION

IF IN DOUBT ASK

A1

| Date: | Issue: | Description: | By: | Review: |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| 09/09/2020 | A | ISSUED FOR DA SUBMISSION ONLY - NOT FOR CONSTRUCTION | D.K. | M.W. |

DOCUMENT CERTIFICATION
Date :
Rick G Wray .....
BE(Civil),CPEng,MIEAust.,NER.,RPEQ: 08293.
(Director NB Consulting Engineers)



NB Consulting Engineers
STRUCTURAL - CIVIL - STORMWATER - REMEDIAL
A.C.N. 076 121 616 A.B.N. 24 076 121 616
**Sydney:** Ph: (02) 9984 7000 Fax: (02) 9984 7444
Suite 207, 30 Fisher Road Dee Why N.S.W. 2099
**Gold Coast:** Ph: (07) 5631 4744
Unit 8, 1726 Gold Coast Highway Burleigh Heads QLD 4220
E : nb@nbconsulting.com.au W : www.nbconsulting.com.au

| | |
|---|---|
| Architect: | BREWSTER HJORTH ARCHITECTS |
| Client: | STEWART HOUSE |
| Project: | PROPOSED DWELLING AT 44 KOOLOORA AVE, FRESHWATER |
| Drawing Title: | SEDIMENT AND EROSION CONTROL PLAN |
| Date: | SEP 2020 |
| Design: | C.F. |
| Drawn: | D.K. |
| Job No: | 200273 |
| Drawing No: | D10 |
| Issue: | A |

NB Consulting Engineers