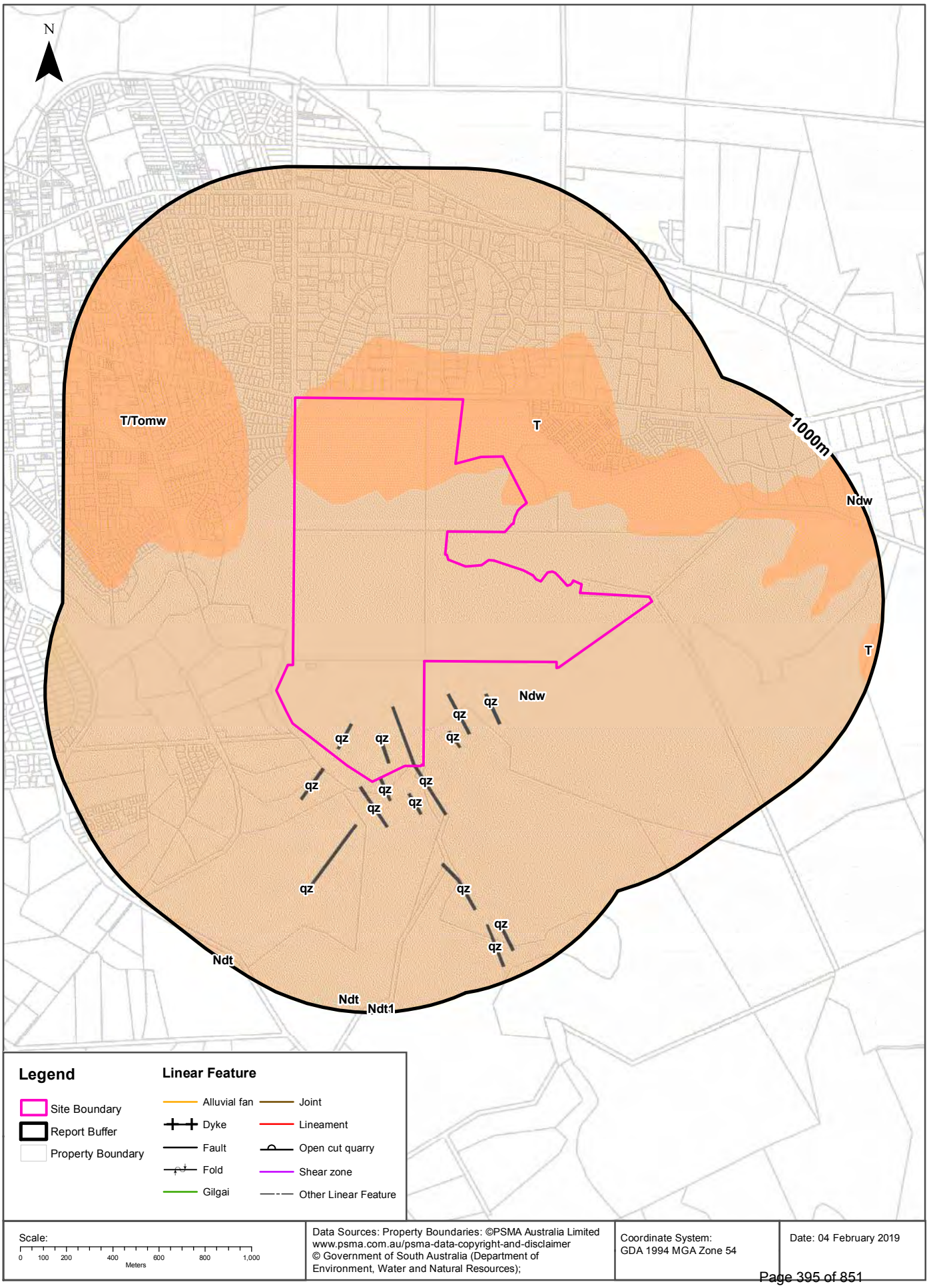
Geology 1:100,000

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Geology

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

Surface Geology 1:100,000

Surface Geology Units within the dataset buffer:

Map Unit Code	Name	Description	Parent Name	Province	Age	Min Age	Max Age	Distance
Ndw	Woolshed Flat Shale	Shale, black; dolomitic siltstone; dolomite; grey laminated siltstone.	Bungarider Subgroup	ADELAIDE GEOSYNCLINE	NEOPROTEROZOIC	Torrensian	Torrensian	0m
qz	Unnamed GIS Unit - see description	Quartz veins/bodies, undifferentiated.		UNKNOWN	MISCELLANEOUS			0m
T	Unnamed GIS Unit - see description	Undifferentiated Tertiary rocks.		UNKNOWN	TERTIARY	Tertiary	Tertiary	0m
T/Tomw	Unnamed GIS Unit - see description	Undifferentiated Tertiary rocks.		UNKNOWN	TERTIARY	Tertiary	Tertiary	202m
Ndt	Stonyfell Quartzite	Quartzite, feldspathic, with shale interbeds; silty sandstone in part schistose and calcareous.	Bungarider Subgroup	ADELAIDE GEOSYNCLINE	NEOPROTEROZOIC	Torrensian	Torrensian	884m
Ndt1	Unnamed GIS Unit - see description	Quartzite or sandstone interbeds. Based on dotted unit in Prot-du on Adelaide, Onkaparinga, Noarlunga and Echunga 1:50 000 maps.	Stonyfell Quartzite	ADELAIDE GEOSYNCLINE	NEOPROTEROZOIC	Torrensian	Torrensian	965m

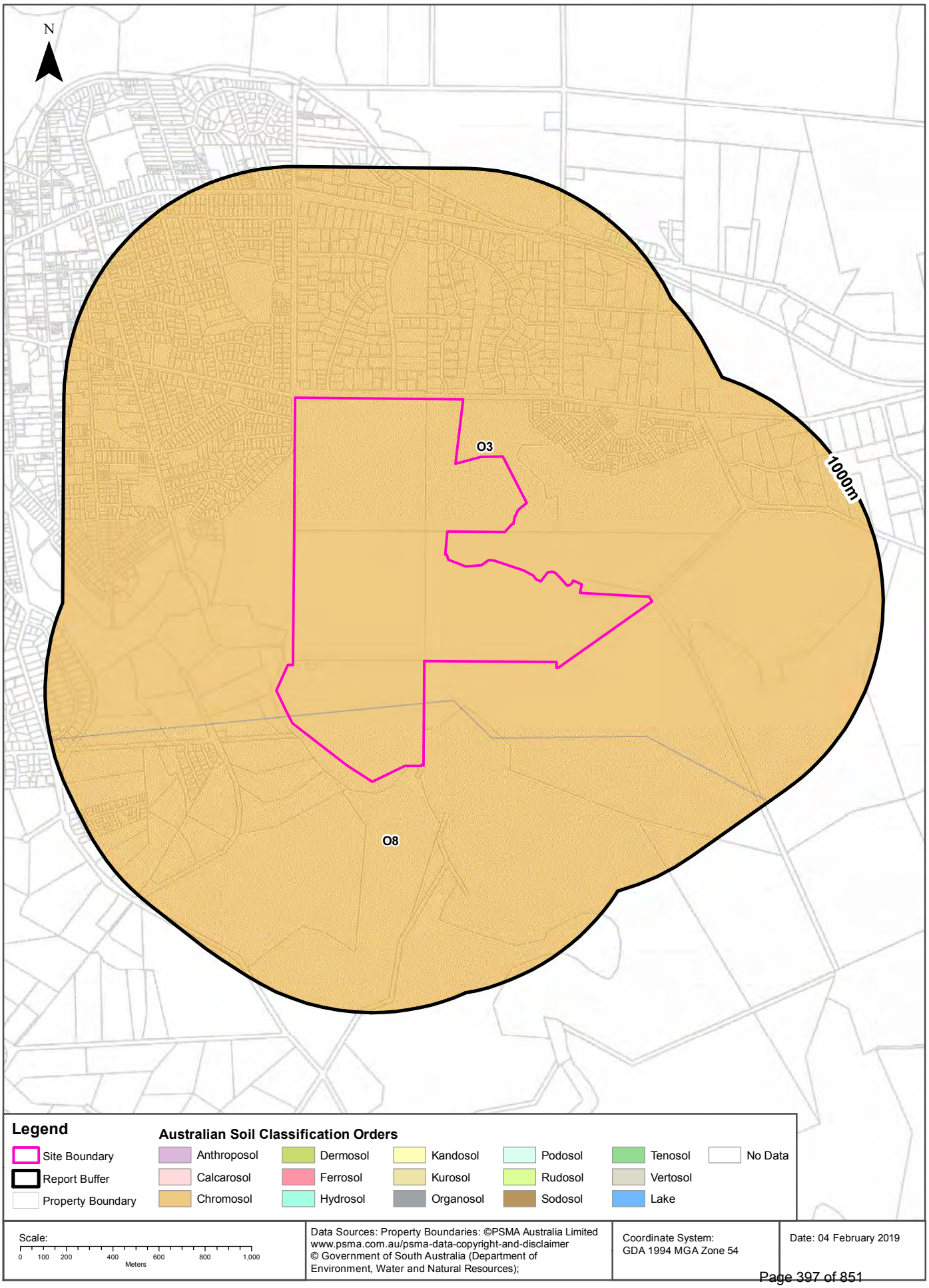
Linear Structures 1:100,000

Linear geological structures within the dataset buffer:

Map Code	Description	Distance
N/A	No features in buffer	

Atlas of Australian Soils

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Soils

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

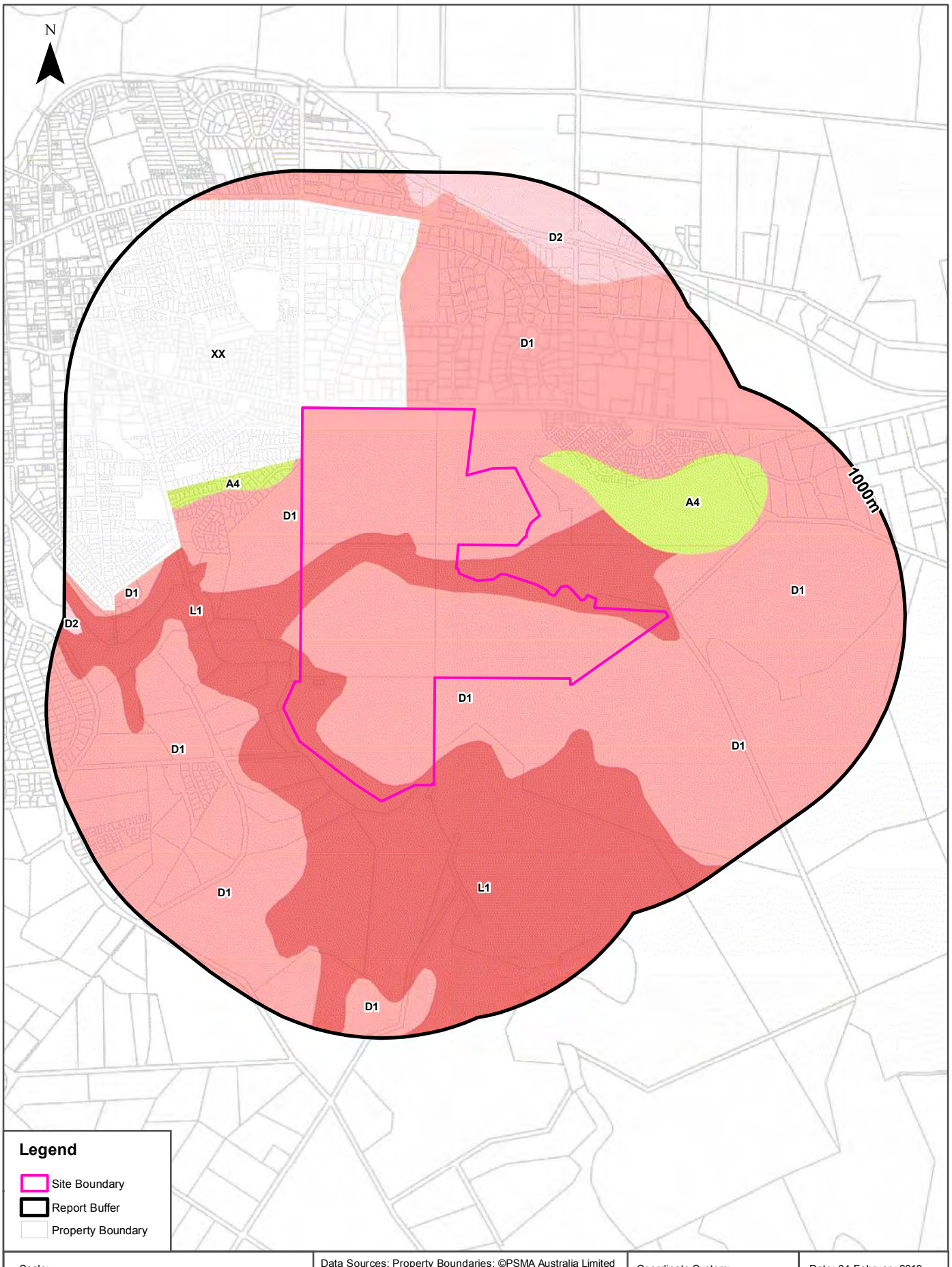
Atlas of Australian Soils

Soil mapping units and Australian Soil Classification orders within the dataset buffer:

Map Unit Code	Soil Order	Map Unit Description	Distance
O3	Chromosol	Hills and valleys: alternating, subparallel hilly ridges and valleys with a general N.-S. trend. Shallow forms of hard alkaline red soils (Dr2.23) with (Um5.41); (Um5.11) and shallow varieties of (Um6) especially (Um6.23) occur on the hilly ridges; while on the hill slopes and in the valleys (Dr2.23) with (Dr2.33), which increases in area towards the northern portion of the unit, occur with small areas of cracking clay soils (Ug5.15, Ug5 16, Ug5 2, and Ug5.3); friable earths (Gn3.13); grey-brown highly calcareous loamy earths (Gc1) in the northern portion of the unit; and also minor areas of soils belonging to groups (Dr3.22), (Dy3.4), and (Dy5.4); while on present stream terraces occur (Dr2.23) and deep varieties of (Um6) with various alluvial soils (unclassified) on the flood-plains.	0m
O8	Chromosol	Rounded hill slopes with some scarps: shallow forms of hard alkaline red soils (Dr2.23) in association with friable loamy soils (Um6.42, Um6.43, and Um6.21); dark structured clays (Uf6.11); smaller areas of shallow red subplastic clay soils (Uf5.31); red friable earths (Gn3.12); cracking clays (Ug5.15, Ug5.16, and Ug5.2) and sandy alkaline yellow mottled soils (Dy5.4 and Dy5.8).	0m

Soil Types

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Soils

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

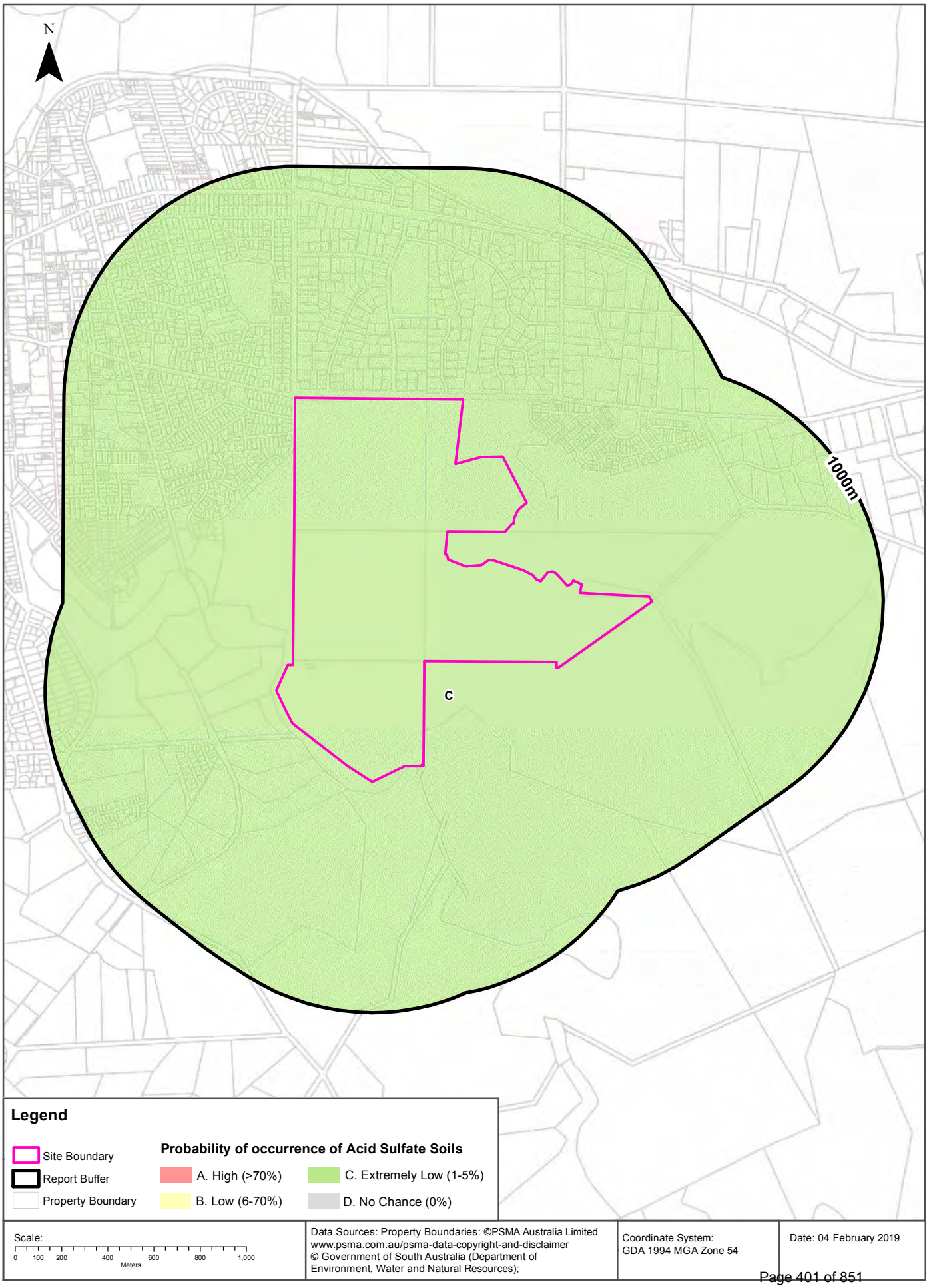
Soil Types

Soil types within the dataset buffer:

Map category code	Soil type description	Distance
D1	Loam over clay on rock	0m
XX	Not applicable - No assessment/analysis undertaken	0m
L1	Shallow soil on rock	0m
A4	Calcareous loam	32m
D2	Loam over red clay	670m

Atlas of Australian Acid Sulfate Soils

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Acid Sulfate Soils

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

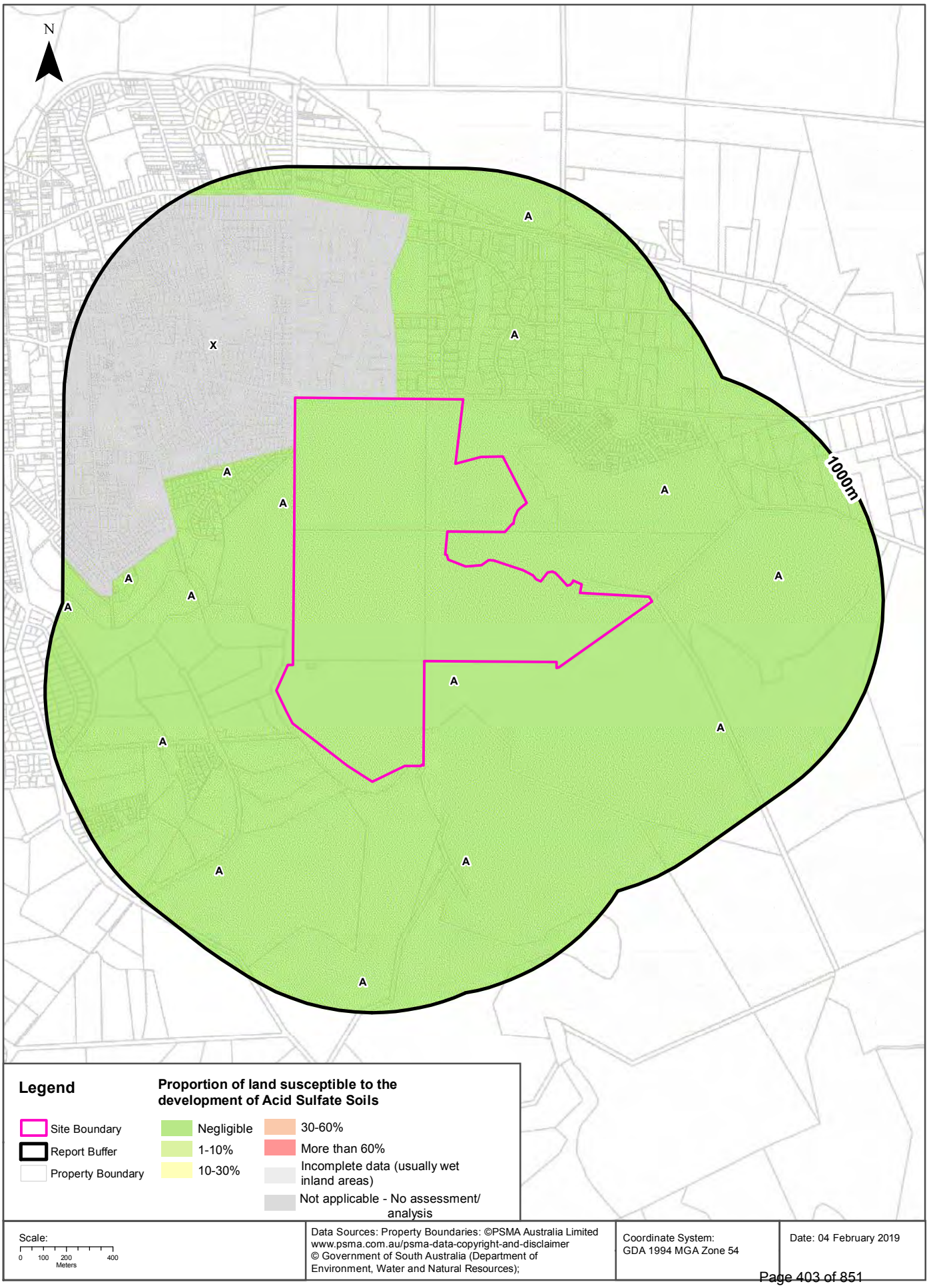
Atlas of Australian Acid Sulfate Soils

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

Class	Description	Distance
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m

Acid Sulfate Soils Potential

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Acid Sulfate Soils

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

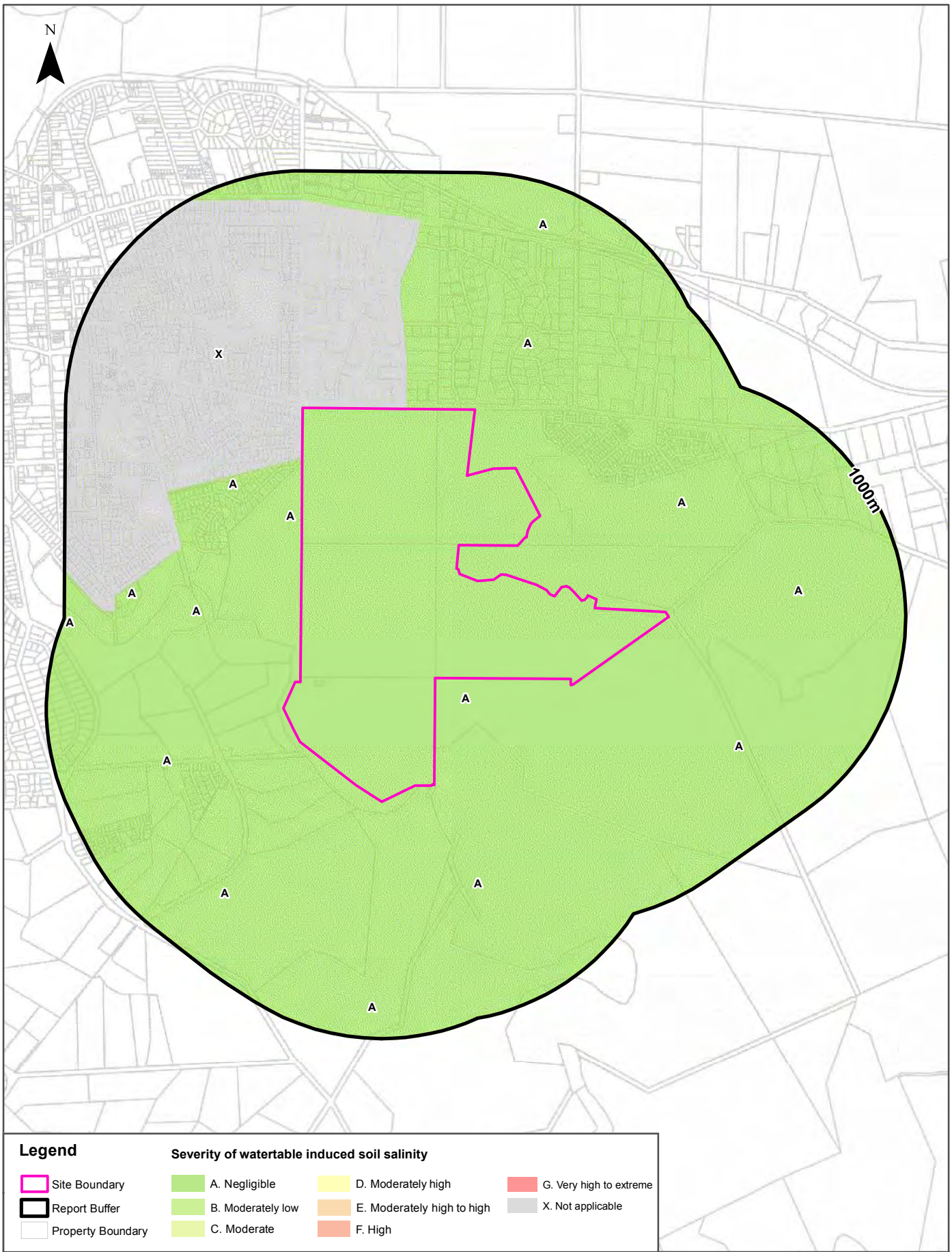
Acid Sulfate Soil Potential

Acid sulfate soil potential within the dataset buffer:

Map category code	Proportion of land susceptible to the development of acid sulfate soils	Distance
A	Negligible	0m
X	Not applicable - No assessment/analysis undertaken	0m

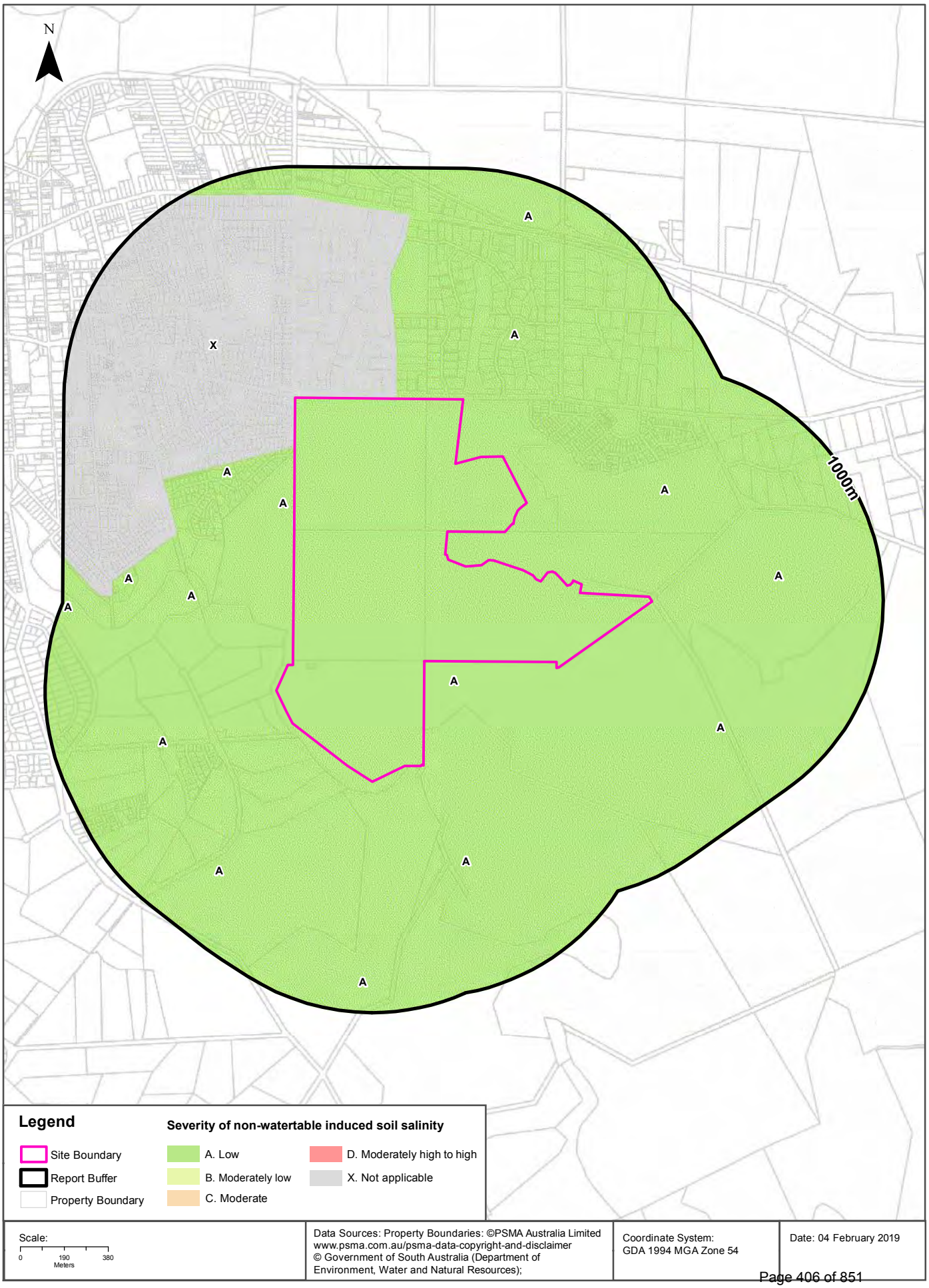
Soil Salinity - Watertable Induced

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



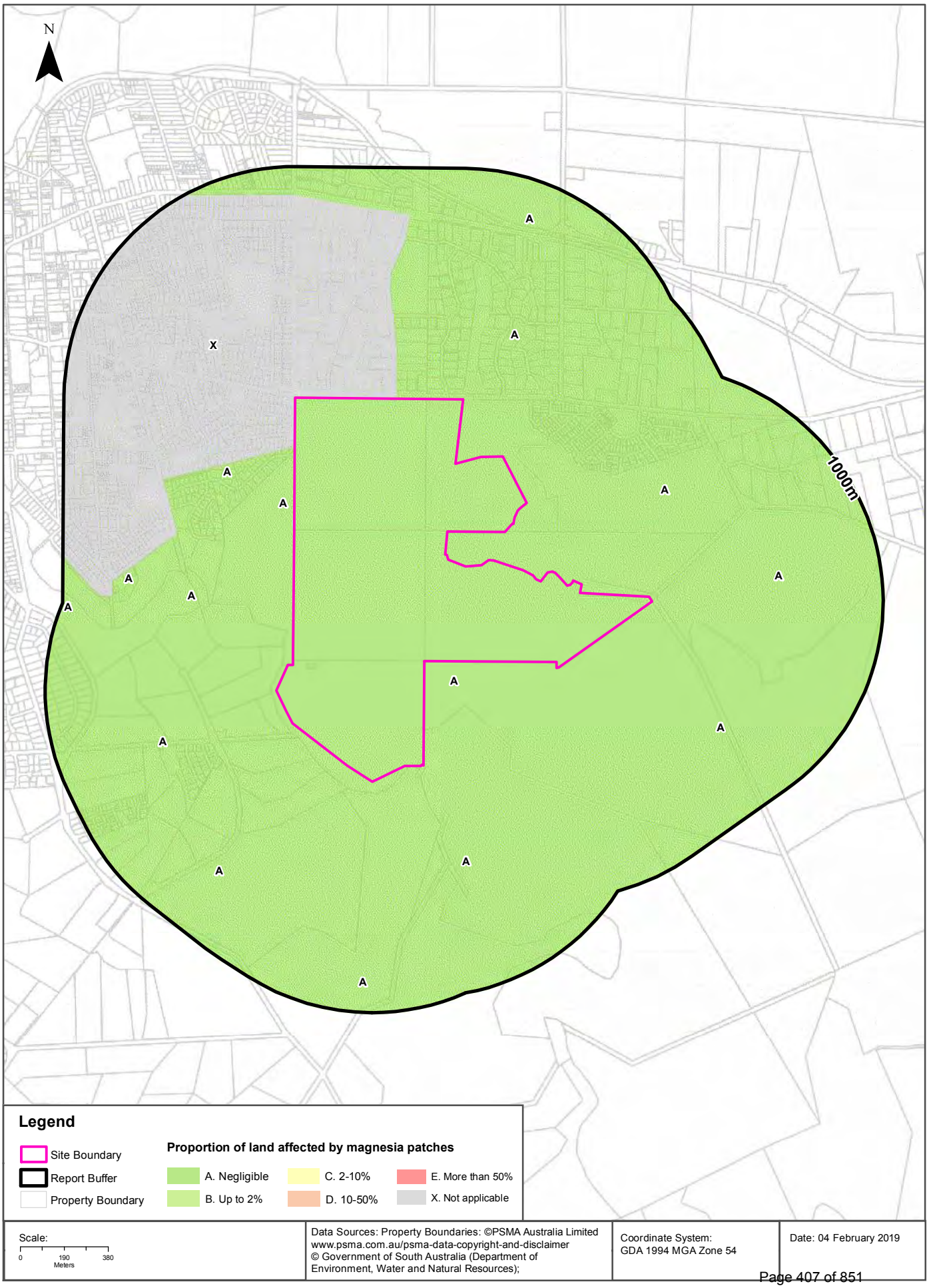
Soil Salinity - Non-watertable

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Soil Salinity - Non-watertable (Magnesia Patches)

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Soil Salinity

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

Soil Salinity - Watertable Induced

Watertable induced soil salinity within the dataset buffer:

Map category code	Severity description	Distance
A	Negligible	0m
X	Not applicable - No assessment/analysis undertaken	0m

Salinity Watertable Induced Data Source: Dept of Environment, Water and Natural Resources - South Australia

Soil Salinity - Non-Watertable

Non-watertable soil salinity within the dataset buffer:

Map category code	Severity description	Surface ECe (dS/m)	Subsoil ECe (dS/m)	Distance
A	Low	<2	<4	0m
X	Not applicable - No assessment/analysis undertaken			0m

Salinity Non-Watertable Data Source: Dept of Environment, Water and Natural Resources - South Australia

Soil Salinity - Non-Watertable (Magnesia Patches)

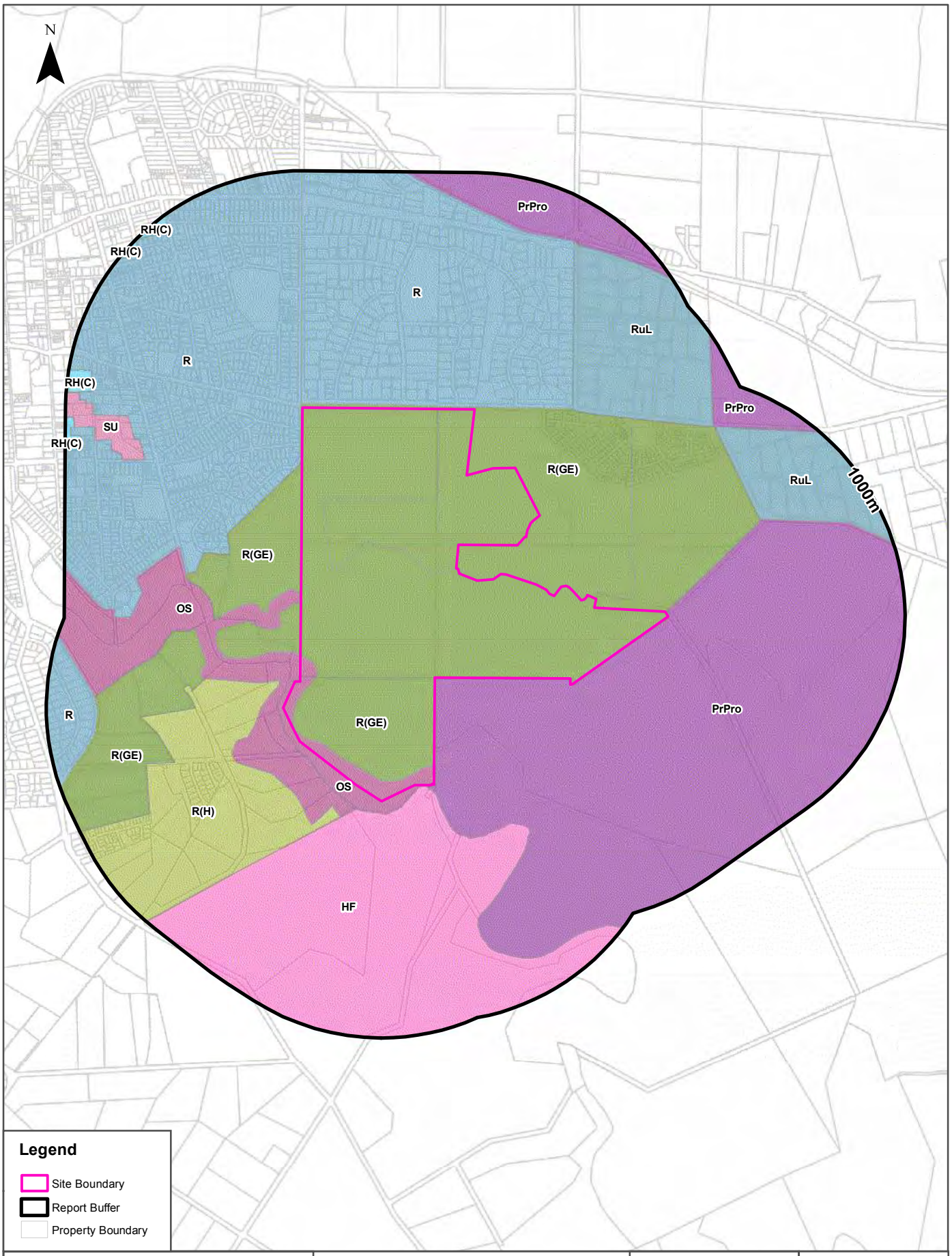
Magnesia patches within the dataset buffer:

Map category code	Proportion of land affected by magnesia patches	Distance
A	Negligible	0m
X	Not applicable - No assessment/analysis undertaken	0m

Salinity Non-Watertable (Magnesia Patches) Data Source: Dept of Environment, Water and Natural Resources - South Australia

Land Development Zones

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Planning

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

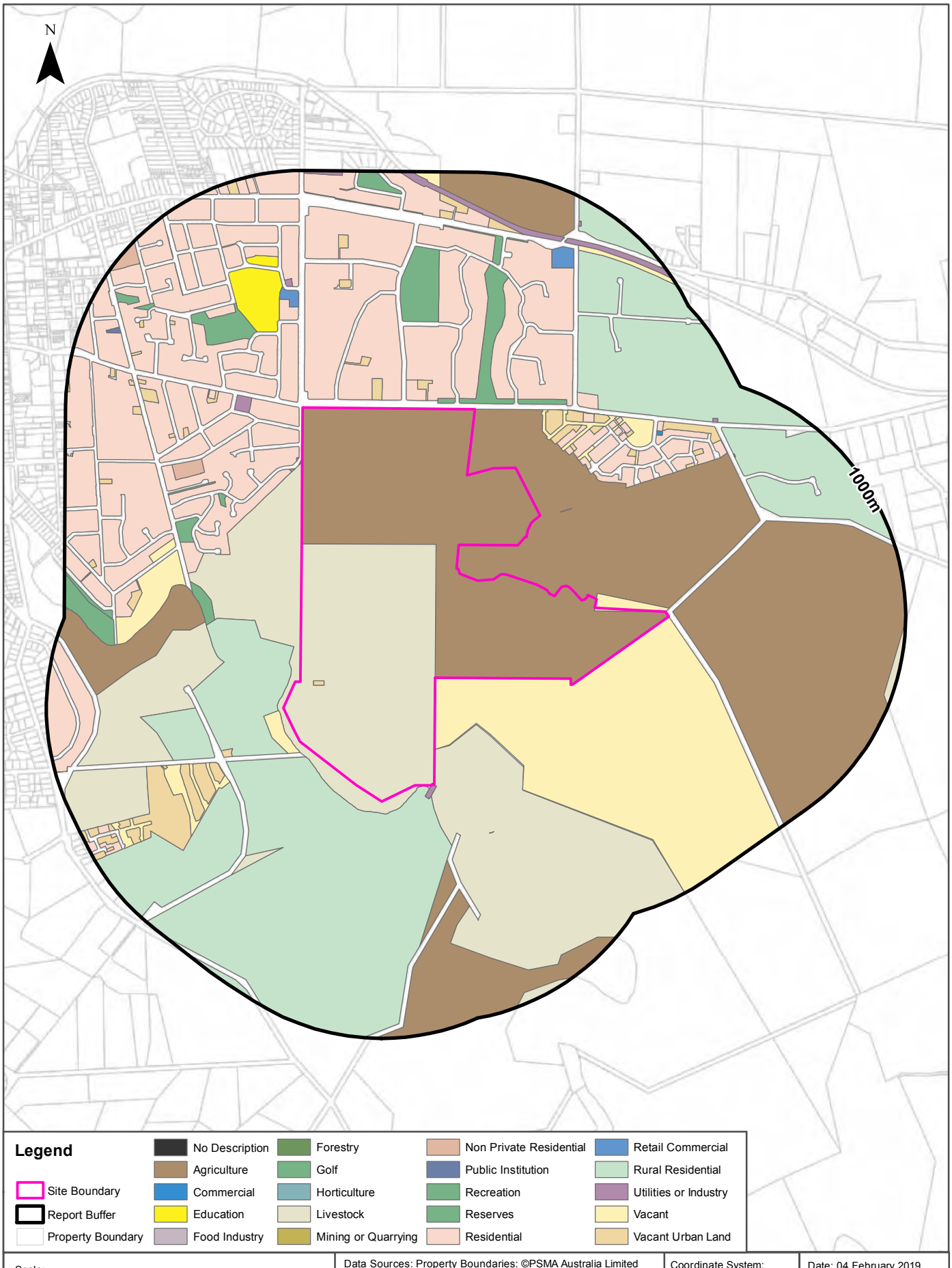
Land Development Zones

Land development zoning within the dataset buffer:

Zone Code	Development Plan Code	Zone Description	Devlopment Category	Distance	Direction
R(GE)	GA	Residential (Gawler East)	RESIDENTIAL	0m	Onsite
R(GE)	BARO	Residential (Gawler East)	RESIDENTIAL	0m	Onsite
OS	BARO	Open Space	OPEN SPACE	0m	Onsite
OS	GA	Open Space	OPEN SPACE	0m	West
PrPro	BARO	Primary Production	PRIMARY PRODUCTION - MINING	0m	East
R	GA	Residential	RESIDENTIAL	0m	North West
HF	PLAY	Hills Face	ENVIRONMENTAL CONSTRAINT	3m	South
R	GA	Residential	RESIDENTIAL	13m	North
R(H)	GA	Residential (Hills)	RESIDENTIAL	55m	South West
RuL	BARO	Rural Living	RURAL LIVING	343m	North East
R(GE)	GA	Residential (Gawler East)	RESIDENTIAL	351m	South West
RuL	BARO	Rural Living	RURAL LIVING	557m	East
SU	GA	Special Use	MISCELLANEOUS	665m	North West
R	GA	Residential	RESIDENTIAL	782m	West
RH(C)	GA	Residential Historic (Conservation)	HISTORIC RESIDENTIAL	890m	North West

Land Use Generalised 2017

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Land Use

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

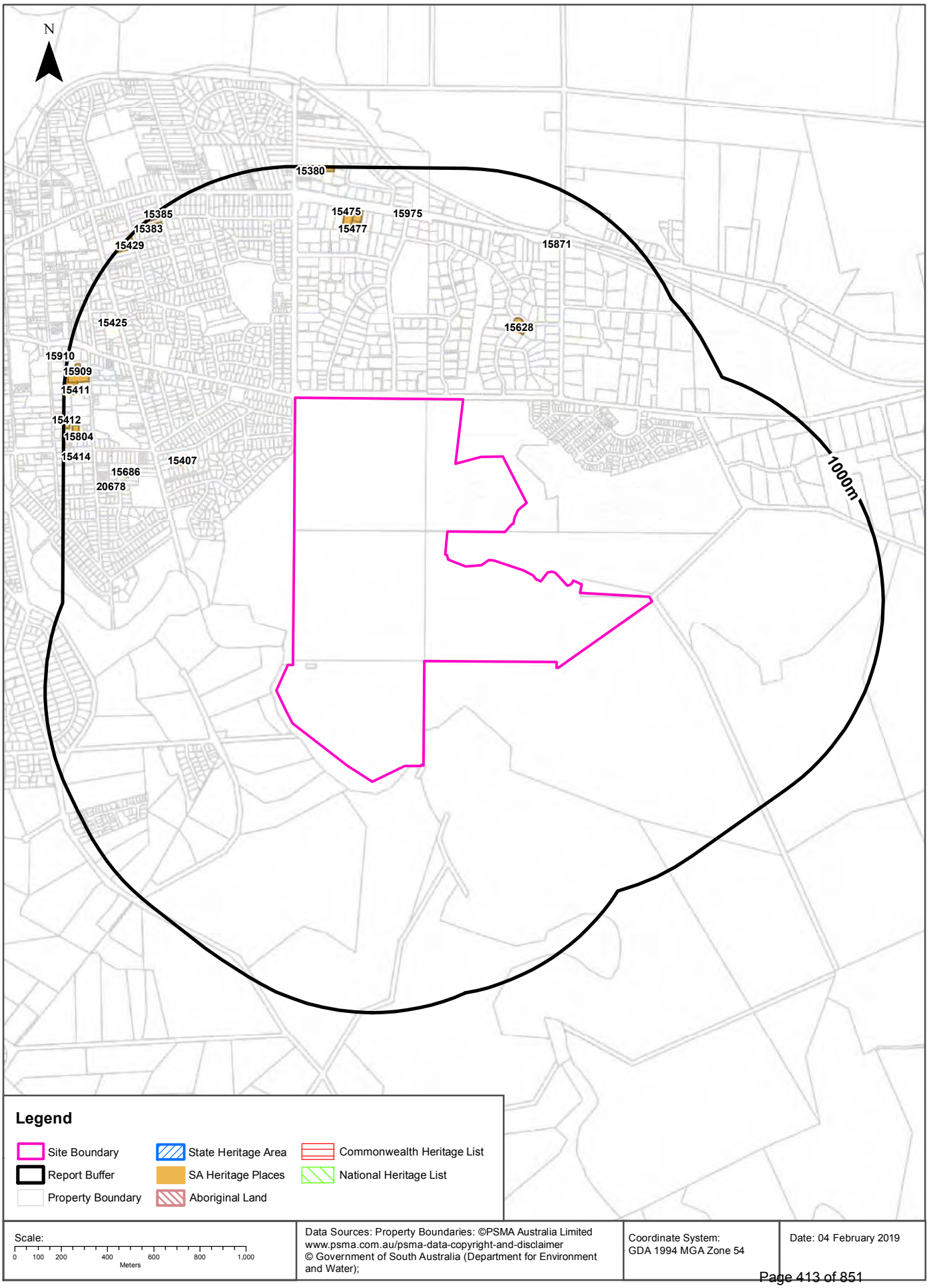
Land Use Generalised 2017

Land use classes within the dataset buffer:

Description	Distance	Direction
Agriculture	0m	Onsite
Livestock	0m	Onsite
Vacant	0m	East
Vacant Urban Land	0m	South West
Vacant	0m	South East
Utilities or Industry	0m	South
Reserves	0m	North West
Rural Residential	3m	South
Residential	14m	North West
Education	338m	North West
Recreation	368m	North
Non Private Residential	412m	North West
Retail Commercial	424m	North West
Commercial	592m	North East
Public Institution	829m	North West

Heritage

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Heritage

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

Commonwealth Heritage List

What are the Commonwealth Heritage List Items located within the dataset buffer?

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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National Heritage List

What are the National Heritage List Items located within the dataset buffer?
Note. Please click on Place Id to activate a hyperlink to online website.

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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State Heritage Areas

State Heritage Areas within the dataset buffer:

Heritage Id	Name	Distance	Direction
N/A	No records in buffer		

Heritage Areas Data Source: Dept of Environment, Water and Natural Resources - South Australia
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SA Heritage Places

SA Heritage Places within the dataset buffer:

Heritage No	Location	Heritage Class	Australian Class	Details	Auth Date	Distance	Direction
15628	2 Lally Drive GAWLER EAST	Local	House	Dwelling, former chaff mill & barn	3/8/2001	372m	North East
15407	1 Deland Avenue GAWLER	State	House	Trevu House Nursing Home (former Dwelling of James Martin MLC)		467m	North West
15686	8 McKinlay Avenue GAWLER EAST	Local	House	Oaklands	3/8/2001	720m	West
20678	1B Dawes Avenue GAWLER EAST	Local	House	Dwelling	3/8/2001	720m	West
15477	7 Eucalypt Drive GAWLER EAST	Local	House	Former Korff farmhouse	3/8/2001	728m	North

Heritage No	Location	Heritage Class	Australian Class	Details	Auth Date	Distance	Direction
15475	6 Eucalypt Drive GAWLER EAST	Local	House	Former Korff barn	3/8/2001	730m	North
15476	7 Eucalypt Drive GAWLER EAST	Local	House	Former Korff farmhouse & attached stable	3/8/2001	762m	North
15871	Barossa Valley Highway GAWLER EAST	State	Hotel - Motel - Inn	Tea Rooms (former Wheatsheaf Hotel)		779m	North East
15975	Lyndoch/Hemafo rd GAWLER EAST	Local	Historic Sites (unclassified)	Stone culvert under Lyndoch Road	3/8/2001	793m	North
15425	23 East Terrace GAWLER EAST	Local	Historic Sites (unclassified)	Dance Academy, former barn	3/8/2001	829m	North West
15909	3 Turner Street GAWLER EAST	Contributory	House	Dwelling, barn & western perimeter walls	3/8/2001	896m	North West
15411	10 Duffield Street GAWLER EAST	Contributory	House	Coach House	3/8/2001	916m	North West
15804	8 Rudall Street GAWLER EAST	Contributory	House	Dwelling	3/8/2001	934m	North West
15910	1 Turner Street GAWLER EAST	State	House	Dwelling		939m	North West
15383	11 Crown Street GAWLER EAST	Contributory	House	Dwelling	3/8/2001	940m	North West
15429	6-8 East Terrace GAWLER EAST	Local	House	Former Hutchinson Hospital	3/8/2001	952m	North West
15386	7 Crown Street GAWLER EAST	Contributory	House	Dwelling	3/8/2001	972m	North West
15413	20 Duffield Street GAWLER EAST	Contributory	House	Dwelling	3/8/2001	976m	North West
15412	18 Duffield Street GAWLER EAST	Contributory	House	Dwelling	3/8/2001	978m	North West
15380	LOT 72 Cheek Avenue North GAWLER EAST	Local	Cemetery	St George's Anglican Cemetery	3/8/2001	981m	North
15409	Duffield Street GAWLER EAST	Contributory	Fence/Wall	Western stone wall	3/8/2001	985m	North West
15385	5 Crown Street GAWLER EAST	Contributory	House	Dwelling	3/8/2001	989m	North West
15414	22 Duffield Street GAWLER EAST	Contributory	House	Dwelling	3/8/2001	996m	West
15343	8 Bishop Street GAWLER EAST	Contributory	House	Dwelling	3/8/2001	998m	North West

Heritage Places Data Source: Dept of Environment, Water and Natural Resources - South Australia

Aboriginal Land

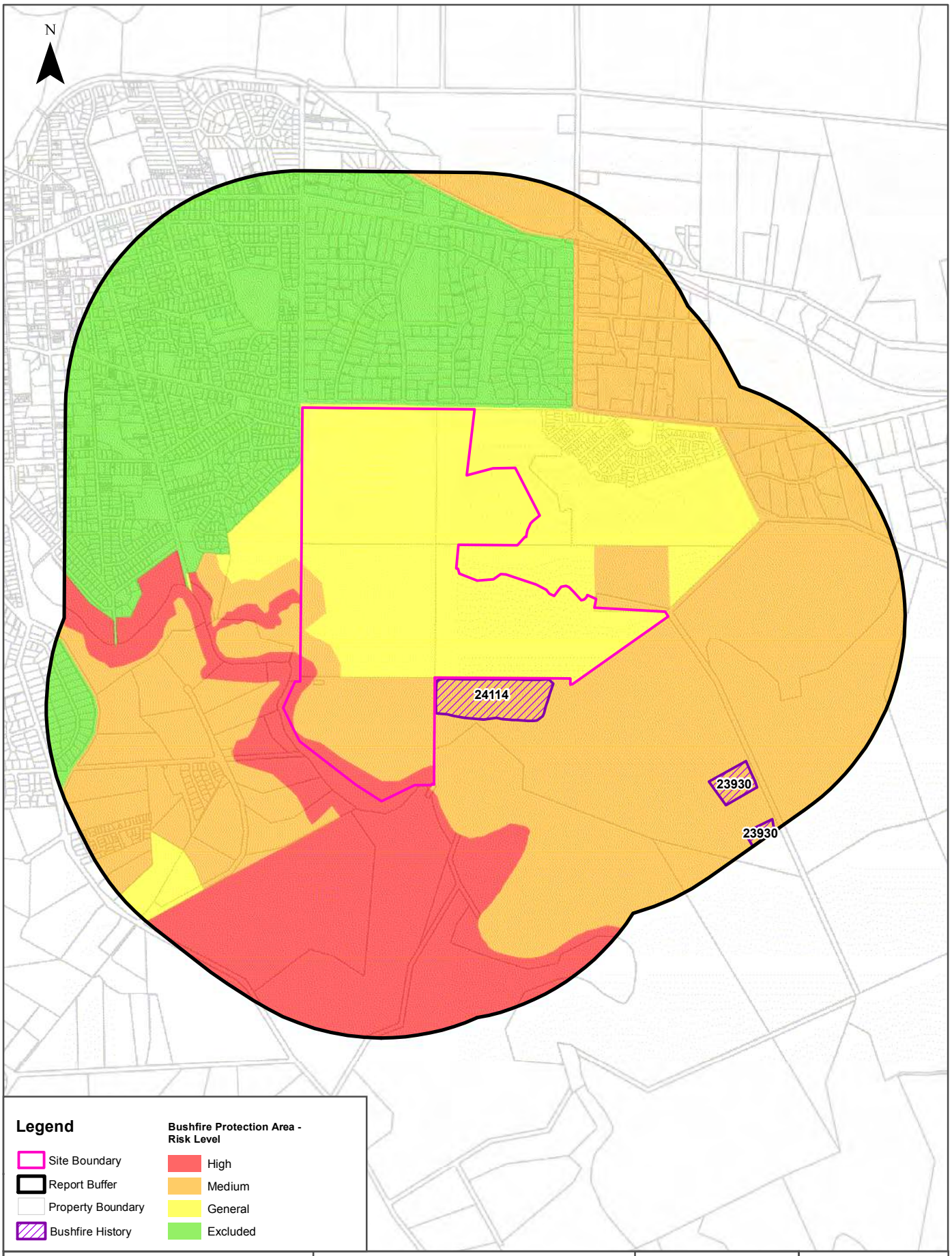
Aboriginal Land within the dataset buffer:

Map Id	Grant Date	Address	Locality	Description	Title	Distance	Direction
N/A	No records in buffer						

Aboriginal Land Data Source: Department of State Development, Resources and Energy - South Australia

Bushfire

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Natural Hazards

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

Bushfire Protection Areas

Bushfire Protection Areas within the dataset buffer:

Map Id	Bushfire Risk Code	Development Plan Code	Additional Development Criteria	Distance	Direction
2436	High	BARO		0m	Onsite
1825	High	GA		0m	Onsite
1826	Medium	GA		0m	Onsite
1827	General	GA		0m	Onsite
2027	Medium	BARO		0m	Onsite
1727	Medium	GA		0m	Onsite
2150	Excluded	GA		0m	West

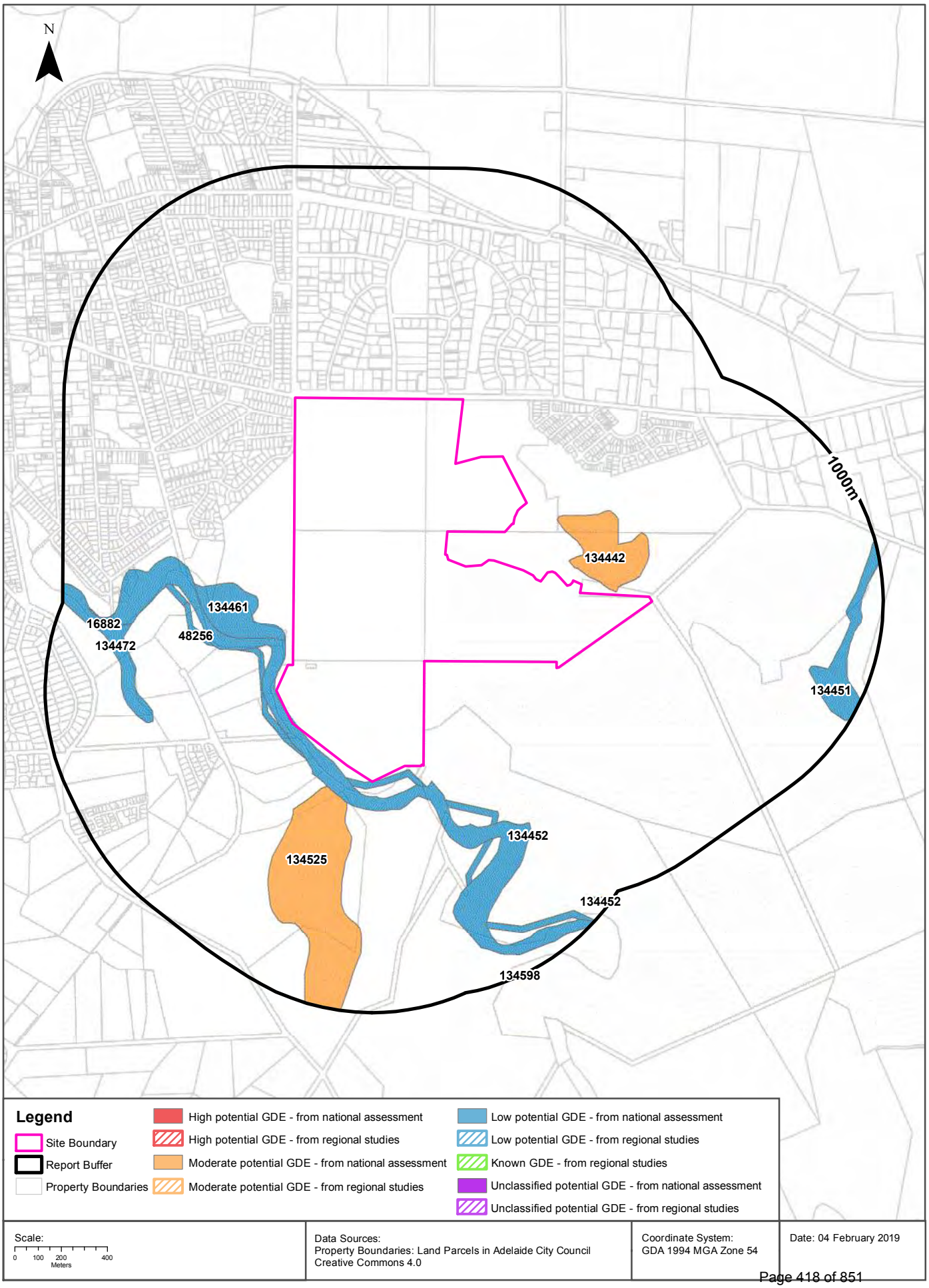
Bushfires and Prescribed Burns History

Bushfires and prescribed burns within the dataset buffer:

Map Id	Incident No.	Incident Name	Incident Type	Date of Fire	Area of Fire	Distance	Direction
24114	209	Para Woodland A16	Prescribed Burn	3/16/2017 12:00:00 AM	7	4m	South East
23930	208	Para Woodlands A15	Prescribed Burn	3/27/2015 12:00:00 AM	3	668m	South East

Groundwater Dependent Ecosystems Atlas

Stages 3 and 4, Springwood Development, Gawler East, SA 5118



Ecological Constraints

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

Groundwater Dependent Ecosystems Atlas

GDEs within the dataset buffer:

MapID	Type	Name	GDE Potential	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
134452	Terrestrial		Low potential GDE - from national assessment	10	Complex fold belt of prominent ranges in north, chiefly quartzite with vales on weaker rocks; stepped fault blocks and islands in south, mainly of weathered metamorphic rocks with ferruginous cappings.	Vegetation		0m
48256	Aquatic		Low potential GDE - from national assessment	5	Complex fold belt of prominent ranges in north, chiefly quartzite with vales on weaker rocks; stepped fault blocks and islands in south, mainly of weathered metamorphic rocks with ferruginous cappings.	River		0m
134442	Terrestrial		Moderate potential GDE - from national assessment	7	Complex fold belt of prominent ranges in north, chiefly quartzite with vales on weaker rocks; stepped fault blocks and islands in south, mainly of weathered metamorphic rocks with ferruginous cappings.	Vegetation		13m
134461	Terrestrial		Low potential GDE - from national assessment	9	Complex fold belt of prominent ranges in north, chiefly quartzite with vales on weaker rocks; stepped fault blocks and islands in south, mainly of weathered metamorphic rocks with ferruginous cappings.	Vegetation		34m
134525	Terrestrial		Moderate potential GDE - from national assessment	5	Complex fold belt of prominent ranges in north, chiefly quartzite with vales on weaker rocks; stepped fault blocks and islands in south, mainly of weathered metamorphic rocks with ferruginous cappings.	Vegetation		123m
16882	Aquatic		Low potential GDE - from national assessment	10	Complex fold belt of prominent ranges in north, chiefly quartzite with vales on weaker rocks; stepped fault blocks and islands in south, mainly of weathered metamorphic rocks with ferruginous cappings.	River		453m

MapID	Type	Name	GDE Potential	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
134472	Terrestrial		Low potential GDE - from national assessment	10	Complex fold belt of prominent ranges in north, chiefly quartzite with vales on weaker rocks; stepped fault blocks and islands in south, mainly of weathered metamorphic rocks with ferruginous cappings.	Vegetation		543m
134451	Terrestrial		Low potential GDE - from national assessment	6	Complex fold belt of prominent ranges in north, chiefly quartzite with vales on weaker rocks; stepped fault blocks and islands in south, mainly of weathered metamorphic rocks with ferruginous cappings.	Vegetation		737m
134598	Terrestrial		Low potential GDE - from national assessment	4	Complex fold belt of prominent ranges in north, chiefly quartzite with vales on weaker rocks; stepped fault blocks and islands in south, mainly of weathered metamorphic rocks with ferruginous cappings.	Vegetation		989m

Ecological Constraints

Stages 3 and 4, Springwood Development, Gawler East, SA 5118

Ramsar Wetlands

RamsarWetlands within the dataset buffer:

Wetland	Distance	Direction
No records in buffer		

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    (b) any loss of profit, loss of revenue, loss of interest, loss of data, loss of goodwill or loss of business opportunities, business interruption arising directly or indirectly out of or in relation to the Report or these Terms,

    irrespective of how that liability arises including in contract or tort, liability under indemnity or for any other common law, equitable or statutory cause of action or otherwise.
12. These Terms are subject to New South Wales law.

Appendix D

Aerial Photographs

Appendix D

Historical Aerial Photographs

1979

Springwood Stage 3 and 4
Gawler East
Preliminary Site Investigation

For

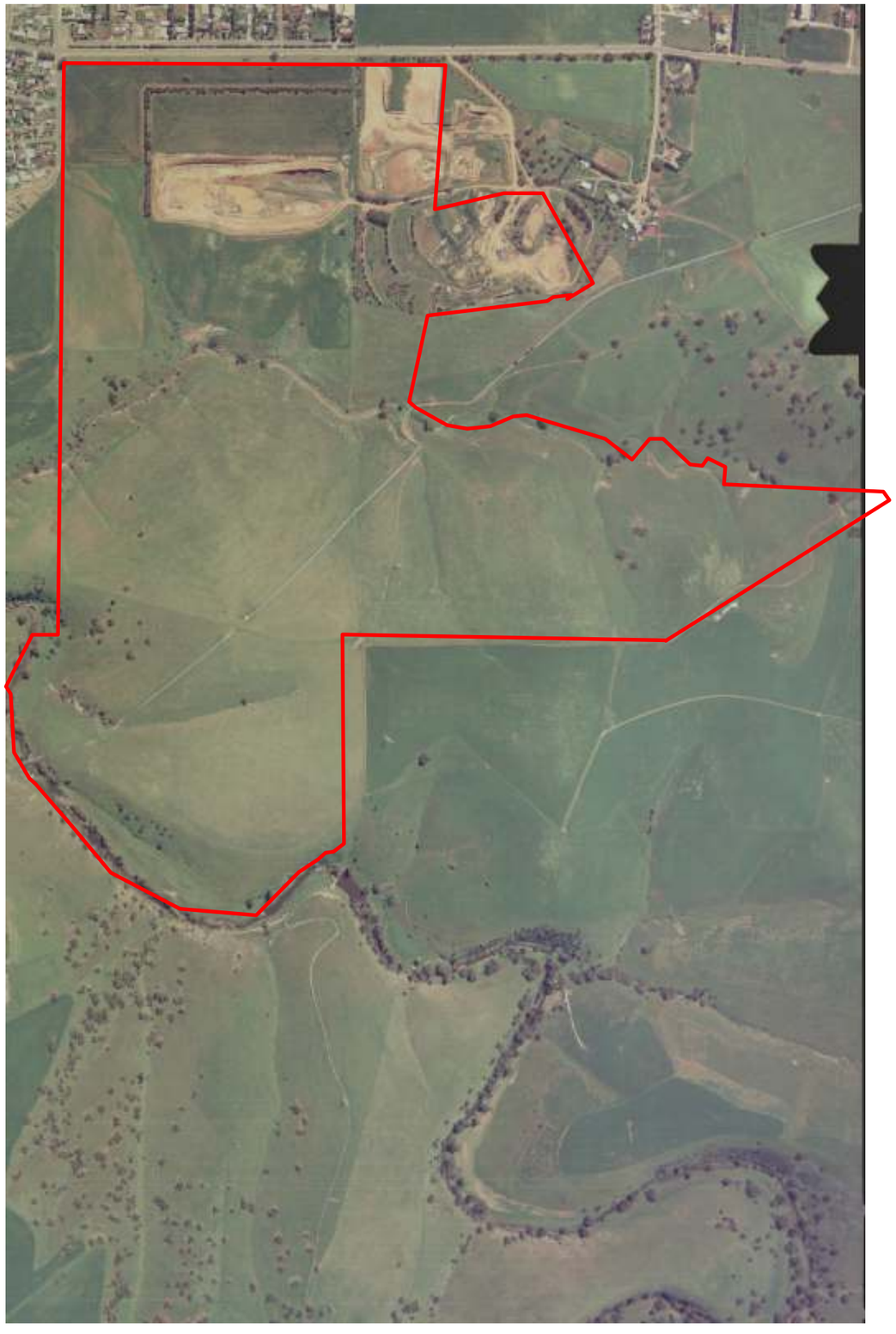
Arcadian Property

LEGEND

Approximate Site Boundary

DELIVERING ENVIRONMENTAL SOLUTIONS

LBW co Details			
Job No.	191076		
Drawn	MF	**Rev.**	0
Checked	MP	**Date**	05.04.2019



Appendix D

Historical Aerial Photographs

1989

Springwood Stage 3 and 4
Gawler East
Preliminary Site Investigation

For

Arcadian Property

LEGEND

Approximate Site Boundary

DELIVERING ENVIRONMENTAL SOLUTIONS

LBW co Details			
Job No.	191076		
Drawn	MF	**Rev.**	0
Checked	MP	**Date**	05.04.2019

Appendix D

Historical Aerial Photographs

2005

Springwood Stage 3 and 4
Gawler East
Preliminary Site Investigation

For

Arcadian Property

LEGEND

Approximate Site Boundary

LBW co DELIVERING ENVIRONMENTAL SOLUTIONS

LBW co Details			
Job No.	191076		
Drawn	MF	**Rev.**	0
Checked	MP	**Date**	05.04.2019

Appendix D

Historical Aerial Photographs

2010

Springwood Stage 3 and 4
Gawler East
Preliminary Site Investigation

For

Arcadian Property

LEGEND

Approximate Site Boundary

DELIVERING ENVIRONMENTAL SOLUTIONS

LBW co Details			
Job No.	191076		
Drawn	MF	**Rev.**	0
Checked	MP	**Date**	05.04.2019

Appendix D

Historical Aerial Photographs

2014

Springwood Stage 3 and 4
Gawler East
Preliminary Site Investigation

For

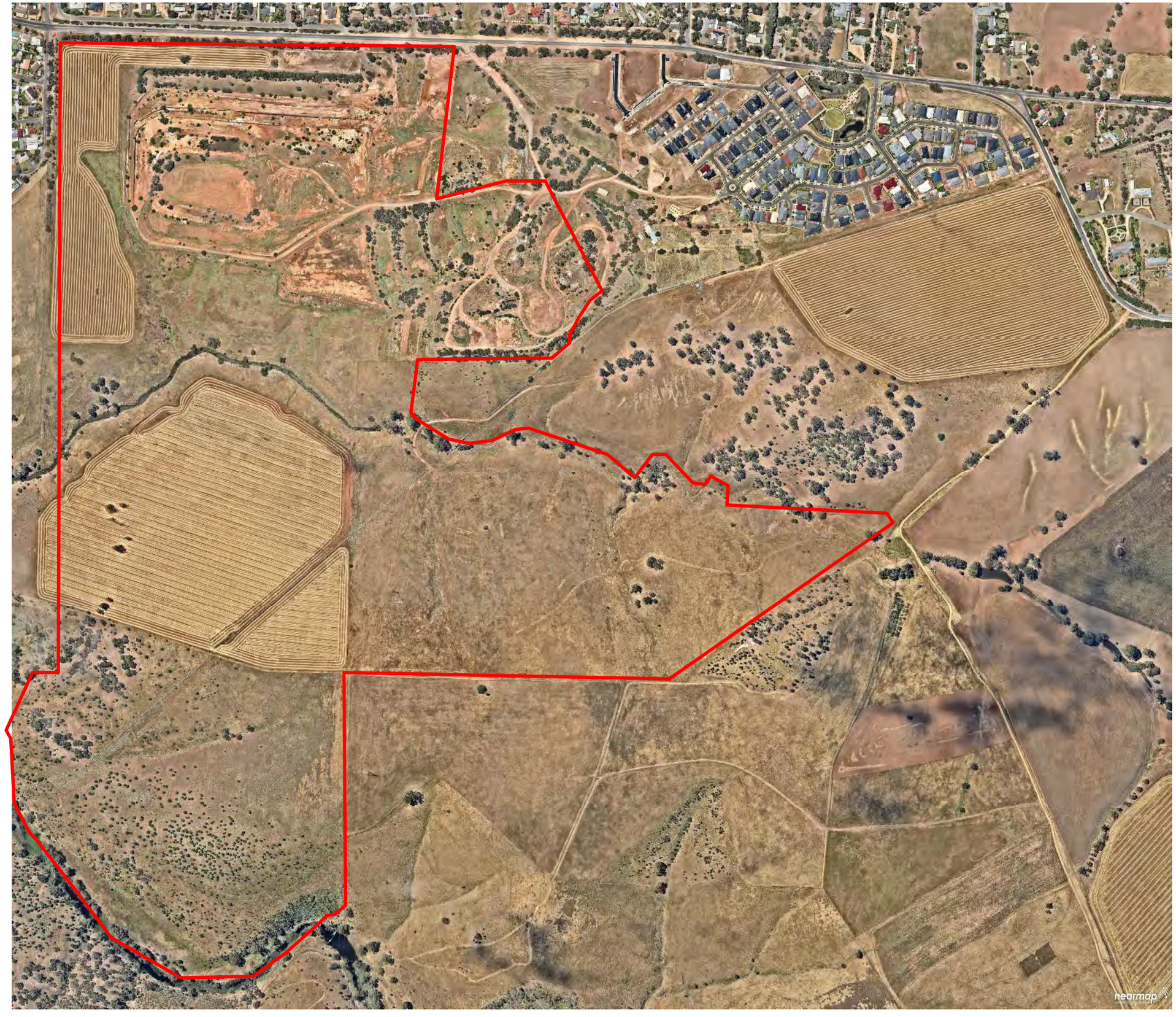
Arcadian Property

LEGEND

Approximate Site Boundary

lbw co | DELIVERING ENVIRONMENTAL SOLUTIONS

LBW co Details			
Job No.	191076		
Drawn	MF	**Rev.**	0
Checked	MP	**Date**	05.04.2019



Appendix D

Historical Aerial Photographs

2016

Springwood Stage 3 and 4
Gawler East
Preliminary Site Investigation

For

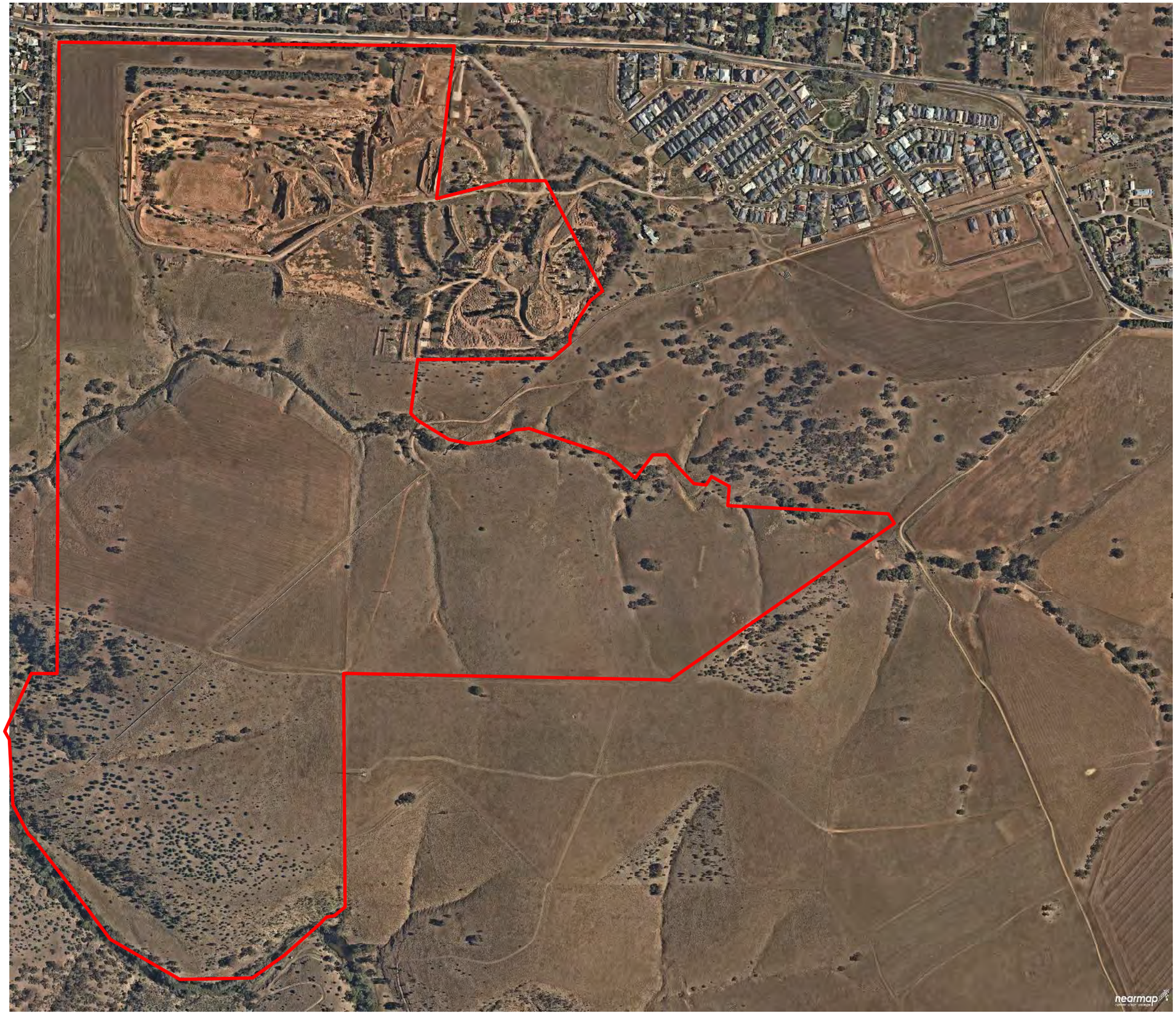
Arcadian Property

LEGEND

Approximate Site Boundary

lbw co | DELIVERING ENVIRONMENTAL SOLUTIONS

LBW co Details			
Job No.	191076		
Drawn	MF	**Rev.**	0
Checked	MP	**Date**	05.04.2019



Appendix D

Historical Aerial Photographs

2018

Springwood Stage 3 and 4
Gawler East
Preliminary Site Investigation

For

Arcadian Property

LEGEND

Approximate Site Boundary

LBW co DELIVERING ENVIRONMENTAL SOLUTIONS

LBW co Details			
Job No.	191076		
Drawn	MF	**Rev.**	0
Checked	MP	**Date**	05.04.2019

Appendix E

Sands and McDougall Search Results

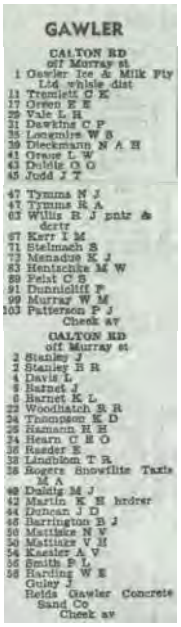
Project Number 191076
Report Title Preliminary Site Investigation
Site Address Springwood Stage 3 and 4

On-site

Nearby off-site activities of significance

1973

Pages 359



GAWLER

CALTON RD
off Murray st
1 Gawler Ice & Milk Pty Ltd whsle dist
11 Tremlett C K
17 Green E E
29 Vale L H
31 Dawkins C F
35 Longmire W S
39 Dieckmann N A H
41 Grace L W
43 Dulcis O O
45 Judd J T
47 Tymms N J
47 Tymms R A
61 Willis B J pntr & dcrtr
67 Kerr I M
71 Stelmach S
73 Menadue K J
83 Hentschke M W
89 Feist C S
91 Dunnicliff P
99 Murray W M
103 Patterson P J
Cheek av

CALTON RD
off Murray st
2 Stanley J
3 Stanley B R
4 Davis L
6 Barnet J
6 Barnet K L
22 Woodhatch S R
24 Thompson K D
26 Hamann R H
34 Hearn C H O
36 Reader E
38 Lindblom T R
38 Rogers Snowflite Taxis M A
40 Dalby M J
42 Martin K H bricklr
44 Duncan J D
46 Harrington B J
50 Mattske N V
50 Mattske V M
54 Kassler A V
56 Smith P L
58 Harding W E
Guley J
Reids Gawler Concrete Sand Co
Cheek av

1963

Pages 380

GAWLER

Appendix F

SA Dangerous Substances Licensing Database Search Results

Government of South Australia
SafeWork SA

Licensing, Customer Services Team

Level 4 World Park A
33 Richmond Road
Keswick SA 5035

GPO Box 465
Adelaide SA 5001

DX 715 Adelaide

Phone 1300 365 255
Email licensing.safework@sa.gov.au

ABN 50-560-588-327

www.safework.sa.gov.au

22 February 2019

Mr Sam Rady
LBW Co Pty Ltd
184 Magill Road
NORWOOD SA 5067

Dear Mr Rady

DANGEROUS SUBSTANCES LICENCE SEARCH

PROPERTY DETAILS: Calton Road, Gawler East 5118

Further to your application for a Dangerous Substance Search dated 6 February 2019 received for the abovementioned site, I advise that there are no current or historical records for this site.

Yours sincerely

MANAGER
CUSTOMER SERVICES TEAM
SAFEWORK SA

Appendix G

EPA Section 7 Search Results

Environment Protection Authority
GPO Box 2607 Adelaide SA 5001
211 Victoria Square Adelaide SA 5000
T (08) 8204 2004
Country areas 1800 623 445

Receipt No :
Admin No : 73272 (52827)

LBW Co
184 Magill Road
NORWOOD SA 5067

Contact: Section 7
Telephone: (08) 8204 2026
Email: epasection7@sa.gov.au

Contact: Public Register
Telephone: (08) 8204 9128
Email: epa.publicregister@sa.gov.au

28 March, 2019

EPA STATEMENT TO FORM 1 - CONTRACTS FOR SALE OF LAND OR BUSINESS

The EPA provides this statement to assist the vendor meet its obligations under section 7(1)(b) of the *Land and Business (Sale and Conveyancing) Act 1994*. A response to the questions prescribed in Schedule 1-Contracts for sale of land or business-forms (Divisions 1 and 2) of the *Land and Business (Sale and Conveyancing) Act 1994* is provided in relation to the land.

I refer to your enquiry concerning the parcel of land comprised in

Title Reference	CT Volume 6186 Folio 896
Address	Allotment 9010 (DP 114845), Calton Road, GAWLER EAST SA 5118

Schedule – Division 1 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS OF MORTGAGES, CHARGES AND PRESCRIBED ENCUMBRANCES AFFECTING THE LAND

7. Environment Protection Act 1993

Does the EPA hold any of the following details relating to the *Environment Protection Act 1993*:

7.1	Section 59 - Environment performance agreement that is registered in relation to the land.	NO
7.2	Section 93 - Environment protection order that is registered in relation to the land.	NO
7.3	Section 93A - Environment protection order relating to cessation of activity that is registered in relation to the land.	NO
7.4	Section 99 - Clean-up order that is registered in relation to the land.	NO
7.5	Section 100 - Clean-up authorisation that is registered in relation to the land.	NO
7.6	Section 103H - Site contamination assessment order that is registered in relation to the land.	NO
7.7	Section 103J - Site remediation order that is registered in relation to the land.	NO

7.8	Section 103N - Notice of declaration of special management area in relation to the land (due to possible existence of site contamination).	NO
7.9	Section 103P - Notation of site contamination audit report in relation to the land.	NO
7.10	Section 103S - Notice of prohibition or restriction on taking water affected by site contamination in relation to the land.	NO

Schedule – Division 2 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS RELATING TO ENVIRONMENT PROTECTION

3-Licences and exemptions recorded by EPA in public register

Does the EPA hold any of the following details in the public register:

a)	details of a current licence issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	NO
b)	details of a licence no longer in force issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	**YES**
c)	details of a current exemption issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
d)	details of an exemption no longer in force issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
e)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to operate a waste depot at the land?	NO
f)	details of a licence issued under the repealed *Waste Management Act 1987* to operate a waste depot at the land?	NO
g)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to produce waste of a prescribed kind (within the meaning of that Act) at the land?	NO

h)	details of a licence issued under the repealed *Waste Management Act 1987* to produce prescribed waste (within the meaning of that Act) at the land?	NO

4-Pollution and site contamination on the land - details recorded by the EPA in public register

Does the EPA hold any of the following details in the public register in relation to the land or part of the land:

a)	details of serious or material environmental harm caused or threatened in the course of an activity (whether or not notified under section 83 of the *Environment Protection Act 1993*)?	NO
b)	details of site contamination notified to the EPA under section 83A of the *Environment Protection Act 1993*?	NO
c)	a copy of a report of an environmental assessment (whether prepared by the EPA or some other person or body and whether or not required under legislation) that forms part of the information required to be recorded in the public register?	NO
d)	a copy of a site contamination audit report?	NO
e)	details of an agreement for the exclusion or limitation of liability for site contamination to which section 103E of the *Environment Protection Act 1993* applies?	NO
f)	details of an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
g)	details of an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993?*	NO
h)	details of a notification under section 103Z(1) of the *Environment Protection Act 1993* relating to the commencement of a site contamination audit?	**YES**
i)	details of a notification under section 103Z(2) of the *Environment Protection Act 1993* relating to the termination before completion of a site contamination audit?	NO
j)	details of records, held by the former *South Australian Waste Management Commission* under the repealed *Waste Management Act 1987*, of waste (within the meaning of that Act) having been deposited on the land between 1 January 1983 and 30 April 1995?	NO

5-Pollution and site contamination on the land - other details held by EPA

Does the EPA hold any of the following details in relation to the land or part of the land:

a)	a copy of a report known as a "Health Commission Report" prepared by or on behalf of the *South Australian Health Commission* (under the repealed *South Australian Health Commission Act 1976*)?	NO
b)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
c)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993*?	NO

d)	a copy of a pre-1 July 2009 site audit report?	NO
e)	details relating to the termination before completion of a pre-1 July 2009 site audit?	NO

Details and/or copies of environmental assessments, licences,exemptions and records on the Public Register may be obtained from the Environment Protection Authority.

Prior to arranging an examination and/or copies of the required above information please telephone (08) 8204 9128 to contact the Public Register Administrator to ensure the required details are available upon arrival.

All care and diligence has been taken to access the above information from available records. Historical records provided to the EPA concerning matters arising prior to 1 May 1995 are limited and may not be accurate or complete and therefore the EPA cannot confirm the accuracy of the historical information provided.

File Reference: EPA/1874; EPA/14132; SC60456

Environment Protection Authority
GPO Box 2607 Adelaide SA 5001
211 Victoria Square Adelaide SA 5000
T (08) 8204 2004
Country areas 1800 623 445

Receipt No :
Admin No : 67577 (52830)

LBW Co
184 Magill Road
NORWOOD SA 5067

Contact: Section 7
Telephone: (08) 8204 2026
Email: epasection7@sa.gov.au

Contact: Public Register
Telephone: (08) 8204 9128
Email: epa.publicregister@sa.gov.au

28 March, 2019

EPA STATEMENT TO FORM 1 - CONTRACTS FOR SALE OF LAND OR BUSINESS

The EPA provides this statement to assist the vendor meet its obligations under section 7(1)(b) of the *Land and Business (Sale and Conveyancing) Act 1994*. A response to the questions prescribed in Schedule 1-Contracts for sale of land or business-forms (Divisions 1 and 2) of the *Land and Business (Sale and Conveyancing) Act 1994* is provided in relation to the land.

I refer to your enquiry concerning the parcel of land comprised in

Title Reference	CT Volume 6162 Folio 334
Address	Allotment 4 (DP 28814), Balmoral Track, GAWLER EAST SA 5118

Schedule – Division 1 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS OF MORTGAGES, CHARGES AND PRESCRIBED ENCUMBRANCES AFFECTING THE LAND

7. Environment Protection Act 1993

Does the EPA hold any of the following details relating to the *Environment Protection Act 1993*:

7.1	Section 59 - Environment performance agreement that is registered in relation to the land.	NO
7.2	Section 93 - Environment protection order that is registered in relation to the land.	NO
7.3	Section 93A - Environment protection order relating to cessation of activity that is registered in relation to the land.	NO
7.4	Section 99 - Clean-up order that is registered in relation to the land.	NO
7.5	Section 100 - Clean-up authorisation that is registered in relation to the land.	NO
7.6	Section 103H - Site contamination assessment order that is registered in relation to the land.	NO
7.7	Section 103J - Site remediation order that is registered in relation to the land.	NO

7.8	Section 103N - Notice of declaration of special management area in relation to the land (due to possible existence of site contamination).	NO
7.9	Section 103P - Notation of site contamination audit report in relation to the land.	NO
7.10	Section 103S - Notice of prohibition or restriction on taking water affected by site contamination in relation to the land.	NO

Schedule – Division 2 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS RELATING TO ENVIRONMENT PROTECTION

3-Licences and exemptions recorded by EPA in public register

Does the EPA hold any of the following details in the public register:

a)	details of a current licence issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	NO
b)	details of a licence no longer in force issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	NO
c)	details of a current exemption issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
d)	details of an exemption no longer in force issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
e)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to operate a waste depot at the land?	NO
f)	details of a licence issued under the repealed *Waste Management Act 1987* to operate a waste depot at the land?	NO
g)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to produce waste of a prescribed kind (within the meaning of that Act) at the land?	NO

h)	details of a licence issued under the repealed *Waste Management Act 1987* to produce prescribed waste (within the meaning of that Act) at the land?	NO

4-Pollution and site contamination on the land - details recorded by the EPA in public register

Does the EPA hold any of the following details in the public register in relation to the land or part of the land:

a)	details of serious or material environmental harm caused or threatened in the course of an activity (whether or not notified under section 83 of the *Environment Protection Act 1993*)?	NO
b)	details of site contamination notified to the EPA under section 83A of the *Environment Protection Act 1993*?	NO
c)	a copy of a report of an environmental assessment (whether prepared by the EPA or some other person or body and whether or not required under legislation) that forms part of the information required to be recorded in the public register?	**YES**
d)	a copy of a site contamination audit report?	**YES**
e)	details of an agreement for the exclusion or limitation of liability for site contamination to which section 103E of the *Environment Protection Act 1993* applies?	NO
f)	details of an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
g)	details of an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993?*	NO
h)	details of a notification under section 103Z(1) of the *Environment Protection Act 1993* relating to the commencement of a site contamination audit?	**YES**
i)	details of a notification under section 103Z(2) of the *Environment Protection Act 1993* relating to the termination before completion of a site contamination audit?	NO
j)	details of records, held by the former *South Australian Waste Management Commission* under the repealed *Waste Management Act 1987*, of waste (within the meaning of that Act) having been deposited on the land between 1 January 1983 and 30 April 1995?	NO

5-Pollution and site contamination on the land - other details held by EPA

Does the EPA hold any of the following details in relation to the land or part of the land:

a)	a copy of a report known as a "Health Commission Report" prepared by or on behalf of the *South Australian Health Commission* (under the repealed *South Australian Health Commission Act 1976*)?	NO
b)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
c)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993*?	NO

d)	a copy of a pre-1 July 2009 site audit report?	NO
e)	details relating to the termination before completion of a pre-1 July 2009 site audit?	NO

Details and/or copies of environmental assessments, licences,exemptions and records on the Public Register may be obtained from the Environment Protection Authority.

Prior to arranging an examination and/or copies of the required above information please telephone (08) 8204 9128 to contact the Public Register Administrator to ensure the required details are available upon arrival.

All care and diligence has been taken to access the above information from available records. Historical records provided to the EPA concerning matters arising prior to 1 May 1995 are limited and may not be accurate or complete and therefore the EPA cannot confirm the accuracy of the historical information provided.

File Reference: SC60456

Environment Protection Authority
GPO Box 2607 Adelaide SA 5001
211 Victoria Square Adelaide SA 5000
T (08) 8204 2004
Country areas 1800 623 445

Receipt No :
Admin No : 72785 (52831)

LBW Co
184 Magill Road
NORWOOD SA 5067

Contact: Section 7
Telephone: (08) 8204 2026
Email: epasection7@sa.gov.au

Contact: Public Register
Telephone: (08) 8204 9128
Email: epa.publicregister@sa.gov.au

28 March, 2019

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The EPA provides this statement to assist the vendor meet its obligations under section 7(1)(b) of the *Land and Business (Sale and Conveyancing) Act 1994*. A response to the questions prescribed in Schedule 1-Contracts for sale of land or business-forms (Divisions 1 and 2) of the *Land and Business (Sale and Conveyancing) Act 1994* is provided in relation to the land.

I refer to your enquiry concerning the parcel of land comprised in

Title Reference	CT Volume 6184 Folio 173
Address	Allotment 1 (FP 13468), Gauge Station Track, KALBEEBA SA 5118

Schedule – Division 1 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS OF MORTGAGES, CHARGES AND PRESCRIBED ENCUMBRANCES AFFECTING THE LAND

7. Environment Protection Act 1993

Does the EPA hold any of the following details relating to the *Environment Protection Act 1993*:

7.1	Section 59 - Environment performance agreement that is registered in relation to the land.	NO
7.2	Section 93 - Environment protection order that is registered in relation to the land.	NO
7.3	Section 93A - Environment protection order relating to cessation of activity that is registered in relation to the land.	NO
7.4	Section 99 - Clean-up order that is registered in relation to the land.	NO
7.5	Section 100 - Clean-up authorisation that is registered in relation to the land.	NO
7.6	Section 103H - Site contamination assessment order that is registered in relation to the land.	NO
7.7	Section 103J - Site remediation order that is registered in relation to the land.	NO

7.8	Section 103N - Notice of declaration of special management area in relation to the land (due to possible existence of site contamination).	NO
7.9	Section 103P - Notation of site contamination audit report in relation to the land.	NO
7.10	Section 103S - Notice of prohibition or restriction on taking water affected by site contamination in relation to the land.	NO

Schedule – Division 2 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS RELATING TO ENVIRONMENT PROTECTION

3-Licences and exemptions recorded by EPA in public register

Does the EPA hold any of the following details in the public register:

a)	details of a current licence issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	NO
b)	details of a licence no longer in force issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	NO
c)	details of a current exemption issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
d)	details of an exemption no longer in force issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
e)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to operate a waste depot at the land?	NO
f)	details of a licence issued under the repealed *Waste Management Act 1987* to operate a waste depot at the land?	NO
g)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to produce waste of a prescribed kind (within the meaning of that Act) at the land?	NO

h)	details of a licence issued under the repealed *Waste Management Act 1987* to produce prescribed waste (within the meaning of that Act) at the land?	NO

4-Pollution and site contamination on the land - details recorded by the EPA in public register

Does the EPA hold any of the following details in the public register in relation to the land or part of the land:

a)	details of serious or material environmental harm caused or threatened in the course of an activity (whether or not notified under section 83 of the *Environment Protection Act 1993*)?	NO
b)	details of site contamination notified to the EPA under section 83A of the *Environment Protection Act 1993*?	NO
c)	a copy of a report of an environmental assessment (whether prepared by the EPA or some other person or body and whether or not required under legislation) that forms part of the information required to be recorded in the public register?	NO
d)	a copy of a site contamination audit report?	NO
e)	details of an agreement for the exclusion or limitation of liability for site contamination to which section 103E of the *Environment Protection Act 1993* applies?	NO
f)	details of an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
g)	details of an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993?*	NO
h)	details of a notification under section 103Z(1) of the *Environment Protection Act 1993* relating to the commencement of a site contamination audit?	**YES**
i)	details of a notification under section 103Z(2) of the *Environment Protection Act 1993* relating to the termination before completion of a site contamination audit?	NO
j)	details of records, held by the former *South Australian Waste Management Commission* under the repealed *Waste Management Act 1987*, of waste (within the meaning of that Act) having been deposited on the land between 1 January 1983 and 30 April 1995?	NO

5-Pollution and site contamination on the land - other details held by EPA

Does the EPA hold any of the following details in relation to the land or part of the land:

a)	a copy of a report known as a "Health Commission Report" prepared by or on behalf of the *South Australian Health Commission* (under the repealed *South Australian Health Commission Act 1976*)?	NO
b)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
c)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993*?	NO

d)	a copy of a pre-1 July 2009 site audit report?	NO
e)	details relating to the termination before completion of a pre-1 July 2009 site audit?	NO

Details and/or copies of environmental assessments, licences,exemptions and records on the Public Register may be obtained from the Environment Protection Authority.

Prior to arranging an examination and/or copies of the required above information please telephone (08) 8204 9128 to contact the Public Register Administrator to ensure the required details are available upon arrival.

All care and diligence has been taken to access the above information from available records. Historical records provided to the EPA concerning matters arising prior to 1 May 1995 are limited and may not be accurate or complete and therefore the EPA cannot confirm the accuracy of the historical information provided.

File Reference: SC60456

Environment Protection Authority
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28 March, 2019

EPA STATEMENT TO FORM 1 - CONTRACTS FOR SALE OF LAND OR BUSINESS

The EPA provides this statement to assist the vendor meet its obligations under section 7(1)(b) of the *Land and Business (Sale and Conveyancing) Act 1994*. A response to the questions prescribed in Schedule 1-Contracts for sale of land or business-forms (Divisions 1 and 2) of the *Land and Business (Sale and Conveyancing) Act 1994* is provided in relation to the land.

I refer to your enquiry concerning the parcel of land comprised in

Title Reference	CT Volume 6205 Folio 146
Address	Allotment 9010 (DP 114845), Calton Road, GAWLER EAST SA 5118

Schedule – Division 1 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS OF MORTGAGES, CHARGES AND PRESCRIBED ENCUMBRANCES AFFECTING THE LAND

7. Environment Protection Act 1993

Does the EPA hold any of the following details relating to the *Environment Protection Act 1993*:

7.1	Section 59 - Environment performance agreement that is registered in relation to the land.	NO
7.2	Section 93 - Environment protection order that is registered in relation to the land.	NO
7.3	Section 93A - Environment protection order relating to cessation of activity that is registered in relation to the land.	NO
7.4	Section 99 - Clean-up order that is registered in relation to the land.	NO
7.5	Section 100 - Clean-up authorisation that is registered in relation to the land.	NO
7.6	Section 103H - Site contamination assessment order that is registered in relation to the land.	NO
7.7	Section 103J - Site remediation order that is registered in relation to the land.	NO

7.8	Section 103N - Notice of declaration of special management area in relation to the land (due to possible existence of site contamination).	NO
7.9	Section 103P - Notation of site contamination audit report in relation to the land.	NO
7.10	Section 103S - Notice of prohibition or restriction on taking water affected by site contamination in relation to the land.	NO

Schedule – Division 2 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS RELATING TO ENVIRONMENT PROTECTION

3-Licences and exemptions recorded by EPA in public register

Does the EPA hold any of the following details in the public register:

a)	details of a current licence issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	NO
b)	details of a licence no longer in force issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	**YES**
c)	details of a current exemption issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
d)	details of an exemption no longer in force issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
e)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to operate a waste depot at the land?	NO
f)	details of a licence issued under the repealed *Waste Management Act 1987* to operate a waste depot at the land?	NO
g)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to produce waste of a prescribed kind (within the meaning of that Act) at the land?	NO

h)	details of a licence issued under the repealed *Waste Management Act 1987* to produce prescribed waste (within the meaning of that Act) at the land?	NO

4-Pollution and site contamination on the land - details recorded by the EPA in public register

Does the EPA hold any of the following details in the public register in relation to the land or part of the land:

a)	details of serious or material environmental harm caused or threatened in the course of an activity (whether or not notified under section 83 of the *Environment Protection Act 1993*)?	NO
b)	details of site contamination notified to the EPA under section 83A of the *Environment Protection Act 1993*?	NO
c)	a copy of a report of an environmental assessment (whether prepared by the EPA or some other person or body and whether or not required under legislation) that forms part of the information required to be recorded in the public register?	**YES**
d)	a copy of a site contamination audit report?	**YES**
e)	details of an agreement for the exclusion or limitation of liability for site contamination to which section 103E of the *Environment Protection Act 1993* applies?	NO
f)	details of an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
g)	details of an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993?*	NO
h)	details of a notification under section 103Z(1) of the *Environment Protection Act 1993* relating to the commencement of a site contamination audit?	**YES**
i)	details of a notification under section 103Z(2) of the *Environment Protection Act 1993* relating to the termination before completion of a site contamination audit?	NO
j)	details of records, held by the former *South Australian Waste Management Commission* under the repealed *Waste Management Act 1987*, of waste (within the meaning of that Act) having been deposited on the land between 1 January 1983 and 30 April 1995?	NO

5-Pollution and site contamination on the land - other details held by EPA

Does the EPA hold any of the following details in relation to the land or part of the land:

a)	a copy of a report known as a "Health Commission Report" prepared by or on behalf of the *South Australian Health Commission* (under the repealed *South Australian Health Commission Act 1976*)?	NO
b)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
c)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993*?	NO

d)	a copy of a pre-1 July 2009 site audit report?	NO
e)	details relating to the termination before completion of a pre-1 July 2009 site audit?	NO

Details and/or copies of environmental assessments, licences,exemptions and records on the Public Register may be obtained from the Environment Protection Authority.

Prior to arranging an examination and/or copies of the required above information please telephone (08) 8204 9128 to contact the Public Register Administrator to ensure the required details are available upon arrival.

All care and diligence has been taken to access the above information from available records. Historical records provided to the EPA concerning matters arising prior to 1 May 1995 are limited and may not be accurate or complete and therefore the EPA cannot confirm the accuracy of the historical information provided.

File Reference: EPA/1874; EPA/14132; SC60456

Environment Protection Authority
GPO Box 2607 Adelaide SA 5001
211 Victoria Square Adelaide SA 5000
T (08) 8204 2004
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Admin No : 60341 (52829)

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184 Magill Road
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28 March, 2019

EPA STATEMENT TO FORM 1 - CONTRACTS FOR SALE OF LAND OR BUSINESS

The EPA provides this statement to assist the vendor meet its obligations under section 7(1)(b) of the *Land and Business (Sale and Conveyancing) Act 1994*. A response to the questions prescribed in Schedule 1-Contracts for sale of land or business-forms (Divisions 1 and 2) of the *Land and Business (Sale and Conveyancing) Act 1994* is provided in relation to the land.

I refer to your enquiry concerning the parcel of land comprised in

Title Reference	CT Volume 6118 Folio 249
Address	Allotment 2 (FP 7765), Calton Road, GAWLER EAST SA 5118

Schedule – Division 1 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS OF MORTGAGES, CHARGES AND PRESCRIBED ENCUMBRANCES AFFECTING THE LAND

7. Environment Protection Act 1993

Does the EPA hold any of the following details relating to the *Environment Protection Act 1993*:

7.1	Section 59 - Environment performance agreement that is registered in relation to the land.	NO
7.2	Section 93 - Environment protection order that is registered in relation to the land.	NO
7.3	Section 93A - Environment protection order relating to cessation of activity that is registered in relation to the land.	NO
7.4	Section 99 - Clean-up order that is registered in relation to the land.	NO
7.5	Section 100 - Clean-up authorisation that is registered in relation to the land.	NO
7.6	Section 103H - Site contamination assessment order that is registered in relation to the land.	NO
7.7	Section 103J - Site remediation order that is registered in relation to the land.	NO

7.8	Section 103N - Notice of declaration of special management area in relation to the land (due to possible existence of site contamination).	NO
7.9	Section 103P - Notation of site contamination audit report in relation to the land.	NO
7.10	Section 103S - Notice of prohibition or restriction on taking water affected by site contamination in relation to the land.	NO

Schedule – Division 2 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS RELATING TO ENVIRONMENT PROTECTION

3-Licences and exemptions recorded by EPA in public register

Does the EPA hold any of the following details in the public register:

a)	details of a current licence issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	NO
b)	details of a licence no longer in force issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	NO
c)	details of a current exemption issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
d)	details of an exemption no longer in force issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
e)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to operate a waste depot at the land?	NO
f)	details of a licence issued under the repealed *Waste Management Act 1987* to operate a waste depot at the land?	NO
g)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to produce waste of a prescribed kind (within the meaning of that Act) at the land?	NO

h)	details of a licence issued under the repealed *Waste Management Act 1987* to produce prescribed waste (within the meaning of that Act) at the land?	NO

4-Pollution and site contamination on the land - details recorded by the EPA in public register

Does the EPA hold any of the following details in the public register in relation to the land or part of the land:

a)	details of serious or material environmental harm caused or threatened in the course of an activity (whether or not notified under section 83 of the *Environment Protection Act 1993*)?	NO
b)	details of site contamination notified to the EPA under section 83A of the *Environment Protection Act 1993*?	NO
c)	a copy of a report of an environmental assessment (whether prepared by the EPA or some other person or body and whether or not required under legislation) that forms part of the information required to be recorded in the public register?	NO
d)	a copy of a site contamination audit report?	NO
e)	details of an agreement for the exclusion or limitation of liability for site contamination to which section 103E of the *Environment Protection Act 1993* applies?	NO
f)	details of an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
g)	details of an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993?*	NO
h)	details of a notification under section 103Z(1) of the *Environment Protection Act 1993* relating to the commencement of a site contamination audit?	**YES**
i)	details of a notification under section 103Z(2) of the *Environment Protection Act 1993* relating to the termination before completion of a site contamination audit?	NO
j)	details of records, held by the former *South Australian Waste Management Commission* under the repealed *Waste Management Act 1987*, of waste (within the meaning of that Act) having been deposited on the land between 1 January 1983 and 30 April 1995?	NO

5-Pollution and site contamination on the land - other details held by EPA

Does the EPA hold any of the following details in relation to the land or part of the land:

a)	a copy of a report known as a "Health Commission Report" prepared by or on behalf of the *South Australian Health Commission* (under the repealed *South Australian Health Commission Act 1976*)?	NO
b)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
c)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993*?	NO

d)	a copy of a pre-1 July 2009 site audit report?	NO
e)	details relating to the termination before completion of a pre-1 July 2009 site audit?	NO

Details and/or copies of environmental assessments, licences,exemptions and records on the Public Register may be obtained from the Environment Protection Authority.

Prior to arranging an examination and/or copies of the required above information please telephone (08) 8204 9128 to contact the Public Register Administrator to ensure the required details are available upon arrival.

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File Reference: SC60456

Environment Protection Authority
GPO Box 2607 Adelaide SA 5001
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Contact: Public Register
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28 March, 2019

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I refer to your enquiry concerning the parcel of land comprised in

Title Reference	CT Volume 5697 Folio 87
Address	Allotment 94 (FP 163062), Gauge Station Track, KALBEEBA SA 5118

Schedule – Division 1 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS OF MORTGAGES, CHARGES AND PRESCRIBED ENCUMBRANCES AFFECTING THE LAND

7. Environment Protection Act 1993

Does the EPA hold any of the following details relating to the *Environment Protection Act 1993*:

7.1	Section 59 - Environment performance agreement that is registered in relation to the land.	NO
7.2	Section 93 - Environment protection order that is registered in relation to the land.	NO
7.3	Section 93A - Environment protection order relating to cessation of activity that is registered in relation to the land.	NO
7.4	Section 99 - Clean-up order that is registered in relation to the land.	NO
7.5	Section 100 - Clean-up authorisation that is registered in relation to the land.	NO
7.6	Section 103H - Site contamination assessment order that is registered in relation to the land.	NO
7.7	Section 103J - Site remediation order that is registered in relation to the land.	NO

7.8	Section 103N - Notice of declaration of special management area in relation to the land (due to possible existence of site contamination).	NO
7.9	Section 103P - Notation of site contamination audit report in relation to the land.	NO
7.10	Section 103S - Notice of prohibition or restriction on taking water affected by site contamination in relation to the land.	NO

Schedule – Division 2 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS RELATING TO ENVIRONMENT PROTECTION

3-Licences and exemptions recorded by EPA in public register

Does the EPA hold any of the following details in the public register:

a)	details of a current licence issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	NO
b)	details of a licence no longer in force issued under Part 6 of the *Environment Protection Act 1993* to conduct, at the land-	
i)	a waste or recycling depot (as referred to in clause 3(3) of Schedule 1 Part A of that Act); or	NO
ii)	activities producing listed wastes (as referred to in clause 3(4) of Schedule 1 Part A of that Act); or	NO
iii)	any other prescribed activity of environmental significance under Schedule 1 of that Act?	NO
c)	details of a current exemption issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
d)	details of an exemption no longer in force issued under Part 6 of the *Environment Protection Act 1993* from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
e)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to operate a waste depot at the land?	NO
f)	details of a licence issued under the repealed *Waste Management Act 1987* to operate a waste depot at the land?	NO
g)	details of a licence issued under the repealed *South Australian Waste Management Commission Act 1979* to produce waste of a prescribed kind (within the meaning of that Act) at the land?	NO

h)	details of a licence issued under the repealed *Waste Management Act 1987* to produce prescribed waste (within the meaning of that Act) at the land?	NO

4-Pollution and site contamination on the land - details recorded by the EPA in public register

Does the EPA hold any of the following details in the public register in relation to the land or part of the land:

a)	details of serious or material environmental harm caused or threatened in the course of an activity (whether or not notified under section 83 of the *Environment Protection Act 1993*)?	NO
b)	details of site contamination notified to the EPA under section 83A of the *Environment Protection Act 1993*?	NO
c)	a copy of a report of an environmental assessment (whether prepared by the EPA or some other person or body and whether or not required under legislation) that forms part of the information required to be recorded in the public register?	NO
d)	a copy of a site contamination audit report?	NO
e)	details of an agreement for the exclusion or limitation of liability for site contamination to which section 103E of the *Environment Protection Act 1993* applies?	NO
f)	details of an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
g)	details of an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993?*	NO
h)	details of a notification under section 103Z(1) of the *Environment Protection Act 1993* relating to the commencement of a site contamination audit?	**YES**
i)	details of a notification under section 103Z(2) of the *Environment Protection Act 1993* relating to the termination before completion of a site contamination audit?	NO
j)	details of records, held by the former *South Australian Waste Management Commission* under the repealed *Waste Management Act 1987*, of waste (within the meaning of that Act) having been deposited on the land between 1 January 1983 and 30 April 1995?	NO

5-Pollution and site contamination on the land - other details held by EPA

Does the EPA hold any of the following details in relation to the land or part of the land:

a)	a copy of a report known as a "Health Commission Report" prepared by or on behalf of the *South Australian Health Commission* (under the repealed *South Australian Health Commission Act 1976*)?	NO
b)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993?*	NO
c)	details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993*?	NO

d)	a copy of a pre-1 July 2009 site audit report?	NO
e)	details relating to the termination before completion of a pre-1 July 2009 site audit?	NO

Details and/or copies of environmental assessments, licences,exemptions and records on the Public Register may be obtained from the Environment Protection Authority.

Prior to arranging an examination and/or copies of the required above information please telephone (08) 8204 9128 to contact the Public Register Administrator to ensure the required details are available upon arrival.

All care and diligence has been taken to access the above information from available records. Historical records provided to the EPA concerning matters arising prior to 1 May 1995 are limited and may not be accurate or complete and therefore the EPA cannot confirm the accuracy of the historical information provided.

File Reference: SC60456

Appendix H

Excerpted Historical Figures

Legend

- Test Pits
- Push Tubes

rem

GAWLER - READYMIX SITE WIDE TEST PIT AND BOREHOLE LOCATION PLAN

Project: ET-03

Figure 3

JANUARY 2007

rem

GAWLER - READYMIX
AST TEST PIT AND
BOREHOLE LOCATION PLAN

Project: EF403

Figure 4

January 2007

rem

GAWLER - READYMIX
WORKSHOP TEST PIT AND BOREHOLE LOCATION PLAN

Project: ET-03

Figure 5

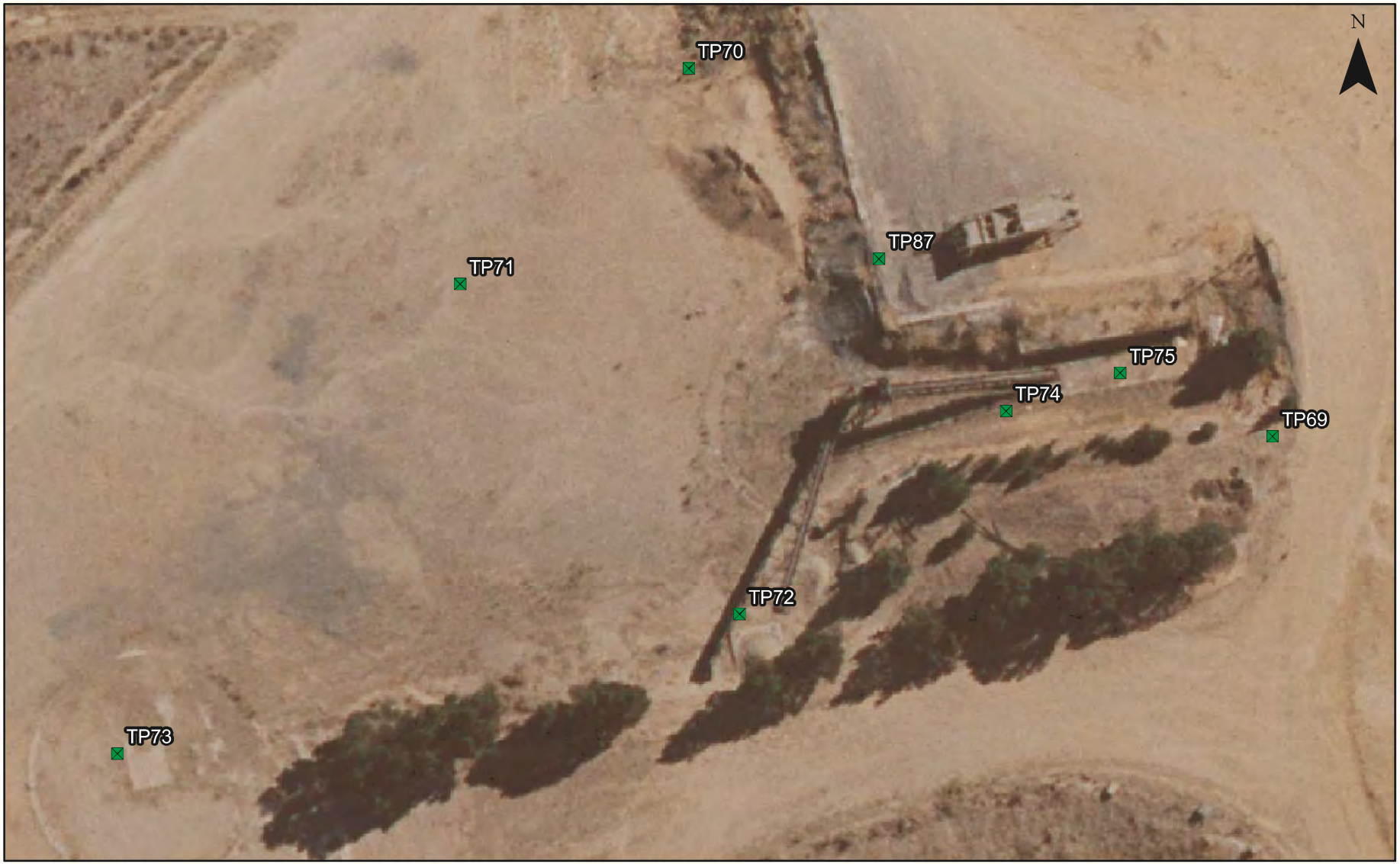
November 2006

GAWLER - READYMIX
CONCRETE PLANT TEST PIT
AND BOREHOLE LOCATION PLAN

Project: ET-03

Figure 6

November 2006



rem

GAWLER - READYMIX
BLENDING PLANT TEST PIT
AND BOREHOLE LOCATION PLAN

Project: ET-03

Figure 7

November 2006

rem

GAWLER - READYMIX
WASHING PLANT TEST PIT
AND BOREHOLE LOCATION PLAN

Project: ET-03

Figure 8

November 2006

Appendix I

Site Photographs

Photograph 1: APEI 1— North portion of former quarry. North-facing view.

Photograph 2: APEI 1—South-west portion of former quarry, showing deposited sediments. West -facing view.

Photograph 3: APEI 1—South-east portion of former quarry, showing deposited sediments and stockpiles. South-east facing view.

Photograph 4: APEI 1— South portion of former quarry, showing deposited sediments. South-facing view.

Photograph 5: APEI 2—Former sediment drying pan, showing stockpiled mulch. South-facing view.

Photograph 6: APEI 3—Former stockpile area. North-west facing view.

Photograph 7: APEI 4—Partially filled former sediment pond. North-facing view.

Photograph 8: APEI 4—Abandoned liquid storage container overlooking former quarry. North-west-facing view.

Photograph 9: APEI 5—Former sediment ponds. North-west-facing view.

Photograph 10: APEI 5—Typical sediment pond, with residual pipework. North-west facing view.

Photograph 11: APEI 5—Scrap metal located immediately north of former sediment ponds.

Photograph 12: APEI 6—Former workshop area. South-facing view

Photograph 13: APEIs 7 and 8—Former Washing and Blending Plants. South-facing view.

Photograph 14: APEI 9—Typical stockpiled soil. North-facing view.

Photograph 15: APEI 9—Typical stockpiled soil. West-facing view

Photograph 16: APEI 9—Typical stockpiled soil. North-east facing view.

Photograph 17: APEI 10—Typical stockpiled soil. East-facing view.

Photograph 18: APEI 11—Former Concrete Batching Plant. West-facing view

Photograph 19: APEI 12—Typical stockpiled soil. North-west facing view.

Photograph 20: APEI 14—Fire pit. South-facing view.

Appendix J

Bore and Test Pit Logs

SOIL BORE SB01

PROJECT NUMBER 191076
PROJECT NAME Arcadian Springwood PSI
ADDRESS Calton Road, Gawler East

DRILLING DATE 19/03/2019
DRILLING COMPANY WDS
DRILL RIG Geoprobe
DRILLING METHOD Push Tube
BOREHOLE DIAMETER (mm) 50
TOTAL DEPTH (mBGL) 2.5

COORDINATES ,
COORD SYSTEM
LOGGED BY Sam Rady
CHECKED BY

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	SB01-01		0		FILL (REWORKED NATURAL): silty sand, brown, fine to medium, loose, poorly graded, subangular	D	
			0				
	SB01-02				FILL (REWORKED NATURAL): clay, light red-brown, low-moderate plasticity, hard	D	
0.5			0				
					FILL (REWORKED NATURAL): silty clay, pale brown -white, low plasticity, stiff, with suspected calcareous inclusions	D	
	SB01-03						
1							
					FILL (REWORKED NATURAL): clayey sand, brown, fine and coarse, dense, poorly graded, subangular, with weathered sandy lenses at bottom of unit.	SM	
1.5							
2							
	SB01-04						
2.5			0				
					Termination Depth at: 2.500m		

Disclaimer This log was prepared by LBWco Pty Ltd for environmental purposes only.
produced by ESlog.ESdat.net on 21 Mar 2019

SOIL BORE SB02

PROJECT NUMBER 191076
PROJECT NAME Arcadian Springwood PSI
ADDRESS Calton Road, Gawler East

DRILLING DATE 19/03/2019
DRILLING COMPANY WDS
DRILL RIG Geoprobe
DRILLING METHOD Push Tube
BOREHOLE DIAMETER (mm) 50
TOTAL DEPTH (mBGL) 3.6

COORDINATES ,
COORD SYSTEM
LOGGED BY Sam Rady
CHECKED BY

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	SB02-01		0		FILL (REWORKED NATURAL): clayey sand, brown, fine to medium, loose, poorly graded, subangular	D	
			0				
0.5	SB02-02				FILL (REWORKED NATURAL): gravelly sand, brown -white, fine and coarse, loose, poorly graded, subangular, with suspected calcareous inclusions	D	
1			0				
	SB02-03				FILL (REWORKED NATURAL): sand, brown, fine to medium, loose, poorly graded, subangular	D	
1.5			0				
	SB02-04				FILL (REWORKED NATURAL): gravelly sand, brown-orange -white, fine to medium, medium dense, poorly graded, subangular	D	
2							
2.5							
3							
3.5							
					Termination Depth at: 3.600m		

SOIL BORE SB03

PROJECT NUMBER 191076
PROJECT NAME Arcadian Springwood PSI
ADDRESS Calton Road, Gawler East

DRILLING DATE 19/03/2019
DRILLING COMPANY WDS
DRILL RIG Geoprobe
DRILLING METHOD Push Tube
BOREHOLE DIAMETER (mm) 50
TOTAL DEPTH (mBGL) 1.700

COORDINATES ,
COORD SYSTEM
LOGGED BY Sam Rady
CHECKED BY

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	SB03-01		0		FILL (REWORKED NATURAL): gravelly sand, brown, fine to medium, loose, poorly graded, angular	D	
			0		FILL (REWORKED NATURAL): sand, brown-orange, fine to medium, loose, well graded, subrounded	D	
	SB03-02		0		FILL (REWORKED NATURAL): silty sand, brown, fine to medium, medium dense, well graded, subrounded, with gravel	D	
0.5							
	SB03-03		0		GRAVELLY SAND: red-orange -brown, fine and coarse, dense, poorly graded, angular	D	
1							
1.5	SB03-04				SAND: grey -white, coarse, very dense, poorly graded, angular, with calcareous inclusions	D	
					Termination Depth at:1.700 m		

SOIL BORE SB04

PROJECT NUMBER 191076
PROJECT NAME Arcadian Springwood PSI
ADDRESS Calton Road, Gawler East

DRILLING DATE 19/03/2019
DRILLING COMPANY WDS
DRILL RIG Geoprobe
DRILLING METHOD Push Tube
BOREHOLE DIAMETER (mm) 50
TOTAL DEPTH (mBGL) 4.8

COORDINATES ,
COORD SYSTEM
LOGGED BY Sam Rady
CHECKED BY

COMMENTS

Depth (mBGL)	Samples	Duplicate	Triplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	SB04-01	SB04-02	SB04-03	0		FILL (REWORKED NATURAL): clay, red-brown, moderate plasticity, hard	D	
0.5						FILL (REWORKED NATURAL): clay, red-brown, high plasticity, very stiff	VM	
				0				
1	SB04-04							
1.5								
2								
				0				
	SB04-05							
2.5						FILL (REWORKED NATURAL): clay, brown, high plasticity, very stiff	wet	
3								
				0				
	SB04-06							
3.5								
4								
4.5				0				
	SB04-07							
				0		GRAVELLY SAND: brown-orange, fine and coarse, dense, poorly graded, subangular	SM	
	SB04-08							
						Termination Depth at: 4.800m		

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SOIL BORE SB05

PROJECT NUMBER 191076
PROJECT NAME Arcadian Springwood PSI
ADDRESS Calton Road, Gawler East

DRILLING DATE 19/03/2019
DRILLING COMPANY WDS
DRILL RIG Geoprobe
DRILLING METHOD Push Tube
BOREHOLE DIAMETER (mm) 50
TOTAL DEPTH (mBGL)

COORDINATES ,
COORD SYSTEM
LOGGED BY Sam Rady
CHECKED BY

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	SB05-01		0		FILL (REWORKED NATURAL): silty sand, brown, fine and coarse, loose, poorly graded, subrounded	D	
			0				
	SB05-02						
0.5					GRAVELLY SAND: red-brown, fine and coarse, dense, poorly graded, subangular	D	
1			0				
	SB05-03						
1.5							
2							
			0				
2.5	SB05-04						
3							
3.5							
4					SAND: brown, coarse, very loose, well graded, subrounded	D	
					SAND: red-brown with white mottling, fine and coarse, medium dense, poorly graded, subangular, with calcareous inclusions	SM	
4.5			0				
	SB05-05						
					Termination Depth at: 4.800m		

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SOIL BORE SB06

PROJECT NUMBER 191076
PROJECT NAME Arcadian Springwood PSI
ADDRESS Calton Road, Gawler East

DRILLING DATE 19/03/2019
DRILLING COMPANY WDS
DRILL RIG Geoprobe
DRILLING METHOD Push Tube
BOREHOLE DIAMETER (mm) 50
TOTAL DEPTH (mBGL) 3.600

COORDINATES ,
COORD SYSTEM
LOGGED BY Sam Rady
CHECKED BY

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	SB06-01		0		FILL (REWORKED NATURAL): silty sand, brown, fine and coarse, loose, poorly graded, subangular	D	
			0				
	SB06-02				FILL (REWORKED NATURAL): sand, red-brown, fine and coarse, loose, poorly graded, subangular, with calcareous inclusions	D	
0.5							
1							
1.5			0				
	SB06-03		0				
	SB06-04				GRAVELLY SAND: red-brown -white, fine and coarse, medium dense, poorly graded, subangular, trace calcareous inclusions	D	
2							
2.5							
3							
3.5			0				
	SB06-05						
					Termination Depth at:3.600 m		

TEST PIT : TP01

PROJECT NUMBER 191076	**EXCAVATION DATE** 20/03/2019	**COORDINATES** ,
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Geoprobe	**COORD SYSTEM**
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** Sam Rady
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP01-01				FILL: sandy cobbles, grey-brown, fine to medium, loose, poorly graded, subangular	D	
	TP01-02				FILL (REWORKED NATURAL): gravelly sand, brown-orange, fine and coarse, loose, poorly graded, subrounded	D	
0.5							
1							
	TP01-03				FILL (REWORKED NATURAL): silty clay, dark brown, moderate plasticity, stiff, with gravel	SM	
1.5							
	TP01-04						
2					Termination Depth at:2.000 m		

TEST PIT : TP02

PROJECT NUMBER 191076	**EXCAVATION DATE** 20/03/2019	**COORDINATES** ,
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM**
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)**	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m)	**LOGGED BY** Sam Rady
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP02-01	TP02-06			FILL: sand, brown, fine to medium, loose, poorly graded, subrounded	D	
	TP02-02				FILL (REWORKED NATURAL): sand, brown-orange, fine to medium, loose, poorly graded, subrounded	D	
0.5							
	TP02-03				FILL (REWORKED NATURAL): silty clay, dark brown, moderate plasticity, stiff, with gravel	SM	
1							
1.5	TP02-04				FILL (REWORKED NATURAL): sandy clay, red-brown with light brown mottling, moderate-high plasticity, stiff	SM	
2					Termination Depth at:2.000 m		

TEST PIT : TP03

PROJECT NUMBER 191076	**EXCAVATION DATE** 20/03/2019	**COORDINATES** ,
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM**
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** Sam Rady
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP03-01				FILL: sandy cobbles, grey-brown, fine to medium, loose, poorly graded, subangular	D	
	TP03-02				FILL (REWORKED NATURAL): gravelly sand, red-brown, fine and coarse, loose, poorly graded, subrounded	D	
0.5	TP03-03				FILL (REWORKED NATURAL): gravelly sand, brown-orange, fine and coarse, loose, poorly graded, subrounded	D	
1							
					FILL (REWORKED NATURAL): clay, brown-orange, fine and coarse, subrounded, with sand	D	
1.5							
	TP03-04						
2					Termination Depth at:2.000 m		

TEST PIT : TP04

PROJECT NUMBER 191076	**EXCAVATION DATE** 20/03/2019	**COORDINATES** ,
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM**
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** Sam Rady
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
0	TP04-01				FILL (REWORKED NATURAL): clayey sand, brown with white mottling, fine to medium, medium dense, well graded, subrounded, with calcareous inclusions	D	
0.5							
1	TP04-02						
	TP04-03				CLAYEY SAND: brown, fine to medium, medium dense, well graded, subrounded	D	
1.5							
	TP04-04						
2					Termination Depth at:2.000 m		

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TEST PIT : TP05

PROJECT NUMBER 191076	**EXCAVATION DATE** 20/03/2019 11:08:32 AM	**COORDINATES** ,
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM**
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** Sam Rady
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
0	TP05-01				FILL (REWORKED NATURAL): gravelly sand, brown, fine to medium, medium dense, well graded, subrounded, with rock fragments	D	
0.5							
1	TP05-02						
1.5	TP05-03				SAND: brown, fine to medium, medium dense, well graded, subrounded, with weathered rock, pale, sedimentary, possibly limestone	D	
	TP05-04						
2					Termination Depth at:2.000 m		

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TEST PIT : TP06

PROJECT NUMBER 191076	**EXCAVATION DATE** 20/03/2019 12:49:14 PM	**COORDINATES** ,
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM**
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** Sam Rady
	TOTAL DEPTH (mBGL) 1.500	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP06-01				FILL: gravelly sand, brown with light brown mottling, fine to medium, medium dense, poorly graded, subangular	D	
0.5	TP06-02				SCHIST: green -brown, moderately weathered		
1							
	TP06-03						
1.5					Termination Depth at:1.500 m		

TEST PIT : TP07

PROJECT NUMBER 191076	**EXCAVATION DATE** 20/03/2019	**COORDINATES** ,
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM**
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** Sam Rady
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP07-01				FILL (REWORKED NATURAL): sandy clay, red-brown, moderate plasticity, stiff	D	
0.5	TP07-02				CLAYEY SAND: light brown with white mottling, fine to medium, medium dense, well graded, subrounded, with calcareous inclusions	D	
1							
1.5	TP07-03						
	TP07-04						
2					Termination Depth at:2.000 m		

TEST PIT : TP08

PROJECT NUMBER 191076	**EXCAVATION DATE** 20/03/2019	**COORDINATES** ,
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM**
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** Sam Rady
	TOTAL DEPTH (mBGL) 0.600	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP08-01				CLAYEY SAND: light brown, fine to medium, medium dense, well graded, subrounded	D	
	TP08-02				SANDY COBBLES: grey-brown, fine to medium, medium dense, poorly graded, angular, with weathered schist	D	
0.5	TP08-03						
					Termination Depth at:0.600 m		

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TEST PIT : TP09

PROJECT NUMBER 191076	**EXCAVATION DATE** 20/03/2019	**COORDINATES** ,
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM**
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** Sam Rady
	TOTAL DEPTH (mBGL) 1.800	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP09-01				FILL: gravelly sand, brown, fine to medium, loose, poorly graded, subangular	D	
0.5	TP09-02				CLAY: dark brown, moderate plasticity, very stiff, with rootlets, trace ash & cinders	SM	
1							
1.5	TP09-03				SCHIST: green -brown, moderately weathered	D	
	TP09-04						
					Termination Depth at:1.800 m		

TEST PIT : TP10

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.350' S, 138°46.291' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP10-01		0		FILL (REWORKED NATURAL): clay, brown, low plasticity, stiff, with rootlets, with rock fragments	D	
	TP10-02		0		FILL (REWORKED NATURAL): sandy clay, brown-orange, low plasticity, soft	SM	
0.5							
1							
	TP10-03		0		FILL (REWORKED NATURAL): clayey sand, brown-orange, low plasticity	SM	
1.5							
					CLAYEY SAND: grey-brown, fine to medium, loose, poorly graded, subangular	D	
	TP10-04		0				
2					Termination Depth at:2.000 m		

TEST PIT : TP11

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.370' S, 138°46.299' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP11-01		0		FILL: clay, brown, low-moderate plasticity, stiff, with rootlets, with rock fragments	D	
	TP11-02		0		FILL: sand, light orange, coarse, loose, with gravel		
0.5							
1	TP11-03		0		SANDY CLAY: light brown-orange, moderate plasticity	SM	
1.5							
					CLAY: brown-orange, moderate plasticity	wet	
	TP11-04		0				
2					Termination Depth at:2.000 m		

TEST PIT : TP12

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.401' S, 138°46.299' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP12-01		0		FILL: cobbles, brown-orange, fine to coarse, very loose, poorly graded, with sand, with gravel, with rock fragments	D	
	TP12-02		0		FILL: cobbles, pale brown-orange, fine to coarse, very loose, poorly graded, with sand, with gravel, with rock fragments	D	
0.5							
1					FILL: sand, brown, fine to coarse, very loose, poorly graded, with sand, with gravel, with rock fragments	D	
1.5							
	TP12-03		0				
2					Termination Depth at:2.000 m		

TEST PIT : TP13

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.349' S, 138°45.487' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP13-01		0		FILL: gravel, blue -grey, fine to coarse, very loose, poorly graded, angular, with sand, with gravel	D	
	TP13-02	TP13-06	0		FILL: sand, brown-orange, fine to coarse, loose, poorly graded, with gravel, with rock fragments	D	
0.5	TP13-03		0		FILL: sand, brown, fine to coarse, loose, poorly graded, with gravel, with rock fragments	SM	
1					CLAY: brown-orange, fine to coarse, moderate plasticity, trace rock fragments	VM	
1.5	TP13-04		0				
2					Termination Depth at:2.000 m		

TEST PIT : TP14

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.311' S, 138°46.025' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP14-01	TP14-05	0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	D	
	TP14-02		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	VM	
0.5							
					FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, very soft	wet	
1							
1.5							
	TP14-03		0				
2					Termination Depth at: 2.000 m		

TEST PIT : TP15.

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.322' S, 138°45.990' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP15.-01		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	D	
	TP15.-02		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	VM	
0.5							
					FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, very soft	wet	
1							
1.5							
	TP15.-03		0				
2					Termination Depth at: 2.000 m		

TEST PIT : TP16

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.314' S, 138°45.965' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP16-01		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	D	
	TP16-02		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	SM	
0.5	TP16-03		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, soft	wet	
1							
					FILL (REWORKED NATURAL): clay, red-brown, moderate plasticity, very soft	S	
1.5							
	TP16-04		0				
2					Termination Depth at: 2.000 m		

TEST PIT : TP17

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.331' S, 138°45.969' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP17-01		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	D	
	TP17-02		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	VM	
0.5							
					FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, very soft	wet	
1							
1.5							
	TP17-03		0				
2					Termination Depth at: 2.000 m		

TEST PIT : TP18

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.331' S, 138°46.029' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP18-01		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	D	
	TP18-02		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	SM	
0.5	TP18-03		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, soft	wet	
1							
					FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	D	
1.5							
	TP18-04		0				
2					Termination Depth at: 2.000 m		

TEST PIT : TP19

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.362' S, 138°45.988' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP19-01		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	D	
	TP19-02		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, soft	wet	
0.5							
					FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, very soft	S	
1							
1.5							
	TP19-03		0				
2					Termination Depth at: 2.000 m		

TEST PIT : TP20

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.364' S, 138°45.945' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP20-01		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	D	
	TP20-02		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, soft	wet	
0.5							
					FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, very soft	S	
1							
1.5							
	TP20-03		0				
2					Termination Depth at: 2.000 m		

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TEST PIT : TP21

PROJECT NUMBER 191076	**EXCAVATION DATE** 21/03/2019	**COORDINATES** -34°36.337' S, 138°46.107' E
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP21-01		0		FILL (REWORKED NATURAL): clay, red-brown -orange, low plasticity, with rootlets	D	
	TP21-02		0		FILL (REWORKED NATURAL): clay, red-brown, low-moderate plasticity, stiff	SM	
0.5							
1							
1.5					CLAYEY SAND: light brown, fine to medium, loose, with gravel, with rock fragments	SM	
	TP21-03		0				
2					Termination Depth at: 2.000 m		

TEST PIT : TP22

PROJECT NUMBER 191076	**EXCAVATION DATE** 22/03/2019	**COORDINATES** -34.60347128, 138.7712471
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP22-01		0		FILL (REWORKED NATURAL): sandy clay, brown, low-moderate plasticity, hard, trace rock fragments	D	
	TP22-02		0		FILL (REWORKED NATURAL): sandy clay, red-brown, low-moderate plasticity, hard, trace rock fragments	D	
0.5							
1	TP22-03		0		FILL (REWORKED NATURAL): sandy clay, red-brown, low-moderate plasticity, stiff	SM	
1.5					CLAY: red-brown, low-moderate plasticity, stiff	SM	
	TP22-04		0				
2					Termination Depth at: 2.000 m		

TEST PIT : TP23

PROJECT NUMBER 191076	**EXCAVATION DATE** 22/03/2019	**COORDINATES** -34.60354271, 138.77100384
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP23-01	TP23-05	0		FILL (REWORKED NATURAL): sandy clay, brown, low-moderate plasticity, hard, trace rock fragments, trace rootlets	D	
	TP23-02		0		CLAYEY SAND: brown-orange, fine to medium, loose, with gravel	SM	
0.5							
					CLAY: red-brown with grey mottling, low-moderate plasticity, stiff	M	
1							
1.5							
	TP23-03		0				
2					Termination Depth at: 2.000 m		

TEST PIT : TP24

PROJECT NUMBER 191076	**EXCAVATION DATE** 22/03/2019	**COORDINATES** -34.60420074, 138.77112164
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP24-01		0		FILL (REWORKED NATURAL): sandy clay, red-brown, low plasticity, hard, trace rootlets	D	
	TP24-02		0		FILL (REWORKED NATURAL): sandy clay, red-brown, low plasticity, hard, with rock fragments	D	
0.5							
	TP24-03		0		FILL (REWORKED NATURAL): clayey sand, red-brown, fine to medium, low plasticity, with rock fragments	D	
1							
					FILL (REWORKED NATURAL): sand, red-brown, fine to coarse, low plasticity, with rock fragments, with clay	D	
1.5							
	TP24-04		0				
2					Termination Depth at: 2.000 m		

TEST PIT : TP25

PROJECT NUMBER 191076	**EXCAVATION DATE** 22/03/2019	**COORDINATES** -34.60751025, 138.77323923
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP25-01		0		FILL (REWORKED NATURAL): clay, brown, low-moderate plasticity, hard, with rock fragments, trace rootlets	D	
	TP25-02		0		FILL (REWORKED NATURAL): clayey sand, brown, fine to medium, medium dense, poorly graded, with rock fragments	D	
0.5							
1							
1.5					FILL (REWORKED NATURAL): clayey sand, dark brown, fine to medium, medium dense, poorly graded, trace rock fragments	D	
	TP25-03		0				
2					Termination Depth at: 2.000 m		

TEST PIT : TP26

PROJECT NUMBER 191076	**EXCAVATION DATE** 22/03/2019	**COORDINATES** -34.60753279, 138.77312523
PROJECT NAME Arcadian Springwood PSI	**MACHINERY** Excavator	**COORD SYSTEM** Latitude, Longitude
ADDRESS Calton Road, Gawler East	**TEST PIT LENGTH (m)** 3	**GROUND ELEVATION (mAHD)**
	TEST PIT WIDTH (m) 0.6	**LOGGED BY** T Horwood
	TOTAL DEPTH (mBGL) 2.000	**CHECKED BY**

COMMENTS

Depth (mBGL)	Samples	Duplicate	PID (ppm)	Graphic Log	Material Description	Moisture	Additional Observations
	TP26-01		0		FILL (REWORKED NATURAL): sandy clay, brown, low-moderate plasticity, hard, with rock fragments, with rootlets, with gravel	D	
	TP26-02		0		FILL (REWORKED NATURAL): clayey sand, brown, fine to medium, low plasticity, loose, with rock fragments	D	
0.5							
					FILL: sand, grey-brown, fine to medium, loose, poorly graded, with rock fragments	D	
1							
1.5							
	TP26-03		0				
2					Termination Depth at: 2.000 m		

Appendix K

Tabulated Analytical Data

Chemical Summary Table

					Metals														
					Arsenic	Barium	Beryllium	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Silver	Zinc
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					2	10	1	0.4	0.5	2	2	5	50	5	5	0.1	2	2	5
Location	**Field ID**	**Depth**	**Date**	**Sample Type**															
Soil Bore	SB01-01	0.0 - 0.1	19/03/2019	Normal	<5	10	<1	<1	<0.5	5	<2	<5	5,970	<5	16	<0.1	<2	<2	<5
Soil Bore	SB01-03	0.9 - 1.0	19/03/2019	Normal	<5	-	-	<1	-	29	-	**7**	-	**6**	-	<0.1	**11**	-	**13**
Soil Bore	SB01-04	2.1 - 2.2	19/03/2019	Normal	<5	-	-	<1	-	24	-	**6**	-	**6**	-	<0.1	**8**	-	**14**
Soil Bore	SB02-01	0.0 - 0.1	19/03/2019	Normal	5	-	-	<1	-	24	-	**5**	-	<5	-	<0.1	**4**	-	**10**
Soil Bore	SB02-04	1.5 - 1.6	19/03/2019	Normal	<5	-	-	<1	-	7	-	<5	-	<5	-	<0.1	<2	-	<5
Soil Bore	SB03-01	0.0 - 0.1	19/03/2019	Normal	<5	20	<1	<1	<0.5	12	<2	<5	19,000	<5	13	<0.1	<2	<2	<5
Sest Pit	SB03-02	0.35 - 0.45	19/03/2019	Normal	<5	-	-	<1	-	11	-	<5	-	<5	-	<0.1	**4**	-	<5
Sest Pit	SB03-03	0.9 - 1.0	19/03/2019	Normal	<5	-	-	<1	-	13	-	<5	-	<5	-	<0.1	<2	-	<5
Soil Bore	SB04-01	0.0 - 0.3	19/03/2019	Normal	10	-	-	<1	-	47	-	**8**	-	<5	-	<0.1	**4**	-	**11**
Soil Bore	*SB04-02*	*0.0 - 0.3*	*19/03/2019*	*Field_D*	*6*	*-*	*-*	*<1*	*-*	*36*	*-*	***6***	*-*	*<5*	*-*	*<0.1*	***4***	*-*	***14***
Soil Bore	*SB04-03*	*0.0 - 0.3*	*19/03/2019*	*Interlab_D*	*11*	*-*	*-*	*<0.4*	*-*	*54*	*-*	***9.0***	*-*	***6.6***	*-*	*<0.1*	***6.1***	*-*	***19***
Soil Bore	SB04-04	0.9 - 1.0	19/03/2019	Normal	7	-	-	<1	-	38	-	**6**	-	<5	-	<0.1	**4**	-	**11**
Soil Bore	SB04-06	3.3 - 3.4	19/03/2019	Normal	5	30	<1	<1	<0.5	40	<2	**6**	52,200	**5**	30	<0.1	**4**	<2	**12**
Sest Pit	SB05-01	0.0 - 0.1	19/03/2019	Normal	<5	-	-	<1	-	16	-	<5	-	<5	-	<0.1	**4**	-	**8**
Sest Pit	SB05-03	1.2 - 1.3	19/03/2019	Normal	<5	-	-	<1	-	10	-	<5	-	<5	-	<0.1	<2	-	<5
Sest Pit	SB05-05	4.7 - 4.8	19/03/2019	Normal	<5	-	-	<1	-	10	-	<5	-	<5	-	<0.1	<2	-	<5
Sest Pit	SB06-02	0.3 - 0.4	19/03/2019	Normal	<5	60	<1	<1	<0.5	11	<2	<5	12,200	<5	39	<0.1	**3**	<2	<5
Sest Pit	SB06-05	3.5 - 3.6	19/03/2019	Normal	<5	-	-	<1	-	8	-	<5	-	<5	-	<0.1	<2	-	<5
Test Pit	TP01-01	0.0 - 0.1	20/03/2019	Normal	<5	80	<1	<1	<0.5	58	11	**21**	41,300	**9**	99	<0.1	**17**	<2	**41**
Test Pit	TP01-03	1.4 - 1.5	20/03/2019	Normal	<5	-	-	<1	-	7	-	<5	-	<5	-	<0.1	<2	-	<5
Test Pit	TP02-02	0.3 - 0.4	20/03/2019	Normal	<5	-	-	<1	-	12	-	<5	-	<5	-	<0.1	<2	-	<5
Test Pit	TP02-04	1.5 - 1.6	20/03/2019	Normal	<5	-	-	<1	-	19	-	**6**	-	**6**	-	<0.1	**6**	-	**10**
Test Pit	*TP02-05*	*0.0 - 0.1*	*20/03/2019*	*Field_D*	*<5*	*-*	*-*	*<1*	*-*	*6*	*-*	*<5*	*-*	*<5*	*-*	*<0.1*	*<2*	*-*	*<5*
Test Pit	*TP02-06*	*0.0 - 0.1*	*20/03/2019*	*Interlab_D*	*2.1*	*-*	*-*	*<0.4*	*-*	*6.9*	*-*	*<5*	*-*	*<5*	*-*	*<0.1*	*<5*	*-*	*<5*
Test Pit	TP03-02	0.3 - 0.4	20/03/2019	Normal	<5	-	-	<1	-	13	-	<5	-	<5	-	<0.1	**2**	-	<5
Test Pit	TP03-04	1.9 - 2.0	20/03/2019	Normal	<5	-	-	<1	-	22	-	**6**	-	**7**	-	<0.1	**8**	-	**13**
Test Pit	TP04-01	0.0 - 0.1	20/03/2019	Normal	<5	-	-	<1	-	28	-	**11**	-	**6**	-	<0.1	**11**	-	**18**
Test Pit	TP04-03	1.4 - 1.5	20/03/2019	Normal	<5	-	-	<1	-	25	-	**9**	-	**7**	-	<0.1	**17**	-	**15**
Test Pit	TP05-02	1.0 - 1.1	20/03/2019	Normal	<5	-	-	<1	-	32	-	**12**	-	**6**	-	<0.1	**9**	-	**23**
Test Pit	TP05-03	1.5 - 1.6	20/03/2019	Normal	<5	-	-	<1	-	40	-	**8**	-	**5**	-	<0.1	**12**	-	**24**
Test Pit	TP06-01	0.0 - 0.1	20/03/2019	Normal	<5	-	-	<1	-	45	-	**24**	-	**8**	-	<0.1	**24**	-	**35**
Test Pit	TP06-02	0.5 - 0.6	20/03/2019	Normal	7	-	-	<1	-	42	-	**16**	-	**11**	-	<0.1	**22**	-	**41**
Test Pit	TP07-01	0.0 - 0.1	20/03/2019	Normal	<5	70	1	<1	<0.5	32	7	**19**	30,600	**8**	212	<0.1	**18**	<2	**24**
Test Pit	TP07-02	0.5 - 0.6	20/03/2019	Normal	<5	-	-	<1	-	37	-	**19**	-	**9**	-	<0.1	**20**	-	**26**
Test Pit	TP08-01	0.0 - 0.1	20/03/2019	Normal	5	-	-	<1	-	40	-	**33**	-	**14**	-	<0.1	**10**	-	**30**
Test Pit	TP08-02	0.4 - 0.5	20/03/2019	Normal	<5	-	-	<1	-	33	-	**17**	-	**10**	-	<0.1	**13**	-	**36**
Test Pit	TP09-01	0.0 - 0.1	20/03/2019	Normal	<5	-	-	<1	-	35	-	**16**	-	**8**	-	<0.1	**11**	-	**36**
Test Pit	TP09-02	0.5 - 0.6	20/03/2019	Normal	<5	-	-	<1	-	34	-	**19**	-	**9**	-	<0.1	**12**	-	**31**
Test Pit	TP10-01	0.0 - 0.1	21/03/2019	Normal	5	-	-	<1	-	36	-	**8**	-	**6**	-	<0.1	**7**	-	**22**
Test Pit	TP10-03	1.1 - 1.2	21/03/2019	Normal	<5	-	-	<1	-	23	-	**12**	-	**6**	-	<0.1	**14**	-	**17**
Test Pit	TP11-01	0.0 - 0.1	21/03/2019	Normal	6	-	-	<1	-	31	-	**6**	-	<5	-	<0.1	**3**	-	**10**

Chemical Summary Table

					Metals														
					Arsenic	Barium	Beryllium	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Silver	Zinc
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					2	10	1	0.4	0.5	2	2	5	50	5	5	0.1	2	2	5
Location	**Field ID**	**Depth**	**Date**	**Sample Type**															
Test Pit	TP11-03	1.0 - 1.1	21/03/2019	Normal	6	-	-	<1	-	22	-	<5	-	<5	-	<0.1	**3**	-	**10**
Test Pit	TP12-01	0.0 - 0.1	21/03/2019	Normal	<5	<10	<1	<1	<0.5	4	<2	<5	7,240	<5	10	<0.1	<2	<2	<5
Test Pit	TP12-03	1.9 - 2.0	21/03/2019	Normal	<5	-	-	<1	-	15	-	<5	-	<5	-	<0.1	**3**	-	**8**
Test Pit	TP13-02	0.2 - 0.3	21/03/2019	Normal	<5	-	-	<1	-	6	-	<5	-	<5	-	<0.1	<2	-	<5
Test Pit	TP13-03	0.5 - 0.6	21/03/2019	Normal	<5	-	-	<1	-	4	-	<5	-	<5	-	<0.1	<2	-	**7**
Test Pit	*TP13-05*	*0.2 - 0.3*	*21/03/2019*	*Field_D*	*<5*	-	-	*<1*	-	*8*	-	*<5*	-	*<5*	-	*<0.1*	*<2*	-	*<5*
Test Pit	*TP13-06*	*0.2 - 0.3*	*21/03/2019*	*Interlab_D*	*2.5*	-	-	*<0.4*	-	*9.2*	-	*<5*	-	*<5*	-	*<0.1*	*<5*	-	*<5*
Test Pit	TP14-01	0.0 - 0.1	21/03/2019	Normal	6	-	-	<1	-	46	-	**7**	-	**7**	-	<0.1	**5**	-	**13**
Test Pit	TP14-03	1.9 - 2.0	21/03/2019	Normal	8	-	-	<1	-	36	-	**6**	-	<5	-	<0.1	**3**	-	**10**
Test Pit	*TP14-04*	*0.0 - 0.1*	*21/03/2019*	*Field_D*	*6*	-	-	*<1*	-	*45*	-	***7***	-	***6***	-	*<0.1*	***4***	-	***13***
Test Pit	*TP14-05*	*0.0 - 0.1*	*21/03/2019*	*Interlab_D*	*6.6*	-	-	*<0.4*	-	*53*	-	***7.6***	-	***9.8***	-	*<0.1*	***6.9***	-	***19***
Test Pit	TP15-02	0.2 - 0.3	21/03/2019	Normal	6	40	<1	<1	<0.5	45	<2	**7**	58,600	**5**	30	<0.1	**4**	<2	**12**
Test Pit	TP15-03	1.9 - 2.0	21/03/2019	Normal	10	-	-	<1	-	39	-	**7**	-	**5**	-	<0.1	**5**	-	**16**
Test Pit	TP16-01	0.0 - 0.1	21/03/2019	Normal	6	-	-	<1	-	44	-	**7**	-	**6**	-	<0.1	**4**	-	**13**
Test Pit	TP16-03	0.5 - 0.6	21/03/2019	Normal	9	-	-	<1	-	38	-	**6**	-	<5	-	<0.1	**5**	-	**15**
Test Pit	TP17-02	0.2 - 0.3	21/03/2019	Normal	6	-	-	<1	-	44	-	**7**	-	**6**	-	<0.1	**5**	-	**14**
Test Pit	TP17-03	1.9 - 2.0	21/03/2019	Normal	9	-	-	<1	-	42	-	**7**	-	<5	-	<0.1	**4**	-	**13**
Test Pit	TP18-01	0.0 - 0.1	21/03/2019	Normal	7	-	-	<1	-	45	-	**7**	-	**7**	-	<0.1	**5**	-	**14**
Test Pit	TP18-03	0.5 - 0.6	21/03/2019	Normal	7	-	-	<1	-	30	-	**5**	-	<5	-	<0.1	**3**	-	**11**
Test Pit	TP19-01	0.0 - 0.1	21/03/2019	Normal	9	-	-	<1	-	45	-	**7**	-	<5	-	<0.1	**4**	-	**14**
Test Pit	TP19-03	1.9 - 2.0	21/03/2019	Normal	7	-	-	<1	-	40	-	**7**	-	**5**	-	<0.1	**4**	-	**12**
Test Pit	TP20-01	0.0 - 0.1	21/03/2019	Normal	8	-	-	<1	-	46	-	**8**	-	**7**	-	<0.1	**6**	-	**18**
Test Pit	TP20-03	1.9 - 2.0	21/03/2019	Normal	10	-	-	<1	-	51	-	**7**	-	<5	-	<0.1	**4**	-	**10**
Test Pit	TP21-01	0.0 - 0.1	21/03/2019	Normal	<5	-	-	<1	-	10	-	<5	-	<5	-	<0.1	<2	-	<5
Test Pit	TP21-03	1.9 - 2.0	21/03/2019	Normal	<5	-	-	<1	-	13	-	<5	-	<5	-	<0.1	**6**	-	**7**
Test Pit	TP22-01	0.0 - 0.1	22/03/2019	Normal	7	-	-	<1	-	24	-	**11**	-	**9**	-	<0.1	**15**	-	**18**
Test Pit	TP22-03	1.0 - 1.1	22/03/2019	Normal	12	-	-	<1	-	26	-	**12**	-	**13**	-	<0.1	**26**	-	**19**
Test Pit	TP23-01	0.0 - 0.1	22/03/2019	Normal	7	-	-	<1	-	22	-	**10**	-	**10**	-	<0.1	**13**	-	**15**
Test Pit	TP23-02	0.2 - 0.3	22/03/2019	Normal	<5	-	-	<1	-	28	-	**10**	-	**12**	-	<0.1	**11**	-	**18**
Test Pit	*TP23-04*	*0.0 - 0.1*	*22/03/2019*	*Field_D*	*8*	-	-	*<1*	-	*25*	-	***12***	-	***10***	-	*<0.1*	***14***	-	***18***
Test Pit	*TP23-05*	*0.0 - 0.1*	*22/03/2019*	*Interlab_D*	*10*	-	-	*<0.4*	-	*39*	-	***13***	-	***14***	-	*<0.1*	***21***	-	***33***
Test Pit	TP24-01	0.0 - 0.1	22/03/2019	Normal	<5	210	<1	<1	<0.5	24	<2	**6**	24,100	**5**	42	<0.1	**5**	<2	**52**
Test Pit	TP24-03	0.8 - 0.9	22/03/2019	Normal	<5	-	-	<1	-	20	-	<5	-	<5	-	<0.1	**3**	-	**7**
Test Pit	TP25-01	0.0 - 0.1	22/03/2019	Normal	<5	-	-	<1	-	24	-	**12**	-	**8**	-	<0.1	**12**	-	**18**
Test Pit	TP25-02	0.3 - 0.4	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP25-03	1.9 - 2.0	22/03/2019	Normal	<5	-	-	<1	-	23	-	**12**	-	**8**	-	<0.1	**15**	-	**17**
Test Pit	TP26-01	0.0 - 0.1	22/03/2019	Normal	<5	-	-	<1	-	24	-	**13**	-	**8**	-	<0.1	**13**	-	**17**
Test Pit	TP26-03	1.9 - 2.0	22/03/2019	Normal	<5	-	-	<1	-	15	-	**10**	-	**6**	-	<0.1	**10**	-	**11**
Surface	TP27-01	-	20/03/2019	Normal	6	-	-	<1	-	40	-	**11**	-	**6**	-	<0.1	**8**	-	**22**
Surface	TP28-01	-	20/03/2019	Normal	<5	-	-	<1	-	38	-	**14**	-	**6**	-	<0.1	**10**	-	**28**
Surface	TP29-01	-	20/03/2019	Normal	<5	-	-	<1	-	25	-	<5	-	<5	-	<0.1	**3**	-	**9**

Chemical Summary Table

					Metals														
					Arsenic	Barium	Beryllium	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Silver	Zinc
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					2	10	1	0.4	0.5	2	2	5	50	5	5	0.1	2	2	5
Location	**Field ID**	**Depth**	**Date**	**Sample Type**															
Surface	TP30-01	-	20/03/2019	Normal	<5	-	-	<1	-	13	-	<5	-	<5	-	<0.1	<2	-	<5
Stockpile	TP31-01	-	21/03/2019	Normal	<5	-	-	<1	-	19	-	**24**	-	**5**	-	<0.1	**10**	-	**11**
Surface	TP31-02	-	21/03/2019	Normal	<5	-	-	<1	-	20	-	**18**	-	**6**	-	<0.1	**9**	-	**13**
Stockpile	TP32-01	-	20/03/2019	Normal	<5	-	-	<1	-	19	-	**9**	-	<5	-	<0.1	**8**	-	**11**
Stockpile	TP33-01	-	20/03/2019	Normal	<5	-	-	<1	-	41	-	**26**	-	**12**	-	<0.1	**16**	-	**36**
Stockpile	TP34-01	-	20/03/2019	Normal	<5	-	-	<1	-	20	-	**11**	-	**6**	-	<0.1	**9**	-	**19**
Stockpile	TP35-01	-	20/03/2019	Normal	<5	-	-	<1	-	22	-	**11**	-	**7**	-	<0.1	**10**	-	**16**
Stockpile	TP36-01	-	20/03/2019	Normal	<5	-	-	<1	-	21	-	**14**	-	**6**	-	<0.1	**9**	-	**17**
Stockpile	TP37-01	-	20/03/2019	Normal	<5	-	-	<1	-	17	-	**8**	-	<5	-	<0.1	**7**	-	**7**
Stockpile	TP38-01	-	20/03/2019	Normal	<5	-	-	<1	-	26	-	**22**	-	**8**	-	<0.1	**11**	-	**16**
Stockpile	TP39-01	-	20/03/2019	Normal	<5	-	-	<1	-	17	-	**6**	-	<5	-	<0.1	**5**	-	**8**
Stockpile	TP40-01	-	22/03/2019	Normal	<5	-	-	<1	-	15	-	**10**	-	<5	-	<0.1	**10**	-	**12**
Surface	TP40-02	-	22/03/2019	Normal	<5	-	-	<1	-	23	-	**13**	-	**7**	-	<0.1	**12**	-	**14**
Stockpile	TP40-03	-	22/03/2019	Normal	<5	-	-	<1	-	16	-	**11**	-	**5**	-	<0.1	**11**	-	**14**
Stockpile	*TP40-04*	*-*	*22/03/2019*	*Interlab_D*	*3.3*	*-*	*-*	*<0.4*	*-*	*19*	*-*	***9.9***	*-*	***6.6***	*-*	*<0.1*	***12***	*-*	***21***
Stockpile	TP41-01	-	22/03/2019	Normal	<5	80	<1	<1	<0.5	20	5	**10**	17,500	**6**	138	<0.1	**10**	<2	**17**
Surface	TP41-02	-	22/03/2019	Normal	<5	-	-	<1	-	28	-	**14**	-	**8**	-	<0.1	**14**	-	**19**
Stockpile	TP42-01	-	22/03/2019	Normal	<5	-	-	<1	-	20	-	**13**	-	**6**	-	<0.1	**12**	-	**14**
Surface	TP42-02	-	22/03/2019	Normal	<5	-	-	<1	-	18	-	**12**	-	**7**	-	<0.1	**11**	-	**16**
Stockpile	TP43-01	-	21/03/2019	Normal	<5	190	<1	<1	<0.5	54	15	**22**	36,900	**6**	141	<0.1	**18**	<2	**37**
Surface	TP43-02	-	21/03/2019	Normal	<5	-	-	<1	-	57	-	**23**	-	**6**	-	<0.1	**19**	-	**40**
Stockpile	TP44-01	-	21/03/2019	Normal	<5	-	-	<1	-	13	-	**5**	-	<5	-	<0.1	**6**	-	**6**
Surface	TP44-02	-	21/03/2019	Normal	<5	-	-	<1	-	15	-	**7**	-	**9**	-	<0.1	**6**	-	**13**
Stockpile	TP45-01	-	21/03/2019	Normal	<5	-	-	<1	-	56	-	**30**	-	**10**	-	<0.1	**22**	-	**46**
Surface	TP45-02	-	21/03/2019	Normal	<5	-	-	<1	-	56	-	**28**	-	**11**	-	<0.1	**21**	-	**42**
Stockpile	TP46-01	-	21/03/2019	Normal	5	-	-	<1	-	14	-	**5**	-	<5	-	<0.1	**6**	-	**10**
Surface	TP46-02	-	21/03/2019	Normal	<5	-	-	<1	-	21	-	**7**	-	**6**	-	<0.1	**8**	-	**12**
Stockpile	TP47-01	-	21/03/2019	Normal	<5	-	-	<1	-	51	-	**18**	-	**7**	-	<0.1	**16**	-	**33**
Surface	TP47-02	-	21/03/2019	Normal	<5	-	-	<1	-	52	-	**20**	-	**8**	-	<0.1	**17**	-	**36**
Stockpile	TP48-01	-	21/03/2019	Normal	5	-	-	<1	-	25	-	**24**	-	<5	-	<0.1	**7**	-	**15**
Surface	TP48-02	-	21/03/2019	Normal	<5	-	-	<1	-	26	-	**14**	-	**7**	-	<0.1	**12**	-	**16**
Stockpile	TP49-01	-	21/03/2019	Normal	<5	-	-	<1	-	28	-	**16**	-	**8**	-	<0.1	**16**	-	**19**
Surface	TP49-02	-	21/03/2019	Normal	<5	-	-	<1	-	32	-	**15**	-	**8**	-	<0.1	**14**	-	**22**
Stockpile	TP50-01	-	21/03/2019	Normal	<5	-	-	<1	-	20	-	**14**	-	**8**	-	<0.1	**10**	-	**16**
Surface	TP50-02	-	21/03/2019	Normal	<5	-	-	<1	-	21	-	**12**	-	**8**	-	<0.1	**11**	-	**15**
Stockpile	TP51-01	-	21/03/2019	Normal	8	100	<1	<1	<0.5	24	7	**9**	24,600	**8**	232	<0.1	**12**	<2	**15**
Surface	TP51-02	-	21/03/2019	Normal	<5	-	-	<1	-	31	-	**16**	-	**10**	-	<0.1	**18**	-	**21**
Stockpile	*TP51-03*	*-*	*21/03/2019*	*Field_D*	*8*	*-*	*-*	*<1*	*-*	*24*	*-*	***10***	*-*	***10***	*-*	*<0.1*	***13***	*-*	***17***
Stockpile	TP51-04	-	21/03/2019	Normal	8	-	-	<1	-	21	-	**8**	-	**8**	-	<0.1	**12**	-	**15**
Stockpile	TP52-01	-	21/03/2019	Normal	<5	-	-	<1	-	17	-	**10**	-	**14**	-	<0.1	**8**	-	**20**
Surface	TP52-02	-	21/03/2019	Normal	<5	-	-	<1	-	16	-	**14**	-	**5**	-	<0.1	**10**	-	**12**

Chemical Summary Table

					Metals														
					Arsenic	Barium	Beryllium	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Silver	Zinc
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					2	10	1	0.4	0.5	2	2	5	50	5	5	0.1	2	2	5
Location	**Field ID**	**Depth**	**Date**	**Sample Type**															
Stockpile	TP53-01	-	21/03/2019	Normal	<5	-	-	<1	-	14	-	**8**	-	**10**	-	<0.1	**6**	-	**14**
Surface	TP53-02	-	21/03/2019	Normal	<5	-	-	<1	-	12	-	**7**	-	**9**	-	<0.1	**5**	-	**14**
Stockpile	TP54-01	-	21/03/2019	Normal	<5	-	-	<1	-	29	-	**15**	-	**9**	-	<0.1	**14**	-	**19**
Surface	TP54-02	-	21/03/2019	Normal	<5	-	-	<1	-	23	-	**12**	-	**7**	-	<0.1	**12**	-	**17**
Surface	TP55-01	-	22/03/2019	Normal	6	120	1	<1	<0.5	21	10	**10**	18,800	**9**	240	<0.1	**13**	<2	**15**
Surface	TP56-01	-	22/03/2019	Normal	<5	-	-	<1	-	13	-	<5	-	**5**	-	<0.1	**5**	-	**7**
Stockpile	SP01-01	-	20/03/2019	Normal	6	-	-	<1	-	29	-	**31**	-	<5	-	<0.1	**15**	-	**23**
Stockpile	SP02-01	-	20/03/2019	Normal	<5	-	-	<1	-	8	-	**6**	-	**8**	-	<0.1	**4**	-	**130**
Stockpile	SP03-01	-	20/03/2019	Normal	<5	-	-	<1	-	18	-	**14**	-	<5	-	<0.1	**9**	-	**11**
Stockpile	SP04-01	-	20/03/2019	Normal	<5	80	<1	<1	<0.5	19	5	**12**	20,500	**5**	136	<0.1	**10**	<2	**12**
Stockpile	SP05-01	-	20/03/2019	Normal	<5	-	-	<1	-	11	-	**27**	-	<5	-	<0.1	**7**	-	**13**
Stockpile	SP06-01	-	20/03/2019	Normal	<5	-	-	<1	-	17	-	**10**	-	**5**	-	<0.1	**10**	-	**13**
Stockpile	SP07-01	-	20/03/2019	Normal	<5	-	-	<1	-	25	-	**12**	-	**6**	-	<0.1	**11**	-	**16**
Stockpile	SP08-01	-	20/03/2019	Normal	<5	-	-	<1	-	25	-	**16**	-	**6**	-	<0.1	**12**	-	**18**

Chemical Summary Table

					PAH																				BTEX						
					Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzo[b+j]fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Total PAH	Carcinogenic PAH (BaP TEQ zero LOR)	Carcinogenic PAH (BaP TEQ Half LOR)	Carcinogenic PAH (BaP TEQ LOR)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Total BTEX
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	0.2	0.3	0.2
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																											
Soil Bore	SB01-01	0.0 - 0.1	19/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Soil Bore	SB01-03	0.9 - 1.0	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Soil Bore	SB01-04	2.1 - 2.2	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Soil Bore	SB02-01	0.0 - 0.1	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Soil Bore	SB02-04	1.5 - 1.6	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Soil Bore	SB03-01	0.0 - 0.1	19/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Sest Pit	SB03-02	0.35 - 0.45	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Sest Pit	SB03-03	0.9 - 1.0	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Soil Bore	SB04-01	0.0 - 0.3	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Soil Bore	*SB04-02*	*0.0 - 0.3*	*19/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*<1*	-	-	-	-	-	-	*<0.2*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.2*
Soil Bore	*SB04-03*	*0.0 - 0.3*	*19/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.5*	-	-	-	-	-	-	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.2*	*<0.3*	-
Soil Bore	SB04-04	0.9 - 1.0	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Soil Bore	SB04-06	3.3 - 3.4	19/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Sest Pit	SB05-01	0.0 - 0.1	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	0.7	0.7	0.7
Sest Pit	SB05-03	1.2 - 1.3	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Sest Pit	SB05-05	4.7 - 4.8	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Sest Pit	SB06-02	0.3 - 0.4	19/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Sest Pit	SB06-05	3.5 - 3.6	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP01-01	0.0 - 0.1	20/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP01-03	1.4 - 1.5	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP02-02	0.3 - 0.4	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP02-04	1.5 - 1.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	*TP02-05*	*0.0 - 0.1*	*20/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*<1*	-	-	-	-	-	-	*<0.2*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.2*
Test Pit	*TP02-06*	*0.0 - 0.1*	*20/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.5*	-	-	-	-	-	-	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.2*	*<0.3*	-
Test Pit	TP03-02	0.3 - 0.4	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP03-04	1.9 - 2.0	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP04-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP04-03	1.4 - 1.5	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP05-02	1.0 - 1.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP05-03	1.5 - 1.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP06-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP06-02	0.5 - 0.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP07-01	0.0 - 0.1	20/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP07-02	0.5 - 0.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP08-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP08-02	0.4 - 0.5	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP09-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP09-02	0.5 - 0.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP10-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP10-03	1.1 - 1.2	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP11-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2

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Chemical Summary Table

					PAH																			BTEX						
					Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzo[b+j]fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Total PAH	Carcinogenic PAH (BaP TEQ zero LOR)	Carcinogenic PAH (BaP TEQ Half LOR)	Carcinogenic PAH (BaP TEQ LOR)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Total BTEX
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	0.2	0.3	0.2
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																											
Test Pit	TP11-03	1.0 - 1.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP12-01	0.0 - 0.1	21/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP12-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP13-02	0.2 - 0.3	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP13-03	0.5 - 0.6	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	*TP13-05*	*0.2 - 0.3*	*21/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*<1*	-	-	-	-	-	-	*<0.2*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.2*
Test Pit	*TP13-06*	*0.2 - 0.3*	*21/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.5*	-	-	-	-	-	-	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.2*	*<0.3*	-
Test Pit	TP14-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP14-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	*TP14-04*	*0.0 - 0.1*	*21/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*<1*	-	-	-	-	-	-	*<0.2*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.2*
Test Pit	*TP14-05*	*0.0 - 0.1*	*21/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.5*	-	-	-	-	-	-	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.2*	*<0.3*	-
Test Pit	TP15-02	0.2 - 0.3	21/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP15-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP16-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP16-03	0.5 - 0.6	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP17-02	0.2 - 0.3	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP17-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP18-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP18-03	0.5 - 0.6	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP19-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP19-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP20-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP20-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP21-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP21-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP22-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP22-03	1.0 - 1.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP23-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP23-02	0.2 - 0.3	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	*TP23-04*	*0.0 - 0.1*	*22/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*<1*	-	-	-	-	-	-	*<0.2*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.2*
Test Pit	*TP23-05*	*0.0 - 0.1*	*22/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.5*	-	-	-	-	-	-	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.2*	*<0.3*	-
Test Pit	TP24-01	0.0 - 0.1	22/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP24-03	0.8 - 0.9	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP25-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP25-02	0.3 - 0.4	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP25-03	1.9 - 2.0	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP26-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Test Pit	TP26-03	1.9 - 2.0	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP27-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP28-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP29-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2

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Chemical Summary Table

					PAH																			BTEX						
					Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzo[b+j]fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Total PAH	Carcinogenic PAH (BaP TEQ zero LOR)	Carcinogenic PAH (BaP TEQ Half LOR)	Carcinogenic PAH (BaP TEQ LOR)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Total BTEX
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	0.2	0.3	0.2
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																											
Surface	TP30-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP31-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP31-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP32-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP33-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP34-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP35-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP36-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP37-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP38-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP39-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP40-01	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP40-02	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP40-03	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	*TP40-04*	*-*	*22/03/2019*	*Interlab_D*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*<0.5*	*-*	*-*	*-*	*-*	*-*	*-*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.2*	*<0.3*	*-*
Stockpile	TP41-01	-	22/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP41-02	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP42-01	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP42-02	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP43-01	-	21/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP43-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP44-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP44-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP45-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP45-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP46-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP46-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP47-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP47-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP48-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP48-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP49-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP49-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP50-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP50-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP51-01	-	21/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP51-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	*TP51-03*	*-*	*21/03/2019*	*Field_D*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*<1*	*-*	*-*	*-*	*-*	*-*	*-*	*<0.2*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.2*
Stockpile	TP51-04	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP52-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP52-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2

4/04/2019

Chemical Summary Table

					PAH																				BTEX						
					Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzo[b+j]fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Total PAH	Carcinogenic PAH (BaP TEQ zero LOR)	Carcinogenic PAH (BaP TEQ Half LOR)	Carcinogenic PAH (BaP TEQ LOR)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Total BTEX
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	0.2	0.3	0.2
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																											
Stockpile	TP53-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP53-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	TP54-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP54-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP55-01	-	22/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Surface	TP56-01	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	SP01-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	SP02-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	SP03-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	SP04-01	-	20/03/2019	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	SP05-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	SP06-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	SP07-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Stockpile	SP08-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2

Chemical Summary Table

					Organochlorine Pesticides																							
					4,4-DDD	4,4-DDE	4,4-DDT	DDT+DDE+DDD	a-BHC	b-BHC	d-BHC	g-BHC (Lindane)	Aldrin	Dieldrin	Aldrin + Dieldrin	chlordane	Chlordane (cis)	Chlordane (trans)	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor epoxide	Methoxychlor
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.05	0.05	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																								
Soil Bore	SB01-01	0.0 - 0.1	19/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Soil Bore	SB01-03	0.9 - 1.0	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Bore	SB01-04	2.1 - 2.2	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Bore	SB02-01	0.0 - 0.1	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Bore	SB02-04	1.5 - 1.6	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Bore	SB03-01	0.0 - 0.1	19/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Sest Pit	SB03-02	0.35 - 0.45	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sest Pit	SB03-03	0.9 - 1.0	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Bore	SB04-01	0.0 - 0.3	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Bore	*SB04-02*	*0.0 - 0.3*	*19/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Bore	*SB04-03*	*0.0 - 0.3*	*19/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Bore	SB04-04	0.9 - 1.0	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Bore	SB04-06	3.3 - 3.4	19/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Sest Pit	SB05-01	0.0 - 0.1	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sest Pit	SB05-03	1.2 - 1.3	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sest Pit	SB05-05	4.7 - 4.8	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sest Pit	SB06-02	0.3 - 0.4	19/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Sest Pit	SB06-05	3.5 - 3.6	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP01-01	0.0 - 0.1	20/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Test Pit	TP01-03	1.4 - 1.5	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP02-02	0.3 - 0.4	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP02-04	1.5 - 1.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	*TP02-05*	*0.0 - 0.1*	*20/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	*TP02-06*	*0.0 - 0.1*	*20/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP03-02	0.3 - 0.4	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP03-04	1.9 - 2.0	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP04-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP04-03	1.4 - 1.5	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP05-02	1.0 - 1.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP05-03	1.5 - 1.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP06-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP06-02	0.5 - 0.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP07-01	0.0 - 0.1	20/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Test Pit	TP07-02	0.5 - 0.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP08-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP08-02	0.4 - 0.5	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP09-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP09-02	0.5 - 0.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP10-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP10-03	1.1 - 1.2	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP11-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Chemical Summary Table

					Organochlorine Pesticides																							
					4,4-DDD	4,4-DDE	4,4-DDT	DDT+DDE+DDD	a-BHC	b-BHC	d-BHC	g-BHC (Lindane)	Aldrin	Dieldrin	Aldrin + Dieldrin	chlordane	Chlordane (cis)	Chlordane (trans)	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor epoxide	Methoxychlor
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.05	0.05	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																								
Test Pit	TP11-03	1.0 - 1.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP12-01	0.0 - 0.1	21/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Test Pit	TP12-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP13-02	0.2 - 0.3	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP13-03	0.5 - 0.6	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	*TP13-05*	*0.2 - 0.3*	*21/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	*TP13-06*	*0.2 - 0.3*	*21/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP14-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP14-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	*TP14-04*	*0.0 - 0.1*	*21/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	*TP14-05*	*0.0 - 0.1*	*21/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP15-02	0.2 - 0.3	21/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Test Pit	TP15-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP16-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP16-03	0.5 - 0.6	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP17-02	0.2 - 0.3	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP17-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP18-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP18-03	0.5 - 0.6	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP19-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP19-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP20-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP20-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP21-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP21-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP22-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP22-03	1.0 - 1.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP23-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP23-02	0.2 - 0.3	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	*TP23-04*	*0.0 - 0.1*	*22/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	*TP23-05*	*0.0 - 0.1*	*22/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP24-01	0.0 - 0.1	22/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Test Pit	TP24-03	0.8 - 0.9	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP25-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP25-02	0.3 - 0.4	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP25-03	1.9 - 2.0	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP26-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Test Pit	TP26-03	1.9 - 2.0	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP27-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP28-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP29-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	10 of 16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Chemical Summary Table

					Organochlorine Pesticides																							
					4,4-DDD	4,4-DDE	4,4-DDT	DDT+DDE+DDD	a-BHC	b-BHC	d-BHC	g-BHC (Lindane)	Aldrin	Dieldrin	Aldrin + Dieldrin	chlordane	Chlordane (cis)	Chlordane (trans)	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor epoxide	Methoxychlor
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.05	0.05	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																								
Surface	TP30-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP31-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP31-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP32-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP33-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP34-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP35-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP36-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP37-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP38-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP39-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP40-01	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP40-02	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP40-03	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	*TP40-04*	-	*22/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP41-01	-	22/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Surface	TP41-02	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP42-01	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP42-02	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP43-01	-	21/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Surface	TP43-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP44-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP44-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP45-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP45-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP46-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP46-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP47-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP47-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP48-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP48-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP49-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP49-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP50-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP50-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP51-01	-	21/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Surface	TP51-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	*TP51-03*	-	*21/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP51-04	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP52-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP52-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	11 of 16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Chemical Summary Table

					Organochlorine Pesticides																							
					4,4-DDD	4,4-DDE	4,4-DDT	DDT+DDE+DDD	a-BHC	b-BHC	d-BHC	g-BHC (Lindane)	Aldrin	Dieldrin	Aldrin + Dieldrin	chlordane	Chlordane (cis)	Chlordane (trans)	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor epoxide	Methoxychlor
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.05	0.05	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																								
Stockpile	TP53-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP53-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	TP54-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP54-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	TP55-01	-	22/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Surface	TP56-01	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	SP01-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	SP02-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	SP03-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	SP04-01	-	20/03/2019	Normal	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
Stockpile	SP05-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	SP06-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	SP07-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stockpile	SP08-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Chemical Summary Table

					Phenols				Halogenated Benzenes	Halogenated Phenols	Inorganics											Polychlorinated Biphenyls	Anions	pH
					2-methylphenol	3-&4-methylphenol	Total Phenols	Sum of Phenols	Hexachlorobenzene	Pentachlorophenol	Calcium/Magnesium Ratio	Exchangeable Sodium	Cation Exchange Capacity (CEC)	Exchangeable Sodium Percent	Exchangeable Magnesium	Exchangeable Calcium	Exchangeable Potassium	Moisture Content	Moisture Content (103°C)	pH (aqueous extract)	pH (Lab)	PCBs (Sum of total)	Sulphate	pH (CaCl2)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	cmol/kg	cmol/kg	%	cmol/kg	cmol/kg	cmol/kg	%	%	pH_Units	pH_Units	mg/kg	mg/kg	pH Unit
EQL					0.5	1	0.5	0.5	0.05	2		0.2	0.2		0.2	0.2	0.2	0.1	1	0.1	0.01	0.1	30	0.1
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																				
Soil Bore	SB01-01	0.0 - 0.1	19/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	<1.0	-	-	-	<0.1	<50	-
Soil Bore	SB01-03	0.9 - 1.0	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	13.5	-	-	-	-	160	8.2
Soil Bore	SB01-04	2.1 - 2.2	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	13.0	-	-	-	-	240	8.2
Soil Bore	SB02-01	0.0 - 0.1	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	-	-	-	-	<50	7.8
Soil Bore	SB02-04	1.5 - 1.6	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8	-	-	-	-	100	8.1
Soil Bore	SB03-01	0.0 - 0.1	19/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	1.7	-	-	-	<0.1	<50	-
Sest Pit	SB03-02	0.35 - 0.45	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6	-	-	-	-	<50	8.0
Sest Pit	SB03-03	0.9 - 1.0	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	-	-	-	-	<50	7.4
Soil Bore	SB04-01	0.0 - 0.3	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	10.2	-	-	-	-	150	7.7
Soil Bore	*SB04-02*	*0.0 - 0.3*	*19/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*8.8*	-	-	-	-	*130*	*7.8*
Soil Bore	*SB04-03*	*0.0 - 0.3*	*19/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*12*	*8.8*	-	-	*230*	-
Soil Bore	SB04-04	0.9 - 1.0	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	27.2	-	-	-	-	300	7.0
Soil Bore	SB04-06	3.3 - 3.4	19/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	36.1	-	-	-	<0.1	280	-
Sest Pit	SB05-01	0.0 - 0.1	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	60	7.9
Sest Pit	SB05-03	1.2 - 1.3	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-	-	50	8.0
Sest Pit	SB05-05	4.7 - 4.8	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	-	-	-	-	<50	7.7
Sest Pit	SB06-02	0.3 - 0.4	19/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	5.0	-	-	-	<0.1	<50	-
Sest Pit	SB06-05	3.5 - 3.6	19/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	9.3	-	-	-	-	50	6.9
Test Pit	TP01-01	0.0 - 0.1	20/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	1.7	-	-	-	<0.1	<50	-
Test Pit	TP01-03	1.4 - 1.5	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8	-	-	-	-	70	7.9
Test Pit	TP02-02	0.3 - 0.4	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	7.9	-	-	-	-	150	7.8
Test Pit	TP02-04	1.5 - 1.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	16.8	-	-	-	-	270	8.0
Test Pit	*TP02-05*	*0.0 - 0.1*	*20/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*<1.0*	-	-	-	-	*<50*	*6.5*
Test Pit	*TP02-06*	*0.0 - 0.1*	*20/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<1*	*7.5*	-	-	*<30*	-
Test Pit	TP03-02	0.3 - 0.4	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	-	-	230	8.0
Test Pit	TP03-04	1.9 - 2.0	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	17.4	-	-	-	-	320	8.1
Test Pit	TP04-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	-	-	<50	7.7
Test Pit	TP04-03	1.4 - 1.5	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	13.6	-	-	-	-	<50	7.9
Test Pit	TP05-02	1.0 - 1.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	-	-	-	-	50	7.6
Test Pit	TP05-03	1.5 - 1.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	11.6	-	-	-	-	580	8.0
Test Pit	TP06-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	-	-	-	-	70	8.0
Test Pit	TP06-02	0.5 - 0.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	14.9	-	-	-	-	<50	8.1
Test Pit	TP07-01	0.0 - 0.1	20/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	7.9	-	-	-	<0.1	<50	-
Test Pit	TP07-02	0.5 - 0.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	10.2	-	-	-	-	<50	7.3
Test Pit	TP08-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	-	-	-	-	<50	7.8
Test Pit	TP08-02	0.4 - 0.5	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	-	-	-	-	<50	7.9
Test Pit	TP09-01	0.0 - 0.1	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	-	-	-	-	700	8.1
Test Pit	TP09-02	0.5 - 0.6	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0	-	-	-	-	150	8.0
Test Pit	TP10-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	-	-	-	-	<50	7.7
Test Pit	TP10-03	1.1 - 1.2	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	15.4	-	-	-	-	70	8.0
Test Pit	TP11-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	- 13 of 16	-	-	-	-	-	-	-	2.9	-	-	-	-	<50	7.0

Chemical Summary Table

					Phenols				Halogenated Benzenes	Halogenated Phenols	Inorganics											Polychlorinated Biphenyls	Anions	pH
					2-methylphenol	3-&4-methylphenol	Total Phenols	Sum of Phenols	Hexachlorobenzene	Pentachlorophenol	Calcium/Magnesium Ratio	Exchangeable Sodium	Cation Exchange Capacity (CEC)	Exchangeable Sodium Percent	Exchangeable Magnesium	Exchangeable Calcium	Exchangeable Potassium	Moisture Content	Moisture Content (103°C)	pH (aqueous extract)	pH (Lab)	PCBs (Sum of total)	Sulphate	pH (CaCl2)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	cmol/kg	cmol/kg	%	cmol/kg	cmol/kg	cmol/kg	%	%	pH_Units	pH_Units	mg/kg	mg/kg	pH Unit
EQL					0.5	1	0.5	0.5	0.05	2		0.2	0.2		0.2	0.2	0.2	0.1	1	0.1	0.01	0.1	30	0.1
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																				
Test Pit	TP11-03	1.0 - 1.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	18.6	-	-	-	-	170	7.5
Test Pit	TP12-01	0.0 - 0.1	21/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	<1.0	-	-	-	<0.1	-	-
Test Pit	TP12-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	-	-	-	-	-	8.0
Test Pit	TP13-02	0.2 - 0.3	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	-	-	-	-	-	8.0
Test Pit	TP13-03	0.5 - 0.6	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	-	-	-	-	-	8.0
Test Pit	*TP13-05*	*0.2 - 0.3*	*21/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*4.0*	-	-	-	-	-	*8.0*
Test Pit	*TP13-06*	*0.2 - 0.3*	*21/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*3.6*	*9.4*	-	-	-	-
Test Pit	TP14-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	-	-	-	-	730	7.7
Test Pit	TP14-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	35.1	-	-	-	-	190	7.5
Test Pit	*TP14-04*	*0.0 - 0.1*	*21/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*8.4*	-	-	-	-	*750*	*7.5*
Test Pit	*TP14-05*	*0.0 - 0.1*	*21/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*8.0*	*8.3*	-	-	*1,000*	-
Test Pit	TP15-02	0.2 - 0.3	21/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	27.2	-	-	-	<0.1	300	-
Test Pit	TP15-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	47.0	-	-	-	-	400	7.4
Test Pit	TP16-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1	-	-	-	-	230	7.5
Test Pit	TP16-03	0.5 - 0.6	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	30.8	-	-	-	-	270	7.3
Test Pit	TP17-02	0.2 - 0.3	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	8.9	-	-	-	-	390	7.4
Test Pit	TP17-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	40.7	-	-	-	-	330	7.5
Test Pit	TP18-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	-	-	-	-	380	7.5
Test Pit	TP18-03	0.5 - 0.6	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	28.4	-	-	-	-	200	7.4
Test Pit	TP19-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	-	-	-	-	60	7.7
Test Pit	TP19-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	35.0	-	-	-	-	250	7.0
Test Pit	TP20-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	-	-	-	-	140	7.9
Test Pit	TP20-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	44.4	-	-	-	-	460	6.9
Test Pit	TP21-01	0.0 - 0.1	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	-	-	-	-	<50	7.5
Test Pit	TP21-03	1.9 - 2.0	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	12.3	-	-	-	-	120	8.1
Test Pit	TP22-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	-	-	-	-	110	8.3
Test Pit	TP22-03	1.0 - 1.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	19.8	-	-	-	-	270	8.3
Test Pit	TP23-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8	-	-	-	-	130	8.2
Test Pit	TP23-02	0.2 - 0.3	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	17.3	-	-	-	-	650	8.0
Test Pit	*TP23-04*	*0.0 - 0.1*	*22/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*5.4*	-	-	-	-	-	*8.3*
Test Pit	*TP23-05*	*0.0 - 0.1*	*22/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*6.4*	*9.8*	-	-	-	-
Test Pit	TP24-01	0.0 - 0.1	22/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	4.0	-	-	-	<0.1	420	-
Test Pit	TP24-03	0.8 - 0.9	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	7.1	-	-	-	-	100	7.4
Test Pit	TP25-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	-	-	-	-	-	8.1
Test Pit	TP25-02	0.3 - 0.4	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	15.4	-	-	-	-	240	-
Test Pit	TP25-03	1.9 - 2.0	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	10.4	-	-	-	-	120	8.0
Test Pit	TP26-01	0.0 - 0.1	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	-	-	-	-	190	8.0
Test Pit	TP26-03	1.9 - 2.0	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	11.2	-	-	-	-	60	8.0
Surface	TP27-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	<50	7.6
Surface	TP28-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	-	-	-	-	<50	7.4
Surface	TP29-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	-	-	-	-	170	7.7

Chemical Summary Table

					Phenols				Halogenated Benzenes	Halogenated Phenols	Inorganics											Polychlorinated Biphenyls	Anions	pH
					2-methylphenol	3-&4-methylphenol	Total Phenols	Sum of Phenols	Hexachlorobenzene	Pentachlorophenol	Calcium/Magnesium Ratio	Exchangeable Sodium	Cation Exchange Capacity (CEC)	Exchangeable Sodium Percent	Exchangeable Magnesium	Exchangeable Calcium	Exchangeable Potassium	Moisture Content	Moisture Content (103°C)	pH (aqueous extract)	pH (Lab)	PCBs (Sum of total)	Sulphate	pH (CaCl2)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	cmol/kg	cmol/kg	%	cmol/kg	cmol/kg	cmol/kg	%	%	pH_Units	pH_Units	mg/kg	mg/kg	pH Unit
EQL					0.5	1	0.5	0.5	0.05	2		0.2	0.2		0.2	0.2	0.2	0.1	1	0.1	0.01	0.1	30	0.1
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																				
Surface	TP30-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	-	-	-	-	110	6.8
Stockpile	TP31-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	-	-	-	-	-	7.9
Surface	TP31-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	-	-	-	-	-	8.0
Stockpile	TP32-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	-	-	-	-	-	7.9
Stockpile	TP33-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	-	-	-	-	-	7.5
Stockpile	TP34-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	-	-	-	-	-	7.8
Stockpile	TP35-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	-	-	-	-	-	7.7
Stockpile	TP36-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1	-	-	-	-	-	7.8
Stockpile	TP37-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	-	-	-	-	-	8.0
Stockpile	TP38-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	-	-	-	-	-	7.5
Stockpile	TP39-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.3	-	-	-	-	-	8.0
Stockpile	TP40-01	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.4	-	-	-	-	-	8.0
Surface	TP40-02	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	-	-	-	-	-	7.9
Stockpile	TP40-03	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.4	-	-	-	-	-	7.9
Stockpile	*TP40-04*	*-*	*22/03/2019*	*Interlab_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*2.5*	*8.9*	-	-	-	-
Stockpile	TP41-01	-	22/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	2.3	-	-	-	<0.1	-	-
Surface	TP41-02	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	-	-	-	-	-	7.6
Stockpile	TP42-01	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	-	-	-	-	-	7.8
Surface	TP42-02	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	-	-	-	-	-	7.8
Stockpile	TP43-01	-	21/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	2.8	-	-	-	<0.1	-	-
Surface	TP43-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	-	-	-	-	-	8.0
Stockpile	TP44-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	-	-	-	-	-	7.9
Surface	TP44-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	-	-	-	-	-	7.8
Stockpile	TP45-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.4	-	-	-	-	-	8.0
Surface	TP45-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	-	-	-	-	-	7.8
Stockpile	TP46-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	7.6
Surface	TP46-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	-	-	-	-	-	7.5
Stockpile	TP47-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7	-	-	-	-	-	7.9
Surface	TP47-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	-	-	-	-	-	7.9
Stockpile	TP48-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.3	-	-	-	-	-	8.3
Surface	TP48-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	-	-	-	-	-	8.0
Stockpile	TP49-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	-	-	-	-	-	7.8
Surface	TP49-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	-	-	-	-	-	7.8
Stockpile	TP50-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.1	-	-	-	-	-	7.9
Surface	TP50-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	-	-	-	-	-	7.9
Stockpile	TP51-01	-	21/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	3.1	-	-	-	<0.1	-	-
Surface	TP51-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	-	-	-	-	-	7.8
Stockpile	*TP51-03*	*-*	*21/03/2019*	*Field_D*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3.4*	-	-	-	-	-	*8.2*
Stockpile	TP51-04	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	-	-	-	-	-	8.1
Stockpile	TP52-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	-	-	-	-	-	6.8
Surface	TP52-02	-	21/03/2019	Normal	-	-	-	-	-	- 15 of 16	-	-	-	-	-	-	-	3.2	-	-	-	-	-	8.0

Chemical Summary Table

					Phenols				Halogenated Benzenes	Halogenated Phenols	Inorganics											Polychlorinated Biphenyls	Anions	pH
					2-methylphenol	3-&4-methylphenol	Total Phenols	Sum of Phenols	Hexachlorobenzene	Pentachlorophenol	Calcium/Magnesium Ratio	Exchangeable Sodium	Cation Exchange Capacity (CEC)	Exchangeable Sodium Percent	Exchangeable Magnesium	Exchangeable Calcium	Exchangeable Potassium	Moisture Content	Moisture Content (103°C)	pH (aqueous extract)	pH (Lab)	PCBs (Sum of total)	Sulphate	pH (CaCl2)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	cmol/kg	cmol/kg	%	cmol/kg	cmol/kg	cmol/kg	%	%	pH_Units	pH_Units	mg/kg	mg/kg	pH Unit
EQL					0.5	1	0.5	0.5	0.05	2		0.2	0.2		0.2	0.2	0.2	0.1	1	0.1	0.01	0.1	30	0.1
Location	**Field ID**	**Depth**	**Date**	**Sample Type**																				
Stockpile	TP53-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6	-	-	-	-	-	7.1
Surface	TP53-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	-	-	-	-	-	7.0
Stockpile	TP54-01	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	-	-	-	-	-	7.8
Surface	TP54-02	-	21/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	-	-	-	-	-	7.8
Surface	TP55-01	-	22/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	2.8	-	-	-	<0.1	-	-
Surface	TP56-01	-	22/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	-	-	-	-	-	8.0
Stockpile	SP01-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	-	-	-	-	-	8.2
Stockpile	SP02-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	-	-	-	-	-	7.7
Stockpile	SP03-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	3.1	-	-	-	-	-	8.0
Stockpile	SP04-01	-	20/03/2019	Normal	<0.5	<1	<0.5	<0.5	<0.05	<2	-	-	-	-	-	-	-	3.0	-	-	-	<0.1	100	-
Stockpile	SP05-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	-	-	-	-	-	8.0
Stockpile	SP06-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.4	-	-	-	-	-	7.9
Stockpile	SP07-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	-	-	-	-	-	7.8
Stockpile	SP08-01	-	20/03/2019	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	-	-	-	-	-	7.7

Duplicate Summary Table

		Location Code	Soil Bore			Soil Bore		
		Field ID	SB04-01	SB04-02		SB04-01	SB04-03	
		Depth	0.0 - 0.1	0.0 - 0.1		0.0 - 0.1	0.0 - 0.1	
		Date	19/03/2019	19/03/2019		19/03/2019	19/03/2019	
		Sample Type	Normal	Field_D	RPD	Normal	Interlab_D	RPD
	Unit	EQL						
Metals								
Arsenic	mg/kg	2	10	6	NA	10	11	10
Barium	mg/kg	10	-	-	-	-	-	-
Beryllium	mg/kg	1	-	-	-	-	-	-
Cadmium	mg/kg	0.4	<1	<1	NA	<1	<0.4	NA
Chromium (hexavalent)	mg/kg	0.5	-	-	-	-	-	-
Chromium (III+VI)	mg/kg	2	47	36	27	47	54	14
Cobalt	mg/kg	2	-	-	-	-	-	-
Copper	mg/kg	5	8	6	NA	8	9.0	NA
Iron	mg/kg	50	-	-	-	-	-	-
Lead	mg/kg	5	<5	<5	NA	<5	6.6	NA
Manganese	mg/kg	5	-	-	-	-	-	-
Mercury	mg/kg	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Nickel	mg/kg	2	4	4	NA	4	6.1	NA
Silver	mg/kg	2	-	-	-	-	-	-
Zinc	mg/kg	5	11	14	NA	11	19	53
PAH								
Naphthalene	mg/kg	0.5	<1	<1	NA	<1	<0.5	NA
BTEX								
Benzene	mg/kg	0.1	<0.2	<0.2	NA	<0.2	<0.1	NA
Toluene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA
Ethylbenzene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA
Xylene (o)	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA
Xylene (m & p)	mg/kg	0.2	<0.5	<0.5	NA	<0.5	<0.2	NA
Xylene Total	mg/kg	0.3	<0.5	<0.5	NA	<0.5	<0.3	NA
Total BTEX	mg/kg	0.2	<0.2	<0.2	NA	<0.2	-	-
Inorganics								
pH (aqueous extract)	pH_Units	0.1	-	-	-	-	8.8	-
Anions								
Sulphate	mg/kg	30	150	130	NA	150	230	42
SPOCAS								
pH (CaCl2)	pH Unit	0.1	7.7	7.8	1	7.7	-	-

Highlighted values indicate duplicate pairs above RPD guidelne of 30 or otherwise demonstrating low precision.
NA - RPD not calculated as one or more concentrations below 5x LOR. Duplicate pair demonstrates acceptable precision.
LP - RPD not calculated as one or more concentrations below 5x LOR. Duplicate pair demonstrates low precision.

Duplicate Summary Table

		Location Code	Test Pit			Test Pit		
		Field ID	TP02-02	TP02-05		TP02-02	TP02-06	
		Depth	0.0 - 0.1	0.0 - 0.1		0.0 - 0.1	0.0 - 0.1	
		Date	20/03/2019	20/03/2019		20/03/2019	20/03/2019	
		Sample Type	Normal	Field_D	RPD	Normal	Interlab_D	RPD
	Unit	EQL						
Metals								
Arsenic	mg/kg	2	<5	<5	NA	<5	2.1	NA
Barium	mg/kg	10	-	-	-	-	-	-
Beryllium	mg/kg	1	-	-	-	-	-	-
Cadmium	mg/kg	0.4	<1	<1	NA	<1	<0.4	NA
Chromium (hexavalent)	mg/kg	0.5	-	-	-	-	-	-
Chromium (III+VI)	mg/kg	2	12	6	LP	12	6.9	LP
Cobalt	mg/kg	2	-	-	-	-	-	-
Copper	mg/kg	5	<5	<5	NA	<5	<5	NA
Iron	mg/kg	50	-	-	-	-	-	-
Lead	mg/kg	5	<5	<5	NA	<5	<5	NA
Manganese	mg/kg	5	-	-	-	-	-	-
Mercury	mg/kg	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Nickel	mg/kg	2	<2	<2	NA	<2	<5	NA
Silver	mg/kg	2	-	-	-	-	-	-
Zinc	mg/kg	5	<5	<5	NA	<5	<5	NA
PAH								
Naphthalene	mg/kg	0.5	<1	<1	NA	<1	<0.5	NA
BTEX								
Benzene	mg/kg	0.1	<0.2	<0.2	NA	<0.2	<0.1	NA
Toluene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA
Ethylbenzene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA
Xylene (o)	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA
Xylene (m & p)	mg/kg	0.2	<0.5	<0.5	NA	<0.5	<0.2	NA
Xylene Total	mg/kg	0.3	<0.5	<0.5	NA	<0.5	<0.3	NA
Total BTEX	mg/kg	0.2	<0.2	<0.2	NA	<0.2	-	-
Inorganics								
pH (aqueous extract)	pH_Units	0.1	-	-	-	-	7.5	-
Anions								
Sulphate	mg/kg	30	150	<50	LP	150	<30	LP
SPOCAS								
pH (CaCl2)	pH Unit	0.1	7.8	6.5	18	7.8	-	-

Highlighted values indicate duplicate pairs above RPD guideln
NA - RPD not calculated as one or more concentrations below
LP - RPD not calculated as one or more concentrations below

Duplicate Summary Table

		Location Code	Test Pit			Test Pit			
		Field ID	TP13-02	TP13-05		TP13-02	TP13-06		
		Depth	0.2 - 0.3	0.2 - 0.3		0.2 - 0.3	0.2 - 0.3		
		Date	21/03/2019	21/03/2019		21/03/2019	21/03/2019		
		Sample Type	Normal	Field_D	RPD	Normal	Interlab_D	RPD	
	Unit	EQL							
Metals									
Arsenic	mg/kg	2	<5	<5	NA	<5	2.5	NA	
Barium	mg/kg	10	-	-	-	-	-	-	
Beryllium	mg/kg	1	-	-	-	-	-	-	
Cadmium	mg/kg	0.4	<1	<1	NA	<1	<0.4	NA	
Chromium (hexavalent)	mg/kg	0.5	-	-	-	-	-	-	
Chromium (III+VI)	mg/kg	2	6	8	NA	6	9.2	NA	
Cobalt	mg/kg	2	-	-	-	-	-	-	
Copper	mg/kg	5	<5	<5	NA	<5	<5	NA	
Iron	mg/kg	50	-	-	-	-	-	-	
Lead	mg/kg	5	<5	<5	NA	<5	<5	NA	
Manganese	mg/kg	5	-	-	-	-	-	-	
Mercury	mg/kg	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	
Nickel	mg/kg	2	<2	<2	NA	<2	<5	NA	
Silver	mg/kg	2	-	-	-	-	-	-	
Zinc	mg/kg	5	<5	<5	NA	<5	<5	NA	
PAH									
Naphthalene	mg/kg	0.5	<1	<1	NA	<1	<0.5	NA	
BTEX									
Benzene	mg/kg	0.1	<0.2	<0.2	NA	<0.2	<0.1	NA	
Toluene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA	
Ethylbenzene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA	
Xylene (o)	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA	
Xylene (m & p)	mg/kg	0.2	<0.5	<0.5	NA	<0.5	<0.2	NA	
Xylene Total	mg/kg	0.3	<0.5	<0.5	NA	<0.5	<0.3	NA	
Total BTEX	mg/kg	0.2	<0.2	<0.2	NA	<0.2	-	-	
Inorganics									
pH (aqueous extract)	pH_Units	0.1	-	-	-	-	9.4	-	
Anions									
Sulphate	mg/kg	30	-	-	-	-	-	-	
SPOCAS									
pH (CaCl2)	pH Unit	0.1	8.0	8.0	0	8.0	-	-	

Highlighted values indicate duplicate pairs above RPD guideln
NA - RPD not calculated as one or more concentrations below
LP - RPD not calculated as one or more concentrations below

Duplicate Summary Table

		Location Code	Test Pit			Test Pit			
		Field ID	TP14-01	TP14-04		TP14-01	TP14-05		
		Depth	0.0 - 0.1	0.0 - 0.1		0.0 - 0.1	0.0 - 0.1		
		Date	21/03/2019	21/03/2019		21/03/2019	21/03/2019		
		Sample Type	Normal	Field_D	RPD	Normal	Interlab_D	RPD	
	Unit	EQL							
Metals									
Arsenic	mg/kg	2	6	6	NA	6	6.6	NA	
Barium	mg/kg	10	-	-	-	-	-	-	
Beryllium	mg/kg	1	-	-	-	-	-	-	
Cadmium	mg/kg	0.4	<1	<1	NA	<1	<0.4	NA	
Chromium (hexavalent)	mg/kg	0.5	-	-	-	-	-	-	
Chromium (III+VI)	mg/kg	2	46	45	2	46	53	14	
Cobalt	mg/kg	2	-	-	-	-	-	-	
Copper	mg/kg	5	7	7	NA	7	7.6	NA	
Iron	mg/kg	50	-	-	-	-	-	-	
Lead	mg/kg	5	7	6	NA	7	9.8	NA	
Manganese	mg/kg	5	-	-	-	-	-	-	
Mercury	mg/kg	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	
Nickel	mg/kg	2	5	4	NA	5	6.9	NA	
Silver	mg/kg	2	-	-	-	-	-	-	
Zinc	mg/kg	5	13	13	NA	13	19	NA	
PAH									
Naphthalene	mg/kg	0.5	<1	<1	NA	<1	<0.5	NA	
BTEX									
Benzene	mg/kg	0.1	<0.2	<0.2	NA	<0.2	<0.1	NA	
Toluene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA	
Ethylbenzene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA	
Xylene (o)	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA	
Xylene (m & p)	mg/kg	0.2	<0.5	<0.5	NA	<0.5	<0.2	NA	
Xylene Total	mg/kg	0.3	<0.5	<0.5	NA	<0.5	<0.3	NA	
Total BTEX	mg/kg	0.2	<0.2	<0.2	NA	<0.2	-	-	
Inorganics									
pH (aqueous extract)	pH_Units	0.1	-	-	-	-	8.3	-	
Anions									
Sulphate	mg/kg	30	730	750	3	730	1,000	31	
SPOCAS									
pH (CaCl2)	pH Unit	0.1	7.7	7.5	3	7.7	-	-	

Highlighted values indicate duplicate pairs above RPD guideln
NA - RPD not calculated as one or more concentrations below
LP - RPD not calculated as one or more concentrations below

Duplicate Summary Table

		Location Code	Stockpile			Stockpile			
		Field ID	TP51-01	TP51-03		TP40-01	TP40-04		
		Depth	-	-		-	-		
		Date	21/03/2019	21/03/2019		22/03/2019	22/03/2019		
		Sample Type	Normal	Field_D	RPD	Normal	Interlab_D	RPD	
	Unit	EQL							
Metals									
Arsenic	mg/kg	2	8	8	NA	<5	3.3	NA	
Barium	mg/kg	10	100	-	-	-	-	-	
Beryllium	mg/kg	1	<1	-	-	-	-	-	
Cadmium	mg/kg	0.4	<1	<1	NA	<1	<0.4	NA	
Chromium (hexavalent)	mg/kg	0.5	<0.5	-	-	-	-	-	
Chromium (III+VI)	mg/kg	2	24	24	0	15	19	24	
Cobalt	mg/kg	2	7	-	-	-	-	-	
Copper	mg/kg	5	9	10	NA	10	9.9	NA	
Iron	mg/kg	50	24,600	-	-	-	-	-	
Lead	mg/kg	5	8	10	NA	<5	6.6	NA	
Manganese	mg/kg	5	232	-	-	-	-	-	
Mercury	mg/kg	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	
Nickel	mg/kg	2	12	13	8	10	12	18	
Silver	mg/kg	2	<2	-	-	-	-	-	
Zinc	mg/kg	5	15	17	NA	12	21	NA	
PAH									
Naphthalene	mg/kg	0.5	<0.5	<1	NA	<1	<0.5	NA	
BTEX									
Benzene	mg/kg	0.1	<0.2	<0.2	NA	<0.2	<0.1	NA	
Toluene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA	
Ethylbenzene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA	
Xylene (o)	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA	
Xylene (m & p)	mg/kg	0.2	<0.5	<0.5	NA	<0.5	<0.2	NA	
Xylene Total	mg/kg	0.3	<0.5	<0.5	NA	<0.5	<0.3	NA	
Total BTEX	mg/kg	0.2	<0.2	<0.2	NA	<0.2	-	-	
Inorganics									
pH (aqueous extract)	pH_Units	0.1	-	-	-	-	8.9	-	
Anions									
Sulphate	mg/kg	30	-	-	-	-	-	-	
SPOCAS									
pH (CaCl2)	pH Unit	0.1	-	8.2	-	8.0	-	-	

Highlighted values indicate duplicate pairs above RPD guideln
NA - RPD not calculated as one or more concentrations below
LP - RPD not calculated as one or more concentrations below

Duplicate Summary Table

		Location Code	Test Pit			Test Pit		
		Field ID	TP23-01	TP23-04		TP23-01	TP23-05	
		Depth	0.0 - 0.1	0.0 - 0.1		0.0 - 0.1	0.0 - 0.1	
		Date	22/03/2019	22/03/2019		22/03/2019	22/03/2019	
		Sample Type	Normal	Field_D	RPD	Normal	Interlab_D	RPD
	Unit	EQL						
Metals								
Arsenic	mg/kg	2	7	8	NA	7	10	NA
Barium	mg/kg	10	-	-	-	-	-	-
Beryllium	mg/kg	1	-	-	-	-	-	-
Cadmium	mg/kg	0.4	<1	<1	NA	<1	<0.4	NA
Chromium (hexavalent)	mg/kg	0.5	-	-	-	-	-	-
Chromium (III+VI)	mg/kg	2	22	25	13	22	39	56
Cobalt	mg/kg	2	-	-	-	-	-	-
Copper	mg/kg	5	10	12	NA	10	13	NA
Iron	mg/kg	50	-	-	-	-	-	-
Lead	mg/kg	5	10	10	NA	10	14	NA
Manganese	mg/kg	5	-	-	-	-	-	-
Mercury	mg/kg	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Nickel	mg/kg	2	13	14	7	13	21	47
Silver	mg/kg	2	-	-	-	-	-	-
Zinc	mg/kg	5	15	18	NA	15	33	LP
PAH								
Naphthalene	mg/kg	0.5	<1	<1	NA	<1	<0.5	NA
BTEX								
Benzene	mg/kg	0.1	<0.2	<0.2	NA	<0.2	<0.1	NA
Toluene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA
Ethylbenzene	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA
Xylene (o)	mg/kg	0.1	<0.5	<0.5	NA	<0.5	<0.1	NA
Xylene (m & p)	mg/kg	0.2	<0.5	<0.5	NA	<0.5	<0.2	NA
Xylene Total	mg/kg	0.3	<0.5	<0.5	NA	<0.5	<0.3	NA
Total BTEX	mg/kg	0.2	<0.2	<0.2	NA	<0.2	-	-
Inorganics								
pH (aqueous extract)	pH_Units	0.1	-	-	-	-	9.8	-
Anions								
Sulphate	mg/kg	30	130	-	-	130	-	-
SPOCAS								
pH (CaCl2)	pH Unit	0.1	8.2	8.3	1	8.2	-	-

Highlighted values indicate duplicate pairs above RPD guideln
NA - RPD not calculated as one or more concentrations below
LP - RPD not calculated as one or more concentrations below

Blanks Summary Table

		Field ID	RINSE-01	RINSE-02	RINSE-03	RINSE-04	TB-01	TB-03
		Date	19/03/2019	20/03/2019	21/03/2019	22/03/2019	19/03/2019	22/03/2019
		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Trip_B	Trip_B
		Unit						
Metals	Arsenic	mg/L	<0.001	-	-	<0.001	-	-
	Cadmium	mg/L	<0.0001	-	-	<0.0001	-	-
	Chromium (III+VI)	mg/L	<0.001	-	-	<0.001	-	-
	Copper	mg/L	<0.001	-	-	<0.001	-	-
	Lead	mg/L	<0.001	-	-	<0.001	-	-
	Mercury	mg/L	<0.0001	-	-	<0.0001	-	-
	Nickel	mg/L	<0.001	-	-	<0.001	-	-
	Zinc	mg/L	<0.005	-	-	<0.005	-	-
PAH	Naphthalene	µg/L	-	<5	<5	<5	<5	<5
TRH	TRH C6-C10	µg/L	-	<20	<20	<20	<20	<20
	TRH C6-C10 less BTEX (F1)	µg/L	-	<20	<20	<20	<20	<20
	TRH >C10-C16	µg/L	-	-	-	<100	-	-
	TRH >C10-C16 less Napthalene (F2)	µg/L	-	-	-	<100	-	-
	TRH >C16-C34	µg/L	-	-	-	<100	-	-
	TRH >C34-C40	µg/L	-	-	-	<100	-	-
	TRH >C10-C40 (sum of fractions)	µg/L	-	-	-	<100	-	-
BTEX	Benzene	µg/L	-	<1	<1	<1	<1	<1
	Toluene	µg/L	-	<2	<2	<2	<2	<2
	Ethylbenzene	µg/L	-	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	-	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	-	<2	<2	<2	<2	<2
	Xylene Total	µg/L	-	<2	<2	<2	<2	<2
	Total BTEX	µg/L	-	<1	<1	<1	<1	<1
Inorganics	pH (Lab)	pH_Units	-	-	-	5.37	-	-

Appendix L

Laboratory Certificates of Analysis

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1904231**	Page	: 1 of 40
Client	: **LBW CO PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: MARK PETERSON	Contact	: Kieren Burns
Address	: 184 MAGILL ROAD NORWOOD SA, AUSTRALIA 5067	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61881625130
Project	: 191076	Date Samples Received	: 22-Mar-2019 10:25
Order number	:	Date Analysis Commenced	: 25-Mar-2019
C-O-C number	: 191076_COC_20190319	Issue Date	: 29-Mar-2019 14:41
Sampler	: ----		
Site	: Springwood Development PSI		
Quote number	: AD/014/19		
No. of samples received	: 93		
No. of samples analysed	: 59		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero
- EP080: Particular sample EM-1904231-022 shows minor BTEX hits. Confirmed by re-analysis.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SB01-01	SB01-03	SB01-04	SB02-01	SB02-04
			Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-002	EM1904231-004	EM1904231-005	EM1904231-006	EM1904231-009
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	8.2	8.2	7.8	8.1
EA055: Moisture Content								
Moisture Content	----	1.0	%	----	13.5	13.0	2.5	5.8
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	----	----	----	----
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	<50	160	240	<50	100
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	5	<5
Barium	7440-39-3	10	mg/kg	10	----	----	----	----
Beryllium	7440-41-7	1	mg/kg	<1	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	5	29	24	24	7
Cobalt	7440-48-4	2	mg/kg	<2	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	7	6	5	<5
Iron	7439-89-6	50	mg/kg	5970	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	6	6	<5	<5
Manganese	7439-96-5	5	mg/kg	16	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	11	8	4	<2
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	<5	13	14	10	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB01-01	SB01-03	SB01-04	SB02-01	SB02-04
				Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-002	EM1904231-004	EM1904231-005	EM1904231-006	EM1904231-009
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SB01-01	SB01-03	SB01-04	SB02-01	SB02-04
			Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-002	EM1904231-004	EM1904231-005	EM1904231-006	EM1904231-009
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
^ Sum of Phenols	----	0.5	mg/kg	<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB01-01	SB01-03	SB01-04	SB02-01	SB02-04
				Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-002	EM1904231-004	EM1904231-005	EM1904231-006	EM1904231-009
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**90.7**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**89.8**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**88.1**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**101**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**97.5**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**89.6**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**103**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**126**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**107**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**73.8**	**79.9**	**83.6**	**81.6**	**83.7**
Toluene-D8	2037-26-5	0.2	%		**80.8**	**82.9**	**84.7**	**81.8**	**80.0**
4-Bromofluorobenzene	460-00-4	0.2	%		**70.6**	**76.8**	**80.7**	**79.3**	**79.3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SB03-01	SB03-02	SB03-03	SB04-01	SB04-02
			Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-010	EM1904231-011	EM1904231-012	EM1904231-014	EM1904231-015
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	8.0	7.4	7.7	7.8
EA055: Moisture Content								
Moisture Content	----	1.0	%	----	7.6	2.2	10.2	8.8
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	1.7	----	----	----	----
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	<50	<50	<50	150	130
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	10	6
Barium	7440-39-3	10	mg/kg	20	----	----	----	----
Beryllium	7440-41-7	1	mg/kg	<1	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	12	11	13	47	36
Cobalt	7440-48-4	2	mg/kg	<2	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	<5	<5	8	6
Iron	7439-89-6	50	mg/kg	19000	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	<5	<5	<5	<5
Manganese	7439-96-5	5	mg/kg	13	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	4	<2	4	4
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	<5	<5	<5	11	14
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB03-01	SB03-02	SB03-03	SB04-01	SB04-02
				Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-010	EM1904231-011	EM1904231-012	EM1904231-014	EM1904231-015
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SB03-01	SB03-02	SB03-03	SB04-01	SB04-02
			Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-010	EM1904231-011	EM1904231-012	EM1904231-014	EM1904231-015
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
^ Sum of Phenols	----	0.5	mg/kg	<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB03-01	SB03-02	SB03-03	SB04-01	SB04-02
				Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-010	EM1904231-011	EM1904231-012	EM1904231-014	EM1904231-015
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**91.9**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**85.8**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**83.7**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**98.7**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**94.4**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**86.4**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**103**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**124**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**105**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**102**	**82.6**	**84.6**	**102**	**87.2**
Toluene-D8	2037-26-5	0.2	%		**106**	**88.4**	**87.1**	**109**	**93.9**
4-Bromofluorobenzene	460-00-4	0.2	%		**102**	**78.9**	**78.5**	**101**	**84.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SB04-04	SB04-06	SB05-01	SB05-03	SB05-05
			Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-016	EM1904231-018	EM1904231-022	EM1904231-024	EM1904231-026
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.0	----	7.9	8.0	7.7
EA055: Moisture Content								
Moisture Content	----	1.0	%	27.2	----	5.2	5.2	4.5
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	36.1	----	----	----
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	300	280	60	50	<50
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	5	<5	<5	<5
Barium	7440-39-3	10	mg/kg	----	30	----	----	----
Beryllium	7440-41-7	1	mg/kg	----	<1	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	38	40	16	10	10
Cobalt	7440-48-4	2	mg/kg	----	<2	----	----	----
Copper	7440-50-8	5	mg/kg	6	6	<5	<5	<5
Iron	7439-89-6	50	mg/kg	----	52200	----	----	----
Lead	7439-92-1	5	mg/kg	<5	5	<5	<5	<5
Manganese	7439-96-5	5	mg/kg	----	30	----	----	----
Nickel	7440-02-0	2	mg/kg	4	4	4	<2	<2
Silver	7440-22-4	2	mg/kg	----	<2	----	----	----
Zinc	7440-66-6	5	mg/kg	11	12	8	<5	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	<1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB04-04	SB04-06	SB05-01	SB05-03	SB05-05
				Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-016	EM1904231-018	EM1904231-022	EM1904231-024	EM1904231-026
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	----	----	----
^ **Total Chlordane (sum)**	----	0.05	mg/kg		----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg		----	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	<0.05	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	<1	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	<0.5	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	<0.5	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	<0.5	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	<0.5	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	<0.5	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	<0.5	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	<0.5	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		----	<2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB04-04	SB04-06	SB05-01	SB05-03	SB05-05
				Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-016	EM1904231-018	EM1904231-022	EM1904231-024	EM1904231-026
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
^ **Sum of Phenols**	----	0.5	mg/kg		----	<0.5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	<0.5	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		----	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		----	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		----	**0.6**	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB04-04	SB04-06	SB05-01	SB05-03	SB05-05
				Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00	19-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-016	EM1904231-018	EM1904231-022	EM1904231-024	EM1904231-026
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	**0.7**	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	**0.7**	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	**0.7**	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	**88.4**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	**86.6**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	**81.3**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	**97.8**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	**94.5**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	**84.6**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	**99.4**	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	**124**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	**104**	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**68.4**	**68.9**	**86.5**	**78.9**	**87.6**
Toluene-D8	2037-26-5	0.2	%		**78.1**	**67.2**	**88.4**	**80.0**	**92.6**
4-Bromofluorobenzene	460-00-4	0.2	%		**67.4**	**68.3**	**114**	**76.0**	**83.4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SB06-02	SB06-05	TP01-01	TP01-03	TP02-02
			Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-028	EM1904231-031	EM1904231-032	EM1904231-034	EM1904231-037
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	6.9	----	7.9	7.8
EA055: Moisture Content								
Moisture Content	----	1.0	%	----	9.3	----	7.8	7.9
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	5.0	----	1.7	----	----
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	<50	50	<50	70	150
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Barium	7440-39-3	10	mg/kg	60	----	80	----	----
Beryllium	7440-41-7	1	mg/kg	<1	----	<1	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	11	8	58	7	12
Cobalt	7440-48-4	2	mg/kg	<2	----	11	----	----
Copper	7440-50-8	5	mg/kg	<5	<5	21	<5	<5
Iron	7439-89-6	50	mg/kg	12200	----	41300	----	----
Lead	7439-92-1	5	mg/kg	<5	<5	9	<5	<5
Manganese	7439-96-5	5	mg/kg	39	----	99	----	----
Nickel	7440-02-0	2	mg/kg	3	<2	17	<2	<2
Silver	7440-22-4	2	mg/kg	<2	----	<2	----	----
Zinc	7440-66-6	5	mg/kg	<5	<5	41	<5	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	<1	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB06-02	SB06-05	TP01-01	TP01-03	TP02-02
				Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-028	EM1904231-031	EM1904231-032	EM1904231-034	EM1904231-037
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	<0.05	----	----
^ **Total Chlordane (sum)**	----	0.05	mg/kg		<0.05	----	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	<0.05	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	<0.2	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	<0.05	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	<0.05	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	----	<2	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB06-02	SB06-05	TP01-01	TP01-03	TP02-02
				Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-028	EM1904231-031	EM1904231-032	EM1904231-034	EM1904231-037
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
^ **Sum of Phenols**	----	0.5	mg/kg		<0.5	----	<0.5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	<0.5	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	----	**0.6**	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	----	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB06-02	SB06-05	TP01-01	TP01-03	TP02-02
				Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-028	EM1904231-031	EM1904231-032	EM1904231-034	EM1904231-037
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		87.0	----	94.2	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		84.0	----	83.7	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		86.0	----	85.2	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		94.8	----	96.8	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		90.9	----	93.7	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		81.4	----	79.5	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		97.8	----	98.0	----	----
Anthracene-d10	1719-06-8	0.5	%		121	----	123	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		103	----	103	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		79.8	80.6	73.7	74.0	78.3
Toluene-D8	2037-26-5	0.2	%		88.1	86.4	79.5	81.4	84.3
4-Bromofluorobenzene	460-00-4	0.2	%		74.9	78.8	72.0	71.6	69.4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP02-04	TP02-05	TP03-02	TP03-04	TP04-01
			Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-039	EM1904231-040	EM1904231-043	EM1904231-045	EM1904231-046
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	8.0	6.5	8.0	8.1	7.7
EA055: Moisture Content								
Moisture Content	----	1.0	%	16.8	<1.0	6.4	17.4	6.3
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	270	<50	230	320	<50
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	6	13	22	28
Copper	7440-50-8	5	mg/kg	6	<5	<5	6	11
Lead	7439-92-1	5	mg/kg	6	<5	<5	7	6
Nickel	7440-02-0	2	mg/kg	6	<2	2	8	11
Zinc	7440-66-6	5	mg/kg	10	<5	<5	13	18
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP02-04	TP02-05	TP03-02	TP03-04	TP04-01
				Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-039	EM1904231-040	EM1904231-043	EM1904231-045	EM1904231-046
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**97.6**	**96.4**	**78.0**	**79.0**	**81.8**
Toluene-D8	2037-26-5	0.2	%		**84.6**	**86.7**	**72.5**	**70.4**	**73.2**
4-Bromofluorobenzene	460-00-4	0.2	%		**117**	**116**	**91.6**	**92.2**	**100**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP04-03	TP05-02	TP05-03	TP06-01	TP06-02
			Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-048	EM1904231-051	EM1904231-052	EM1904231-054	EM1904231-055
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.9	7.6	8.0	8.0	8.1
EA055: Moisture Content								
Moisture Content	----	1.0	%	13.6	5.4	11.6	4.8	14.9
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	<50	50	580	70	<50
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	25	32	40	45	42
Copper	7440-50-8	5	mg/kg	9	12	8	24	16
Lead	7439-92-1	5	mg/kg	7	6	5	8	11
Nickel	7440-02-0	2	mg/kg	17	9	12	24	22
Zinc	7440-66-6	5	mg/kg	15	23	24	35	41
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP04-03	TP05-02	TP05-03	TP06-01	TP06-02
				Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-048	EM1904231-051	EM1904231-052	EM1904231-054	EM1904231-055
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**79.7**	**84.0**	**88.0**	**88.2**	**81.2**
Toluene-D8	2037-26-5	0.2	%		**68.6**	**76.1**	**75.6**	**79.7**	**74.1**
4-Bromofluorobenzene	460-00-4	0.2	%		**88.0**	**100**	**95.8**	**109**	**96.4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP07-01	TP07-02	TP08-01	TP08-02	TP09-01
			Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-057	EM1904231-058	EM1904231-062	EM1904231-063	EM1904231-066
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	7.3	7.8	7.9	8.1
EA055: Moisture Content								
Moisture Content	----	1.0	%	----	10.2	3.3	6.0	3.2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	7.9	----	----	----	----
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	<50	<50	<50	<50	700
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	5	<5	<5
Barium	7440-39-3	10	mg/kg	70	----	----	----	----
Beryllium	7440-41-7	1	mg/kg	1	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	32	37	40	33	35
Cobalt	7440-48-4	2	mg/kg	7	----	----	----	----
Copper	7440-50-8	5	mg/kg	19	19	33	17	16
Iron	7439-89-6	50	mg/kg	30600	----	----	----	----
Lead	7439-92-1	5	mg/kg	8	9	14	10	8
Manganese	7439-96-5	5	mg/kg	212	----	----	----	----
Nickel	7440-02-0	2	mg/kg	18	20	10	13	11
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	24	26	30	36	36
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP07-01	TP07-02	TP08-01	TP08-02	TP09-01
				Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-057	EM1904231-058	EM1904231-062	EM1904231-063	EM1904231-066
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
^ **Total Chlordane (sum)**	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP07-01	TP07-02	TP08-01	TP08-02	TP09-01
				Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-057	EM1904231-058	EM1904231-062	EM1904231-063	EM1904231-066
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
^ Sum of Phenols	----	0.5	mg/kg		<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP07-01	TP07-02	TP08-01	TP08-02	TP09-01
				Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-057	EM1904231-058	EM1904231-062	EM1904231-063	EM1904231-066
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**91.1**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**88.7**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**97.9**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**98.6**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**95.4**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**83.2**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**97.1**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**127**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**108**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**85.4**	**89.1**	**81.1**	**81.5**	**92.4**
Toluene-D8	2037-26-5	0.2	%		**83.8**	**81.7**	**77.4**	**77.0**	**87.0**
4-Bromofluorobenzene	460-00-4	0.2	%		**108**	**110**	**98.0**	**100**	**104**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP09-02	TP27-01	TP28-01	TP29-01	TP30-01
			Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-067	EM1904231-070	EM1904231-071	EM1904231-072	EM1904231-073
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	8.0	7.6	7.4	7.7	6.8
EA055: Moisture Content								
Moisture Content	----	1.0	%	10.0	1.9	<1.0	2.0	1.3
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	150	<50	<50	170	110
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	6	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	34	40	38	25	13
Copper	7440-50-8	5	mg/kg	19	11	14	<5	<5
Lead	7439-92-1	5	mg/kg	9	6	6	<5	<5
Nickel	7440-02-0	2	mg/kg	12	8	10	3	<2
Zinc	7440-66-6	5	mg/kg	31	22	28	9	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP09-02	TP27-01	TP28-01	TP29-01	TP30-01
				Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-067	EM1904231-070	EM1904231-071	EM1904231-072	EM1904231-073
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**80.7**	**76.5**	**87.4**	**85.2**	**81.8**
Toluene-D8	2037-26-5	0.2	%		**82.4**	**78.8**	**73.3**	**75.2**	**77.6**
4-Bromofluorobenzene	460-00-4	0.2	%		**104**	**102**	**95.2**	**94.1**	**94.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP32-01	TP33-01	TP34-01	TP35-01	TP36-01
			Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-074	EM1904231-075	EM1904231-076	EM1904231-077	EM1904231-078
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.9	7.5	7.8	7.7	7.8
EA055: Moisture Content								
Moisture Content	----	1.0	%	4.0	2.0	4.6	4.0	2.1
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	41	20	22	21
Copper	7440-50-8	5	mg/kg	9	26	11	11	14
Lead	7439-92-1	5	mg/kg	<5	12	6	7	6
Nickel	7440-02-0	2	mg/kg	8	16	9	10	9
Zinc	7440-66-6	5	mg/kg	11	36	19	16	17
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP32-01	TP33-01	TP34-01	TP35-01	TP36-01
				Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-074	EM1904231-075	EM1904231-076	EM1904231-077	EM1904231-078
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**74.3**	**84.2**	**88.5**	**74.3**	**83.2**
Toluene-D8	2037-26-5	0.2	%		**81.9**	**83.8**	**92.4**	**77.3**	**85.8**
4-Bromofluorobenzene	460-00-4	0.2	%		**69.9**	**74.0**	**79.5**	**66.1**	**73.8**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP37-01	TP38-01	TP39-01	SP01-01	SP02-01
			Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-079	EM1904231-080	EM1904231-081	EM1904231-082	EM1904231-083
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	8.0	7.5	8.0	8.2	7.7
EA055: Moisture Content								
Moisture Content	----	1.0	%	2.5	2.2	2.3	3.0	<1.0
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	6	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	17	26	17	29	8
Copper	7440-50-8	5	mg/kg	8	22	6	31	6
Lead	7439-92-1	5	mg/kg	<5	8	<5	<5	8
Nickel	7440-02-0	2	mg/kg	7	11	5	15	4
Zinc	7440-66-6	5	mg/kg	7	16	8	23	130
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP37-01	TP38-01	TP39-01	SP01-01	SP02-01
				Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-079	EM1904231-080	EM1904231-081	EM1904231-082	EM1904231-083
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**71.0**	**83.5**	**82.9**	**81.8**	**86.5**
Toluene-D8	2037-26-5	0.2	%		**73.7**	**87.3**	**87.3**	**82.6**	**91.1**
4-Bromofluorobenzene	460-00-4	0.2	%		**65.7**	**76.8**	**76.4**	**73.5**	**77.2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SP03-01	SP04-01	SP05-01	SP06-01	SP07-01
			Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904231-084	EM1904231-085	EM1904231-086	EM1904231-087	EM1904231-088
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	8.0	----	8.0	7.9	7.8
EA055: Moisture Content								
Moisture Content	----	1.0	%	3.1	----	<1.0	2.4	2.6
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	3.0	----	----	----
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	----	100	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Barium	7440-39-3	10	mg/kg	----	80	----	----	----
Beryllium	7440-41-7	1	mg/kg	----	<1	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	18	19	11	17	25
Cobalt	7440-48-4	2	mg/kg	----	5	----	----	----
Copper	7440-50-8	5	mg/kg	14	12	27	10	12
Iron	7439-89-6	50	mg/kg	----	20500	----	----	----
Lead	7439-92-1	5	mg/kg	<5	5	<5	5	6
Manganese	7439-96-5	5	mg/kg	----	136	----	----	----
Nickel	7440-02-0	2	mg/kg	9	10	7	10	11
Silver	7440-22-4	2	mg/kg	----	<2	----	----	----
Zinc	7440-66-6	5	mg/kg	11	12	13	13	16
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	<1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP03-01	SP04-01	SP05-01	SP06-01	SP07-01
				Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-084	EM1904231-085	EM1904231-086	EM1904231-087	EM1904231-088
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	----	----	----
^ **Total Chlordane (sum)**	----	0.05	mg/kg		----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg		----	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	<0.05	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	<1	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	<0.5	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	<0.5	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	<0.5	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	<0.5	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	<0.5	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	<0.5	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	<0.5	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		----	<2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP03-01	SP04-01	SP05-01	SP06-01	SP07-01
				Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-084	EM1904231-085	EM1904231-086	EM1904231-087	EM1904231-088
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
^ Sum of Phenols	----	0.5	mg/kg		----	<0.5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	1.2	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP03-01	SP04-01	SP05-01	SP06-01	SP07-01
				Client sampling date / time	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00	20-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904231-084	EM1904231-085	EM1904231-086	EM1904231-087	EM1904231-088
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	89.4	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	83.6	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	86.1	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	98.1	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	94.4	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	82.0	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	102	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	126	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	107	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		68.9	73.9	84.1	75.1	74.3
Toluene-D8	2037-26-5	0.2	%		75.2	76.7	88.4	84.3	83.0
4-Bromofluorobenzene	460-00-4	0.2	%		63.7	66.5	77.4	69.8	69.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SP08-01	----	----	----	----
			Client sampling date / time	20-Mar-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1904231-089	--------	--------	--------	--------
				Result	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	**7.7**	----	----	----	----
EA055: Moisture Content								
Moisture Content	----	1.0	%	**2.2**	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**25**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**16**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**6**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**12**	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**18**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	<50	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP08-01	----	----	----	----
				Client sampling date / time	20-Mar-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1904231-089	--------	--------	--------	--------
					Result	----	----	----	----
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**102**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**106**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**90.8**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RINSE-01	TB-01	Rinse-02	----	----
				Client sampling date / time	19-Mar-2019 00:00	19-Mar-2019 00:00	20-Mar-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1904231-001	EM1904231-021	EM1904231-041	--------	--------
					Result	Result	Result	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		----	<20	<20	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		----	<20	<20	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		----	<20	<20	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		----	<1	<1	----	----
Toluene	108-88-3	2	µg/L		----	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		----	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		----	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		----	<2	<2	----	----
^ **Total Xylenes**	----	2	µg/L		----	<2	<2	----	----
^ **Sum of BTEX**	----	1	µg/L		----	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		----	<5	<5	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		----	**91.1**	**78.4**	----	----
Toluene-D8	2037-26-5	2	%		----	**93.5**	**89.9**	----	----
4-Bromofluorobenzene	460-00-4	2	%		----	**90.3**	**87.7**	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	36	140
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	38	128
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	33	139
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CERTIFICATE OF ANALYSIS

Work Order	: **EM1904350**	Page	: 1 of 48
Client	: **LBW CO PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: MARK PETERSON	Contact	: Kieren Burns
Address	: 184 MAGILL ROAD NORWOOD SA, AUSTRALIA 5067	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61881625130
Project	: 191076	Date Samples Received	: 26-Mar-2019 10:20
Order number	:	Date Analysis Commenced	: 26-Mar-2019
C-O-C number	: 191076_COC_20190321	Issue Date	: 04-Apr-2019 10:52
Sampler	: ----		
Site	: Springwood Development PSI		
Quote number	: AD/014/19		
No. of samples received	: 103		
No. of samples analysed	: 79		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Arenie Vijayaratnam	Non-metals prep supervisor	Melbourne Inorganics, Springvale, VIC
Dianne Blane	Laboratory Coordinator (2IC)	Newcastle - Inorganics, Mayfield West, NSW
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ALS is not NATA accredited for the analysis of Exchangeable Cations on Alkaline Soils when performed under ALS Method ED006.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H+ + Al3+).

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP10-01	TP10-03	TP11-01	TP11-03	TP31-01
			Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-002	EM1904350-004	EM1904350-006	EM1904350-008	EM1904350-010
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.7	8.0	7.0	7.5	7.9
EA055: Moisture Content								
Moisture Content	----	1.0	%	5.5	15.4	2.9	18.6	3.4
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	<50	70	<50	170	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	5	<5	6	6	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	36	23	31	22	19
Copper	7440-50-8	5	mg/kg	8	12	6	<5	24
Lead	7439-92-1	5	mg/kg	6	6	<5	<5	5
Nickel	7440-02-0	2	mg/kg	7	14	3	3	10
Zinc	7440-66-6	5	mg/kg	22	17	10	10	11
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP10-01	TP10-03	TP11-01	TP11-03	TP31-01
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-002	EM1904350-004	EM1904350-006	EM1904350-008	EM1904350-010
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**85.3**	**80.2**	**84.5**	**81.0**	**81.7**
Toluene-D8	2037-26-5	0.2	%		**84.3**	**81.7**	**87.8**	**76.7**	**85.6**
4-Bromofluorobenzene	460-00-4	0.2	%		**81.9**	**83.5**	**84.4**	**77.3**	**80.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP31-02	TP48-01	TP48-02	TP43-01	TP43-02
			Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-011	EM1904350-012	EM1904350-013	EM1904350-014	EM1904350-015
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	8.0	8.3	8.0	----	8.0
EA055: Moisture Content								
Moisture Content	----	1.0	%	4.6	2.3	4.0	----	4.1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	----	----	2.8	----
EG005(ED093)T: Total Metals by ICP-AES								
Barium	7440-39-3	10	mg/kg	----	----	----	190	----
Beryllium	7440-41-7	1	mg/kg	----	----	----	<1	----
Cobalt	7440-48-4	2	mg/kg	----	----	----	15	----
Iron	7439-89-6	50	mg/kg	----	----	----	36900	----
Manganese	7439-96-5	5	mg/kg	----	----	----	141	----
Silver	7440-22-4	2	mg/kg	----	----	----	<2	----
Arsenic	7440-38-2	5	mg/kg	<5	5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	20	25	26	54	57
Copper	7440-50-8	5	mg/kg	18	24	14	22	23
Lead	7439-92-1	5	mg/kg	6	<5	7	6	6
Nickel	7440-02-0	2	mg/kg	9	7	12	18	19
Zinc	7440-66-6	5	mg/kg	13	15	16	37	40
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	----	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	----	<1	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP31-02	TP48-01	TP48-02	TP43-01	TP43-02
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-011	EM1904350-012	EM1904350-013	EM1904350-014	EM1904350-015
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	----	<0.05	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	----	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	----	----	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	----	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	----	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	----	----	<0.5	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	----	----	<0.5	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	----	----	<0.5	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	----	----	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	----	<0.5	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	----	<0.5	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	----	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg		----	----	----	<2	----
^ Sum of Phenols	----	0.5	mg/kg		----	----	----	<0.5	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP31-02	TP48-01	TP48-02	TP43-01	TP43-02
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-011	EM1904350-012	EM1904350-013	EM1904350-014	EM1904350-015
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP31-02	TP48-01	TP48-02	TP43-01	TP43-02
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-011	EM1904350-012	EM1904350-013	EM1904350-014	EM1904350-015
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	98.8	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	93.3	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	96.2	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	----	102	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	----	101	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	----	----	90.5	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	----	106	----
Anthracene-d10	1719-06-8	0.5	%		----	----	----	115	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	----	108	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		80.6	87.0	81.6	86.2	86.7
Toluene-D8	2037-26-5	0.2	%		86.3	83.0	80.9	82.3	85.8
4-Bromofluorobenzene	460-00-4	0.2	%		82.7	81.0	80.5	82.6	82.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP49-01	TP49-02	TP44-01	TP44-02	TP46-01
			Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-016	EM1904350-017	EM1904350-018	EM1904350-019	EM1904350-020
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.8	7.8	7.9	7.8	7.6
EA055: Moisture Content								
Moisture Content	----	1.0	%	3.4	3.4	3.2	2.9	2.7
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	28	32	13	15	14
Copper	7440-50-8	5	mg/kg	16	15	5	7	5
Lead	7439-92-1	5	mg/kg	8	8	<5	9	<5
Nickel	7440-02-0	2	mg/kg	16	14	6	6	6
Zinc	7440-66-6	5	mg/kg	19	22	6	13	10
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP49-01	TP49-02	TP44-01	TP44-02	TP46-01
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-016	EM1904350-017	EM1904350-018	EM1904350-019	EM1904350-020
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**86.6**	**88.5**	**101**	**98.9**	**96.5**
Toluene-D8	2037-26-5	0.2	%		**82.8**	**77.2**	**88.9**	**87.0**	**83.4**
4-Bromofluorobenzene	460-00-4	0.2	%		**84.6**	**81.4**	**87.9**	**82.1**	**82.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP46-02	TP45-01	TP45-02	TP47-01	TP47-02
			Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-021	EM1904350-022	EM1904350-023	EM1904350-024	EM1904350-025
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.5	8.0	7.8	7.9	7.9
EA055: Moisture Content								
Moisture Content	----	1.0	%	3.4	2.4	2.6	4.7	3.5
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	21	56	56	51	52
Copper	7440-50-8	5	mg/kg	7	30	28	18	20
Lead	7439-92-1	5	mg/kg	6	10	11	7	8
Nickel	7440-02-0	2	mg/kg	8	22	21	16	17
Zinc	7440-66-6	5	mg/kg	12	46	42	33	36
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP46-02	TP45-01	TP45-02	TP47-01	TP47-02
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-021	EM1904350-022	EM1904350-023	EM1904350-024	EM1904350-025
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**96.1**	**105**	**72.1**	**71.5**	**71.7**
Toluene-D8	2037-26-5	0.2	%		**79.3**	**79.9**	**92.4**	**92.0**	**94.6**
4-Bromofluorobenzene	460-00-4	0.2	%		**80.5**	**78.7**	**84.8**	**86.0**	**85.4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP12-01	TP12-03	TP13-02	TP13-03	TP13-05
			Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-026	EM1904350-028	EM1904350-030	EM1904350-031	EM1904350-033
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	8.0	8.0	8.0	8.0
EA055: Moisture Content								
Moisture Content	----	1.0	%	----	4.0	4.5	3.3	4.0
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Barium	7440-39-3	10	mg/kg	<10	----	----	----	----
Beryllium	7440-41-7	1	mg/kg	<1	----	----	----	----
Cobalt	7440-48-4	2	mg/kg	<2	----	----	----	----
Iron	7439-89-6	50	mg/kg	7240	----	----	----	----
Manganese	7439-96-5	5	mg/kg	10	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	4	15	6	4	8
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg	<5	<5	<5	<5	<5
Nickel	7440-02-0	2	mg/kg	<2	3	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	<5	8	<5	7	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP12-01	TP12-03	TP13-02	TP13-03	TP13-05
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-026	EM1904350-028	EM1904350-030	EM1904350-031	EM1904350-033
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
^ **Total Chlordane (sum)**	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	----	----	----	----
^ **Sum of Phenols**	----	0.5	mg/kg		<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP12-01	TP12-03	TP13-02	TP13-03	TP13-05
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-026	EM1904350-028	EM1904350-030	EM1904350-031	EM1904350-033
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP12-01	TP12-03	TP13-02	TP13-03	TP13-05
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-026	EM1904350-028	EM1904350-030	EM1904350-031	EM1904350-033
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**89.5**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**99.8**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**105**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**111**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**109**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**101**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**115**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**128**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**120**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**74.2**	**71.1**	**77.3**	**77.6**	**67.5**
Toluene-D8	2037-26-5	0.2	%		**82.9**	**89.2**	**95.6**	**96.2**	**82.5**
4-Bromofluorobenzene	460-00-4	0.2	%		**79.6**	**84.1**	**86.0**	**85.4**	**75.8**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP52-01	TP52-02	TP54-01	TP54-02	TP53-01
			Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-034	EM1904350-035	EM1904350-036	EM1904350-037	EM1904350-038
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	6.8	8.0	7.8	7.8	7.1
EA055: Moisture Content								
Moisture Content	----	1.0	%	2.5	3.2	4.0	2.9	1.6
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	17	16	29	23	14
Copper	7440-50-8	5	mg/kg	10	14	15	12	8
Lead	7439-92-1	5	mg/kg	14	5	9	7	10
Nickel	7440-02-0	2	mg/kg	8	10	14	12	6
Zinc	7440-66-6	5	mg/kg	20	12	19	17	14
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP52-01	TP52-02	TP54-01	TP54-02	TP53-01
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-034	EM1904350-035	EM1904350-036	EM1904350-037	EM1904350-038
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**71.7**	**76.0**	**73.2**	**69.4**	**80.4**
Toluene-D8	2037-26-5	0.2	%		**88.6**	**94.3**	**91.1**	**86.9**	**101**
4-Bromofluorobenzene	460-00-4	0.2	%		**82.9**	**85.9**	**81.6**	**80.3**	**91.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP53-02	TP51-01	TP51-02	TP51-03	TP51-04
			Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-039	EM1904350-040	EM1904350-041	EM1904350-042	EM1904350-043
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.0	----	7.8	8.2	8.1
EA055: Moisture Content								
Moisture Content	----	1.0	%	1.3	----	2.9	3.4	3.0
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	3.1	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Barium	7440-39-3	10	mg/kg	----	100	----	----	----
Beryllium	7440-41-7	1	mg/kg	----	<1	----	----	----
Cobalt	7440-48-4	2	mg/kg	----	7	----	----	----
Iron	7439-89-6	50	mg/kg	----	24600	----	----	----
Manganese	7439-96-5	5	mg/kg	----	232	----	----	----
Silver	7440-22-4	2	mg/kg	----	<2	----	----	----
Arsenic	7440-38-2	5	mg/kg	<5	8	<5	8	8
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	12	24	31	24	21
Copper	7440-50-8	5	mg/kg	7	9	16	10	8
Lead	7439-92-1	5	mg/kg	9	8	10	10	8
Nickel	7440-02-0	2	mg/kg	5	12	18	13	12
Zinc	7440-66-6	5	mg/kg	14	15	21	17	15
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	<1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP53-02	TP51-01	TP51-02	TP51-03	TP51-04
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-039	EM1904350-040	EM1904350-041	EM1904350-042	EM1904350-043
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg		----	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	<0.05	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	<1	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	<0.5	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	<0.5	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	<0.5	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	<0.5	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	<0.5	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	<0.5	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	<0.5	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		----	<2	----	----	----
^ Sum of Phenols	----	0.5	mg/kg		----	<0.5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP53-02	TP51-01	TP51-02	TP51-03	TP51-04
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-039	EM1904350-040	EM1904350-041	EM1904350-042	EM1904350-043
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP53-02	TP51-01	TP51-02	TP51-03	TP51-04
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-039	EM1904350-040	EM1904350-041	EM1904350-042	EM1904350-043
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	90.9	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	93.8	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	97.3	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	99.4	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	97.9	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	84.6	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	102	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	112	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	105	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		89.4	79.2	93.0	79.8	83.7
Toluene-D8	2037-26-5	0.2	%		84.5	84.6	90.4	84.9	87.1
4-Bromofluorobenzene	460-00-4	0.2	%		82.0	83.0	86.0	79.6	88.0

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP50-01	TP50-02	TP14-01	TP14-03	TP14-04
			Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-044	EM1904350-045	EM1904350-046	EM1904350-048	EM1904350-049
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.9	7.9	7.7	7.5	7.5
EA055: Moisture Content								
Moisture Content	----	1.0	%	3.1	3.0	8.3	35.1	8.4
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	----	----	730	190	750
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	6	8	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	20	21	46	36	45
Copper	7440-50-8	5	mg/kg	14	12	7	6	7
Lead	7439-92-1	5	mg/kg	8	8	7	<5	6
Nickel	7440-02-0	2	mg/kg	10	11	5	3	4
Zinc	7440-66-6	5	mg/kg	16	15	13	10	13
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP50-01	TP50-02	TP14-01	TP14-03	TP14-04
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-044	EM1904350-045	EM1904350-046	EM1904350-048	EM1904350-049
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**79.6**	**90.2**	**84.7**	**65.3**	**85.2**
Toluene-D8	2037-26-5	0.2	%		**86.2**	**90.5**	**89.2**	**67.0**	**87.4**
4-Bromofluorobenzene	460-00-4	0.2	%		**78.9**	**85.1**	**80.2**	**68.4**	**87.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP15-02	TP15-03	TP16-01	TP16-03	TP17-02
			Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-051	EM1904350-052	EM1904350-053	EM1904350-055	EM1904350-058
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	7.4	7.5	7.3	7.4
EA055: Moisture Content								
Moisture Content	----	1.0	%	----	47.0	5.1	30.8	8.9
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	27.2	----	----	----	----
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	300	400	230	270	390
EG005(ED093)T: Total Metals by ICP-AES								
Barium	7440-39-3	10	mg/kg	40	----	----	----	----
Beryllium	7440-41-7	1	mg/kg	<1	----	----	----	----
Cobalt	7440-48-4	2	mg/kg	<2	----	----	----	----
Iron	7439-89-6	50	mg/kg	58600	----	----	----	----
Manganese	7439-96-5	5	mg/kg	30	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	6	10	6	9	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	45	39	44	38	44
Copper	7440-50-8	5	mg/kg	7	7	7	6	7
Lead	7439-92-1	5	mg/kg	5	5	6	<5	6
Nickel	7440-02-0	2	mg/kg	4	5	4	5	5
Zinc	7440-66-6	5	mg/kg	12	16	13	15	14
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP15-02	TP15-03	TP16-01	TP16-03	TP17-02
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-051	EM1904350-052	EM1904350-053	EM1904350-055	EM1904350-058
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
^ **Total Chlordane (sum)**	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP15-02	TP15-03	TP16-01	TP16-03	TP17-02
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-051	EM1904350-052	EM1904350-053	EM1904350-055	EM1904350-058
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
^ Sum of Phenols	----	0.5	mg/kg		<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP15-02	TP15-03	TP16-01	TP16-03	TP17-02
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-051	EM1904350-052	EM1904350-053	EM1904350-055	EM1904350-058
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**91.2**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**94.3**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**97.9**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**114**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**112**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**96.7**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**116**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**127**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**120**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**82.9**	**86.4**	**96.7**	**83.3**	**82.7**
Toluene-D8	2037-26-5	0.2	%		**76.5**	**76.0**	**85.8**	**80.4**	**82.2**
4-Bromofluorobenzene	460-00-4	0.2	%		**77.1**	**71.8**	**81.1**	**83.6**	**81.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP17-03	TP18-01	TP18-03	TP21-01	TP21-03
			Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-059	EM1904350-060	EM1904350-062	EM1904350-064	EM1904350-066
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.5	7.5	7.4	7.5	8.1
EA055: Moisture Content								
Moisture Content	----	1.0	%	40.7	5.4	28.4	3.0	12.3
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	330	380	200	<50	120
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	9	7	7	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	42	45	30	10	13
Copper	7440-50-8	5	mg/kg	7	7	5	<5	<5
Lead	7439-92-1	5	mg/kg	<5	7	<5	<5	<5
Nickel	7440-02-0	2	mg/kg	4	5	3	<2	6
Zinc	7440-66-6	5	mg/kg	13	14	11	<5	7
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP17-03	TP18-01	TP18-03	TP21-01	TP21-03
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-059	EM1904350-060	EM1904350-062	EM1904350-064	EM1904350-066
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**75.9**	**93.1**	**91.4**	**93.7**	**95.2**
Toluene-D8	2037-26-5	0.2	%		**75.5**	**87.1**	**89.9**	**87.1**	**80.6**
4-Bromofluorobenzene	460-00-4	0.2	%		**77.8**	**84.5**	**80.6**	**84.2**	**76.1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP19-01	TP19-03	TP20-01	TP20-03	TP40-01
			Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-067	EM1904350-069	EM1904350-070	EM1904350-072	EM1904350-073
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.7	7.0	7.9	6.9	8.0
EA055: Moisture Content								
Moisture Content	----	1.0	%	3.5	35.0	3.6	44.4	2.4
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	60	250	140	460	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	9	7	8	10	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	45	40	46	51	15
Copper	7440-50-8	5	mg/kg	7	7	8	7	10
Lead	7439-92-1	5	mg/kg	<5	5	7	<5	<5
Nickel	7440-02-0	2	mg/kg	4	4	6	4	10
Zinc	7440-66-6	5	mg/kg	14	12	18	10	12
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP19-01	TP19-03	TP20-01	TP20-03	TP40-01
				Client sampling date / time	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	21-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-067	EM1904350-069	EM1904350-070	EM1904350-072	EM1904350-073
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**86.6**	**89.4**	**88.3**	**83.5**	**82.3**
Toluene-D8	2037-26-5	0.2	%		**87.2**	**91.7**	**87.1**	**84.8**	**85.2**
4-Bromofluorobenzene	460-00-4	0.2	%		**89.2**	**92.1**	**95.7**	**87.1**	**85.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP40-02	TP40-03	TP41-01	TP41-02	TP42-01
			Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-074	EM1904350-075	EM1904350-076	EM1904350-077	EM1904350-078
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.9	7.9	----	7.6	7.8
EA055: Moisture Content								
Moisture Content	----	1.0	%	3.4	2.4	----	3.5	2.6
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	----	2.3	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Barium	7440-39-3	10	mg/kg	----	----	80	----	----
Beryllium	7440-41-7	1	mg/kg	----	----	<1	----	----
Cobalt	7440-48-4	2	mg/kg	----	----	5	----	----
Iron	7439-89-6	50	mg/kg	----	----	17500	----	----
Manganese	7439-96-5	5	mg/kg	----	----	138	----	----
Silver	7440-22-4	2	mg/kg	----	----	<2	----	----
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	23	16	20	28	20
Copper	7440-50-8	5	mg/kg	13	11	10	14	13
Lead	7439-92-1	5	mg/kg	7	5	6	8	6
Nickel	7440-02-0	2	mg/kg	12	11	10	14	12
Zinc	7440-66-6	5	mg/kg	14	14	17	19	14
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	<1	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP40-02	TP40-03	TP41-01	TP41-02	TP42-01
				Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-074	EM1904350-075	EM1904350-076	EM1904350-077	EM1904350-078
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		----	----	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg		----	----	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	<0.05	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	----	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	----	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	----	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	----	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg		----	----	<2	----	----
^ Sum of Phenols	----	0.5	mg/kg		----	----	<0.5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP40-02	TP40-03	TP41-01	TP41-02	TP42-01
				Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-074	EM1904350-075	EM1904350-076	EM1904350-077	EM1904350-078
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		----	----	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	----	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP40-02	TP40-03	TP41-01	TP41-02	TP42-01
			Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-074	EM1904350-075	EM1904350-076	EM1904350-077	EM1904350-078
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	88.3	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	97.3	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	98.0	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	105	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	104	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	90.8	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	109	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	120	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	114	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	94.8	90.9	85.5	82.6	86.7
Toluene-D8	2037-26-5	0.2	%	95.6	85.2	84.6	90.8	88.6
4-Bromofluorobenzene	460-00-4	0.2	%	94.4	88.9	86.1	85.4	87.6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP42-02	TP25-01	TP25-02	TP25-03	TP26-01
			Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-079	EM1904350-080	EM1904350-082	EM1904350-083	EM1904350-084
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.8	8.1	----	8.0	8.0
EA055: Moisture Content								
Moisture Content	----	1.0	%	2.6	4.6	----	10.4	4.2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	----	----	15.4	----	----
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	----	----	240	120	190
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	<1
Chromium	7440-47-3	2	mg/kg	18	24	----	23	24
Copper	7440-50-8	5	mg/kg	12	12	----	12	13
Lead	7439-92-1	5	mg/kg	7	8	----	8	8
Nickel	7440-02-0	2	mg/kg	11	12	----	15	13
Zinc	7440-66-6	5	mg/kg	16	18	----	17	17
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	<50	<50
EP080: BTEXN								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP42-02	TP25-01	TP25-02	TP25-03	TP26-01
				Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-079	EM1904350-080	EM1904350-082	EM1904350-083	EM1904350-084
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**96.7**	**82.4**	----	**83.7**	**85.0**
Toluene-D8	2037-26-5	0.2	%		**95.6**	**88.2**	----	**87.3**	**84.4**
4-Bromofluorobenzene	460-00-4	0.2	%		**97.7**	**85.1**	----	**88.3**	**86.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP26-03	TP55-01	TP56-01	TP24-01	TP24-03
			Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-086	EM1904350-087	EM1904350-088	EM1904350-089	EM1904350-091
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	8.0	----	8.0	----	7.4
EA055: Moisture Content								
Moisture Content	----	1.0	%	11.2	----	3.0	----	7.1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	2.8	----	4.0	----
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	60	----	----	420	100
EG005(ED093)T: Total Metals by ICP-AES								
Barium	7440-39-3	10	mg/kg	----	120	----	210	----
Beryllium	7440-41-7	1	mg/kg	----	1	----	<1	----
Cobalt	7440-48-4	2	mg/kg	----	10	----	<2	----
Iron	7439-89-6	50	mg/kg	----	18800	----	24100	----
Manganese	7439-96-5	5	mg/kg	----	240	----	42	----
Silver	7440-22-4	2	mg/kg	----	<2	----	<2	----
Arsenic	7440-38-2	5	mg/kg	<5	6	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	15	21	13	24	20
Copper	7440-50-8	5	mg/kg	10	10	<5	6	<5
Lead	7439-92-1	5	mg/kg	6	9	5	<5	<5
Nickel	7440-02-0	2	mg/kg	10	13	5	5	3
Zinc	7440-66-6	5	mg/kg	11	15	7	52	7
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	<0.5	----	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	<1	----	<1	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP26-03	TP55-01	TP56-01	TP24-01	TP24-03
				Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-086	EM1904350-087	EM1904350-088	EM1904350-089	EM1904350-091
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg		----	<0.05	----	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	<0.05	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	<0.05	----	<0.05	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	<0.5	----	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	<0.5	----	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	<0.5	----	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	<1	----	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	<0.5	----	<0.5	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	<0.5	----	<0.5	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	<0.5	----	<0.5	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	<0.5	----	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	<0.5	----	<0.5	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	<0.5	----	<0.5	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	<0.5	----	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg		----	<2	----	<2	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP26-03	TP55-01	TP56-01	TP24-01	TP24-03
				Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-086	EM1904350-087	EM1904350-088	EM1904350-089	EM1904350-091
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
^ **Sum of Phenols**	----	0.5	mg/kg		----	<0.5	----	<0.5	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	<0.5	----	<0.5	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		----	<0.5	----	<0.5	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		----	<0.5	----	<0.5	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		----	**0.6**	----	**0.6**	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		----	**1.2**	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP26-03	TP55-01	TP56-01	TP24-01	TP24-03
				Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-086	EM1904350-087	EM1904350-088	EM1904350-089	EM1904350-091
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	93.5	----	92.0	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	93.9	----	97.4	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	95.2	----	99.9	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	96.4	----	97.9	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	96.3	----	97.3	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	81.1	----	78.0	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	102	----	99.9	----
Anthracene-d10	1719-06-8	0.5	%		----	112	----	113	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	105	----	103	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		89.0	86.3	88.0	82.8	83.0
Toluene-D8	2037-26-5	0.2	%		83.7	86.8	85.6	78.4	81.1
4-Bromofluorobenzene	460-00-4	0.2	%		86.2	87.8	87.6	81.4	82.6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP22-01	TP22-03	TP23-01	TP23-02	TP23-04
			Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit	EM1904350-093	EM1904350-095	EM1904350-097	EM1904350-098	EM1904350-100
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	8.3	8.3	8.2	8.0	8.3
EA055: Moisture Content								
Moisture Content	----	1.0	%	3.8	19.8	5.8	17.3	5.4
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	110	270	130	650	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	12	7	<5	8
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	24	26	22	28	25
Copper	7440-50-8	5	mg/kg	11	12	10	10	12
Lead	7439-92-1	5	mg/kg	9	13	10	12	10
Nickel	7440-02-0	2	mg/kg	15	26	13	11	14
Zinc	7440-66-6	5	mg/kg	18	19	15	18	18
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP22-01	TP22-03	TP23-01	TP23-02	TP23-04
				Client sampling date / time	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00
Compound	CAS Number	LOR	Unit		EM1904350-093	EM1904350-095	EM1904350-097	EM1904350-098	EM1904350-100
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**89.9**	**84.1**	**89.1**	**93.5**	**88.7**
Toluene-D8	2037-26-5	0.2	%		**88.8**	**73.4**	**79.8**	**81.9**	**74.8**
4-Bromofluorobenzene	460-00-4	0.2	%		**90.3**	**78.5**	**83.6**	**85.6**	**79.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	Composite 01	----	----	----	----
			Client sampling date / time	22-Mar-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1904350-103	--------	--------	--------	--------
				Result	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	**7.7**	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**19.3**	----	----	----	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	**68**	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	**2.60**	----	----	----	----
ED006: Exchangeable Cations on Alkaline Soils								
ø Exchangeable Calcium	----	0.2	meq/100g	**4.5**	----	----	----	----
ø Exchangeable Magnesium	----	0.2	meq/100g	**5.7**	----	----	----	----
ø Exchangeable Potassium	----	0.2	meq/100g	**0.9**	----	----	----	----
ø Exchangeable Sodium	----	0.2	meq/100g	**5.7**	----	----	----	----
ø Cation Exchange Capacity	----	0.2	meq/100g	**16.8**	----	----	----	----
ø Exchangeable Calcium Percent	----	0.2	%	**27.0**	----	----	----	----
ø Exchangeable Magnesium Percent	----	0.2	%	**33.7**	----	----	----	----
ø Exchangeable Potassium Percent	----	0.2	%	**5.1**	----	----	----	----
ø Exchangeable Sodium Percent	----	0.2	%	**34.1**	----	----	----	----
ø Calcium/Magnesium Ratio	----	0.2	-	**0.8**	----	----	----	----
ø Magnesium/Potassium Ratio	----	0.2	-	**6.6**	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	**4.86**	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	<0.5	----	----	----	----
Total Organic Carbon	----	0.5	%	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	RINSE-03	RINSE-04	TB-03	----	----
			Client sampling date / time	21-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1904350-001	EM1904350-081	EM1904350-101	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	5.37	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	----	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	----	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RINSE-03	RINSE-04	TB-03	----	----
				Client sampling date / time	21-Mar-2019 00:00	22-Mar-2019 00:00	22-Mar-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1904350-001	EM1904350-081	EM1904350-101	--------	--------
					Result	Result	Result	----	----
EP080: BTEXN - Continued									
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	**----**	**----**
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	**----**	**----**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**94.5**	**88.0**	**95.9**	**----**	**----**
Toluene-D8	2037-26-5	2	%		**93.7**	**88.2**	**92.9**	**----**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**96.4**	**90.4**	**96.8**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	36	140
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	38	128
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	33	139
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

LBW co Pty Ltd
184 Magill Road
Norwood
SA 5069

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Mark Peterson**

Report **647273-S**
Project name SPRINGWOOD DEVELOPMENT PSI
Project ID 191076
Received Date Mar 25, 2019

Client Sample ID			**SB04-03**	**TP02-06**
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**M19-Ma35294**	**M19-Ma35296**
Date Sampled			**Mar 19, 2019**	**Mar 20, 2019**
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50
BTEX				
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	98	102
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	8.8	7.5
Sulphate (as SO4)	30	mg/kg	230	< 30
% Moisture	1	%	12	< 1
Heavy Metals				
Arsenic	2	mg/kg	11	2.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	54	6.9
Copper	5	mg/kg	9.0	< 5
Lead	5	mg/kg	6.6	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	6.1	< 5
Zinc	5	mg/kg	19	< 5

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Mar 26, 2019	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Mar 26, 2019	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Mar 26, 2019	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Mar 26, 2019	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	Mar 26, 2019	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Sulphate (as SO4)	Melbourne	Mar 26, 2019	28 Day
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Metals M8	Melbourne	Mar 26, 2019	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Melbourne	Mar 26, 2019	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261
Site # 23736

Company Name:	LBW co Pty Ltd	**Order No.:**		**Received:**	Mar 25, 2019 2:00 PM
Address:	184 Magill Road	**Report #:**	647273	**Due:**	Apr 1, 2019
	Norwood	**Phone:**	08 8331 2417	**Priority:**	5 Day
	SA 5069	**Fax:**	08 8331 2415	**Contact Name:**	Mark Peterson
Project Name:	SPRINGWOOD DEVELOPMENT PSI				
Project ID:	191076				

Eurofins | mgt Analytical Services Manager : Savini Suduweli

Sample Detail						pH (1:5 Aqueous extract at 25°C as rec.)	Sulphate (as SO4)	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
External Laboratory											
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	SB04-03	Mar 19, 2019		Soil	M19-Ma35294	X	X	X	X	X	X
2	TP02-06	Mar 20, 2019		Soil	M19-Ma35296	X	X	X	X	X	X
Test Counts						2	2	2	2	2	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure, April 2011 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.2 2018
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.2 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	98			70-130	Pass	
TRH C10-C14	%	120			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	99			70-130	Pass	
Toluene	%	115			70-130	Pass	
Ethylbenzene	%	123			70-130	Pass	
m&p-Xylenes	%	113			70-130	Pass	
Xylenes - Total	%	117			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	104			70-130	Pass	
TRH C6-C10	%	92			70-130	Pass	
TRH >C10-C16	%	117			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	110			80-120	Pass	
Cadmium	%	103			80-120	Pass	
Chromium	%	117			80-120	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper			%	116			80-120	Pass	
Lead			%	116			80-120	Pass	
Mercury			%	113			75-125	Pass	
Nickel			%	112			80-120	Pass	
Zinc			%	110			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M19-Ma31739	NCP	%	95			70-130	Pass	
TRH C10-C14	M19-Ma32373	NCP	%	106			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M19-Ma31739	NCP	%	87			70-130	Pass	
Toluene	M19-Ma31739	NCP	%	95			70-130	Pass	
Ethylbenzene	M19-Ma31739	NCP	%	96			70-130	Pass	
m&p-Xylenes	M19-Ma31739	NCP	%	90			70-130	Pass	
o-Xylene	M19-Ma31739	NCP	%	95			70-130	Pass	
Xylenes - Total	M19-Ma31739	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M19-Ma31739	NCP	%	86			70-130	Pass	
TRH C6-C10	M19-Ma31739	NCP	%	88			70-130	Pass	
TRH >C10-C16	M19-Ma32373	NCP	%	103			70-130	Pass	
Spike - % Recovery									
				Result 1					
Sulphate (as SO4)	M19-Ma29785	NCP	%	114			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M19-Ma35630	NCP	%	111			75-125	Pass	
Cadmium	M19-Ma35630	NCP	%	114			75-125	Pass	
Chromium	M19-Ma35630	NCP	%	120			75-125	Pass	
Copper	M19-Ma35630	NCP	%	117			75-125	Pass	
Lead	M19-Ma35630	NCP	%	117			75-125	Pass	
Mercury	M19-Ma35630	NCP	%	120			70-130	Pass	
Nickel	M19-Ma35630	NCP	%	116			75-125	Pass	
Zinc	M19-Ma35630	NCP	%	117			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M19-Ma37615	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M19-Ma32417	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M19-Ma32417	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M19-Ma32417	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M19-Ma37615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M19-Ma37615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M19-Ma37615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M19-Ma37615	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M19-Ma37615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M19-Ma37615	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M19-Ma37615	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M19-Ma37615	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	M19-Ma32417	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M19-Ma32417	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M19-Ma32417	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
pH (1:5 Aqueous extract at 25°C as rec.)	B19-Ma34751	NCP	pH Units	9.1	9.3	pass	30%	Pass	
Sulphate (as SO4)	M19-Ma29781	NCP	mg/kg	< 30	< 30	<1	30%	Pass	
% Moisture	M19-Ma35294	CP	%	12	12	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M19-Ma35630	NCP	mg/kg	4.1	4.3	3.0	30%	Pass	
Cadmium	M19-Ma35630	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M19-Ma35630	NCP	mg/kg	5.9	6.0	2.0	30%	Pass	
Copper	M19-Ma35630	NCP	mg/kg	7.8	7.9	1.0	30%	Pass	
Lead	M19-Ma35630	NCP	mg/kg	22	22	<1	30%	Pass	
Mercury	M19-Ma35630	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M19-Ma35630	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	M19-Ma35630	NCP	mg/kg	70	72	3.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Authorised By

Savini Suduweli	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)

Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

LBW co Pty Ltd
184 Magill Road
Norwood
SA 5069

Attention: **Mark Peterson**

Report **647553-S**
Project name SPRINGWOOD DEVELOPMENT PSI
Project ID 191076
Received Date Mar 26, 2019

Client Sample ID			**TP13-06**	**TP14-05**	**TP40-04**	**TP23-05**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M19-Ma37524**	**M19-Ma37525**	**M19-Ma37526**	**M19-Ma37527**
Date Sampled			**Mar 21, 2019**	**Mar 21, 2019**	**Mar 22, 2019**	**Mar 22, 2019**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	58	69	61	69
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	9.4	8.3	8.9	9.8
Sulphate (as SO4)	30	mg/kg	-	1000	-	-
% Moisture	1	%	3.6	8.0	2.5	6.4
Heavy Metals						
Arsenic	2	mg/kg	2.5	6.6	3.3	10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	9.2	53	19	39
Copper	5	mg/kg	< 5	7.6	9.9	13
Lead	5	mg/kg	< 5	9.8	6.6	14
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	6.9	12	21
Zinc	5	mg/kg	< 5	19	21	33

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Mar 28, 2019	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Mar 28, 2019	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Mar 28, 2019	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Mar 28, 2019	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	Mar 28, 2019	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Sulphate (as SO4)	Melbourne	Mar 28, 2019	28 Day
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Metals M8	Melbourne	Mar 28, 2019	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Melbourne	Mar 27, 2019	14 Day
- Method: LTM-GEN-7080 Moisture			

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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: LBW co Pty Ltd
Address: 184 Magill Road
Norwood
SA 5069

Project Name: SPRINGWOOD DEVELOPMENT PSI
Project ID: 191076

Order No.:
Report #: 647553
Phone: 08 8331 2417
Fax: 08 8331 2415

Received: Mar 26, 2019 6:15 PM
Due: Apr 3, 2019
Priority: 5 Day
Contact Name: Mark Peterson

Eurofins | mgt Analytical Services Manager : Savini Suduweli

Sample Detail						pH (1:5 Aqueous extract at 25°C as rec.)	Sulphate (as SO4)	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
External Laboratory											
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	TP13-06	Mar 21, 2019		Soil	M19-Ma37524	X		X	X	X	X
2	TP14-05	Mar 21, 2019		Soil	M19-Ma37525	X	X	X	X	X	X
3	TP40-04	Mar 22, 2019		Soil	M19-Ma37526	X		X	X	X	X
4	TP23-05	Mar 22, 2019		Soil	M19-Ma37527	X		X	X	X	X
Test Counts						4	1	4	4	4	4

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure, April 2011 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.2 2018
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.2 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	102			70-130	Pass	
TRH C10-C14	%	129			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	110			70-130	Pass	
Toluene	%	104			70-130	Pass	
Ethylbenzene	%	111			70-130	Pass	
m&p-Xylenes	%	104			70-130	Pass	
Xylenes - Total	%	108			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	106			70-130	Pass	
TRH C6-C10	%	93			70-130	Pass	
TRH >C10-C16	%	130			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	110			80-120	Pass	
Cadmium	%	102			80-120	Pass	
Chromium	%	120			80-120	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper			%	114			80-120	Pass	
Lead			%	119			80-120	Pass	
Mercury			%	113			75-125	Pass	
Nickel			%	111			80-120	Pass	
Zinc			%	110			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S19-Ma35101	NCP	%	87			70-130	Pass	
TRH C10-C14	S19-Ma35149	NCP	%	79			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S19-Ma35101	NCP	%	83			70-130	Pass	
Toluene	S19-Ma35101	NCP	%	78			70-130	Pass	
Ethylbenzene	S19-Ma35101	NCP	%	83			70-130	Pass	
m&p-Xylenes	S19-Ma35101	NCP	%	79			70-130	Pass	
o-Xylene	S19-Ma35101	NCP	%	89			70-130	Pass	
Xylenes - Total	S19-Ma35101	NCP	%	82			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S19-Ma35101	NCP	%	79			70-130	Pass	
TRH C6-C10	S19-Ma35101	NCP	%	82			70-130	Pass	
TRH >C10-C16	S19-Ma35149	NCP	%	77			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M19-Ma39542	NCP	%	103			75-125	Pass	
Cadmium	M19-Ma39542	NCP	%	107			75-125	Pass	
Chromium	M19-Ma39542	NCP	%	118			75-125	Pass	
Copper	M19-Ma39542	NCP	%	110			75-125	Pass	
Lead	M19-Ma39542	NCP	%	116			75-125	Pass	
Mercury	M19-Ma39542	NCP	%	110			70-130	Pass	
Nickel	M19-Ma39542	NCP	%	107			75-125	Pass	
Zinc	M19-Ma39542	NCP	%	118			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C16-C34	M19-Ma35506	NCP	%	47			70-130	Fail	Q08
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	K19-Ma37480	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S19-Ma35138	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S19-Ma35138	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S19-Ma35138	NCP	mg/kg	< 50	82	59	30%	Fail	Q15
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	K19-Ma37480	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	K19-Ma37480	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	K19-Ma37480	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	K19-Ma37480	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	K19-Ma37480	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	K19-Ma37480	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	K19-Ma37480	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	K19-Ma37480	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S19-Ma35138	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
pH (1:5 Aqueous extract at 25°C as rec.)	M19-Ma39815	NCP	pH Units	9.3	9.3	pass	30%	Pass	
% Moisture	M19-Ma37517	NCP	%	7.4	8.0	8.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M19-Ma39542	NCP	mg/kg	4.3	4.3	<1	30%	Pass	
Cadmium	M19-Ma39542	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M19-Ma39542	NCP	mg/kg	12	13	1.0	30%	Pass	
Copper	M19-Ma39542	NCP	mg/kg	11	11	<1	30%	Pass	
Lead	M19-Ma39542	NCP	mg/kg	20	19	<1	30%	Pass	
Mercury	M19-Ma39542	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M19-Ma39542	NCP	mg/kg	6.2	6.1	1.0	30%	Pass	
Zinc	M19-Ma39542	NCP	mg/kg	49	49	1.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Savini Suduweli	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)

Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

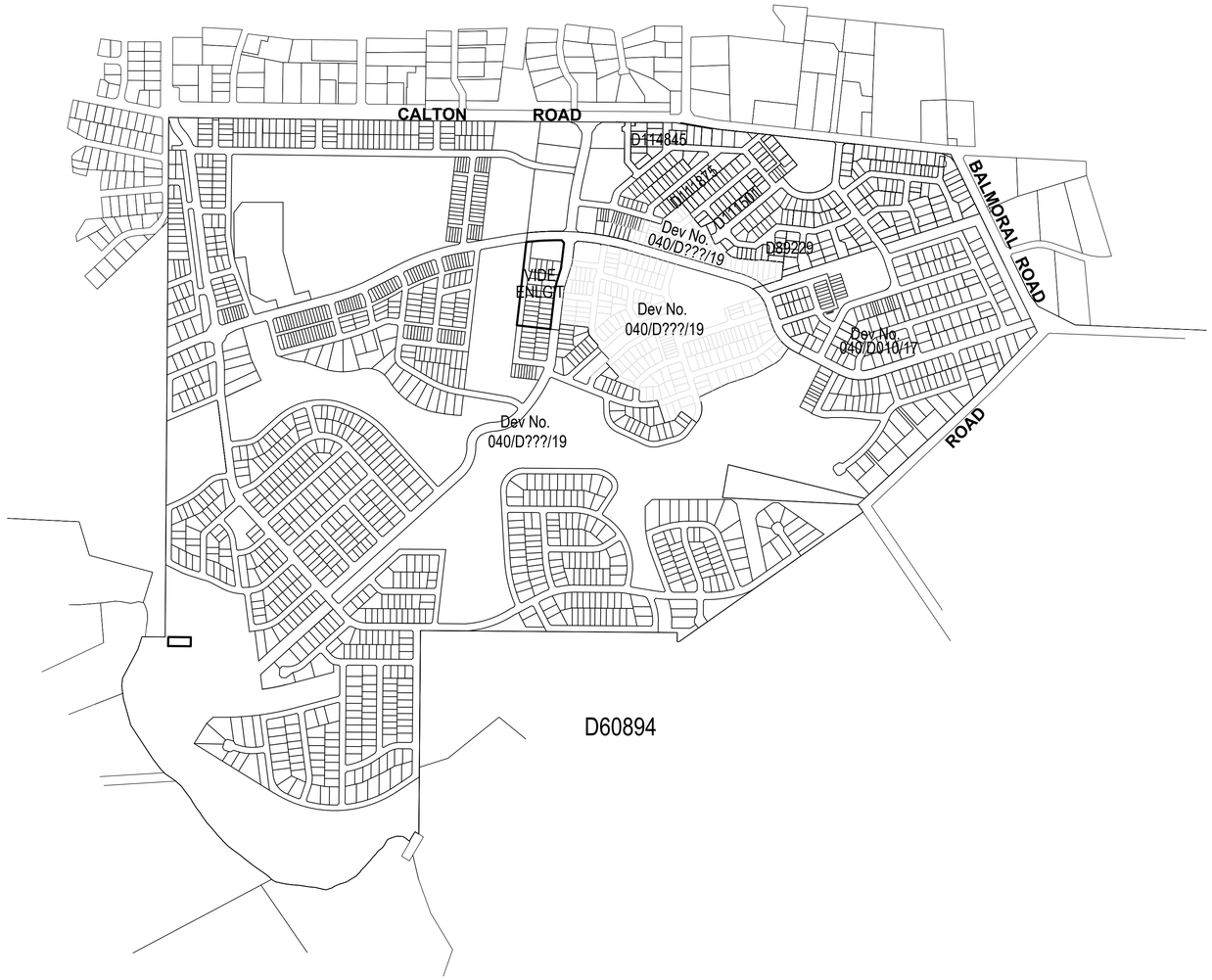
Appendix M

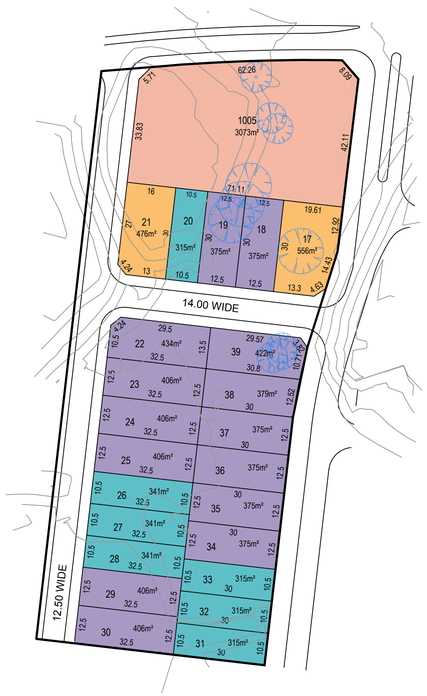
Site Development Plans

Development No. / /
Town of Gawler

Proposed Plan of Division
Allotment 9002 in Dev No. 490/D???/19
Hundred of Barossa
in the area named
GAWLER EAST

PT CT 6205/146





	Super Conventional (22+)	0
	Conventional (20)	0
	Traditional (17 - 19)	0
	Courtyard (14 - 17)	2
	Villa (12.5)	14
	Villa (10.5)	7
	Terrace	0
	Total	23
	Other	1
	Total	24

0 10 20 40 60 80 100 m

1:1000

N
W E
S

Regulated tree

No. of proposed allotments	24
Area of division	1.521ha
Reserve area	0.000ha
Length of new roads	790m

Contour interval 2m.
Datum AHD.

Vide Titles for disposition of easements

Road pavements shown are indicative only.

Not to be used for detailed engineering design.

Dimensions and areas are subject to survey.

 Original Sheet Size A1

Glenn Ian Hordacre
LICENSED SURVEYOR

REF:	**A010816.0000**
DWG NO.:	A010816-CG PROP2 REV C
REVISION:	C
DEL	12.06.2019

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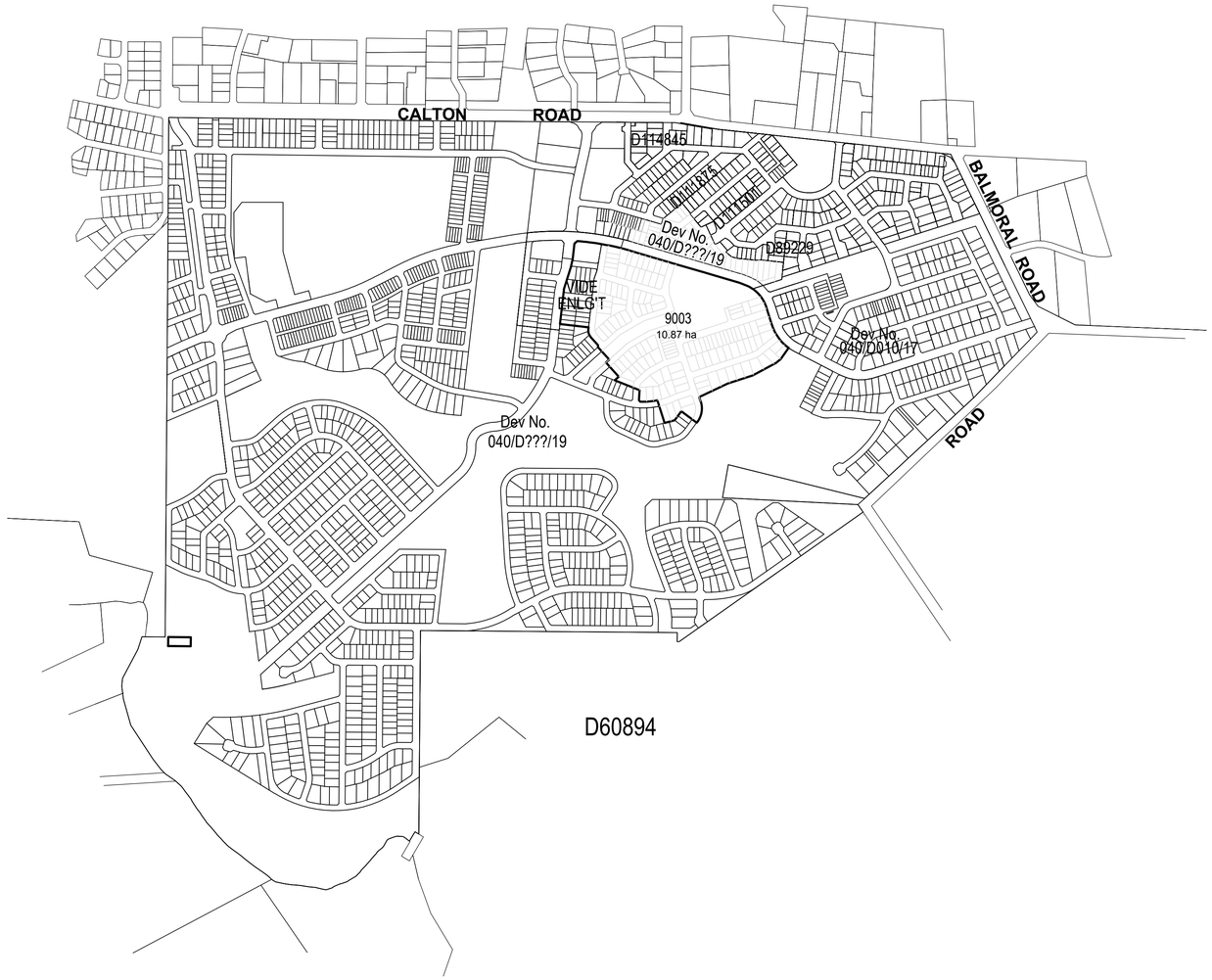
+ Property + Land Development +
+ Construction + Mining +
+ Spatial Information Management +

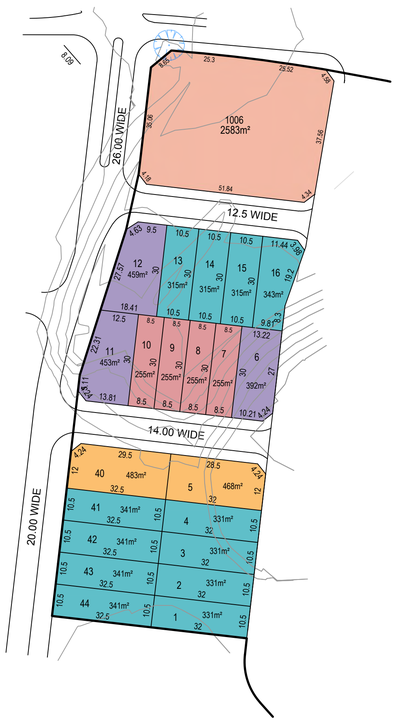
Alexander Symonds Surveying Consultants

Development No. / /
Town of Gawler

Proposed Plan of Division
Allotment 9000 in Dev No. 490/D???/19
Hundred of Barossa
in the area named
GAWLER EAST

PT CT 6212/430
PT CT 6205/146
PT CT 6162/334





	Super Conventional (22+)	0
	Conventional (20)	0
	Traditional (17 - 19)	0
	Courtyard (14 - 17)	2
	Villa (12.5)	3
	Villa (10.5)	12
	Terrace	4
	Total	21
	Other	1
	Total	22

0 10 20 40 60 80 100 m

1:1000

N
W E
S

No. of proposed allotments	22
Area of division	1.149ha
Reserve area	0.000ha
Length of new roads	120m

Contour interval 2m.
Datum AHD.

Vide Titles for disposition of easements

Road pavements shown are indicative only.

Not to be used for detailed engineering design.

Dimensions and areas are subject to survey.

 Original Sheet Size A1

Glenn Ian Hordacre
LICENSED SURVEYOR

REF:	**A010816.0000**
DWG NO.:	A010816-CG PROP3 REV A
REVISION:	B
DEL	10.06.2019

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+ Property + Land Development +
+ Construction + Mining +
+ Spatial Information Management +

Alexander Symonds Surveying Consultants

Springwood Flora and Fauna Assessment

March 2019

Springwood Flora and Fauna Assessment March 2019

13 June 2019

Version 2

Prepared by EBS Ecology for Arcadian Property

Document Control					
Revision No.	Date issued	Authors	Reviewed by	Date Reviewed	Revision type
1	14/03/2019	A. Sinel	EBS Ecology	02/05/2019	Draft
	07/06/2019	A. Sinel	EBS Ecology	07/06/2019	Final

Distribution of Copies			
Revision No.	Date issued	Media	Issued to
1	02/05/2019	Electronic	Warwick Mittiga, Chief Executive Officer, Arcadian Property
2	07/06/2019	Electronic	Warwick Mittiga, Chief Executive Officer, Arcadian Property

EBS Ecology Project Number: E90301

CITATION: EBS Ecology (2019) Springwood Flora and Fauna Assessment March 2019. Report to Arcadian Property. EBS Ecology, Adelaide.

Cover photograph: Springwood Creek looking east from Lomandra Grassland.

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GLOSSARY AND ABBREVIATION OF TERMS

BAM	Bushland Assessment Method
BDBSA	Biological Database of South Australia
DEW	Department for Environment and Water
DotEE	Department of the Environment and Energy
EBS	EBS Ecology
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
IBRA	Interim Biogeographical Regionalisation of Australia
LGA	Local Government Area
NPW Act	National Parks and Wildlife Act 1974
NRM Act	Natural Resources Management Act 2004
NV Act	Native Vegetation Act 1991
NVIS	Normalised Vegetation Information System
PMST	Protected Matters Search Tool
SEB	Significant Environmental Benefit
SPRAT	Species Profile and Threats Database
TEC	Threatened Ecological Community
TPZ	Tree Protection Zone

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1 INTRODUCTION

EBS Ecology (EBS) was engaged by Arcadian Property (Arcadian) to undertake a review of the land at Gawler being utilised for the Springwood Development. This land was first assessed in November 2008 and then seasonally through to 2010 by Kellogg Brown and Root (KBR) on behalf of Delfin Lend Lease which involved rigorous ecological assessments of the area utilising both flora and fauna survey methods (Appendix 3). This included the use of pitfall trapping to analyse inconspicuous species such as small reptiles and mammals. A number of ecological constraints were identified within this report and this directed the future planning of the Springwood Development with a view to avoiding key areas where possible.

The review was undertaken to update changes (if any) to species of conservation significance and if the ecological conditions present at the time of the 2010 survey were still relevant to the current Springwood Masterplan. The desktop assessment involved searching Commonwealth and State databases to identify threatened species potentially occurring or known from the proposed Springwood Development site, as well as relevant matters of national environmental significance and other matters protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *National Parks and Wildlife Act 1972* (NPW Act). A review of other available background information sources such as Naturemaps was also conducted.

The field survey, which was conducted on 18 March 2019, included a roaming fauna survey and was largely focussed on ground-truthing the ecological values as presented in KBR (2010). For all background survey methods and detailed results please refer to that report in the first instance.

1.1 Objectives

Specifically the objectives of this report are to:

- Conduct database searches to identify matters of national and state environmental significance (*Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters database via the online Protected Matters Search Tool (PMST) and NatureMaps Supertable results);
- Review previous biological surveys, data and reports to highlight data gaps and key issues;
- Review existing mapping data (e.g. vegetation communities, vegetation condition and aerial photographs);
- Ground truth and confirm the outcomes and findings of the desktop study by conducting a field assessment;

1.2 Springwood development area

The Springwood Development is located on the south eastern fringe of the Town of Gawler, SA approximately 39 km north east of the Adelaide CBD (Figure 1).

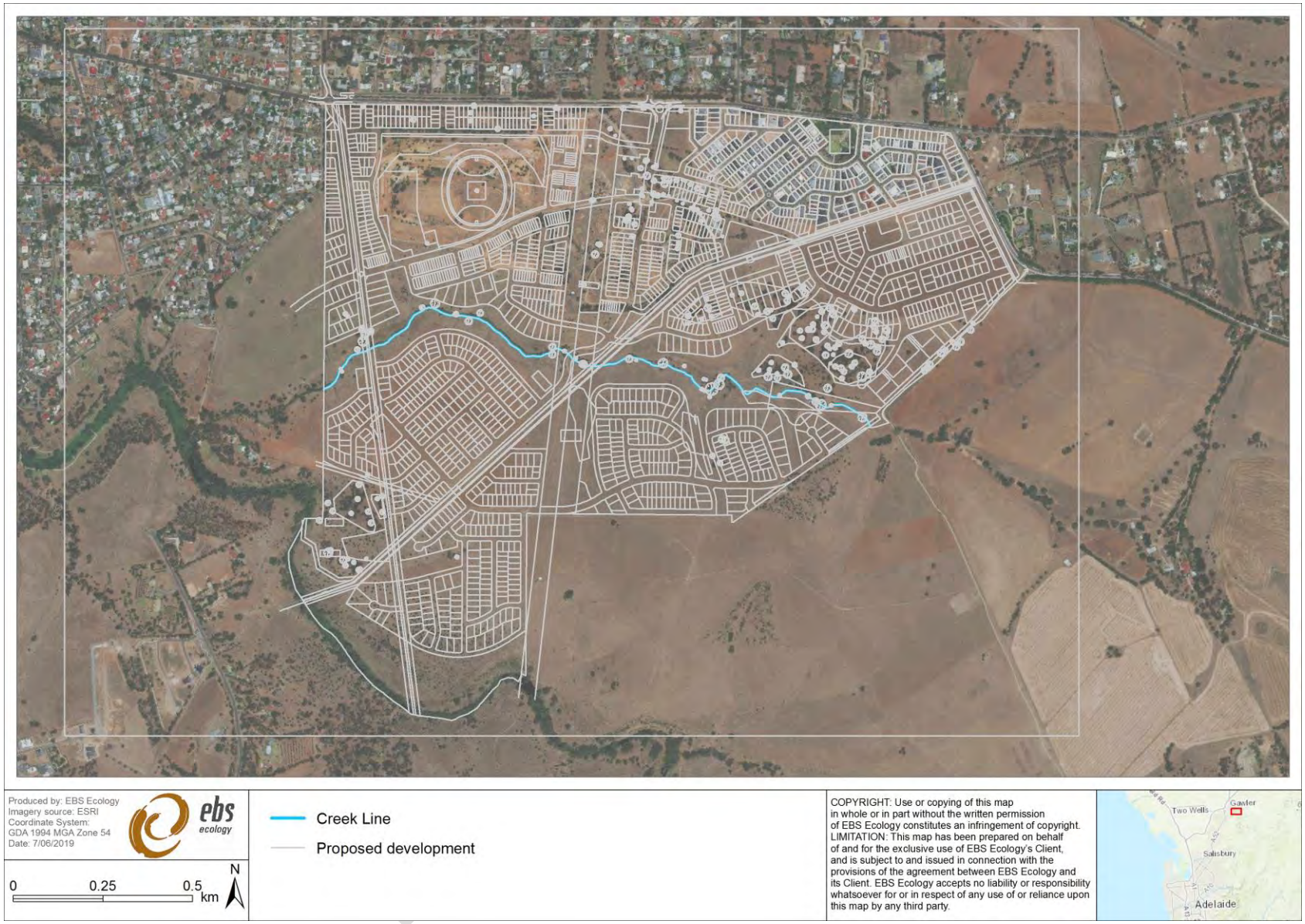


Figure 1. Location of the Springwood Development with masterplan layout.

2 COMPLIANCE AND LEGISLATIVE SUMMARY

2.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act and the *Environment Protection and Biodiversity Conservation Regulations 2000* provide a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the Act as 'matters of national environmental significance'. The nine matters of national environmental significance protected under the Act are:

1. World Heritage properties
2. National Heritage places
3. Wetlands of international importance (listed under the RAMSAR Convention)
4. Listed threatened species and ecological communities
5. Migratory species protected under international agreements
6. Commonwealth marine areas
7. The Great Barrier Reef Marine Park
8. Nuclear actions (including uranium mines
9. A water resource, in relation to coal seam gas development and large coal mining development

Any action that has, will have, or is likely to have a significant impact on matters of national environmental significance requires referral under the EPBC Act. Substantial penalties apply for undertaking an action that has, will have or is likely to have significant impact on a matter of national environmental significance without approval.

2.2 Native Vegetation Act 1991

Native vegetation within the Springwood Development area is protected under the *Native Vegetation Act 1991* (NV Act) and *Native Vegetation Regulations 2017* which has been updated since the previous survey. Any proposed clearance of native vegetation in South Australia (unless exempt under the *Native Vegetation Regulations 2017*) is to be assessed against the NV Act Principles of Clearance, and requires approval from the Native Vegetation Council (NVC). A net environmental benefit is generally conditional on an approval being granted. This project is considered to be relevant under exemption Regulation 12(35) – Residential subdivision to allow clearance of vegetation in connection with residential subdivision, associated house sites, roads and other associated infrastructure.

Applications for clearance approval and development approval are encouraged to be made at the same time. In determining the SEB, the NVC must be provided with written notification of the entire clearance footprint at the allotment scale which includes clearance for the dwelling and any associated structures; clearance within 10 metres of a building for maintenance; fences; vehicle tracks; and any additional clearance for fire safety. Individual regulations for these clearance activities will not apply in connection to new subdivisions and must be considered at this stage.

Depending on how large the allotments, consideration of all areas for the dwelling (and associated clearance) should occur, including those areas that involve no vegetation clearance situated on a different part of the block (or where the vegetation is shown to be less significant or more degraded than the vegetation proposed to be cleared).

This regulation ensures adequate planning is undertaken for residential subdivisions and the associated house site and residual clearance required. If clearance is avoided and minimised at this stage, the SEB requirement can also be minimised.

Clearance can only occur once development approval has been granted and the NVC have approved the clearance and SEB.

2.3 National Parks and Wildlife Act 1972

Native plants and animals in South Australia are protected under the *National Parks and Wildlife Act 1972* (NPW Act). It is an offence to take a native plant or protected animal without approval. Threatened plant and animal species are listed in Schedules 7 (endangered species), 8 (vulnerable species) and 9 (rare species) of the Act. Persons must not:

- Take a native plant on a reserve, wilderness protection area, wilderness protection zone, land reserved for public purposes, a forest reserve or any other Crown land;
- Take a native plant of a prescribed species on private land;
- Take a native plant on private land without the consent of the owner (such plants may also be covered by the NV Act);
- Take a protected animal or the eggs of a protected animal without approval;
- Keep protected animals unless authorised to do so; and
- Use poison to kill a protected animal without approval.

Conservation rated flora and fauna species listed on Schedules 7, 8, or 9 of the NPW Act are known to or may occur within the Springwood Development area. Persons must comply with the conditions imposed upon permits and approvals.

2.4 Natural Resources Management Act 2004

Under the *Natural Resources Management Act 2004* (NRM Act) landholders have a legal responsibility to manage declared pest plants and animals and prevent land and water degradation.

Key components under the Act include the establishment of regional Natural Resource Management (NRM) Boards and development of regional NRM Plans; the ability to control water use through prescription, allocations and restrictions; requirement to control pest plants and animals and activities that might result in land degradation.

3 BACKGROUND INFORMATION

3.1 Project background

The Springwood Development masterplan has allocated 74 hectares of open space, equating to 34% of the overall area. Primarily farmland, the Springwood Development area also includes a tributary of the south Para River, from this point onwards referred to as Springwood Creek.

3.2 Environmental setting

3.2.1 IBRA

The Interim Biogeographical Regionalisation of Australia (IBRA) identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. The bioregions are further refined into subregions and environmental associations (DotEE, 2012). The Springwood Development area is located within the Flinders Lofty Block IBRA Bioregion, the Mt Lofty Ranges IBRA Subregion and the Rosedale Environmental associations.

Native vegetation remnancy figures for IBRA subregions and associations are useful for setting regional landscape targets. Approximately 15% (46,342 ha) of the Mt Lofty Ranges Subregion is mapped as remnant vegetation, of which 27% (12,706 ha) is formally conserved. Areas are formally conserved and protected within National Parks and Wildlife reserves, private Heritage Agreements under the NV Act and Indigenous Protected Areas. A full summary is provided below in Table 1.

Table 1. IBRA bioregion, subregion, and environmental association environmental landscape summary.

Flinders Lofty Block IBRA bioregion	
Temperate to arid Proterozoic ranges, alluvial fans and plains, and some outcropping volcanics, with the semi-arid to arid north supporting Native Cypress, Black Oak (Belah) and Mallee open woodlands, *Eremophila* and *Acacia* shrublands, and Bluebush/Saltbush chenopod shrublands on shallow, well-drained loams and moderately-deep, well-drained red duplex soils. The increase in rainfall to the south corresponds with an increase in low open woodlands of *Eucalyptus obliqua* and E. *baxteri* on deep lateritic soils, and E. *fasciculosa* and *E. cosmophylla* on shallower or sandy soils.	
Mount Lofty Ranges IBRA subregion	
This subregion extends from north of the Fleurieu Peninsula to the Barossa Valley, and is predominantly an undulating to low hilly upland with steeper marginal ranges and hills. The Barossa Valley is the lowest area in this subregion and represents a structural basin. The rest of the subregion consists of hilly uplands on sandstone and shale with northerly trending strike ridges and dissected lateritic tableland remnants. Low open woodland commonly dominated by *Eucalyptus obliqua* and *E. baxteri* are found in higher rainfall areas on deep, lateritic soils. Shallower or sandy soils support *E. fasciculosa, E cosmophylla* and in the northern part of the region *E. goniocalyx*. *E leucoxylon* dominates the woodlands on podzolised soils in the lower rainfall areas*, E. viminalis* ssp. *cygnetensis* dominate the wetter and cooler woodlands and *E. odorata* characterises drier sites. Eucalypts give way to drooping sheoak (*Allocasuarina verticillata*) in the most arid woodlands and in coastal situations on shallow rocky soils.	
Remnant vegetation	Approximately 15% (46,342 ha) of the subregion is mapped as remnant native vegetation, of which 27% (12,706ha) is formally conserved
Landform	Hills and valleys; alternating subparallel hilly ridges and valleys with a general N-S trend in north. In south, hilly dissected tableland.

Geology	Dissected lateralised surface in south
Soil	Hard setting loams with red clayey subsoils, Highly calcareous loamy earths, Hard setting loams with mottled yellow clayey subsoil, Coherent sandy soils, Cracking clays.
Vegetation	Eucalyptus woodlands with a shrubby understorey.
Conservation significance	129 species of threatened fauna, 270 species of threatened flora. 4 wetlands of national significance.
Rosedale IBRA environmental association	
Remnant vegetation	Approximately 5% (3,089 ha) of the association is mapped as remnant native vegetation, of which 11% (331 ha) is formally conserved
Landform	Undulating to rolling plain on shale with broad floodplains.
Geology	Shale and alluvium.
Soil	Hard pedal red duplex soils, reddish friable loams and brown self-mulching cracking clays.
Vegetation	Open parkland of SA Blue gum, Sugar Gum, River Red gum or exotic conifers.
Conservation significance	70 species of threatened fauna, 66 species of threatened flora. 0 wetlands of national significance.

3.2.2 Administrative boundaries

The Springwood Development area falls within The Gawler and the Barossa Councils Local Government Areas (LGA's). From an environmental perspective, the area is situated within the Adelaide and Mount Lofty Ranges (AMLRNRM) Board area.

4 METHODS

4.1 Desktop assessment

A PMST report was generated on 26 March 2019 to identify matters of national environmental significance under the EPBC Act relevant to the Springwood Development area (DotEE 2019). This was undertaken to identify any elements which may have changed since the KBR 2010 report. The PMST is maintained by the Department of the Environment and Energy (DotEE) and was used to identify flora and fauna species or ecological communities of national environmental significance that may occur or have suitable habitat within the Springwood Development area.

4.1.1 Database searches

Species listed under South Australia's NPW Act in the Springwood Development area were assessed using the BDBSA flora and fauna supertable overview. The dataset was obtained on 29th March 2019 and used to identify threatened species that have been recorded within the 5 km buffer of the Springwood Development area (DEW 2019) as well as having a spatial reliability of <1km and the record occurred within the past 30 years

4.1.2 Literature review

A review of the KBR flora and fauna survey report previously conducted within the Springwood Development area was undertaken to augment the desktop assessment. More specifically, to assist in the deliberation of the likelihood of occurrence of threatened species in the local area.

4.2 Field survey

The field survey was conducted on March 18 2019 by NVC accredited consultant Andrew Sinel. Areas highlighted from the review of the KBR report were targeted as well as any other areas that looked of higher potential ecological value. The quarry area was not assessed specifically however general observations were made based on previous surveys such as the presence of Peregrine Falcon.

4.3 Limitations

The content of the desktop assessment was derived from existing datasets and references from a range of sources. EBS has not attempted to verify the accuracy of any such information.

Flora and fauna records were sourced from the PMST and the Naturemaps flora and fauna supertable overviews. The flora and fauna super tables include verified flora and fauna records submitted to DEW or partner organisations. Although much of the data has been through a variety of validation processes, the lists may contain errors and should be used with caution. DEW give no warranty that the data is accurate or fit for any particular purpose of the user or any person to whom the user discloses the information.

The reliability of the data ranges from 100 m to over 100 km. Fauna species, in particular birds, also have the ability to traverse distances in excess of 20 km. It is also acknowledged that the presence of species may not be adequately represented by database records. Hence the PMST and supertable

results may not highlight all potential threatened flora and fauna species that may occur in the area, within a 5 km radius.

The findings and conclusions expressed by EBS are based solely upon information in existence at the time of the assessment. The combination of database records and background research have provided a solid foundation for determining the flora and fauna that are likely to, or are known to, occur within the Springwood Development area.

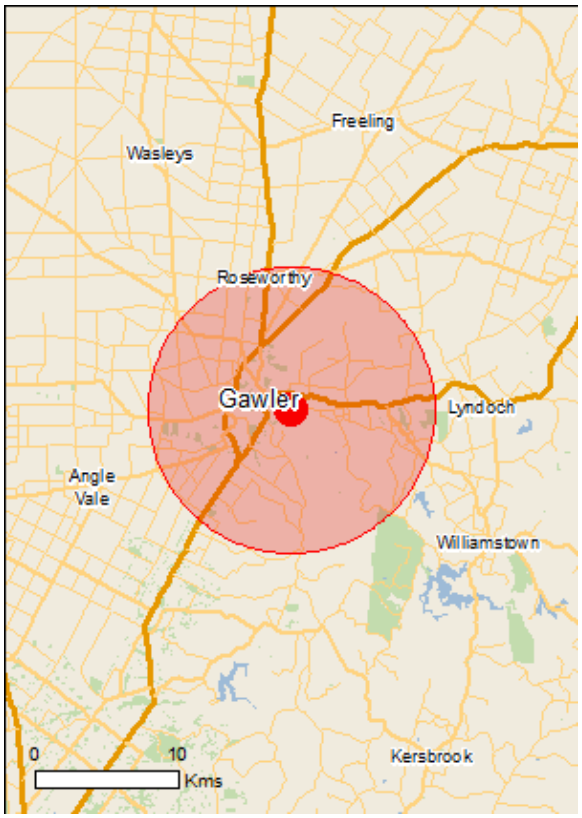
5 RESULTS

5.1 Matters of national environmental significance

Two threatened ecological communities (TECs), 28 threatened species and 13 migratory species were identified in the PMST as potentially occurring or having suitable habitat potentially occurring within 5 km of the Springwood Development area. The results of the EPBC Act PMST report are summarised in Table 2 (DotEE 2018).

The relevant matters of national environmental significance, other matters protected under the EPBC Act, and threatened species listed under the NPW Act are discussed in detail below (Table 2).

Table 2. Summary of the results of the EPBC Act Protected Matters Search Tool report.

Search area (20 km buffer)	Matters of National Environment Significance under the EPBC Act 1999	Identified within the search area
	World Heritage Properties	None
	National Heritage Properties	None
	Wetlands of International Significance	None
	Great Barrier Reef Marine Park	None
	Commonwealth Marine Areas	None
	Threatened Ecological Communities	2
	Threatened Species	28
	Migratory Species	13
	Commonwealth Lands	3
	Commonwealth Heritage Places	None
	Listed Marine Species	19
	Whales and other Cetaceans	None
	Critical Habitats	None
	Commonwealth Reserves	None
	State and Territory Reserves	3
	Regional Forest Agreements	None
	Invasive Species	45
	Nationally Important Wetlands	None

5.1.1 Threatened ecological communities

Two TECs were identified in the PMST as potentially occurring within 5 km of the Springwood Development area. A summary of these TECs and comment regarding their likelihood of occurrence in the area are provided in Table 3.

Table 3. The threatened ecological communities identified in the PMST and their likelihood of presence within the Springwood Development area.

Threatened Ecological Community	EPBC Status	Likelihood of occurrence in the Development area
Iron-grass Natural Temperate Grassland of South Australia	CE	Known
Peppermint Box (*E. odorata*) Grassy Woodland of South Australia	CE	Unlikely

A community fitting within the criteria for Iron-grass Temperate Grassland was observed by KBR (2010). The size and condition of the community meet the requirements of condition class B as described in the EPBC Policy Statement 3.7 (DEWR 2007). If development or adverse impact on this area was likely to occur, then the proposal will require referral to DoTEE. For a summary of this community please see section 7.2.1.

5.1.2 Nationally Threatened flora

Fourteen flora species listed as threatened under the EPBC Act were identified in the PMST as potentially occurring or having suitable habitat potentially occurring within 5 km of the Springwood Development area (Table 4). One of these species (*Olearia pannosa* ssp. *pannosa*) was also identified in the 5 km BDBSA search however was not recorded in the KBR surveys. This species was not observed during the 2019 site assessment. No other species from the EPBC search tool results were deemed likely to be present based on previous records and existing conditions.

5.1.3 State threatened flora

Eleven flora species listed as threatened under the NPW Act were identified in the BDBSA search as being previously recorded within 5 km of the Springwood Development area (Table 4). Nine of the NPW Act listed species were considered as likely or possibly occurring within the Springwood Development area (Table 4) based on previous surveys and available habitat. A full list of the BDBSA flora observations is provided in Appendix 1.

Table 4. Threatened flora species listed under the EPBC Act and NPW Act identified in the PMST (Source 1) and BDBSA (Source 2) database searches within 5 km of the Springwood Development area.

Scientific name	Common name	Conservation status		Source	BDBSA last record (year)	Likelihood of occurrence within Development area
		Aus	SA			
Acacia iteaphylla	Flinders Ranges Wattle		R	2	27/11/2002	Likely
Acacia trineura	Three-nerve Wattle		E	2	10/02/2012	Unlikely
Austrostipa densiflora	Fox-tail Spear-grass		R	2	11/11/2005	Possible
Austrostipa gibbosa	Swollen Spear-grass		R	2	28/10/2011	Possible
Austrostipa multispiculis	Many-flowered Spear-grass		R	2	20/11/2011	Possible

Scientific name	Common name	Conservation status		Source	BDBSA last record (year)	Likelihood of occurrence within Development area
		Aus	SA			
Bothriochloa macra	Red-leg Grass		R	2	21/09/2016	Likely
Caladenia argocalla	White beauty spider Orchid	EN		1		Unlikely
Caladenia behrii	Pink Lipped spider Orchid	EN		1		Unlikely
Caladenia rigida	White Spider-orchid	EN		1		Unlikely
Caladenia tensa	Greencomb Spider-orchid	EN		1		Unlikely
Caladenia xantholeuca	White Rabbits	EN		1		Unlikely
Cladium procerum	Leafy Twig-rush		R	2	31/01/2018	Possible
Corybas dentatus	Toothed Helmet Orchid	VU		1		Unlikely
Dianella longifolia var. grandis	Pale Flax-lily		R	2	1/07/2018	Possible
Euphrasia collina ssp. osbornii	Osbornes eyebright	EN		1		Unlikely
Maireana rohrlachii	Rohrlach's Bluebush		R	2	3/01/2013	Likely
Olearia pannosa ssp. pannosa	Silver Daisy-bush	VU	V	1,2	22/09/2015	Possible
Prasophyllum pallidum	Pale leek orchid	VU		1		Unlikely
Prasophyllum pruinosum	Plum Leek Orchid	EN		1		Unlikely
Prasophyllum validum	Sturdy leek Orchid	VU		1		Unlikely
Pterostylis psammophila	Two-bristle Greenhood	CE		1		Unlikely
Pterostylis sp. Hale	Hale Dwarf Greenhood	EN		1		Unlikely
Sclerolaena muricata var. villosa	Five-spine Bindyi		R	2	30/01/2018	Unlikely
Telymitra matthewsii	Spiral Sun Orchid	VU		1		Unlikely

Conservation status
Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare. ssp.: the conservation status applies at the sub-species level. Mi: Migratory species. (W): Wetland migratory species. (M): Marine migratory species. (T): Terrestrial migratory species. Ma: Marine species.

5.1.4 Nationally threatened fauna

Fourteen fauna species listed as threatened under the EPBC Act were identified in the PMST as potentially occurring or having suitable habitat potentially occurring within 5 km of the Springwood Development area (Table 5). Flinders Range Worm Lizard (*Aprasia pseudopulchella*) was considered likely to be present within the area based on available habitat and opportunistic observations made in the KBR 2010 report. The areas mapped as suitable habitat for this species in the KBR report have been avoided by the Springwood Masterplan.

5.1.5 State threatened fauna

Fourteen fauna species listed as threatened under the NPW Act were identified in the BDBSA search as being previously recorded within 5 km of the Springwood Development area (Table 5). Several of these were previously observed within the area by KBR (2010). Four species of state conservation significance were known onsite from the KBR surveys, Common Brushtail Possum (*Trichosurus vulpecula*), White Winged Chough (*Corcorax melanorhamphos*), Elegant Parrot (*Neophema elegans*) and Peregrine Falcon (*Falco peregrinus*). These are all likely to still utilise the site for some or all of the species habitat requirements. A further six were considered likely to utilise the area at some period (Table 5). A full list of the BDBSA flora observations is provided in Appendix 2.

Table 5. Threatened fauna species listed under the EPBC Act and NPW Act identified in the PMST (Source 1) and BDBSA (Source 2) database searches within 5 km of the Springwood Development area

Scientific name	Common name	Conservation status		Source	BDBSA last record (year)	Likelihood of occurrence within Development area
		Aus	SA			
Actitis hypoleucos	Common Sandpiper	Mi.		1		Unlikely
Aprasia pseudopulchella	Flinders Ranges Worm-lizard	VU		1		Known
Apus pacificus	Fork Tailed Swift	Mi.		1		Unlikely
Botaurus poiciloptilus	Australasian Bittern	EN		1		Unlikely
Calidris acuminata	Sharp-tailed Sandpiper	Mi.		1		Unlikely
Calidris ferruginea	Curlew Sandpiper	CE, Mi		1		Unlikely
Calidris melanotos	Pectoral Sandpiper	Mi.		1		Unlikely
Cinclosoma punctatum anachoreta	Spotted Quailthrush	CE		1		Unlikely
Corcorax melanorhamphos	White-winged Chough		R	2	31/08/2016	Known
Coturnix ypsilophora	Brown Quail		V	2	16/09/2015	Likely
Emydura macquarii	Macquarie River Turtle		V	2	14/10/2017	Possible
Falco peregrinus	Peregrine Falcon		R			Known
Falcunculus frontatus frontatus	Eastern Shriketit		R	2	2/03/2013	Likely
Gallinago hardwickii	Latham's Snipe	Mi.	R	2	23/11/2008	Unlikely
Grantiella picta	Painted Honeyeater	VU		1		Unlikely
Hirundapus caudacutus	White-throated Needletail	Mi.		1		Unlikely
Hylacola pyrrhopygia parkeri	Chestnut-rumped Heathwren	EN		1		Unlikely
Isoodon obesulus obesulus	Southern Brown Bandicoot	EN		1		Unlikely
Leipoa ocellata	Malleefowl	VU		1		Unlikely
Melithreptus gularis	Black-chinned Honeyeater		R	2	24/02/2012	Possible
Motacilla cinerea	Grey Wagtail	Mi.		1		Unlikely
Motacilla flava	Yellow Wagtail	Mi.		1		Unlikely
Myiagra cyanoleuca	Satin Flycatcher	Mi.		1		Unlikely
Myiagra inquieta	Restless Flycatcher		R	2	22/09/2015	Likely
Neophema elegans	Elegant Parrot		R	2	20/09/2017	Known
Numenius madagascariensis	Eastern Curlew,	CE, MI		1		Unlikely
Pandion haliaetus	Osprey	Mi.		1		Unlikely
Parvipsitta pusilla	Little Lorikeet		E	2	25/02/2012	Possible

Scientific name	Common name	Conservation status		Source	BDBSA last record (year)	Likelihood of occurrence within Development area
		Aus	SA			
Pedionomus torquatus	Plains-wanderer	CE		1		Unlikely
Petroica phoenicea	Flame Robin		V	2	17/05/2018	Likely
Pezoporus occidentalis	Night Parrot	EN		1		Unlikely
Plegadis falcinellus	Glossy Ibis		R	2	25/11/2014	Possible
Pteropus poliocephalus	Grey-headed Flying-fox	VU		1		Unlikely
Rostratula australis	Australian Painted-snipe	EN		1		Unlikely
Stagonopleura guttata	Diamond Firetail		V	2	18/04/2018	Likely
Strepera versicolor	Grey Currawong		R	2	25/10/2017	Likely
Trichosurus vulpecula	Common Brushtail Possum		R	2	2/03/2013	Known
Tringa nebularia	Common Greenshank	Mi.		1		Unlikely
Zoothera lunulata halmaturina	Bassian Thrush	VU		1		Unlikely

Conservation status
Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare. ssp.: the conservation status applies at the sub-species level. Mi: Migratory species. (W): Wetland migratory species. (M): Marine migratory species. (T): Terrestrial migratory species. Ma: Marine species.

5.1.6 Nationally listed migratory / marine species

Thirteen fauna species listed as migratory under the EPBC Act were identified in the PMST as potentially occurring or having suitable habitat potentially occurring within 5 km of the Springwood Development area (Table 5). All 13 species were bird species. Latham's Snipe (*Gallinago hardwickii*) was recorded immediately south of the area by KBR (2008) and could potentially occur in the creek habitat within the Springwood Development area as a vagrant visitor. There has been no further observations of this species within the BDBSA search to 2019. Based on the lack of habitat within the Springwood Development site, a referral for this specie sis not required.

Rainbow Bee-eater (*Merops ornatus*) was previously recorded across the area and noted onsite at the time of the 2019 survey. This species (previously listed as a migratory) is now listed only as a marine species under the EPBC Act which means protection is limited to Commonwealth Marine Areas. Commonwealth Marine Areas are not present within the Springwood Development Area. A referral for this species is not required.

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5.2 Field survey

5.2.1 Flora

While seasonal conditions have been very good in the interim period since the 2010 KBR report, the past few seasons have had exceptionally dry periods and this has been coupled with a dramatic increase in the numbers of Western Grey Kangaroos (*Macropus fuliginosus*) which were described as commonly recorded though confined to few individuals throughout the site in the 2008 report. Based on the number of observations in 2019, it can be assumed that this population has expended significantly, and this would be consistent with many areas surrounding the Adelaide metropolitan and peri – urban areas. Despite this, the vegetation communities were represented in similar condition and the range of species previously present could be expected to persist since that time. The range of perennial grass tussocks present however was most likely reduced due to seasonal inputs.

5.3 Specific species and community issues

5.3.1 Eucalyptus porosa scattered trees

Scattered *Eucalyptus porosa* (Mallee Box) trees are dominant on the northern slopes of the South Para River anabranch with a few other scattered remnants in other sections of the Springwood Development area. These trees are subject to the *Native Vegetation Act 1991*. There are permitted clearance activities authorised under the *Native Vegetation Regulations 2017.* The Regulations outline the circumstances where clearing native vegetation is permitted, outside of the clearance controls in the Native Vegetation Act 1991. This development allows a clearance application to occur under the Native Vegetation Regulation exemption 12(35) – Residential subdivision.

The Regulations place a great emphasis on the proponent applying the Mitigation Hierarchy, a fundamental principle which encourages proponents to consider all possible ways to avoid and minimise clearance to reduce the level of clearance required. Reducing the level of clearance also reduces the SEB offset (where required) and associated cost to the proponent. The Native Vegetation Council (NVC) assesses whether proponents have adequately applied the Mitigation Hierarchy.

In determining the SEB, the NVC must be provided with written notification of the entire clearance footprint at the allotment scale which includes clearance for the dwelling and any associated structures; clearance within 10 metres of a building for maintenance; fences; vehicle tracks; and any additional clearance for fire safety. Individual regulations for these clearance activities will not apply in connection to new subdivisions and must be considered at this stage.

5.3.2 Iron-grass (Lomandra) Temperate Grassland

This was identified within the KBR report and was observed as still being present and in relatively good condition in terms of tussock density and size. It was not possible to make an accurate assessment as the herbaceous species diversity during the March visit due to appalling conditions from a seasonal perspective. The masterplan avoids the area mapped as the Threatened Ecological Community. See section 6.2.1 for further discussion on this area.

Figure 2. Lomandra community observed still present during 2019 site visit.

5.3.3 Flinders Worm Lizard

An opportunistic observation of this species was made within the area by KBR (2010) and has not been recorded onsite since. No new records for this species have been made within the Gawler area since that observation. While the species is likely to be in low density, they are widespread and any retention of habitat is of high conservation value. The Springwood Masterplan has avoided all areas mapped as high habitat value within the 2010 KBR report.

5.3.4 Peregrine Falcon

KBR observed Peregrine Falcon using the site as a roosting and hunting area. A pair was observed in a roost site within the high wall of the quarry precinct and hunting over the adjacent areas of the quarry and Mallee Box woodland south of the quarry fence line over 2008 to 2010. There was no evidence of past or current nesting / breeding in the quarry or elsewhere. The March visit confirmed likely ongoing use by this species which, while not observed directly, there was significant whitewash on the walls of the quarry suggesting the quarry walls were being used as roosting and resting habitat.

6 QUANTIFYING EPBC IMPACTS

6.1 What is a significant impact?

The Australian Government Department of Sustainability, Environment, Water, Population and Communities publication 'Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies: Significant Impact Guidelines 1.2' states: 'A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.

6.2 Self-assessment

An action is likely to have a significant impact on species if there a real chance or possibility that the action will cause the following criteria to occur. A self-assessment for Iron-grass Temperate Grasslands has been conducted below.

6.2.1 Iron-grass Temperate Grassland

The Springwood Development will not impact directly on the TEC based on the Masterplan design. The close proximity of housing allotments to the mapped community will be likely to cause indirect impacts. These include potential disturbances such as illegal dumping; e.g. lawn clippings and garden waste; and increased foot traffic and bike use. A self-assessment of the *Lomandra* grassland is made based on criteria used in assessing matters of national environmental significance.

- Will the Development lead to a long term decrease in the size of the population.

There is every likelihood that this project will lead to a slow long term decrease in the population due to the impacts listed above

- Will the Development reduce the area of occupancy of the species.

The Springwood Development area will not directly reduce the area of occupancy

- Will the Development fragment an existing population.

The project will not fragment the existing population

- Will the Development adversely affect critical habitat.

The Springwood Development area is not considered to impact other areas of critical habitat.

- Will the Development disrupt breeding cycles.

No changes to the pollination or seed production potential of the community would be expected.

- Will the Development modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

It is likely that some alterations to the quality of the habitat would occur, partly due to potential weed competition but also through soil compaction and degradation of the slopes where the community is present.

- Will the Development result in the establishment of invasive species that are harmful to the species.

High potential for this impact with garden waste and increased likelihood of garden escapees

- Will the Development introduce disease that may cause the species to decline.

The proposed project is not considered likely to act as a vector for disease.

- Will the Development interfere with the recovery of the species.

The proposed project will not impact on the recovery of this community at the wider scale.

It is likely that the close proximity of the Springwood Development to a nationally listed ecological community will impact the community through a long term decrease in size and threats from invasive species. It is recommended that a referral for this area is conducted. The potential outcome of this would be mitigation measures employed such as buffer zones from the Iron-grass community and a conservation management plan to ensure the longevity and sustainability of the community.

7 MITIGATION MEASURES

7.1 Mitigation Hierarchy

Avoid outline measures taken to avoid clearance of native vegetation such as making adjustments to the location, design, size or scale of the activity in order to reduce the impact.

Areas of the highest density trees are of particularly high value with many having large hollows and provide other habitat values such as food and roosting resources. Springwood has avoided the areas of highest vegetation cover where practical and maintains over 70ha of open space.

Minimise if clearance cannot be avoided, outline measures taken to minimize the extent, duration and intensity of impacts of the clearance on biodiversity to the fullest possible extent.

Prior to development commencing, a Vegetation Management Plan (VMP) and a Construction Environmental Management Plan (CEMP) must be developed so as to guide the future development of the site. Reserves have been incorporated into the strategic design where remnant trees are present where possible in a bid to reduce SEB requirements while also improving the amenity value of the development.

Rehabilitate/restore - outline measures taken to rehabilitate ecosystems that have been degraded, and to restore ecosystems that have been degraded, or destroyed by the impact of clearance that cannot be avoided or further minimized, such as allowing for the re-establishment of the vegetation

WGA has included a preliminary stormwater treatment strategy for the site. This considers the drainage for the Springwood Development and includes elements such as Macrophyte beds, shallow wetland ponds and ecological sponges / reed beds. KBR provided input into the most suitable sites and has assisted in the initial stormwater treatment planning. The wetland systems and ponds along the eastern section of the Springwood Creek avoids the important reptile habitat areas, all of the remnant trees and will allow for development of biologically productive riparian habitats in what is currently a weed infested gully.

Offset- any adverse impact on native vegetation that cannot be avoided or further minimized should be offset by the achievement of a significant environmental benefit that outweighs that impact.

Offsets are intended to compensate for any residual adverse impacts. An offset should only be considered after all reasonable steps have been taken to avoid, minimise and rehabilitate/restore the impacts of clearance activities.

8 IMPACT SUMMARY

The following is a summary of the direct and indirect impacts associated with the Masterplan based on the KBR 2010 report and follow up site visit in March 2019 with likely mitigation or follow up requirements.

- Recommendation for a referral to the minister under the EPBC Act for potential indirect impacts to the TEC Iron-grass Temperate Grassland.
- Scattered Tree Assessment clearance application provided to the Native Vegetation Council for the removal of up to 70 individual *Eucalyptus porosa* (Mallee Box) trees with measures utilising the mitigation hierarchy undertaken.

9 DISCUSSION

This Springwood Development area has an overall low ecological value with pasture the dominant vegetation type present which commonly had high weed cover as part of the composition. Based on species observations made by KBR (2010), the survey effort was commensurate with the biological values of the site and annual and seasonal variation components were undertaken through 2008 to 2010.

Impacts on fauna will be mostly associated with rehabilitation of the quarry and the consequent impacts on avifauna. Rehabilitation and major earthworks are a necessity in order to make the quarry precinct safe. Remediation of the high wall of the quarry must be undertaken to manage some of the geotechnical risks and it is unlikely that mitigation actions can be undertaken for species utilising the quarry wall such as Rainbow Bee-eater, Peregrine Falcon, White-winged Chough and Fairy Martin and these species will be displaced from the site. Given the man-made nature of the quarry, this feature has been a temporary habitat structure and it is expected that species will adapt to changes again with each of these species having differing opportunities to re-locate in the region. This includes greater use of other habitats, both natural and man-made such as woodland, sand quarries and natural cliff and rock outcrops in the region.

Stormwater management plans utilizing sections of Springwood Creek as temporary flow management buffers is supported by EBS. Joint planning undertaken by WPG and KBR identified suitable sections devoid of native vegetation for retention and riffle banks. In an area of increasing urbanization, extremely low remnancy of native vegetation, historical records of migratory wetland birds and indirect pressures such as climate change, any efforts to increase the extent and frequency of ephemeral or semi -riparian zones is welcomed from an ecological perspective.

Culverts associated with these structures are not expected to provide significant habitat fragmentation or restriction of biodiversity corridor values provided by Springwood Creek based on the likely fauna community structure expected within an urban area.

10 REFERENCES

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Department of the Environment and Energy (DotEE) (2012) Interim Biogeographic Regionalisation for Australia v. 7 (IBRA) [ESRI shapefile]. Available at: http://intspat01.ris.environment.gov.au/fed/catalog/search/resource/details.page?uuid=%7B3C182B5A-C081-4B56-82CA-DF5AF82F86DD%7D [Accessed 29th March 2019].

Department of the Environment and Energy (DotEE) (2019) EPBC Act Protected Matters Report. http://www.environment.gov.au/erin/ert/epbc/index.html [Report created 29th March 2019]

Kellogg Brown and Root (2010) Gawler East Development Plan Amendment, Gawler East Ecological Survey.

11 APPENDICES

Appendix 1. Flora species BDBSA records within 5km radius of Springwood Development Area

Species	Common	AUS	SA	Date
Acacia acinacea	Wreath Wattle			3/01/2013
Acacia continua	Thorn Wattle			1/08/2012
Acacia cyclops	Western Coastal Wattle			17/12/2014
Acacia iteaphylla	Flinders Ranges Wattle		R	27/11/2002
Acacia ligulata	Umbrella Bush			10/12/2014
Acacia melanoxylon	Blackwood			22/09/2016
Acacia notabilis	Notable Wattle			13/10/2015
Acacia paradoxa	Kangaroo Thorn			19/10/2017
Acacia pycnantha	Golden Wattle			19/10/2017
Acacia retinodes	Wirilda			1/08/2012
Acacia salicina	Willow Wattle			25/11/2012
Acacia saligna	Golden Wreath Wattle			10/02/2012
Acacia sp.	Wattle			17/06/2001
Acacia trineura	Three-nerve Wattle		E	10/02/2012
Acacia victoriae ssp.	Elegant Wattle			18/02/2015
Acaena echinata	Sheep's Burr			25/10/2017
Aira cupaniana	Small Hair-grass			28/10/2011
Aira elegantissima	Delicate Hair-grass			28/10/2011
Aira sp.	Hair-grass			25/10/2017
Allium triquetrum	Three-cornered Garlic			29/09/2015
Allocasuarina verticillata	Drooping Sheoak			13/10/2015
Amaranthus albus	Stiff Tumbleweed			1/05/2012
Anredera cordifolia	Madeira Vine			29/09/2015
Anthosachne scabra	Native Wheat-grass			31/01/2018
Arctotheca calendula	Cape Weed			25/10/2017
Aristida behriana	Brush Wire-grass			5/12/2017
Aristida contorta	Curly Wire-grass			20/11/2011
Artemisia arborescens	Silver Wormwood			31/01/2018
Arthropodium fimbriatum	Nodding Vanilla-lily			30/11/2016
Arthropodium sp.	Vanilla-lily			18/09/2010
Arthropodium strictum	Common Vanilla-lily			23/09/2013
Arundo donax	Giant Reed			31/01/2018
Asparagus asparagoides (NC)	Bridal Creeper			23/11/1999
Asparagus asparagoides f.	Bridal Creeper			24/10/2012
Asparagus asparagoides f. asparagoides	Bridal Creeper			25/02/2015
Asphodelus fistulosus	Onion Weed			25/10/2017
Asteriscus spinosus	Golden Pallensis			3/04/2018
Atriplex prostrata	Creeping Saltbush			31/01/2018
Atriplex semibaccata	Berry Saltbush			27/11/2014

Species	Common	AUS	SA	Date
Atriplex sp.	Saltbush			1/10/2011
Atriplex suberecta	Lagoon Saltbush			25/11/2012
Austrostipa blackii	Crested Spear-grass			3/01/2013
Austrostipa curticoma	Short-crest Spear-grass			25/11/2012
Austrostipa densiflora	Fox-tail Spear-grass		R	11/11/2005
Austrostipa drummondii	Cottony Spear-grass			23/11/2012
Austrostipa elegantissima	Feather Spear-grass			25/11/2012
Austrostipa eremophila	Rusty Spear-grass			3/01/2013
Austrostipa gibbosa	Swollen Spear-grass		R	28/10/2011
Austrostipa mollis	Soft Spear-grass			1/12/2014
Austrostipa multispiculis	Many-flowered Spear-grass		R	20/11/2011
Austrostipa nodosa	Tall Spear-grass			3/01/2013
Austrostipa puberula	Fine-hairy Spear-grass			24/10/2012
Austrostipa scabra ssp. falcata	Slender Spear-grass			28/10/2011
Austrostipa sp.	Spear-grass			25/10/2017
Avena barbata	Bearded Oat			31/01/2018
Avena sp.	Oat			3/01/2013
Baumea juncea	Bare Twig-rush			31/01/2018
Bellardia latifolia	Red Bartsia			24/10/2012
Boerhavia dominii	Tar-vine			25/10/2017
Boerhavia dominii (NC)	Tar-vine			6/04/2013
Bolboschoenus caldwellii	Salt Club-rush			28/10/2011
Bothriochloa macra	Red-leg Grass		R	21/09/2016
Brachypodium distachyon	False Brome			25/10/2017
Brassica sp.				13/01/2004
Brassica tournefortii	Wild Turnip			24/10/2012
Briza maxima	Large Quaking-grass			25/10/2017
Briza minor	Lesser Quaking-grass			25/10/2017
Bromus diandrus	Great Brome			25/10/2017
Bromus diandrus (NC)	Great Brome			27/11/2002
Bromus hordeaceus ssp. hordeaceus	Soft Brome			19/10/2017
Bromus madritensis	Compact Brome			28/10/2011
Bromus rubens	Red Brome			28/10/2011
Bromus sp.	Brome			31/01/2018
Bursaria spinosa ssp.	Bursaria			15/11/2005
Bursaria spinosa ssp. spinosa	Sweet Bursaria			24/10/2012
Callitris gracilis	Southern Cypress Pine			26/11/2012
Calostemma purpureum	Pink Garland-lily			13/04/2016
Cardamine flexuosa	Wood Bitter-cress			26/08/2015
Carduus pycnocephalus	Shore Thistle			13/10/2015
Carex bichenoviana	Notched Sedge			10/12/2014
Carthamus lanatus	Saffron Thistle			8/12/2017
Casuarina glauca	Grey Buloak			29/09/2015
Casuarinaceae sp.	Sheaok Family			19/10/1999
Catapodium rigidum	Rigid Fescue			29/10/2014

Species	Common	AUS	SA	Date
Cenchrus ciliaris	Buffel Grass			1/01/2012
Cenchrus clandestinus	Kikuyu			2/10/2014
Cenchrus longisetus	Feather-top			11/06/2015
Cenchrus setaceus	Fountain Grass			31/01/2018
Centaurea calcitrapa	Star Thistle			10/12/2010
Centaurium erythraea	Common Centaury			19/12/2014
Centipeda cunninghamii	Common Sneezeweed			10/05/2017
Chasmanthe floribunda	African Corn-flag			29/09/2015
Cheilanthes austrotenuifolia	Annual Rock-fern			18/09/2010
Cheilanthes distans	Bristly Cloak-fern			10/08/1999
Cheilanthes lasiophylla	Woolly Cloak-fern			18/12/2014
Cheilanthes sp.	Rock-fern			21/09/2016
Chenopodium glaucum	Glaucous Goosefoot			31/01/2018
Chenopodium murale	Nettle-leaf Goosefoot			31/05/2017
Chloris gayana	Rhodes Grass			11/06/2015
Chloris truncata	Windmill Grass			17/12/2014
Chondrilla juncea	Skeleton Weed			6/12/2017
Chrozophora tinctoria	Dyer's Litmus Plant			8/12/2017
Cirsium vulgare	Spear Thistle			21/06/2018
Citrullus colocynthis	Colocynth			8/12/2017
Cladium procerum	Leafy Twig-rush		R	31/01/2018
Convolvulus angustissimus ssp.	Narrow-leaf Bindweed			8/12/2017
Convolvulus angustissimus ssp. angustissimus (NC)	Narrow-leaf Bindweed			10/12/2014
Convolvulus angustissimus ssp. peninsularum (NC)	Narrow-leaf Bindweed			23/11/2012
Convolvulus arvensis	Field Bindweed			10/12/2010
Convolvulus erubescens (NC)	Australian Bindweed			27/11/2002
Convolvulus erubescens complex				10/09/2013
Convolvulus remotus	Grassy Bindweed			28/10/2014
Convolvulus sp.	Bindweed			30/01/2013
Conyza bonariensis	Flax-leaf Fleabane			15/02/2018
Corybas diemenicus	Veined Helmet-orchid			22/08/2016
Crassula colligata ssp. colligata				25/11/2011
Crassula colorata var. acuminata	Dense Crassula			24/10/2012
Crassula sp.	Crassula/Stonecrop			18/09/2010
Crepis capillaris	Smooth Hawksbeard			13/10/2015
Crepis foetida ssp. foetida	Stinking Hawksbeard			4/12/2017
Cucumis myriocarpus ssp. myriocarpus	Paddy Melon			31/05/2017
Cullen australasicum	Tall Scurf-pea			19/10/2017
Cycnogeton procerum	Water-ribbons			9/11/2012
Cymbopogon ambiguus	Lemon-grass			31/01/2018
Cynara cardunculus ssp. flavescens	Artichoke Thistle			31/01/2018
Cynodon dactylon (NC)	Couch			13/01/2004
Cynodon dactylon var.	Couch			14/02/2018
Cynodon dactylon var. dactylon	Couch			25/10/2017
Cynoglossum suaveolens	Sweet Hound's-tongue			28/10/2011

Species	Common	AUS	SA	Date
Cynosurus echinatus	Rough Dog's-tail Grass			31/01/2018
Cyperus gymnocaulos	Spiny Flat-sedge			23/11/2012
Cyperus sp.	Flat-sedge			31/01/2018
Cyperus vaginatus	Stiff Flat-sedge			28/10/2011
Dactylis glomerata	Cocksfoot			5/12/2017
Danthonia sp. (NC)	Wallaby-grass			27/11/2002
Datura inoxia	Downy Thorn-apple			16/12/2014
Dianella longifolia var. grandis	Pale Flax-lily		R	1/07/2018
Dianella revoluta var.				26/11/2012
Dianella revoluta var. revoluta	Black-anther Flax-lily			26/11/2014
Dichanthium sericeum ssp.	Silky Blue-grass			23/11/2012
Dichanthium sericeum ssp. sericeum	Silky Blue-grass			3/01/2013
Dichondra repens	Kidney Weed			8/12/2017
Digitaria ammophila	Spider Grass			3/01/2013
Digitaria brownii	Cotton Panic-grass			24/10/2012
Diplotaxis tenuifolia	Lincoln Weed			6/06/2017
Disa bracteata	South African Weed Orchid			31/01/2018
Dittrichia graveolens	Stinkweed			14/02/2018
Dodonaea viscosa ssp.	Sticky Hop-bush			23/11/2012
Dodonaea viscosa ssp. spatulata	Sticky Hop-bush			31/01/2018
Drosera auriculata	Tall Sundew			10/09/2013
Drosera macrantha ssp. planchonii	Climbing Sundew			15/11/2005
Dysphania pumilio	Small Crumbweed			12/05/2017
Echium plantagineum	Salvation Jane			31/01/2018
Ehrharta calycina	Perennial Veldt Grass			22/10/2014
Ehrharta longiflora	Annual Veldt Grass			25/10/2017
Einadia nutans ssp.	Climbing Saltbush			23/10/2013
Einadia nutans ssp. nutans	Climbing Saltbush			28/10/2011
Enchylaena sp.				25/11/2012
Enchylaena tomentosa var.	Ruby Saltbush			25/08/2017
Enchylaena tomentosa var. tomentosa	Ruby Saltbush			27/11/2002
Enneapogon nigricans	Black-head Grass			5/12/2017
Enteropogon acicularis	Umbrella Grass			3/01/2013
Eragrostis barrelieri	Pitted Love-grass			23/05/2016
Eragrostis cilianensis	Stink Grass			11/06/2015
Eragrostis curvula	African Love-grass			13/05/2013
Eragrostis minor	Small Stink-grass			11/06/2015
Eragrostis trichophora	Hairyflower Lovegrass			11/06/2015
Eremophila longifolia	Weeping Emubush			24/10/2012
Erodium botrys	Long Heron's-bill			8/12/2017
Erodium crinitum	Blue Heron's-bill			16/11/2017
Erodium sp.	Heron's-bill/Crowfoot			15/11/2005
Eucalyptus camaldulensis ssp.	River Red Gum			25/10/2017
Eucalyptus camaldulensis ssp. camaldulensis	River Red Gum			31/01/2018
Eucalyptus cladocalyx (NC)	Sugar Gum			15/11/2005

Species	Common	AUS	SA	Date
Eucalyptus leucoxylon ssp.	South Australian Blue Gum			25/10/2017
Eucalyptus leucoxylon ssp. leucoxylon	South Australian Blue Gum			28/10/2011
Eucalyptus leucoxylon ssp. pruinosa	Inland South Australian Blue Gum			28/10/2011
Eucalyptus odorata	Peppermint Box			16/10/2014
Eucalyptus odorata (NC)	Peppermint Box			23/11/1999
Eucalyptus porosa	Mallee Box			3/01/2013
Eucalyptus socialis ssp. socialis	Beaked Red Mallee			12/02/2012
Eucalyptus sp.				11/07/2013
Euphorbia drummondii (NC)				13/03/2013
Euphorbia drummondii s.str.				3/04/2018
Euphorbia terracina	False Caper			29/09/2015
Foeniculum vulgare	Fennel			31/01/2018
Fraxinus angustifolia ssp. angustifolia	Desert Ash			31/01/2018
Freesia cultivar	Freesia			29/09/2015
Fumaria capreolata	White-flower Fumitory			25/10/2017
Fumaria densiflora	Dense Fumitory			17/10/2012
Gahnia lanigera	Black Grass Saw-sedge			12/02/2012
Galenia pubescens var. pubescens	Coastal Galenia			3/04/2018
Galium aparine	Cleavers			7/10/2016
Gazania linearis	Gazania			6/06/2017
Gazania sp.	Gazania			19/10/1999
Geranium retrorsum	Grassland Geranium			11/11/2005
Geranium solanderi	Austral Geranium			17/09/2012
Geranium sp.	Geranium			18/09/2010
Gladiolus undulatus	Wild Gladiolus			1/12/2014
Gleditsia triacanthos				2/10/2014
Gomphocarpus cancellatus	Broad-leaf Cotton-bush			31/01/2018
Gomphocarpus fruticosus	Narrow-leaf Cotton-bush			1/05/2012
Gonocarpus elatus	Hill Raspwort			8/06/2017
Goodenia pinnatifida	Cut-leaf Goodenia			18/11/2014
Gramineae sp.	Grass Family			22/05/2000
Hainardia cylindrica	Common Barb-grass			14/11/2016
Haloragis aspera	Rough Raspwort			10/11/2005
Heliotropium asperrimum	Rough Heliotrope			19/10/2017
Heliotropium europaeum	Common Heliotrope			15/02/2018
Heliotropium supinum	Creeping Heliotrope			31/01/2018
Helminthotheca echioides	Ox-tongue			31/01/2018
Hordeum glaucum	Blue Barley-grass			23/11/1999
Hordeum leporinum	Wall Barley-grass			2/10/2014
Hordeum sp.	Barley-grass			3/01/2013
Hordeum vulgare	Barley			19/10/1999
Hyparrhenia hirta	Tambookie Grass			29/01/2018
Hypochaeris glabra	Smooth Cat's Ear			31/01/2018
Hypochaeris radicata	Rough Cat's Ear			25/10/2017
Hypochaeris sp.	Cat's Ear			8/12/2015

Species	Common	AUS	SA	Date
Juncus kraussii	Sea Rush			28/10/2011
Juncus subsecundus	Finger Rush			28/10/2011
Juncus usitatus	Common Rush			28/10/2011
Kickxia commutata ssp. graeca				18/04/2018
Kickxia elatine ssp.	Sharp-leaf Toadflax			6/12/2017
Lachnagrostis filiformis	Common Blown-grass			28/10/2011
Lactuca saligna	Willow-leaf Lettuce			31/01/2018
Lactuca serriola f.	Prickly Lettuce			8/12/2017
Lavandula stoechas ssp. stoechas	Topped Lavender			1/12/2012
Leiocarpa tomentosa	Woolly Plover-daisy			24/10/2012
Lepidium africanum	Common Peppercress			23/10/2013
Lepidium sp.	Peppercress			24/10/2012
Lichen sp.				25/11/2012
Limonium companyonis	Sea-lavender			11/06/2015
Lobelia anceps	Angled Lobelia			31/01/2018
Lolium rigidum	Wimmera Ryegrass			3/01/2013
Lolium sp.	Ryegrass			25/10/2017
Lomandra collina	Sand Mat-rush			23/09/2013
Lomandra densiflora	Soft Tussock Mat-rush			25/10/2017
Lomandra effusa	Scented Mat-rush			3/01/2013
Lomandra multiflora ssp.	Many-flower Mat-rush			13/04/2016
Lomandra multiflora ssp. dura	Hard Mat-rush			18/12/2014
Lomandra nana	Small Mat-rush			23/11/2012
Lomandra sororia	Sword Mat-rush			28/10/2011
Lomandra sp.	Mat-rush			13/03/2013
Lycium australe	Australian Boxthorn			10/08/1999
Lycium ferocissimum	African Boxthorn			31/01/2018
Lysimachia arvensis	Pimpernel			19/12/2014
Lythrum hyssopifolia	Lesser Loosestrife			17/10/2012
Maireana brevifolia	Short-leaf Bluebush			15/02/2018
Maireana enchylaenoides	Wingless Fissure-plant			25/10/2017
Maireana rohrlachii	Rohrlach's Bluebush		R	3/01/2013
Malva parviflora	Small-flower Marshmallow			25/02/2016
Malva preissiana	Australian Hollyhock			13/10/2015
Malva preissiana (NC)	Australian Hollyhock			28/10/2011
Malva weinmanniana	Australian Hollyhock			25/10/2017
Malvaceae sp.				19/10/1999
Marrubium vulgare	Horehound			25/10/2017
Medicago minima	Little Medic			23/10/2013
Medicago polymorpha	Burr-medic			23/10/2013
Medicago scutellata	Snail Medic			15/11/2005
Medicago sp.	Medic			17/06/2001
Melaleuca brevifolia	Short-leaf Honey-myrtle			31/01/2018
Melaleuca lanceolata	Dryland Tea-tree			12/02/2012
Melaleuca sp.	Tea-tree			17/06/2001

Species	Common	AUS	SA	Date
Mentha pulegium	Pennyroyal			31/01/2018
Microtis frutetorum				15/11/2005
Moraea miniata	Two-leaf Cape Tulip			6/10/2016
Moraea setifolia	Thread Iris			7/10/2016
Moss sp.				26/11/2012
Myoporum montanum	Native Myrtle			10/08/1999
Myriophyllum sp.	Milfoil			28/10/2011
Nassella neesiana				4/10/2009
Nicotiana glauca	Tree Tobacco			31/01/2018
Not naturalised in SA sp.				23/11/1999
Oenothera stricta ssp. stricta	Common Evening Primrose			14/12/2017
Olea europaea ssp.	Olive			9/05/2017
Olea europaea ssp. europaea	Olive			3/07/2018
Olearia pannosa ssp. pannosa	Silver Daisy-bush	VU	V	22/09/2015
Onopordum acaulon	Horse Thistle			15/06/2017
Orobanche minor	Lesser Broomrape			24/09/2018
Oxalis perennans	Native Sorrel			2/11/2017
Oxalis perennans (NC)	Native Sorrel			18/06/2003
Oxalis pes-caprae	Soursob			3/07/2018
Oxalis purpurea	One-o'clock			13/10/2015
Panicum capillare var. brevifolium	Witch-grass			21/06/2017
Panicum effusum var. effusum	Hairy Panic			24/10/2012
Panicum hillmanii	Witch-grass			11/06/2015
Panicum sp.	Panic/Millet			1/12/2014
Papaver rhoeas	Field Poppy			4/12/2017
Paspalum dilatatum	Paspalum			31/01/2018
Pentameris pallida	Pussy Tail			31/01/2018
Phalaris aquatica	Phalaris			31/01/2018
Phalaris sp.	Canary Grass			3/07/2018
Phoenix canariensis	Canary Island Palm			2/04/2015
Phragmites australis	Common Reed			31/01/2018
Picnomon acarna	Soldier Thistle			11/01/2017
Pimelea micrantha	Silky Riceflower			24/10/2012
Pinus halepensis	Aleppo Pine			27/11/2002
Pinus sp.	Pine			19/10/1999
Piptatherum miliaceum	Rice Millet			6/12/2017
Pittosporum angustifolium	Native Apricot			31/01/2018
Plantago lanceolata var.	Ribwort			6/12/2017
Plantago lanceolata var. lanceolata	Ribwort			13/11/2015
Plantago sp.	Plantain			17/06/2001
Pleurosorus rutifolius	Blanket Fern			28/10/2010
Poa annua	Winter Grass			26/05/2017
Poa crassicaudex	Thick-stem Tussock-grass			24/10/2012
Poa labillardieri var. labillardieri	Common Tussock-grass			3/01/2013
Poa sp.	Meadow-grass/Tussock-grass			1/12/2014

Species	Common	AUS	SA	Date
Polygonum arenastrum	Wireweed			23/10/2013
Polygonum aviculare	Wireweed			10/02/2012
Polypogon monspeliensis	Annual Beard-grass			31/01/2018
Populus nigra	Lombardy Poplar			11/06/2015
Portulaca oleracea	Common Purslane			17/12/2014
Potamogeton pectinatus	Fennel Pondweed			28/10/2011
Prunus dulcis	Almond			13/10/2015
Prunus persica var.	Peach			3/02/2014
Prunus sp.	Plum			27/11/2002
Pseudognaphalium luteoalbum	Jersey Cudweed			23/05/2018
Ptilotus angustifolius	Narrow-leaf Yellow-tails			23/11/2012
Ptilotus seminudus	Rabbit-tails			15/11/2005
Ptilotus spathulatus	Pussy-tails			8/12/2017
Raphanus raphanistrum	Wild Radish			31/01/2018
Rapistrum rugosum ssp. rugosum	Turnip Weed			25/10/2017
Reichardia tingitana	False Sowthistle			6/12/2017
Reseda lutea	Cut-leaf Mignonette			14/04/2016
Rhagodia parabolica	Mealy Saltbush			11/12/2014
Rhamnus alaternus	Blowfly Bush			29/09/2015
Roepera glauca	Pale Twinleaf			25/11/2012
Romulea rosea var. australis	Common Onion-grass			16/08/2016
Romulea sp.	Onion-grass			18/06/2003
Rosa canina	Dog Rose			18/12/2014
Rostraria cristata	Annual Cat's-tail			25/10/2013
Rumex acetosella	Sorrel			28/10/2011
Rumex brownii	Slender Dock			28/10/2011
Rumex conglomeratus	Clustered Dock			31/01/2018
Rumex crispus	Curled Dock			3/01/2013
Rumex hypogaeus	Three-corner Jack			25/10/2017
Rumex sp.	Dock			13/04/2016
Rytidosperma auriculatum	Lobed Wallaby-grass			15/11/2005
Rytidosperma caespitosum	Common Wallaby-grass			3/01/2013
Rytidosperma duttonianum	Brown-back Wallaby-grass			28/10/2011
Rytidosperma racemosum var. racemosum	Slender Wallaby-grass			10/11/2005
Rytidosperma setaceum	Small-flower Wallaby-grass			3/01/2013
Rytidosperma sp.	Wallaby-grass			25/10/2017
Salsola australis	Buckbush			17/04/2018
Salvia verbenaca var.	Wild Sage			31/01/2018
Salvia verbenaca var. verbenaca	Wild Sage			25/10/2017
Samolus repens	Creeping Brookweed			31/01/2018
Scabiosa atropurpurea	Pincushion			15/02/2018
Scandix pecten-veneris ssp. pecten-veneris	Shepherd's Needle			15/11/2005
Schinus molle	Pepper-tree			25/10/2017
Schoenoplectus subulatus	Shore Club-rush			28/10/2011
Schoenoplectus tabernaemontani	River Club-rush			31/01/2018

Species	Common	AUS	SA	Date
Sclerolaena muricata var. villosa	Five-spine Bindyi		R	30/01/2018
Scorzonera laciniata var. calcitrapifolia	Scorzonera			4/12/2017
Senecio odoratus	Scented Groundsel			21/11/2014
Senecio phelleus	Woodland Groundsel			19/06/2018
Senecio picridioides	Purple-leaf Groundsel			11/12/2014
Senecio pterophorus	African Daisy			31/01/2018
Senecio quadridentatus	Cotton Groundsel			4/06/2014
Senecio sp.	Groundsel			11/11/2005
Senecio vulgaris	Common Groundsel			16/11/2017
Senna artemisioides ssp.	Desert Senna			9/05/2017
Senna artemisioides ssp. petiolaris				27/11/2002
Senna artemisioides ssp. X coriacea	Broad-leaf Desert Senna			24/10/2012
Setaria constricta	Knotty-butt Paspalidium			23/11/2012
Setaria jubiflora	Warrego Summer-grass			2/11/2017
Sherardia arvensis	Field Madder			28/10/2011
Sida corrugata var.	Corrugated Sida			23/06/2012
Sida corrugata var. angustifolia	Grassland Sida			13/03/2013
Sida corrugata var. corrugata	Corrugated Sida			24/10/2012
Silybum marianum	Variegated Thistle			26/10/2017
Sisymbrium erysimoides	Smooth Mustard			11/06/2015
Sisymbrium sp.	Wild Mustard			19/10/1999
Solanum elaeagnifolium	Silver-leaf Nightshade			21/06/2018
Solanum linnaeanum	Apple Of Sodom			3/07/2018
Solanum nigrum	Black Nightshade			15/02/2018
Sonchus asper	Rough Sow-thistle			31/01/2018
Sonchus oleraceus	Common Sow-thistle			31/01/2018
Stackhousia monogyna	Creamy Candles			25/10/2017
Stackhousia monogyna (NC)	Creamy Candles			10/09/2013
Symphyotrichum subulatum	Aster-weed			31/01/2018
Tamarix parviflora	Athel Pine			29/09/2015
Taraxacum sp.	Dandelion			1/06/2012
Teucrium racemosum	Grey Germander			25/11/2011
Themeda triandra	Kangaroo Grass			8/06/2017
Thyridia repens	Creeping Monkey-flower			14/02/2018
Tragopogon porrifolius	Salsify			19/10/2016
Tribulus terrestris	Caltrop			29/01/2018
Trifolium angustifolium	Narrow-leaf Clover			25/10/2017
Trifolium arvense var. arvense	Hare's-foot Clover			31/01/2018
Trifolium campestre	Hop Clover			31/01/2018
Trifolium sp.	Clover			11/07/2013
Trifolium subterraneum	Subterranean Clover			17/10/2012
Tropaeolum majus	Nasturtium			2/10/2014
Typha domingensis	Narrow-leaf Bulrush			31/01/2018
Urtica urens	Small Nettle			31/05/2017
Velleia arguta	Toothed Velleia			24/10/2012

Species	Common	AUS	SA	Date
Verbascum virgatum	Twiggy Mullein			8/12/2017
Verbena supina var. erecta	Trailing Verbena			15/01/2016
Vicia sativa ssp.	Common Vetch			10/09/2013
Vicia sativa ssp. sativa	Common Vetch			28/10/2011
Vicia sp.	Vetch			11/11/2005
Vicia tetrasperma	Slender Vetch			2/03/2012
Vittadinia blackii	Narrow-leaf New Holland Daisy			20/11/2015
Vittadinia cervicularis var. cervicularis	Waisted New Holland Daisy			25/11/2011
Vittadinia cuneata var.	Fuzzy New Holland Daisy			3/11/2017
Vittadinia cuneata var. cuneata	Fuzzy New Holland Daisy			3/01/2013
Vittadinia gracilis	Woolly New Holland Daisy			25/10/2017
Vittadinia megacephala	Giant New Holland Daisy			24/10/2012
Vulpia bromoides	Squirrel-tail Fescue			28/10/2011
Vulpia muralis	Wall Fescue			28/10/2011
Vulpia myuros f.	Fescue			15/11/1999
Vulpia myuros f. myuros	Rat's-tail Fescue			25/10/2017
Vulpia sp.	Fescue			31/01/2018
Wahlenbergia sp.	Native Bluebell			1/02/2011
Wahlenbergia stricta ssp. stricta	Tall Bluebell			28/10/2011
Walwhalleya proluta	Rigid Panic			6/12/2017
Walwhalleya proluta (NC)	Rigid Panic			27/11/2002
Watsonia meriana var. bulbillifera	Bulbil Watsonia			25/10/2017
Withania somnifera	Winter Cherry			15/02/2018
Xanthium spinosum	Bathurst Burr			9/05/2017
Xanthorrhoea quadrangulata	Rock Grass-tree			9/05/2017

Appendix 2. Fauna species BDBSA records within 5km radius of Springwood Development Area

Class	Species	Common	AUS	SA	DATE
ACTINOPTERI	*Carassius auratus*	Goldfish			25/11/2011
	Cyprinus carpio	European Carp			8/12/2015
	Galaxias maculatus	Common Galaxias			8/12/2015
	Gambusia holbrooki	Eastern Gambusia			25/11/2011
	Philypnodon grandiceps	Big-headed Gudgeon			15/11/2012
AMPHIBIA	*Crinia signifera*	Common Froglet			28/06/2018
	Limnodynastes dumerilii	Banjo Frog			10/09/2013
	Limnodynastes tasmaniensis	Spotted Marsh Frog			27/07/2017
	Litoria ewingii	Brown Tree Frog			14/09/2005
	Tadpole sp.	tadpole			6/12/2017
AVES	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater			15/06/2017
	Acanthiza chrysorrhoa	Yellow-rumped Thornbill			18/04/2018
	Acanthiza reguloides	Buff-rumped Thornbill			14/12/2017
	Accipiter cirrocephalus cirrocephalus	Collared Sparrowhawk			14/03/2011
	Accipiter fasciatus	Brown Goshawk			29/01/2018
	Acrocephalus australis	Australian Reed Warbler			25/10/2017
	Aegotheles cristatus	Australian Owlet-nightjar			5/09/2009
	Alauda arvensis	Eurasian Skylark			10/09/2013
	Anas gracilis	Grey Teal			5/09/2012
	Anas superciliosa	Pacific Black Duck			31/01/2018
	Anthochaera carunculata	Red Wattlebird			18/04/2018
	Anthus australis	Australian Pipit			24/08/2017
	Aphelocephala leucopsis	Southern Whiteface			18/10/2010
	Aquila audax	Wedge-tailed Eagle			21/03/2018
	Ardea alba modesta	Great Egret			25/10/2012
	Ardea pacifica	White-necked Heron			20/09/2017
	Artamus cinereus	Black-faced Woodswallow			3/04/2018
	Artamus cyanopterus	Dusky Woodswallow			25/08/2011
	Cacatua galerita	Sulphur-crested Cockatoo			25/10/2017
	Cacatua sanguinea sanguinea	Little Corella			25/10/2017
	Cacatua tenuirostris	Long-billed Corella			1/08/2011
	Cacomantis flabelliformis	Fan-tailed Cuckoo			8/08/2012
	Cacomantis pallidus	Pallid Cuckoo			27/06/2018
	Caligavis chrysops	Yellow-faced Honeyeater			31/05/2018
	Carduelis carduelis	European Goldfinch			26/07/2017
	Chalcites basalis	Horsfield's Bronze Cuckoo			18/09/2015
	Chalcites lucidus	Shining Bronze Cuckoo			25/02/2012
	Chenonetta jubata	Maned Duck			6/10/2016
	Cheramoeca leucosterna	White-backed Swallow			19/06/2018
	Circus assimilis	Spotted Harrier			16/03/2017
	Climacteris picumnus	Brown Treecreeper			26/10/2017
	Colluricincla harmonica	Grey Shrikethrush			25/10/2017

Class	Species	Common	AUS	SA	DATE
	Columba livia	Feral Pigeon			25/10/2017
	Coracina novaehollandiae	Black-faced Cuckooshrike			6/06/2018
	Corcorax melanorhamphos	White-winged Chough		R	31/08/2016
	Corvus coronoides	Australian Raven			18/10/2009
	Corvus mellori	Little Raven			18/04/2018
	Coturnix pectoralis	Stubble Quail			22/05/2018
	Coturnix ypsilophora	Brown Quail		V	16/09/2015
	Dacelo novaeguineae	Laughing Kookaburra			31/01/2018
	Daphoenositta chrysoptera	Varied Sittella			28/02/2012
	Dicaeum hirundinaceum	Mistletoebird			14/05/2018
	Egretta novaehollandiae	White-faced Heron			18/04/2018
	Elanus axillaris	Black-shouldered Kite			23/05/2018
	Elseyornis melanops	Black-fronted Dotterel			25/10/2017
	Eolophus roseicapilla	Galah			25/10/2017
	Epthianura albifrons	White-fronted Chat			16/10/2017
	Falco berigora	Brown Falcon			22/05/2018
	Falco cenchroides	Nankeen Kestrel			25/10/2017
	Falco longipennis	Australian Hobby			17/12/2014
	Falcunculus frontatus frontatus	Eastern Shriketit		R	2/03/2013
	Gallinago hardwickii	Latham's Snipe		R	23/11/2008
	Gallinula tenebrosa	Dusky Moorhen			31/01/2018
	Gallirallus philippensis mellori	Buff-banded Rail			29/03/2010
	Gavicalis virescens	Singing Honeyeater			22/05/2018
	Geopelia placida	Peaceful Dove			22/05/2018
	Glossopsitta concinna	Musk Lorikeet			25/10/2017
	Grallina cyanoleuca	Magpielark			25/10/2017
	Gymnorhina tibicen	Australian Magpie			18/04/2018
	Haliastur sphenurus	Whistling Kite			25/05/2018
	Hieraaetus morphnoides	Little Eagle			14/02/2018
	Hirundo neoxena	Welcome Swallow			25/10/2017
	Lalage tricolor	White-winged Triller			8/12/2017
	Malacorhynchus membranaceus	Pink-eared Duck			18/01/2012
	Malurus cyaneus	Superb Fairywren			21/06/2018
	Malurus cyaneus leggei	Superb Fairywren (Mainland SA)			13/10/2015
	Manorina melanocephala	Noisy Miner			21/02/2013
	Megalurus cruralis	Brown Songlark			19/10/2017
	Megalurus gramineus	Little Grassbird			24/10/2012
	Megalurus mathewsi	Rufous Songlark			25/10/2017
	Melithreptus brevirostris	Brown-headed Honeyeater			31/01/2018
	Melithreptus gularis	Black-chinned Honeyeater		ssp	24/02/2012
	Melithreptus lunatus	White-naped Honeyeater			20/07/2015
	Merops ornatus	Rainbow Bee-eater			25/10/2017
	Microcarbo melanoleucos melanoleucos	Little Pied Cormorant			31/01/2018
	Milvus migrans	Black Kite			25/03/2015
	Myiagra inquieta	Restless Flycatcher		R	22/09/2015

Class	Species	Common	AUS	SA	DATE
	Neophema elegans	Elegant Parrot		R	20/09/2017
	Ninox boobook	Southern Boobook			19/06/2018
	Northiella haematogaster (NC)	Bluebonnet		ssp	16/10/2009
	Ocyphaps lophotes	Crested Pigeon			15/06/2017
	Pachycephala pectoralis	Golden Whistler			28/06/2018
	Pachycephala rufiventris	Rufous Whistler			22/05/2018
	Pachycephala rufiventris rufiventris	Rufous Whistler			27/10/2015
	Pardalotus punctatus	Spotted Pardalote			31/03/2016
	Pardalotus striatus	Striated Pardalote			22/09/2016
	Parvipsitta porphyrocephala	Purple-crowned Lorikeet			2/11/2011
	Parvipsitta pusilla	Little Lorikeet		E	25/02/2012
	Passer domesticus	House Sparrow			8/12/2017
	Pelecanus conspicillatus	Australian Pelican			4/12/2017
	Petrochelidon ariel	Fairy Martin			14/10/2017
	Petrochelidon nigricans	Tree Martin			24/08/2017
	Petroica goodenovii	Red-capped Robin			15/05/2018
	Petroica phoenicea	Flame Robin		V	17/05/2018
	Phalacrocorax carbo	Great Cormorant			1/02/2013
	Phalacrocorax sulcirostris	Little Black Cormorant			7/11/2012
	Phalacrocorax varius	Great Pied Cormorant			9/11/2012
	Phaps chalcoptera	Common Bronzewing			19/06/2018
	Phasianus colchicus	Common Pheasant			25/10/2016
	Phylidonyris novaehollandiae	New Holland Honeyeater			18/04/2018
	Phylidonyris novaehollandiae novaehollandiae	New Holland Honeyeater (mainland SA)			28/08/2015
	Platycercus elegans	Crimson Rosella			18/04/2018
	Plegadis falcinellus	Glossy Ibis		R	25/11/2014
	Podargus strigoides	Tawny Frogmouth			27/03/2018
	Porphyrio porphyrio	Purple Swamphen			10/09/2013
	Porzana fluminea	Australian Crake (Australian Spotted Crake)			18/01/2012
	Psephotus haematonotus	Red-rumped Parrot			25/10/2017
	Psephotus haematonotus haematonotus	Red-rumped Parrot (eastern SA except NE)			19/12/2014
	Ptilotula penicillata	White-plumed Honeyeater			18/04/2018
	Rhipidura albiscapa	Grey Fantail			16/08/2016
	Rhipidura leucophrys	Willie Wagtail			18/04/2018
	Smicrornis brevirostris	Weebill			25/10/2017
	Spilopelia chinensis	Spotted Dove			24/10/2012
	Stagonopleura guttata	Diamond Firetail		V	18/04/2018
	Strepera versicolor	Grey Currawong		ssp	25/10/2017
	Strepera versicolor melanoptera	Black-winged Currawong (SE, MLR, MM)			28/08/2015
	Streptopelia risoria	Barbary Dove			10/09/2011
	Sturnus vulgaris	Common Starling			31/01/2018
	Tachybaptus novaehollandiae	Australasian Grebe			11/01/2017
	Threskiornis moluccus	Australian White Ibis			11/01/2017
	Todiramphus sanctus	Sacred Kingfisher			19/10/2017

Class	Species	Common	AUS	SA	DATE
	Tribonyx ventralis	Black-tailed Nativehen			27/08/2013
	Trichoglossus haematodus	Rainbow Lorikeet			25/10/2017
	Turdus merula	Common Blackbird			2/03/2013
	Tyto delicatula delicatula	Eastern Barn Owl			1/05/2018
	Vanellus miles	Masked Lapwing			25/10/2017
	Vanellus tricolor	Banded Lapwing			17/08/2011
	Zosterops lateralis	Silvereye			18/04/2018
MAMMALIA	*Cervus dama*	Fallow Deer			3/09/2015
	Cervus elaphus	Red Deer			17/12/2013
	Felis catus	Domestic Cat (Feral Cat)			25/06/2012
	Lepus europaeus	European Brown Hare			22/05/2018
	Macropus (Osphranter) robustus	Euro			27/06/2018
	Macropus fuliginosus	Western Grey Kangaroo			16/04/2018
	Mus musculus	House Mouse			24/08/2017
	Oryctolagus cuniculus	Rabbit (European Rabbit)			8/12/2017
	Ovis aries	Sheep (Feral Sheep)			13/02/2013
	Rattus norvegicus	Brown Rat (Sewer Rat, Norway Rat)			3/05/2017
	Tachyglossus aculeatus	Short-beaked Echidna	ssp		10/09/2013
	Trichosurus vulpecula	Common Brushtail Possum		R	2/03/2013
	Vulpes vulpes	Fox (Red Fox)			14/05/2018
REPTILIA	*Chelodina longicollis*	Eastern Long-necked Turtle			30/08/2013
	Christinus marmoratus	Marbled Gecko			2/03/2013
	Cryptoblepharus pannosus	Speckled Wall Skink			15/10/2014
	Ctenotus spaldingi	Eastern Striped Skink			30/01/2018
	Delma molleri	Gulfs Delma			18/06/2015
	Emydura macquarii	Macquarie River Turtle		V	14/10/2017
	Hemiergis decresiensis	Three-toed Earless Skink			9/08/2017
	Hemiergis peronii	Four-toed Earless Skink			29/03/2010
	Lampropholis guichenoti	Garden Skink			14/10/2017
	Lerista bougainvillii	Bougainville's Skink			16/09/2015
	Menetia greyii	Dwarf Skink			15/08/2015
	Morethia obscura	Mallee Snake-eye			19/10/2009
	Parasuta flagellum	Little Whip Snake			29/03/2010
	Pogona barbata	Eastern Bearded Dragon			28/10/2016
	Pseudechis porphyriacus	Red-bellied Black Snake			14/10/2017
	Pseudonaja textilis	Eastern Brown Snake			27/11/2017
	Tiliqua rugosa	Sleepy Lizard			31/01/2018
	Tiliqua scincoides	Eastern Bluetongue			17/04/2018

Appendix 3. KBR Phase 2 ecological survey

GAWLER EAST DEVELOPMENT PLAN AMENDMENT

Gawler East Ecological Survey

Prepared for:

DELFIN LEND LEASE PTY LTD

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Prepared by:

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20 August 2010

AEN814-G-REP-003 Rev. 1

Limitations Statement

The sole purpose of this report and the associated services performed by Kellogg Brown & Root Pty Ltd (KBR) is to provide a flora fauna survey in accordance with the scope of services set out in the contract between KBR and Delfin Lend Lease Pty Ltd ('the Client'). That scope of services was defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to the site.

KBR derived the data in this report primarily from visual inspections, examination of records in the public domain and interviews with individuals with information about the site made on the dates indicated. The passage of time, manifestation of latent conditions or impacts of future events may require further exploration at the site and subsequent data analysis, and re-evaluation of the findings, observations and conclusions expressed in this report.

In preparing this report, KBR has relied upon and presumed accurate certain information (or absence thereof) relative to the site provided by government officials and authorities, the Client and others identified herein. Except as otherwise stated in the report, KBR has not attempted to verify the accuracy or completeness of any such information.

The findings, observations and conclusions expressed by KBR in this report are not, and should not be considered, an opinion concerning seasonal and annual variation in some species. No warranty or guarantee, whether express or implied, is made with respect to the data reported or to the findings, observations and conclusions expressed in this report. Further, such data, findings, observations and conclusions are based solely upon site conditions, information, drawings supplied by the Client in existence at the time of the investigation.

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the provisions of the agreement between KBR and the Client. KBR accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

Revision History

Revision	Date	Comment	Signatures		
			Originated by	Checked by	Approved by
0	1/2/2010	For use	SJR	RJA	SJR
1	20/8/2010	For use			

CONTENTS

1 Introduction

Kellogg, Brown & Root Pty Ltd (KBR) was commissioned by Delfin Lend Lease (Delfin, the Client) to undertake an ecological assessment for a site at Gawler East, South Australia which is the subject of a Development Plan Amendment (DPA). An initial assessment report was based on on-site reconnaissance surveys and a review of 'desktop information' over July to September 2008 and November 2008 to January 2009 (KBR 2009).

Detailed assessment of vegetation, flora and fauna was undertaken in 2009, with seasonal observations made over July to December 2009 and up to May 2010. A more detailed fauna survey, including a trapping assessment of ground fauna, occurred in October 2009. This report describes the findings from all components of the field assessments during 2008 to 2010. Appendix A includes copies of species lists for the site. This extended period of survey provided for ecological investigations under both drought and more normal weather and rainfall conditions. It also allowed for comprehensive records to be compiled of annual and seasonal variation in some flora and fauna groups.

2 Legislation and policy

Commonwealth legislation relevant to the project in relation to vegetation communities and flora and fauna species and their habitat is the:

- *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act). This Act relates to the definition, protection and management of all matters of national environmental significance such as ecological communities, species and their habitat and sites. It also includes strategic assessments, threatening processes and recovery plans, including regional recovery plans. It is illegal to undertake an action that will have a significant adverse impact on a matter of national environmental significance.

The EPBC Act provides for the implementation and administration of international agreements concerning fauna to which Australia is a signatory, namely:

- CITES—Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973)
- JAMBA—Agreement between the Government of Japan and the Government of Australia for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (1974)
- CAMBA—Agreement between the Government of Australia and the Government of the Peoples Republic of China for the Protection of Migratory Birds and their Environment (1986)
- ROKAMBA—Agreement between the Government of Australia and the Government of the Republic of Korea for the Protection of Migratory Birds (2007)
- Bonn Convention—Convention on the Conservation of Migratory Species of Wild Animals, for which Australia is a range state under the Convention (1979)
- Earth Summit—Convention on Biological Diversity (Rio de Janeiro, 1992). Convention on Biological Diversity and The National Strategy for the Conservation of Australia's Biological Diversity (ANZECC, Department of the Environment, Sport and Territories 1996)
- National Strategy for the Conservation of Australian Species and Communities Threatened with Extinction (Endangered Species Advisory Committee 1992).

A proponent of any proposed development that may have an adverse impact upon Matters of National Environmental Significance (MNES) must submit a referral under the EPBC Act to the Commonwealth Minister of Environment.

State legislation includes:

- *National Parks and Wildlife Act 1972* (NP&W Act), especially Schedules 7, 8 and 9 as revised in the *National Parks and Wildlife (Miscellaneous) Amendment Act 2000* and in *2008*.
- *Natural Resources Management Act 2004 (NRM Act)*, which repeals the *Animal and Plant Control (Agricultural Protection and Other Purposes) Act 1986* and the *Soil Conservation and Land Care Act 1997* and incorporates the functional requirements of these latter Acts under the NRM Act. The NRM Act establishes provisions for the management of the State's natural resources, including the land and water resources plus pest plants and animals.
- *Native Vegetation Act 1991, Native Vegetation (Miscellaneous) Amendment Act 2002* and the Native Vegetation Regulations 2003.

In addition, the *Development Act 1993* will be relevant to the occurrence of significant trees and the *Mining Act 1971* may be relevant to actions undertaken in the former quarry.

State agreements, policies and strategies relevant to habitats, communities and species include:

- *Threatened Species Strategy for South Australia* (Department of Environment and Natural Resources 2007).
- *The State Government policy, No Species Loss A Biodiversity Strategy for South Australia 2006–2016* is the key policy for protection of biodiversity in the State and is applicable to the project.
- *Tackling Climate Change: South Australia's Greenhouse Strategy 2007-2020* also relates to the sustainable management of natural resources and includes requirements to assess the potential risks associated with climate change influences on native and invasive species.
- *The South Australian Biosecurity Strategy 2008-2013* is a risk management framework that provides a summary review of threats posed by pests in the State, plus potential implementation requirements. This Strategy is applicable to the project.
- *Informing biodiversity conservation for the Adelaide and Mount Lofty Ranges Region, South Australia. Priorities, Strategies and Targets* (Department for Environment and Heritage 2009a.). This strategic document provides a summary of nature conservation matters for the region in which the site is located.

3 Methodology

Following review of an aerial photograph of the site, a reconnaissance survey of the site was undertaken in August and September 2008 by Dr Bob Anderson and Sarah Reachill. This survey involved a general assessment of all of the site and identification of areas of potential conservation significance. Specific areas of potential interest, such as riparian, rocky and remnant woodland sites, were assessed on foot. These included sections of the South Para River and an unnamed tributary of the River to the north, plus areas of remnant *Eucalyptus porosa* (Mallee box) woodland in the east and south of the site. Site-specific and incidental observations of all species observed were recorded for the site and surrounding area. The results of the initial surveys are described in KBR (2009).

Following on from the initial assessments it was determined that much of the site is anthropogenic and provides habitat primarily for introduced plants and for a few common native flora and fauna species only. However, there are smaller areas of higher quality habitat for some native flora and fauna species. These include:

- The rocky creekline (the unnamed tributary of the South Para River referred to above) which traverses the site in an east to west direction. This section of the site, including rocky outcrops, represented potential habitat for Iron-grass grassland, which is a nationally threatened plant association, the nationally threatened Flinders Ranges worm-lizard (*Aprasia pseudopulchella*) and a number of other reptile species, possibly including the nationally endangered Pygmy bluetongue lizard (*Tiliqua adelaidensis*).
- Riparian areas of the South Para River, primarily for avifauna and aquatic species, but also for reptiles in rocky areas.
- Areas of remnant native woodland and grassland, for bats, some avifauna and possibly, a few reptile species, including species dependent on spider burrows. This could include Pygmy bluetongue lizard.

Following a project review with Delfin in 2009, KBR was informed that there would be no development along the South Para River corridor, primarily due to the very steep and rugged terrain and its riparian values. The Gawler East DPA drafted by Government indicates that the South Para River corridor will be in an Open Space Zone and will be protected from development. In addition, much of the corridor is under private ownership and access to some areas of private property is difficult to negotiate. It was agreed that most of the survey effort in 2009/10 would be directed at documenting in detail the remainder of the site.

Detailed observations were made of the site on 21 – 23 November 2008 (dawn and day surveys) and 27 – 28 December 2008 (dawn and dusk surveys) and

16 January 2009 (day survey). Vegetation and fauna surveys were undertaken on 5 September; 4 October, 16 October and 18 October; 13 November and 28 December 2009 and 29 March and 14 May 2010. These were dawn and day surveys.

A reconnaissance of the quarry precinct was undertaken over two days in July 2009 and initial observations and species lists compiled. A detailed fauna assessment of the quarry site was carried out by observation on 11 December 2009 and 29 March 2010, primarily for seasonally dependent (migratory) avifauna. A brief boundary survey of the quarry was undertaken on 28 December 2009 and 14 May 2010.

Each survey occasion reviewed the vegetation, flora and habitat areas on the site. Specific faunal groups surveyed by observation on each occasion included:

- Mammals and avifauna (terrestrial and riparian)
- reptiles
- amphibians.

Conditions at the time of each assessment varied according to season, including cool mornings and evenings and warm days during December 2008 and hot and dry for the week preceding the January 2009 survey. Mallee box was flowering in November 2008 and 2009. *Eucalyptus camaldulensis* (River red gum) was flowering in December 2008 and 2009 and January 2009. Some of the planted tree and shrub species were flowering during all site assessments. All flowering trees were key attractants for some woodland bird species.

Remnant pools of water were present in the South Para River section of the site in November and December 2008, but only a few remained in January 2009. Water was present over September to December 2009 and into May 2010, including a number of deep pools.

Water was not present in much of the unnamed tributary of the River during all of these surveys i.e. the eastern section, east of the SA Water pipeline. Water was confined to occasional shallow pools and a surface film in January 2009 and present as a low level flow and pools in the western section of the tributary for much of the winter and spring. It was present as a low flow and pools up to 20 cm deep throughout the central section of the tributary over July to December 2009. Parts of this section were dry in 2010, with some areas of stagnant water and slow trickle flows in others.

The October 2009 survey was undertaken in cool to warm weather with daytime temperatures varying between 17°C to 27°C. Night time temperatures were also cool (7°C-12°C) with the exception of one warm night (17°C). Nil rainfall was recorded for this period.

Conditions over the main period of observation from September to December 2009, the main period of assessment, are summarised below in Table 3.1 (data sourced from the Bureau of Meteorology for the Edinburgh Station).

Table 3.1 Weather averages for 2009

	September 2009	October 2009	November 2009	December 2009
Total rainfall (mm)	55.2	16.2	25.4	20.6
Average temperature (ºC)	19.8	22.6	32.0	14.2

Areas of loose rocks and rock outcrop, especially those in and surrounding the watercourses, were thoroughly investigated on multiple occasions by rock turning to ascertain the presence of ground fauna (primarily reptiles) and to assess the presence of invertebrate fauna.

Observations of all flora and fauna species were recorded as field notes. Collections of flora were made and will be lodged in the State Herbarium following curation and completion of the project.

Discussions were held with members of Birds South Australia and Birds Australia, the South Australian Museum curators and Dr Aaron Fenner in order to access information not in the public domain. Dr Fenner recently completed a PhD on Pygmy bluetongue lizards and he inspected the site to assess its suitability as habitat for this species.

3.1 PITFALL TRAPPING

Following initial review and site reconnaissance, key habitat areas for trapping were determined and a stratified assessment by pitfall traps established. Elliott trap and cage trap trapping was not undertaken due to large populations of meat ants present across the site.

Stratification targeted the two dominant habitats, namely:

- Mallee box mature open woodland
- Anthropogenic grassland with shallow rock strata and surface rock scatter suitable for reptiles.

A total of eight traplines five pitfall buckets/trapline were established (Figures 3.1 and 3.2). Pitfall lines (as straight line transects) were placed in an orientation which provided maximum sampling of the target habitat (e.g. woodlands and rocky outcrops). Five straight sided plastic buckets were buried at 5 m intervals with their opening at or slightly below ground level. Where soil conditions—usually the presence of rock at shallow depth—prevented digging the required depth for a 15 or 10 L bucket, a smaller size (5 L) was inserted. Appendix B includes photographs of each pitfall line.

A low, temporary fence (drift net) of black fly wire 20 cm high was erected along the length of the pitfall line such that it passed over the centre of each bucket. To provide captured animals with protection, cardboard cylinders, paper towel, shredded paper, rocks and/or leaf litter were placed in each bucket. To prevent dehydration, a small amount of water was added to each bucket. A metal lid with wire supports 15 cm high was installed over each bucket to provide shade and to protect captured animals from pilfering by other animals (primarily foxes, magpies and ravens).

Following the completion of trapping, pitfall traps were filled with rocks *insitu*, closed by a secure plastic lid, capped with a large rock, buried with soil and each lid further

covered with cobbles and boulders. The end points of each trap line site were marked with pink flagging tape or a 1 m high wooden stake.

Table 3.2 Fauna trapping sites data

Site	Trapping method	X[1]	Y[1]	Comment
GE1	5 pits	296315	6168130	Open Mallee box woodland on open hill crest
GE2	5 pits	296249	6168134	Open Mallee box woodland on drainage line
GE3	5 pits	296321	6168030	Open Mallee box woodland adjacent to rocky outcrop
GE4	5 pits	293362	6167980	Open Mallee box woodland on south facing slope with remnant native grassland
GE5	5 pits	296326	6167921	Open Mallee box woodland on south facing slope adjacent to deadfall with areas of remnant native grassland
GE6	5 pits	296098	6168158	Open Mallee box woodland on open bare ground
GE7	5 pits	295880	6168090	Rocky, anthropogenic grassland on drainage line
GE8	5 pits	295887	6168090	Rocky, anthropogenic grassland on crest

[1]. Datum is GDA 94.

State Government permits and approvals relevant to the fauna assessment are as follow:

- Scientific Research Permit Z25683-1
- Animal Ethics Approval 1/2009
- Animal Welfare Licence No. 167.

All approvals are current until 2011. Copies of all field fauna data will be provided to the South Australian Biological Survey database at the completion of the project.

Delfin provided the approvals from the landholders for access.

Figure 3.1
Pitfall line in Eucalyptus porosa (Mallee box) open woodland

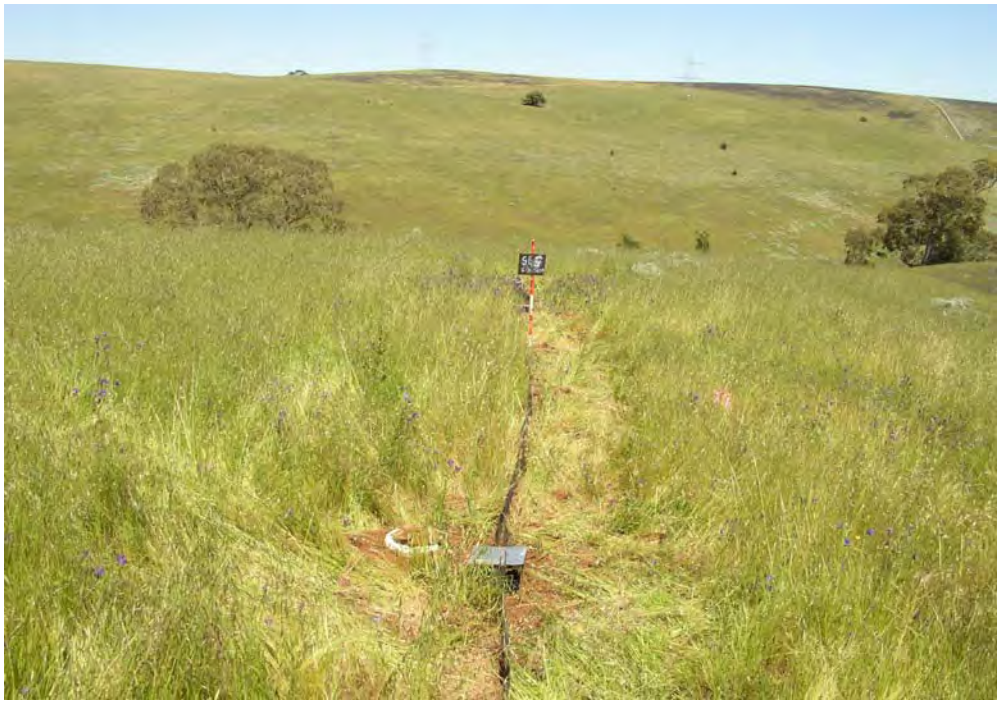


Figure 3.2
Pitfall line in anthropogenic grassland

3.2 OBSERVATION AND ACTIVE SEARCHING

Direct observations made of fauna species were recorded as field notes. This primarily included birds, larger mammals and reptiles during opportunistic and active searches.

Observations were made of actual and potential burrows, nest sites, diggings/ scratching/forage areas, paw prints and scats. Each sign was an indicator of the presence of animals and all were recorded.

Active searching generally involved rock-turning, litter raking and excavating fresh burrows. Most effort was directed at rock turning. This method was undertaken in the following fauna habitat areas;

- *Eucalyptus porosa* open woodland, especially where it occurs over rocky outcrops
- *E. camaldulensis* open woodland over tall to low sedgeland and grassland along riparian areas
- South Para River and the unnamed eastern drainage line (primarily the rock outcrops associated with these watercourses and their tributaries)
- anthropogenic grassland and cropping and pasture areas
- quarry precinct.

In addition, active searching and observation of all buildings and structures able to be inspected in the quarry precinct was undertaken to assess the presence of micro-chiropteran bats and roosting birds.

4 Results — main site

The results of the site assessments are considered in two sections in this report. The information about the largest section of the site (172.46 ha, defined as the main site), which includes all land areas excluding the quarry, and the quarry precinct (discussed in Section 5).

4.1 MAIN SITE

4.1.1 Vegetation and flora

KBR (2009) provides an introduction to the landscape setting and an initial analysis of the vegetation and flora of the site. A number of additional native and introduced (including pest) plant species were recorded during 2009 and 2010, as summarised in Appendix A. The areas of relatively intact communities which contain remnant native flora, primarily as overstorey and understorey, are depicted on Figure 7.5 at the end of the report. Note: no areas of native shrubstorey were recorded in the site; indeed, there is only one native shrub recorded in the site.

Two vegetation communities were more obvious and in much better condition in 2009/10 than 2008, presumably due to the more average rainfall conditions, especially the occurrence of rain in spring. Additional information is provided about these in this section.

The riparian grassland and sedgeland dominated by *Typha domingensis* (Narrow-leaf bulrush), *Bolboschoenus caldwellii* (Sea club-rush), *Juncus kraussii* (Sea rush) and *Cyperus gymnocaulos* (Spiny flat-sedge) associated with the western section of the unnamed creekline is relatively intact (as it is along parts of the South Para River). Despite severe grazing impacts and pest plant infestations, this community remains in good condition. Sub-surface seepage from the quarry to the north of the creekline may be responsible for much of the water present here over summer and autumn.

Two small areas of Iron-grass (*Lomandra effusa – L. multiflora* ssp. *dura*) Natural Temperate Grassland of South Australia (estimated to be about 1.4 ha), plus areas of potential habitat for this community, occur on the southern side (north facing slope) of the unnamed tributary (Refer to Figure 6.3). The community is confined to South Australia, listed as a nationally threatened community of ecological significance and is rated as being critically endangered under the EPBC Act.

This Grassland community in the site is in moderate to good condition, despite having been exposed to excessive grazing and severe trampling-compaction pressure by livestock and grazing by rabbits in the past and currently. Although the occurrence has moderate to heavy weed infestations, the native flora species diversity is considered to be reasonable with 16 species recorded. Additional native species would be likely to

occur following the cessation of livestock grazing. Other areas east of the occurrence may have supported this community in the past, although there are no plants of the Iron-grass species. These areas are considered as providing suitable, potential habitat for this Grassland.

Over 2008 to 2010, 70 indigenous flora species were recorded across the site. Additional flora species, potentially including some of State or regional conservation significance may occur in the site. However, their detection will remain problematic until the grazing pressure is reduced.

4.1.2 Introduced and pest plants

A total of 96 introduced species were recorded during the survey i.e. 58% of the total floristic diversity across the site. A range of introduced grasses, including species associated with pasture improvement, such as *Phalaris aquatica* (Phalaris) and *Dactylis glomerata* (Cocksfoot), are dominant. Various annual and perennial broadleaf species also occur, including a range of woody weeds with the species and relative abundance of each varying according to location and grazing pressure. *Cynara cardunculus* (Artichoke thistle) is a dominant broadleaf weed species of many areas in the site, such as over the area disturbed to install the SEAGas gas pipeline and adjacent to the Barossa Trunk water pipeline (SA Water). Ongoing weed control of this species will be required to prevent its spread further into the woodland areas and into the small areas of native grassland.

Lycium ferocissimum (African boxthorn) and *Olea europaea* (Olive), both declared woody weeds in the AMLR NRM Board region and South Australia, occur throughout the site, especially along creeklines and in the woodlands. The latter species is dominant and is the monotypic overstorey species in much of the open, anthropogenic grassland sections of the site. Very limited control of some trees and shrubs in small areas has been undertaken.

There is a wide range of other pest plants that will require active management, such as *Marrubium vulgare* (Horehound), *Xanthium spinosum* (Bathurst burr) and a number of other thistle species. Two species of particular concern and interest are discussed immediately below.

A relatively large infestation of *Nassella leucotricha* (White needlegrass, Texas needlegrass) was recorded over about 2 – 3 ha adjacent to the SA Water pipeline at the northern part of the site (Refer Figure 4.1). This is considered to be a significant pest species for the State, with its occurrence more typical of eastern Australia. The SA Herbarium database has two recorded collections only for the species, at Scott Creek and Clarendon Weir i.e. well distant from the current infestation. Additional small infestations are known for the Southern Lofty botanical region, but collections have not apparently been lodged with the Herbarium or have yet to be recorded on its database.

Withania somnifera (Winter cherry) was recorded in the southern half of the site. This is an unusual weed species for both the State and the site with five records of it in the SA Herbarium, including two from the Adelaide metropolitan region. The current collection is the first from the Southern Lofty botanical region outside of the metropolitan area. The species is thriving and actively colonizing an area of over 5 ha.

Figure 4.1
Example of Nassella leucotricha

4.1.3 Fauna species and habitat

No Department for Environment and Natural Resources (DENR, formerly the Department of Environment and Heritage, DEH) Biological Survey assessment sites are located at or near this location (Armstrong et al. 2003, NatureMaps 2008). DENR (BDBSA) and SA Museum databases have records of 21 bird species and five frog species for the general region of the site. There are nil records of mammals and reptiles. Including the southern section of the North Para River in the search area indicates records of 29 bird species, 20 mammal species, including five introduced species and five species considered to be extinct in the region, 36 reptile species and six frog species for the general region of the site.

However, within the wider region i.e. an area of 10 km x 10 km from the centre of site, about 290 species from all faunal groups have been recorded from all sources in the literature. This provides a far greater number of species and also introduces a degree of ambiguity, primarily because it includes a wide range of habitats, especially large areas of relatively intact native vegetation communities, species and habitats which do not occur on the site.

The regional data includes records from Birds Australia (Barrett et al. 2003, Paton et al. 2004 and Atlas records) and some of the relevant regional assessments reported in DTEI (2007). The dominant native faunal group is birds (avifauna) with 210 species, followed by reptiles (40 species), mammals (20 species) and amphibians (six species). The remainder of the species recorded are introduced.

This current assessment is primarily a survey of the terrestrial environment, with limited information being reported for the aquatic environments.

The main habitat areas for faunal groups present in the site are:

- *Eucalyptus porosa* (Mallee box) open grassy woodland, especially where it occurs over rocky outcrops
- *E. camaldulensis* (River red gum) open to very open woodland over sedgeland and grassland along riparian areas, with the better quality areas being along the South Para River
- South Para River and the unnamed eastern drainage line, including tributaries, primarily as the habitat provided by the rock outcrops and surface rock scatter associated with these watercourses
- anthropogenic cropping and pasture areas, which is dominant, occupying about 130 ha (67% of the site).

From a fauna habitat perspective, there is limited complexity remaining on most of the site, with the better quality areas, which are most prospective for fauna, associated with:

- the large, mature trees, particularly those with hollows for birds, micro-chiropteran bats and some reptiles and some of the small areas of native grassland
- riparian areas for aquatic fauna, especially amphibians and some birds, plus as a water source for fauna generally. This includes steep, sandy and rocky banks suitable for nesting by some bird species and as cover for reptiles
- rocky outcrops and surface rock scatter for reptiles.

These habitat areas are of moderate to high value.

The remaining areas are anthropogenic and would be expected to be used by common and cosmopolitan native and introduced species only, especially avifauna.

It is likely that the mining faces in the quarry and some other areas here would provide suitable habitat for some bird, reptile and rodent species. This is discussed in Section 5.

Amphibians

Four species were recorded by their advertisement calls in riparian areas of the site, with the South Para River corridor containing the largest populations. All species are common in the State and region. An additional two species could occur, but would require a much greater survey effort than was possible.

Reptiles

About 36 reptile species probably occurred in or adjacent to the site in the past. Current reptile diversity across the site is typical of what was predicted to occur in the region, with the majority of species being small lizard species. Potential habitat is present for a number of other species not recorded, such as Tawny dragon, Earless dragon, Wood gecko and several small snake species.

A total of 16 reptile species were recorded on the site through a combination of active searching and pitfall trapping. Table 3 provides a summary of the pitfall trapping results.

Table 4.1 Results of pitfall trapping (October 2009)

Pitfall no.	Habitat	Scientific name
1	Eucalyptus porosa open woodland	-
2	Eucalyptus porosa open woodland	*Menetia greyii*
		Morethia obscura
		Lerista bougainvillii
		Cryptoblepharus plagiocephalus
3	Eucalyptus porosa open woodland	*Lerista bougainvillii*
4	Eucalyptus porosa open woodland	*Lerista bougainvillii*
5	Eucalyptus porosa open woodland	-
6	Eucalyptus porosa open woodland	*Cryptoblepharus plagiocephalus*
7	Anthropogenic grassland	*Delma molleri*
		Lerista bougainvillii
8	Anthropogenic grassland	*Lerista bougainvillii*

Active searching along small rocky gullies, such as those around pitfall lines 7 and 8, yielded more reptile species than the woodland areas; *Ctenotus robustus* (Eastern striped skink), *Delma molleri, Hemiergis peronii* (Four-toed earless skink), *Lerista bougainvillii* (Bougainville's skink), *Parasuta flagellum* (Little whip snake), *Pseudonaja textilis* (Eastern brown snake) and *Pogona barbata* (juvenile) (Eastern bearded dragon) were all recorded under rocks in these areas. Each of these species was also recorded elsewhere in the site in similar habitat, such as along the slope between pitfalls 1 and 2.

The highest diversity and largest number of reptile species were observed in those sections of grassland with discontinuous scree of medium and large sized, relatively flat rocks on the surface, usually over relatively shallow bedrock. Most of these sites are located along the watercourses. Ant and termite colonies were frequently present beneath these rocks and provide a secure food source for small lizards.

Other species recorded on site by direct observation were *Christinus marmoratus* (Marbled gecko) and larger species as *Chelodina longicollis* (Long-necked tortoise) (South Para River only), *Pseudonaja textilis* (Eastern brown snake), *Tiliqua rugosa* (Sleepy lizard) and *Tiliqua scincoides scincoides* (Eastern bluetongue). *Pseudechis porphyriacus* (Red-bellied black snake) was recorded once along the South Para River. *Notechis scutatus* (Tiger snake) is known to have occurred in the site in the past (KBR 2009).

Lerista bougainvillii (Bougainville's skink), *Ctenotus* robustus (Eastern striped skink) and *Delma molleri* were the species most commonly recorded in the site by all assessment methods. *Cryptoblepharus plagiocephalus* (Wall skink) was the most common species recorded in woody debris in the understorey in woodland.

Birds

A total of 65 native bird species were recorded across all habitats in this section of the site during the survey, representing approximately 30% of the surrounding regions' avifauna diversity. The complete species list is in Appendix A.

The majority of bird species were recorded in woodland habitat at various locations throughout the site. Some of the *Eucalyptus porosa* (Mallee box) and *E. camaldulensis*

(River red gum) were flowering during the 2008 to 2010 surveys. While much of the flowering was sparse, occasional trees and small areas of woodland had an average to heavy flowering and these areas were being used by many of the bird species.

The majority of bird species recorded are considered common within the State and region and some were recorded in very small numbers or on a seasonal basis only. Based on all survey data, the dominant terrestrial species are the cosmopolitan species typically recorded in open sites with limited woodland and habitat diversity, namely *Manorina melanocephala* (Noisy miner), *Anthochaera carunculata* (Red wattlebird), *Lichenostomus penicillatus* (White-plumed honeyeater), *Gymnorhina tibicen* (Australian magpie), *Corvus coronoides* (Australian raven), *Geophaps lophotes* (Crested pigeon) and *Eolophus roseicapilla* (Galah).

Nonetheless, 17 species observed on or adjacent to the site are of National, State and/or regional conservation significance. These are summarized in Table 6.1 and discussed in more detail Section 6. In summary, *Gallinago hardwickii* (Latham's snipe), *Gallirallus philippensis* (Buff-banded rail), *Todiramphus sanctus* (Sacred kingfisher) and *Pachycephala rufiventris* (Rufous whistler) were only recorded along the South Para River corridor on one occasion for each species. *Podargus strigoides* (Tawny frogmouth) was recorded here and at Dead Man's Pass Reserve too. *Merops ornatus* (Rainbow bee-eater) was present in the main site, where it was recorded feeding on feral European honeybees. There was no evidence of past or recent nest sites. These were recorded in the quarry as discussed in Section 5. The species was also recorded adjacent to the site in Dead Man's Pass Reserve and at a number of locations along the South Para River corridor.

Acanthiza chrysorrhoa (Yellow-rumped thornbill), *Aphelocephala leucopsis* (Southern whiteface), *Petrochelidon ariel* (Fairy martin), *Ephthianura albifrons* (White-fronted chat), *Neophema elegans* (Elegant parrot), *Psephotus haematonotus* (Red-rumped parrot) and *Petronica goodenovii* (Red-capped robin) were recorded in the main site. Of these species, *Acanthiza chrysorrhoa* and *Psephotus haematonotus* are considered to be breeding residents and were recorded at a number of locations. *Podargus strigoides* (Tawny frogmouth) and *Cuculus pallidus* (Pallid cuckoo) were recorded adjacent to the site.

Mammals

Macropus fuliginosus (Western grey kangaroo) was commonly recorded, though confined to a few observed individuals, throughout most of the site, especially along the drainage lines. *Tachyglossus aculeatus* (Short-beaked echidna) was also noted once in the woodland area, but probably forages throughout the site.

Trichosurus vulpecula (Common brushtail possum) and *Pseudocheirus peregrinus* (Common ringtail possum) were recorded occasionally in the region. The former species was confined to the South Para River corridor and is listed as rare in the State.

While not formally assessed, insectivorous bats will be present throughout the site, primarily as a result of the large number of tree hollows and the water sources present. Seven species of micro-bats are commonly recorded in the region. The SA Museum (2006) and DTEI (2007) provide more information about their occurrence, with a summary of information about rare species provided below.

Saccolaimus flaviventris (Yellow-bellied sheathtail bat) is listed as rare in South Australia (a total of 20 records only of the species) and it appears to be an occasional migrant only in the State and rarely in this section of the State. There is a recent record of the species along the Gawler River.

Vespadelus vulturnus (Little forest bat), occurs in the Mt Lofty Ranges but it is at its north-western distributional limit. This species could eventually be recorded in the region. Another species, *Scotorepens balstoni* (Western broad-nosed bat), has been recorded 70 km north of Gawler and in Adelaide but these records were from 70 years ago. However, a recent record of the species in Adelaide indicates that it appears to be very rare in the region (Terry Reardon, SA Museum, pers. comm., November 2009). The vegetated corridor of the Gawler River to the west and isolated clumps and areas of woodland in the site and along the South Para River are areas of remnant overstorey vegetation with hollows in the region i.e. potential roost sites for bats.

Invertebrates

Invertebrates were common throughout the site, although the assemblage was dominated by introduced species and there was low species richness of ground invertebrates. The introduced Portuguese millipede, five species of ground spider and three species of ant were those most commonly recorded in the pitfall lines. A total of 11 ant species were recorded. Due to the large number of *Iridomyrmex* colonies, this ant species was the most commonly recorded native species. Three species of introduced land snail were present, namely the white snails, *Cernuella (Helicella) virgata*, which was the dominant species, plus *Theba pisana*, and *Cochlichella acuta*.

Feral European honeybee colonies were recorded in a number of hollows in Mallee box and River red gum trees.

Aquatic fauna

Aquatic survey sites in the region have been established as part of Waterwatch and the AMLR NRM Board and by the EPA (DTEI 2007, AMLR NRM Board 2008 and pers. comm. February 2010). Most of these assess macro-invertebrates and there are relatively few fish sampling sites. There are macro-invertebrate survey sites for the South Para River at Dead Man's Pass and the Para Woodlands Reserve. Macro-invertebrate diversity is moderate at both sites (rated as "fairly healthy").

Hammer et al. (2009) and AMLR NRM Board (2008) indicate that eight native and one introduced fish species were known to occur in the Gawler River catchment (which includes the North and South Para and Gawler Rivers) prior to 1990. Eight native fish species, of which two are additional to pre 1990 records, and four introduced species have been recorded.

Two native species have been recorded in the South Para River near to the Para Woodlands, namely Climbing galaxias and Flathead gudgeon and four native species have been recorded from the southern section of the North Para River. The pest species, Gambusia, has also been commonly recorded in all rivers in the region and at the sites referred to above.

Introduced and pest animals

Vulpes vulpes (European red fox), *Oryctolagus cuniculus* (European rabbit) and *Lepus capensis* (Brown hare) were recorded during the surveys. Adults and sub-adults and fox scats, prints and runs were evident through the woodland areas and especially along gully and riparian sites. Rabbit scats (as buck heaps) were present in parts of the site and several large active warrens were noted along the watercourses. However, there is a low incidence of the species across the whole site. Brown hare occurred as individuals throughout the site. It is expected *Felis catus* (feral cat) would also be present on site, although no evidence of the species was seen during the surveys. *Mus musculus* (House mouse) was recorded over summer and autumn 2009-10.

Introduced bird species recorded on site included *Carduelis carduelis* (European goldfinch), Alauda arvensis (Eurasian skylark), *Turdus merula* (Common/Eurasian blackbird), *Columba livia* (Rock dove), *Streptopelia chinensis* (Spotted turtle-dove, Indian dove), *Passer domesticus* (House sparrow) and *Sturnus vulgaris* (Common starling). All of these species were common and breeding in the site, with Common starling being the dominant species of all avifauna recorded. It is out-competing most native species for use of tree hollows and was recorded breeding in many of these hollows. The species occurred in flocks of several hundred individuals during summer.

Four introduced fish species have been recorded in the Gawler River catchment (AMLR NRM Board 2008).

5 Results — Quarry precinct

A disused sand quarry (Holcim quarry) is located to the north of the main site and occupies 61.71 ha. There has been minimal site clean-up and remediation of the quarry following the cessation of mining and there is an array of buildings, plant and machinery still present.

From a fauna habitat perspective, there is limited habitat remaining on this section of the site, with the better quality areas, which are most prospective for fauna, associated with the:

- Small areas of planted woodland, possibly with an occasional remnant tree, for birds and micro-chiropteran bats
- very small areas of native grassland
- riparian areas of the ponds and dams for aquatic fauna, especially amphibians and some birds, plus as a water source for fauna generally. This includes steep banks suitable for nesting by some bird species
- rocky faces and outcrops of the abandoned working faces for bird species, and possibly some reptiles.

Most of the quarry site is totally disturbed and anthropogenic, with large areas that are bare or infested with introduced species plus some small areas that have been planted with a mix of native and indigenous overstorey species as part of mine rehabilitation.

5.1 VEGETATION AND FLORA

Amenity plantings are present along the main entrance and include various eucalypt species and a range of other native species (Refer Appendix A). The former office site is present on the western side of the main entrance and adjacent to this area is a small area (0.82 ha) of planted Mallee box woodland, estimated to be about 30 – 40 years old. An occasional remnant Mallee box appears to be present here too.

Amenity and screening plantings are present around and throughout the site and include *Callitris gracilis* (Southern cypress pine) around the slime ponds and various shrubs such as *Acacia iteaphylla* (Flinders Range Wattle), *Acacia saligna* (Common wreath wattle) and *Dodonaea viscosa* (Sticky hop bush). The majority of overstorey vegetation in the main area of the quarry has been planted on areas of overburden and fill. Therefore, these areas are believed to have been planted and are not subject to the Native Vegetation Act or Native Vegetation Council clearance requirements. Nonetheless, this vegetation provides a useful habitat for some bird species from within the region and locally.

The ground flora is dominated by a wide range of introduced grass, herb and forb species, including a large number of pest plants. Small areas of terrestrial grassland species are actively colonising the site, mostly as *Chloris truncata* (Windmill grass), *Enneapogon acicularis, Austrodanthonia* spp. (Wallaby-grasses), especially *A. setacea* (Small-flower wallaby-grass), and *Aristida behriana* (Brush-wire Grass), with a lower incidence of *Austrostipa* spp. (Spear-grasses). A total of 35 indigenous plant species (24% of the total flora) were recorded in the quarry.

Wetlands in the quarry are associated with the slimes ponds, sumps and other low lying areas of the site. Some are bare, while others have areas of *Typha domingensis* (Narrow-leaf bulrush) as the dominant species, and others are dominated by varying sized infestations of a few weed species.

Figure 5.1
Eucalyptus porosa with White-winged choughs. This bird species is considered to be State and regionally significant.

Regrowth patches of regrowth native tussock grassland of *Austrodanthonia caespitosa* (Common wallaby-grass), several species of *Austrostipa* and *Aristida behriana* (Brush-wire grass) is present west of the main entrance and along the main driveway into the site.

Good quality remnant *Austrodanthonia caespitosa* tussock grassland was recorded as a very small area near one of the disused sand mining areas (adjacent to a power pylon within the powerline easement) and its occurrence accords with the Pre-European settlement vegetation communities for the region of Kraehenbuehl (1996) (refer to Figure 5.2).

Figure 5.2
Austrodanthonia caespitosa and Aristida behriana remnant native grassland

5.2 INTRODUCED AND PEST PLANTS

A total of 114 introduced plant species were recorded during the survey comprising approximately 76% of the total floristic diversity recorded across this portion of the proposed development area.

Artichoke thistle (*Cynara cardunculus*) is present as a colonizing species and is dominant in most of the heavily disturbed areas of the site (as it is in sections of the main site) (Figure 5.3). Weed control of this species will be required to prevent further spread. African boxthorn (*Lycium ferocissimum*) and Olive (*Olea europaea*), both declared weeds in South Australia, were recorded in varying infestations mostly as small plants. Skeleton weed (*Chondrilla juncea*), also a declared plant in South Australia, is present near the high wall adjacent to a wetland area. This species will spread easily given the lack of existing ground cover and its mode of dispersal ('daisy' seeds transported by wind) and control will be required. A number of other species, including *Tribulus terrestris* (Caltrop), *Chrysanthemoides monilifera* (Boneseed), *Xanthium spinosum* (Bathurst burr) and *Cortaderia selloana* (Pampas grass), will also require control as part of any development.

Figure 5.3
Example of Artichoke thistle infestation present in the quarry area (and elsewhere in the site)

5.3 FAUNA

Macropus robustus (Euro) is present here as a small breeding population (about six individuals recorded) and Echidna scratchings were present around some ant colonies. Micro-bats were not recorded in any of the abandoned buildings and other structures.

In total, 48 bird species were recorded within the quarry site. A number of these are breeding residents or migratory species and seven species are listed as being of conservation significance at a Commonwealth, State or regional level. The abandoned quarry provides habitat, in the form of secure rock ledges, for nest sites for species such as *Petrochelidon ariel* (Fairy martin) and *Hirundo neoxena* (Welcome swallow).

Suitable habitat is present for a number of common reptile species and the areas of ponded water +/- Typha sedgeland are suitable breeding habitat for several amphibian species. These species are similar to those described in KBR (2009) and Section 4 for the remainder of the site.

The EPBC Act listed migratory bird species, *Merops ornatus* (Rainbow bee-eater), was observed and has nested within disused compacted sand stockpiles in the site. Breeding pairs were present here in 2009, hence the site is of regional importance for this species. The species has recently been recorded as a breeding 'resident' elsewhere in the region and it was recorded as non-breeding birds at a number of sites in the quarry.

Three bird species of state significance were recorded within the quarry site. *Corcorax melanorhamphos* (White-winged chough) was present on one occasion

within the only area of Mallee box woodland with a good leaf litter layer. One old and one recent nest were present in the woodland.

Falco peregrinus (Peregrine falcon) and *Haliastur sphenurus* (Whistling kite) were also recorded on this site. A pair of Peregrine falcon was roosting at one area of the quarry 'high wall'. Whistling kite is likely to be an overfly species only. This species is known to nest along the Gawler River.

Acanthiza chrysorrhoa (Yellow-rumped thornbill) (breeding), *Petrochelidon ariel* (Fairy martin) (breeding), and *Psephotus haematonotus* (Red-rumped parrot), which are listed in the Regional Recovery Plan of Willson and Bignall (2009), were recorded here.

There is limited habitat available for most reptile species, with the most obvious difference between the main site being the lack of surface rock and sub-crop. Seven reptile species were recorded here, with *Christinus marmoratus* (Marbled gecko) being the commonly recorded species, primarily in the abandoned equipment and buildings and *Hemiergis peronii* (Four-toed earless skink) and *Lerista bougainvillii* (Bougainville's skink) were recorded under debris in the quarry. Delfin staff recorded a 'black snake' in a building in the north east of the site during 2009. It is unknown if it was a *Pseudechis porphyriacus* (Red-bellied black snake) or *Notechis scutatus* (Tiger snake) (both species have been recorded in the region in historical records).

5.4 PEST ANIMALS

Pest vertebrate animal numbers are considered to be low to moderate in the quarry. Little evidence was found to indicate high numbers of *Vulpes vulpes* (European red fox), semi-feral cat, *Lepus capensis* (Brown hare) and *Oryctolagus cuniculus* (European rabbit), although all are present and spotlight surveys were not undertaken. There is at least one breeding pair of fox present and rabbits are breeding residents here. *Columbia livia* (Rock dove, feral pigeon) is present and breeding in disused plant and equipment in the site. *Turdus merula* (Eurasian blackbird), *Streptopelia chinensis* (Spotted turtle-dove, Indian dove), *Passer domesticus* (House sparrow) and *Sturnus vulgaris* (Common starling) are breeding residents here also.

Introduced invertebrate numbers are high through the site and dominate the assemblage, especially Portuguese millipede and land snails. Four species of introduced land snail were present, namely *Cantareus (Helix) aspersa,* the white snails, *Cernuella (Helicella) virgata*, which was the dominant species and *Theba pisana*, and *Cochlichella acuta*.

6 Matters of conservation significance

All matters of conservation significance are discussed in this section according to Commonwealth and State legislation.

6.1 COMMONWEALTH

Environment Protection and Biodiversity Conservation Act 1999 (EPBC)

The following section describes EPBC Act listed species and communities identified on site and those which are likely to occur. EPBC listed species and communities which are potentially impacted as a result of development will require the project to be referred to the Commonwealth for approval.

6.1.1 EPBC Act listed Species

No flora species and habitat for these species, of national conservation significance (as described in the Protected Matters Search), were recorded in the site. *Olearia pannosa* subsp. *pannosa* (Silver daisy-bush) and *Prasophyllum pallidum* (Pale leek orchid) are listed as vulnerable under the EPBC Act and are noted as likely to occur in the area. The initial site and subsequent surveys did not indicate that the required habitat was present to support either of these species in the site.

No other flora species of national significance are predicted to occur here.

Nationally significant bird species observed on or adjacent to the site were the migratory species, *Gallinago hardwickii* (Latham's snipe) and *Merops ornatus* (Rainbow bee-eater). The former was recorded once as a single bird along the edge of sedgeland and reed beds on the South Para River, to the east of the site boundary.

Rainbow bee-eater was primarily recorded within the quarry precinct, especially in the eastern section, including the Mallee box woodland here, and in the main section of the site. It is estimated that about 20 birds were present in the quarry. This species has been recorded as a breeding migrant elsewhere in the region in the past and currently, over 2008 to 2010, for example at Clonlea Park along the North Para River, at Dead Man's Pass Reserve and along the South Para River. Over the same time period it was also recorded throughout a much wider region, including from the North Para River, Greenock Creek, Sandy Creek Conservation Park, Para Wirra Recreation Park, Tanunda Golf Course and around Buckland Park (R. Anderson, pers. obs.; R. Attwood, Birds SA, pers. comm. February 2010).

Merops ornatus is an inter-continental migrant and migrates to the southern parts of Australia from northern areas of the continent during spring and remains over summer to early autumn before returning north. At the time of survey in summer 2009, three breeding pairs and up to 14 other birds were observed using the disused quarry. The quarry precinct contains numerous potential nesting areas, which, by observation,

were predominantly unused. Compacted sand stockpiles were the only recorded breeding site. Areas of water near the quarry face provide potential food and water sources, as do the woodlands in the local and surrounding region. The woodlands provide observation, 'hawking platforms' and roosting habitat for this species. Much of the site has rocky, skeletal or heavier loam and clay soils which would preclude their use for nesting by the species.

The development of the quarry area would result in a significant impact on this population of the species and its preferred habitat.

Figure 6.1
Rainbow bee-eater nesting sites

Aprasia pseudopulchella (Flinders Ranges worm-lizard) has previously been recorded in the region and on site by observation in an earlier survey by KBR. The species was not recorded during the pitfall fauna survey or during rock turning observations over 2009 and 2010.

Aprasia pseudopulchella is currently considered to be endemic to South Australia and is classified as vulnerable under the EPBC Act. It was previously listed at a State level under the National Parks and Wildlife Act but was delisted in 2008 (DEH 2008). The delisting occurred because the Worm-lizard is now believed to be relatively common and widespread throughout the northern Adelaide Plains, northern Mount Lofty Ranges to the Flinders Ranges region of South Australia. Taxonomically, the species is barely distinguishable from another species, *Aprasia parapulchella*, which occurs in NSW and Victoria. The species is considered to be relatively common (M. Hutchinson SA Museum, pers. comm., 2009).

The distribution of the species and its apparent rarity in the past led to its classification as a species of national conservation significance (DEWHA 2008). Prior to 2000 (Robinson et al. 2000), the species was considered to be confined to the Flinders Ranges and the Northern Mount Lofty Ranges, with a few occurrences in the foothills

and western escarpment of the Mount Lofty Ranges, such as in and around the Cobbler Creek Recreation Park and the upper region of the Little Para Linear Park (City of Salisbury 2009) and one record from near Mylor in the Adelaide Hills (DEH 2008). There is one historical record of the species south of Adelaide (Noarlunga).

The species occurrence was considered to be sparse. For example, Mitchell (1992) recorded eight individuals over a 30 month survey period at Cobbler Creek.

The species is co-distributed with *Tiliqua adelaidensis* (Pygmy bluetongue lizard) and also occurs in other habitats. As a result of extensive trapping surveys as part of ecological studies of *T. adelaidensis* in the Mid North of SA, the species has been recorded relatively frequently and there are good annual records for it every year from a range of sites around Burra over 2004 to 2009. Here the species has been recorded in *Lomandra*-dominated and other grasslands and shrublands with a scatter of small surface rocks. Around Clare and Auburn the species occurs in grassy woodlands with native grassland understorey.

It will also use modified grasslands i.e. those which contain some weed species. The ecology of the species remains poorly studied and known. It occurs in open woodland, native tussock grassland, riparian habitats and rocky isolates (Cogger et al. 1993). Specifically, steep areas with surface rock, and stony soils or clay soils with stony surface appear to be its preferred habitat. The diet of most *Aprasia* species consists of the larvae and pupae of ants.

Previously it has been considered as a species which resides underground and only rarely appearing at or near the soil surface, usually in about September to October, presumably during mating season. However, recent surveys indicate that it shelters below surface rocks and can be found in these locations during autumn and winter. It is found on the surface during warm conditions in October to December and in February to April, especially a few days after rain (Anderson, pers. obs., 2008 and 2009). Juveniles are most commonly recorded during this latter time period.

The Regional Recovery Plan for Threatened Species and Ecological Communities of Adelaide and Mount Lofty Ranges 2009-2014 (Willson and Bignall 2009) states that the greatest risks to the Worm-lizard are habitat destruction or modification and predation by *Vulpes vulpes* (European red fox) and feral and uncontrolled cats (*Felis catus*). Weed invasion resulting in habitat modification is also considered a moderate risk. This species is considered a high priority conservation species for the region in Willson and Bignall (2009).

Detailed searches of the site in a range of seasons and conditions identified areas of potential fair to good quality habitat for the species, along with ample suitable food resources and it is considered highly likely that this species occurs in parts of the proposed development area. Other areas of marginal habitat are present, along with large areas of unsuitable habitat also.

Pygmy bluetongue lizard originally occurred in the region (KBR 2009), although the closest extant population is now around Auburn in the Mid North. The species was not recorded on the site. Abandoned (empty) spider burrows constructed by large lycosid and mygalomorph spiders are essential habitat for the species, since it uses these burrows as refuges. A detailed inspection of the site indicated that there are few areas of remnant grassland and very few spider burrows of sufficient size throughout

the site to support this species (A. Fenner, pers. comm.., October, 2009). Consequently, it is considered very unlikely that this species occurs in the site.

Figure 6.2
Termite colony beneath loose surface rock

EPBC Act listed communities

The Iron-grass (*Lomandra effusa – L. multiflora* ssp. *dura*) Natural Temperate Grassland of South Australia is listed as a threatened community of ecological significance and critically endangered under the EPBC Act. An area of this community (estimated to be about 1.5 ha) occur on the southern side (north facing slope) of the unnamed tributary (Refer Figure 6.3). Both species are present in the occurrence, with *L. effusa* dominant. Being on a rocky, steep slope, this section of the site is not arable and has not been subject to cultivation. The community is in moderate to good condition, despite having been exposed to livestock grazing in the past and currently, and having considerable weed infestations. The species diversity in the occurrence is considered to be reasonable with 16 native species recorded, including a number of grazing and disturbance resistant species. Additional native species would be likely to be recorded following the cessation of livestock grazing and the occurrence is amenable to rehabilitation.

Turner (2010) provides the Draft National Recovery Plan for this Grassland Community. The current example of the community is slightly south of the southern boundary on the distribution map in this reference. Nonetheless, it is clearly this community and other examples of it have been recorded around Blakeview, even further south (Anderson, pers. obs., 2005, KBR 2007).

The size and condition of the community meet the requirements of condition class B as described in the EPBC Policy Statement 3.7 (DEWR 2007). If development or

adverse impact on this area was likely to occur, then the proposal will require referral to DEWHA.

The *Eucalyptus odorata* (Peppermint box) woodland community predicted to occur in the region, and potentially the site, by the EPBC Protected Matters search databases, does not occur in the site. The few trees of this species recorded have been planted. This community is present on a small section of the Para Woodland Reserve adjacent to the site (Bentz and Milne 2007).

6.2 OTHER MATTERS OF NATIONAL CONSERVATION SIGNIFICANCE

A Regional Recovery Plan (Willson and Bignall 2009) has been prepared by DEH for a range of communities and species in the Adelaide and Mount Lofty Ranges (AMLR) region, which includes the site. The Plan complies with EPBC Act requirements for a formal Recovery Plan for adoption under the Act. The Plan divides the region into a series of sub-regions (based on landscape context) and the site is located in the Adelaide Plains sub-region. Threatened species exclude those species listed under the EPBC Act and some of the species listed in Schedules to the NPW Act. Based on analyses, each species is assigned a conservation rating for both the region and each sub-region, although these ratings are not officially recognised under legislation.

Within each sub-region, each species is further analysed and provided with a priority and threat summary. Priority includes three categories, very high, high and medium and threat summary has four categories, which are the same as for priority ranking and including low also.

Table 6.1 Bird species of conservation significance recorded on site

Family	Scientific name	Common name	Conservation status
ACANTHIZIDAE	*Acanthiza chrysorrhoa*	Yellow-rumped thornbill (B)	Regional Uncommon
	Aphelocephala leucopsis	Southern whiteface	Regional Vulnerable
ACCIPITRIDAE	*Haliastur sphenurus*	Whistling kite	Regional Uncommon
CORCORACIDAE	*Corcorax melanorhamphos*	White-winged chough (B)	State Rare, Regional Vulnerable
CUCULIDAE	*Cacomantis pallidus*	Pallid cuckoo	Regional Vulnerable
FALCONIDAE	*Falco peregrinus*	Peregrine falcon	State Rare, Regional Vulnerable
HALCYONIDAE	*Todiramphus sanctus*	Sacred kingfisher	Regional Uncommon
HIRUNDINIDAE	*Petrochelidon ariel*	Fairy martin (B)	Regional Uncommon
MELIPHAGIDAE	*Epthianura albifrons*	White-fronted chat	Regional Uncommon
MEROPIDAE	*Merops ornatus*	Rainbow bee-eater (B)	National (Migratory)
PACHYCEPHALIDAE	*Pachycephala rufiventris*	Rufous Whistler	Regional Uncommon
PETROICIDAE	*Petroica goodenovii*	Red-capped robin	Regional Vulnerable
PODARGIDAE	*Podargus strigoides*	Tawny frogmouth (B)	Regional Uncommon
PSITTACIDAE	*Neophema elegans*	Elegant parrot	State Rare
	Psephotus haematonotus	Red-rumped parrot (B)	Regional Uncommon
RALLIDAE	*Gallirallus philippensis*	Buff-banded rail	Regional Vulnerable
SCOLOPACIDAE	*Gallinago hardwickii*	Latham's snipe	National (Migratory)

B= breeding resident or migrant.

14 species with a conservation rating at the AMLR regional level were recorded on all sections of the site, including areas adjacent to it, as per Table 6.1 (Figure 7.2). All of these species are ranked as being of medium priority and most have a low, or occasionally, medium threat status.

The total includes two species with a State conservation status of Rare. Two species with national conservation status and two with State status were present as listed in Table 6.1.

Figure 6.3
Lomandra effusa – L. multiflora ssp. dura Natural Temperate Grassland community with native Austrostipa grassland in background

6.3 NATIONAL PARKS AND WILDLIFE ACT 1972 (SA)

Three bird species of State significance were recorded on site, *Falco peregrinus* (Peregrine falcon), *Corcorax melanorhamphos* (White-winged chough) and *Neophema elegans* (Elegant parrot), each of which is listed as rare. Each of these species is considered in the previous section with additional information immediately below. *Neophema elegans* is listed as rare, but is excluded from consideration in the Regional Recovery Plan.

Peregrine falcon uses the site as a roosting and hunting area, especially the pigeons that flock and breed in the site. A pair was observed in a roost site within the high wall of the quarry precinct and hunting over the adjacent areas of the quarry and Mallee box woodland south of the quarry fenceline over 2008 to 2010. There is no evidence of past or current nesting in the quarry or elsewhere. There are two breeding pairs of the species in the region, with the closest pair being in an abandoned quarry east of the site and on the South Para River, and at least an additional two pairs in the wider region. The pair in the quarry may represent a new pair of birds or may be one of the current pairs in the region that is using the quarry as a roost site out of the breeding season.

A flock of White-winged chough (about 15 birds) was recorded once within Mallee box woodland in the quarry site. The species is considered to be a breeding 'resident', although it appears to be migratory in the region i.e. it uses a large area of habitat of which the quarry is a component. This species forages in leaf litter and relies on woodland habitat, with its apparent decline in recent years linked to land clearing in South Australia (Willson and Bignall 2009).

Elegant parrot was recorded as two birds in 2008 only.

Gallirallus philippensis (Buff-banded rail), which is considered to be vulnerable in the region and was formerly of State conservation significance, was recorded once as a single adult bird in aquatic tall grassland (reed) habitat along the South Para River adjacent to the site. This species is particularly secretive and cryptic.

Trichosurus vulpecula (Common brushtail possum), listed as rare in the state, is a hollow-dependent species and is present along the woodland of the South Para River.

Pseudophryne bibronii (Bibron's toadlet) (State rare) has been recorded near Gawler recently (Ecological Associates 2005, A. Shackley, November 2008, email). The species may still be present along some of the better quality riparian sites and grassland areas which are subject to temporary inundation. The species was not observed and did not respond to aural call playback in summer and autumn. Future late summer to autumn surveys following average or above average rainfall would be required to detect the species (if present).

6.4 REGIONAL STATUS

The consideration of regional status of flora and fauna is primarily derived from Willson and Bignall (2009). There are no flora species in the site that are listed under their Regional Recovery Plan.

Lang and Kraehenbuehl (2002) in the 2008 update of Florlist provide the regional status of flora species in the State. Within the site, there are two species listed as rare and nine species listed as uncommon in the Southern Lofty botanical region.

Shackley (2009) provides lists of flora species, including threatened species, for Dead Man's Pass and the South Para River corridor, including the Para Woodland Reserve. He indicates that about 170 native species occur in both sites. It is possible that some of these species occurred in the site at some stage; however, agricultural and extractive industry use of it has resulted in the current species diversity. Nonetheless, removal of grazing impacts may well allow some additional species to be recorded in future.

Carpenter and Reid (2000) provided the original assessment of regional status for avifauna. However, the more recent regional conservation ratings for the Adelaide Mount Lofty Ranges region (AMLR) and the Adelaide Plains sub-region for all fauna species of Willson and Bignall (2009) have been applied. Sub-region ratings are described in terms of landscape species priority and further defined in terms of regional vulnerability (Very high, high, and low priority).

14 bird species rated at the AMLR regional level were recorded on or adjacent to the site. All are rated as being of moderate priority for conservation and most have a low priority for the region i.e. they are thought to be declining, but are species with risk. All have been discussed in the earlier sections of this report.

6.4.1 Potentially present species

KBR (2009) provided information about a range of species potentially present in the region. Some of these data referenced were provided by Councillor A. Shackley, Town of Gawler in a list of observations and past records for flora and fauna species in the local area (P. Gatsios, email to KBR, 19 November 2008). Additional information on this topic was provided in his Submission to the Development Policy Advisory Committee in regard to the Gawler East Plan Amendment (Shackley 2009).

Some species of national conservation significance originally occurred in or near the site, but these are now considered to be extinct, either in the State or the region. These include species such as *Bettongia lesueur* (Burrowing bettong), *Isoodon obesulus* (Southern brown bandicoot), *Leipoa ocellata* (Mallee fowl), *Pedionomus torquatus* (Plains-wanderer), *Cinclosoma punctatum* (Spotted quail-thrush), *Alcedo azurea* (Azure kingfisher) and *Xanthomyza phrygia* (Regent honeyeater). For example, the current population of the Regent honeyeater in all of eastern Australia is less than 1,500 birds (Birds Australia 2008). The species is considered to be extinct in South Australia and Western Victoria (Armstrong et al. 2003, AMLR NRM Board 2008). No additional survey for this species (or the other species referred to above) in the site or region is warranted.

Turnix varius (Painted button quail) and *Melithreptus gularis* (Black-chinned honeyeater) (listed as rare at a State level) have been recorded adjacent to the site in the past (1996 and 1981 respectively). It is unlikely that both of the species are present due to the lack of suitable habitat. Neither species was recorded in the site or adjacent region over 2008 to 2010.

Other species of particular significance include *Coturnix ypsilophora* (Brown quail), *Microeca fascinans* (Jacky winter), *Myiagra inquieta* (Restless flycatcher), *Melanodryas cucullata* (Hooded robin) and *Melithreptus albogularis* (White-throated honeyeater). Species which might still occur on or adjacent to the site for part of the year include *Falcunculus frontatus* (Crested shrike-tit), *Stagonopleura guttata* (Diamond firetail), *Climacteris picumnus* (Brown tree-creeper), *Chrysococcyx lucidus* (Shining bronze-cuckoo), *Petroica phoenicea* (Flame robin) and *Taeniopygia guttata* (Zebra finch). Some of these species are seasonal or altitudinal migrants and many occur in very small numbers in the region. No recent sightings of most of these species have been made for this part of the region, although there are recent records for some adjacent areas (R. Attwood, Birds Australia. pers. comm., December 2008). Habitat for some species, such as Diamond firetail and Brown quail, is not available in the site. It is considered that there is a very low risk of these species being present. The other species may occur here with their occurrence being confined to native woodland and grassland habitats. Providing these habitats are conserved and managed appropriately, then the species will be likely to use the site.

Wetland species, such as *Biziura lobata* (Musk duck), *Oxyura australis* (Blue-billed duck) and *Stictonetta naevosa* (Freckled duck), are considered very unlikely to use this site as primary habitat due to the lack of large areas of permanent water. However, these and other threatened aquatic species may occur in the riparian areas as occasional visitors. There are no records of these species being present in the region for many years.

Egernia cunninghami (Cunningham's skink), a species potentially present in the site and region was last recorded in the wider region east of the site in 1926 (SA Museum

collection records). A detailed assessment of the site did not record any evidence of the species. This is a similar conclusion to that recorded by Milne in Ecological Associates (2005) during an assessment of the North Para River. Potential habitat is present for a number of other reptile species not recorded during the survey, such as *Ctenophorus decresii* (Tawny dragon), *Tympanocryptis pinguicolla* (Earless dragon), Wood gecko (*Diplodactylus vittatus*) and several small snake species. None of these have an official conservation status, but their occurrence here would be of scientific interest. Two additional amphibian species may occur, including *Pseudophryne bibronii* (Bibron's toadlet), rated as rare South Australia.

Fish species such as *Pseudaphritis urvillii* (Congolli), *Mordacia mordax* (Short-headed lamprey) and *Tandanus tandanus* (Freshwater catfish) have been recorded in the catchment in the past. These species are considered to have a conservation status by Hammer et al. (2009). Drought, lack of environmental flows, including nil or reduced estuarine connections, and other management issues has resulted in major changes in the abundance of these and some other native fish species.

Figure 6.4
Peregrine falcon roosting habitat with Fairy martin nests on the roof of the rock chamber

7 Discussion and conclusions

There are three matters of national environmental significance (MNES) present on the site to which the EPBC Act is relevant:

- Two bird species and one reptile species and their habitat
- a small area of one threatened plant community and a larger area of potential habitat for the community
- avifauna species listed under a Regional Recovery Plan.

Subject to design and final use for sections of the development area, if any of the habitats and areas occupied by MNES are potentially or likely to be adversely impacted by development then a Referral to DEWHA will be required. The definition of 'adverse impact' includes all forms of impact associated with a development, including direct, indirect, potential, combined and cumulative. Delfin has indicated that it will submit a Referral to DEWHA for the project later in 2010 i.e. prior to any work commencing on the site.

Over 2009 and 2010, more detail has been provided by Delfin to KBR on the planned development and management measures proposed for the site and the conservation value of these measures are considered in the current section.

Consultation with groups in DENR will be required so as to provide for written approval from this agency. For example, this will be in relation to species of State conservation significance and in the event that any areas of native vegetation will be adversely affected.

Approval by Council will be required if any significant trees are proposed to be removed. If these are indigenous, remnant native trees then approval by the Native Vegetation Council will be required also.

The pest plants management group of the AMLR NRM Board will need to be informed of the pest plant infestations, for example, *Nassella leucotricha* (White (Texas) needlegrass), *Withania somnifera* (Winter cherry) and *Lycium ferocissimum* (African boxthorn). Other species with regional priority and high environmental threat will require control also, such as *Xanthium spinosum* (Bathurst burr), *Tribulus terrestris* (Caltrop), *Chondrilla juncea* (Skeleton weed), *Chrysanthemoides monilifera* (Boneseed) and *Cynara cardunculus* (Artichoke thistle). Management of these species will likely require the development and implementation of detailed Weeds Management Plan.

Figures 7.1, 7.2, 7.3 and 7.5 record the location of MNES and the other sites of biological significance recorded to date. Ongoing survey and monitoring of the condition of the proposed conservation management areas and measures is recommended.

7.1 POTENTIAL AND PROPOSED IMPACT AREAS AND CONSEQUENCES

This site is not homogeneous in its biological significance and much of it (67%) contains few species or habitats of biological value. This is a similar conclusion to that provided by Bentz and Milne (2007) in their assessment of the Para Woodlands Reserve adjacent to the site.

Based on species observations, the survey effort appears to be commensurate with the biological values of the site and annual and seasonal variation components have been able to be undertaken over 2008 to 2010. There are some areas of fair to good value (see Figures7. 1, 7.2, 7.3 and 7.5) and, wherever practicable, these would need to be excluded from development, or, investigated for exclusion from development. Delfin has provided commitment to these investigations as part of its early master planning for the project. Some of these areas of biological importance would require strengthening through appropriate management measures so as to retain and improve these values.

7.2 VEGETATION COMMUNITIES AND FLORA

Mallee box grassy woodland is no longer listed as a conservation priority for the State (DEH 2005). However, Armstrong et al. (2003) consider that this woodland is still of particular conservation significance in the region. By observation, any example of mature woodland remaining in peri-urban areas is unusual and hence is biologically important and all good quality examples of it on site are of at least regional value.

Planning to retain the River red gum woodland, which occurs as sparse tall woodland and isolated trees along watercourses in the site should be undertaken. An arborist's assessment may be required to assess the risk associated with these trees and to establish a retention strategy.

There are no flora species, or their habitat, in the site that are listed under the EPBC Act. No species listed under the NPW Act or the Regional Recovery Plan of Willson and Bignall (2009) were recorded.

Within the site, there are two species listed as rare in the Southern Lofty botanical region and nine species listed as uncommon (Lang and Kraehenbuehl 2002, 2008 update). *Lomandra effusa* (Iron-grass) is confined to one location in the site and is a component of the Iron-grass (*Lomandra effusa – L. multiflora* ssp. *dura*) Natural Temperate Grassland of South Australia community. The whole of this community and potential habitat for colonisation by the species adjacent to the occurrence should be planned for conservation as part of the development. Delfin has indicated that its intention is to reserve the whole of this area subject to detailed design and any approval requirements established by DEWHA and DENR..

Nine species listed as uncommon for the region are present. One species, *Calystegia sepium* (Large bindweed), was confined to the South Para River corridor. This area will not be impacted by construction.

Aristida behriana (Brush-wire grass) occurs occasionally in sections of the site with occurrences in the quarry along the main access road and with most of its distribution in the main site along the un-named watercourse. The former occurrence is likely to be removed during remediation of the quarry and the latter will be conserved.

Lomandra densiflora (Sword mat-rush) and Mallee box are primarily confined to the northern section of the main site, especially adjacent to both sides of the un-named watercourse, with occasional occurrences elsewhere in the site. Delfin has advised that major remnant occurrences of these species have been included in its master planning for conservation, conserved through excluding development in these areas of occurrence. It is expected that most of the individual trees would also be conserved, either in open space areas or in appropriately sized development sites, although this will be subject to detailed planning. The exception is some of the planted Mallee box in the quarry and these are likely to require removal as part of remediation of this precinct.

The occurrence of all of the other species is in the understorey of the south facing area of Mallee box woodland in the site (Figure 7.5). As discussed above, this area is planned to be reserved from development subject to the detailed planning process and formal approvals.

7.3 FAUNA HABITAT AND SPECIES

The largest impact on fauna will be associated with rehabilitation of the quarry and the consequent impacts on avifauna. Discussions with Delfin have indicated that rehabilitation and major earthworks are a necessity in order to make the quarry precinct safe. Therefore, Rainbow bee-eater, Peregrine falcon, White-winged chough and Fairy martin habitat will be removed by the proposed development and these species will be displaced from the site.

Each of these species will have differing opportunities to re-locate in the region, including greater use of other habitats, such as woodland, sand quarries and natural cliff and rock outcrops in the region. Some degree of management will be possible, for example, removing livestock and weeds from the Mallee box woodland and allowing a litter layer to develop could allow Choughs to eventually use the dry woodlands in the main site and it is highly likely that steep-sided compacted sand piles can be constructed elsewhere in the site to allow for the Rainbow bee-eater) to breed. Fairy martin will use a variety of steep sided structures for nest sites, including under bridges, culverts and eaves. Delfin has indicated that remediation of the high wall of the quarry must be undertaken to manage some of the geotechnical risks and it is unlikely that mitigation actions can be undertaken for the Peregrine falcon roosting within the development site.

Hollow-dependent bird and bat species and nest building bird species are present on site, although by observation, the breeding numbers of the former are very limited due to competition with introduced birds, such as Common starling and Rock dove and also feral European honeybee colonies. Since the woodlands will not be removed, both groups of bird species will be unlikely to be impacted by development. Initial and ongoing control of pest species would greatly assist in providing more habitat for hollow-dependent species.

Woodland bird species of significance were recorded in the site, but in relatively small numbers. The site does not have the biological values and habitat diversity required by many woodland bird species, or to support large populations of these species, as occur to the north, for example in Para Wirra and Sandy Creek Conservation Reserves. The occurrence of individuals of species such as Red-capped robin, Pallid cuckoo and Rufous whistler is typical of species moving from area to area to find

suitable habitat. In particular, there is no native shrubstorey present on the site and there are but a few areas of natural regeneration of the overstorey species. In most of the site, feral European olive) and African boxthorn provides the only shrubstorey. This limits the number of small bird species resident in the site. For example, *Rhipidura albiscapa* (Grey fantail), *Petroica phoenicea* (Flame robin) and thornbill species (other than Yellow-rumped thornbill) were not recorded here.

Delfin has commenced detailed master planning for the site and this includes identifying those areas that are best suited to be set aside for biological reserves and open space areas as part of managing development of the site. The basis of this will be the areas of biological value extant in the site (Table 7.1). Future planning will require development of a formal management plan that should be developed in consultation with the Town of Gawler i.e. the future custodians of the land when Delfin transfer land areas as a designated community reserve.

A revegetation plan for areas developed as conservation sites based on the use of indigenous species from the site and region to reinforce the existing values would greatly benefit a wide range of bird species. This necessarily involves collection of propagating material from the site and developing a revegetation strategy for use of tubestock and direct seeding. In addition, the most successful strategy will involve fencing, exclusion of livestock and control of weeds. This will allow native species to colonize adjacent areas.

Table 7.1 Vegetation communities and habitat areas of biological value

Community or Habitat	Area (ha)
Iron-grass Community	1.41
Potential Iron-grass Community habitat	1.37
Flinders Ranges worm-lizard (fair to good habitat)	13.48
Flinders Ranges worm-lizard (marginal habitat)	9.61
Mallee box woodland	8.56
Native vegetation as understorey	6.62
Riparian grassland and sedgeland (excluding South Para River)	1.84
Wallaby-grass grassland	0.0796
River red gum trees (excluding South Para River)	Single and scattered mature trees only

Rainbow bee-eater, Peregrine falcon, White-winged chough and Fairy martin are species primarily located in the quarry precinct that will be affected by rehabilitation works necessarily required as part of the development of the site. It is likely that similar works would have been required as part of restoration under PIRSA's requirements for the site. Nonetheless, these species will be displaced as a result of the proposal. Suitable Rainbow bee-eater nesting habitat could be established elsewhere in the site through construction of compacted silty sand banks and piles. The other three species would be displaced and would have to shift to other locations in the site or region. There are opportunities to provide for other habitats in the site as an integral part of master planning for the development for Fairy martin and White-winged chough.

Wallbridge & Gilbert (2010) has reviewed and revised the initial stormwater management strategy for the site presented as part of the DPA. A revised report considers the drainage for the development and includes management of the

watercourses. Consequently, this implicates the areas of biological significance in the site. KBR has been provided with this report and has assisted in its development. The biologically sensitive areas are now mostly avoided by the elements of the strategy. The wetland systems and ponds along the eastern section of the un-named watercourse avoids the important reptile habitat areas, all of the remnant trees and will allow for development of biologically productive riparian habitats in what is currently a weed infested gully.

7.4 PARA WOODLAND RESERVE

The Para Woodland Reserve was established in 2003. It now occupies about 400 ha, abuts the south eastern boundary of the site, and includes a relatively large frontage along the South Para River. The Reserve has a number of similarities with the Delfin site, including large areas of degraded grazing land and small areas of Mallee box woodland, as well as differences, such as the presence of *Eucalyptus odorata* (Peppermint box) woodland (Bentz and Milne 2007). The Para Woodland is jointly owned and managed by DENR and the Nature Conservation Society of South Australia. Weed species and fire management are being undertaken, complemented by revegetation works with the long term aim of re-establishing a diverse woodland ecosystem. Ongoing funding has been recently obtained to allow for future management of the Reserve in perpetuity.

Biologically it would be useful to provide a linkage between the Para Woodland to the Mallee box woodland and un-named tributary corridor on the site. In the long term, this would allow for biological connectivity from south to north and east to west. Establishing riparian vegetation in the eastern portion of the watercourse and managing the weeds and pest animals along the whole length of the corridor would be of particular value for the site.

Following cessation of livestock grazing, the site would also be able to provide ample propagating material for a range of understorey species not recorded in the Para Woodland. The combination of all of these actions could be a valuable conservation opportunity for the region.

7.5 SITE MANAGEMENT ISSUES

Management of weeds will be essential, and, in most areas of the site will involve their initial and ongoing removal as part of construction. Management within conservation and open space areas must be targeted with a long term commitment aimed at eradicating all high threat introduced species and replacing these with indigenous species.

Flora and fauna habitat management and improvement will need to be an integral part of site development. The details associated with these initiatives will developed in future but will be based on a vision and desire of protecting and managing the higher quality areas of biological significance sensitively within a planned residential development. Examples of specific programs should include:

- Weed and pest animal species control, including feral European honeybee colonies and pest fauna using tree hollows
- rehabilitation and revegetation using site and regionally specific indigenous species

- re-establishing Iron-grass Grassland in areas which are potentially suitable for this nationally threatened community
- transplanting of native understorey species which will be disturbed by development
- development and maintenance of a seed bank of native species for the site
- fencing, including virtual fencing, to exclude people from some areas
- on-site passive recreation and education areas
- development of habitat for specific fauna groups and species, including ground fauna and avifauna displaced from the quarry site during its rehabilitation
- integrating stormwater management with conservation initiatives as part of design and development
- initial and ongoing monitoring of impacts.

Cessation of livestock grazing has advantages and risks, the most important of which will be an increase in fine fuel loads in the large areas of tall grasslands of introduced species. During and as part of any long term development of the site, a fire management plan must be developed in collaboration with the CFS. Continuation of livestock grazing may be required to assist the control of fuel loads. If so, then grazing should be excluded from the areas proposed as conservation zones by temporary fencing. Active control of weeds in these zones would be a necessary, ongoing action. Cessation of grazing in the Iron-grass Grassland areas will require ongoing assessment and adaptive management in order to establish the best management regime, both in the current term and future, especially a commitment to ongoing, judicious control of pest plants in the community.

Delfin indicates that residential development is likely to commence in the north east section of the site. This area has been subject to cereal cropping for many years and is biologically insensitive for native vegetation and fauna. Therefore, there is no impediment to development here.

Any construction within the South Para River corridor will require management, especially in regard to effects on water quality and fauna. Once the impact corridor and construction methods have been agreed and a final design developed, then a baseline monitoring program will be required.

General and detailed monitoring programs should be established for the conservation areas established in the development of the site. Observations and data collection which document the management actions undertaken in relation to the response of flora and fauna should continue to be made during future surveys. Monitoring of ground fauna, primarily reptiles, should be undertaken and further representative collections made on behalf of the SA Museum of all new species found on the site.

7.6 OTHER MATTERS

The assessment has been undertaken over a range of seasonal conditions during 2008 to 2010. 2009 was a year of average rainfall, both in total and distribution. 2008 was a drought year, with little spring rainfall and 2010 was a year of below average rainfall until May, then an average to above average year thereafter (to date). In addition, livestock grazing pressure has continued to be high to extreme during all of the assessment period, especially over each summer and early autumn. Consequently, it is

considered that some additional plant and fauna species will be recorded in the site. For examples of these grazing pressures see Photos 17 and 18 in Appendix B.

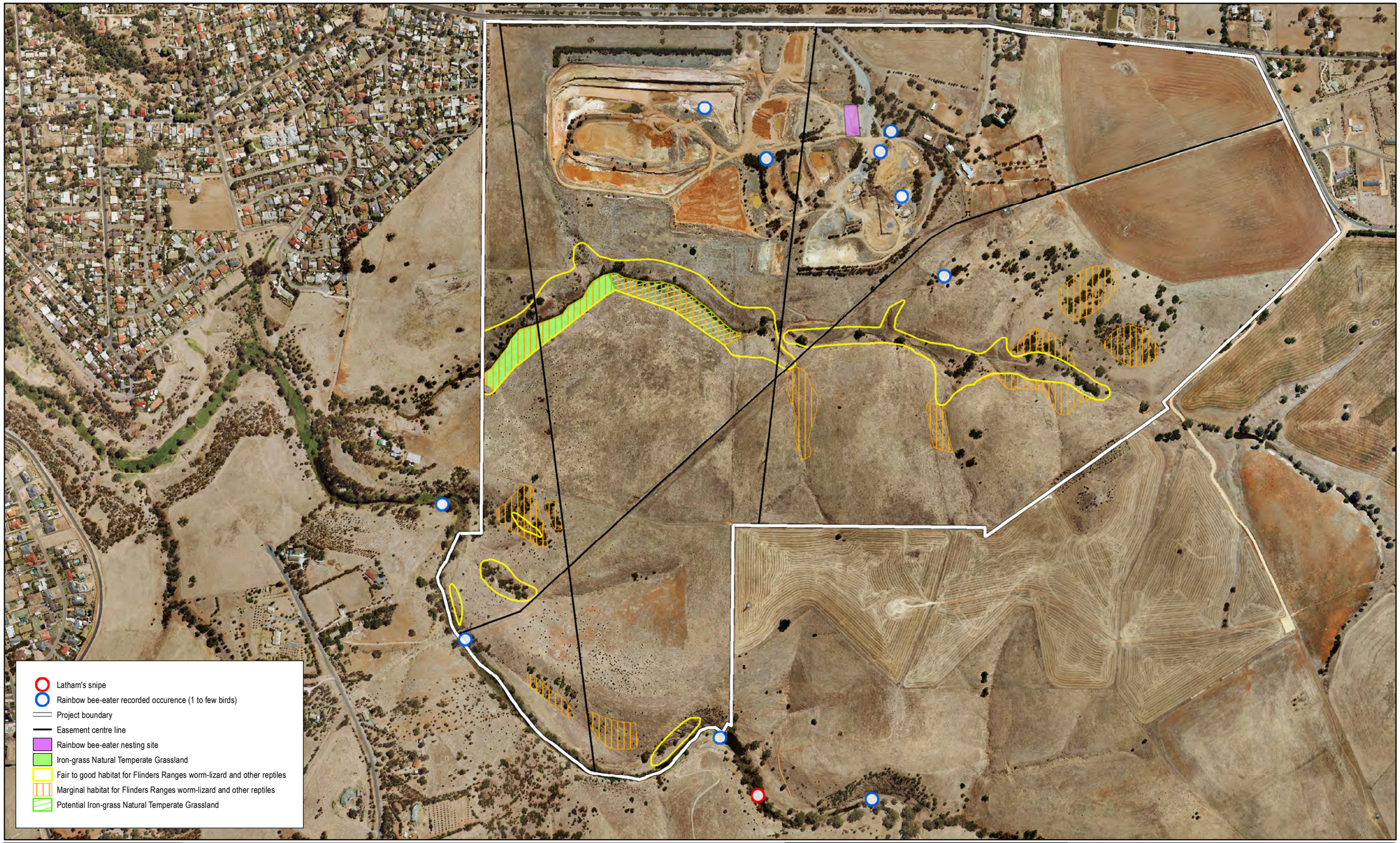
For some terrestrial migratory species, such as cuckoo, all were relatively rare in south eastern Australia over 2005 to 2008. However, Pallid cuckoo was extremely widely reported in 2009 over much of this region and in southern South Australia generally. This presumably was a result of the impacts of drought in previous years.

The commencement of the planned project is unlikely to cause any significant long term effect on local bat populations or other hollow-dependent species. However, if there is the likelihood that some hollow trees will need to be removed during construction, then all trees with potential bat roosts or suitable for use by other native species should be identified and efforts made to capture and re-locate bats, and other native fauna species, from the trees before removal. Relocation and use of all such hollow trees in the conservation areas as part of habitat management is recommended.

Prior to development commencing, a Vegetation Management Plan (VMP) and a Construction Environmental Management Plan (CEMP) must be developed so as to guide the future development of the site. This would include establishing Significant Environmental Benefit requirements as off-sets for any native vegetation and areas of fauna habitat removed. Future conservation initiatives, especially habitat conservation and restoration, pest species management actions and revegetation guidelines should be included in these documents. A range of conservation and open space initiatives could be developed for the site subject to design and planning considerations. The logical timing to develop these is part of the detailed planning process. Some of these suggestions are discussed above, although more detailed planning and commitment will be required to understand and implement these opportunities properly. Approval from the Native Vegetation Council will be required for the VMP.

The development and implementation of ongoing monitoring of the proposed conservation management measures and conservation areas is recommended and may be required as part of the VMP and other conditions of approval. Ongoing liaison with State and Council authorities by Delfin will also be necessary.

Figures 7.1 to 7.5 indicate the location of MNES, other sites of biological significance and some of the key pest plant infestations recorded in the site to date.



Delfin Lend Lease

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SOURCE Base imagery supplied by Delfin Lend Lease Pty Ltd, 2010 (captured 2006)

GIS FILE	PROJECTION	FINAL APPROVAL	DATE
AEN814-GIS-005	MGA 94 Zone 54	B. Anderson	20Aug10

Kellogg, Brown & Root Pty Ltd

KBR

Kellogg, Brown & Root Pty Ltd ABN 91 007 660 317

186 Greenhill Rd, Parkside SA 5063

Drawn by J. Paull

TITLE

Matters of National Environmental Significance

FIGURE No.	Rev
7.1	1

Delfin Lend Lease

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SOURCE Base imagery supplied by Delfin Lend Lease Pty Ltd, 2010 (captured 2006)

GIS FILE	PROJECTION	FINAL APPROVAL	DATE
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Kellogg, Brown & Root Pty Ltd

KBR

Kellogg, Brown & Root Pty Ltd ABN 91 007 660 317

186 Greenhill Rd, Parkside SA 5063

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TITLE

Regional Recovery Plan Species

FIGURE No.	Rev
7.2	1

Delfin Lend Lease

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SOURCE Base imagery supplied by Delfin Lend Lease Pty Ltd, 2010 (captured 2006)

GIS FILE	PROJECTION	FINAL APPROVAL	DATE
AEN814-GIS-007	MGA 94 Zone 54	B. Anderson	20Aug10

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186 Greenhill Rd, Parkside SA 5063

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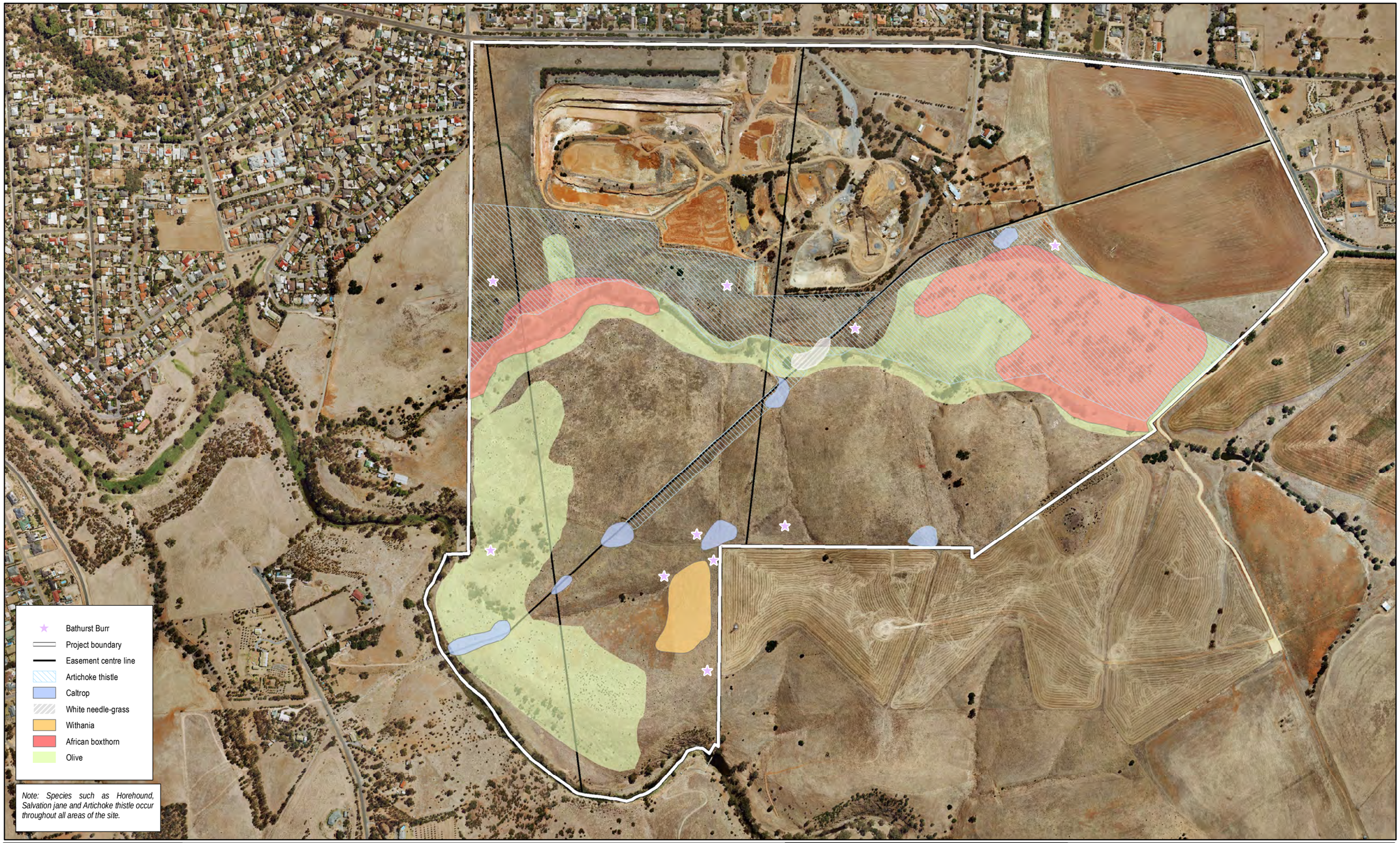
TITLE

Species of State Significance and Associated Habitat Areas

FIGURE No.	Rev
7.3	1



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GIS FILE	PROJECTION	FINAL APPROVAL	DATE
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Kellogg, Brown & Root Pty Ltd

KBR

Kellogg, Brown & Root Pty Ltd ABN 91 007 660 317

186 Greenhill Rd, Parkside SA 5063

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TITLE

Declared and High Threat Environmental Weed Species

FIGURE No.	Rev
7.4	1

Delfin Lend Lease

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SOURCE Base imagery supplied by Delfin Lend Lease Pty Ltd, 2010 (captured 2006)

GIS FILE	PROJECTION	FINAL APPROVAL	DATE
AEN814-GIS-009	MGA 94 Zone 54	B. Anderson	20Aug10

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Drawn by J. Paull

TITLE

Native Vegetation Areas

FIGURE No.	Rev
7.5	1

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