

GEOTECHNIQUE
PTY LTD

ABN 64 002 841 063



Job No: 14305/1&2
Our Ref: 14305/1&2-L1
7 November 2018

Mirvac Homes (NSW) Pty Limited
C/- Calibre Group
Level 2, 2 Burbank Place
Norwest Business Park
BAULKHAM HILLS NSW 2153
Email: Nicole.Franklin@calibregroup.com

Attention: Ms N Franklin

Dear Madam

re: **Proposed Stages 1 to 4 Residential Subdivision
Part Lots 201 & 202 in DP590247
Station Street, Menangle
Progress of Detailed Contamination Assessment**

Further to the Preliminary Environmental Site Assessment (PESA) report prepared by Environmental Investigation Services (EIS) (Ref: E27284KBrpt dated 13 May 2014) for the proposed rezoning of 30 hectares (ha) land currently registered as Lots 201 and 202 in DP590247 and Lot 21 in DP581862, located at off Station Street, Menangle, Geotechnique Pty Ltd was recently engaged by Mirvac Homes through Calibre Group to carry out detailed contamination assessment (DCA) of Part Lots 201 and 202 in DP590247, which are proposed as stages 1 to 4 residential subdivision. The objective of the DCA is to assess whether the soil within the site presents a risk of harm to human health and the environment. Stage 1 development area within part Lot 201 occupies about 10.55ha, whilst Stages 2 to 4 development areas within part Lot 202 occupies about 28.64ha.

EIS carried out a review of site history information as part of the PESA. The review included historical aerial photographs, NSW Department of Lands records, Planning Certificates under Section 149 (2 & 5) of the Environmental Planning and Assessment Act 1979, Council records and records of WorkCover NSW. For details, reference should be made to Report E27284KBrpt.

Site history information revealed that Lots 201 and 202 were owned by Camden Park Estate Pty Ltd until the 1980s. Since then Lots 201 and 202 were owned by numerous companies. Aerial photos indicate that these lots were predominantly vacant pastoral land. Part of Lot 201 was used for agriculture purposes between the 1950s and 1990s. Extraction activities were granted by Council in 1989 to Menangle Sand and Soil Supplies Pty Ltd for the extraction activities to the north section of Lots 201 and 202, which were outside the development area. The Section 149(2 & 5) Planning Certificates indicate no issues arising under the Contaminated Land Management Act 1997. A search of records held by WorkCover NSW did not locate any records of keeping dangerous goods at the site.

14305/1&2-L1

Part Lots 201 & 202 in DP590247 - Station Street, Menangle

As a part of PESA, EIS also carried testing of soil samples from fifteen locations in the open area of the site. Groundwater samples were also analysed from four monitoring wells. Concentrations of analytes in the soil samples did not exceed Health Based Investigation Levels (HILs). Marginal elevations of zinc above the most conservative Ecological Investigation Levels (EIL) were detected in two surface fill samples. However, results were not considered to pose a risk to ecology. Ground water results indicate minor elevated Heavy Metals concentrations, which is very common in groundwater in shale formation.

In order to verify the current site condition, an Environmental Scientist from Geotechnique carried out site inspection on 17 and 18 October and 1 November 2018.

Observed site features in proposed stage proposed Stage 1 Development Area (in part Lot 201 in DP590247) and in proposed Stages 2 to 4 Development Areas (in part Lot 202 in DP590247), are shown on attached Drawing Nos 14305/1-AA1 and 14305/2-AA1 respectively. Areas of environmental concern as identified by EIS are also shown on the drawings.

Based on the previous PESA report and observed current site condition, Geotechnique would like to adopt sampling as detailed below followed by appropriate chemical analysis as a part of DCA:

Judgemental Sampling:

Judgemental Sampling in the Proposed Stage 1 Development Area			
S/F#	Description	Sampling points	Remarks
1	Uneven ground surface, likely fill area	7	
2	Scrap metal	2	
3	Gravel driveway	3	
4	Scrap timber, oils drums and car wheels with tyres	1	
5	Fill area	6	
6	Depression area, possible fill	6	
7	Dam	3 in the dam, 6 in dam wall, 10 in dam sediment stockpile	Sampling of dam water (before breaching), dam wall (after breaching) and dam sediment (after breaching and stockpiling the sediment)
8	Concrete water trough	-	
9	Concrete driveway	2	Post Demolition
10	Clad/fibro building, GI roof	3	Post Demolition
11	Dilapidated GI/timber structure with scrap metal and car tyres surrounding	3	Post Demolition
12	Bitumen road	3	
13	Rusted metal trough	1	
14	Dilapidated GI sheds	4	Post Demolition
15	GI above ground storage tank	2	Post Demolition
16	Timber clad building, GI roof	1	Post Demolition
17	Scrap timber	-	
	Power poles	4 per pole	After removing the poles from the ground.

14305/1&2-L1

Part Lots 201 & 202 in DP590247 - Station Street, Menangle

Judgemental Sampling in the Proposed Stages 2-4 Development Areas			
S/F#	Description	Sampling Points	Remarks
1	Brick/fibro building, GI roof	3	Post demolition
2	GI/fibro stable	11	Post demolition
3	Timber clad building, GI roof	2	Post demolition
4	Footprint of previous building, concrete and fill present	5	Post demolition
5	Mixed waste (general domestic waste, PVC pipes, used car batteries, oil/petrol drums, herbicide drums, chlorine drums, fibro cement pipe)	2	
6	Uneven ground surface, likely small fill area	12	
7	Scrap metal	2	
8	Chemical drums	1	
9	Large irrigation pipe reel	-	
10	Dilapidated GI shed, bare ground surface	6	Post demolition
11	Bare ground driveway	3	
12	Gravel driveway	18	
13	Scrap timber, oils drums and car wheels with tyres	1	
14	Disused farm vehicle	1	
15	Dilapidated GI shed, bare ground surface, tyres, oil drums, machinery, pile of fabric waste, pile of sawdust, shipping container, bag of Granulox (heavy metal content)	3	Post demolition
16	Fill area	16	Post demolition
17	Timber poles	-	
18	Depression area, possible fill	5	
19	Stockpile, average height 0.3m	3	
20	Concrete water trough	-	
21	Timber clad/GI building with GI roof	2	Post demolition
22	Oil drum	2	
23	Metal and timber fenced animal enclosure area	-	
24	Rusted steel pipe	2	Post demolition
25	Fibro-cement pipes	3	
26	Fill area with plastic bags with straw and decomposed organic matter	6	
27	Stockpile of building rubble, average height 1.2m	-	
28	Soil stockpile, average height 2.5m	10	
29	Grain with sawdust	-	
30	Dam	-	Appears to be outside the bulk earthworks area.
31	Concrete structure, scattered GI and timber and fill area	3	Post demolition

14305/1&2-L1

Part Lots 201 & 202 in DP590247 - Station Street, Menangle

Judgemental Sampling in the Proposed Stages 2-4 Development Areas			
S/F#	Description	Sampling Points	Remarks
32	GI structure and scattered GI with timber supports	2	Post demolition
33	Scrap timber and tree branches	-	
34	Timber clad with GI roof structure, brick chimney shed, GI and timber surrounding	3	Post demolition
35	Concrete structure	2	Post demolition
36	Soil stockpile, average height 0.6m	10	
37	Soil stockpile, average height 0.3m	3	
38	Soil stockpile, average height 0.3m	3	
39	Soil stockpile, average height 0.4m	3	
40	Soil stockpile, average height 0.3m	3	
41	Soil stockpile, average height 0.4m	7	
42	Soil stockpile, average height 0.4m	3	
	Power poles	4 Per pole	After removing the poles from the ground.

Systematic Sampling:

Due to past market garden activities within about 6.6ha area in proposed Stage 1 Development, soil samples will be recovered from eighty one (81) systematic locations in accordance the NSW EPA "Sampling Design Guidelines for Contaminated Sites", as indicated on Drawing No 14035/1-P2.

As the site for proposed stages 2 to 4 development areas were predominantly vacant pastoral land without any agriculture activities, in our opinion, no systematic sampling and testing will be required in the open area of the site.

If any contaminants are identified, the site could be made suitable for the proposed use following appropriate remediation and validation.

If any suspect materials (identified by unusual staining, odour, discolouration or inclusions such as building rubble, asbestos sheet(s)/piece(s)/pipe(s), ash material, etc.) are encountered during any stage of future earthworks/site preparation/demolition, we recommend that this office is contacted for assessment. In the event of contamination, detailed assessment, remediation and validation will be necessary.

14305/1&2-L1

Part Lots 201 & 202 in DP590247 - Station Street, Menangle

If you have any questions, please do not hesitate to contact the undersigned.

Yours faithfully
GEOTECHNIQUE PTY LTD



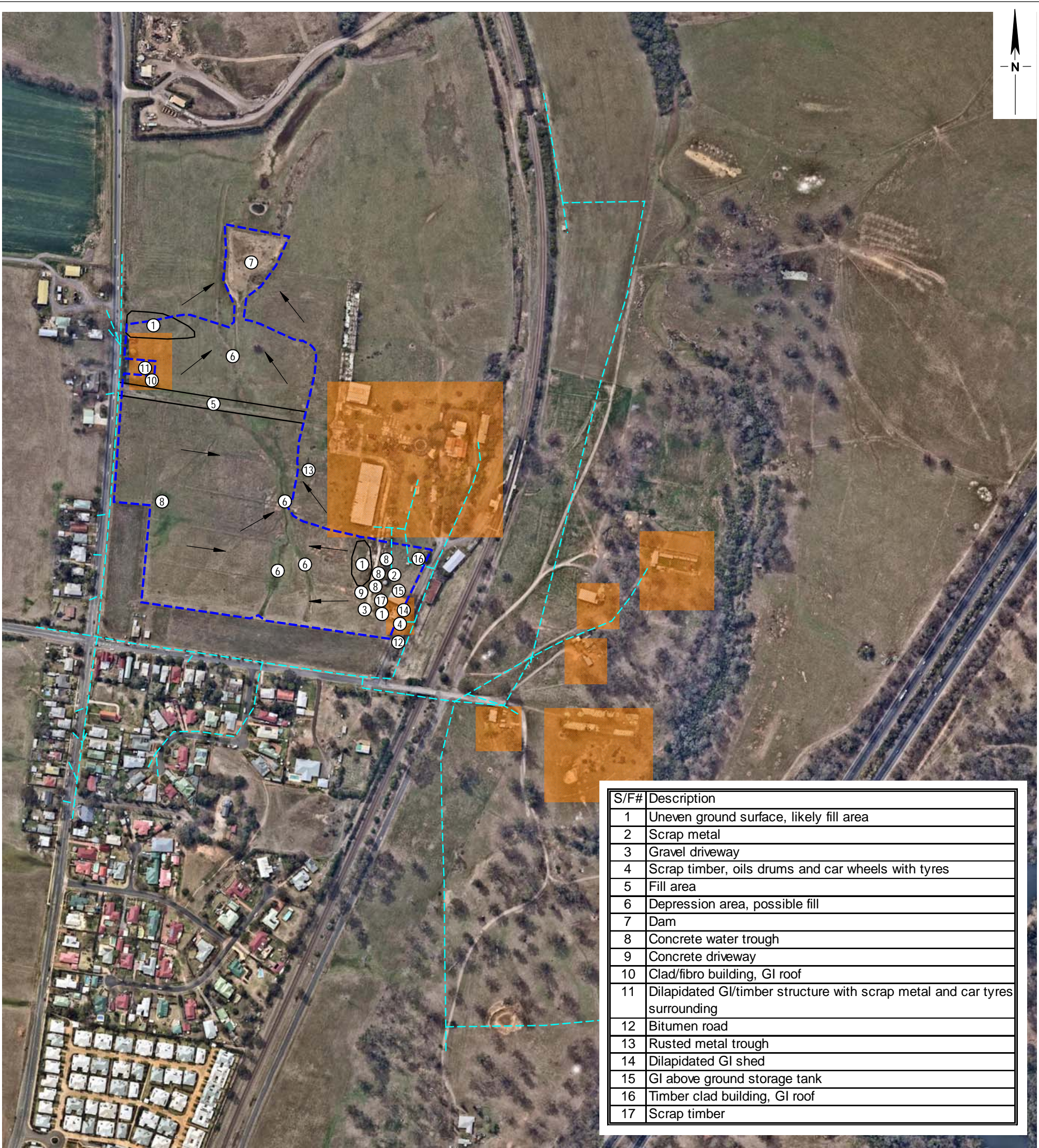
ANWAR BARBHUYIA

Senior Associate

B.E (Civil), MEngSc (Enviro), MIEAust

Attached: Drawing No 14305/1-AA1 & 14305/2-AA1 (Site Features)

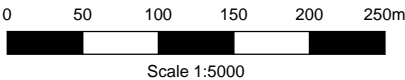
Drawing No 14305/1-P2 (Proposed systematic sampling locations in proposed stage 1 development area)

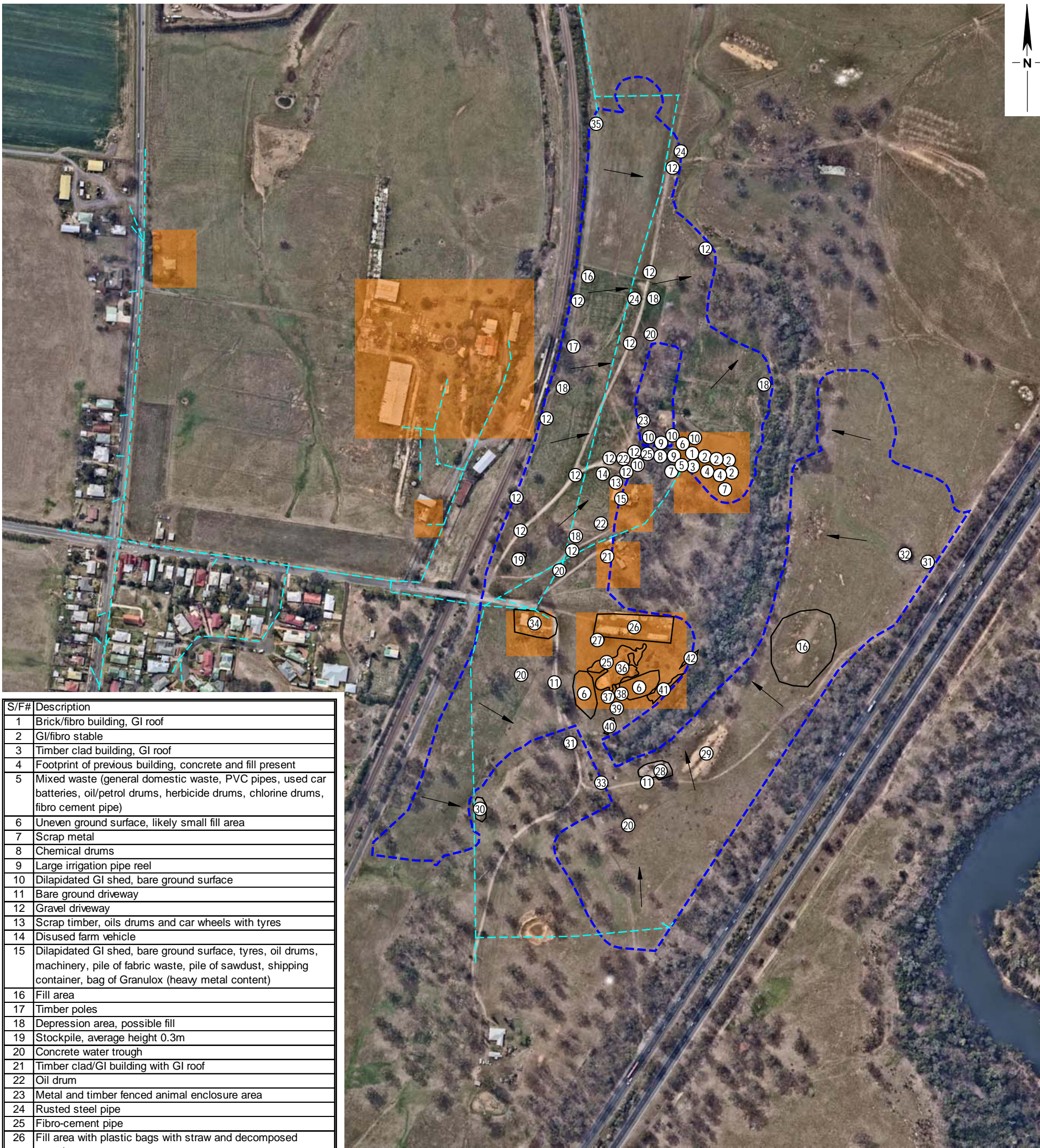


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



- Area of Environmental Concern
(as identified by EIS Report Ref: E27284KBrpt dated 13 May 2014)
- Slope
- Power Line
- Site Feature Number
- Approximate Extent of Bulk Earthworks





S/F#	Description
1	Brick/fibro building, GI roof
2	GI/fibro stable
3	Timber clad building, GI roof
4	Footprint of previous building, concrete and fill present
5	Mixed waste (general domestic waste, PVC pipes, used car batteries, oil/petrol drums, herbicide drums, chlorine drums, fibro cement pipe)
6	Uneven ground surface, likely small fill area
7	Scrap metal
8	Chemical drums
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10	Dilapidated GI shed, bare ground surface
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12	Gravel driveway
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20	Concrete water trough
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25	Fibro-cement pipe
26	Fill area with plastic bags with straw and decomposed organic matter
27	Stockpile of building rubble, average height 1.2m
28	Soil stockpile, average height 2.5m
29	Grain with sawdust
30	Dam
31	Concrete structure, scattered GI and timber and fill area
32	GI structure and scattered GI with timber supports
33	Scrap timber and tree branches
34	Timber clad with GI roof structure, brick chimney shed, GI and timber surrounding
35	Concrete structure
36	Soil stockpile, average height 0.6m
37	Soil stockpile, average height 0.3m
38	Soil stockpile, average height 0.3m
39	Soil stockpile, average height 0.4m
40	Soil stockpile, average height 0.3m
41	Soil stockpile, average height 0.4m
42	Soil stockpile, average height 0.4m

LEGEND

-  Area of Environmental Concern (as identified by EIS Report Ref: E27284KBrpt dated 13 May 2014)
-  Slope
-  Power Line
-  Site Feature Number
-  Approximate Extent of Bulk Earthworks

0 50 100 150 200 250m
Scale 1:5000



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Station Street
Menangle

Site Features - Stages 2 to 4

Drawing No: 14305/2-AA1
Job No: 14305/2
Drawn By: MH
Date: 6 November 2018
Checked By: JH/AB

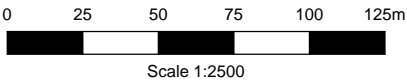
File Ref: 14305-2
Layers: 0, AA1




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- Power Line
- Approximate Extent of Bulk Earthworks
- Test Pit



 CONSULTING ENGINEERS	PO Box 880 Penrith NSW 2750 Tel: 02 4722 2700 Fax: 02 4722 2777 e-mail: info@geotech.com.au www.geotech.com.au	Station Street Menangle	Drawing No: 14305/1-P2 Job No: 14305/1 Drawn By: MH Date: 7 November 2018 Checked By: AB
		Proposed Systematic Test Pit Locations - Stage 1	File Ref: 14305-1 Layers: 0, P2