

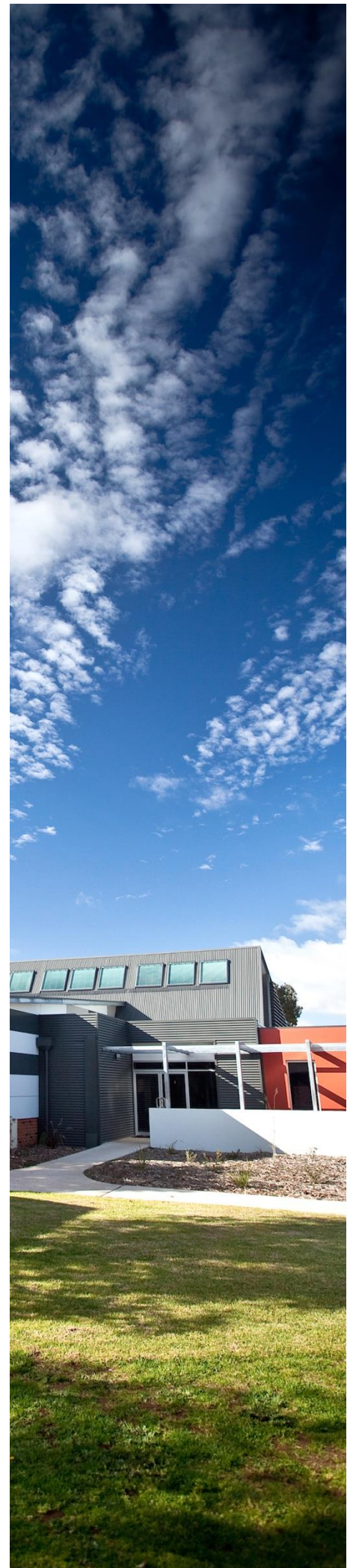


Geotechnical Investigation Report

1 Winbourne Street & 6
Mulgoa Way, Mudgee NSW
(Lot 17 & 18 DP 230349)

(Our Reference:37752-GR01_B)

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Project Name:	1 Winbourne Street & 6 Mulgoa Way, Mudgee NSW (Lot 17 & 18 DP 230349)
Client:	Housing Plus
Project No.	37752
Report Reference	37752-GR01_B
Date:	4.11.2022
Revision:	B

Prepared by:	Reviewed by:
	
Gareth Williams Geotechnical Technician	Richard Noonan BE(Hons) ME FIEAust CPEng NER Director

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1.0 INTRODUCTION

The following is a report on the geotechnical assessment of a site in accordance with AS1726-2017 “Geotechnical Site Investigations”.

The site investigation was carried out by Barnson Pty Ltd, on behalf of Housing Plus.



Plate 1 – Area of Investigation

Housing Plus is planning to demolish existing buildings and build duplexes at 1 Winbourne Street & 6 Mulgoa Way, Mudgee NSW (Lot 17 & 18 DP 230349). The proposed site feature that is covered by this investigation is as follows.

- Proposed Buildings.

The investigation comprised of three (3) boreholes together with field mapping near the site. Details of the field work and laboratory testing are given in the report together with comments relevant to design and construction practice.

1.1 Terminology

The methods used in this report to describe the soil profiles, including visual classification of material types encountered, are in accordance with Australian standard AS1726-2017 “Geotechnical Site Investigations”.

1.2 Limitations

The geotechnical section of Barnson Pty Ltd has conducted this investigation and prepared this report in response to specific instructions from the client to whom this report is addressed. This report is intended for the sole use of the client, and only for the purpose which it is prepared. Any third party who relies on the report or any representation contained in it does so at their own risk.

1.3 Geotechnical Testing

Representative samples from the site were subjected to the following range of tests in accordance with relevant method of Australian Standard AS1289:

- Linear Shrinkage
- pH

NATA reports are attached in *Appendix D*.

2.0 SITE DESCRIPTION

2.1 General Site Description

The site is situated in a residential area of Mudgee NSW.

The site consists of lightly scattered grass and weed cover with mature trees scattered on site.

The site is slightly sloping north west and has existing residential dwellings on the lot. Established buildings, residential houses and rural farmland exist in the vicinity surrounding the site.

Any trees noted to be within the building zone, should be removed and the excavation remaining should be backfilled with natural material and reinstated in layers to a minimum of 95% Standard Maximum Dry Density.



Plate 2 – View of borehole 1 location facing north.



Plate 3 – View of borehole 2 location facing east.



Plate 4 – View of borehole 3 location facing north.

3.0 METHOD OF INVESTIGATION

On the 16th of September 2021, a geotechnical investigation was carried out at the above-mentioned development site. The field drilling was carried out by a geotechnical technician who logged the borehole on site and undertook geological mapping of the nearby area.

A drilling rig with a 90mm auger and tungsten tip was used to excavate two (2) boreholes for the proposed building to depths of 3.0m within the proposed areas. These are identified as boreholes 1 and 3.

Additionally, due to access difficulties, a hand auger was used to excavate one (1) borehole to depth of 1.2m for the proposed building. This is identified as borehole 2

3.1 GPS Co-Ordinates

The boreholes were drilled as close as possible to the anticipated location of the proposed buildings. GPS Co-ordinates of these were recorded on site to enable plotting of the borehole locations. The following Table 1 shows this co-ordinates.

Table 1: GPS Co-Ordinates of Boreholes

Location	Longitude	Latitude	Proposed Structure
Borehole 1	149.598639	-32.596378	Building
Borehole 2	149.598791	-32.596411	Building
Borehole 3	149.598643	-32.596677	Building

The boreholes were recorded on site with a Garmin Oregon 550 handheld GPS, using GDA94 Datum. The co-ordinates have an accuracy of +/- 5m. These locations are also shown on site plan in **Appendix B**.

The borehole logs of sub-surface profiles are attached in **Appendix C**. Disturbed samples (Ds <3kg) were sampled from the boreholes and returned to the Laboratory where Linear Shrinkage testing was performed to assist in the material classification.

4.0 GENERAL SUB-SURFACE CONDITIONS

4.1 Top Soil

A 0.2m-0.3m thick layer of topsoil was encountered at the boreholes. The topsoil material comprised of sandy silt.

4.2 Sub-Soil

Alluvial soils were encountered throughout the boreholes. These generally comprised of slightly moist silty clay, clayey silt with traces of gravel and sandy clayey silt with traces of gravel to depths as shown on the borelogs attached in **Appendix C**.

4.3 Regional Geology

Reference to the New South Wales 1:1,000,000 Geological Map indicates the surrounding area consists of *“Alluvial and riverine plain deposits of gravel, sand, silt and clay; claypans and outwash areas of black and red clayey silt and sand; coastal sand dunes and beach deposits”*.

Rock was not encountered during our investigation.

4.4 Seismicity

Reference is made to AS1170.4-2007 as per clause 4.1.1 the sites sub-soil class is “C_e – Shallow Sub-soil”.

4.5 Seasonal Surface Movement

From the laboratory test results, as shown attached, an estimated ground surface movement (Y_s) was calculated in accordance with AS2870-2011 (using a change in suction at the soil surface $\Delta\mu = 1.5pF$ and a depth of design suction change, $H_s = 2.3m$) being:

$$Y_s = 30-35 \text{ mm}$$

The site is noted to have low bearing soils to a depth of 0.6m at the boreholes 1 and 2. Clause 2.1.3 of AS2870-2011 states that; *“Sites shall be classified as Class P if the allowable bearing pressure at the foundation level is less than 100kPa”*. This applies to the top 0.6m of this site. Further, the site has mature trees scattered over site which will cause abnormal soil moisture content. Due to these extraordinary site features, it is our opinion that a **Site Classification of ‘P’** should be adopted for the site in its present condition. The overall seasonal surface movement of the site in its present condition is noted above. The soil reactivity is advised to be ‘M’ classification.

Reference is made to Appendix ‘H’ of AS2870-2011, which gives guidance on the design of footings on reactive clay soils with the effect of trees. The footing design engineer will need to calculate the tree induced differential centre heave mound height (y_m) based on the tree height and distance of the proposed buildings from the tree or group of trees. This value should be used to design a suitable footing design in accordance with section 4 of the code.

5.0 NATA LABORATORY TESTING

Disturbed samples were taken during the field investigation. Laboratory testing was carried out on selected samples of all different material types, with details of the sampling and testing shown below:

Soil Index Properties testing were carried out on samples to aid in classification of the soils encountered and to assist in determining design parameters.

5.1 Linear Shrinkage Testing (L.S)

The shrinkage results are summarised in the below table:

Table 2: Linear Shrinkage Results

Borehole No.	Depth (m)	Proposed Structure	Linear Shrinkage (%)
Borehole 1	0.8	Building	7.0
Borehole 1	2.0	Building	11.0
Borehole 2	0.8	Building	8.5
Borehole 3	0.8	Building	10.0
Borehole 3	2.0	Building	9.0

The above test results confirm the material being of medium plasticity.

5.2 Acid Sulphates

Acidic ground conditions can be caused by dissolved “aggressive” carbon dioxide, pure and very soft waters, organic and mineral acids and bacterial activity. pH testing was conducted on the site samples to determine if any acidic conditions were present in the soils encountered.

Table 3: pH Testing Results

Borehole No.	Sample Depth (m)	Proposed Structure	pH	Exposure Classification
Borehole 1	0.8	Building	7.5	A1
Borehole 2	0.8	Building	7.4	A1
Borehole 3	0.8	Building	7.3	A1

These results show the exposure classification as per Table 5.2 AS2870-2011. Groundwater was not encountered during this investigation.

6.0 SUB-SURFACE BEARING CAPACITIES

6.1 Bearing Capacities General

All the below soil strengths are applicable to the sites at the time of the investigation. These bearing capacities should not be used for design purposes, they are provided to give an indication of soil strength only.

Elevation of moisture content will cause a marked decrease in bearing capacity with soil types listed.

Table 4: In-Situ Site Bearing Capacities

Borehole No.	Soil Strata	Depth of Strata (m)	Ultimate Base Bearing Capacity (kPa)	Factored Limit State bearing capacity with $\phi = 0.52$ (kPa)
Borehole 1	Soft CLAY	0.3-0.4	<48	<25
	Firm CLAY	0.4-0.5	96	50
	Stiff CLAY	0.5-0.7	150	80
	Very Stiff CLAY	0.7-0.8	300	156
	Hard CLAY	0.8-1.8	>500	260
	Hard SILT	1.8-3.0	>500	260
Borehole 2	Soft CLAY	0.2-0.3	<48	<25
	Firm CLAY	0.3-0.4	96	50
	Stiff SILT	0.4-0.7	150	80
	Very Stiff SILT	0.7-0.8	300	156
	Hard SILT	0.8-1.2	>500	260
Borehole 3	Very Stiff CLAY	0.2-0.5	300	156
	Hard CLAY	0.5-1.0	>500	260
	Hard SILT	1.0-3.0	>500	260

A Geotechnical reduction factor of 0.52 has been applied to all listed ultimate bearing capacities (reference table 4.3.2 (i) AS2159-2009) for low to moderate risk rating.

7.0 EARTHWORKS RECOMMENDATIONS

7.1 Excavations

Excavations within the natural silts and clays will be achievable using conventional earthmoving equipment. The civil contractor should be responsible for selecting excavation equipment based on the proposed excavation depths and equipment capabilities.

7.2 General Construction Filling

All earthworks performed on site must be undertaken in a controlled manner, in accordance with a suitable earthwork's specification. Filling should be placed, compacted, inspected and tested in accordance with the Level 2 requirements of AS3798-2007.

The following conditions should also be satisfied:

- General filling must be compacted to a minimum dry density ratio of 98-100% relative to standard compaction at a moisture content of -2% to +2% of standard optimum moisture content.
- Filling should proceed in layers of 300mm maximum loose thicknesses.
- Layers of filling should be horizontal or benched to suit the surrounding topography.
- The existing subgrade can be used as bulk fill.

7.3 Site Construction Batters

7.3.1 Temporary batter slopes

In soil should be graded no steeper than 2 Horizontal (H) in 1 Vertical (V), and protected from erosion by re-directing any surface water flows from the batter face, revegetating etc.

7.3.2 Permanent batter slopes

Batter slopes in with clay should be no steeper than 3 Horizontal (H) in 1 Vertical (V) and protected from erosion. Alternatively, fill embankments may be retained with properly designed and constructed retaining walls.

8.0 DESIGN PARAMETERS DISCUSSIONS

8.1 Foundation Recommendation

It is anticipated the footings for the proposed single storey duplex buildings will consist of a stiffened raft slab. Soft soil in the upper layer was encountered and the site is tree affected. It is recommended the raft slabs be supported on an upgraded pad by undertaking below site works:

1. Strip and remove the top 400-500mm of soft soil.
2. Proof roll remaining subgrade to confirm even bearing of at least 50kPa is achieved.
3. Place controlled fill consisting of imported road base to underside slab level. Compact to 95% standard compaction. Confirm compaction is achieved by appointing a geotechnical testing authority to assess the fill compaction to level 2 requirements of AS3798-2007.

The footing slab design can then be undertaken with guidance from AS2870-2011. Additional surface movement due to the interaction of nearby trees needs to be taken into account. If the trees noted to be near the building zone are to be removed, the excavation remaining should be backfilled with natural material and reinstated in layers to a minimum of 95% Standard Maximum Dry Density.

8.2 General Pavement Notes

All pavement areas are required to be sealed and well drained to prevent moisture affecting the sub-grade. All pavement areas should be removed of any other deleterious material then compacted to a minimum of 100% standard compaction. The pavement should be placed, compacted and tested in accordance with AS3798-2007.

9.0 CONCLUSION

The testing methods adopted are indicative of the site's sub-surface conditions to the depths excavated and to specific sampling and/or testing locations in this investigation, and only at the time the work was carried out.

The accuracy of geotechnical engineering advice provided in this report may be limited by unobserved variations in ground conditions across the site in areas between and beyond test locations and by any restrictions in the sampling and testing which was able to be carried out, as well as by the amount of data that could be collected given the project and site constraints.

These factors may lead to the possibility that actual ground conditions and materials behaviour observed at the test locations may differ from those which may be encountered elsewhere on the site.

If the sub-surface conditions are found to differ from those described in this report, we should be informed immediately to evaluate whether recommendations should be reviewed and amended if necessary.

Appendix A - General Notes

GEOTECHNICAL INVESTIGATION GENERAL NOTES

This report contains the results of a geotechnical investigation conducted for a specific purpose and client. The results should not be used by other parties, or for other purposes, as they may contain neither adequate nor appropriate information. In particular, the investigation does not cover contamination issues unless specifically required to do so by the client.

TEST HOLE LOGGING

The information on the test hole logs (boreholes, test pits, exposures etc.) is based on a visual and tactile assessment, except at the discrete locations where the test information is available (field and/or laboratory results). The borehole logs include both factual data and inferred information. Reference should be made to the relevant sheets for the explanation of logging procedures (Soil and Rock Descriptions, Core Log Sheet Notes etc).

GROUNDWATER

Unless otherwise indicated, the water levels presented on the borehole logs are the levels of free water or seepage in the bore hole recorded at the given time of measuring. The actual groundwater level may differ from this recorded level depending on material permeability's (i.e. depending on response time of the measuring instrument). Further, variations of this level could occur with time due to such effects as seasonal, environmental and tidal fluctuations or construction activities. Confirmation of groundwater levels, phreatic surfaces or piezometric pressures can only be made by appropriate instrumentation techniques and monitoring programmes.

INTERPRETATION OF RESULTS

The discussion or recommendations contained within this report normally are based on a site evaluation from discrete borehole area. Generalised, idealised or inferred subsurface conditions (including any geotechnical cross-sections) have been assumed or prepared by interpolation and/or extrapolation of these data. As such these conditions are an interpretation and must be considered as a guide only.

CHANGE IN CONDITIONS

Local variations or anomalies in the generalised ground conditions do occur in the natural environment, particularly between discrete borehole locations. Additionally, certain design or construction procedures may have been assumed in assessing the soil-structure interaction behaviour of the site. Furthermore, conditions may change at the site from those encountered at the time of the geotechnical investigation through construction activities and constantly changing natural forces.

Any change in design, in construction methods, or in ground conditions as noted during construction, from those assumed or reported should be referred to this firm for appropriate assessment and comment.

GEOTECHNICAL VERIFICATION

Verification of the geotechnical assumptions and/or model is an integral part of the design process – investigation, construction verification and performance monitoring. Variability is a feature of the natural environment and, in many instances, verification of soil or rock quality, or foundation levels are required. There may be a requirement to extend foundation depths to modify a foundation system or to conduct monitoring as a result of this natural variability. Allowance for verification by geotechnical personnel accordingly should be recognised and programmed during construction.

FOUNDATIONS

Where referred to in the report, the soil or rock quality, or the recommendation depth of any foundation (piles, caissons footings etc.) is an engineering estimate. The estimate is influenced and perhaps limited, by the fieldwork method and testing carried out in connection with the site investigation, and other pertinent information as has been made available. The material quality and/or foundation depth remains, however, an estimate and therefore liable to variation. Foundation drawings, designs and specifications should provide for variations in the final depth, depending upon the ground conditions at each point of support, and allow for geotechnical verification.

REPRODUCTION OF REPORTS

Where it is desired to reproduce the information contained in our geotechnical report, or other technical information, for the inclusion in contract documents or engineering specification of the subject development, such reproductions should include at least all of the relevant test hole and test data, together with the appropriate standard description sheets and remarks made in the written report of a factual or descriptive nature.

Reports are the subject of copyright and shall not be reproduced either totally or in part without the express permission of this firm.

ROCK

Rock Strength

Rock strength is a scale of strength, based on point load index testing, or field testing.

Term	Letter Symbol	Point load index (Mpa) Is (50)	Field guide to strength
Extremely low	EL	< 0.03	Easily remoulded by hand to a material with soil properties.
Very low	VL	0.03 – 0.1	Material crumbles under firm blows with sharp end of pick.
Low	L	0.1 – 0.3	Easily scored by knife, has dull sound under hammer.
Medium	M	0.3 – 1.0	Readily scored with knife, core pieces broken by hand with difficulty
High	H	1 – 3	Rock rings under hammer, core piece broken by pick only.
Very high	VH	3 – 10	Hand specimen breaks with pick after more than one blow.
Extremely high	EH	> 10	Hand specimen breaks with pick after several than one blow.

Rock Weathering

Rock weathering is the degree of rock weathering, determined in the field.

Term	Letter Symbol	Definition
Residual soil	RS	Soil developed on extremely weathered rock.
Extremely weathered rock	XW	Soil is weathered to such an extent that it has soil properties, i.e. it disintegrates or can be remoulded in water.
Distinctly weathered rock	DW	Rock strength usually changed by weathering. The rock may be discoloured, usually by iron staining, porosity is increased.
Slightly weathered rock	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh rock	FR	Rock shows no sign of decomposition or staining.

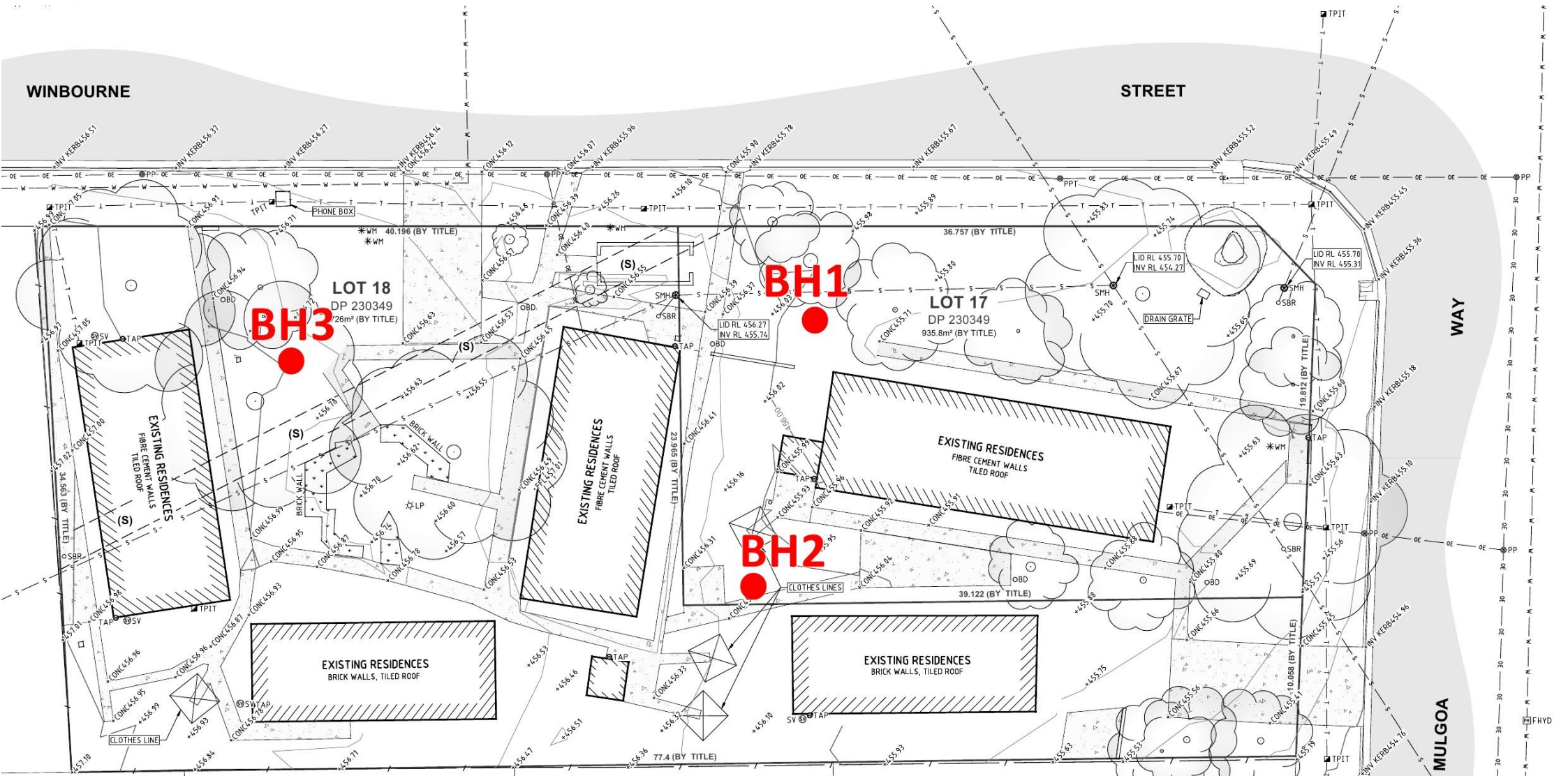
Appendix B - Site Plan with Borehole Locations

WINBOURNE

STREET

WAY

MULGOA



LOT 4
DP 230632

LOT 3
DP 230632

LOT 2
DP 230632

LOT 1
DP 230632

- NOTES:
- THE BOUNDARY INFORMATION SHOWN ON THIS PLAN BEEN PLOTTED AS REQUIRED UNDER DIVISION 1, SECTION 9.1(1) OF THE "SURVEYING AND SPATIAL INFORMATION REGULATION 2017". IT HAS NOT BEEN DETERMINED BY AN ACCURATE BOUNDARY SURVEY.
 - A DETAIL & LEVEL SURVEY IS NOT A "LAND SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT 2002. IF ANY CONSTRUCTION OR DESIGN WORK WHICH RELIES ON CRITICAL SETBACKS FROM THE STREET OR BOUNDARIES IS PLANNED, IT WOULD BE IMPERATIVE TO CARRY OUT FURTHER SURVEY WORK TO DETERMINE THE BOUNDARY DIMENSIONS.
 - THE LOCATIONS AND DEPTHS OF UNDERGROUND SERVICES ARE NOT ASSURED BY BARNSON. SERVICE AUTHORITIES SHOULD BE CONSULTED BEFORE ANY EXCAVATION, DEMOLITION OR CONSTRUCTION COMMENCES.
 - THERE MAY BE UNDERGROUND SERVICES THAT HAVE NOT BEEN SHOWN HEREON.
 - BARNSON TAKES NO RESPONSIBILITY FOR LOSSES, DAMAGES OR INJURIES TO ANY PERSON OR ORGANISATION THAT MAY OCCUR DUE TO THE RELIANCE ON THIS PLAN FOR THE LOCATION OF UNDERGROUND

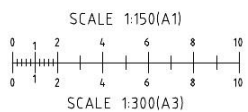
LEVEL AND DETAIL SURVEY PLAN

REDUCTION RATIO 1:150 @ A1
1:300 @ A3



DATE OF SURVEY : 13th OCTOBER 2021
 SURVEY BY : R. Boylan

DATUM : AUSTRALIAN HEIGHT DATUM (A.H.D.)
 ORIGIN : SSM 58435 RL 483.146m 15 CL(M.S.)
 MAJOR CONTOUR INTERVAL : 1 METRE



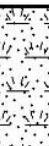

(S) EASEMENT TO DRAIN SEWAGE 1.83 WIDE (VIDE L887246)

LID RL 454.17
INV RL 453.00

Appendix C - Borehole Logs

CLIENT Housing Plus PROJECT NAME Site Classification
 PROJECT NUMBER 37752 PROJECT LOCATION 1 Winbourne Street & 6 Mulgoa Way, Mudgee NSW
 DATE STARTED 30/11/21 COMPLETED 30/11/21 R.L. SURFACE _____ DATUM _____
 DRILLING CONTRACTOR Barnson SLOPE 90° BEARING ---
 EQUIPMENT Scout 1750 Drill Rig HOLE LOCATION Borehole 1
 HOLE SIZE 90mm LOGGED BY HC CHECKED BY NR

NOTES

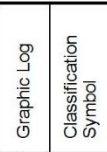
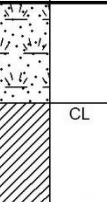
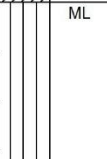
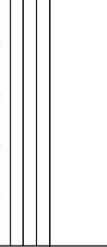
Method	Samples	Depth (m)	Graphic Log	Classification Symbol	Material Description	Dynamic Cone Penetrometer Blows / 100mm	Additional Observations
		0.0			Sandy SILT: brown	0	TOPSOIL
		0.3		CL	Silty CLAY: orange-brown: slightly moist: soft to hard: medium plasticity	2	ALLUVIAL
	Disturbed Sample LS = 7.0%	0.5				3	
		1.0				6	
		1.2		CL	Silty CLAY: brown: slightly moist: hard: medium plasticity	10	ALLUVIAL
		1.5				15	
		1.8				19	
		2.0		ML	Clayey SILT: trace gravel: red-brown: slightly moist: hard: medium plasticity	24	ALLUVIAL
	Disturbed Sample LS = 11.0%	2.5				32	
		3.0					

BOREHOLE / TEST PIT WITH DCP: 37752-G01A-G02A-G03A.GPJ GINT STD AUSTRALIA.GDT 9/12/21 Flight Auger & Tungsten Carbide (T.C) Bit

Borehole 1 terminated at 3m

CLIENT Housing Plus PROJECT NAME Site Classification
 PROJECT NUMBER 37752 PROJECT LOCATION 1 Winbourne Street & 6 Mulgoa Way, Mudgee NSW
 DATE STARTED 30/11/21 COMPLETED 30/11/21 R.L. SURFACE _____ DATUM _____
 DRILLING CONTRACTOR Barnson SLOPE 90° BEARING ---
 EQUIPMENT Hand Auger HOLE LOCATION Borehole 2
 HOLE SIZE 90mm LOGGED BY HC CHECKED BY NR

NOTES

Method	Samples	Depth (m)	Graphic Log	Classification Symbol	Material Description	Dynamic Cone Penetrometer Blows / 100mm	Additional Observations
HA		0			Sandy SILT: brown	0	TOPSOIL
		0.2		CL	Silty CLAY: yellow: slightly moist: soft to firm: medium plasticity	4	ALLUVIAL
		0.4		ML	Clayey SILT: trace gravel: orange-red: stiff to hard: medium plasticity	8	ALLUVIAL
		0.5				12	
		1.0				20	
		1.2			Borehole 2 terminated at 1.2m	32	

BOREHOLE / TEST PIT WITH DCP_37752-G01A-G02A-G03A.GPJ_GINT STD AUSTRALIA.GDT 9/12/21

CLIENT Housing Plus PROJECT NAME Site Classification

PROJECT NUMBER 37752 PROJECT LOCATION 1 Winbourne Street & 6 Mulgoa Way, Mudgee NSW

DATE STARTED 30/11/21 COMPLETED 30/11/21 R.L. SURFACE _____ DATUM _____

DRILLING CONTRACTOR Barnson SLOPE 90° BEARING ---

EQUIPMENT Scout 1750 Drill Rig HOLE LOCATION Borehole 3

HOLE SIZE 90mm LOGGED BY HC CHECKED BY NR

NOTES

Method	Samples	Depth (m)	Graphic Log	Classification Symbol	Material Description	Dynamic Cone Penetrometer Blows / 100mm	Additional Observations
		0.0			Sandy SILT: brown	0	TOPSOIL
		0.2		CL	Silty CLAY: brown: slightly moist: very stiff to hard: medium plasticity	4	ALLUVIAL
		0.5				5	
						6	
						6	
						7	
						9	
						10	
						14	
						17	
		1.0		ML	Sandy Clayey SILT: trace gravel: red-brown: slightly moist: hard: medium plasticity	22	ALLUVIAL
						32	
		1.5					
		2.0					
		2.5					
		3.0					

Flight Auger & Tungsten Carbide (T.C) Bit

Disturbed Sample
LS = 10.0%

Disturbed Sample
LS = 9.0%

BOREHOLE / TEST PIT WITH DCP 37752-G01A-G02A-G03A-GPJ GINT STD AUSTRALIA.GDT 9/12/21

Borehole 3 terminated at 3m



Appendix D - NATA Laboratory Reports

Material Test Report

Report Number: 37752-1
Issue Number: 1
Date Issued: 08/12/2021
Client: Housing Plus
PO Box 968, Orange NSW 2800
Contact: Scott Taylor
Project Number: 37752
Project Name: Site Classification
Project Location: 1 Winbourne Street & 6 Mulgoa Way, Mudgee NSW
Work Request: 5758
Sample Number: D21-5758A
Date Sampled: 30/11/2021
Dates Tested: 01/12/2021 - 02/12/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 1, Depth: 800mm
Material: Orange-Brown Silty CLAY



Barnson Pty Ltd

Dubbo Laboratory

16 L Yarrandale Road Dubbo NSW 2830

Phone: 1300 BARNSON

Email: nreardon@barnson.com.au

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A handwritten signature in black ink, appearing to read "N. Reardon".

Approved Signatory: Nick Reardon

Laboratory Manager

NATA Accredited Laboratory Number: 9605

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	7.0		
Cracking Crumbling Curling	None		

Material Test Report

Report Number: 37752-1
Issue Number: 1
Date Issued: 08/12/2021
Client: Housing Plus
PO Box 968, Orange NSW 2800
Contact: Scott Taylor
Project Number: 37752
Project Name: Site Classification
Project Location: 1 Winbourne Street & 6 Mulgoa Way, Mudgee NSW
Work Request: 5758
Sample Number: D21-5758B
Date Sampled: 30/11/2021
Dates Tested: 01/12/2021 - 02/12/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 1, Depth: 2.0m
Material: Red-Brown Clayey SILT Trace Gravel



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Laboratory Manager
NATA Accredited Laboratory Number: 9605

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	11.0		
Cracking Crumbling Curling	Curling		

Material Test Report

Report Number: 37752-1
Issue Number: 1
Date Issued: 08/12/2021
Client: Housing Plus
PO Box 968, Orange NSW 2800
Contact: Scott Taylor
Project Number: 37752
Project Name: Site Classification
Project Location: 1 Winbourne Street & 6 Mulgoa Way, Mudgee NSW
Work Request: 5758
Sample Number: D21-5758C
Date Sampled: 30/11/2021
Dates Tested: 01/12/2021 - 02/12/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 2, Depth: 800mm
Material: Orange-Red Clayey SILT Trace Gravel



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Approved Signatory: Nick Reardon
Laboratory Manager
NATA Accredited Laboratory Number: 9605

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	8.5		
Cracking Crumbling Curling	None		

Material Test Report

Report Number: 37752-1
Issue Number: 1
Date Issued: 08/12/2021
Client: Housing Plus
PO Box 968, Orange NSW 2800
Contact: Scott Taylor
Project Number: 37752
Project Name: Site Classification
Project Location: 1 Winbourne Street & 6 Mulgoa Way, Mudgee NSW
Work Request: 5758
Sample Number: D21-5758D
Date Sampled: 30/11/2021
Dates Tested: 01/12/2021 - 02/12/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 3, Depth: 800mm
Material: Brown Silty CLAY



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Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	10.0		
Cracking Crumbling Curling	None		

Material Test Report

Report Number: 37752-1
Issue Number: 1
Date Issued: 08/12/2021
Client: Housing Plus
PO Box 968, Orange NSW 2800
Contact: Scott Taylor
Project Number: 37752
Project Name: Site Classification
Project Location: 1 Winbourne Street & 6 Mulgoa Way, Mudgee NSW
Work Request: 5758
Sample Number: D21-5758E
Date Sampled: 30/11/2021
Dates Tested: 01/12/2021 - 02/12/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 3, Depth: 2.0m
Material: Red-Brown Sandy Clayey SILT Trace Gravel



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Laboratory Manager
NATA Accredited Laboratory Number: 9605

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	9.0		
Cracking Crumbling Curling	None		