GeoEnviro Consultancy Pty Ltd
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3rd September 2008

JC03029A-r3

Tiffany Developments
C/- JMD Development Consultants
PO Box 25
CAMPBELLTOWN NSW 2560

Attention: Mr Terry Hams

Dear Sir,

Re Oxford Falls Retirement Resort
Oxford Falls Road, Barnes Road and Wearden Road, Oxford Falls
Geotechnical and Contamination Review

As requested, we have reviewed the revised layout of the proposed development. GeoEnviro Consultancy Pty Ltd has prepared the following documents in relation to the site;

Reference	Date	Title
JC03029A	January 2004	Preliminary Contamination and Geotechnical Assessment
JG03029A-L6	23rd September 2004	Stability Assessment-
JG03029A-r2	13th September 2006	Site Contamination Remediation and Ground Subsidence Issue

We understand from our review of the drawings the following;

- The proposed buildings will be situated away from the steep colluvial slopes.
- The design level of the building platform will be at about RL 85m
- The proposed buildings will be of 2 to 4 storeys construction with a single level basement

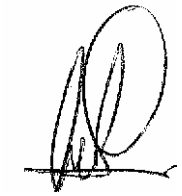
Based on our review of documents, we are of the opinion that our comments and recommendations on geotechnical and contamination issues are considered valid for the revised layout.

We note that our previous reports have highlighted groundwater constraints on future development particularly in areas within close proximity to Channel Creek. Basement construction in the presence of groundwater would need to consider the following;

- Construction of an appropriate shoring system such as contiguous pile wall or secant pile wall system.
- The need for dewatering during basement construction and potential impact of ground subsidence on surrounding areas. The impacts may be reduced by piling all buildings to bedrock and carefully staging the development to reduce sensitivity of the surrounding areas to ground subsidence.
- Water proofing of the basements

Should you have any queries, please contact the undersigned.

Yours faithfully
GeoEnviro Consultancy Pty Ltd



Solern Liew CPEng
Director

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13th September 2006

JC03029A-r2

Tiffany Developments
C/- JMD Development Consultants
PO Box 25
CAMPBELLTOWN NSW 2560

Attention: Mr Terry Hams

Dear Sir,

Re Oxford Falls Retirement Resort
Oxford Falls Road, Barnes Road and Wearden Road, Oxford Falls
Site Contamination Remediation and Ground Subsidence Issues

As required by The Department of Planning, this letter presents our comments on site contamination remediation and ground subsidence issues pertaining to the site in respect of the above proposed development. Our comments are based on available information obtained from our Preliminary Contamination and Geotechnical Assessment report (Ref JC03029A dated January 2004).

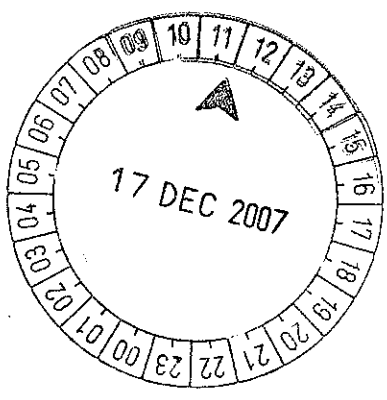
1.0 Background Information

1.1 Site Locality

The site is situated in the area bounded by Oxford Fall Road, Wearden Road and Barnes Road and comprises of 7 semi-rural residential blocks as follows;

Lot No	DP No
1108	752038
1110	752038
20	842523
1111	752038
80	846099
1113	752038
1336	752038

Total site area is about 40 acres. Refer to the attached Drawing No 1 for locality plan



1.2 Topography and Geology

The site is situated on the upper catchment area of Middle Creek which flows to the Narrabeen Lakes.

The site topography and landscape may be divided into three areas as follows;

- Crest of the sandstone ridge on the south western portion of the site with ground surface reduced level (RL) typically ranging from about 92m to 114m. The overburden soil on this portion of the site belongs to the Hawkesbury Soil Landscape of colluvial origin. Typical soil consists of earthy sand, yellow earths and some yellow podzolic soil on inside of sandstone benches and along joints and fractures.
- Toe of the sandstone hill with ground surface RL typically ranging from about 84 to 92m. The overburden soil on this portion of the site belongs to the Lambert Soil Landscape of erosional origin. Typical soil consists of earthy sand and yellow earths on the crest and leached sands, grey earths and gleyed podzolic soil in poorly drained areas
- Creek area which runs along the eastern site boundary with ground surface RL typically ranging from about 78 to 86m. The soil in this portion of the site belongs to the Oxford Falls Soil Landscape of fluvial origin. Typical soil consists of earthy sand, yellow earths and siliceous Sands on the slopes and leached sands and grey earths on the valley floors.

The underlying bedrock of the site consists of Hawkesbury Sandstone typically consisting of medium to coarse grained quartz sandstone. Some shale outcrops are present along the ridges.

The site has been predominantly cleared of trees and bushes and consists of open grassland. Forested areas and dense trees exist on the sandstone hillslopes on the south western portion of the site and along the creek on the eastern portion of the site.

1.3 Site Conditions

The site conditions during our previous investigation are as shown on the attached Drawing No 1.

The following is a summary of site features and history;

Lot 1108 in DP 752038

This lot consist of a large house with a few small buildings/sheds nearby. The remaining portion of the site consists of vacant land. This lot is currently being used for residential. Sandstone outcrops and small rock ledges were noted on the ground surface along the south eastern portion of the lot.

The aerial photographs indicate this lot to have been cleared of vegetation since 1961. There were a number of buildings and small sheds and these structures were possibly associated with agricultural activities. By 1978, the majority of the structures were removed from the lot.

The 1994 photograph indicates the site conditions to be similar to current.

Lot 1110 in DP 752038

This lot is currently being occupied by the Australian Tennis Academy and the Falls Function rooms. A channel transects the eastern portion of the site. The major portion of the lot on the western side of the channel is occupied by tennis courts. The function centre occupies the front portion of the site with a large bitumen car park.

The 1961 photograph indicates a large building existed on the western portion of the lot with a number of small buildings located close by. There was another small building at the front of the property with a track leading to the large building. Thick vegetation canopied the creek.

The large building appeared to have been demolished in 1978 and the major portion of the lot was bare of vegetation.

The 1986 photograph indicates the academy and function rooms to have been established since then.

Lot 20 in DP 842523

There is a residential dwelling at the north western corner of the lot with a track leading to two sheds on the eastern side of the lot. At the time of the previous investigation, there was a number of building material and miscellaneous items stored alongside the track including some piles of rubbish. The remaining portion of the site consisted of undeveloped land with a lot of trees and bushes.

Based on the aerial photographs taken in 1961, 1970, 1978 and 1986, this lot consisted of bushland. The southern portion of the site was cleared and the track leading to the existing dwelling was formed since 1994.

Lot 111 in DP 752038

There is a large residential dwelling with a tennis court and pool on the western portion of the site. The remaining major portion of the lot consists of vacant cleared land with a well maintained lawn. Dense trees and bushes canopy the eastern portion of the lot including the creek.

Some minor orchard activities were noted on the western portion of the lot based on the 1951 aerial photograph. The track which currently exists was formed since 1951. At that time, there was a small house with two sheds at the end of the track, approximately where the existing house is located. The lot appeared to have been significantly cleared of vegetation since 1951 with the exception of the front eastern portion.

The 1961 photograph indicates a long building with a possible dam in the vicinity of the current tennis court and pool locations. This building and dam appeared to have been removed by 1970 and there appeared to have a significant scarring of the ground surface in this area. Some excavation and filling works may have occurred. The remaining portion of the lot was regenerated with trees and bushes.

The scarring of the ground surface was still evident in the 1978 photo. The small house appeared to have been demolished after 1994.

Lot 80 in DP 846099

This lot is being occupied by a house on the southern portion. Thick trees and bushes canopied the sandstone hill slopes in the middle of the lot and the remaining portion of the lot was cleared of trees.

Based on the aerial photographs taken in 1951, 1961, 1970 and 1978, this lot consisted of bushland. The 1986 photograph indicates the southern portion of the lot to be cleared of trees and bushes and was covered with grass.

The existing house was noted in the 1994 photograph.

Lot 1113 in DP 752038

The southern portion of the property is occupied by a large house with a tennis court and landscaped gardens. On the northern portion of the lot, at the toe of the sandstone hill slopes, there is a small dam with a house. A workshop building with an above ground fuel tank was erected to the south east of the house. This tank appeared to have been in used at the time of our previous investigation and hydrocarbon staining was evident around the tank. The remaining portion of the site consists of vacant land with grass cover.

The 1951 photograph indicates the northern portion of the lot to have been predominantly cleared of trees with a lot of small buildings scattered across the lot. There appeared to have significant amount activities including orchard activities on the northern portion of the lot. A shed was constructed in the vicinity of the current workshop building and a house further to the south.

Site activities appeared to have diminished in 1961. The house and a number of small sheds remained. The northern portion of the site was predominantly cleared of vegetation and bare ground was exposed.

Ground surface disturbance was noted on the north eastern portion of the lot. The buried fill with building rubble encountered in the previous investigation suggests previous excavation and landfilling activities had occurred.

The tennis court which currently exists on the southern portion of the lot was noted in the 1986 photograph. Some clearing of vegetation was noted in this area

Lot 1336 in DP 752038

There is a house at the north western portion of the lot with a dressage arena located to the east of the house. Two large sheds exist along the Oxford Falls Road frontage. The remaining portion of the site was fenced and used as horse paddocks.

The 1951 aerial photograph indicates this lot to be part of the adjoining southern property. Large buildings occupied the southern portion of the lot and these building were demolished and removed by 1961. This lot remained vacant with no specific landuse until 1978 where a horse track was formed at approximately in the middle of the lot.

The 1986 photograph indicates the site conditions to be similar to current.

1.4 Subsurface Conditions

The subsurface conditions of the site were assessed by excavation of 35 test pits (TP 1 to 35) across the site using a rubber tyred backhoe on 4th December 2003. The test pits locations are shown on the attached Drawing No 1. Details of the subsurface profiles encountered are outlined on the attached Table A.

The following is a summary of subsurface conditions encountered;

- Fill with varying quantities of building material (eg bricks, concrete, steel, etc) was encountered at the north eastern portion of Lot 1113. Depths of fill as indicated in TPs 12, 13, 14 and 15 vary from 0.6m to 2.0m. TP 8 and 9 which were excavated on the northern portion of Lot 1113 also encountered fill but without building rubble. Depths of fill in TP 8 and 9 were found to be about 0.8m and 1.4m respectively.
- Fill with some building material was also encountered on the southern portion of Lot 1113 to depths of about 1.2m in TP 6 and 0.8min TP 7.
- Fill containing building rubble was encountered in TP 31 and 33 which were located in Lot 20. Depths of fill in TP 31 and 33 were found to be about 1.8m and 0.6m respectively.
- Fill containing building rubble was encountered in TP 34 and 35 which were located on the southern portion of Lot 80. Depths of fill in TP 34 and 35 were found to be about 2.2m and 1.5m respectively.
- Relatively thick sandy and clayey soil profile was encountered along the creek on the eastern portion of the site as indicated in TP 1, 2, 19, 20 and 26. The soil profile was generally found to be moist to wet and relatively weak (ie very loose to loose for cohesionless soil and soft to stiff for cohesive soil). Sandstone bedrock was encountered in TP 1 and 2 at depths of about 2.3m and 2.8m respectively. TP 19, 20 and 26 which were excavated to depths varying from 2.2m to 2.9m did not encounter bedrock.
- Sandy soil overlying sandstone bedrock at relatively shallow depths of less than 1.5m generally occurs on the western and southern portion of the site, on the sandstone hill slopes and crests. Typical of sandstone hill slopes, there will be some localised deepening of sandstone bedrock caused by drops and benches of the sandstone formation. The sandy soil was generally found to be moist to wet and relatively weak.
- Groundwater was encountered in TP 1, 2, 20, 24, 28, 30, 34 and 35 at depths varying from 0.8m to 2.2m
- Information on subsurface profile in Lot 1110 is limited due to the built-up nature of the site with tennis courts, buildings and car parks.

2. Contamination Issues

2.1 Potential for Contamination

The following conclusions were made with respect to potential site contamination;

- There is some potential for contamination in the workshop and above ground fuel tank location within Lot 1113. Types of contamination exist may include hydrocarbon and heavy metals.
- There is a significant amount of fill with buried building rubble at the northern portion of Lot 1113. Fill with buried rubble was also encountered in other parts of the site (eg in Lot 80 and 20). Types of contamination exists can be variable depending on the source of the fill material and it may include heavy metals, pesticides and asbestos.
- There was a significant amount site activities on Lot 1336 in 1951 where the major portion of the site was occupied with buildings. The exact nature of landuse could not be determined in the previous investigation, however previous site activities involving agricultural or manufacturing has the potential to cause contamination.
- There appeared to have previous agricultural activities on Lot 1108 and contamination associated with pesticides and heavy metals may have occurred.
- Contamination may exist in the vicinity of the existing building areas caused by human activities. Types of contamination exist may include hydrocarbon and heavy metals.

Note that the above comments were based on observation of site indicators, review of site history and limited subsurface investigation. No chemical analysis was carried out to validate the assessment.

2.2 Contamination Remediation

The following are comments on contamination remediation works commonly adopted to clean up the site;

Hydrocarbon Contaminated Areas

The remediation works may involve the following;

- All hydrocarbon contaminated soil should be excavated and stockpiled at one corner of the site.
- Sampling and laboratory testing should be carried out on the excavated surface to ensure that all hydrocarbon contaminated soil has been removed from the affected area.
- The hydrocarbon contaminated stockpile should be bioremediated on-site by spreading over a designated area to a thickness of not greater than 0.5m and periodically tilled. Nutrients containing nitrogen, phosphorous and potassium may be added to promote bioremediation process.

- The progress of bioremediation should be monitored based on visual observations, odour and laboratory analysis.
- Clean soil after bioremediation may be reused on site as backfill material.
- In the event where 'Clean soil' could not be achieved, the contaminated soil should be disposed to a Department of Environment and Conservation (DEC) approved landfill.

Buried Rubbish and Contaminated Fill Areas

The remediation works may involve the following;

- Buried fill containing a significant amount of building material including bonded asbestos pieces should be disposed to a DEC approved landfill as "Solid Waste" in accordance with Workcover requirements.
- Buried fill containing pockets or traces of building material and rubbish may be screened to isolate building material, household rubbish and miscellaneous inclusion from the earthfill. A bucket screen attached to an excavator or a purpose-built "Power Screen" may be used to screen the fill containing building rubble and/or rubbish. If bonded asbestos material is present in the fill mass, this material should be manually isolated and appropriately disposed to an EPA approved landfill in accordance with Workcover requirements.
- If the screened fill is to be reused on site, laboratory analysis should be carried out to ensure the concentrations of contaminants of concern are within the relevant site criteria.

Heavy Metal and Pesticides Contaminated Areas

The remediation works may involve the following;

- All Heavy Metal and pesticides contaminated soil on the ground surface should be excavated.
- Sampling and laboratory testing should be carried out on the excavated surface to ensure that the affected soil has been removed.
- The Heavy metal and pesticides contaminated stockpile should be disposed to a DEC approved landfill. Soil characterisation based on the DEC guidelines will be necessary prior to landfill disposal.

3. Ground Subsidence Issues

3.1 Potential for Ground Subsidence

The following conclusions were made with respect to ground subsidence and instability;

- The site inspection and mapping did not reveal signs of major natural earth movements or landslip on the upper sloping ground, apart from surficial soil erosion and scouring.
- The site was found to be generally poorly drained particularly on the lower slopes of the sandstone hill and in the vicinity of the creek. The presence of groundwater, soft soil and soft organic clays in various parts of the site as encountered in the test pit investigation are constraints to the proposed development and this may be managed by implementation of appropriate geotechnical measures.

3.2 Geotechnical Measures

The following are general comments on geotechnical input commonly adopted to develop the site;

- Some major upgrading of drainage works in order to improve site drainage will be required.
- Fill construction for building platforms and pavements typically include stripping of all topsoil and organic material, excavation of all uncontrolled fill and soft ground, proof rolling of the exposed surface with roller and compaction of fill in layers not exceeding 250mm loose thickness and compacted to a minimum 95% of Standard Maximum Dry Density at ±2% of Optimum Moisture Content.

  Appropriate batter slopes for excavations as follows may be adopted;

Material	Recommended Batter
Alluvial Soil	5 Horizontal : 1 Vertical
Compacted Fill	2.5 Horizontal : 1 Vertical
Residual clay	2 Horizontal : 1 Vertical
Weathered Bedrock	0.5 Horizontal : 1 Vertical

- Excavation requiring retaining walls should be kept under 0.9m if possible. Deeper excavations in excess of 0.9m requiring retaining walls should be properly designed by a qualified engineer.
- The site roadworks should be planned to reduce cutting and filling to the absolute minimum and the earthworks undertaken in stages to alleviate erosion and localised instability problem. To minimise the effects of erosion, all road batters, whether in cut or fill should be stabilised by planting (or the application of a sprayed-on mulch) with appropriate species of vegetation as soon as practical after construction.
- Building footings should be supported on "engineered fill", competent natural soil or sandstone bedrock depending on the required bearing capacities. On sloping sites, footings socketed into competent bedrock are recommended.

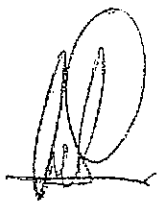
4.0 Conclusion

We understand that the proposed development will include a retirement resort and associated facilities.

The subject site has a number of contamination and ground subsidence issues which need to be addressed. Subject to good environmental and engineering practices mentioned above, we are of the opinion that the subject site is suitable for the proposed development.

Should you have any queries, please contact the undersigned.

Yours faithfully
GeoEnviro Consultancy Pty Ltd



Solern Liew CPEng
Director

Attachment: Drawing No 1: Site Locality and Test Pit Location
Table A: Summary of Test Pit Profile

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GeoEnviro Consultancy

Drawn By:	SL	Date : 15/1/04	
Checked By:	SL	Date :15/1/04	
Revision By:		Date:	
Scale:	1:200	A3	

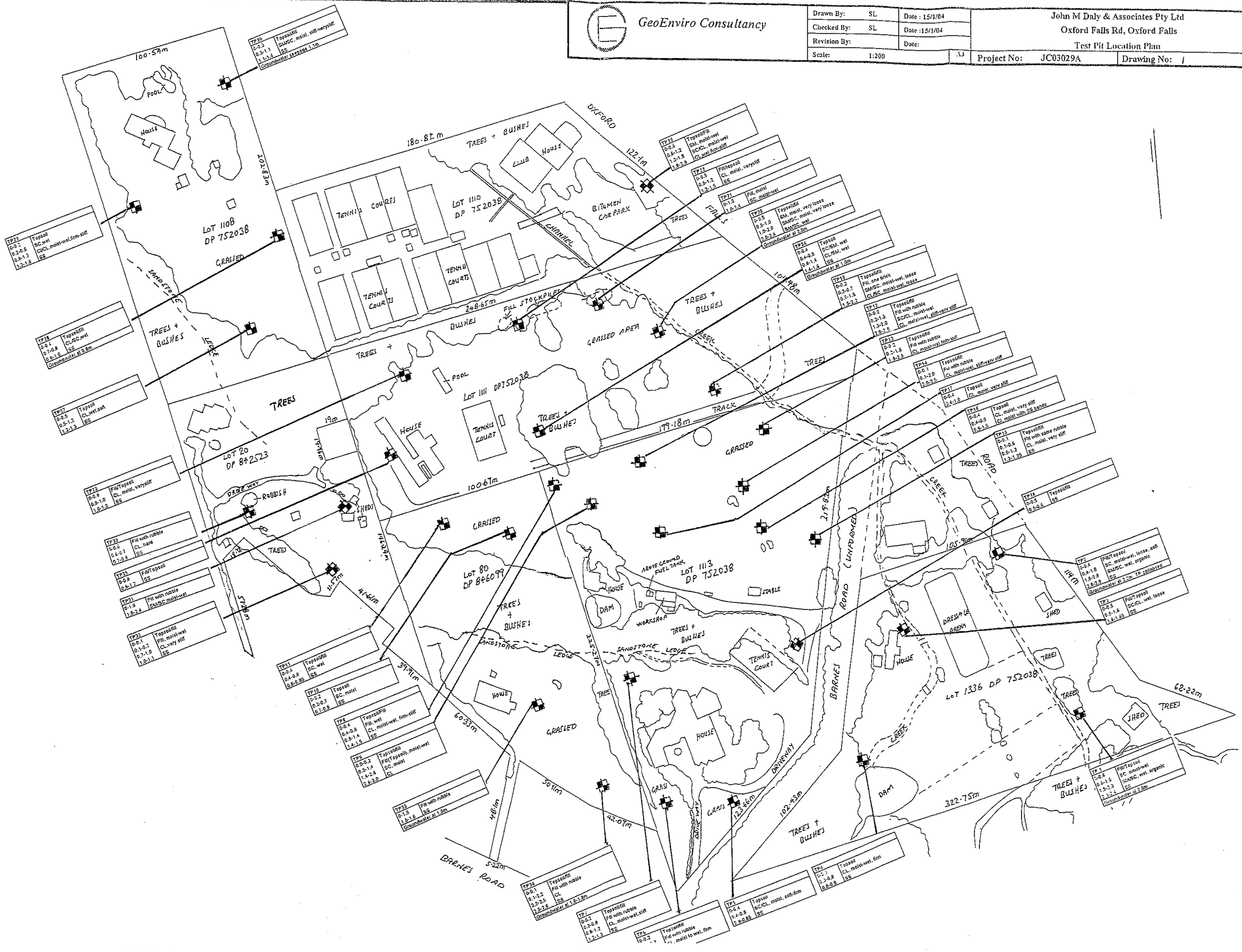
John M Daly & Associates Pty Ltd

Oxford Falls Rd, Oxford Falls

Test Pit Location Plan

Project No: JC03029A

Drawing No: 1



GeoEnviro Consultancy Pty Ltd

Table A : Summary of Test Pit Profile

CLIENT: John Daly & Associates Pty
PROJECT: Proposed Retirement Resort
LOCATION: Lots 1110, 1336, 1108, 1113, 80,1111 and 20 Oxford Fall Road, Oxford Fall

Job Number: JC03029A
Logged By: LM
Checked By: SL
Date: 04-Dec-2003

Test Pit Number	Test Location	Depth (m) From	Depth (m) To	Material Description
1	Refer to Drawing No 1	0.0	0.60	Fill/Topsoil: Clayey Silty Sand and Sandy Clay with some gravel, grey brown, moist to wet
		0.60	1.50	(SC) Sandy Clay/Clayey Sand: medium plasticity, fine to medium grained, brown and yellow brown with some gravel, moist to wet
		1.50	2.30	(SM/SC) Silty Sand/Clayey Sand: fine to medium grained, dark grey and brown with organic odour, wet
		2.30	2.40	Sandstone: distinctly weathered, low strength, brown
				Backhoe Refusal at 2.4m. Groundwater seepage at 2.0m
2		0.0	0.40	Topsoil/Fill: Clayey Silty Sand with some gravel, brown, wet
		0.40	1.80	(SC) Clayey Sand: fine to medium grained with some silt and gravel, yellow brown and grey, moist to wet, loose
		1.80	2.80	(SM/SC) Silty Sand/Clayey Sand: fine to medium grained, dark grey and brown with organic odour, wet
		2.80	2.90	Sandstone: distinctly weathered, low strength, brown
				Backhoe Refusal at 2.9m. Groundwater seepage at 2.2m, Test pit collapsed
3		0.0	0.50	Topsoil/Fill: Clayey Silty Sand, with some gravel
		0.50	1.60	(SC/Cl) Sandy Clay/Clayey Sand: fine to medium grained, medium plasticity yellow brown, wet, loose
		1.60	1.65	Sandstone: distinctly weathered, very low strength
				Backhoe Refusal at 1.65m
4		0.0	0.30	Topsoil: Clayey Silty Sand, fine to medium grained, dark brown, wet
		0.30	0.80	(CL) Sandy Clay: medium plasticity, yellow brown, with some gravel, MC>PL firm , PP 40 to 100kPa
		0.80	0.90	Sandstone: distinctly weathered, very low strength
				Backhoe Refusal at 1.65m
5		0.0	0.40	Topsoil: Clayey Silty Sand, fine to medium grained, dark brown, moist
		0.40	0.80	(SC/CL) Sandy Clay/Clayey Sand, fine to medium grained, low plasticity, yellow brown moist with some gravel, PP 40 to 100kPa, soft to firm
		0.80	0.85	Sandstone: distinctly weathered, very low strength
				Backhoe Refusal at 0.85m, dry
6		0.0	0.20	Topsoil/Fill: Clayey Silty Sand with some gravel, brown
		0.20	1.20	Fill: Silty Sand mixed with some sandy clay, some brick and concrete fragments , some rusty steel pipes, grey brown, moist to wet
		1.20	1.60	(CL) Sandy Clay: medium plasticity, yellow brown, moist to wet, firm, PP 40 to 60kPa
		1.60	1.65	Sandstone: distinctly weathered, very low strength
				Backhoe Refusal at 1.65m, dry
				Notes:
				MC = Moisture Content.
				PL = Plastic Limit.
				PP = Pocket Penetrometer.

Table A : Summary of Test Pit Profile

CLIENT: John Daly & Associates Pty
PROJECT: Proposed Retirement Resort
LOCATION: Lots 1110, 1336, 1108, 1113, 80,1111 and 20 Oxford Fall Road, Oxford Fall

Job Number: JC03029A
Logged By: LM
Checked By: SL
Date: 04-Dec-2003

Test Pit Number	Test Location	Depth (m) From	Depth (m) To	Material Description
7	Refer to Drawing No 1	0.0	0.20	Topsoil/Fill: Clayey Silty Sand, brown
		0.20	0.80	Fill: Silty Sand/Clayey Sand, with some sandstone gravel, brick and concrete fragments, a trace of glass pieces, dark grey and brown, moist to wet
		0.80	1.20	(Cl) Gravelly Sandy Clay: low plasticity, yellow brown, MC>PL, stiff
		1.20	1.30	Sandstone: distinctly weathered, low strength, grey
				Bucket Refusal at 1.3m
8		0.0	0.40	Topsoil/Fill: Clayey Silty Sand, brown
		0.40	0.80	Fill: Silty Sand with sandstone gravel, brown, wet
		0.80	1.40	(CL) Sandy Clay/Gravelly Sandy Clay: low plasticity, grey and yellow brown MC>PL, firm to stiff with some sandstone cobbles
		1.40	1.50	Sandstone: distinctly weathered, low strength, grey
				Bucket Refusal at 1.5m
9		0.0	0.20	Topsoil/Fill: Clayey Silty Sand, brown, wet
		0.20	1.40	Fill: Clayey Silty Sand (Topsoil) mixed with some sandstone gravel, dark brown and grey, moist to wet
		1.40	2.60	(SC) Sandy Clay/Clayey Sand: fine to medium grained, grey brown, moist
		2.60	3.00	(Cl) Gravelly Clay with some sandstone bands, brown
10		0.0	0.20	Topsoil: Clayey Silty Sand, fine to medium grained, brown, wet
		0.20	0.70	(SC) Clayey Sand: fine to medium grained with some sandstone bands, grey brown, moist
		0.70	0.80	Sandstone: distinctly weathered, low strength, brown
				Bucket Refusal at 0.8m
11		0.0	0.40	Topsoil/Fill: Clayey Silty Sand, brown
		0.40	0.80	(SC) Clayey Sand: fine to medium grained, brown, wet
		0.80	0.85	Sandstone: distinctly weathered, low strength, brown
				Bucket Refusal at 0.85m
12		0.0	0.20	Topsoil/Fill: Clayey Silty Sand, dark brown, moist
		0.20	1.30	Fill: Mixture of Silty Sand with some bricks, concrete up to about 0.8m in size, ash and sandstone gravel, dark grey and brown, Moist
		1.30	2.00	(SC/CL) Sandy Clay/Clayey Sand, fine to medium grained, brown, moist to wet
		2.00	2.90	(CL) Sandy Clay: medium plasticity, yellow brown, MC>PL, stiff to very stiff
13		0.0	0.20	Topsoil/Fill: Clayey Silty Sand, with some gravel, brown
		0.20	1.80	Fill: Mixture of Silty Sand and building rubble such as bricks, concrete, ash moist to wet
		1.80	2.50	(CL) Sandy Clay: medium plasticity, orange brown, MC>PL, PP 90 to 160kPa firm to stiff

Notes:
MC = Moisture Content.
PL = Plastic Limit.
PP = Pocket Penetrometer.

Table A : Summary of Test Pit Profile

CLIENT: John Daly & Associates Pty
PROJECT: Proposed Retirement Resort
LOCATION: Lots 1110, 1336, 1108, 1113, 80,1111 and 20 Oxford Fall Road, Oxford Fall

Job Number: JC03029A
Logged By: LM
Checked By: SL
Date: 04-Dec-2003

Test Pit Number	Test Location	Depth (m) From	Depth (m) To	Material Description
14	Refer to Drawing No 1	0.0	0.10	Topsoil/Fill: Clayey Silty Sand, brown, moist to wet
		0.10	2.00	Fill: Mixture of Silty Sand and Clayey Sand with some concete footings up to about 1.6m long, steel bars up to about 1.2m long, some bricks and brick fragments, some ash and timber pieces and sandstone gravel/cobbles, dark grey brown, moist
		2.00	2.50	(CL) Sandy Clay: medium plasticity, brown and grey, MC>PL, stiff to very stiff PP 160 to 210kPa
15		0.0	0.10	Topsoil/Fill: Clayey Silty Sand , brown, moist
		0.10	0.60	Fill: Clayey Silty Sand and Sandy Clay mixed with some bricks and concrete pieces, dark grey, moist
		0.60	1.20	(CL) Gravelly Sandy Clay: medium plasticity, orange brown, MC>PL, very stiff
		1.20	1.25	Sandstone: extremely weathered, extremely low strength, dark brown and red
16		0.0	0.40	Topsoil: Clayey Silty Sand, brown and grey, moist
		0.40	0.90	(CL) Sandy Clay: medium plasticity, orange brown, MC>PL, PP 190 to 260 kPa
		0.90	1.50	(Cl) Gravelly Sandy Clay: medium plasticity with sandstone bands, brown, moist
17		0.0	0.40	Topsoil: Clayey Silty Sand, fine to medium grained, grey brown, moist
		0.40	1.00	(CL) Gravelly Sandy Clay/Sandy Clay: medium plasticity, orange brown MC>=PL, very stiff, moist
18		0.0	0.50	Topsoil/Fill: Clayey Sand with some gravel
		0.50	0.60	Sandstone: distincly weathered, low strength, grey brown
				Backhoe Refusal at 0.6m
19		0.0	0.20	Topsoil/Fill: Clayey Silty Sand, brown, moist
		0.20	0.70	Fill: Silty Sand and Clayey Sand with some sandstone gravel, one brick, dark grey brown, moist, loose
		0.70	1.50	(SM/SC) Silty Sand/Clayey Sand: fine to medium grained, yellow brown, MC>PL; loose
		1.50	2.20	(CL/SC) Clayey Sand/Sandy Clay: medium plasticity, fine to medium grained MC>PL, loose
20		0.0	0.50	Topsoil/Fill: Clayey Silty Sand, fine to medium grained, with some gravel brown, moist
		0.50	1.00	(SM) Silty Sand, fine to medium grained, moist, very loose
		1.00	2.00	(SM/SC) Silty Sand/Clayey Sand: fine to medium grained, yellow brown, moist , very loose
		2.00	2.40	As above but wet and loose.
				Groundwater seepage at 2.0m
				Notes:
				MC = Moisture Content.
				PL = Plastic Limit.
				PP = Pocket Penetrometer.

Table A : Summary of Test Pit Profile

CLIENT: John Daly & Associates Pty
PROJECT: Proposed Retirement Resort
LOCATION: Lots 1110, 1336, 1108, 1113, 80,1111 and 20 Oxford Fall Road, Oxford Fall

Job Number: JC03029A
Logged By: LM
Checked By: SL
Date: 04-Dec-2003

Test Pit Number	Test Location	Depth (m) From	Depth (m) To	Material Description
21	Refer to Drawing No 1	0.0	1.00	Fill: Topsoil (Clayey Silty Sand) with some sandstone gravel, brown and dark grey, moist
		1.00	1.40	(SC) Sandy Clay/Clayey Sand: fine to medium grained, medium plasticity, brown mosit to wet
22		0.0	0.50	Fill/Topsoil: Clayey Sand mixed wit hsome silty sand, concrete and brick pieces dark brown and grey, moist
		0.50	1.20	(CL) Sandy Clay: medium plasticity, orange brown with some gravel, MC>=PL very stiff, PP 260 to 340kPa
		1.20	1.50	Sandstone: fine to medium grained, extremely to distinctly weathered, grey brown
				Bucket Refusal at 1.5m
23		0.0	0.80	Fill/Topsoil: Clayey Silty Sand mixed with some sandy clay and sandstone gravel with some organic odour, dark grey, wet
		0.80	1.00	(CL) Gravelly Sandy Clay: medium plasticity, grey brown , MC>=PL, very stiff
		1.00	1.20	Sandstone: fine to medium grained, distinctly weathered, brown
				Bucket Refusal at 1.2m
24		0.0	0.40	Topsoil: Clayey Silty Sand, fine to medium grained, dark grey, moist
		0.40	0.80	(SC/SM) Silty Sand/Clayey Sand: fine to medium grained, grey brown, wet
		0.80	1.40	(CL/SC) Gravelly Sandy Clay/Clayey Sand: fine to medium grained, medium plasticity, red brown and yellow brown, MC>PL, wet with some sandstone gravel
		1.40	1.60	Sandstone: fine to medium grained, distinctly weathered, low strength, grey brown
				Backhoe Refusal at 1.6m, Groundwater at 1.0m
25		0.0	0.80	Fill/Topsoil: Clayey Sand, fine to medium grained, with some sandstone gravel brown, moist
		0.80	1.20	Sandstone: extremely weathered, extremely weak with some sandy clay bands, orange brown
26		0.0	0.60	Topsoil/Fill: Clayey Sand with Silt and Gravel, grey
		0.60	1.20	(SM) Silty Sand: fine to medium grained, dark brown, moist to wet
		1.20	1.80	(SC/CL) Sandy Clay/Clayey Sand: fine to medium grained, medium plasticity grey brown, moist to wet
		1.80	2.90	(CL) Sandy Clay: low plasticity, orange brown with some gravel, MC>=PL wet, firm to stiff, PP 60 to 150kPa

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Table A : Summary of Test Pit Profile

CLIENT: John Daly & Associates Pty
PROJECT: Proposed Retirement Resort
LOCATION: Lots 1110, 1336, 1108, 1113, 80,1111 and 20 Oxford Fall Road, Oxford Fall

Job Number: JC03029A
Logged By: LM
Checked By: SL
Date: 04-Dec-2003

Test Pit Number	Test Location	Depth (m) From	Depth (m) To	Material Description
27		0.0	0.50	Topsoil: Clayey Silty Sand, fine to medium grained, brown with some gravel, wet
		0.50	1.20	(CL) Sandy Clay, low plasticity, orange brown with red mottling, some ironstone gravel, MC>>PL, wet, soft, PP <50kPa
		1.20	1.30	Sandstone: fine to medium grained, extremely to distinctly weathered, very low to low strength, grey brown
				Bucket Refusal at 1.3m
28		0.0	0.40	Topsoil/Fill: Clayey Sand with some gravel, brown
		0.40	0.80	(CL/SC) Gravelly Sandy Clay/Clayey Sand: low plasticity, orange brown MC>PL
		0.80	1.00	Sandstone: extremely weathered, very low strength, orange brown
				Groundwater seepage at 0.8m
29		0.0	0.20	Topsoil: Clayey Silty Sand, fine to medium grained, grey brown, wet
		0.20	0.60	(SC) Clayey Sand/Sandy Clay: medium plasticity, fine to medium grained, dark brown, wet
		0.60	1.30	(CL-CI) Sandy Clay: low to medium plasticity, grey with some ironstone gravel MC>=PL, firm to stiff, PP 50 to 150kPa
		1.30	1.60	Sandstone: extremely to distinctly weathered, very low strength, grey brown
				Bucket Refusal at 1.6m
30		0.0	0.30	Topsoil/Fill: Clayey Silty Sand, fine to medium grained, dark brown, wet
		0.30	1.10	(SM/SC) Gravelly Sandy Clay/Clayey Sand, fine to medium grained, medium plasticity, orange borwn and grey, MC>=PL, stiff to very stiff, PP 140 to 220kPa
		1.10	1.40	Sandstone: extremely to distinctly weathered, very low strength, grey brown
				Bucket Refusal at 1.4m, Slight seepage at 1.1m
31		0.0	1.80	Fill: Mixture of Silty Sand, Sandy Clay, crushed concrete, bricks, tiles and sandstone cobbles/boulders, dark brown and grey, moist
		1.80	2.40	(SM/SC) Silty Sand/Clayey Sand: fine to medium grained, dark brown, moist to wet
32		0.0	0.10	Topsoil/Fill: Clayey Sand with some gravel, brown
		0.10	0.70	Fill: Silty Sand mixed with sandstone and sandy clay, brown and grey , moist to wet
		0.70	1.00	(CL) Gravelly Sandy Clay: medium plasticity, grey brown, very stiff, PP 320 to 410kPa
		1.00	1.10	Sandstone: fine to medium plasticity, low strength, grey
				Backhoe Refusal at 1.1m

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GeoEnviro Consultancy Pty Ltd

Table A : Summary of Test Pit Profile

CLIENT:	John Daly & Associates Pty	Job Number:	JC03029A
PROJECT:	Proposed Retirement Resort	Logged By:	LM
LOCATION:	Lots 1110, 1336, 1108, 1113, 80,1111 and 20 Oxford Fall Road, Oxford Fall	Checked By:	SL
		Date:	04-Dec-2003

Test Pit Number	Test Location	Depth (m) From	Depth (m) To	Material Description
33	Refer to Drawing No 1	0.0	0.60	Fill: Sandy Clay and Clayey Sand with some sandstone, brick and concrete pieces, grey brown, moist
		0.60	0.70	(CL) Gravelly Sandy Clay: medium plasticity, grey, hard, moist
		0.70	0.80	Sandstone: fine to medium grained, distinctly weathered, low strength grey
				Backhoe Refusal at 0.8m
34		0.0	0.10	Topsoil/Fill: Clayey Silt
		0.10	2.20	Fill: Mixture of Sandy Clay and Clayey Sand with some bricks and brick fragments some concrete pieces up to about 0.8m in size, some crushed sandstone, grey brown , wet
		2.20	2.50	(CL) Gravelly Sandy Clay: medium plasticity, grey brown
		2.50	2.60	Sandstone: fine to medium grained, distinctly weathered, low strength, grey
				Groundwater seepage at 1.6 to 1.8m
35		0.0	1.50	Fill: Mixture of Sandy Clay and Clayey Sand with a trace of building material such as concrete and bricks
		1.50	1.60	Sandstone: fine to medium grained, distinctly weathered, low strength, grey
				Slight Groundwater seepage at 1.5m

Notes:
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