

TREE ASSESSMENT ELEMENTS

Number: Unique and sequential identification number
 Name: Botanical name/height: (m)
 Trunk: Circumference (m) at 1 metre above natural ground level
 Canopy: Diameter (m) at the furthest point from the trunk (m)
 Health: The general health and vigour of the tree
 Defects / Decay: Structural defects or evidence of internal decay
 Damage / Disturbance: Evidence of past damage to the tree or disturbance within the root zone
 Disease: Evidence of past or present disease or insect infestation
 Stage: Current growth stage (e.g. juvenile, semi-mature, mature or over mature)
 Quality: Tree quality classification trees are to be classified as being of Exceptional (E), High (H), Medium (M), Poor (P), or Low (L) quality.
 Tree Act Status: Refer notes below

Tree 'Regulated' Status by Virtue of size (On - Leased Land)
 Under the Tree Protection Act 2005 a tree is termed a Regulated Tree and is to be protected if it is growing on Urban Leased land and has at least one of:
 * A height of 12m or more; or
 * A trunk circumference of 1.5m (approx 0.5m in diameter) or more at 1m above ground level; or
 * Two or more trunks and the total circumference of all the trunks, 1m above ground level, is 1.5m or more; or
 * A minimum crown width of 12m or more, and
 * Must be alive - all dead trees have been ranked as Non Protected trees.
 * Is not a weed species under the Pest Plant & Animals Declaration 2005

Tree Protection Status on Leased Land as 'Regulated Trees' (if stated)
 YES - The tree has a dimension that any activity must be assessed under the Tree Protection Act on Leased Land;
 NO - The tree if on Leased land is sufficiently small or declared a Weed Species that it does not require assessment under the Tree Protection Act.

Tree Protection Status on Unleased Government Land
 Trees on Unleased Government land can only be removed / pruned or ground damaging activity if approval is given in writing from all applicable Government agencies.

Future Tree Approvals
 On-Leased land: if a tree has regulated status then approval must be gained from TaMS Urban TreeScapes Unit and / or ACTPLA prior to removal, lopping or ground damaging activity.

Off-Leased (Territory) land: Please note all trees located external to a leased block boundary i.e. the verge or open space, cannot be removed, pruned or damaged without the approval of the Urban TreeScapes Unit, City Services (13 22 81) as on Government land.

Tree Management
 Trees within leases require a Tree Management Plan (TMP) and on the verge or other public space a Landscape Management Protection Plan (LMPP) outlining removals, pruning, tree protection measures, site access and restorative works issues as part of the design process.

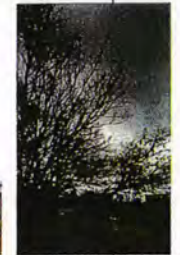
TREE ASSESSMENT REPORT

BLOCK 13 OF SECTION 28 CONTAINS A MIX OF DECIDUOUS EXOTIC TREES AND EVERGREEN NATIVES. THE SITE IS GRASSED THROUGHOUT WITH THE EXCEPTION OF CONCRETE FOOT PATHS AS SHOWN. ALTHOUGH PROTECTED BY BOLLARDS, SOME POINTS ARE ACCESSIBLE TO CONSTRUCTION & MAINTENANCE VEHICLES WHO USE THE FRAM CROSSING TO PARK UP ON THE VERGE AND WITHIN THE BLOCK. EVIDENT WHERE WORN AND COMPACTED AS SHOWN AS BROWN AREAS IN AERIAL.

MATURE MEDIUM & HIGH QUALITY RATED *Eucalyptus mannifera* & *E. sideroxylon* 'Rosea' TREES 3 & 5 APPEAR TO BE GROWING & ARE IN GOOD HEALTH.

GROUP 1 TREES ARE SEMI - MATURE *Ulmus parvifolia*. THESE TREES HAVE BEEN PLANTED AS A STAND WITHIN A RELATIVELY TIGHT PLANTING ARRANGEMENT. AS SUCH, SOME TREES WITHIN THE STAND ARE SUPPRESSED & OR HAVE LEANING / UNDER DEVELOPED CANOPIES.

SELECTIVE THINNING MAY BE AN ADVANTAGE TO ALLOW SOME INDIVIDUAL IMPROVED LARGER TREE FORMS



PLEASE NOTE TREE LOCATIONS & NUMBERS WERE LOCATED ACTMAPAI 2012 AERIAL AND WERE VERIFIED FROM SITE INSPECTION UNDERTAKEN BY ENVIROLINKS DESIGN PTY LTD, JUNE 2013 WHEN TREES WERE DORMANT & IDENTIFYING FEATURES NOT EXHIBITED. TREE NUMBERS ALLOCATED BY ENVIROLINKS DESIGN.

TREES ASSESSED BY GROUP as being of similar species and attributes (eg. size, health, stage)

VALUE RANKING - INDIVIDUAL TREES

The delineation within the value classification is based on the works being on leased land and therefore under the jurisdiction of the TaMS Urban TreeScapes Unit (UTU) & or ACTPLA. All trees on Government Land can not be removed or damaged or works undertaken near them without the approval of the UTU. The Tree Act and Regulated Tree definitions are applicable to leased sites.



EXCEPTIONAL VALUE - trees that are outstanding examples of their species and have significant visual impact. They have most of the following: mature specimens with grand appearance and stature; may have unusual character; may be a rare species; well balanced; cultural heritage importance; significant scientific value; presents a low hazard/safety risk. Significant value within the landscape context of the site and should be preserved.

HIGH VALUE - trees that are good examples of their species and have significant visual impact. They have most of the following: high arboricultural value or potential; good form; healthy specimens with good size and little or no epicormic shoots or other arboricultural problems. Good value within the landscape context of the site and should be preserved if at all possible.

MEDIUM VALUE - trees generally complying with most of the following: reasonable form or reasonable current size with good health / growth potential; healthy specimen with significant growth (or with moderate tree surgery a large tree can be modified from fair to good health, it can carry some deadwood); has value within the landscape context of the site; presents a medium to low hazard/safety risk. Does not justify special attention of construction expenditure but justifies a minor design adjustment to save or could be removed if necessary. Retain if appropriate to land use and future management cost and risks.

POOR VALUE - trees generally complying with most of the following: specimen with low growth or poor form and possible health problems; trees of little value; presents a high or very high hazard/safety risk. Expendable, remove if necessary - retain if appropriate to land use and future management costs and risks.

LOW VALUE - non-significant tree under the 2005 Tree Protection Act. Trees therefore can range from well established quality trees to poor health small trees of no significance. Some possibly with important landscape impact (e.g. regeneration) or future growth potential to contribute to the landscape in future years. Expendable, remove if necessary - retain if appropriate to land use and future management costs and risks.

DEAD TREE

TREE ASSESSMENT SCHEDULE

ELD No.	Botanical Name	Height (m)	No. Trunks	Trunk circ. (m)	Canopy dia. (m)	Health and Vigour	Structural defects and decay	Past Damage or root disturbance	Disease or Infestation	Stage	Quality Rating
						(G-good, F-fair, P-poor, DW-deadwood, EPI-epicormic growth)	(OC-occluded fork, AGL - Above Ground Level)	(AGL - Above Ground Level)	(AGL - Above Ground Level)	Juvenile (J), Semi-mature (SM), Mature (M), Over mature (OM)	Low (L), Poor (P), Medium (M), High (H), Exceptional (E) <i>(NOTE: Quality Rating also noted with (E) specify an exceptional rating due to heritage listed status)</i>
G1	<i>Ulmus parvifolia</i>	5-10	1	0.55-1.3	5-10	Good	None apparent	Some past up pruning of lower canopy	None apparent	Semi - Mature	Low
G2	<i>Prunus sp.</i>	4-5	1	0.55	4	Fair, some dead branches / trunks	None apparent	Some past up pruning of lower canopy	Some have rotted / dead stem	Semi - Mature	Low
G3	<i>Prunus sp.</i>	4-5	1	0.55	4	Fair, some dead branches / trunks	None apparent	Some past up pruning of lower canopy	None apparent	Semi - Mature	Low
1	<i>Zelkova serrata</i>	8.5	1	1	8	Good	None apparent	Some past up pruning of lower canopy	None apparent	Mature	Low
2	<i>Zelkova serrata</i>	8.5	1	1	8	Good	None apparent	Some past up pruning of lower canopy	None apparent	Mature	Low
3	<i>Eucalyptus sideroxylon</i> 'Rosea'	11	1	2.5	14	Good	None apparent	None apparent	None apparent	Mature	High
4	<i>Quercus robur</i>	11	1	1.5	10	Good	None apparent	None apparent	None apparent	Mature	Medium
5	<i>Eucalyptus mannifera</i>	10.5	1	1.3	14	Good, slight lean to North West	None apparent	None apparent	None apparent	Mature	Medium
6	<i>Ulmus sp.</i>	10	4	2.5	12	Good, multi trunk	None apparent	Some past up pruning of lower canopy	None apparent	Mature	Medium
7	<i>Ulmus sp.</i>	7	4.00	2	5	Fair, multi trunk suckering right up against building	None apparent	None apparent	None apparent	Mature	Medium

C. Plan Information	JR	JRD	10/2/14
B. Plan Information	JR	JRD	28/2/14
A. Plan Information	JR	JRD	17/6/14
NO. DESCRIPTION	DATE	BY	DATE

NOTES
 - Copyright and property of Envirolinks Design Pty Ltd. May be used only for the stated project and these terms, and its successors with terms of engagement for similar uses.
 - To be used in conjunction with all relevant contracts, specifications, reports, drawings and development approval conditions. Obtain any outstanding statutory approvals prior to commencement of works.
 - Figure dimensions to be taken in preference to scaled measurements. Dimensions in italics indicate noted approximations.
 - Where noted for Contractors:
 - Contractor to investigate for locating all services and establish necessary clearances and approvals. Contractor to verify dimensions, levels & details to site conditions and prior works, and report all discrepancies to the Superintendent for resolution before commencing work.
 - All work to be done in accordance with the relevant standards and specifications for any nominated materials or services.
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CLIENT

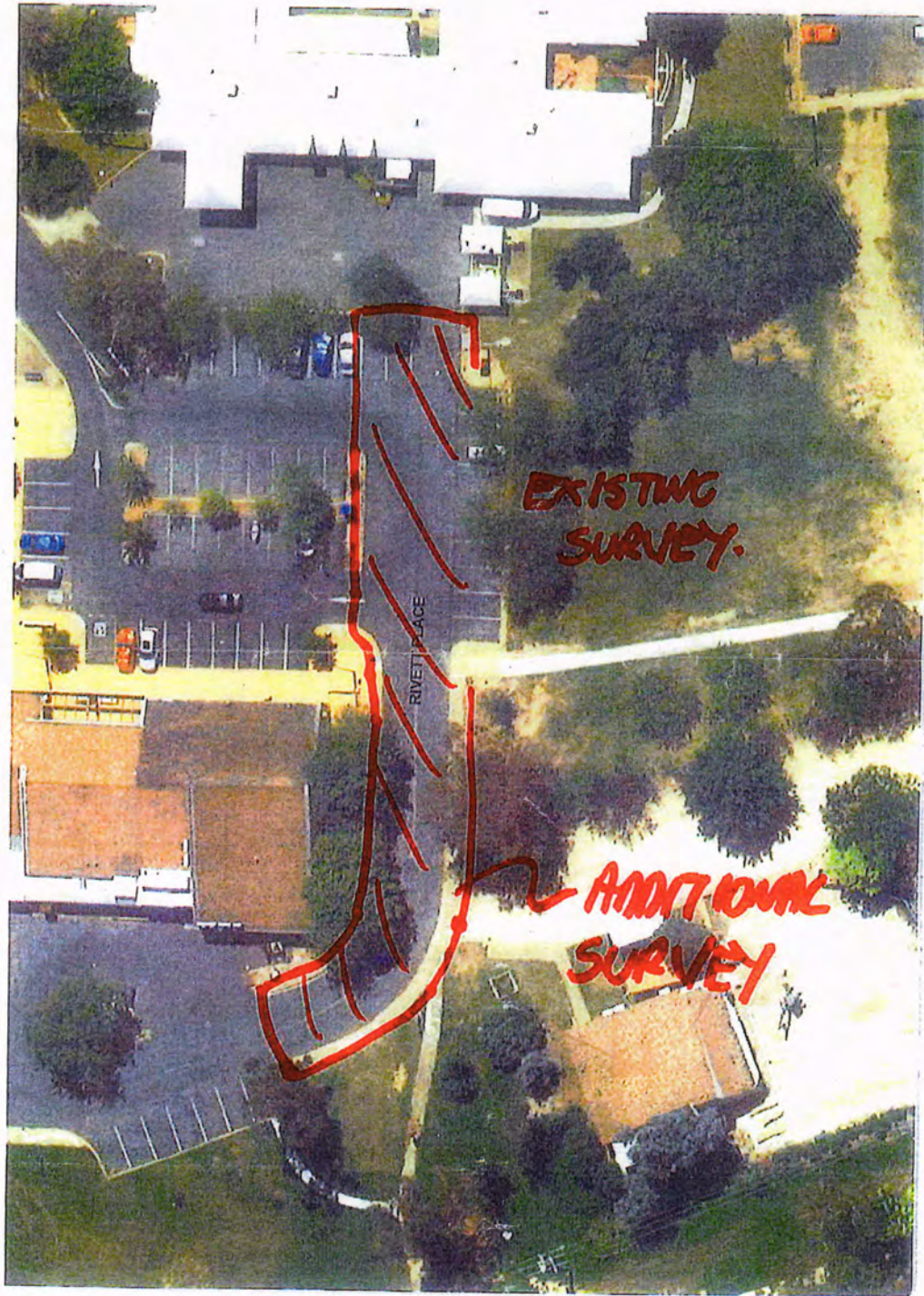
 LANDSCAPE ARCHITECT

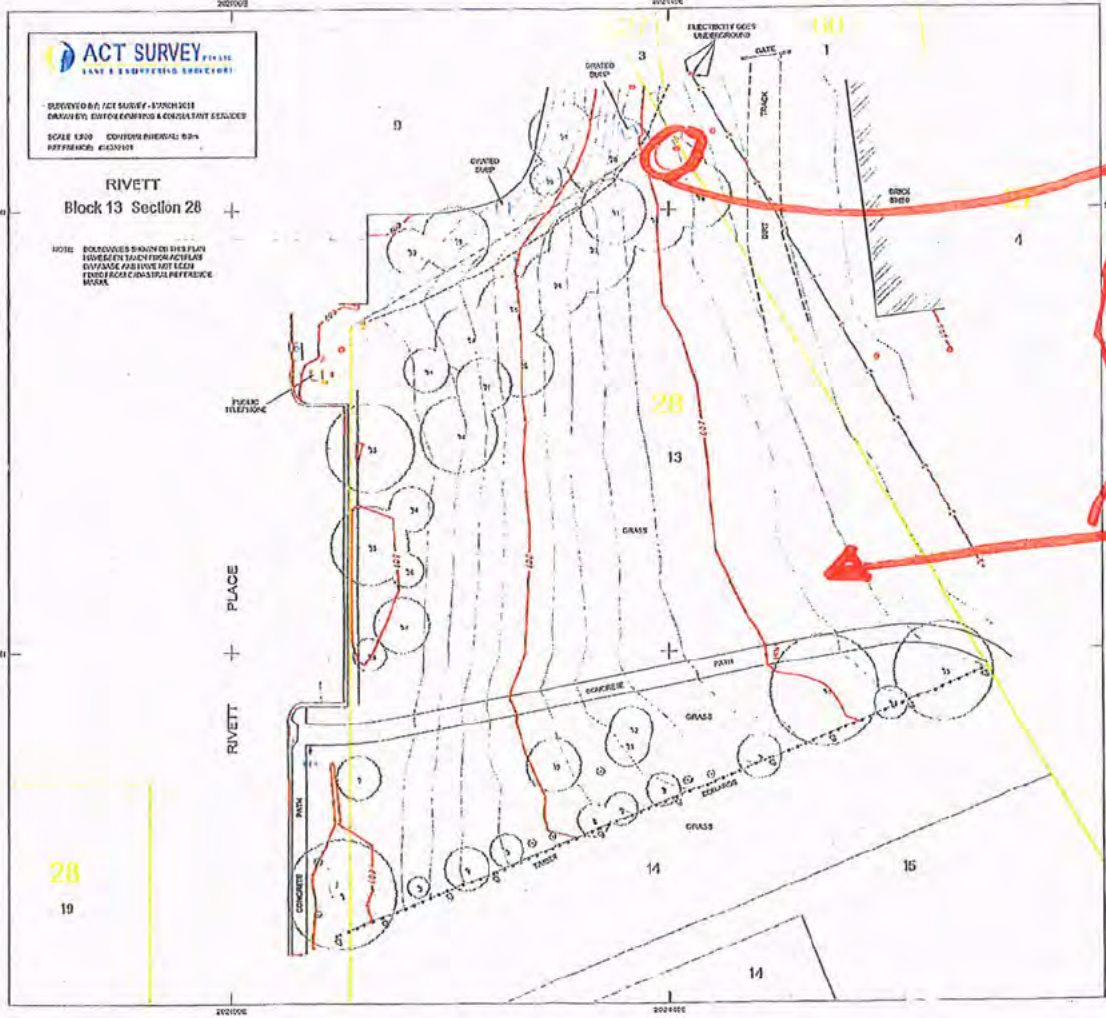
LANDSCAPE ARCHITECT - QUALITY - SERVICE
 ENVIRONMENTAL - ECO FRIENDLY
 5 / 81 Dundas Court, PHILLIP ACT 2608
 PO BOX 88 WARRAMUNGA ACT 2611
 PH(02) 6281 6066 Fax(02) 6281 6055
 www.envirolinksdesign.com.au

PROJECT
 BLOCK 13
 SECTION 28
 RIVETT
 TITLE
 TREE ASSESSMENT PLAN
 SCALE
 1:1000 @ A3
 NORTH
 JOB NO.
 1517
 DRAW NO.
 TA-01
 ISSUE

Tree Number	Species	Height (metres)	Trunk Circumference (metres)	Number of Trunks	Crown Spread (metres)	Easting	Northing	Health (H,M,F,L,D)	Value Ranking (E,H,M,P,L,D)	Tree Act	Notes	Diameter
1	Eucalypt	14.00	1.89	1	10.00	202410.16	596538.05					0.60
2	Deciduous	5.00	0.31	1	4.00	202411.70	596548.60					0.10
3	Deciduous	3.00	0.31	1	2.00	202417.10	596538.72					0.10
4	Deciduous	6.00	0.63	1	4.00	202421.41	596540.32					0.20
5	Deciduous	4.00	0.31	Multi	3.00	202425.06	596542.01					0.10
6	Deciduous	3.00	0.31	1	3.00	202433.13	596544.73					0.10
7	Deciduous	4.00	0.31	1	3.00	202435.67	596545.71					0.10
8	Deciduous	3.00	0.31	1	3.00	202439.46	596547.48					0.10
9	Deciduous	5.00	0.63	Multi	4.00	202448.08	596550.42					0.20
10	Deciduous	5.00	0.63	Multi	5.00	202429.44	596549.68					0.20
11	Deciduous	4.00	0.63	1	4.00	202436.20	596551.57					0.20
12	Deciduous	4.00	0.63	1	4.00	202436.59	596552.98					0.20
13	Eucalypt	11.00	1.57	1	10.00	202454.04	596556.32					0.50
14	Eucalypt	4.00	0.31	1	3.00	202460.11	596555.11					0.10
15	Deciduous	10.00	0.94	Multi	9.00	202464.94	596558.00					0.30
16	Deciduous	7.00	0.94	1	6.00	202442.67	596601.17					0.30
17	Deciduous	10.00	1.26	1	8.00	202439.67	596602.63					0.40
18	Deciduous	10.00	0.94	1	6.00	202438.60	596599.09					0.30
19	Deciduous	10.00	0.94	1	6.00	202434.95	596599.84					0.30
20	Deciduous	11.00	1.26	1	8.00	202434.69	596604.68					0.40
21	Deciduous	9.00	0.94	1	6.00	202430.22	596606.79					0.30
22	Deciduous	7.00	0.31	1	3.00	202428.77	596602.73					0.10
23	Deciduous	11.00	0.94	1	8.00	202432.92	596596.44					0.30
24	Deciduous	10.00	0.94	1	6.00	202429.55	596593.25					0.30
25	Deciduous	9.00	0.94	1	6.00	202425.49	596591.11					0.30
26	Deciduous	8.00	0.94	1	6.00	202426.42	596586.03					0.30
27	Deciduous	6.00	0.63	1	5.00	202422.99	596584.07					0.20
28	Deciduous	9.00	0.94	1	6.00	202421.60	596588.35					0.30
29	Deciduous	8.00	0.94	1	6.00	202420.44	596597.32					0.30
30	Deciduous	6.00	0.63	1	4.00	202416.22	596596.29					0.20
31	Deciduous	4.00	0.63	Multi	4.00	202417.80	596585.45					0.20
32	Deciduous	9.00	0.94	1	7.00	202420.75	596579.61					0.30
33	Deciduous	9.00	1.26	1	8.00	202412.70	596578.45					0.40
34	Deciduous	8.00	0.63	1	4.00	202416.43	596572.92					0.20
35	Deciduous	8.00	0.94	1	7.00	202412.72	596569.60					0.30
36	Deciduous	6.00	0.63	1	3.00	202416.07	596567.39					0.20
37	Deciduous	5.00	0.63	1	5.00	202415.59	596562.41					0.20
38	Deciduous	3.00	0.31	Multi	3.00	202412.68	596559.73					0.10

6/16





IDENTIFY -

- PIPE DIRECTIONS FROM STRUCTURE
- TYPE OF SERVICE
- PIPE DIMENSIONS FROM STRUCTURE

SHOW EXISTING EASEMENTS

Carson, Lucia

From: Carson, Lucia on behalf of LDA, Planning & Design
Sent: Wednesday, 19 March 2014 2:01 PM
To: Mundy, Graham
Subject: FW: Fee Proposal - Rivett Section 28 Block 13
Attachments: Signed Proposal.pdf

Graham,

The SIR undertaken by Mott MacDonald for Rivett Section 28 Block 13 stated that "A site survey is required to be undertaken to confirm the overland flow path alignment within this site". I requested Josh to invite ACT Survey to submit a Fee Proposal to carry out the work. Attached above is the ACT Survey Fee proposal for the sum of [REDACTED] including GST to undertake this job. Your approval is requested.

Regards,

Lucia

From:
Sent: Wednesday, 12 February 2014 10:00 PM
To: Zamora-Pullin, Joshua
Subject: Re: Fee Proposal - Rivett Section 28 Block 13

Hi Joshua
Here is our quote for the Rivett survey.
Thanks, regards

ACT Survey Pty Ltd
T: 02 62310059 | F: 02 62310086 | M:
Email:

-rom: [Zamora-Pullin, Joshua](#)
Sent: Tuesday, February 11, 2014 2:09 PM
To:
Cc: [Travis, Garry](#)
Subject: Fee Proposal - Rivett Section 28 Block 13

Good Afternoon

The LDA invites you to submit a **Fee Proposal** to carry out a Topographical Survey on Rivett Section 28 Block 13, with particular interest in any overland flow channels.

I look forward to receiving your proposal, please call or email if I can be of any help

Kind Regards

Joshua Zamora-Pullin

Phone: 6207 1749 | Email: joshua.zamora-pullin@act.gov.au

Project Officer | Urban Releases | Land Development Agency | Economic Development Directorate

Level 7 TransACT House, 470 Northbourne Avenue, Dickson ACT 2602

GPO Box 158, Canberra ACT 2601 | www.economicdevelopment.act.gov.au

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LAND DEVELOPMENT AGENCY PURCHASE ORDER REQUEST FORM

Document Type	PURCHASE ORDER or AMENDMENT (DELETE ONE)	INSERT ORDER NUMBER	INSERT CONTRACT NUMBER
	SELECTED SUPPLIER		LDA ADDRESS

Name: **ACT Survey Pty Ltd**
 Address: **33 Lesteere Crescent, KAMBAH ACT 2902**
 ABN Number: **23 108 758 310**
 Contact:



Section: Urban Releases
 Street Address: Level 7 TransACT House
 470 Northbourne Ave
 Dickson ACT 2602

 Postal Address: GPO Box 158
 CANBERRA ACT 2601

Procurement Methodology: **Single Select**

LINE	DESCRIPTION	AMOUNT (exc GST)	GST	TOTAL (inc GST)	ACCOUNTING FLEXFIELD					
					Entity	Cost Centre	Account	Int Trading	Project	Agency Code
	(Topographical Survey for Rivett Section 28 Block 13)				150	16714	111538	.	.	.
	.				150	.	.	.	.	.
	.				150	.	.	.	.	.
	.				150	.	.	.	.	.
	.				150	.	.	.	.	.
ORDER TOTAL:										

Requests/Comments: **Requests/Comments**

APPROVING OFFICER (signature and name)	Date	REQUESTING OFFICER (signature and name)	Tel
	19/3/14		
Name: Graham Mundy	Date: 19.03.2014	Name: Lucia Carson	Phone: 6207 9604

207

Carson, Lucia

From: Mundy, Graham
Sent: Wednesday, 19 March 2014 2:07 PM
To: LDA, Planning & Design
Cc: Chappell, Hazel
Subject: RE: Fee Proposal - Rivett Section 28 Block 13

Lucia

ACT Survey Fee approved.

Regards

Graham

From: Carson, Lucia **On Behalf Of** LDA, Planning & Design
Sent: Wednesday, 19 March 2014 2:01 PM
To: Mundy, Graham
Subject: FW: Fee Proposal - Rivett Section 28 Block 13

Graham,

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Regards,

Lucia

From:
Sent: Wednesday, 12 February 2014 10:00 PM
To: Zamora-Pullin, Joshua
Subject: Re: Fee Proposal - Rivett Section 28 Block 13

Hi Joshua
Here is our quote for the Rivett survey.
Thanks, regards

ACT Survey Pty Ltd
T: 02 62310059 | F: 02 62310086 | M:
Email:

From: [Zamora-Pullin, Joshua](#)
Sent: Tuesday, February 11, 2014 2:09 PM
To: !
Cc: [Travis, Garry](#)

Subject: Fee Proposal - Rivett Section 28 Block 13

Good Afternoon

The LDA invites you to submit a **Fee Proposal** to carry out a Topographical Survey on Rivett Section 28 Block 13, with particular interest in any overland flow channels.

I look forward to receiving your proposal, please call or email if I can be of any help

Kind Regards

Joshua Zamora-Pullin

Phone: 6207 1749 | Email: joshua.zamora-pullin@act.gov.au

Project Officer | Urban Releases | Land Development Agency | Economic Development Directorate

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Carson, Lucia

From: Carson, Lucia on behalf of LDA, Planning & Design
Sent: Wednesday, 19 March 2014 2:39 PM
To: Zamora-Pullin, Joshua
Subject: FW: Fee Proposal - Rivett Section 28 Block 13
Attachments: Signed Proposal.pdf

Hi Josh,

We have approval to proceed with the Topographical Survey for Rivett Section 28 Block 13. Could you please send an email to ACT Geotech requesting them to proceed.

Regards,

Lucia

From: Carson, Lucia
Sent: Monday, 17 February 2014 8:33 AM
To: _____
c: Zamora-Pullin, Joshua
Subject: FW: Fee Proposal - Rivett Section 28 Block 13

Good morning

Thank you for the quote for Topographical Survey for Rivett Section 28 Block 13. Could you please hold off doing the survey as I need to find out if LDA needs to advise the community what LDA is proposing to do on this site. I will let you know as soon as possible when the survey can be undertaken.

Regards,

Lucia Carson
Project Officer
Site Preparation
and Development Agency
Economic Development Directorate
Level 7 TransACT House
470 Northbourne Avenue
DICKSON ACT 2602
T: 6207 9604
F: 6207 7324
E: lucia.carson@act.gov.au

From: Zamora-Pullin, Joshua
Sent: Thursday, 13 February 2014 9:07 AM
To: _____
Cc: Travis, Garry; Carson, Lucia
Subject: RE: Fee Proposal - Rivett Section 28 Block 13

Good Morning

Thank you for your Topographical Survey fee proposal for Rivett Section 28 Block 13

We would like you to proceed with the work as contained in your proposal. Total cost (inc GST).

Please reply to this email as your acceptance of the work

I am happy to help in any way possible, so please don't hesitate to contact me

Kind Regards

Joshua Zamora-Pullin
Phone: 6207 1749 | Email: joshua.zamora-pullin@act.gov.au
Project Officer | Urban Releases | Land Development Agency | Economic Development Directorate
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ACT SURVEY PTY LTD

LAND & ENGINEERING SURVEYORS

ABN 23 108 758 310

ESTIMATE OF COSTS FOR SURVEY PROJECT

2007
AS-FM-2b

Client: LDA
Contact: Joshua Zamora-Pullin

Project: Rivett Section 28 Block 13 - Detail Survey

Agreed Scope of Work: As per survey request

Project Officer: Telephone: 0410 655 793

Survey Cost: Fieldwork and processing:
Drafting

Sub-Total: Plus GST

Total Estimate:

Thank you for the opportunity to quote for this project.

If you have any questions regarding this Quotation please contact the project officer

12 February, 2014

-----	-----	-----
Signature	Name	Date

Client instructions: Please complete section below and FAX to 62965901

Estimate approved yes no (Please circle one)

Approving officer:



Signature

Joshua Zamora-Pullin

Name

13-02-14

Date

ACT SURVEY Pty Ltd
PO Box 378
Mawson ACT 2607

Phone: (02) 62966540
Fax: (02) 62965901
Mobile:

Carson, Lucia

From: Zamora-Pullin, Joshua
Sent: Thursday, 13 February 2014 9:07 AM
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Cc: Travis, Garry; Carson, Lucia
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Joshua Zamora-Pullin

Phone: 6207 1749 | Email: joshua.zamora-pullin@act.gov.au

Project Officer | Urban Releases | Land Development Agency | Economic Development Directorate

Level 7 TransACT House, 470 Northbourne Avenue, Dickson ACT 2602

GPO Box 158, Canberra ACT 2601 | www.economicdevelopment.act.gov.au

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LAND DEVELOPMENT AGENCY: PURCHASE REQUEST FORM

PROJECT - Suburb: RIVETT **Block :** 13 **Section:** 28

DOCUMENT TYPE	PURCHASE ORDER REQUEST	ORDER NUMBER	CONTRACT NUMBER
----------------------	-------------------------------	---------------------	------------------------

SELECTED SUPPLIER	
NAME	ACT Survey Pty Ltd
ADDRESS	PO Box 378 Mawson ACT 2607
ABN NUMBER	23 108 758 310
CONTACT	Gerard McMahon
Procurement	Single Select

LAND DEVELOPMENT AGENCY ADDRESS	
SECTION	Urban Renewal / Urban release
ADDRESS	Level 7 , Transact House 470 Northbourne Avenue Dickson ACT 2602 GPO Box 158 Canberra City 2601

LINE	DESCRIPTION	AMOUNT (excl GST)	GST	TOTAL (incl GST)	ACCOUNTING FLEXFIELD					
					Entity	Cost Centre	Account	Int Trading	Project	Agency code
	Detailed Survey				150	16714	111538	99	99999	9999
					150					
					150					
					150					
					150					
					150					
ORDER TOTAL: \$										

Requests/Comments:

APPROVING OFFICER (signature & print name) DATE:
Hazel Chappell <i>HChappell</i> 13/02/2014

REQUESTING OFFICER (signature & print name) PHONE NO.
Joshua Zamora-Pullin <i>JZamora</i> 71749



ACT
Government

Land
Development
Agency
CANBERRA FIRST

198

Purchase Order

ABN: 20 419 925 579

Send To
ACT SURVEY PTY LTD PO BOX 378 MAWSON, ACT 2607

Deliver To
Level 6 TransACT House 470 Northbourne Avenue Dickson ACT 2602

Invoice To
Level 6 TransACT House 470 Northbourne Avenue Dickson ACT 2602

Order Number: L14294

Please quote this number on all deliveries and invoices.
Please supply the undermentioned goods/services in accordance with the terms and conditions.

Supplier No: 654	Buyer: H TRINDER	Creation Date: 13-FEB-2014
Contact:		Payment Terms: 30 Days
Phone: (02) 6231 0059		

Notes: Detailed survey - 13/28 Rivett	Page: 1 of 1
--	---------------------

Item	Description	Qty	Unit	Unit Price	Unit Total (Ex GST)
1	Detailed survey - 13/28 Rivett	0	DOLLAR	1.00	

HAYLEY TRINDER

Finance Officer

Person Authorised to Sign

Total Exclusive of GST:

Total Inclusive of GST, where applicable:

Enquiries to:

Kaz Wilson
Phone: (02) 6205 1168
Email: karen.wilson@act.gov.au

Signature

13-FEB-2014

Date



ACT SURVEY PTY LTD

LAND & ENGINEERING SURVEYORS

ABN 23 108 758 310

2007
AS-FM-2b

ESTIMATE OF COSTS FOR SURVEY PROJECT

Client: LDA

Contact: Joshua Zamora-Pullin

Project: Rivett Section 28 Block 13 - Detail Survey

Agreed Scope of Work: As per survey request

Project Officer: Telephone:

Survey Cost: Fieldwork and processing:
Drafting

Sub-Total: \$800.00 Plus GST

Total Estimate:

Thank you for the opportunity to quote for this project.

If you have any questions regarding this Quotation please contact the project officer

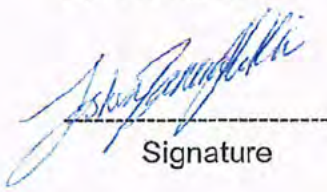
12 February, 2014

Signature	Name	Date

Client instructions: Please complete section below and FAX to 62965901

Estimate approved yes no (Please circle one)

Approving officer:


Signature

Joshua Zamora-Pullin
Name

13-02-14
Date

ACT SURVEY Pty Ltd
PO Box 378
Mawson ACT 2607

Phone: (02) 62966540
Fax: (02) 62965901
Mobile:



ACT SURVEY PTY LTD

LAND & ENGINEERING SURVEYORS
ABN 23 108 758 310

2007
AS-FM-2b

ESTIMATE OF COSTS FOR SURVEY PROJECT

Client: LDA
Contact: Joshua Zamora-Pullin

Project: Rivett Section 28 Block 13 - Detail Survey

Agreed Scope of Work: As per survey request

Project Officer: Telephone:

Survey Cost: Fieldwork and processing:
Drafting

Sub-Total: Plus GST

Total Estimate:)

Thank you for the opportunity to quote for this project.

If you have any questions regarding this Quotation please contact the project officer

12 February, 2014

Signature	Name	Date

Client instructions: Please complete section below and FAX to 62965901

Estimate approved yes no (Please circle one)

Approving officer:


Signature

Joshua Zamora-Pullin
Name

13-02-14
Date

ACT SURVEY Pty Ltd
PO Box 378
Mawson ACT 2607

Phone: (02) 62966540
Fax: (02) 62965901
Mobile:

Carson, Lucia

From: Zamora-Pullin, Joshua
Sent: Tuesday, 11 February 2014 2:11 PM
To: Carson, Lucia
Subject: FW: Fee Proposal - Rivett Section 28 Block 13

From: Zamora-Pullin, Joshua
Sent: Tuesday, 11 February 2014 2:09 PM
To: - ACT Survey
Cc: Travis, Garry
Subject: Fee Proposal - Rivett Section 28 Block 13

Good Afternoon

The LDA invites you to submit a **Fee Proposal** to carry out a Topographical Survey on Rivett Section 28 Block 13, with particular interest in any overland flow channels.

I look forward to receiving your proposal, please call or email if I can be of any help

Kind Regards

Joshua Zamora-Pullin
Phone: 6207 1749 | Email: joshua.zamora-pullin@act.gov.au
Project Officer | Urban Releases | Land Development Agency | Economic Development Directorate
Level 7 TransACT House, 470 Northbourne Avenue, Dickson ACT 2602
GPO Box 158, Canberra ACT 2601 | www.economicdevelopment.act.gov.au

20
194

Carson, Lucia

From: Carson, Lucia
Sent: Tuesday, 11 February 2014 1:43 PM
To: Zamora-Pullin, Joshua
Cc: Travis, Garry
Subject: Site Survey for Rivett Section 28 Block 13

*no overland
flow paths.*

Joshua,

Would you please have _____ undertake a site survey for Rivett Section 28 Block 13. **In particular I need to confirm the overland flow path alignment for this site.**

Regards,

Lucia

Taken by hand to Finance 22.08.13

193

Sale of Professional Services Invoice



FOR THE ATTENTION OF Lucia Carson
LAND DEVELOPMENT AGENCY
GPO BOX 158
CANBERRA ACT 2601

Mott MacDonald
Units 11 & 12, First Floor
Block C, Trevor Pearcey Hse
28-30 Traeger Court
Bruce
ACT 2617
Australia

T +61 2 6253 1555
F +61 2 6253 1666

21.8.2013

Invoice No	IN00007715	ABN No	13134120353	Date	21 August 2013
Customer PO Ref		Customer Contact		Customer ABN No	
Our Reference	311006	Our Contact		Customer No	L500904
				Page	1 of 1

Project Description Rivett - Block 13 Section 28

AUD

TAX INVOICE (Summary Attached)

PROFESSIONAL SERVICE FEE

LAND DEVELOPMENT AGENCY - ACCOUNTS PAYABLE					
Entity	Cost Centre	Accounts	Int Trading	Project	Agency
150	16714				
Amount			PO No. 413399		
Goods/Services Received					
Name (print please)			Signature		
Lucia Carson			<i>[Signature]</i>		
Payment Approved					
Delegated (print please)			Signature		
M. Carson			<i>[Signature]</i>		
Designation			Date		
NB			22/8/13		
FINANCIAL USE ONLY					
Description					
Tax Code: 10% AP Free Exempt Outside Scope Capital 10% Capital Free Other - IT, ITCap WAEN					

Net Value

Zero Rated Goods	ABN	0.00%
Other Rated Goods		10.00%

GST Amount
Gross Value AUD

"This is a payment claim made under the "Building and Construction Industry (Security of Payment) Act 2009 (ACT)"
Payment terms within 30 days from date of invoice. Payment to be received no later than 20th September 2013

Please quote our Invoice Number as your remitter name and make payment to our bank account - HSBC Australia
accountsreceivable@mottmac.com.au or mail cheque to Unit 11 & 12, 1st Flr, Blk C, 28-30 Traeger Court, Bruce ACT 2617.

Mott MacDonald Aust Pty Ltd
Registered in Australia ABN 13134120353

Sale of Professional Services Invoice



FOR THE ATTENTION OF Lucia Carson
LAND DEVELOPMENT AGENCY
GPO BOX 158
CANBERRA ACT 2601

LDA
23 AUG 2013
INCOMING MAIL

Mott MacDonald
Units 11 & 12, First Floor
Block C, Trevor Pearcey Hse
28-30 Traeger Court
Bruce
ACT 2617
Australia

T +61 2 6253 1555
F +61 2 6253 1666

Invoice No	IN00007715	ABN No	13134120353	Date	21 August 2013
Customer PO Ref		Customer Contact		Customer ABN No	
Our Reference	311006	Our Contact		Customer No	L500904
				Page	1 of 1

Item Description Rivett – Block 13 Section 28 **AUD**

TAX INVOICE (Summary Attached)

PROFESSIONAL SERVICE FEE

				Net Value
Zero Rated Goods	0.00	ABN	0.00%	0.00
Other Rated Goods	2,560.00		10.00%	256.00

GST Amount
Gross Value AUD

"This is a payment claim made under the "Building and Construction Industry (Security of Payment) Act 2009 (ACT)"
Payment terms within 30 days from date of invoice. Payment to be received no later than 20th September 2013

Please quote our Invoice Number as your remitter name and make payment to our bank
account – HSBC Australia B . Please email remittance to
accountsreceivable@mottmac.com.au or mail cheque to Unit 11 & 12, 1st Flr, Blk C, 28-30 Traeger
Court, Bruce ACT 2617.

Mott MacDonald Aust Pty Ltd
Registered in Australia ABN 13134120353

21/08/2013
Inv No 7715
311006CC05
MB

TAX INVOICE SUMMARY

Attention: **Lucia Carson**

Re: **Rivett - Block 13 Section 28**

To: Professional services in connection with engineering services for the above project in accordance with our proposal dated 5 June 2013. **Purchase Order No L13399**

Progress Claim No. 3

Item	Fee	Completed	Total Claimed	Previously Claimed	This Claim
Site Investigation Report		100%			
Submission of SI servicing proposals to ACTEW		100%			
Traffic Statement		100%			
Liaison/Meetings LDA		100%			
Admission & disbursements costs		100%			
Management of Subconsultants		100%			
Subconsultants					
Tree Assessment (To be Invoiced by EnviroLinks)		0%			
Environmental assessment Phase 1 (To be invoiced by Coffeys)		0%			
Geotech Desktop Assessment (To be invoiced by Coffeys)		0%			
TOTAL FEE					
TOTAL GST					
TOTAL AMOUNT					

Total Amount (including GST) Due this Invoice

Received via email 20.08.2013
 Sent to Finance 5.08.2013

190



Invoice Number: INV0000282709
 Date: 31/07/2013
 Currency: AUD

Tax Invoice

Coffey Geotechnics Pty Ltd ABN: 93 056 929 483

Bill To: LAN0127
LAND DEVELOPMENT AGENCY
 LEVEL 7, TRANSACT HOUSE
 470 NORTHBOURNE AVENUE
 DICKSON ACT 2602

Attention: LUCIA CARSON

Project Number: GEOTFYSH09656AA
 Customer Reference: Order No. L13411
 Project: Due Dilligence Rivett
 Project Manager:

Service Description: FINAL INVOICE This Invoice GST 10% Total Inc GST

Professional service fees as per the attached billing details

Amount Due (AUD)

If you have a question regarding your Invoice please email cons_ar@coffey.com or call Accounts Receivable 1300 300 019

- Direct Credit:** Bank: _____
 Account Name: _____
 Email Remittance Advice to: _____
- Cheque:** Please send cheque to: PO Box 5275, West Chatswood, NSW, 1515, Australia
- Payment Details:** Ensure that the invoice number **INV0000282709** is included with the remittance advice.
- Terms:** 14 days from Invoice

LAND DEVELOPMENT AGENCY - ACCOUNTS PAYABLE					
Entity	Cost Centre	Accounts	Int Trading	Project	Agency
150	16714				
Amount			PO No. 113411		
Goods/Services Received					
Name (print please)			Signature		
Lucia Carson					
Payment Approved					
Delegated Name (print please)			Signature		
Cameron Mackay					
Designation			Date		
Project Director			9/8/13		
FINANCIAL USE ONLY					
Description					
Tax Code: 10% AP Free Exempt Outside Scope Capital 10% Capital Free Other - IT, ITCap, NABN					



GEOTECHNICAL INVESTIGATION

Due Diligence Assessment: Block 13 Section 28,
Rivett, ACT

Land Development Agency

GEOTFYSH09656AA-01

23 July 2013

23 July 2013

Land Development Agency
c/- Mott Macdonald Pty Ltd,
Units 11 & 12, 1st Floor, Block C, Trevor Pearcey House,
28-30 Traeger Court,
Bruce, ACT 2617

Attention: Mike Breen

Dear Mike,

RE: Geotechnical Investigation

Due Diligence Assessment: Block 13 Section 28, Rivett, ACT

Coffey Pty Ltd (Coffey) is pleased to present the results of our geotechnical and contamination investigation for the Due Diligence Assessment at Block 13, Section 28 Rivett, ACT.

If you have any questions related to the report, or we can be of any further assistance, please do not hesitate to contact the undersigned on (02) 6260 7288.

For and on behalf of Coffey Pty Ltd

Project Geotechnical Engineer

Distribution: Original held by Coffey Pty Ltd
Electronic copy to Mott Macdonald and Land Development Agency

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Important Information about your Coffey Report

Figures

Figure 1 – Investigation Location Plan

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Appendices

Appendix A: Site Photos

Appendix B: Test Pit Logs and Explanatory Notes and DCP Test Results

Appendix C: Laboratory Test Reports

1 INTRODUCTION

This report presents the results of a Geotechnical Investigation and Phase 1 Preliminary Contamination Assessment (the investigation) carried out by Coffey at Block 13, Section 28, Rivett, ACT. The investigation forms part of a Due Diligence Assessment of the site being undertaken by Mott Macdonald Pty Ltd.

The investigation was commissioned by Mott Macdonald Pty Ltd on behalf of the Land Development Agency and was undertaken in general accordance with our proposal GEOTFYSH09656AAP-01, dated 30 May 2013.

Block 13, Section 28, Rivett is located adjacent to the Rivett Neighbourhood Oval and the Rivett Shops, off Bangalay Crescent. The approximate area of the block is 3,750m².

The objective of the combined assessment was to assess subsurface conditions at the site and provide comments and recommendations on the following;

- Subsurface conditions, including groundwater conditions within the depth of exploration;
- Excavation conditions;
- Re-use of the site won materials as engineered fill and placement procedures;
- Site classification.

2 SCOPE OF WORK

2.1 Geotechnical Investigation

The scope of work for the geotechnical investigation comprised the following:

- Review of published geological maps and other published data covering the study area;
- Review of geotechnical data held by Coffey from investigations on sites adjacent to the study area, if available;
- Site walkover by a geotechnical engineer to assess potential constraints;
- Excavation of 5 test pits to a maximum depth of 2.75m or refusal using a 3t rubber track excavator;
- Dynamic Cone Penetrometer Testing adjacent to each test pit.
- Laboratory testing comprising 3 No. Particle Size Distribution Tests, 3 No. Atterberg Limits Tests and 3 No. moisture content determinations.

3 GEOTECHNICAL INVESTIGATION

3.1 Desk Top Study and Walkover Survey

3.1.1 Topography and Drainage

The western portion of the Site slopes gently to the east; from the higher western portion adjoining the Rivett Shops car park and Rivett Place. The Site grades to relatively level with minor surface

undulations in the east where it meets the Rivett Sports field and amenities. Topographical information provided in ACT Planning and Land Authority's online interactive mapping service (ACTmapi) indicates the Site lies at an elevation between 606 to 609m above Australian Height Datum (AHD).

Municipal stormwater pits were observed in the Rivett Shops car park to the west of the Site and in the Sports field car park to the north. Some infiltration of surface water is expected to occur within the unsealed and vegetated portions of Site, with runoff diverted to municipal stormwater system. Ultimately, surface water runoff is delivered to Weston Creek (approx. 950m east of Site) via the municipal stormwater system.

Vegetation at the site comprises sparse grass cover and some mature trees around the lot boundaries.

Photographs from the walkover survey are reproduced in Appendix A.

3.1.2 Local Geology and Soils

The 1:50,000 Geology Map of Canberra, Queanbeyan and Environs (Russell 1980) indicates that the Site is underlain Silurian age Deakin Volcanics comprising various tuffs, rhyolite, rhyodacites and agglomerates.

Jenkins (2000) describes the soils of the Site as the transferral landscape *Burra*, with soils identified as typically shallow well drained Rudosols (Lithosols) and Tenosols (Lithosols/Earthy Sands) on crests and upper slopes with moderately deep, moderately well drained Red Kurosols (Red Podzolic soils) and Red Kandosols (Red Earths) on mid- to lower-slopes. Moderately deep, slowly to moderately well drained Brown Chromosols (Yellow Podsolics Soils) and Brown Kandosols (Yellow Earths) are prevalent along drainage lines.

3.1.3 Regional Hydrogeology and Groundwater Usage

The 1:100,000 scale hydrogeological map *Hydrogeology of the Australian Capital Territory* (Evans 1984) indicates the site is located on late Silurian Deakin Volcanics comprising various tuffs, rhyolite, rhyodacites and agglomerates. Water quality tends to be variable to poor with dissolve solids concentration less than 500mg/l and a water yield of 0.5-1.0l/s.

The nearest surface water receptor is Weston Creek which is located approximate 950m to the east of the Site. Groundwater levels are inferred to be at a depth approximately similar or slightly higher than the average surface level of Weston Creek (at approximately RL 590m AHD) and are likely to flow in an easterly to north-easterly direction.

3.1.4 Review of Coffey Archives

A review of archives retained by Coffey found no records of previous investigations and studies carried out by Coffey in the vicinity of the study area.

3.2 Fieldwork

Fieldwork for the investigation was carried out on 4 July 2013 and comprised the excavation of five test pits (TP01 to TP05) to a maximum depth of 1.3m within the investigation area. Based on the initial scope of work, the test pits were to be excavated to a maximum depth of 2.75m, however, during excavation of the test pits, they were terminated on very slow progress within extremely weathered rock.

DCP Tests were carried out adjacent to each test pit to assess the in situ density of the sub-strata. These indicated a medium dense to dense layer in the upper 150mm to 300mm, underlain by very dense to hard sands and/or clays. The tests refused between 750mm and 900mm below existing ground surface.

The approximate locations of the test pits are shown in Figure 1.

A Coffey Geoscientist was present during drilling operations to log materials encountered and photograph the recovered samples. Engineering logs of the test pits together with explanation sheets are presented in Appendix B.

3.3 Subsurface Conditions

Table 1 below provides a summary of the subsurface conditions observed in the test pits.

Table 1 - Summary of Subsurface Conditions Encountered in Test Pits

Material / Origin	Description	Range of Depth to top of Unit (m)	Range of Depth to Base of Unit (m)
Fill	Clayey SAND, fine to coarse grained, brown, medium plasticity clay, assessed loose, with some foreign material.	0.0	0.2 to 0.3
Fill	SAND, fine to medium grained, pale grey with some medium plasticity clay, assessed medium dense. Encountered in TP02 only.	0.2	0.4
Fill	Clay, low to high plasticity, black – red/brown, with some fine grained sand, charcoal and gravel, assessed soft to stiff, encountered in TPs 04 and 05 only.	0.3	0.4 to 0.45
Residual Soil	CLAY, sandy CLAY, medium to high plasticity, with occasional fine to coarse grained sand, black, red/brown, orange/brown, assessed stiff to hard, encountered in all test pits	0.2 to 0.45	0.6 to 0.9
XW Rock	Clayey SAND, gravelly SAND, fine to coarse grained sand, fine to coarse grained angular to subangular gravel, medium plasticity clay, assessed dense to very dense.	0.4 to 0.9	unknown

3.4 Groundwater

Groundwater seepages were not observed during excavation of the test pits. It should be noted that groundwater conditions may vary due to seasonal variations, in particular following heavy or prolonged rainfall.

3.5 Laboratory Testing

3.5.1 Particle Size Distribution Tests

Table 2 presents a summary of the Particle Size Distribution test results on soil samples taken from the test pits. The laboratory test reports are presented in Appendix C.

Table 2 – Summary of Particle Size Distribution test results

Sample Location	Depth (m)	Clay/Silt (%)	Sand (%)	Gravel (%)
TP1	0.3 – 0.4	59	37	4
TP1	0.9 – 1.0	60	37	3
TP4	1.0 – 1.2	61	43	6

3.6 Moisture Content

Table 3 presents a summary of the moisture content test results on soil samples taken from the test pits. The laboratory test reports are presented in Appendix C.

Table 3 – Summary of Moisture Content Test Results

Test Location	Depth (m)	Moisture Content (%)
TP1	0.3 – 0.4	13.0
TP1	0.9 – 1.0	12.6

3.7 Atterberg Limit Tests

Table 4 presents a summary of the Atterberg Limit test results on soil samples taken from the test pits. The laboratory test reports are presented in Appendix C.

Table 4 – Summary of Atterberg Limits Test Results

Test Location	Depth (m)	Plastic Limit	Liquid Limit	Plasticity Index	Linear Shrinkage (%)
TP1	0.3 – 0.4	21	53	32	15.5
TP1	0.9 – 1.0	17	30	13	6.5
TP4	1.0 – 1.2	19	41	22	12.5

4 DISCUSSION AND RECOMMENDATIONS

4.1 Earthworks

4.1.1 Excavation Conditions

Based on the subsurface conditions encountered in the boreholes, it is expected that shallow excavations should encounter fill, and residual soils. Shallow excavations of the soil materials should be able to be carried out using tracked excavators of greater than 5 tonne capacity. Larger excavators may be required to excavate into the extremely weathered materials.

Trafficability over the fill and residual soils, if exposed during and following periods of significant rainfall, may be difficult for wheeled vehicles.

Groundwater was not observed during test pitting. It is expected that groundwater conditions may change seasonally and after wet periods. Groundwater seepage may be expected both within the fill and along the fill and residual soil interfaces.

4.1.2 Suitability of On-Site Materials for use as Engineered Fill

The residual and extremely weathered materials should generally be suitable for re-use as Engineered Fill, provided unsuitable materials such as organics, waste or oversized particles are removed. The existing fill materials will generally not be suitable for re-use as fill.

4.1.3 Unsupported Batters (Temporary or Permanent)

If required, where there is sufficient area on site, the following temporary and permanent unsupported batters may be adopted:

	<u>Temporary Batter Slopes</u>	<u>Permanent Batter Slopes</u>
• Fill	1 (V) : 2 (H)	1 (V) : 3 (H)
• Residual Soils (clayey)	1 (V) : 1 (H)	1 (V) : 2.5 (H)

Surface water should be diverted away from the crests of any excavations by catch drains. Permanent slopes exposing soils should be vegetated to reduce the potential for scour and erosion. The above batters assume surcharge loads are kept well clear of batter crests.

Notwithstanding the above recommended batter slopes, there may be unfavourable conditions within the exposed materials which may require further treatment, such as laying back or covering with mesh. Accordingly, it is recommended that any unsupported batters be viewed by Coffey at regular stages during construction and immediately after rainfall to assess any such requirements for stabilising measures.

4.2 Site Classification

Based on our assessment and Australian Standard (AS2870-2011) "Residential slabs and footings" a site classification of **M**, with an assessed characteristic surface movement (y_s) in the range of less than 20mm is considered appropriate for this site.

If more than 400mm of uncontrolled fill or 400mm of fill material other than sand is present on or remains beneath the footings or if the depth of excavation within the building area extends more than 500mm below the current surface, the above site classification must be reassessed.

The site classifications presented above are provided on the basis that the performance expectations set out in Appendix B of AS2870-2011 are acceptable.

5 PHASE 1 CONTAMINATION ASSESSMENT

Coffey Environments Australia has carried out a preliminary Contamination Assessment and the report will be submitted separately.

6 LIMITATIONS

The geotechnical model and recommendations in this report are based on a limited number of test locations. The test pit logs describe subsurface conditions only at the specific test locations. Ground conditions can vary over relatively close distances and a geotechnical engineer should be engaged at the construction stage to assess whether site conditions are consistent with design assumptions.

The attached document following this report entitled "Important Information about Your Coffey Report" presents additional information on the uses and limitations of this report.

Important information about your **Coffey** Report

As a client of Coffey you should know that site subsurface conditions cause more construction problems than any other factor. These notes have been prepared by Coffey to help you interpret and understand the limitations of your report.

Your report is based on project specific criteria

Your report has been developed on the basis of your unique project specific requirements as understood by Coffey and applies only to the site investigated. Project criteria typically include the general nature of the project; its size and configuration; the location of any structures on the site; other site improvements; the presence of underground utilities; and the additional risk imposed by scope-of-service limitations imposed by the client. Your report should not be used if there are any changes to the project without first asking Coffey to assess how factors that changed subsequent to the date of the report affect the report's recommendations. Coffey cannot accept responsibility for problems that may occur due to changed factors if they are not consulted.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man. For example, water levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Coffey to be advised how time may have impacted on the project.

Interpretation of factual data

Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from literature and external data source review, sampling and subsequent laboratory testing are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified, can reveal what is hidden by

earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, owners should retain the services of Coffey through the development stage, to identify variances, conduct additional tests if required, and recommend solutions to problems encountered on site.

Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered as the project develops. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. Your report should not be applied to any project other than that originally specified at the time the report was issued.

Important information about your **Coffey Report**

Interpretation by other design professionals

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Coffey to work with other project design professionals who are affected by the report. Have Coffey explain the report implications to design professionals affected by them and then review plans and specifications produced to see how they incorporate the report findings.

Data should not be separated from the report*

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way.

Logs, figures, drawings, etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel) and laboratory evaluation of field samples. These logs etc. should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Geoenvironmental concerns are not at issue

Your report is not likely to relate any findings, conclusions, or recommendations about the potential for hazardous materials existing at the site unless specifically required to do so by the client. Specialist equipment, techniques, and personnel are used to perform a geoenvironmental assessment. Contamination can create major health, safety and environmental risks. If you have no information about the potential for your site to be contaminated or create an environmental hazard, you are advised to contact Coffey for information relating to geoenvironmental issues.

Rely on Coffey for additional assistance

Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to a project, from design to construction. It is common that not all approaches will be necessarily dealt with in your site assessment report due to concepts proposed at that time. As the project progresses through design towards construction, speak with Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

Responsibility

Reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than the design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Coffey to other parties but are included to identify where Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Coffey closely and do not hesitate to ask any questions you may have.

* For further information on this aspect reference should be made to "Guidelines for the Provision of Geotechnical Information in Construction Contracts" published by the Institution of Engineers Australia, National Headquarters, Canberra, 1987.

Figures

Rivett Block 13 Section 28

1: 1,432



DISCLAIMER

The map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current or otherwise reliable.

24-May-2013

Page 1 of 2



ACT
Government



**Rivett Block 13
Section 28**

1: 1,432



DISCLAIMER

The map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current or otherwise reliable.

Legend

- 2004 Contours - 10m
- 2004 Contours - 5m
- 2004 Contours - 1m
- Registered Sections
- Approved Sections
- Proposed Sections
- Electrical Easements
- Gas Easements
- Right of Way Easements
- Sewer Easements
- Stormwater Easements
- Telecommunications Easements
- Water Easements
- Water Feature Polygons
- Water Feature Lines
- Urban Registered Blocks
- Rural Registered Blocks
- Stratum Registered Blocks
- Urban Approved Blocks
- Rural Approved Blocks
- Stratum Approved Blocks
- Urban Proposed Blocks
- Rural Proposed Blocks
- Rural Occupied Blocks
- Class B Units
- 2012 Aerial Photography
 - Red: Band_1
 - Green: Band_2
 - Blue: Band_3

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Appendix A


Site Photos



Site Photo 1 – General View Looking Towards Rivett Shops from Near Clubhouse



Site Photo 2 – General View Looking South Towards Church


drawn	CMC		client: Land Development Agency	
approved	JT		project: Due Diligence Assessment: Block 13 Section 28, Rivett, ACT	
date	19/7/2013		title: SITE PHOTOS	
scale	NTS		project no: GEOTFYSH09656AA-01	
original size	A4		Page: 1	



Site Photo 3 – General View Looking North Towards Clubhouse



Site Photo 4 – General View Looking North Towards Care Home

drawn	CMC	 <p>coffey geotechnics SPECIALISTS MANAGING THE EARTH</p>	client:	Land Development Agency	
approved	JT		project:	Due Diligence Assessment: Block 13 Section 28, Rivett, ACT	
date	19/7/2013		title:	SITE PHOTOS	
scale	NTS		project no:	GEOTFYSH09657AA-01	Page: 2
original size	A4				

Appendix B

Engineering Test Pit Logs and Explanatory Notes and DCP Test Results

Soil Description Explanation Sheet (1 of 2)

DEFINITION:

In engineering terms soil includes every type of uncemented or partially cemented inorganic or organic material found in the ground. In practice, if the material can be remoulded or disintegrated by hand in its field condition or in water it is described as a soil. Other materials are described using rock description terms.

CLASSIFICATION SYMBOL & SOIL NAME

Soils are described in accordance with the Unified Soil Classification (UCS) as shown in the table on Sheet 2.

PARTICLE SIZE DESCRIPTIVE TERMS

NAME	SUBDIVISION	SIZE
Boulders		>200 mm
Cobbles		63 mm to 200 mm
Gravel	coarse	20 mm to 63 mm
	medium	6 mm to 20 mm
	fine	2.36 mm to 6 mm
Sand	coarse	600 µm to 2.36 mm
	medium	200 µm to 600 µm
	fine	75 µm to 200 µm

MOISTURE CONDITION

- Dry** Looks and feels dry. Cohesive and cemented soils are hard, friable or powdery. Uncemented granular soils run freely through hands.
- Moist** Soil feels cool and darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.
- Wet** As for moist but with free water forming on hands when handled.

CONSISTENCY OF COHESIVE SOILS

TERM	UNDRAINED STRENGTH s_u (kPa)	FIELD GUIDE
Very Soft	<12	A finger can be pushed well into the soil with little effort.
Soft	12 - 25	A finger can be pushed into the soil to about 25mm depth.
Firm	25 - 50	The soil can be indented about 5mm with the thumb, but not penetrated.
Stiff	50 - 100	The surface of the soil can be indented with the thumb, but not penetrated.
Very Stiff	100 - 200	The surface of the soil can be marked, but not indented with thumb pressure.
Hard	>200	The surface of the soil can be marked only with the thumbnail.
Friable	-	Crumbles or powders when scraped by thumbnail.

DENSITY OF GRANULAR SOILS

TERM	DENSITY INDEX (%)
Very loose	Less than 15
Loose	15 - 35
Medium Dense	35 - 65
Dense	65 - 85
Very Dense	Greater than 85

MINOR COMPONENTS

TERM	ASSESSMENT GUIDE	PROPORTION OF MINOR COMPONENT IN:
Trace of	Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary component.	Coarse grained soils: <5% Fine grained soils: <15%
With some	Presence easily detected by feel or eye, soil properties little different to general properties of primary component.	Coarse grained soils: 5 - 12% Fine grained soils: 15 - 30%

SOIL STRUCTURE

ZONING		CEMENTING	
Layers	Continuous across exposure or sample.	Weakly cemented	Easily broken up by hand in air or water.
Lenses	Discontinuous layers of lenticular shape.	Moderately cemented	Effort is required to break up the soil by hand in air or water.
Pockets	Irregular inclusions of different material.		

GEOLOGICAL ORIGIN

WEATHERED IN PLACE SOILS

- Extremely weathered material Structure and fabric of parent rock visible.
- Residual soil Structure and fabric of parent rock not visible.

TRANSPORTED SOILS

- Aeolian soil Deposited by wind.
- Alluvial soil Deposited by streams and rivers.
- Colluvial soil Deposited on slopes (transported downslope by gravity).
- Fill Man made deposit. Fill may be significantly more variable between tested locations than naturally occurring soils.
- Lacustrine soil Deposited by lakes.
- Marine soil Deposited in ocean basins, bays, beaches and estuaries.

Soil Description Explanation Sheet (2 of 2)

SOIL CLASSIFICATION INCLUDING IDENTIFICATION AND DESCRIPTION

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60 mm and basing fractions on estimated mass)				USC	PRIMARY NAME	
COARSE GRAINED SOILS More than 50% of materials less than 63 mm is larger than 0.075 mm	GRAVELS More than half of coarse fraction is larger than 2.0 mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes.	GW	GRAVEL	
		GRAVELS WITH FINES (Appreciable amount of fines)	Predominantly one size or a range of sizes with more intermediate sizes missing.	GP	GRAVEL	
		SANDS More than half of coarse fraction is smaller than 2.0 mm	CLEAN SANDS (Little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate sizes missing	SW	SAND
			SANDS WITH FINES (Appreciable amount of fines)	Predominantly one size or a range of sizes with some intermediate sizes missing.	SP	SAND
	(A 0.075 mm particle is about the smallest particle visible to the naked eye)	GRAVELS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below)	GM	SILTY GRAVEL	
			Plastic fines (for identification procedures see CL below)	GC	CLAYEY GRAVEL	
		SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).	SM	SILTY SAND	
			Plastic fines (for identification procedures see CL below).	SC	CLAYEY SAND	
FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm (A 0.075 mm particle is about the smallest particle visible to the naked eye)	IDENTIFICATION PROCEDURES ON FRACTIONS <0.2 mm.					
	SILTS & CLAYS Liquid limit less than 50	DRY STRENGTH	DILATANCY	TOUGHNESS		
		None to Low	Quick to slow	None	ML	SILT
		Medium to High	None	Medium	CL	CLAY
	SILTS & CLAYS Liquid limit greater than 50	Low to medium	Slow to very slow	Low	OL	ORGANIC SILT
		Low to medium	Slow to very slow	Low to medium	MH	SILT
		High	None	High	CH	CLAY
		Medium to High	None	Low to medium	OH	ORGANIC CLAY
HIGHLY ORGANIC SOILS	Readily identified by colour, odour, spongy feel and frequently by fibrous texture.			Pt	PEAT	

• Low plasticity – Liquid Limit W_L less than 35%. • Medium plasticity – W_L between 35% and 50%.

COMMON DEFECTS IN SOIL

TERM	DEFINITION	DIAGRAM	TERM	DEFINITION	DIAGRAM
PARTING	A surface or crack across which the soil has little or no tensile strength. Parallel or sub parallel to layering (eg bedding). May be open or closed.		SOFTENED ZONE	A zone in clayey soil, usually adjacent to a defect in which the soil has a higher moisture content than elsewhere.	
JOINT	A surface or crack across which the soil has little or no tensile strength but which is not parallel or sub parallel to layering. May be open or closed. The term 'fissure' may be used for irregular joints <0.2 m in length.		TUBE	Tubular cavity. May occur singly or as one of a large number of separate or inter-connected tubes. Walls often coated with clay or strengthened by denser packing of grains. May contain organic matter	
SHEARED ZONE	Zone in clayey soil with roughly parallel near planar, curved or undulating boundaries containing closely spaced, smooth or slickensided, curved intersecting joints which divide the mass into lenticular or wedge shaped blocks.		TUBE CAST	Roughly cylindrical elongated body of soil different from the soil mass in which it occurs. In some cases the soil which makes up the tube cast is cemented.	
SHEARED SURFACE	A near planar curved or undulating, smooth, polished or slickensided surface in clayey soil. The polished or slickensided surface indicates that movement (in many cases very little) has occurred along the defect.		INFILLED SEAM	Sheet or wall like body of soil substance or mass with roughly planar to irregular near parallel boundaries which cuts through a soil mass. Formed by infilling of open joints.	

Engineering Log - Excavation

Excavation No. **TP01**
 Sheet 1 of 1
 Project No: **GEOTFYSH09656AA**
 Date started: **4.7.2013**
 Date completed: **4.7.2013**
 Logged by: **SB**
 Checked by: **CMC/ND**

Client: **Land Development Agency**
 Principal:
 Project: **Due Diligence Assessment: Block 13, Section 28, Rivett, ACT**
 Test pit location: **Refer to Figure 1**

equipment type and model: 5 Tonne Pit Orientation: Easting: 689310 m R.L. Surface:
 excavation dimensions: 0.7m long 2.5m wide Northing: 6073338 m datum: UTM 55H

excavation information					material substance							
method	penetration	support	water	notes samples, tests, etc	depth RL metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/density index	pocket penetrometer kPa	structure and additional observations
1	2	3									100 200 300 400	
W		N						FILL: Clayey SAND, fine to coarse grained, brown, medium plasticity clay	D	S		FILL
		None Encountered		TP1-1			CI	CLAY, medium plasticity, black with some white and grey sand, with some fine to coarse grained sand	<Wp	Vs/H		RESIDUAL PID = 0.0
				TP1-2	0.5							PID = 0.0
				DS				SANDSTONE, very low to low strength	D	H		EXTREMELY TO HIGHLY WEATHERED ROCK
					1.0			Test pit TP01 terminated at 0.8m				Test Pit terminated on Very Slow progress
					1.5							

Sketch

method N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	support S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water water level on date shown water inflow water outflow	notes, samples, tests U ₃₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	classification symbols and soil description based on unified classification system moisture D dry M moist W wet Wp plastic limit W _L liquid limit	consistency/density index VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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TESTPIT GEOTFYSH09656AA.GPJ COFFEY.C '18.7.13

Engineering Log - Excavation

Excavation No. **TP02**

Sheet 1 of 1

Project No: **GEOTFYSH09656AA**

Client: **Land Development Agency**

Date started: **4.7.2013**

Principal:

Date completed: **4.7.2013**

Project: **Due Diligence Assessment: Block 13, Section 28, Rivett, ACT** Logged by: **SB**

Test pit location: **Refer to Figure 1**

Checked by: **CMC/ND**

equipment type and model: 5 Tonne Pit Orientation: Easting: 689283 m R.L. Surface:
excavation dimensions: 0.7m long 2.5m wide Northing: 6073338 m datum: UTM 55H

excavation information				material substance									
method	penetration	support	water	notes samples, tests, etc	depth RL	depth metres	graphic log	classification symbol	material	moisture condition	consistency/density index	pocket penetrometer kPa	structure and additional observations
1	2	3							soil type: plasticity or particle characteristics, colour, secondary and minor components.			100 200 300 400	
W		N							FILL: Clayey SAND , fine to medium grained, pale black, medium plasticity clay	D	L		FILL
				TP2-1				SW	SAND , fine to medium grained, pale grey, with some medium plasticity clay	M	MD		PID = 0.0
				TP2-2				CH	Sandy CLAY , medium to high plasticity, red/brown/orange, fine to coarse grained sand	=Wp	VSt		PID = 0.0
				DS		0.5		SC	Clayey SAND , fine to coarse grained, grey/brown, medium plasticity clay	D	VD		RESIDUAL SOIL
									Test pit TP02 terminated at 0.9m				Tree root observed at 0.7m
						1.0							EXTREMELY WEATHERED ROCK
						1.5							Test Pit terminated on Very Slow progress

Sketch

method N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	support S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water water level on date shown water inflow water outflow	notes, samples, tests U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	classification symbols and soil description based on unified classification system moisture D dry M moist W wet Wp plastic limit W _L liquid limit	consistency/density index VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Excavation

Excavation No. **TP03**
 Sheet 1 of 1
 Project No: **GEOTFYSH09656AA**
 Date started: **4.7.2013**
 Date completed: **4.7.2013**
 Logged by: **SB**
 Checked by: **CMC/ND**

Client: **Land Development Agency**
 Principal:
 Project: **Due Diligence Assessment: Block 13, Section 28, Rivett, ACT**
 Test pit location: **Refer to Figure 1**

equipment type and model: 5 Tonne Pit Orientation: Easting: 689270 m R.L. Surface:
 excavation dimensions: 0.7m long 2.5m wide Northing: 6073317 m datum: UTM 55H

excavation information				material substance								
method	penetration	support	water	notes samples, tests, etc	depth RL metres	graphic log	classification symbol	material	moisture condition	consistency/density index	pocket penetrometer	structure and additional observations
1	2	3						soil type: plasticity or particle characteristics, colour, secondary and minor components.			100 200 300 400	
E		N						FILL: Clayey SAND , fine to coarse grained, black, medium plasticity clay, with some foreign material	M	L		FILL
			None Encountered	TP3-1			CH	CLAY , high plasticity, red/brown, some fine grained sand	<Wp	St		RESIDUAL SOIL PID = 0.0
				TP3-2	0.5		SC	Clayey SAND , fine to medium grained, grey/brown, medium plasticity clay	D	DVD		EXTREMELY WEATHERED ROCK
					1.0			Test pit TP03 terminated at 0.8m				Tree root observed at 0.8m Test Pit terminated on Very Slow progress
					1.5							

Sketch

method N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	support S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water ▽ water level on date shown ► water inflow ◄ water outflow	notes, samples, tests U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	classification symbols and soil description based on unified classification system moisture D dry M moist W wet W _p plastic limit W _L liquid limit	consistency/density index VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Excavation

Client: **Land Development Agency**

Principal:

Project: **Due Diligence Assessment: Block 13, Section 28, Rivett, ACT** Logged by: **SB**

Test pit location: **Refer to Figure 1**

Excavation No. **TP04**

Sheet 1 of 1

Project No: **GEOTFYSH09656AA**

Date started: **4.7.2013**





Date completed: **4.7.2013**

Checked by: **CMC/ND**

equipment type and model: 5 Tonne Pit Orientation: Easting: 689297 m R.L. Surface:
 excavation dimensions: 0.7m long 2.5m wide Northing: 6073327 m datum: UTM 55H

excavation information				material substance								
method	penetration	support	water	notes samples, tests, etc	depth RL metres	graphic log	classification symbol	material	moisture condition	consistency/density index	pocket penetrometer kPa	structure and additional observations
1	2	3						soil type: plasticity or particle characteristics, colour, secondary and minor components.			100 200 300 400	
W		N						FILL: Clayey SAND , fin eto coarse grained, brown, medium plasticity, with some foreign material	D	L		FILL
				TP4-1			CL	CLAY , low to medium plasticity, black, with some fine grained sand, gravel and charcoal	<Wp	S		PID = 0.0
				TP4-2	0.5		CH	Sandy CLAY , medium to high plasticity, red/brown, fine to medium grained sand	=Wp	St		RESIDUAL SOIL
				Bs								
					1.0		SW	Gravelly SAND , fine to coarse grained, brown/orange/grey/red, fine to coarse grained, angular to subangular gravel	D/M	D		EXTREMELY WEATHERED ROCK PID = 0.0
								Test pit TP04 terminated at 1.3m				Test Pit terminated on Very Slow progress
					1.5							

Sketch

method N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	support S shoring N nil penetration 1 2 3 4  no resistance ranging to refusal water  water level on date shown  water inflow  water outflow	notes, samples, tests U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	classification symbols and soil description based on unified classification system moisture D dry M moist W wet Wp plastic limit W _L liquid limit	consistency/density index VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Excavation

Excavation No. **TP05**
 Sheet 1 of 1
 Project No: **GEOTFYSH09656AA**
 Date started: **4.7.2013**
 Date completed: **4.7.2013**
 Logged by: **SB**
 Checked by: **CMC/ND**

Client: **Land Development Agency**
 Principal:
 Project: **Due Diligence Assessment: Block 13, Section 28, Rivett, ACT**
 Test pit location: **Refer to Figure 1**

equipment type and model: 5 Tonne Pit Orientation: Easting: 689310 m R.L. Surface:
 excavation dimensions: 0.7m long 2.5m wide Northing: 6073326 m datum: UTM 55H

excavation information				material substance									
method	penetration	support	water	notes samples, tests, etc	depth RL	depth metres	graphic log	classification symbol	material	moisture condition	consistency/density index	pocket penetrometer	structure and additional observations
1	2	3							soil type: plasticity or particle characteristics, colour, secondary and minor components.			100 200 300 400	
W		N							FILL: Clayey SAND , fine to coarse grained, black, medium plasticity clay, with some foreign material	M	L		FILL
			None Encountered	TP5-1				CH	CLAY , high plasticity, red/brown, some fine grained sand	<Wp	St		RESIDUAL PID = 0.0
				TP5-1	0.5			SC	Clayey SAND , fine to medium grained, grey/brown, medium plasticity clay, with some fine to coarse grained gravel	D	D/DV		EXTREMELY WEATHERED ROCK
									Test pit TP05 terminated at 0.8m				Tree root observed at 0.6m PID = 0.0
					1.0								Test Pit terminated on Very Slow progress
					1.5								

Sketch

TESTPIT GEOTFYSH09656AA.GPJ COFFEY.C 18.7.13

method N natural exposure X existing excavation BH backhoe bucket B bulldozer blade R ripper E excavator	support S shoring N nil penetration 1 2 3 4 no resistance ranging to refusal water water level on date shown water inflow water outflow	notes, samples, tests U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample V vane shear (kPa) Bs bulk sample E environmental sample R refusal	classification symbols and soil description based on unified classification system moisture D dry M moist W wet W _p plastic limit W _L liquid limit	consistency/density index VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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AS1289 F3.2 - 1984 Dynamic Cone Penetrometer Test

Sheet **1** of **2**

Client	Land Development Agency	Office	Fyshwick
Principal		Date	4/07/2013
Project	Due Diligence Assessment	By	SB
Location	Block 13 Section 28, Rivett, ACT	Checked	CMC

Test No.	1	Test No.	2	Test No.	3	Test No.	4
Test Location:	Adj. TP01	Test Location:	Adj. TP02	Test Location:	Adj. TP03	Test Location:	Adj. TP04
RL:		RL:		RL:		RL:	
Depth	Blows	Depth	Blows	Depth	Blows	Depth	Blows
0.15	6	0.15	7	0.15	4	0.15	7
0.30	7	0.30	14	0.30	12	0.30	12
0.45	22	0.45	25	0.45	28	0.45	19
0.60	28	0.60	38	0.60	27	0.60	27
0.75	R	0.75	R	0.75	34	0.75	34
0.90		0.90		0.90	R	0.90	R
1.05		1.05		1.05		1.05	
1.20		1.20		1.20		1.20	
1.35		1.35		1.35		1.35	
1.50		1.50		1.50		1.50	

AS1289 F3.2 - 1984 Dynamic Cone Penetrometer Test

Sheet **2** of **2**

Client	Land Development Agency	Office	Fyshwick
Principal		Date	4/07/2013
Project	Due Diligence Assessment	By	SB
Location	Block 13 Section 28, Rivett, ACT	Checked	CMC

Test No.	5	Test No.		Test No.		Test No.	
Test Location:	Adj. TP05	Test Location:		Test Location:		Test Location:	
RL:		RL:		RL:		RL:	
Depth	Blows	Depth	Blows	Depth	Blows	Depth	Blows
0.15	4	0.15		0.15		0.15	
0.30	17	0.30		0.30		0.30	
0.45	22	0.45		0.45		0.45	
0.60	29	0.60		0.60		0.60	
0.75	R	0.75		0.75		0.75	
0.90		0.90		0.90		0.90	
1.05		1.05		1.05		1.05	
1.20		1.20		1.20		1.20	
1.35		1.35		1.35		1.35	
1.50		1.50		1.50		1.50	

Appendix C
Laboratory Test Reports



Fyshwick, Canberra Laboratory

Coffey Testing Pty Ltd
 ABN 92 114 364 046
 16 Mildura Street
 Fyshwick ACT 2609

Phone: +61 2 6260 7288
 Fax: +61 2 6260 7211

Material Test Report

Report No: FYSH13S-01219-1

Issue No: 1

Client: Coffey Geotechnics Pty Ltd (Fyshwick)
 P.O. Box 152
 Fyshwick ACT 2609

Principal:
 Project No.: INFOFYSH00507AA
 Project Name: GEOTFYSH09656AA - Due Diligence Rivett
 Lot No.: TRN:

Accredited for compliance with ISO/IEC 17025.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.



WORLD RECOGNISED ACCREDITATION

Approved Signatory: Rod Wilkins
 (Senior Geotechnician)
 NATA Accredited Laboratory Number: 431
 Date of Issue: 22/07/2013

Sample Details

Sample ID: FYSH13S-01219
 Client Sample:
 Date Sampled: 05/07/2013
 Source: Test Pit
 Material: Natural Material
 Classification: AS Grading
 Sampling Method: Submitted by client
 Project Location: Rivett, ACT
 Sample Location: TP1: 0.9m to 1.0m

Particle Size Distribution

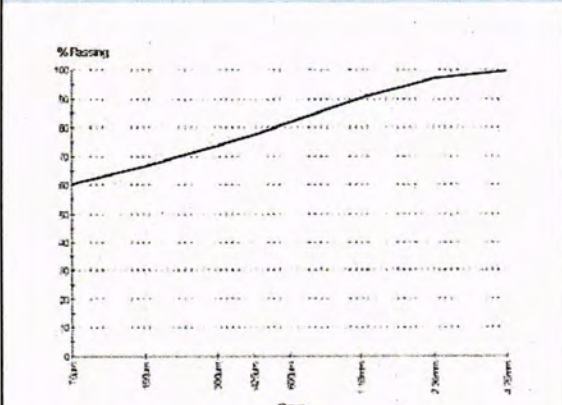
Method: AS 1289.3.6.1
 Drying by: Oven
 Date Tested: 17/07/2013
 Note: Sample Washed

Sieve Size	% Passing	Limits
4.75mm	100	
2.36mm	97	
1.18mm	90	
600µm	82	
425µm	77	
300µm	74	
150µm	67	
75µm	60	

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	12.6	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	6.5	
Mould Length (mm)		254	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.2	30	
Method		One Point	
Plastic Limit (%)	AS 1289.3.2.1	17	
Shrinkage Index (%)	AS 1289.3.3.1	13	

Chart



Comments

N/A



Material Test Report


Report No: FYSH13S-01220-1
 Issue No: 1

Client: Coffey Geotechnics Pty Ltd (Fishwick)
 P.O. Box 152
 Fishwick ACT 2609

Principal:
 Project No.: INFOFYSH00507AA
 Project Name: GEOTFYSH09656AA - Due Diligence Rivett
 Lot No.: TRN:

Accredited for compliance with ISO/IEC 17025.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.



Approved Signatory: Rod Wilkins
 (Senior Geotechnician)
 NATA Accredited Laboratory Number: 431
 Date of Issue: 22/07/2013

Sample Details

Sample ID: FYSH13S-01220
 Client Sample:
 Date Sampled: 05/07/2013
 Source: Test Pit
 Material: Natural Material
 Classification: AS Grading
 Sampling Method: Submitted by client
 Project Location: Rivett, ACT
 Sample Location: TP4: 1.0m to 1.2m

Particle Size Distribution

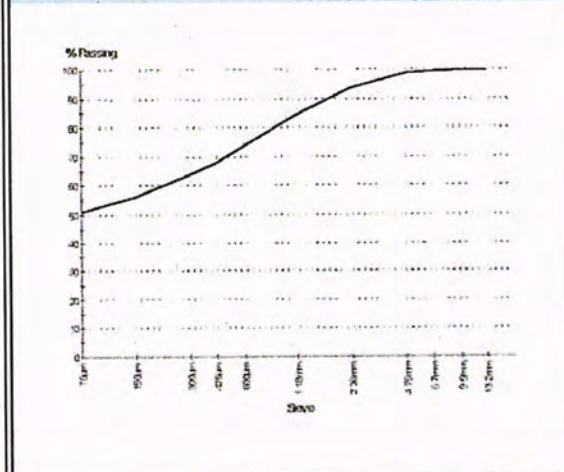
Method: AS 1289.3.6.1
 Drying by: Oven
 Date Tested: 17/07/2013
 Note: Sample Washed

Sieve Size	% Passing	Limits
13.2mm	100	
9.5mm	100	
6.7mm	99	
4.75mm	99	
2.36mm	94	
1.18mm	84	
600µm	74	
425µm	68	
300µm	64	
150µm	56	
75µm	51	

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1		
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	12.5	
Mould Length (mm)		254	
Crumbling		No	
Curling		Yes	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.2	41	
Method		One Point	
Plastic Limit (%)	AS 1289.3.2.1	19	
Shrinkage Index (%)	AS 1289.3.3.1	22	

Chart



Comments

N/A



Fyshwick, Canberra Laboratory

Coffey Testing Pty Ltd
ABN 92 114 364 046
16 Mildura Street
Fyshwick ACT 2609

Phone: +61 2 6260 7288
Fax: +61 2 6260 7211

Material Test Report

Report No: FYSH13S-01221-1
Issue No: 1

Client: Coffey Geotechnics Pty Ltd (Fyshwick)
P.O. Box 152
Fyshwick ACT 2609

Principal:
Project No.: INFOFYSH00507AA
Project Name: GEOTFYSH09656AA - Due Diligence Rivett
Lot No.: TRN:

Accredited for compliance with ISO/IEC 17025.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.



Approved Signatory: Rod Wilkins
(Senior Geotechnician)
NATA Accredited Laboratory Number: 431
Date of Issue: 22/07/2013

Sample Details

Sample ID:	FYSH13S-01221
Client Sample:	
Date Sampled:	05/07/2013
Source:	Test Pit
Material:	Natural Material
Classification:	AS Grading
Sampling Method:	Submitted by client
Project Location:	Rivett, ACT
Sample Location:	TP1: 0.3m to 0.4m

Particle Size Distribution

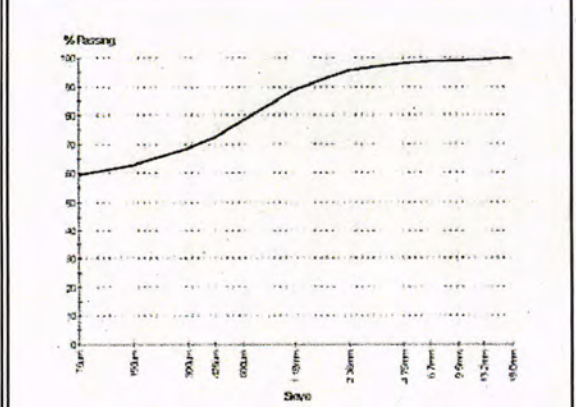
Method:	AS 1289.3.6.1
Drying by:	Oven
Date Tested:	17/07/2013
Note:	Sample Washed

Sieve Size	% Passing	Limits
19.0mm	100	
13.2mm	99	
9.5mm	99	
6.7mm	99	
4.75mm	98	
2.36mm	96	
1.18mm	89	
600µm	78	
425µm	72	
300µm	68	
150µm	63	
75µm	59	

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	13.0	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	15.5	
Mould Length (mm)		254	
Crumbling		No	
Curling		Yes	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.2	53	
Method		One Point	
Plastic Limit (%)	AS 1289.3.2.1	21	
Shrinkage Index (%)	AS 1289.3.3.1	32	

Chart



Comments

N/A



Rivett Section 28 Block 13

Site Investigation Report

July 2013

Land Development Agency





Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
1	25/07/2013	NC	MF <i>[Signature]</i>	MB <i>[Signature]</i>	Draft

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Executive Summary

Mott MacDonald has been engaged by the Land Development Agency to prepare a Site Investigation Report (SIR) for Rivett Section 28 Block 13 (the Site). The block is located between the Rivett shops and Rivett oval.

This report has been prepared in accordance with Mott MacDonald's fee proposal dated 05 June 2013.

The findings of this investigation are as follows:

Vergeworks

It is proposed that vergeworks on public land would be minimal consisting of hard paving to the existing verge at the northern end of the block.

Vehicular Access

Preliminary discussions with TAMS have indicated that a safe location for vehicular access is to be identified taking into account the potential impact on other facilities in the vicinity. On this basis the preferred location for vehicle access is on Rivett Place at the southern end of the block clear of the existing carparking and circulation aisle.

Services:

Stormwater – There is an existing public 525mm dia stormwater line outside the eastern boundary of the Site. This existing stormwater line is located on the low side of the Site. It appears feasible for the service tie for Section 28 Block 13 to connect into the this line via a maintenance hole

Sewer – There is an existing sewer tie located at the northern corner of the Site. ACTEW Water has advised that the location of the tie appears to be acceptable to service the block. Refer correspondence in Appendix C.

Water – There is no evidence of existing water mains located within the Site. An existing main is located in the adjacent to the western boundary of the Site which is suitable placed to provide a water service connection. ACTEW Water has given in-principle approval to the proposed water tie in this location. Refer correspondence in Appendix C.

Gas – These is an existing gas easement along the western boundary of the Site containing a 32mm dia gas main. ZNX has advised that there are no issues connecting a gas service to the development off the existing line. Refer correspondence contained in Appendix C.

Telecommunication – There is no evidence of existing telecommunications infrastructure located within the Site. An existing communication line is located adjacent to and west of the Site which should be suitable for providing a telecommunication service connection. Telstra has provided in-principle approval for the proposed Telstra network connection, refer to the correspondence contained in Appendix C.

Electrical – ActewAGL have advised that they cannot confirm whether or not the existing electrical network has the capacity to service a development on the Site until the size and conditions of any future development is known. Refer to the correspondence with ActewAGL contained in Appendix C.

Easements *deck*

The following easements are identified from ACTMAPi and are located on Site:

- Shared electrical and sewer easement along the northern boundary of the Site of varying width; &
- ActewAGL gas easement along the western boundary.

There are no new easements required within the site.

Existing easements within the Site may form a constraint to the development of the Site.

Existing Path

There is an existing concrete footpath that passes through the southern part of the Site. The development of the Site would require the removal of this path. It is anticipated that the existing footpath south of the development Site should be sufficient for the pedestrians accessing the path network and the playground from the Rivett shops.

Trees

A tree assessment has been undertaken which indicated that there are 35 trees located on the Site, two that are of medium value are considered to be Protected Trees under the Tree Protection Act 2005. Trees identified as protected may be a constraint to the development of the Site.

Noise

Traffic noise is not anticipated to be a constraint to a future development.

Overland Flow Path

There appears to be an existing minor overland flow path through the Site. The overland flow path has been identified on the basis of a visual assessment on site and contour information of the surrounding area shown on ACTMAPi. To comply with the Design Standards for Urban Infrastructure the overland flow paths should not cross block leases. The overland flow path may be a development constraint to the Site. A site survey is required to be undertaken to confirm the overland flow path alignment.

Traffic

Traffic conditions observed indicate that land uses associated with a community facility will not significantly affect the operational capacity of the adjacent streets or the intersections of Bangalay Crescent / Streeton Drive and Bangalay Crescent / Hindmarsh Drive. Traffic is not expected to be a constraint to the development of the Site.

Soil Condition

Preliminary contamination and geotechnical assessments have been undertaken by Coffey Environments and Coffey Geotechnics which indicated the following :

- No apparent visual indication of Site contamination were observed during the Site walkover;
- No unusual odours were noted during sampling;
- No visual evidence of potential asbestos contaminating material (ACM) was noted;
- 10 soil samples were collected, there were no indications of volatile organic compounds recorded;
- 5 samples were selected for chemical analysis, no sample found to contain contaminants of potential concern in excess of the adopted site assessment criteria;
- The geological profile of the site generally consists of fill up to 0.4m deep in places over residual soils to a maximum depth of 0.9m with extremely weathered rock as shallow as 0.4m in places;
- Five on site test pits were excavated to a maximum depth of 1.3m where they were terminated on refusal within extremely weathered rock;
- Ground water was not observed during excavations of test pits;
- The Site is considered to be classified as **M** (moderately reactive clay sites, which may experience moderate ground movement from moisture changes).

The likelihood of contamination to be present on the Site is considered to be low.

Cost Estimate

The estimated cost to service the Site is

1. Existing Block

Rivett Section 28 Block 13 (the Site) is bounded by :

- North – Existing community facilities building on Block 9 Section 28;
- East – Rivett public oval and facilities on Block 4 Section 27;
- South – Existing community facilities car park on Block 14 Section 28; and
- West – public infrastructure of Rivett Place and carpark serving Rivett local shops.

The Site is currently undeveloped and is approximately 2,550m² in size. Site observations indicate that the Site currently contains the following :

- Grass surface;
- Clusters of mature trees;
- Pedestrian pathway; and
- Block 13 generally falls from west to east at about 4%.

The Site is registered on the ACT Territory Plan 14 December 2012 for Community Facilities (CFZ).

Figure 1.1: Rivett Section 28 Block 13 Aerial Photograph



Source: ACTMAPi version 3 2012 aerial photograph accessed on 25th June 2013

1.1 Vergeworks

There is an existing verge of varying width located between the western boundary of the Site and Rivett Place.

- At the northern corner of the Site the verge is approximately 5.5m wide over a length of 7m and contains a public phone booth, streetlight, existing service pits and dryland grassing.
- At the southern corner of the site the verge is approximately 5.5m wide over a length of about 20m. This section of verge contains a footpath, a mature eucalypt tree and dryland grassing.
- Between the above sections of verge the block frontage is adjacent to 90 degree parking spaces over a length of some 27m with minimal width of verge in the order of 300mm. This section of verge consists of decomposed granite infill with log barriers located just inside the block boundary. Refer Figure 1.2.

deck →

Figure 1.2 – Existing log barriers and decomposed granite infill on western side of the Site



deck. Where exactly are (proposed) to do this way?

It is proposed that vergeworks on public land would be minimal consisting of hard paving to the existing verge at the northern end of the block in the vicinity of the telephone box. The lack of verge width adjacent to the parking spaces may be addressed with the provision of paving gas easement which occupies the frontage to the block.

1.2 Access

The following are the normal requirements for the location of driveways in the ACT:

- ACTPLA Community and Recreation Facilities Location Guidelines General Code – There should not be direct access off arterial roads and other roads with high traffic volumes;
- Parking and Vehicular Access General Code – Access points directly opposite the terminating road of a T-junction should be avoided; and
- Parking and Vehicular Access General Code – Corner blocks should have the driveway at the maximum practicable distance from the corner, and preferably on the minor road.

Preliminary discussions with TAMS have indicated that a safe location for vehicular access is to be identified taking into account the potential impact on other facilities in the vicinity. TAMS have agreed to provide comments on the completed site investigation report for Block 13. Refer correspondence in Appendix C

An indicative location for vehicle access has been shown on the proposed service plan MMD-311006-C-DR-CC05-SP-0002 Appendix A. This location is clear of the existing 90 degree parking spaces adjacent to the western boundary of the Site. This proposed driveway location is also clear of the circulation aisle of the carpark serving Rivett shops. Note that the indicative location will provide for a similar arrangement to the existing access driveway for Section 28 Block 15 which is adjacent to the Site.

There is no visual evidence of significant pavement failure or distress within Rivett Place. The road width of Rivett Place at the proposed access is approximately 7.5m and the verge adjacent to the Site is approximately 5.5m wide. It is anticipated that this width should allow a sufficient space for a waste vehicle to access and egress the Site. On this basis Rivett Place is considered suitable to be used by waste vehicles to service the Site.

The tree assessment in Appendix D indicates that there is a high value tree that is considered to be Protected Trees within the western verge of the site adjacent to the location of the proposed vehicular access, as shown in Figure 1.3. There appears to be sufficient space to for the driveway to be located clear of this canopy of the existing tree.

1.3 Existing Services

Existing service information has been obtained from:

- Existing services plans provided by service authorities for sewer, water, gas, electricity and communications via A Dial Before You Dig (DBYD) request, details are provided in Appendix B; and
- ACT 1993 stormwater plans.

The information supplied in this section is qualified on the basis that others have supplied it for use in this report. This information was updated and confirmed by a site visit where possible. There were no major discrepancies on site that appeared to be in conflict with the information supplied by authorities apart from some positional variations of some structures.

The following services are shown on the Existing Services Plan, drawing number MMD-311006-C-DR-CC05-SP-0001 in Appendix A.

Stormwater

ACT 1993 Stormwater plans indicate;

- No existing stormwater lines within the Site;
- Existing 450mm dia stormwater north of the Site with a maintenance hole at the corner;
- Existing 525mm dia stormwater east of the Site with a maintenance hole midblock near the southern corner; and
- No evidence of existing stormwater ties to the Site.

Sewer

ACTEW Water plans indicate :

- Existing 150mm dia sewer main within an easement along north boundary of the Site;
- Existing 150mm dia sewer tie located near north most corner of the Site and
- Existing 150mm dia sewer main located external to the western boundary of the Site.

Water Supply

ACTEW Water and WAE drawings indicate :

- No evidence of existing water tie to the Site;
- No water mains within the Site and
- 150mm dia water main external to the western boundary of the Site including hydrant in the verge of Rivett Place.

Gas

ActewAGL plans indicate :

- 32mm gas main from Bangalay Crescent aligned adjacent to carpark area and Rivett Place;
- Gas easement along the western boundary of the Site containing a 32mm diameter gas main and
- No evidence of existing gas tie to the Site.

Telecommunications

Telstra/ plans indicate :

- No telecommunication assets within the Site; and
- Existing Telstra lines located external to the western boundary of the Site.

Electricity

ActewAGL plans indicate :

- Existing electricity line within an easement along north boundary of the Site;
- Existing high and low voltage, overhead power lines external to the eastern boundary of the Site; and
- Existing low voltage, underground cables external to the south-west corner of the Site.

1.4 Required Services

The site should be readily serviced as most of the existing service networks are located nearby.

The required services for the Site are :

- Water service connection from main on Rivett Place. ACTEW Water has given in-principle approval to the proposed water supply tie, refer correspondence contained in Appendix C.
- There is an existing public 525dia stormwater line outside the eastern boundary of the Site within adjacent Section 27 Block 4 – Urban Open Space. This existing stormwater line is located on the low side of the Site. It is considered appropriate for the service tie for Section 28 Block 13 to connect into the existing maintenance hole along this line at the lower eastern corner of the block.
- Existing survey data from 2001 indicates that the depth of the sewer tie should be acceptable to service the block. ACTEW Water has advised that the location of the tie appears to be acceptable to service the block, refer correspondence contained in Appendix C.
- Gas service connection from the gas main within the easement along the west boundary. ZNX have advised that there are no issues connecting a service to the development from the existing gas line. Refer correspondence contained in Appendix C.
- Telstra service connection from Telstra lines on Rivett Place. Telstra has provided in-principle approval for the proposed Telstra network connection. Refer correspondence contained in Appendix C.
- Electrical service connection from electrical line in Rivett Place.

The required services for the site are as shown on the Proposed Services Plan, drawing MMD-311006-C-DR-CC05-SP-0002 in Appendix A.

1.5 Soil Condition

Preliminary Contamination Report

A Phase 1 Contamination Assessment has been undertaken by Coffey Environments. Refer Appendix E.

The objectives of this assessment were to assess the potential for contaminating activities to have been undertaken on the site and to recommend supplementary investigations to this assessment. The findings included the following:

- The Site appears to have been vacant since at least 1975, aerial imaging was not available prior to 1975, but the Site appears to not have been developed;
- No apparent visual indication of site contamination were observed during the site walkover;
- Clayey Sand fill was encountered to a depth of 0.3m across the site with fill materials overlaying Clay/Clayey Sand Soils;
- No unusual odours were noted during sampling;
- There was no visual evidence of potential asbestos contaminating material (ACM);
- 10 soil samples were collected, there were no indication of volatile organic compounds; and
- 5 samples were selected for chemical analysis, no samples were found to contain contaminants of potential concern in excess of the adopted site assessment criteria.

As a result of the investigations conducted during the preliminary assessment, the likelihood of contamination to be present on the Site is considered to be low.

Preliminary Geotechnical Report

A preliminary geotechnical assessment has been undertaken by Coffey Geotechnics. Refer to Appendix E.

Its objectives were to investigate likely subsurface conditions, likely excavation conditions, site classification, and geotechnical constraints relevant to the potential land use and geotechnical factors relevant to construction. The findings of the investigation are as follows:

- 1:50,000 Geology Map of Canberra, Queanbeyan and Environs indicate that the Site is underlain by Silurian age Deakin Volcanics;
- Five on site test pits were excavated to a maximum depth of 1.3m where they were terminated on refusal within extremely weathered rock;
- The geological profile of the site generally consists of fill up to 0.4m deep in places over residual soils to a maximum depth of 0.9m with extremely weathered rock as shallow as 0.4m;
- Groundwater was not observed during excavations of the test pits. It should be noted that the groundwater conditions may vary due to seasonal variations, in particular following heavy or prolonged rainfall;
- The residual and extremely weathered materials should generally be suitable for re-use as engineered fill, provided unsuitable materials such as organics, waste or oversized particles are removed;
- The existing fill materials will generally not be suitable for reuse as fill;
- Based on Coffey's assessment and Australian Standard (AS2870:2011) "Residential slabs and footings" a site classification of **M** (moderately reactive clay sites, which may experience moderate ground movement from moisture changes) with an assessed characteristic surface movement (y_s) in the range of less than 20mm is considered appropriate for this Site. This classification may vary depending on the degree on cut or fill undertaken on the site.

The geotechnical model and recommendations are based on a limited number of test locations. Ground conditions can vary over relatively close distances and a geotechnical engineer should be engaged at the construction stage to assess whether the Site conditions are consistent with design assumptions.

1.6 Noise

The assessment of traffic noise has been undertaken by a non-specialist in this field.

Traffic noise is not expected to be a constraint to the proposed development. The Site is located in a residential area far from an arterial road (approximately 500m from Hindmarsh Drive).

On this basis noise is unlikely to be a constraint on the development, however, this would need to be confirmed by a formal acoustic study by a specialist in that field.

1.7 Traffic

The streets in the vicinity to the Site include :

- Rivett Place – The Site is located on Rivett Place. Rivett Place is considered to be an Access Street and connects the local shops, and centres to the minor collector road Bangalay Crescent; and
- Bangalay Crescent – A minor collector road through Rivett that connects the residential access streets and local shops and centres to Streeton Drive, and Hindmarsh Drive. Mid-block volumes (dated 30 November 2012) provided by Roads ACT indicate that Bangalay Crescent has an average daily traffic volume of approximately 845 vehicles in each direction with 3.9% heavy vehicles.

Refer Figure 1.4 overleaf.

The intersections of Bangalay Crescent and Hindmarsh Drive and Bangalay Crescent and Streeton Drive are priority controlled. Traffic on both Hindmarsh Drive and Streeton Drive has priority. Traffic observations undertaken on the 04/07/2013 during the AM peak indicate the following:

- Vehicles turn left and right from Streeton Drive and Hindmarsh Drive into Bangalay Crescent with minimal to no delay; and
- No queues on Streeton Drive and Hindmarsh Drive were observed.

A future development that would meet the land use of a Community Facility is unlikely to generate significant traffic volumes during peak times. Traffic is therefore not considered to be a constraint to the development of the Site.

Figure 1.4: Road Network in vicinity of Site



Source: ACTMAPI version 2 2009 aerial photograph accessed on 13th July 2012