Date: 11 November 2021
Ref: 33691YJ Site Report 1

Site Report

Watershed Building Group
68 Delmar Parade
Sydney NSW 2099

Attention: David Hawkes
Email: david@watershedbuildinggroup.com.au

GEOTECHNICAL PILE INSPECTION
PROPOSED RESIDENTIAL DEVELOPMENT
13 MONASH CRESCENT, CLONTARF, NSW

As requested, our Senior Geotechnical Engineer, Mr Baki Abdul, visited the above site on 9 October 2021 to witness the drilling of five continuous flight auger (CFA) piles. This site report confirms our discussions on site with David Hawkes of Watershed Building Group and should be read in conjunction with our geotechnical investigation report, Ref: 33691YJrpt, dated 2 February 2021.

We have made reference to the following information provided including phone and email correspondence:

1. Structural engineering drawings prepared by Partridge Structural Pty Ltd (Partridge, Ref: Job No. 2020S0081, Drawing Nos. S2.1, Revision C, dated 15 October 2021; S2.2, Revision A, dated 30 August 2021; and, SK03, Revision A, dated 3 November 2021).
2. Phone correspondence with Rhys Flory of Partridge on 5 November 2021.
3. Email from David Hawkes on 10 November 2021 with a cross section sketch of the spa.
4. Email from Peter Horton of Horton Coastal Engineering Pty Ltd to Rhys Flory of Partridge on 9 November 2021, and,
5. Email from Baki Abdul of JK Geotechnics to David Hakes of Watershed Building Group on 10 November 2021.

Based on the above we understand the following:

- Type P1(U) piles are 450mm diameter and have been designed to be founded on materials suitable for an allowable bearing pressure (ABP) of 700kPa. Piles are detailed to be 3.5m in length (Ref: Items 1 and 2 above).
- Type P2(U) piles are shown as 600 diameter but will be substituted for Type P1(U) piles (450mm diameter) and have been designed to be founded on materials suitable for an ABP of 700kPa. Piles are detailed to be 3.5m in length (Ref: Items 1 and 2 above).

- Type P3(U) piles are 300mm diameter and have been designed to be founded on materials suitable for an ABP of 400kPa. Piles are detailed to be 3.5m in length (Ref: Items 1 and 2 above).
- Four piles for the spa are understood to be 450mm diameter and have been designed for an ABP of 200kPa. We recommended that piles be drilled below the scour level of RL-0.8m and to a minimum depth of 3.5m, based on a surface level of RL2.5m, and founded in sand of medium density. Where this is the case, they may be designed for an ABP of 200kPa. It should be noted that the above ABP assumes that the seawall will be properly constructed and designed and will prevent the loss of any sand from behind the wall. If soil levels are raised the depth of drilling should be increased, i.e. if drilled from RL2.7m drill depth should be 3.7m (Ref: Items 3, 4 and 5).

JK Geotechnics witnessed the drilling of five Type P1(U) piles, nominated as Pile Nos. 1 to 5, that were drilled using a 6-tonne CFA piling rig operated by A Class Piling & Drilling Pty Ltd. These piles are shown in the attached Sketch 1, which used the Partridge drawing as a base plan. David Hawkes of Watershed Building Group provided the approximate surface level of where the piles were drilled.

We referred to the nearby borehole and dynamic cone penetration (DCP) test information to assist in the assessment of the inferred depth to the medium dense sand unit. We also carried out an additional DCP test at the rear yard in the vicinity of the proposed spa area. At the inspected pile locations, the subsurface soils generally comprised sandy fill to a maximum depth of about 0.6m that then overlay natural sands.

The following table provides a summary of the pile drilling observed by JK Geotechnics:

Pile No.	Pile Diameter (m)	Approximate Surface Level (RL mAHD)	Drill Depth from Surface (m)	Approximate Pile Toe Level (RL mAHD)
1	0.45	2.7	3.80	-1.10
2	0.45	2.7	3.86	-1.16
3	0.45	2.7	3.84	-1.14
4	0.45	2.7	3.60	-0.90
5	0.45	2.7	3.63	-0.93

From reference to the boreholes and DCP tests carried out in our previous geotechnical investigation, tactile examination of the materials recovered during drilling and pile depths achieved, it is our opinion that the piles reported in the table above and drilled in our presence are likely founded on materials suitable for the design ABP of 700kPa. This assessment is made on the basis that the proposed seawall will be properly engineered and constructed and will prevent the loss of sand from the site. If this is not the case and there is the potential that sand will be lost from around the piles thus reducing their embedment depth, the above piles will not be suitable for an ABP of 700kPa. On the assumption that a seawall will be installed that will prevent the loss of sand, the remaining piles should be drilled to similar depths and founded on at least medium dense sand.

As discussed on site we recommend that you discuss the geotechnical inspections required by the certifier. We recommend the following, as set out in our geotechnical report:

- Inspection of all footings or piling drilling/final depths to confirm that the design ABP's have been achieved.
- Proof roll of subgrade prior to the placement of engineered fill and slabs on grade.
- Density testing of all fill placed as engineered fill

Proposed Seawall

We understand a new seawall will be constructed behind the existing seawall at the rear property (south-western boundary). The existing wall will then be removed and a new facing may be installed. It is understood that advice has been sought from a coastal engineer indicating that scour during storms may extend to RL-0.8m. In this regard it is understood that it is proposed to construct a new contiguous pile seawall that will be designed to perform satisfactorily in the event that the soil in front of the wall is scoured to a depth of RL-0.8m. Where this is the case, the toe reduced levels for the piles discussed above are suitable for the design ABP's. However, should the constructed seawall not prevent the loss of material from behind it the above pile toe reduced levels are not suitable and the piles will need to be deepened.

It is understood that it is proposed to install a contiguous pile wall. To prevent the loss of sand from between the piles it is proposed to dry pack the gap between the piles to prevent the loss of sand from behind the wall. However, to prevent this occurring during a storm period the gaps will need to be filled to RL-0.8m. This will be below the groundwater table and will be difficult to achieve practically and will also likely result in the loss of material from behind the wall as the sand will flow out from between the piles with the water. Consequently, we do not recommend that a contiguous pile wall be used. We recommend that either of the following approaches be adopted:

- a secant pile wall, or
- a contiguous pile wall with jet grouting completed behind the wall to fill the gaps between the piles.

A specialist contractor should be contacted for specific advice on these options.

It is understood that the seawall is only proposed to be constructed along the south-western site boundary. However, it should be noted that should the seawalls on the adjoining property fail during a storm event that sand will be lost from behind the wall. In this regard further advice should be sought from the coastal engineer on whether the new sea wall should not just extend along the south-western boundary but also the north-western and south-eastern boundaries. Advice should also be sought on the distance back from the south-western boundary that these walls extend.

For the design of the seawall the parameters provided in the table below may be adopted. As the wall will be designed to prevent water penetrating it, it should be designed to resist full hydrostatic pressures.

Shoring Wall Design Parameters				
Material Type (1)	**Dry/Wet Unit Weight (kN/m^3)**	**Effective Friction Angle (degrees)**	**Effective cohesion (kPa)**	**Elastic Modulus (MPa)**
Sand, including fill (Very Loose to Loose)	17/19	28	0	8
Sand (Medium Dense, including thin Layer of Dense)	18/20	33	0	30

(1) An assessment of the depths of the soil material types relative densities is presented in Section 3.2 of the JK Geotechnics report (Ref: 33691YJrpt, dated 2 February 2021).

Should you require any further information regarding the above, please do not hesitate to contact the undersigned.

Regards
For and on behalf of
JK GEOTECHNICS

Baki Abdul
Senior Geotechnical Engineer

Reviewed By

Jarett Mones
Associate | Geotechnical Engineer

Woodie Theunissen
Principal Associate | Geotechnical Engineer

Encl: Sketch 1: Pile Inspection Plan

Sketch 1: Pile Inspection Plan

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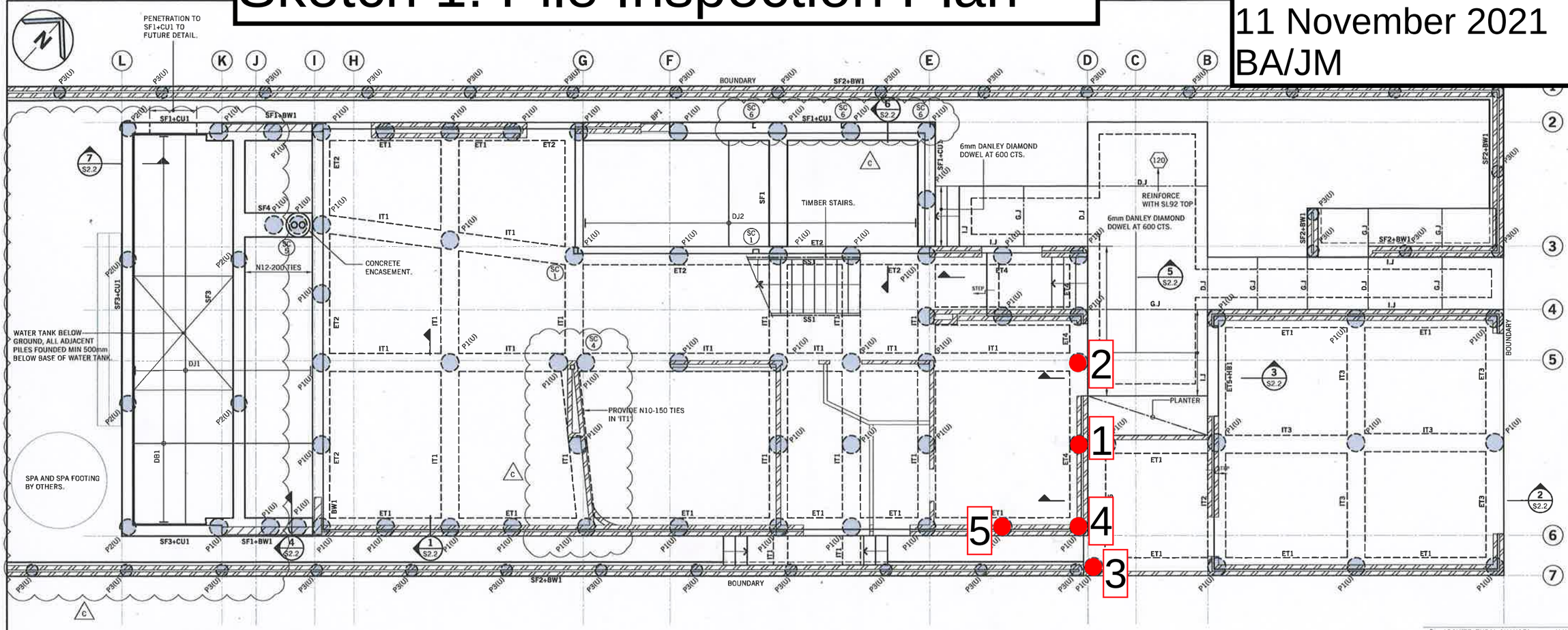
BA/JM



GROUND FLOOR & GARAGE SLAB PLAN

SCALE 1:50

170 THICK SLABS U.N.O.

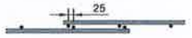
REINFORCE ALL SLABS WITH **SL102** IN TOP & BOTTOM THROUGHOUT, UNLESS NOTED OTHERWISE, WITH EXTRA REINFORCEMENT TRIMMERS AS NOTED ON PLAN.

THESE SLABS AND FOOTINGS HAVE BEEN DESIGNED TO CLASS **A** SITE CLASSIFICATION IN ACCORDANCE WITH AS2870 - RESIDENTIAL SLABS AND FOOTINGS CODE FOR **ARTICULATED FULL MASONRY** CONSTRUCTION. SITE CLASSIFICATION TO BE CONFIRMED BY THE BUILDER'S GEOTECHNICAL ENGINEER.

THESE SLABS HAVE BEEN DESIGNED TO RECEIVE A TOPPING SLAB OF 100mm MAXIMUM THICKNESS TO HYDRONIC HEATING MANUFACTURERS SPECIFICATION.

RESIDENTIAL SLAB ON GROUND NOTES

1. CAST ALL SLABS ON A "CROMFORD" 0.2 THICK HIGH-IMPACT RESISTANT POLYETHYLENE FILM DAMP PROOF MEMBRANE, OR APPROVED EQUIVALENT, OVER 20 MINIMUM; 50 MAXIMUM SAND COMPACTED BY WETTING.
2. REFER TO NOTE M9 FOR DETAILS AND SPACING OF WALL JOINTS IN MASONRY WALLS.
3. REINFORCE ALL SLABS AS NOTED ON PLAN.



FABRIC LAP DIAGRAM

RESIDENTIAL GROUND PREPARATION:

1. REMOVE ALL TOPSOIL AND ORGANIC MATERIAL. IF SOFT AND/OR WET CONDITIONS ARE ENCOUNTERED THE SUBGRADE IS TO BE INSPECTED BY THE SUPERVISING ENGINEER AND HIS WRITTEN INSTRUCTIONS RECEIVED PRIOR TO PROCEEDING.
2. DIG OUT ANY SOFT SPOTS AND REPLACE WITH FILL.
3. PROVIDE "CONTROLLED FILL" OR "ROLLED FILL" COMPACTED IN ACCORDANCE WITH AS2870, PART 6.4.2.

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

CONTACT ALL SERVICES ASSET OWNERS, COMPLY WITH THEIR REQUIREMENTS.

NOTE:
1. AS PER SECTION 5.1 OF THE GEOTECHNICAL REPORT, VIBRATING MONITORING SHOULD, AS A MINIMUM BE UNDERTAKEN AT THE COMMENCEMENT OF DEMOLITION AND DURING INITIAL TRACKING OF PLANT/EQUIPMENT TO CONFIRM THAT POTENTIALLY DAMAGING TRANSMITTED VIBRATIONS ARE NOT OCCURRING.
2. SUBGRADE PREPARATION FOR ALL EXTERNAL PAVING SLABS ON GROUND TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH SECTION S5.3 OF THE GEOTECHNICAL REPORT.

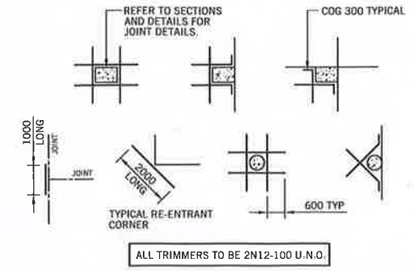
LEGEND

- (170) — DENOTES SLAB THICKNESS
- (SC 1) — DENOTES COLUMN/POST STARTS OVER REFER MEMBER SCHEDULE
- — DENOTES BRICK WALLS OVER
- P1(U) — DENOTES 450 DIA. REINFORCED CONCRETE PIER UNDER MINIMUM 3500 DEEP
- P2(U) — DENOTES 400 DIA. REINFORCED CONCRETE PIER UNDER
- P3(U) — DENOTES 300 DIA. REINFORCED CONCRETE PIER UNDER
- BW1 — DENOTES 190 WIDE REINFORCED CONCRETE BLOCK WALLS ALL CORES FILLED.
- BP1 — DENOTES MIN. 790 x 190 REINFORCED BLOCK PIER, ALL CORES FILLED.
- G.J, D.J, I.J — DENOTES CONCRETE JOINTS, REFER TO DWG S2.3 FOR DETAILS.

MEMBER SCHEDULE

MARK	DESCRIPTION	SIZE
SC1	STEEL COLUMN	150 x 100 x 8 RHS
SC4	STEEL COLUMN	100 x 9 SHS
SC5	STEEL COLUMN	2/152.4 x 6 CHS HOT DIP GALVANISED
SC6	STEEL COLUMN	125 PFC HOT DIP GALVANISED
DB1	DECK BEARER	2/240 x 45 MGP12 AT 1200 CTS, H4 TREATED
DJ1	DECK JOIST	90 x 45 MGP10 AT 300 CTS, H4 TREATED
DJ2	DECK JOIST	140 x 45 MGP10 AT 300 CTS, H4 TREATED
SS1	STAIR STRINGER	230 DEEP x 12 THICK PLATE
WP1	WALL PLATE	SAME SIZE AS DECK BEARER, FIX TO SLAB WITH M12-600 CHEMICAL ANCHORS, 100 EMBEDMENT
S.T.P.	— DENOTES SEASONED TREATED PINE	
MGP	— DENOTES MACHINE GRADED SEASONED PINE	

NOTE:
REFER TO STEEL NOTES DWG S1.2 FOR FABRICATION REQUIREMENTS AND SURFACE TREATMENT U.N.O.



ALL TRIMMERS TO BE 2N12-100 U.N.O.

TYPICAL SLAB ON GROUND TRIMMER DETAILS

SCALE 1:100

AT ALL COLUMNS, WALLS, PITS, FLOOR WASTES, ETC THAT CAUSE A PENETRATION THROUGH THE SLAB.

Rev.	Issue / Amendment	By	App.	Date
C	ARCHITECTURAL CHANGES	V.K	R.F	15.1021
B	ARCHITECTURAL CHANGES	V.K	R.F	30.09.21
A	FOR CONSTRUCTION	V.K	S.D	30.08.21
P2	PRELIMINARY	V.K	R.F	15.08.21
P1	PRELIMINARY	V.K	R.F	10.08.20

PARTRIDGE

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Client
MR ANTHONY BROOKS

Architect
JIM BUDA ARCHITECTS
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Project
NEW RESIDENCE
13 MONASH CRESCENT
CLONTARF

Title
GROUND FLOOR LEVEL SLABS & FOOTINGS PLAN

ELECTRONIC SIGNATURE: THIS DRAWING HAS BEEN ASSIGNED AN ELECTRONIC SIGNATURE CODE. THE PRESENCE OF THIS CODE INDICATES THAT THIS IS THE CERTIFIED DRAWING ISSUED FOR CONSTRUCTION.

DO NOT SCALE DRAWINGS USE FIGURED DIMENSIONS

Electronic Code	Signature Date	Designed
-		R.F
Scale at A1	Date	Drawn
1:100, 1:50, 1:10	JULY 2020	V.K
Job No.	Drawing No.	Revision
2020S0081	S2.1	C

APPROVED FOR CONSTRUCTION