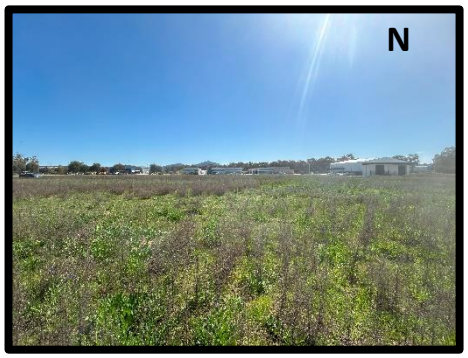
SITE CLASSIFICATION REPORT

Client:	Celestial Cluster	Address:	28 Platinum Court, Thurgoona NSW
Job No.:	L25	Revision:	0
Date:	October 14, 2024		

1 Site Photos



Classifications		
Site	Slab*	Wind
P	H2-D	N2

Allowable Bearing Pressure*		Allowable Shaft Adhesion*	
Strip and Pad Footings	Beams and Slab Panels	Compression (Ignore first 1 m)	Tension (Ignore first 1 m)
100 kPa within natural soils	50 kPa within natural soils	20 kPa	10 kPa

Notes:

1. **Based on our investigative location, natural material was encountered at approximately 0.1 – 0.2 m.**

2 Site Classification

This classification has been determined in accordance with the Australian Standards AS2870:2011 and AS3798:2007. A site classification of **Class P** has been determined in accordance with AS2870 Clause 2.1.3.

As requested, a slab design classification has been provided with reference to clause 2.1.2 of AS2870:2011. This classification is based on the assumption that the predominate movement is a result of soil reactivity under normal moisture conditions. Although we note that movement may occur for reasons other than soil reactivity, as outlined in clause 2.1.3, however, for the purpose of this slab design classification we have not considered other factors. The designers should ensure that all factors within clause 2.1.3 have been considered.

3 Wind Classification

Wind classification at the time of the investigation has been determined based on the Australian Standard AS4055:2012. The sites region, terrain category, shielding factor (taking into consideration the future development of the site) and topography produce a wind classification and common notation of **N2 W33**.

4 Estimated Allowable Bearing Pressure

The design bearing capacity within natural soils may be achieved at the tested location subject to confirmation by a suitably qualified geotechnical engineer based on AS2870:2011 clause 2.4.5 as:

- Maximum of 100 kPa for strip and pad footings and under the edge footing of footing slabs used without tie bars between the edge footing and slab.
- Maximum of 50 kPa under all beams and slab panels and support thickenings for slab construction.

4.1 Allowable Skin Friction (Shaft Adhesion)

The allowable shaft adhesion after the first 1 m may be adopted at a maximum of **20 kPa** in compression and **10 kPa in tension** at the tested locations.

5 Estimated Slab Classification

A slab classification of **H2-D** and characteristic surface movement of **60 < y_s < 75** has been estimated for the site by a soil technician based on a visual-tactile assessment, however, this is an estimation only based on the reactivity of the soil profile climatic moisture changes in the region. Based on moisture changes due to climatic effect, surface movements may occur from other factors described in the class P trigger criteria which have not been considered in the characteristic surface movement estimation.

6 Dynamic Cone Penetrometer (DCP) results

Depths are measured from the existing surface level

Test Number *Depth* (mm)* **Surface RL (m AHD)**	**BH01**	**BH02**	**BH03**	**BH04**
0-100	4	7	12	9
100-200	10	8	6	5
200-300	8	7	12	9
300-400	5	10	14	12
400-500	9	11	8	8
500-600	6	5	11	9
600-700	12	7	12	8
700-800	10	6	14	10
800-900	12	8	9	14
900-1000	10	10	5	14
1000-1100	12	8	6	13
1100-1200	14	11	7	17
1200-1300	12	13	7	14
1300-1400	13	14	7	10
1400-1500	12	15	8	10
1500-1600	12	13	7	12
1600-1700	11	15	9	12
1700-1800	9	15	11	18

Test Number *Depth* (mm)* Surface RL (m AHD)	BH01	BH02	BH03	BH04
1800-1900	11	14	9	18
1900-2000	9	16	11	15
2000-2100	10	14	9	17
2100-2200	9	13	10	17
2200-2300	9	18	12	16
2300-2400	12	16	15	15
2400-2500	12	16	18	16
2500-2600	14	15	21	24
2600-2700	14	14	21	24
2700-2800	16	14	19	24
2800-2900	14	13	22	24
2900-3000	16	15	22	21
3000-3100	16	16	22	17
3100-3200	16	16	19	13
3200-3300	16	16	16	12
3300-3400	17	17	16	14
3400-3500	21	16	13	13
3500-3600	19	13	13	14
3600-3700	17	13	14	13
3700-3800	15	13	14	14
3800-3900	16	12	14	14
3900-4000	18	12	13	14
4000-4100	**END**	**END**	**END**	**END**

7 Groundwater

During the brief period in which the excavation was open, no evidence of groundwater seepage was observed; however, groundwater could be present in proximity to the soil-to-rock interface. Inflow may have been observed had the borehole(s) been left open for an extended duration. No long-term groundwater monitoring was conducted as part of the proposed scope of works. It should be acknowledged that groundwater and seepage levels are subject to seasonal fluctuations and/or other contributing factors.

8 Comments

The site may be reclassified in accordance with clause 2.5.3 (c) if assessed by a suitably qualified geotechnical Engineer on the basis of first principles of engineering. Cut/fill on site can change the depth of the crack zone which would alter the characteristic surface movement, if this is to occur the design engineer is to consider this with provided borehole logs.

The client/design engineer must make their own interpretations from the information presented within this site classification and will need to accept all responsibility for such interpretations. All depths provided are based on the borehole locations, variability in subsurface conditions must be anticipated. The borehole was positioned within the front of the property.

Moisture conditions on site may vary from the time of investigation compared to the time of construction. Groundwater is likely to be present following heavy rainfall events.

9 Limitations

The report limitations are outlined below:

- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the BHM proposal; and terms of contract between BHM and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- Where information has been provided by third parties, BHM has not undertaken any verification process, except where specifically stated in the report;
- BHM have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or land use. BHM should be contacted immediately in such circumstances;
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose;
- Copyright in this report is the property of BHM. BHM has used a degree of care, skill and diligence normally exercised by consulting professionals in similar circumstances and locality. No other warranty expressed or implied is made or intended. Subject to payment of all fees due for the investigation, the client alone shall have a licence to use this report;
- If the client, or any person, provides a copy of this report to any third party, such third party must not rely on this report except with the express written consent of BHM; and
- Any third party who seeks to rely on this report without the express written consent of BHM does so entirely at their own risk and to the fullest extent permitted by law, BHM accepts no liability whatsoever, in respect of any loss or damage suffered by any such third party.
- The site classification has been determined in accordance with AS 2870:2011, and wind classification is determined in accordance with AS 4055:2021. The classifications are

applicable at the time of undertaking our investigation, we have not considered any proposed developments on adjacent land which may alter the classification.

- Where recommendations are made in this report, they must be followed. Soil has been logged based on visual-tactile assessments made by the soil technician, which inherently contains certain level of uncertainty when compared to laboratory analysis, the results provided within this report are indicative of the subsurface conditions at the tested locations, and up to the investigative depths presented within the borehole logs attached to this report. The borehole logs and other data presented in this report should be interpreted by a suitably qualified Geotechnical Engineer when determining design implications.
- The depth of the investigation is governed by AS 2870:2011, C.l (2.4.3) and the number of boreholes generally governed in accordance with AS 2870:2011 C.l(2.4.4). The number of boreholes present, and depth are a result of the agreed scope of work provided to us by the client.
- The design engineer is to consider the adequacy of this aspect and should satisfy themselves on the design. There may be a variety of reasons as to why an investigation should be carried out at deeper depths with additional testing locations, this should be considered by suitably qualified geotechnical engineer or design engineer.
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the BHM proposal; and terms of contract between BHM and the client (as applicable).
- BHM hold no responsibility for interpretations made by other parties involved with the proposed developments unless they are supported by an expressed statement made within this report.

If you have any questions concerning the contents of this letter, please do not hesitate to contact us.

Yours faithfully,
For and on behalf of
BHM Geotechnical Pty Ltd

Daniel Zora
Geotechnical Engineer

In encl.

Appendix A – Borehole Logs

This the document described as

Appendix A

BHM Geotechnical

BOREHOLE LOG BH01

CLIENT Celestial Cluster
PROJECT ID L25
DRILLER SR
ADDRESS 28 Platinum Court, Thurgoona NSW 2640

DRILLING DATE 11 October 2024
TOTAL DEPTH 4.0 m
DIAMETER 50 mm
EQUIPMENT HA
LOGGED BY SR

COORDINATES TBS
COORD SYS MGA
COMPLETION 11/10/24
SURFACE ELEVATION TBS
PENETRATION ANGLE -90

COMMENTS

LOGGED BY SR
CHECKED BY DZ

Drilling Method	Ground water	Elevation (m)	Depth (m)	Graphic Log	USCS	Samples	Material Description	Moisture	Rel. Density/ Consistency	Hand Penetrometer Readings (kPa)	Additional Observations
	DRY ON COMPLETION	-0.2	0.2				TOPSOIL. gravelly CLAY, low to medium plastic, brown.	W<PL			
					CH		CLAY: medium to high plastic, brown.		St		Alluvial
		-0.4	0.4				as above, brown mottled black.				
		-0.6	0.6						VSt		
		-0.8	0.8								
		-1	1				CLAY: medium to high plastic, brown.				
		-1.2	1.2								
		-1.4	1.4								
		-1.6	1.6								
		-1.8	1.8								
		-2	2								
		-2.2	2.2								
		-2.4	2.4								
		-2.6	2.6						H		
		-2.8	2.8								
		-3	3								
		-3.2	3.2								
		-3.4	3.4								
		-3.6	3.6								
		-3.8	3.8								
		-4	4				Borehole terminated at 4.0 m.				

BHM Geotechnical

BOREHOLE LOG BH02

CLIENT Celestial Cluster
PROJECT ID L25
DRILLER SR
ADDRESS 28 Platinum Court, Thurgoona NSW 2640

DRILLING DATE 11 October 2024
TOTAL DEPTH 4.0 m
DIAMETER 50 mm
EQUIPMENT HA
LOGGED BY SR

COORDINATES TBS
COORD SYS MGA
COMPLETION 11/10/24
SURFACE ELEVATION TBS
PENETRATION ANGLE -90

COMMENTS

LOGGED BY SR
CHECKED BY DZ

Drilling Method	Ground water	Elevation (m)	Depth (m)	Graphic Log	USCS	Samples	Material Description	Moisture	Rel. Density/ Consistency	Hand Penetrometer Readings (kPa)	Additional Observations
	DRY ON COMPLETION	-0.2	0.2				TOPSOIL. gravelly CLAY, low to medium plastic, brown.	W<PL			
					CH		CLAY: medium to high plastic, brown.		St		Alluvial
		-0.4	0.4				as above, brown mottled black.				
		-0.6	0.6								
		-0.8	0.8						VSt		
		-1	1				CLAY: medium to high plastic, brown.				
		-1.2	1.2						H		
		-1.4	1.4								
		-1.6	1.6								
		-1.8	1.8								
		-2	2								
		-2.2	2.2								
		-2.4	2.4								
		-2.6	2.6								
		-2.8	2.8								
		-3	3								
		-3.2	3.2								
		-3.4	3.4								
		-3.6	3.6								
		-3.8	3.8								
		-4	4				Borehole terminated at 4.0 m.				

BHM Geotechnical

BOREHOLE LOG BH03

CLIENT Celestial Cluster
PROJECT ID L25
DRILLER SR
ADDRESS 28 Platinum Court, Thurgoona NSW 2640

DRILLING DATE 11 October 2024
TOTAL DEPTH 4.0 m
DIAMETER 50 mm
EQUIPMENT HA
LOGGED BY SR

COORDINATES TBS
COORD SYS MGA
COMPLETION 11/10/24
SURFACE ELEVATION TBS
PENETRATION ANGLE -90

COMMENTS

LOGGED BY SR
CHECKED BY DZ

Drilling Method	Ground water	Elevation (m)	Depth (m)	Graphic Log	USCS	Samples	Material Description	Moisture	Rel. Density/ Consistency	Hand Penetrometer Readings (kPa)	Additional Observations
	DRY ON COMPLETION	-0.2	0.2		CH		TOPSOIL. gravelly CLAY, low to medium plastic, brown.	W<PL	St		Alluvial
							CLAY: medium to high plastic, brown.				
		-0.4	0.4				as above, brown mottled red.				
		-0.6	0.6								
		-0.8	0.8								
		-1	1				as above, brown.				
		-1.2	1.2						VSt		
		-1.4	1.4								
		-1.6	1.6								
		-1.8	1.8								
		-2	2								
		-2.2	2.2								
		-2.4	2.4						H		
		-2.6	2.6								
		-2.8	2.8								
		-3	3								
		-3.2	3.2								
		-3.4	3.4								
		-3.6	3.6								
		-3.8	3.8								
		-4	4				Borehole terminated at 4.0 m.				

BHM Geotechnical

BOREHOLE LOG BH04

CLIENT Celestial Cluster
PROJECT ID L25
DRILLER SR
ADDRESS 28 Platinum Court, Thurgoona NSW 2640

DRILLING DATE 11 October 2024
TOTAL DEPTH 4.0 m
DIAMETER 50 mm
EQUIPMENT HA
LOGGED BY SR

COORDINATES TBS
COORD SYS MGA
COMPLETION 11/10/24
SURFACE ELEVATION TBS
PENETRATION ANGLE -90

COMMENTS

LOGGED BY SR
CHECKED BY DZ

Drilling Method	Ground water	Elevation (m)	Depth (m)	Graphic Log	USCS	Samples	Material Description	Moisture	Rel. Density/ Consistency	Hand Penetrometer Readings (kPa)	Additional Observations
	DRY ON COMPLETION	-0.2	0.2		CH		TOPSOIL. gravelly CLAY, low to medium plastic, brown.	W<PL	VSt		Alluvial
							CLAY: medium to high plastic, brown.				
		-0.4	0.4				as above, brown mottled red.				
		-0.6	0.6								
		-0.8	0.8				as above, brown.				
		-1	1								
		-1.2	1.2								
		-1.4	1.4								
		-1.6	1.6								
		-1.8	1.8						H		
		-2	2								
		-2.2	2.2								
		-2.4	2.4								
		-2.6	2.6								
		-2.8	2.8								
		-3	3								
		-3.2	3.2								
		-3.4	3.4								
		-3.6	3.6								
		-3.8	3.8								
		-4	4				Borehole terminated at 4.0 m.				