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TITLE:	SITE INVESTIGATION.
SITE:	NETBALL CHANGE ROOMS DIMBOOLA RECREATION RESERVE DIMBOOLA.
JOB No:	6061SI.
DATE:	7 JUNE 2017.
CLIENT:	ATT: PHIL KING HINDMARSH SHIRE COUNCIL PO BOX 250 NHILL 3418
EMAIL:	pking@hindmarsh.vic.gov.au
PROPOSED STRUCTURE:	NETBALL CHANGEROOMS.

INDEX:

THIS SITE INVESTIGATION REPORT WAS PREPARED UNDER THE DIRECTION OF
LEIGH DAVIES, MIEAust, CPEng. NER
BUILDING PRACTITIONERS REGISTRATION No EC-1128.

SITE INVESTIGATION REPORT

SITE INVESTIGATION

Investigation work was carried out on this property in order to determine the site classification for proposed netball change rooms.

A hand auger was used to take samples from thee boreholes at locations selected to give a representative indication of the insitu soils over the proposed site. Two sets of Dynamic Cone Penetrometer (DCP) readings were also taken to indicate soil strength and soil moisture variations.

Borehole BH1 and the Dynamic Cone Penetrometer readings for DC1were located near the western most corner of the site. Borehole BH3 and the Dynamic Cone Penetrometer readings for DC2were located near the eastern most corner of the site. BH2 was located near the centre of the site.

SITE ASSESSMENT

The soil samples showed the site contains mainly silty sand for the full depth samples to 2250 mm deep.
No ground water or rock was found in the boreholes.

While many trees are located in close proximity to the proposed building the low reactivity of the site indicates they should not cause any significant problems for the proposed building

SOIL BEARING CAPACITY

As the site was found to contain deep sand deposits two Dynamic Cone Penetrometer (DCP) tests were carried out to give an indication of the sand density conditions with depth to assess compliance with AS 2870.

For the sandy soils, the average penetrations per blow readings have been used to give an indication of the relative density of the soil with depth. These values are shown on the attached DCP result sheets. The table below summarizes the layers of different density descriptions.

mm/ Blow	**Bearing Capacity (kPa)**	**Description**	**DC1**	**DC2**
			Depth in mm	
20-42	-	Medium Dense Sand	140	140
10-20	-	Dense Sand	500	300
43-70	-	Loose Sand	960	-
20-42	-	Medium Dense Sand	1180	1200
10-20	-	Dense Sand	2000	2590
<10	-	Very Dense Sand	-	3000

Readings in the deep sand are probably mainly due to variables of soil density rather than soil moisture or material type differences.

While readings below 1500 mm deep are probably quite reliable in the long term, readings above this elevation should be used with some caution as bearing capacities can vary significantly due to seasonal influences. Bearing capacity values appearing after a prolonged dry period may be substantially different after a lengthy wet period. These readings were taken following 13 years of exceptionally dry seasonal conditions prior to 2010, a very wet 2010/2011 summer, a very dry 2012/13 winter/spring/summer, very dry 2014 and 2015 winters and a wet 2016 winter and may not reflect the worst possible site conditions.

For deep sand sites a major consideration should be the guidelines given in clause 6.4.2(a) of AS 2870 which states under the heading for Controlled fill, "For sand fill not containing gravel sized material a blow count of 7 or more per 0.3 m using the penetrometer test described in AS 1289.6.3.3 is deemed to satisfy this requirement. While this clause refers to fill, it is logical that the same criteria should also apply to non-filled sites as many deep sand sites do not meet these requirements. This is equivalent to readings of less than 43 mm/blow on the Dynamic Cone Penetrometer result sheets that occur between depths of 500 and 960 mm in the above readings. Therefore these loose readings have some potential for significant settlement and are below acceptable standards.

CHARACTERISTIC SURFACE MOVEMENT

The Australian Code AS 2870 (designated as the deemed-to-satisfy footing code for Class 1 and 10a buildings in the Building Code of Australia 1990) classifies soils as A, S, M, H or E sites based on the value of Characteristic Surface Movement (Ys) for the site.

The borehole samples were analysed and an estimate made of the characteristic surface movement using $Ys = Ipt \times \Delta pf \times \Delta H$. The suction profile adopted was based on the requirements of clause 2.2.3 of AS 2870 - RESIDENTIAL SLABS AND FOOTINGS code.

SITE CLASSIFICATION

A detailed description of the soil profiles is given in the soil bore logs which are attached to this report. The characteristic surface movement (Ys) for this site is 15 mm.

BASED ON THE Ys VALUE OF 15 mm AND THE CLIMATIC ZONE DESIGNATED FOR THIS AREA THIS SITE WOULD NORMALLY BE CLASSIFIED AS CLASS "S" (SLIGHTLY REACTIVE) IN ACCORDANCE WITH CLAUSE 2.1.2 OF AS 2870. HOWEVER AS THE SITE CONTAINS A SIGNIFICANT DEPTH OF LOOSE SANDY SOIL WHICH HAS THE POTENTIAL TO SETTLE WHEN LOADED THE SITE HAS BEEN CLASSIFIED A CLASS "P" (PROBLEM SITE) IN ACCORDANCE WITH CLAUSE 2.1.3 OF AS 2870.

NB: The extent of this site investigation was determined from what has been found to be adequate on other similar sites and structures. The comments given in this report are based on the information obtained from the work described above. However it should be pointed out that the subsurface conditions on some sites vary significantly and that these variations may not be uncovered in the normal extent of investigations. If this information is not known then no responsibility can be taken for any situation that may arise as a consequence of these unknown conditions.

If excavation works uncover significantly different or unusual ground conditions (loose or wet soils or soils of a different colour or texture to those described in the soil bore log report) then this office should be contacted immediately. This will possibly involve additional investigation at the client's expense.

If anyone involved with this project have any reason to believe that the extent of the investigation may not have sufficiently covered potential variations or specific problems for this site, a more comprehensive investigation should be carried out prior to site work commencing to minimize the possibility of disruptions during construction.

ATTACHMENT 1

SOIL BORE LOG

LOCATION: NETBALL CHANGE ROOMS
DIMBOOLA RECREATIONS RESERVE
DIMBOOLA.

DATE TAKEN: 4 JUNE 2017.

SAMPLING METHOD: HAND AUGER.

GROUND WATER: NOT ENCOUNTERED.

GENERAL DESCRIPTION: MAINLY VERY SILTY SAND.

HOLE 1	HOLE 2	HOLE 3	SOIL DESCRIPTION	USC	Ipt	VISUAL ASSESSMENT	
						MOISTURE	STRENGTH
0000-0400	0000-0150	0000-0050	DARK BROWN TO DARK GREY/ CLAYEY SILTY SAND	SC	0.010	MOIST	DENSE
-	-	0050-0600	DARK GREY/BROWN VERY CLAYEY SILTY SAND	SC	0.015	MOIST	DENSE
-	0150-0600	-	DARK GREY/BROWN MOTTLED LIGHT BROWN SILTY SAND	SM	0.005	MOIST	DENSE
0400-1200	-	0600-1500	LIGHT BROWN VERY SILTY SAND	SM	0.005	MOIST	DENSE
1200-1500	0600-2250	-	GREY/BROWN VERY SILTY SAND	SM	0.005	MOIST	DENSE