



AJ & GC Kennedy Investments Pty Ltd T/AS
ABN: 65074789058
112 Fowlers Lane, Bangalow 2479
Phone number: 02 66 872 699, Fax number: 02 66 872 588

Structural Engineering Report on Boundary Retaining Wall Replacement

Property Address: 26 – 28 River Street, New Brighton
Date of Inspection: 11 February 2025
Prepared by: Alan Kennedy

1. Introduction

This report details the findings of a structural inspection conducted at 26 – 28 River Street, New Brighton, regarding the condition of the existing common boundary retaining wall. Observations indicate that due to both stormwater runoff from 26 River Street and the age and structural inadequacy of the existing retaining wall, a replacement retaining wall structure is necessary. This report outlines the observed issues, recommendations for replacement, and the importance of runoff diversion.

2. Observations

During the inspection, the following conditions were noted:

- The existing retaining wall along the common boundary between 26 and 28 River Street exhibits signs of structural inadequacy, including significant cracking, displacement, and potential loss of soil retention capability.
- Stormwater runoff from 26 River Street partially flows toward 28 River Street, contributing to excessive hydrostatic pressure against the retaining wall.
- Continued water infiltration threatens the stability of the wall, leading to potential failure and adverse effects on adjacent structures.
- The foundation of the existing house at 28 River Street could be compromised if water runoff is not properly managed.

Refer to photos 1 & 2 below for view of existing arrangements

3. Engineering Assessment

The retaining wall is exhibiting clear signs of distress due to both structural failure and hydraulic forces exerted by stormwater. The key engineering concerns include:

- **Inadequate Drainage:** Lack of a proper drainage system exacerbates hydrostatic pressure behind the wall.
- **Structural Weakness:** The existing materials and construction method appear insufficient to resist the lateral forces imposed by the soil and water accumulation.
- **Soil Erosion Risks:** Water infiltration from 26 River Street is contributing to erosion at the base of the wall, undermining its stability.

Given these factors, the retaining wall must be replaced with a structurally sound system designed to accommodate soil pressure, mitigate hydrostatic forces, and provide longevity.

4. Recommendations

4.1 Retaining Wall Replacement

A new retaining wall should be constructed using reinforced concrete sleeper proprietary system such as the one attached (refer to Aussie Rock Landscape & Construction Quote dated 9/7/24) that is designed to withstand lateral soil and hydrostatic pressures. The key design features should include:

- Adequate height and thickness for stability.
- Required footing depths for the steel columns that support the concrete sleeper system.

4.2 Drainage and Stormwater Management

To ensure the longevity and effectiveness of the new wall, the following drainage measures should be implemented:

- Subsurface Drainage System: A perforated drainage pipe (agricultural drain) should be installed at the base of the wall, surrounded by free-draining gravel, to redirect water away from the structure.
- Surface Water Diversion: The runoff from 26 River Street should be redirected away from the retaining wall through a properly graded swale or underground drainage system.

4.3 Impact on 28 River Street

To prevent potential for water-related damage to the foundation of the existing house at 28 River Street, additional preventative measures should be considered:

- Improvement to drainage arrangements along the length of the external wall of the house such as adjusting ground levels to provide fall away from the footings to direct water flow away from the structure.
- Use of geotextile fabric behind the retaining wall to prevent soil migration while allowing water drainage.
- Regular maintenance and inspection of drainage systems to prevent clogging and ensure effective performance.

5. Conclusion

The inspection has determined that the common boundary retaining wall at 26 – 28 River Street, New Brighton, is structurally inadequate and requires immediate replacement. The primary contributing factors to its deterioration are the age and condition of the existing retaining wall system as well as the stormwater runoff from 26 River Street. By constructing a new concrete sleeper retaining wall along the length of the common boundary with proper drainage measures and redirecting surface water flow, the integrity of the replacement structure and the integrity of the adjacent house at 28 River Street will be safeguarded.

6. Next Steps

- Engineering Design and Approval: Engage a structural engineer to design the replacement wall and drainage system. – Confirm levels in the vicinity to determine the maximum and minimum height of the proposed retaining wall and the proposed finished ground levels
- Local Authority Consultation: Check with council if CDC is the best pathway and then seek necessary permits and approvals for construction.
- Construction and Implementation: Engage a qualified contractor to execute the work in accordance with engineering specifications.
- Ongoing Maintenance: Implement regular inspections to ensure the longevity of the new retaining wall.

By taking these steps, both properties can be protected from further structural damage and water-related issues, ensuring long-term stability and safety.

Conditions:

1. It should be noted that the structural elements used in the building works are to be maintained to avoid deterioration appropriate to the exposure conditions.
2. The building works and its associated footings should be maintained in accordance with established practices and guidelines such as the CSIRO Foundation Maintenance and Footings Performance including leaks in plumbing such as storm water and sewerage and drainage should be repaired promptly.

Yours faithfully

Alan Kennedy
ALAN KENNEDY

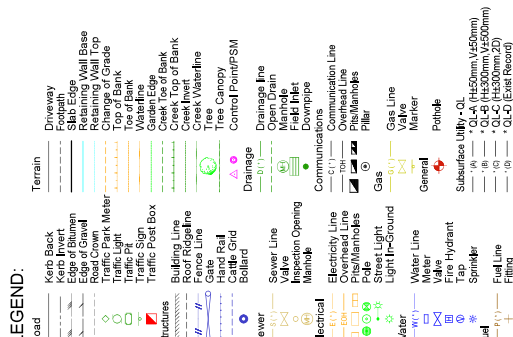
B.E. (Civil) IE Aust No. 232362

ENC; Survey report prepared by Bennett & Bennett dated 2/8/24, Boundary survey report prepared by Heath & McPhail, surveying dated 23/5/19, Retaining wall notes by Brisbane Structural Engineering, retaining wall quote prepared by Aussie Rock Landscape & Construction dated 9/7/24.



Photos 1 & 2 (above & below) view of existing arrangements including garden beds and retaining structures at the date of inspection. Please note it is intended that the garden beds will be removed either entirely or in part to facilitate same finished ground levels as the existing grassed areas in front of the garden beds. The final replacement retaining wall will be a continuous wall along the length of the boundary that is at its highest point (approx. 1.8 m) in the north corner





OTES:
Drawn
Field S

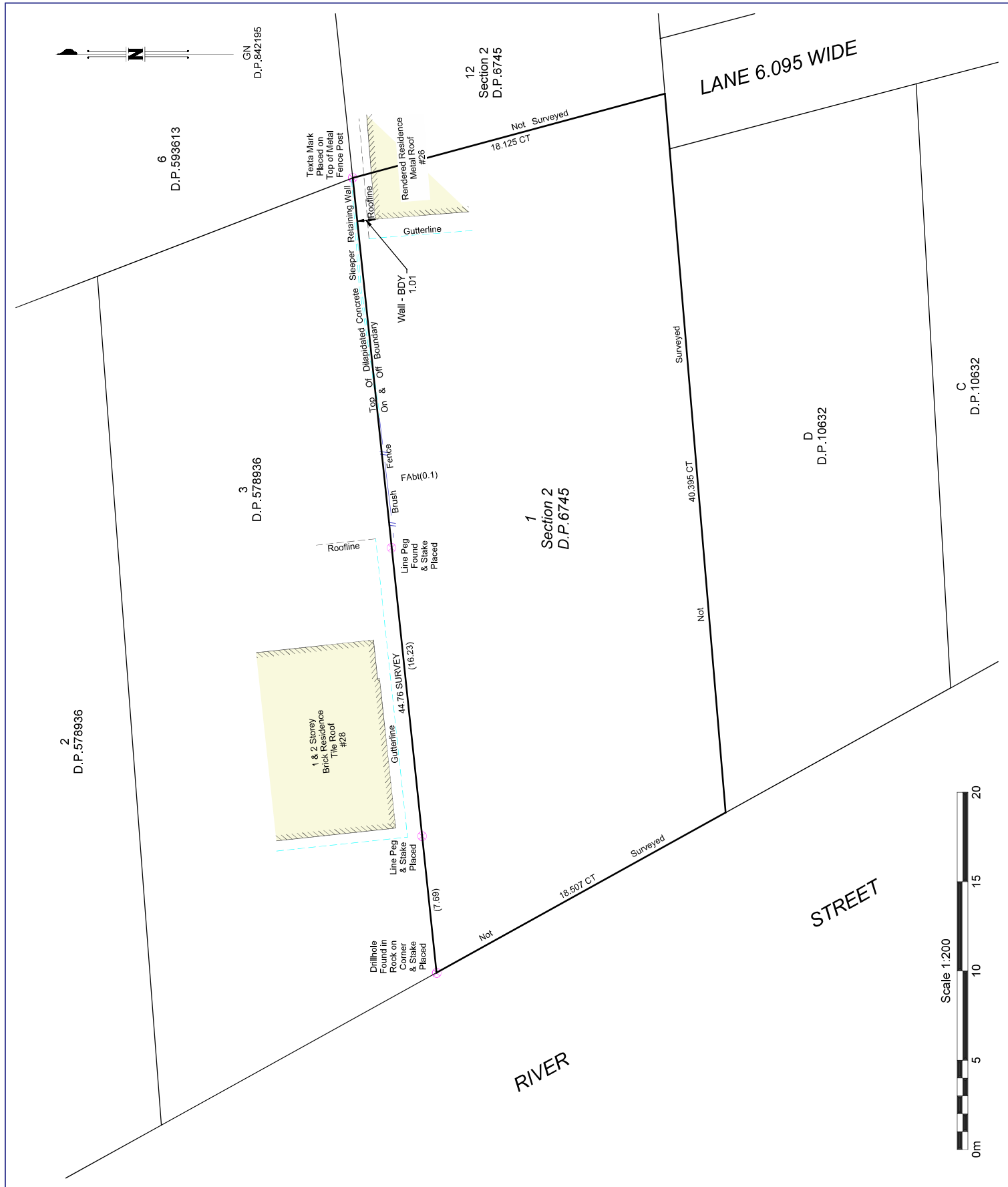
rel datum: Arbitrary (N/A)
 ellipsoid datum: MGA Derived PLAN (D.P.842195)
 spheroid Origin: PM (SCIMS) (PM41669)
 A System: GDA2020 Coordinate System: Plane 1:1
 meridian: D.P.842195

**Plan Showing Marks Placed
Part Lot 1 Section 2 D.P.6745
26 River Street
New Brighton**

ent:	Roger Uren
ed by:	New Brighton
cal Gov:	Byron Shire Council
veyed By:	NST
ated Created:	02/08/24
Scale:	1:200
Ref:	241147
un No:	241147_001_SKT
Rev:	A

Page 1 of 1

A3



This plan is of a pegout survey showing marks placed on Lot 3 in DP 578936 only, and as such is not examined for registration by Land Registry Services.

No responsibility can therefore be accepted for any future difference in boundary definition which may result from re-survey of adjoining lands or subsequent registration of new survey plans.

This is not a full Identification Survey for this property.

The Building on the subject site has only been located as shown.

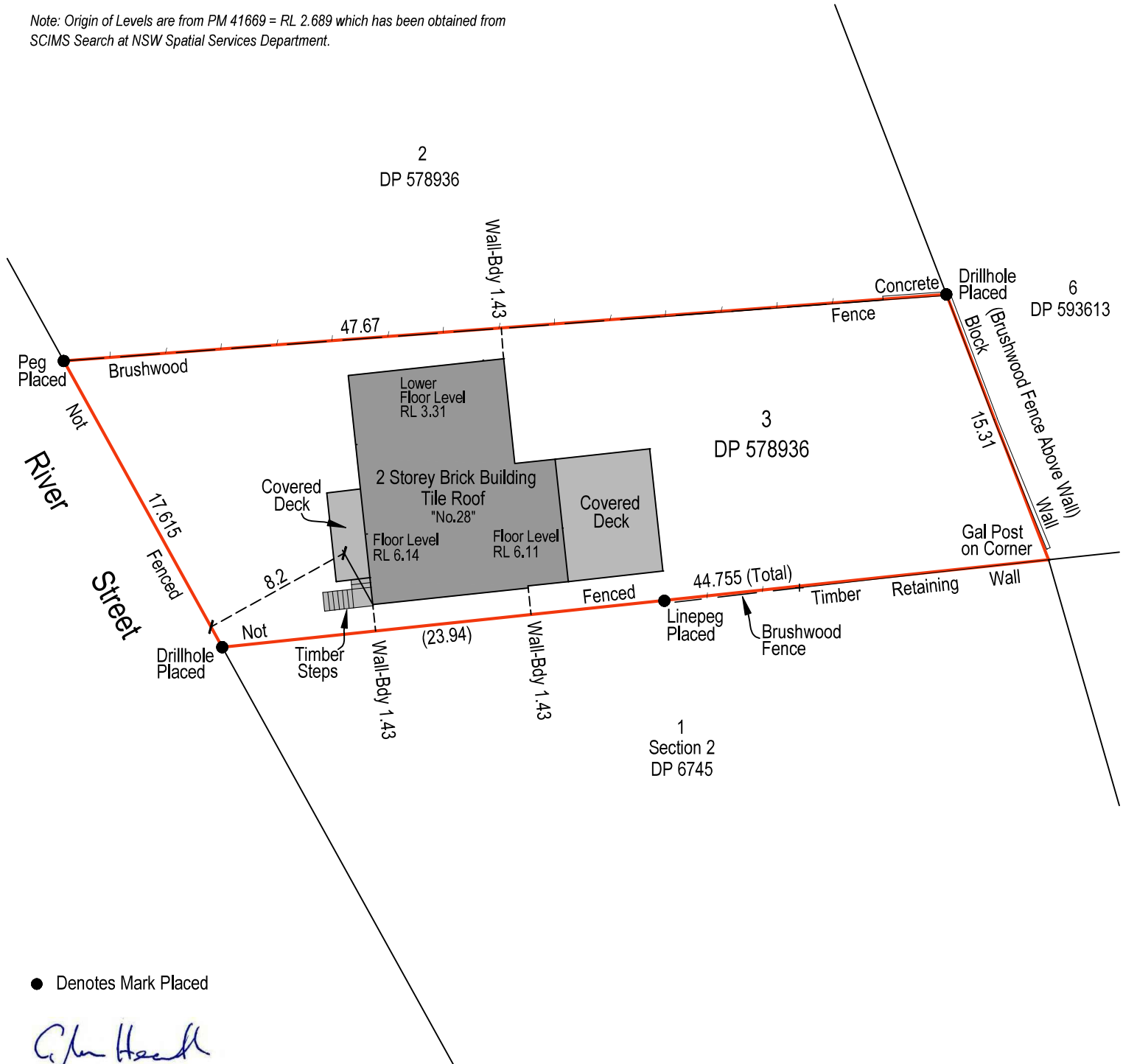
The property was partially fenced at the date of survey.

No Title Search has been carried out for this survey.

There may be other restrictions & easements upon this land that have not been investigated as part of this survey.

This plan may not be copied unless these notes are included.

MGA



- Denotes Mark Placed

G. J. HEATH
Registered Surveyor
Date Surveyed: 23/05/2019



Heath & McPhail Surveying Pty Ltd
60 Hillcrest Avenue
Goonellabah. NSW . 2480 . Australia
Office: (02) 66 886181
Glen Heath: 0417 677 689 Ian McPhail: 0407 289 192

PLAN SHOWING MARKS PLACED FOR BOUNDARY REMARK & LOCATION OF BUILDING

**Lot 3 in DP 578936,
28 River Street, New Brighton.
For: M & L Ridgway**

LGA: Byron	Parish: Billinudgel	Locality: New Brighton	County: Rous
Scale: 1:500@A4	Date: 23/05/2019	Cogo: HM19076.mjo	Dwg No: HM19076-1

RETAINING WALL NOTES

FOOTING F_c IS TO BE 25MPa MIN, U.N.O.
NOMINAL SLUMP IS TO BE 80mm.
MAX AGGREGATE SIZE IS 20mm.

WALES/SLEEPERS TO BE 40MPa CONCRETE POURED INTO STEEL FORMS AND VIBRATED, CURED FOR 7 DAYS MIN.

DESIGN SURCHARGE (LIVE LOAD) BEHIND WALL OF **5.0 kPa** IN ACCORDANCE WITH AUSTRALIAN STANDARDS. WALLS ARE NOT TO SUPPORT ANY PERMANENT SURCHARGE LOADS FROM STRUCTURES OR THE LIKE.

RETAINING WALLS HAVE AN ASSUMED DESIGN LIFE OF 60 YEARS IN ACCORDANCE WITH AS2312.2 AND AS4680.

ALL STEEL COLUMNS TO BE GRADE 350 AND H.D.G. THE WALL IS DESIGNED TO HAVE A BACK SLOPE OF 1 IN 25 OR 4° MIN.

ALL FOOTINGS MUST BE FOUNDED INTO STIFF NATURAL GROUND WITH A MINIMUM ALLOWABLE BEARING CAPACITY OF 100 kPa. NOTIFY ENGINEER IF GROUND IS SOFT OR WET.

IT IS RECOMMENDED TO NOT BACK FILL BEHIND THE WALL UNTIL FOOTINGS HAVE CURED FOR AT LEAST 5 DAYS.

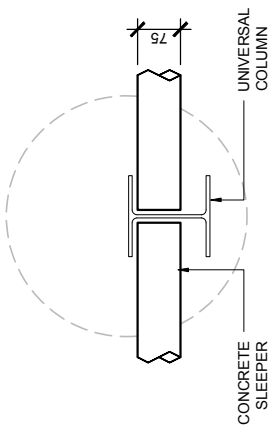
ALL CONCRETE IS TO BE VIBRATED (HAND RODDING OR MECHANICAL VIBRATOR) DURING POURING.

HAND OPERATED COMPACTION EQUIPMENT ONLY PERMITTED WITHIN 2.0m OF WALL.

SLEEPER TYPE (1) MAY BE USED FOR THE TOP FOUR (4) SLEEPERS OF ANY WALL HEIGHT U.N.O.

WHERE GRAVEL DRAINAGE LAYER CANNOT BE INSTALLED, AN ENGINEER APPROVED 'CORE DRAIN' TYPE DRAINAGE CELL SYSTEM MAY BE USED. CONTACT ENGINEER WITH EXACT PRODUCT PRIOR TO USE.

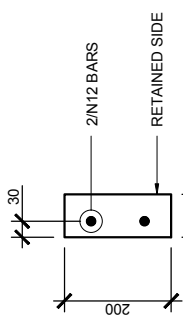
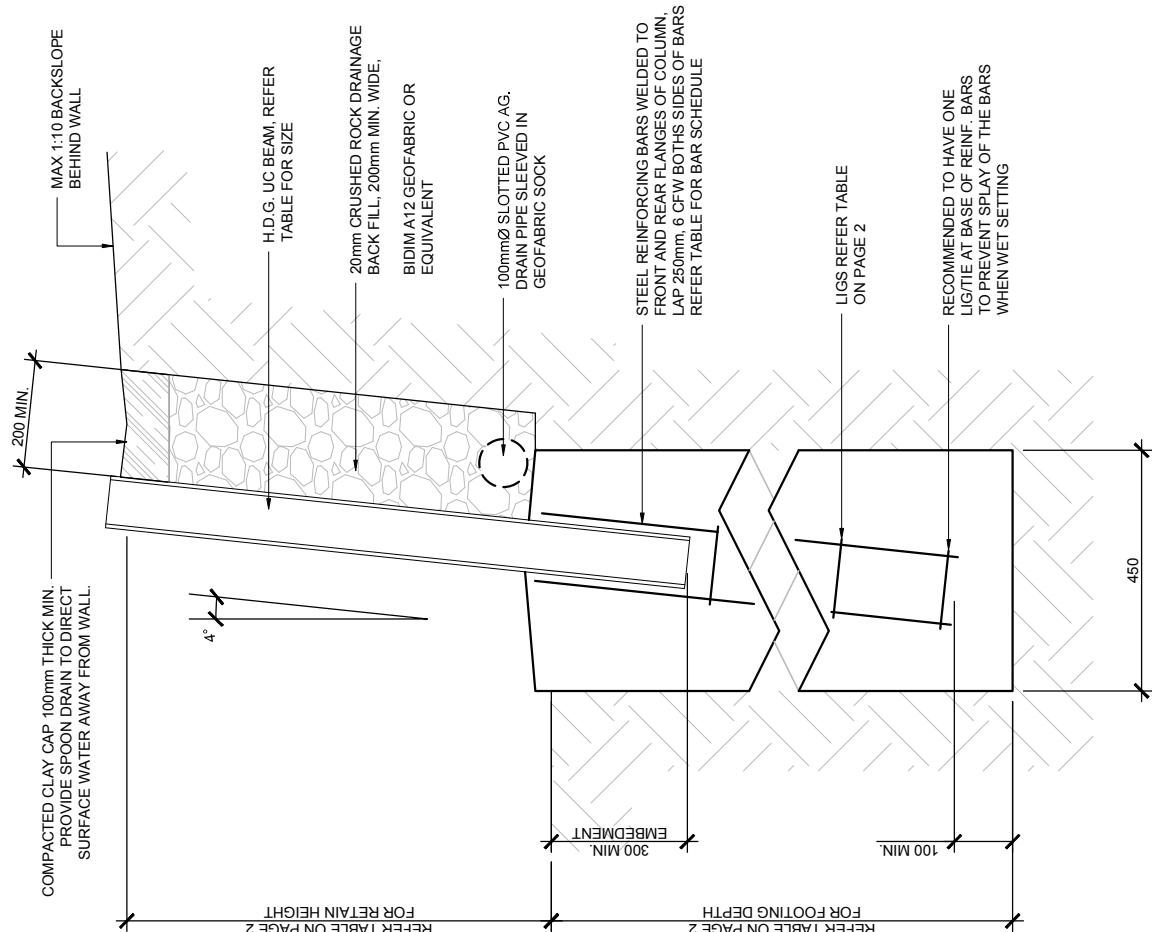
ALL WALLS HAVE BEEN DESIGNED TO SUPPORT A 1.8m MAX HEIGHT, TIMBER SLATTED FENCE OVER WITH A WIND CLASSIFICATION OF 'N2'.



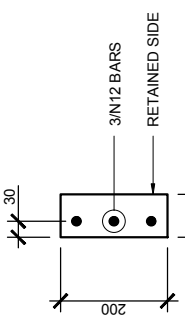
PLAN VIEW DETAIL
SCALE 1:10

IMPORTANT NOTE

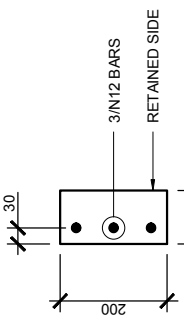
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT NO EARTHWORKS UNDERMINE ANY EXISTING STRUCTURE AND THAT ALL SERVICES ARE LOCATED PRIOR TO CONSTRUCTION.



SLEEPER TYPE (1) DETAIL
SCALE 1:10



SLEEPER TYPE (2) DETAIL
SCALE 1:10



SLEEPER TYPE (3) DETAIL
SCALE 1:10

				TITLE UC RETAINING WALL DETAILS - 5 kPa		APPROVAL ISSUE			
JARED GREEN	0423 632 960	RPEQ 17502, NER, CPEng, MIEAust		PROJECT	NEW SOUTH WALES REGION	DATE	4 / 3 / 2019	REVISION	C
BEN ASSALOM	0432 911 707			CLIENT	REALCRETE	JOB No.	BS-2166	PAGE No.	1

FOOTING DEPTH NOTES

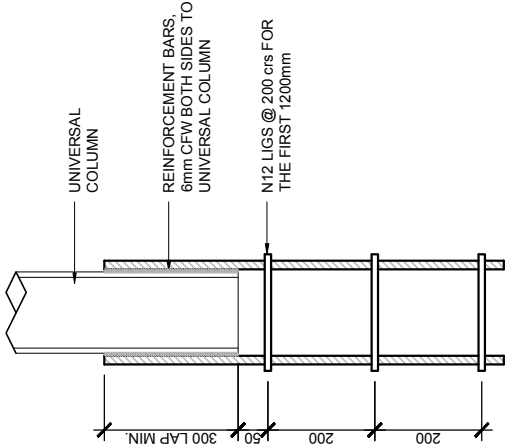
TO PROVIDE THE BEST POSSIBLE CHANCE OF PERFORMANCE AND LONGEVITY OF THE WALLS, CANTILEVERED RETAINING WALLS LIKE THESE RELY PREDOMINANTLY ON APPROPRIATE GROUND CONDITIONS DURING CONSTRUCTION. WE THEREFORE RECOMMEND THE CLIENT OBTAIN A STANDARD 'DCP' BEARING TEST DONE BY A QUALIFIED GEOTECH CONSULTANT.

ALL FOOTINGS MUST BE FOUNDED INTO STIFF GROUND WITH A MINIMUM ALLOWABLE BEARING CAPACITY OF 100 kPa.

ENGINEER **MUST BE** NOTIFIED FOR THE RE-DESIGN OF FOUNDATIONS SHOULD THE BUILDERS DISCOVER THE GROUND IS SOFT OR WET.

ENGINEER **MUST BE** NOTIFIED FOR THE RE-DESIGN OF FOUNDATIONS SHOULD THE BUILDERS ENCOUNTER HARD/IMPERMEABLE ROCK.

IF YOU CANNOT REACH THE SPECIFIED DEPTH DO NOT SIMPLY ASSUME ANY HOLE DUG TO DEPTH IS SUFFICIENT.



LIGATURE DETAIL
SCALE 1:10

WALL HEIGHT MAX mm	PIER DEPTH MIN. mm	PIER SPACING MAX mm	INTERMEDIATE COLUMN	WALL END COLUMN	SLEEPER TYPE	FOOTING DIAMETER (mm)	REINF. BARS FRONT FLANGE	REINF. BARS REAR FLANGE	LIG SPACINGS (mm)
600	1000	2000	100 UC 14.8	100 PFC	TYPE 1	450	2/N12	2/N12	R6 @ BASE
800	1200	2000	100 UC 14.8	100 PFC	TYPE 1	450	2/N12	2/N12	R6 @ BASE
1000	1600	2000	100 UC 14.8	125 PFC	TYPE 2	450	2/N12	2/N12	R6 @ BASE
1200	1800	2000	100 UC 14.8	125 PFC	TYPE 2	450	2/N12	2/N12	R6 @ BASE
1400	2200	2000	100 UC 14.8	150 PFC	TYPE 2	450	2/N12	2/N16	R6 @ BASE
1600	2400	2000	100 UC 14.8	150 PFC	TYPE 2	450	2/N16	2/N16	R6 @ BASE
1800	2600	2000	150 UC 23.4	150 PFC	TYPE 2	450	2/N16	2/N16	R6 @ BASE
2000	3000	2000	150 UC 23.4	180 PFC	TYPE 2	450	2/N16	3/N16	R6 @ BASE
2200	3200	2000	150 UC 23.4	180 PFC	TYPE 3	450	2/N16	3/N16	R6 @ BASE
2400	3600	2000	150 UC 23.4	180 PFC	TYPE 3	450	2/N16	3/N16	R6 @ BASE
2600	3800	2000	150 UC 23.4	180 PFC	TYPE 3	450	2/N16	3/N16	R6 @ BASE
2800	4000	2000	150 UC 30.0	230 PFC	TYPE 3	450	2/N16	3/N20	N12 @ 200 c/s
3000	4200	2000	150 UC 30.0	250 PFC	TYPE 3	450	2/N16	4/N20	N12 @ 200 c/s
3200	4400	2000	200 UC 46.2	250 PFC	2/TYPE 2	450	2/N16	4/N20	N12 @ 200 c/s
3400	4600	2000	200 UC 46.2	250 PFC	2/TYPE 2	450	3/N16	4/N20	N12 @ 200 c/s
3600	4800	2000	200 UC 52.2	300 PFC	2/TYPE 2	450	3/N16	4/N24	N12 @ 200 c/s

Ben Alsalom
RPEQ 17502, NER, CPEng, MIEAust

JARED GREEN 0423 632 960
BEN ALSALOM 0432 911 707



TITLE UC RETAINING WALL DETAILS - 5 kPa

PROJECT NEW SOUTH WALES REGION

CLIENT REALCRETE

APPROVAL ISSUE

DATE 4 / 3 / 2019

REVISION C

JOB No.

BS-2166

PAGE No.

1



PO Box 7084 East Ballina 2478 NSW
 Office: 02 6687 8104,
 David mobile: 0429 701 442,
 Email: office@aussierock.net
 License No: 337065C

To: Mark Ridgway 28 River st New Brighton
 Jeanie Nove 26 River st New Brighton

QUOTE
Date:9-7-24

Item		GST	Amount
1`	Remove existing retaining wall, vegetation, and fence. Supply & install 63m2 smooth charcoal concrete sleeper, 200mm x 80mm 1,980m, galvanized steel post, footings 450mmx450mm x 1.6m deep.		
2	Approximately 48-ton waste material removed, work area to be left neat and tidy		\$46,215,000
3	Lot 26 remove and reinstall paved area encroaching lot 28		\$4,950
4	Access to be provide from lot 26 driveway where all care will be taken but no reasonability		
5	Price Includes all machinery, waste management fees, concrete pump, and all materials.		
6	Exclusions, Approvals, drawings, plumbing, electrical, traffic control.		

Subtotal	\$51,165.00
GST 10%	\$5,116.50
Total	56,281,50

20% Deposit, remaining owing to be paid 7 days after completion.

On accepting this quote please sign and return

Sign here: