

GALLASCH & ASSOCIATES PTY LTD

ACN 007 088 128 (INC. IN VICTORIA) ABN 13 007 088 128

CONSULTING CIVIL AND BUILDING ENGINEERS

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Member Firm

LAND CAPABILITY ASSESSMENT
Gol Gol Heights Pty Ltd Subdivision
Lot 4 of PS of Lot 2 in DP 829 902, Gol Gol, New South Wales



Ref No: 13/320

Date: 21 February 2013

Client: Gol Gol Heights Pty Ltd
PO Box SM214
Mildura Vic 3502

Project: Land Capability Assessment
Lot 4 of PS of Lot 2 in DP 829 902
Subdivision into 3000 m² Allotment Sizes
Gol Gol, New South Wales

MALCOLM G GALLASCH BE FIEAust CPEng MASBC GAICD
Registered Building Practitioner No. EC-1015

Managing Director and Principal Engineer
Graduate Member Australian Institute of Company Directors

**Foundation Engineering • Building and Structural Engineering • Civil Engineering • Geotechnical Engineering
Project Engineering • Forensic Engineering • Water Resources Engineering and Management**

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Ref No: 13/320

Rev No.	Author	Reviewer	Approved for Issue		
			Name	Signature	Date
0	M Gallasch		M Gallasch		21/02/12

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Ref No: 13/320

Date: 21 February 2013

Client: Gol Gol Heights Pty Ltd, PO Box SM214, Mildura South Vic 3501

Project: Land Capability Assessment—Lot 4 of PS of Lot 2 in DP 829 902
Subdivision into 3000 m² Allotment Sizes, Gol Gol, New South Wales

Brief:

The subject Lot 4 is currently zoned R5 Large Lot Residential as depicted on Wentworth Local Environmental Plan 2011, Land Zoning Map—Sheet LZN_004G.

Gol Gol Heights Pty Ltd as owner of the subject Lot 4 wishes to have the minimum lot size reduced from 5000 m² to 3000 m² in order to promote opportunity for rural housing that contributes to the social and economic welfare of the rural community of Gol Gol.

A Land Capability Assessment is required to support this submission.

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DOMESTIC EFFLUENT DISPOSAL IN NEW SOUTH WALES Based on NSW Health Department Septic Tank and Collection Well Accreditation Guideline—December 2001

1. Scope (Section 2):

This Guideline sets out the minimum requirements for accreditation by the NSW Department of Health (NSW Health) of septic tanks and collection wells used in the treatment and/or collection of domestic sewage primarily from single dwellings.

2. Capacity of Septic Tank (Section 8.4.1 & Annexure 2):

Number of persons between 5 to 10. Adopted household population equals number of bedrooms plus one as Section 3.4 of Victorian Code of Practice (No. 891.3).

Garbage grinders and spa baths are excluded.

Sludge allowance of 1550L irrespective of the number of persons for desludging at 4 yearly intervals.

The required septic tank capacity is the sludge allowance (1550L) plus the daily flow per person (150 L/person) multiplied by the number of persons, eg for a 4 bedroom house, **septic tank capacity = 1550 + (150 x 5) = 2300 L minimum.**

DOMESTIC EFFLUENT DISPOSAL IN NEW SOUTH WALES
Design of On-Site System based on AS/NZS 1547 : 2012
"On-site domestic wastewater management"
(Appendix L, Land Application Methods – Trenches etc)

1. Scope (Section L1):

Evapotranspiration absorption (ETA) systems provide traditional means of land application treatment of effluent from septic tanks.

2. Selection of DLR Value (Section L2):

Design Loading Rate (DLR) for trenches receiving primary quality effluent shall be selected using Table L1.

Visual/tactile examination of the excavated soil indicates a weakly structural sandy loam soil texture for which Table L1 indicates Soil Category 2 and recommends an indicative permeability in excess of 3.0 m/day and a conservative DLR of 15 to 20 mm/day.

Falling head soil percolation tests were carried out at three locations (see Site Plan Appendix B) with the following results:

Test No.	1	2.	3
Soil Percolation Rate (mm/hour)	1025	601	997
Soil Permeability (m/day)	4.10	2.40	3.99
Soil Classification	Sand	Sand	Sand
Long Term Absorption Rate (L/m ² /day)	23.1	20.8	23.0

Although falling head permeators are not recommended in this Standard (refer Appendix CG2), the writer has found over 20 years experience that the results do provide an acceptable guide to evapotranspiration absorption trench designs.

It is noted that the Table L1 indicative permeability in excess of 3.0 m/day validates the percolation test average permeability of 3.5 m/day.

Table L1, Note 4, advises that ETA systems are not normally used for soil Categories 1 to 3. These soils require a system design by suitably qualified and experienced person in order to achieve even distribution of effluent over the full design surface area.

3. Plants (Section L3):

Surface vegetation for evapotranspiration absorption trenches shall be grasses and shrubs that tolerate wet conditions and have high evapotranspiration capacity and be well exposed to the sun and wind.

4. Design Area Sizing (Section L4):

The bottom area of the trenches is sized from the design daily flow (Q) divided by the design loading rate (DLR) as follows:

$$\text{Design Area (m}^2\text{)} = 750 \text{ L/day} \div 20 \text{ mm / day} = 37.5 \text{ m}^2.$$

Adopt three trenches of 25 m length each x 0.50 m width for bottom area of 37.5 m² as required.

Alternative trench design for 5 persons at daily flow (5 x 200) = 1000 L/day utilising the percolation test results and the Mildura Rural City Council program is as follows: (refer Appendices B2 for each site.):

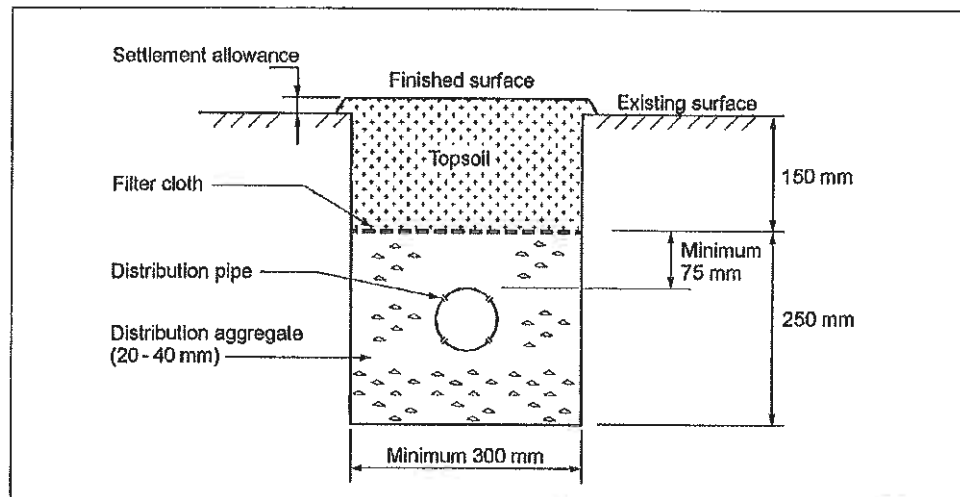
Test No.	1	2.	3
Trench Width (m)	0.5	0.5	0.5
Trench Length (m)	43	48	43
Bottom Area (m ²)	21.5	24	21.5

This alternative design is less conservative than the Section L4 design which is therefore adopted.

5. Construction (Section L5):

Trenches may be gravity loaded using a slotted or drilled distribution pipe of diameter not less than 100 mm.

Figure L1 depicts a conventional piped trench with adopted dimensions from Table L2 as follows:



NOTE: LPED lines can be used to replace distribution pipes when dose loading effluent into trenches.

FIGURE L1 CONVENTIONAL PIPED TRENCH

6. Layout:

Layout of trenches shall typically be as shown on Typical Allotment Plan (Appendix A) with setback distance from boundaries and buildings at least 6.0 m. It is noted that the Disposal Area of 148 m² represents only 4.9% of the allotment area of 3000 m² which is considered to be supportable.

Malcolm G Gallasch BE FIEAust CPEng MASBC GAICD
Principal Engineer
Registered Building Practitioner No. EC – 1015

rep&photos_lca_gol_gol_heights_lot4oflot2_dp829 902
22/02/2013 : 11:10 AM

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Land Capability Assessment Table for Domestic Wastewater Disposal and Reuse through a Conventional Trench System in compliance with EPA Publication 891.3, February 2013

Ref No: 13/320

Date: 21 February 2013

Client: Gol Gol Heights Pty Ltd

Project: Land Subdivision, Lot 4 of PS of Lot 2 in DP 829 902, Gol Gol, NSW

Land Feature	Land Capability Class Rating (EPA Publication 891.3)					
	1 V. Good	2 Good	3 Fair	4 Poor	5 V. Poor	Site Rating
General						
Allotment area (ha)	> 0.4	0.2 – 0.4	0.1 – 0.2	–	< 0.1	2
Site runoff	V. Slow	Slow	Moderate	Rapid	V. Rapid	2
Site drainage	No dampness	Moist soil	–	Visible dampness	Ponded water	1
Flood/inundation potential (frequency yrs)	Never	Never	< 1 in 100	< 1 in 30	> 1 in 20	1
Distance from non-potable water	> 300 m	> 180 m	>60 m	<60 m	< 30 m	1
Slope (%)	0 – 2	2 – 8	8 – 12	12 – 20	> 20	2
Landslip	Never	Never	Low potential	High potential	Incipient	1
Seasonal groundwater table depth (m)	> 5	2.5 – 5	2.5 – 2.0	2.0 – 1.5	< 1.5	1
Rainfall (mm/yr)	< 450	450 – 650	650 – 750	750 – 1000	> 1000	1
Pan evaporation (mm/yr)	> 1500	1250 – 1500	1000 – 1250	–	< 1000	1
Soil Profile *						
Profile depth (m)	> 2	1.5 – 2	1.5 – 1.0	1.0 – 0.5	< 0.5	2
Reactivity class (AS 2870 – 2011)	S	M	H	E	A	2
Soil Permeability Category (EPA Publication 891.3)	2 and 3	4	–	5	1 and 6	1
Stoniness (%)	–	< 10	10 – 20	20 – 50	> 50	2
Dispersive characteristic (AS 1289.3.8.1 – 2006)	Not	Not	Coherent /Swell	Moderate	Strong	1
Salinity	V. Low	Low	Moderate	High	V. High	2
Overall	Site rating satisfying all performance criteria					2

* Characteristic relevant to soils associated with disposal trench.

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Land Capability Assessment:

On the basis of the Land Capability Assessment Table, the Overall Land Capability Class Rating is [2] which relates to several constraining features. These features are capable of being handled by appropriate design without detriment to adjoining properties.

The LCA Rating of [2] is considered to be a true and accurate assessment of the land capability of the subject land within the accuracy deemed appropriate for the purpose of this assessment.

The LCA Rating of [2] defined as good is only a general guide for the purpose of subdivision into lots of 3000 m² because soils and landscapes can be variable within Lot 4 of 13.83 hectares.

A Land Capability Assessment should be undertaken for each subdivided lot of 3000 m² area together with detail design of land application system by a suitably qualified and experienced person.

Management and Monitoring Program:

As the Design of an absorption/transpiration disposal trench system is based on both soil absorption and plant transpiration, the landowner shall

- ensure that the system is installed in compliance with the Design,
- ensure that copious plants and grasses are established and maintained over the disposal field,
- clearly define and maintain the specified disposal field and reserve area,
- inspect the septic tank annually for depths of scum and sludge which are to be removed at least 4 yearly.



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**Gol Gol Heights Pty Ltd—Land Capability Assessment
Lot 4 of PS of Lot 2 in DP 829 902, Gol Gol, New South Wales
Photos Taken 07 February 2013**



Photo A.



Photo B.

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**Gol Gol Heights Pty Ltd—Land Capability Assessment
Lot 4 of PS of Lot 2 in DP 829 902, Gol Gol, New South Wales
Photos Taken 07 February 2013**



Photo C.



Photo D.

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**Gol Gol Heights Pty Ltd—Land Capability Assessment
Lot 4 of PS of Lot 2 in DP 829 902, Gol Gol, New South Wales
Photos Taken 07 February 2013**



Photo E.



Photo F.

GALLASCH & ASSOCIATES PTY LTD

**Gol Gol Heights Pty Ltd—Land Capability Assessment
Lot 4 of PS of Lot 2 in DP 829 902, Gol Gol, New South Wales
Photos Taken 07 February 2013**



Photo G.



Photo H.

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**Gol Gol Heights Pty Ltd—Land Capability Assessment
Lot 4 of PS of Lot 2 in DP 829 902, Gol Gol, New South Wales
Photos Taken 07 February 2013**



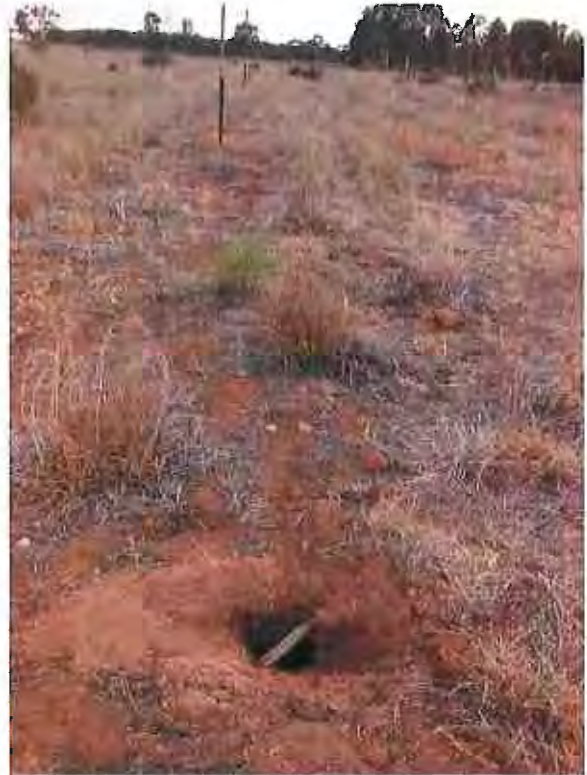
Photo I.

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**Gol Gol Heights Pty Ltd—Land Capability Assessment
Lot 4 of PS of Lot 2 in DP 829 902, Gol Gol, New South Wales
Photos Taken 09 February 2013**



Test Site No. 1.



Test Site No. 2.

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**Gol Gol Heights Pty Ltd—Land Capability Assessment
Lot 4 of PS of Lot 2 in DP 829 902, Gol Gol, New South Wales
Photos Taken 17 February 2013**



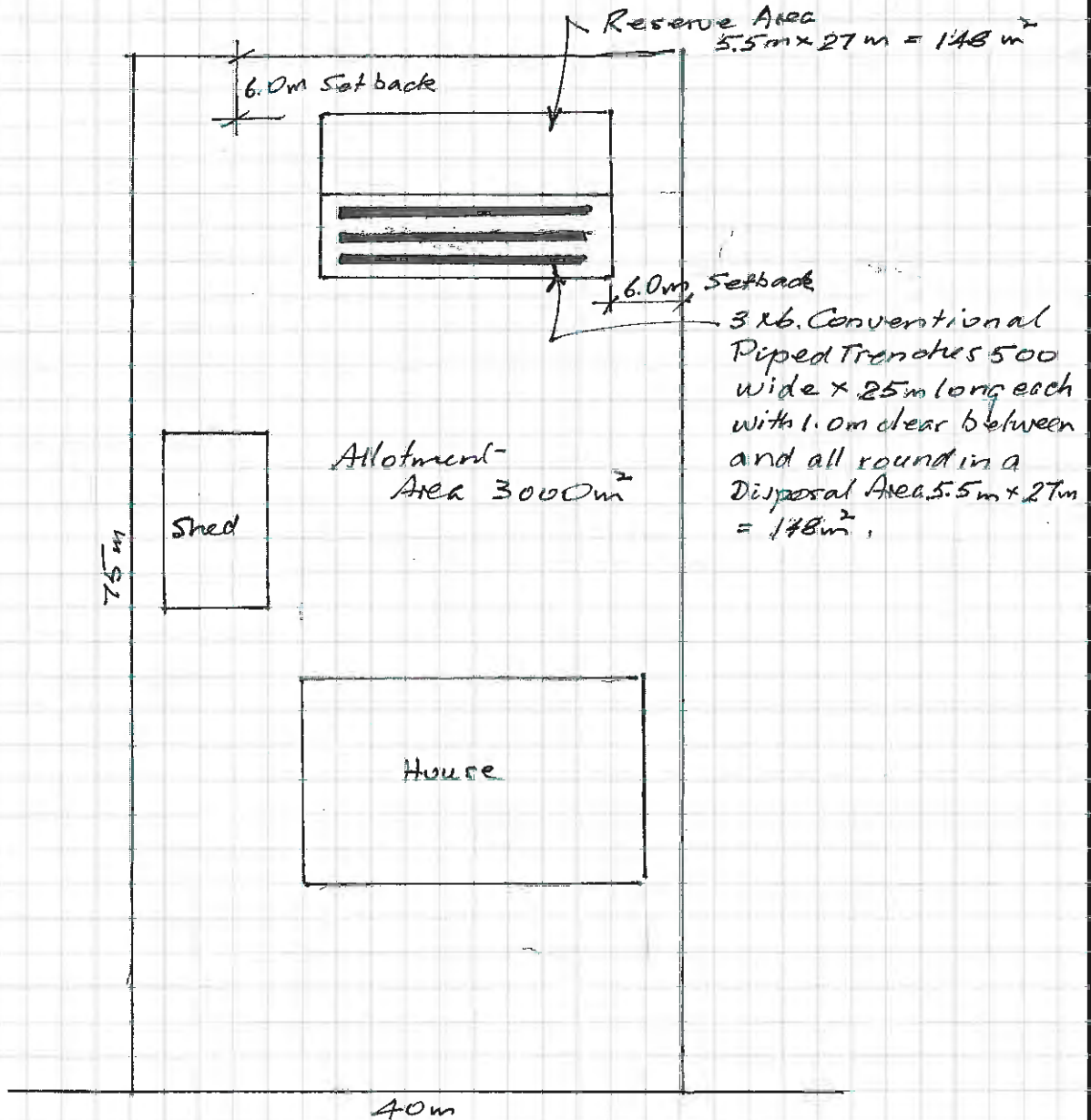
Test Site No. 3.

COMPUTATION SHEET

Client: Gol. Gal. Heights Pty Ltd Date: 19/02/13

Project: Land Subdivision Lot 4 or PS or Lot 2 in DP 829 902

Gol Gal NSW



STREET
TYPICAL ALLOTMENT (3000 m²)
SITE PLAN
Scale 1:400

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Membership No. 66229

The Institution of Engineers, Australia

M G Gallasch

Computed:

MGG

Ref. No.

13/320

Page:

A

DP 845486

Registered: 28.2.1995

CA: NO 12/94 OF 19.7.1994

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: PARISH TN. GOLGOL (29)

Last Plan: DP 829902

PLAN OF SUBDIVISION OF
LOT 2 IN DP 829902

Lengths are in metres Reduction Ratio 1:4000

Municipality: WENTWORTH

Locality: GOL GOL

Parish: GOL GOL

County: WENTWORTH

This is sheet 1 of my plan in sheets
(Delete if inapplicable)

I, PETER ROBERT DANSON
of 103 WALNUT AVENUE, MILDURA,

a surveyor registered under the Surveyors Act, 1920, as amended, hereby certify that the survey represented in this plan of subdivision as regards Lots 1, 2 & 3 is accurate and has been made in accordance with the Survey Practice Regulation 1990 and was completed on

15th JULY 1994
Signature: Peter R. Danson
Surveyor registered under Surveyors Act, 1920, as amended.
Datum Line of Azimuth
Inserts date of survey

Plans used in preparation of survey/compilation

686-1820	596-1820
1004-1820	WLO 3688
WLO 5192	DP 739952
DP 829902	

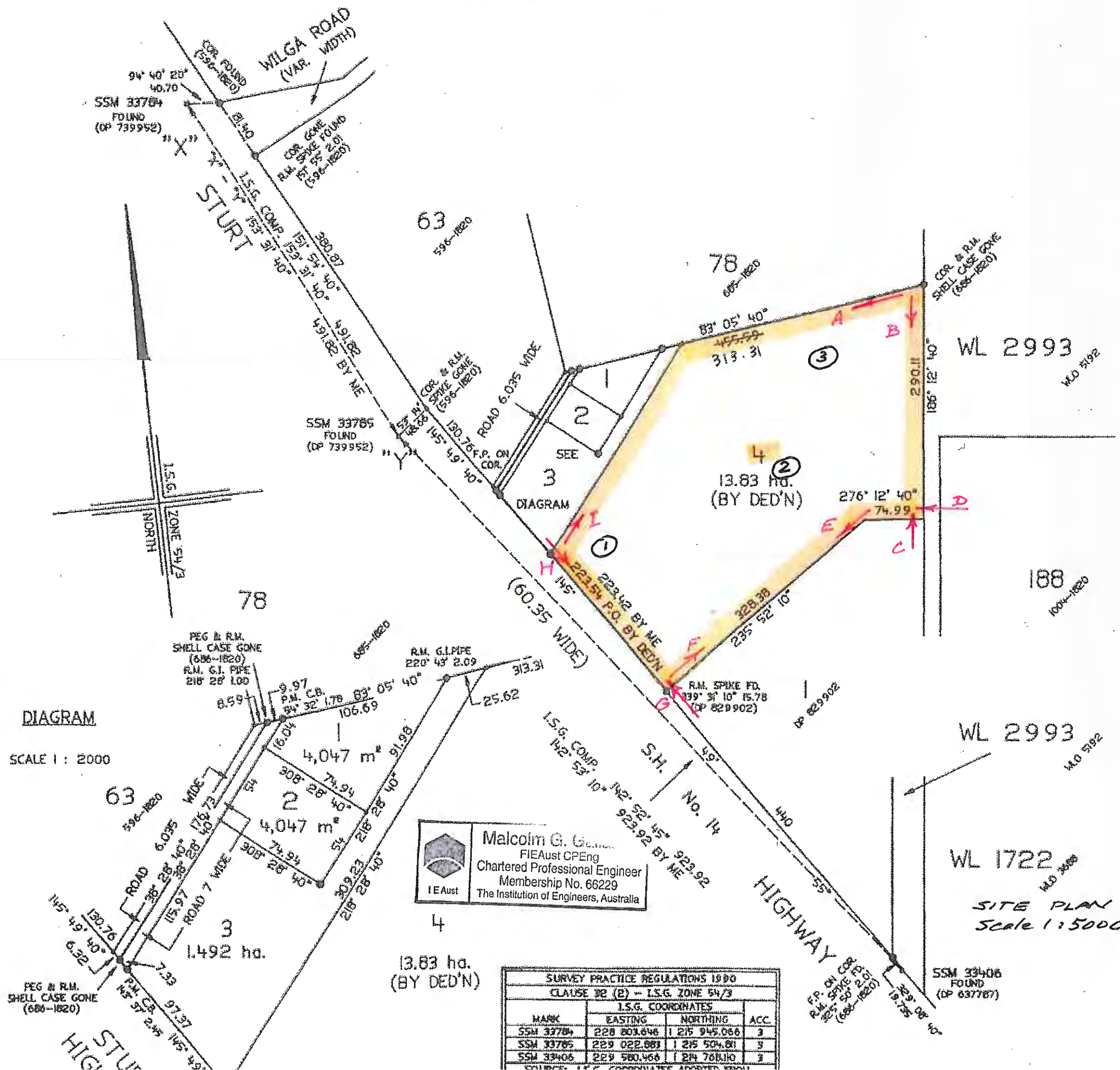
PANEL FOR USE ONLY for statements of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

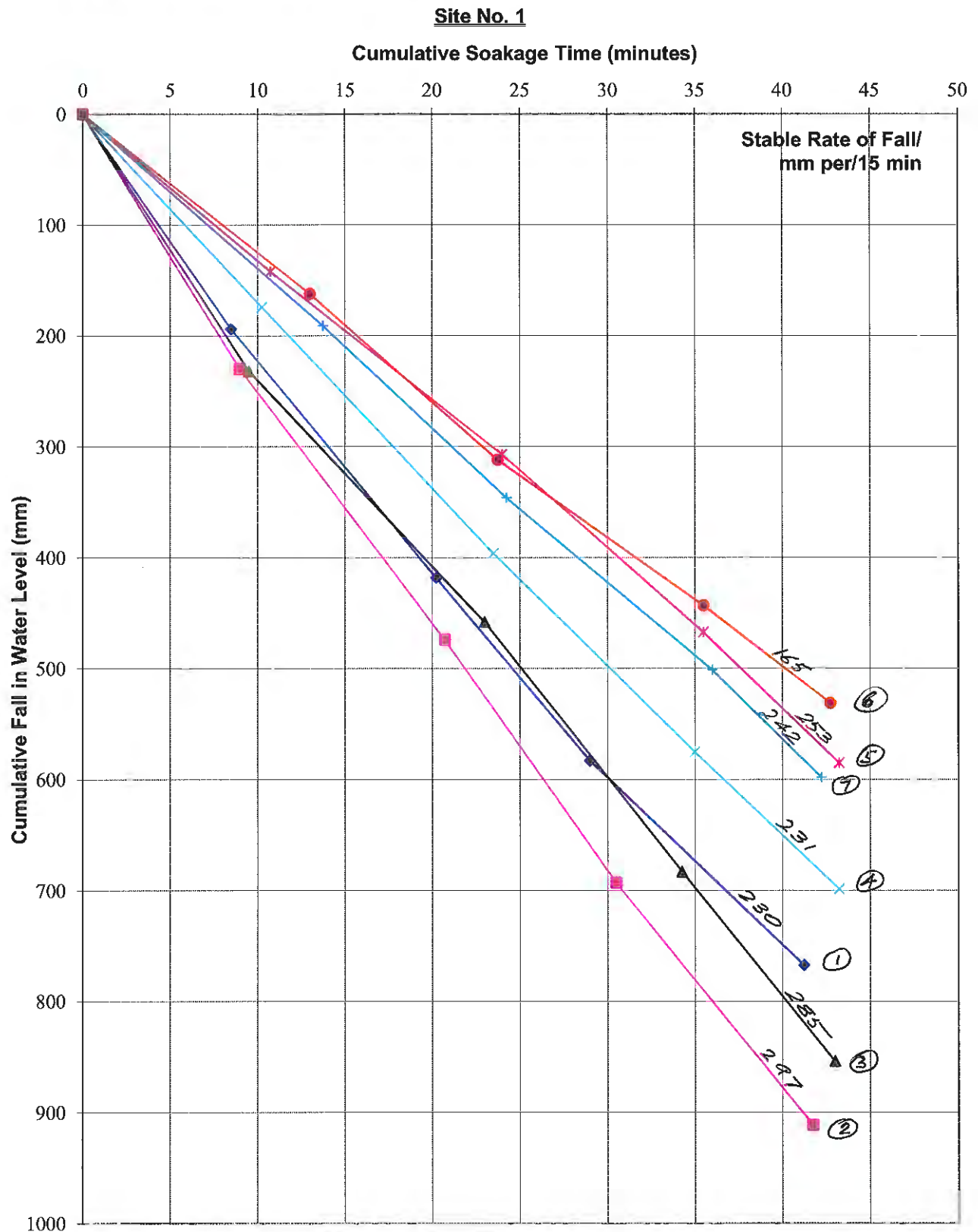
IT IS INTENDED TO DEDICATE THE
ROAD 7 WIDE AS PUBLIC ROAD

RA No. 13/320
Locations of Photos
& Test Sites
Appendix B

NOON

7329.7429





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PERCOLATION RECORDING SHEETS

Ref No: 13/320

Date: 09/02/13

Client: Gol Gol Heights Pty Ltd

Job: Land Subdivision—Lot 4 of Lot 2 in DP 829 902
Gol Gol, New South Wales

Site No. 1

HOLE No: 1					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
121	315	9:01:45 AM	9:10:15 AM	8	194
116	340	9:10:45 AM	9:22:30 AM	20	418
126	291	9:23:00 AM	9:31:45 AM	29	583
108	292	9:33:15 AM	9:45:30 AM	41	767
				41	767

HOLE No: 2					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
99	329	9:02:15 AM	9:11:15 AM	9	230
113	357	9:11:45 AM	9:23:30 AM	21	474
110	329	9:24:15 AM	9:34:00 AM	31	693
105	323	9:34:45 AM	9:46:00 AM	42	911
				42	911

HOLE No: 3					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
99	331	9:02:45 AM	9:12:15 AM	10	232
124	350	9:12:45 AM	9:26:15 AM	23	458
114	339	9:26:45 AM	9:38:00 AM	34	683
109	280	9:38:45 AM	9:47:30 AM	43	854
				43	854

HOLE No: 4					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
101	275	9:03:00 AM	9:13:15 AM	10	174
103	325	9:13:45 AM	9:27:00 AM	23	396
99	278	9:27:30 AM	9:39:00 AM	35	575
109	232	9:39:45 AM	9:48:00 AM	43	698
				43	698

GALLASCH & ASSOCIATES PTY LTD

PERCOLATION RECORDING SHEETS

Ref No: 13/320

Date: 09/02/13

Client: Gol Gol Heights Pty Ltd

Job: Land Subdivision—Lot 4 of Lot 2 in DP 829 902
Gol Gol, New South Wales

Site No. 1

HOLE No: 5					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
118	260	9:03:30 AM	9:14:15 AM	11	142
90	255	9:14:45 AM	9:28:00 AM	24	307
105	265	9:28:30 AM	9:40:00 AM	36	467
110	228	9:40:45 AM	9:48:30 AM	43	585
				43	585

HOLE No: 6					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
98	260	9:04:15 AM	9:17:15 AM	13	162
85	235	9:18:15 AM	9:29:00 AM	24	312
109	240	9:29:30 AM	9:41:15 AM	35	443
112	200	9:41:45 AM	9:49:00 AM	43	531
				43	531

HOLE No: 7					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
107	298	9:04:45 AM	9:18:30 AM	14	191
95	250	9:19:15 AM	9:29:45 AM	24	346
107	262	9:30:30 AM	9:42:15 AM	36	501
102	199	9:43:00 AM	9:49:15 AM	42	598
				42	598

GUIDE TO DESIGN RATES FOR SEPTIC SYSTEMS

Based on "Code of Practice - Septic Tanks 2003".

Program developed by Mildura Rural City Council

Date : 09/02/13**HOUSEHOLD RESIDENCES**

9/02/2013

Applicant Details

Site No. 1

Owner: Gol Gol Heights Pty Ltd

Site Address: Lot 4 of PS of Lot 2 in DP 829902

Gol Gol, New South Wales

Occupation Details

(Insert number into one of the boxes below)

OPTION 1: Total number of bedrooms =

OPTION 2 : Total number of persons/users

5

(No. of persons = No of bedrooms plus one)

Water Saving Devices

Place an "X" into the appropriate boxes for water rated appliances as set out below (if known)

1. Bathroom		
- flow restricters on showers	☒	Unrestricted (20 litres/minute)
	☐	A rated (16 litres/minute)
	☐	AA rated (12 litres/minute)
	☐	AAA rated (9 litres/minute)
2. Laundry		
- washing machine	☒	Unrestricted (7 kg capacity)
	☐	A rated (6 kg capacity)
	☐	AA rated (front loading, 5 kg capacity)
	☐	AAA rated (front loading, 4 kg capacity)
3. Water closet		
- cisterns	☒	Unrestricted (10 litre capacity)
	☐	A - AAA rated (dual 6/3 litre capacity)
4. Other uses		
- sink, basins and trough etc	☒	Unrestricted
	☐	A rated (aerator taps)
	☐	AA rated (flow restricters)
	☐	AAA rated (suds saver)

Effluent Flow RateEstimated daily effluent flow = **1000** Litres/day**Septic Tank Capacity**

Insert 'X' for food waste disposal unit

4

Frequency of desludging = **4** years (At least every 3 years)Minimum septic tank capacity = **2600** Litres**NOTE: Above figures represent best values available at this time and are a guide only.**

SOIL PERCOLATION TEST REPORT

(Based on the "falling head method" described in Code of Practice—Septic Tanks,
EPA Publication 451, March 1996, which has given consistent and appropriate results over many years.)
XLS Program developed by Mildura Rural City Council

Date : 9/02/2013

Applicant Details

Owner: Gol Gol Heights Pty Ltd
Site Address: Lot 4 of PS of Lot 2 in DP 829902
Gol Gol, New South Wales

Site No. 1

Effluent Loading Rate

Expected daily effluent flow rate = **1000** L/day (See worksheets 1 & 2)

Test Data & Analysis

Stable Rate of Fall (Method - Appendix B of Code)		
Hole 1	230	mm/15 min
Hole 2	297	mm/15 min
Hole 3	285	mm/15 min
Hole 4	231	mm/15 min
Hole 5	253	mm/15 min
Hole 6	165	mm/15 min
Hole 7	242	mm/15 min
Hole 8		mm/15 min
Hole 9		mm/15 min
Hole 10		mm/15 min

Statistical Information	
Mean :	243.29
Std. Dev.	43.16
Max.	308.03
Min.	178.54

Test Results within Max & Min values	
Hole 1	230
Hole 2	297
Hole 3	285
Hole 4	231
Hole 5	253
Hole 6	Rejected
Hole 7	242
Hole 8	
Hole 9	
Hole 10	
Total =	1538

Soil Percolation Rate = $\frac{1538}{6}$ mm/15 min = **1025 mm/hr**

Soil Permeability = 4.10 m/day

Soil Classification = Sand

Long Term Absorption Rate = 23.1 L/ sq.m/day

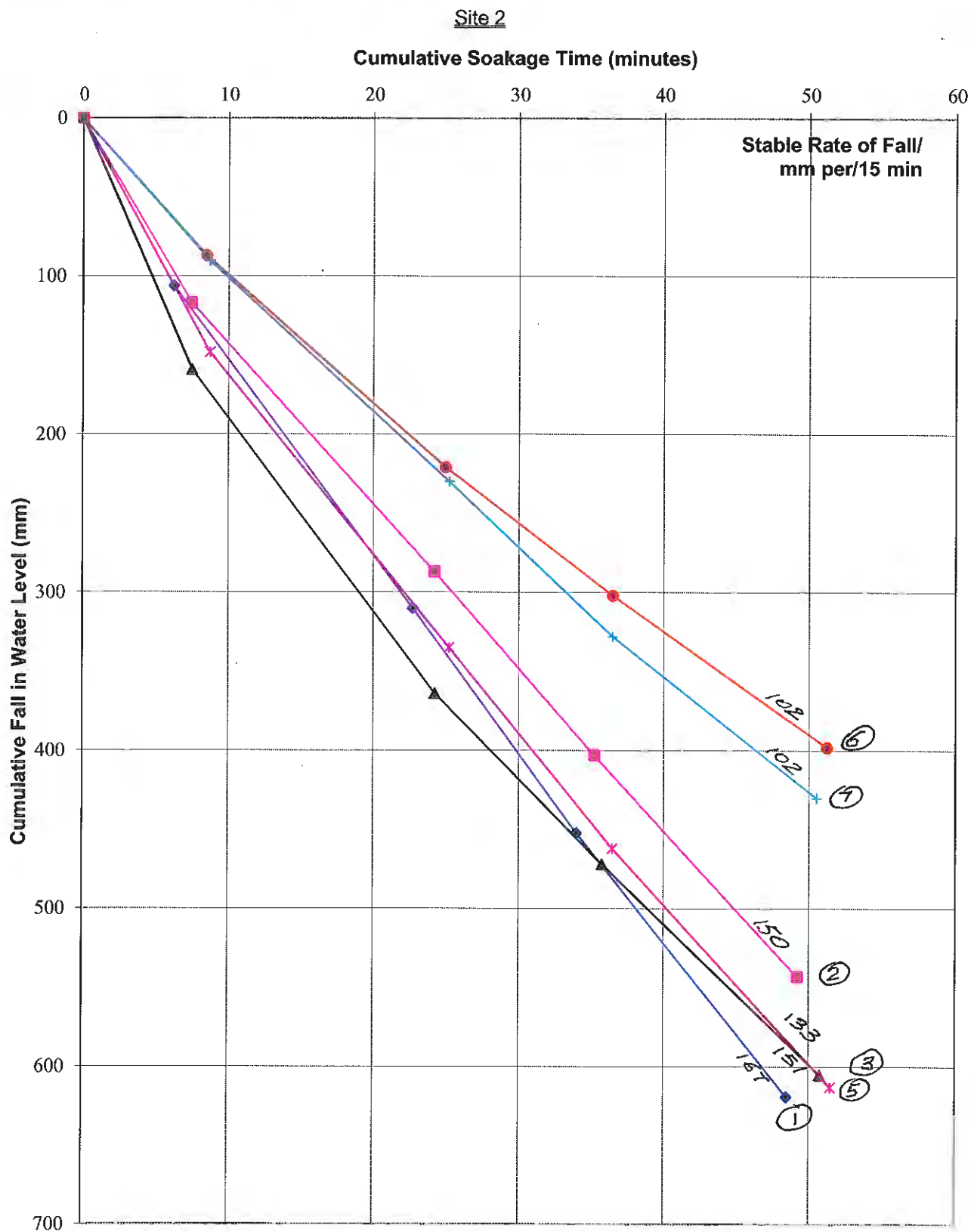
Sub-Soil Absorbntion Trench Options

	Trench width		Trench length (min.)		
Option 1:	1000	mm	29	Metres	S *
Option 2:	700	mm	36	Metres	S *
Option 3:	500	mm	43	Metres	S *
Option 4:	300	mm	54	Metres	S *
Other 1:	1200	mm	25	Metres	S *
Other 2:	2000	mm	17	Metres	

Signed:



- * NOTES: (i) "S". - May be suitable subject to further treatment, investigation and/or design.
(ii) "N.S". - Generally not suitable for septic tank effluent."
(iii) Trench lengths may be reduced by 50% where effluent is treated to 20/30 standard.



GALLASCH & ASSOCIATES PTY LTD

PERCOLATION RECORDING SHEETS

Ref No: 13/320

Date: 09/02/13

Client: Gol Gol Heights Pty Ltd

Job: Land Subdivision—Lot 4 of Lot 2 in DP 829 902
Gol Gol, New South Wales

Site No. 2

HOLE No: 1					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
120	226	10:04:00 AM	10:10:15 AM	6	106
105	309	10:11:00 AM	10:27:30 AM	23	310
98	240	10:28:15 AM	10:39:30 AM	34	452
102	269	10:40:00 AM	10:54:30 AM	49	619
				49	619

HOLE No: 2					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
114	231	10:04:00 AM	10:11:30 AM	7	117
120	290	10:12:00 AM	10:28:45 AM	24	287
118	234	10:29:15 AM	10:40:15 AM	35	403
110	250	10:41:00 AM	10:55:00 AM	49	543
				49	543

HOLE No: 3					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
106	265	10:05:00 AM	10:12:30 AM	8	159
95	300	10:13:00 AM	10:29:45 AM	24	364
102	210	10:30:00 AM	10:41:30 AM	36	472
95	228	10:42:00 AM	10:57:00 AM	51	605
				51	605

HOLE No: 4					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
	Borehole collapsed.			0	00
				0	00
				0	00
				0	00
				0	00
				0	00

GALLASCH & ASSOCIATES PTY LTD

PERCOLATION RECORDING SHEETS

Ref No: 13/320

Date: 09/02/13

Client: Gol Gol Heights Pty Ltd

Job: Land Subdivision—Lot 4 of Lot 2 in DP 829 902
Gol Gol, New South Wales

Site No. 2

HOLE No: 5					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
100	248	10:05:00 AM	10:13:45 AM	9	148
100	287	10:14:15 AM	10:30:45 AM	25	335
110	237	10:31:15 AM	10:42:30 AM	36	462
106	257	10:43:00 AM	10:58:00 AM	51	613
				51	613

HOLE No: 6					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
103	190	10:06:15 AM	10:14:45 AM	9	87
90	224	10:15:00 AM	10:31:30 AM	25	221
101	182	10:32:00 AM	10:43:30 AM	37	302
101	197	10:43:45 AM	10:58:30 AM	51	398
				51	398

HOLE No: 7					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
110	200	10:06:45 AM	10:15:30 AM	9	90
109	249	10:16:00 AM	10:32:30 AM	25	230
110	208	10:33:00 AM	10:44:15 AM	36	328
131	233	10:44:45 AM	10:58:48 AM	51	430
				51	430

GUIDE TO DESIGN RATES FOR SEPTIC SYSTEMS

Based on "Code of Practice - Septic Tanks 2003".

Program developed by Mildura Rural City Council

Date : 09/02/13

HOUSEHOLD RESIDENCES**Applicant Details**

Site No. 2

Owner: Gol Gol Heights Pty Ltd

Site Address: Lot 4 of PS of Lot 2 in DP 829902

Gol Gol, New South Wales

Occupation Details

(Insert number into one of the boxes below)

OPTION 1: Total number of bedrooms =

OPTION 2 : Total number of persons/users

5

(No. of persons = No of bedrooms plus one)

Water Saving Devices

Place an "X" into the appropriate boxes for water rated appliances as set out below (if known)

1. Bathroom

- flow restricters on showers

X

Unrestricted (20 litres/minute)

A rated (16 litres/minute)

AA rated (12 litres/minute)

AAA rated (9 litres/minute)

2. Laundry

- washing machine

X

Unrestricted (7 kg capacity)

A rated (6 kg capacity)

AA rated (front loading, 5 kg capacity)

AAA rated (front loading, 4 kg capacity)

3. Water closet

- cisterns

X

Unrestricted (10 litre capacity)

A - AAA rated (dual 6/3 litre capacity)

4. Other uses

- sink, basins and trough etc

X

Unrestricted

A rated (aerator taps)

AA rated (flow restricters)

AAA rated (suds saver)

Effluent Flow RateEstimated daily effluent flow = **1000** Litres/day**Septic Tank Capacity**

Insert 'X' for food waste disposal unit

Frequency of desludging =

4

years

(At least every 3 years)

Minimum septic tank capacity = **2600** Litres*NOTE: Above figures represent best values available at this time and are a guide only.*

GALLASCH & ASSOCIATES PTY LTD

SOIL PERCOLATION TEST REPORT

(Based on the "falling head method" described in Code of Practice—Septic Tanks,
EPA Publication 451, March 1996, which has given consistent and appropriate results over many years.)
XLS Program developed by Mildura Rural City Council

Date : 9/02/2013

Applicant Details

Owner: Gol Gol Heights Pty Ltd
Site Address: Lot 4 of PS of Lot 2 in DP 829902
Gol Gol, New South Wales

Site No. 2

Effluent Loading Rate

Expected daily effluent flow rate = **1000** L/day (See worksheets 1 & 2)

Test Data & Analysis

Stable Rate of Fall		
(Method - Appendix B of Code)		
Hole 1	167	mm/15 min
Hole 2	150	mm/15 min
Hole 3	133	mm/15 min
Hole 4		mm/15 min
Hole 5	151	mm/15 min
Hole 6	102	mm/15 min
Hole 7	102	mm/15 min
Hole 8		mm/15 min
Hole 9		mm/15 min
Hole 10		mm/15 min

Statistical Information	
Mean :	140.60
Std. Dev.	24.70
Max.	177.66
Min.	103.54

Test Results within	
Max & Min values	
Hole 1	167
Hole 2	150
Hole 3	133
Hole 4	
Hole 5	151
Hole 6	Rejected
Hole 7	Rejected
Hole 8	
Hole 9	
Hole 10	
Total =	601

Soil Percolation Rate = $\frac{601}{4}$ mm/15 min = **601** mm/hr

Soil Permeability = 2.40 m/day

Soil Classification = Sand

Long Term Absorption Rate = 20.8 L/ sq.m/day

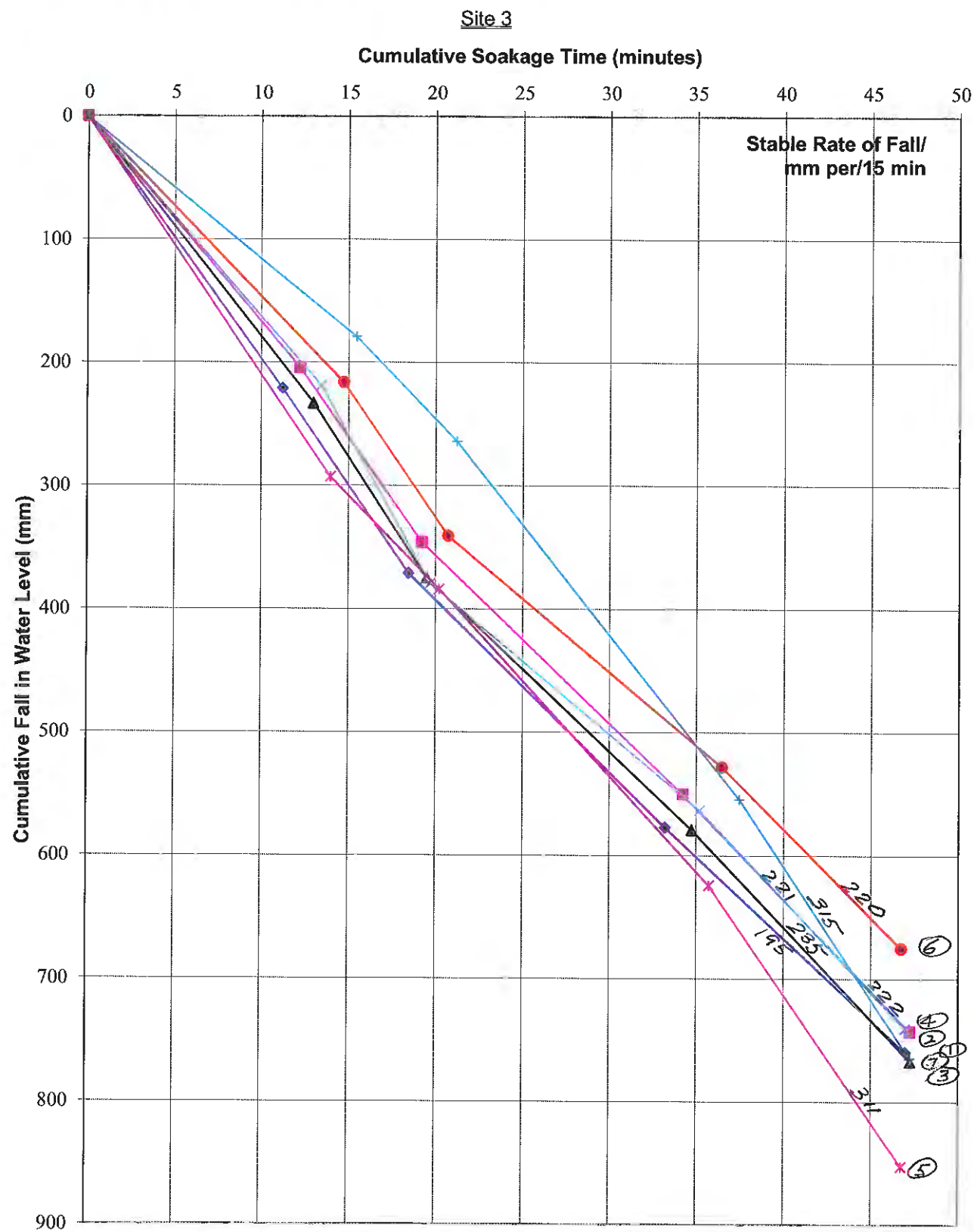
Sub-Soil Absorbntion Trench Options

	Trench width		Trench length (min.)		
Option 1:	1000	mm	32	Metres	S *
Option 2:	700	mm	40	Metres	S *
Option 3:	500	mm	48	Metres	S *
Option 4:	300	mm	60	Metres	S *
Other 1:	1200	mm	28	Metres	S *
Other 2:	2000	mm	19	Metres	

Signed:



- * NOTES: (i) "S". - May be suitable subject to further treatment, investigation and/or design.
(ii) "N.S". - Generally not suitable for septic tank effluent."
(iii) Trench lengths may be reduced by 50% where effluent is treated to 20/30 standard.



PERCOLATION RECORDING SHEETS

Ref No: 13/320

Date: 17/02/13

Client: Gol Gol Heights Pty Ltd

Job: Land Subdivision—Lot 4 of Lot 2 in DP 829 902
Gol Gol, New South Wales

Site No. 3

HOLE No: 1					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
121	342	12:54:15 PM	1:05:30 PM	11	221
101	251	1:06:15 PM	1:13:30 PM	19	371
132	338	1:13:45 PM	1:28:30 PM	33	577
120	302	1:29:00 PM	1:42:45 PM	47	759
				47	759

HOLE No: 2					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
147	351	12:54:30 PM	1:06:45 PM	12	204
108	250	1:07:15 PM	1:14:15 PM	19	346
138	342	1:14:45 PM	1:29:45 PM	34	550
109	301	1:30:15 PM	1:43:15 PM	47	742
				47	742

HOLE No: 3					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
137	370	12:55:00 PM	1:08:00 PM	13	233
122	264	1:08:30 PM	1:15:00 PM	20	375
153	357	1:15:30 PM	1:30:45 PM	35	579
117	305	1:31:15 PM	1:43:45 PM	47	767
				47	767

HOLE No: 4					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
130	349	12:55:30 PM	1:09:00 PM	14	219
112	272	1:09:30 PM	1:15:45 PM	20	379
175	359	1:16:15 PM	1:31:45 PM	35	563
115	292	1:32:15 PM	1:44:00 PM	47	740
				47	740

GALLASCH & ASSOCIATES PTY LTD

PERCOLATION RECORDING SHEETS

Ref No: 13/320

Date: 17/02/13

Client: Gol Gol Heights Pty Ltd

Job: Land Subdivision—Lot 4 of Lot 2 in DP 829 902
Gol Gol, New South Wales

Site No. 3

HOLE No: 5					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
132	425	12:56:00 PM	1:10:00 PM	14	293
113	204	1:10:30 PM	1:16:45 PM	20	384
146	386	1:17:15 PM	1:32:45 PM	36	624
122	350	1:33:30 PM	1:44:30 PM	47	852
				47	852

HOLE No: 6					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
176	392	12:56:15 PM	1:11:00 PM	15	216
97	222	1:11:30 PM	1:17:30 PM	21	341
156	343	1:18:00 PM	1:33:45 PM	37	528
130	277	1:34:30 PM	1:44:45 PM	47	675
				47	675

HOLE No: 7					
Water Level (mm)		Time (h:m:s)		Cumulative Soakage Time (minutes)	Cumulative Fall in Water Level (mm)
Initial	Final	Initial	Final		
				0	0
271	450	12:56:30 PM	1:12:00 PM	15	179
213	298	1:12:30 PM	1:18:15 PM	21	264
150	440	1:18:45 PM	1:35:00 PM	37	554
112	322	1:35:30 PM	1:45:15 PM	47	764
				47	764

GUIDE TO DESIGN RATES FOR SEPTIC SYSTEMS

Based on "Code of Practice - Septic Tanks 2003".

Program developed by Mildura Rural City Council

Date : 17/02/13

HOUSEHOLD RESIDENCES**Applicant Details****Site No. 3**

Owner: Gol Gol Heights Pty Ltd

Site Address: Lot 4 of PS of Lot 2 in DP 829902

Gol Gol, New South Wales

Occupation Details

(Insert number into one of the boxes below)

OPTION 1: Total number of bedrooms =

OPTION 2 : Total number of persons/users

5

(No. of persons = No of bedrooms plus one)

Water Saving Devices

Place an "X" into the appropriate boxes for water rated appliances as set out below (if known)

1. Bathroom		
- flow restricters on showers	☒	Unrestricted (20 litres/minute)
	☐	A rated (16 litres/minute)
	☐	AA rated (12 litres/minute)
	☐	AAA rated (9 litres/minute)
2. Laundry		
- washing machine	☒	Unrestricted (7 kg capacity)
	☐	A rated (6 kg capacity)
	☐	AA rated (front loading, 5 kg capacity)
	☐	AAA rated (front loading, 4 kg capacity)
3. Water closet		
- cisterns	☒	Unrestricted (10 litre capacity)
	☐	A - AAA rated (dual 6/3 litre capacity)
4. Other uses		
- sink, basins and trough etc	☒	Unrestricted
	☐	A rated (aerator taps)
	☐	AA rated (flow restricters)
	☐	AAA rated (suds saver)

Effluent Flow RateEstimated daily effluent flow = **1000** Litres/day**Septic Tank Capacity**

Insert 'X' for food waste disposal unit

Frequency of desludging =

4

years

(At least every 3 years)

Minimum septic tank capacity = **2600** Litres*NOTE: Above figures represent best values available at this time and are a guide only.*

SOIL PERCOLATION TEST REPORT

(Based on the "falling head method" described in Code of Practice—Septic Tanks,
EPA Publication 451, March 1996, which has given consistent and appropriate results over many years.)
XLS Program developed by Mildura Rural City Council

Date : 17/02/2013**Applicant Details**

Owner: Gol Gol Heights Pty Ltd
Site Address: Lot 4 of PS of Lot 2 in DP 829902
Gol Gol, New South Wales

Site No. 3**Effluent Loading Rate**

Expected daily effluent flow rate = **1000** L/day (See worksheets 1 & 2)

Test Data & Analysis

Stable Rate of Fall (Method - Appendix B of Code)		
Hole 1	221	mm/15 min
Hole 2	221	mm/15 min
Hole 3	235	mm/15 min
Hole 4	222	mm/15 min
Hole 5	311	mm/15 min
Hole 6	220	mm/15 min
Hole 7	315	mm/15 min
Hole 8		mm/15 min
Hole 9		mm/15 min
Hole 10		mm/15 min

Statistical Information	
Mean :	249.29
Std. Dev.	43.84
Max.	315.05
Min.	183.52

Test Results within Max & Min values	
Hole 1	221
Hole 2	221
Hole 3	235
Hole 4	222
Hole 5	311
Hole 6	220
Hole 7	315
Hole 8	
Hole 9	
Hole 10	
Total =	1745

Soil Percolation Rate = $\frac{1745}{7}$ mm/15 min = **997** mm/hr

Soil Permeability = 3.99 m/day

Soil Classification = Sand

Long Term Absorption Rate = 23.0 L/ sq.m/day

Sub-Soil Absorbtion Trench Options

	Trench width		Trench length (min.)		
Option 1	1000	mm	29	Metres	S *
Option 2	700	mm	36	Metres	S *
Option 3	500	mm	43	Metres	S *
Option 4	300	mm	54	Metres	S *
Other 1:	1200	mm	26	Metres	S *
Other 2:	2000	mm	17	Metres	

Signed:

- * NOTES: (i) "S". - May be suitable subject to further treatment, investigation and/or design.
(ii) "N.S.". - Generally not suitable for septic tank effluent."
(iii) Trench lengths may be reduced by 50% where effluent is treated to 20/30 standard.