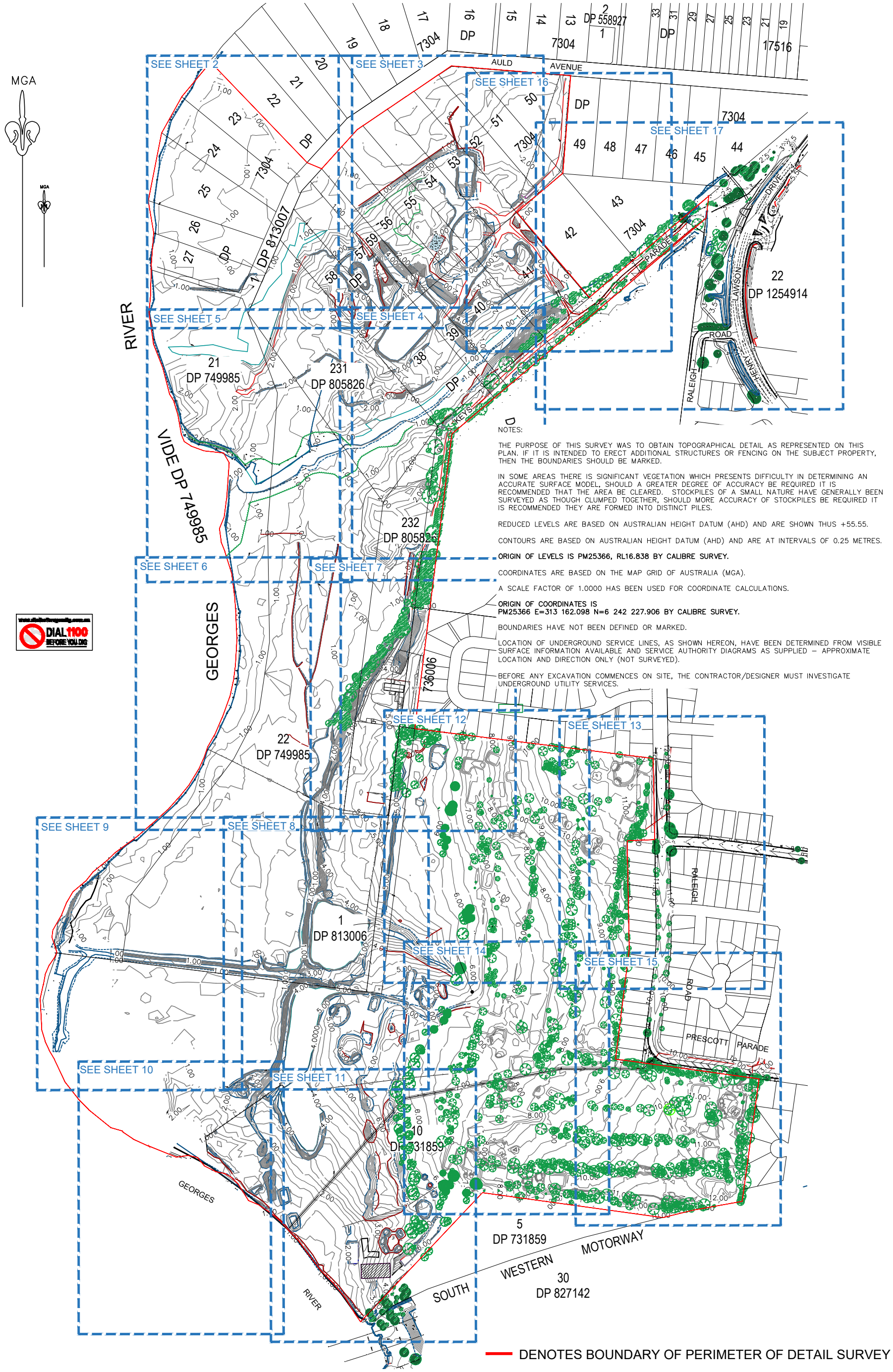

NOTES:

THE PURPOSE OF THIS SURVEY WAS TO OBTAIN TOPOGRAPHICAL DETAIL AS REPRESENTED ON THIS PLAN. IF IT IS INTENDED TO ERECT ADDITIONAL STRUCTURES OR FENCING ON THE SUBJECT PROPERTY, THEN THE BOUNDARIES SHOULD BE MARKED.

IN SOME AREAS THERE IS SIGNIFICANT VEGETATION WHICH PRESENTS DIFFICULTY IN DETERMINING AN ACCURATE SURFACE MODEL, SHOULD A GREATER DEGREE OF ACCURACY BE REQUIRED IT IS RECOMMENDED THAT THE AREA BE CLEARED. STOCKPILES OF A SMALL NATURE HAVE GENERALLY BEEN SURVEYED AS THOUGH CLUMPED TOGETHER, SHOULD MORE ACCURACY OF STOCKPILES BE REQUIRED IT IS RECOMMENDED THEY ARE FORMED INTO DISTINCT PILES.

REDUCED LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD) AND ARE SHOWN THUS +55.55.

CONTOURS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD) AND ARE AT INTERVALS OF 0.25 METRES.

ORIGIN OF LEVELS IS PM25366, RL16.838 BY CALIBRE SURVEY.

COORDINATES ARE BASED ON THE MAP GRID OF AUSTRALIA (MGA).

A SCALE FACTOR OF 1.0000 HAS BEEN USED FOR COORDINATE CALCULATIONS.

ORIGIN OF COORDINATES IS PM25366 E=313 162.098 N=6 242 227.906 BY CALIBRE SURVEY.

BOUNDARIES HAVE NOT BEEN DEFINED OR MARKED.

LOCATION OF UNDERGROUND SERVICE LINES, AS SHOWN HEREON, HAVE BEEN DETERMINED FROM VISIBLE SURFACE INFORMATION AVAILABLE AND SERVICE AUTHORITY DIAGRAMS AS SUPPLIED – APPROXIMATE LOCATION AND DIRECTION ONLY (NOT SURVEYED).

BEFORE ANY EXCAVATION COMMENCES ON SITE, THE CONTRACTOR/DESIGNER MUST INVESTIGATE UNDERGROUND UTILITY SERVICES.

DENOTES BOUNDARY OF PERIMETER OF DETAIL SURVEY

		DESIGN	DRAWN	CHECK	APPD.	DATE
FIRST ISSUE		GW	PW	DJH	DJH	07/01/2020
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	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

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Registered Surveyor (No.1208)
DATE: 19/01/2021

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PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 250 500 750 1000 1250 1500 1750 2000
SCALE 1:25000 (A1) SCALE 1:50000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	01 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEYS\18-001054-SU_DETAIL SURVEYS PAGE 1-16 REV 2.DWG LAST SAVED BY: PENG WU

GEORGES RIVER

VIDE DP 749985

MGA

20

21

22

23

24

25

26

27

DP 813007

1

DP

7304

56

57

58

59

231
DP 805826

21
DP 749985

MANGROVES

TALL GRASS AREA

SPORTS FIELD

GRASS AREA

WATER

CLEARED AREA

DRAINAGE CHANNEL

BANK

TOP OF BANK

BOTTOM OF BANK

TOP OF BANK

EDGE OF CLEARED AREA

CHANGE OF GRADE

1.25

1.00

0.75

1.50

2.00

2.25

2.75

3.00

3.25

3.75

2.50

FOR CONTINUATION REFER TO SHEET 3

FOR CONTINUATION REFER TO SHEET 5

FIRST ISSUE		DESIGN	DRAWN	CHECK	APPD.	DATE
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	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

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PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	02 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\S18-001054-SU_DETAIL SURVEY.S PAGE 1-16 REV 2.DWG LAST SAVED BY PENG WU

AULD AVENUE

MGA

DP 20

7304 18

19

METAL FENCE

GRASS PADDOCK

CHANNEL

DRAINAGE

50

51

52

53

54

55

56

57

58

59

42

41

40

39

38

DAM

DRY DAM

PATHWAY

CHANGE OF GRADE

CONC.

MESH

WIRE

WEIGHBRIDGE

TRACK

EDGE

METAL POST & WIRE FENCE

STOCK PILE

SMALL STOCKPILE IN TREE AREA

CRUSHED ROCK

CONCRETE PAD

AREA OF FILL

GRASS / SCRUB AREA

CREEK

BANK

TOP

BOTTOM

OF

FOR CONTINUATION REFER TO SHEET 2

FOR CONTINUATION REFER TO SHEET 4

FIRST ISSUE		DESIGN	DRAWN	CHECK	APPD.	DATE
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	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

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PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	03 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\18-001054-SU_DETAIL SURVEY'S PAGE 1-16 REV 2.DWG LAST SAVED BY PENG WU

FOR CONTINUATION REFER TO SHEET 3

FOR CONTINUATION REFER TO SHEET 5

FOR CONTINUATION REFER TO SHEET 7

DAM
RECENTLY CLEARED
CLEARED AREA
VEGETABLE GARDENS
FILL AREA
TREE
GRASS
GRASSED AREA
AREA OF SMALL STOCKPILES
DENSE TREE AREA
GOLF DRIVING RANGE
TRACK
FENCE
MESH FENCE
METAL POST
WIRE FENCE
BITUMEN
CREEK
WATER COURSE
EDGE
TOP OF BANK
BOTTOM OF BANK
GRADE CHANGE
GRADE LINE
MGA
41
7304
40
39
38
DP
231
DP 805826
22
DP 749985
232
DP 805826
101
DP 603087
1
DP 625013

FIRST ISSUE		DESIGN	DRAWN	CHECK	APPD.	DATE
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	1	GW	PW	DJH	DJH	05/02/2021
	2	JA	PW	DJH	DJH	19/01/2021

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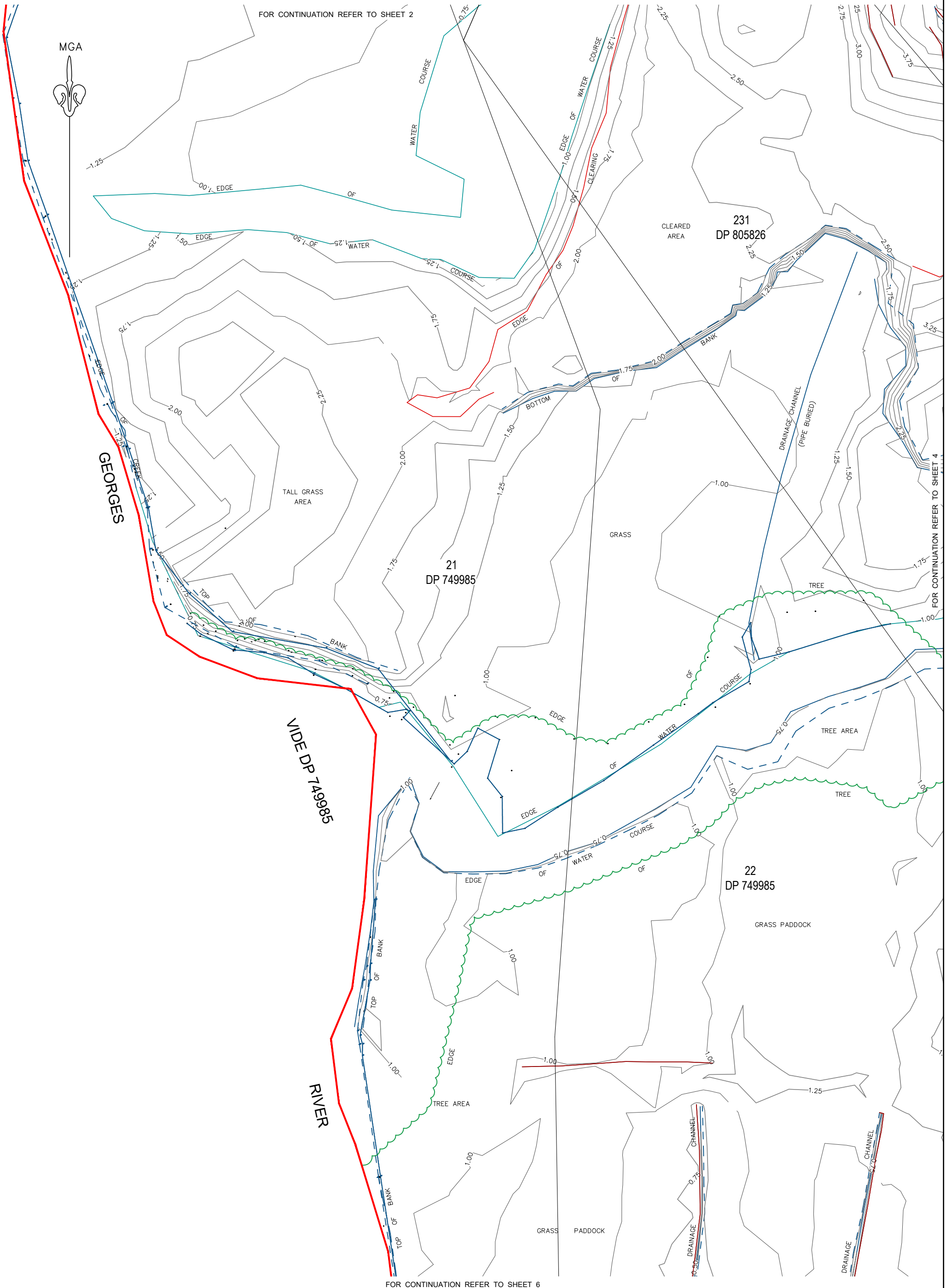
PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	04 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18001054SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\S18-001054-SU_DETAIL SURVEYS PAGE1-16 REV 2.DWG LAST SAVED BY:PENG WU



FIRST ISSUE	DESIGN	DRAWN	CHECK	APPD.	DATE
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AMENDMENTS 0	GW	PW	DJH	DJH	07/01/2020
1	GW	PW	DJH	DJH	05/02/2020
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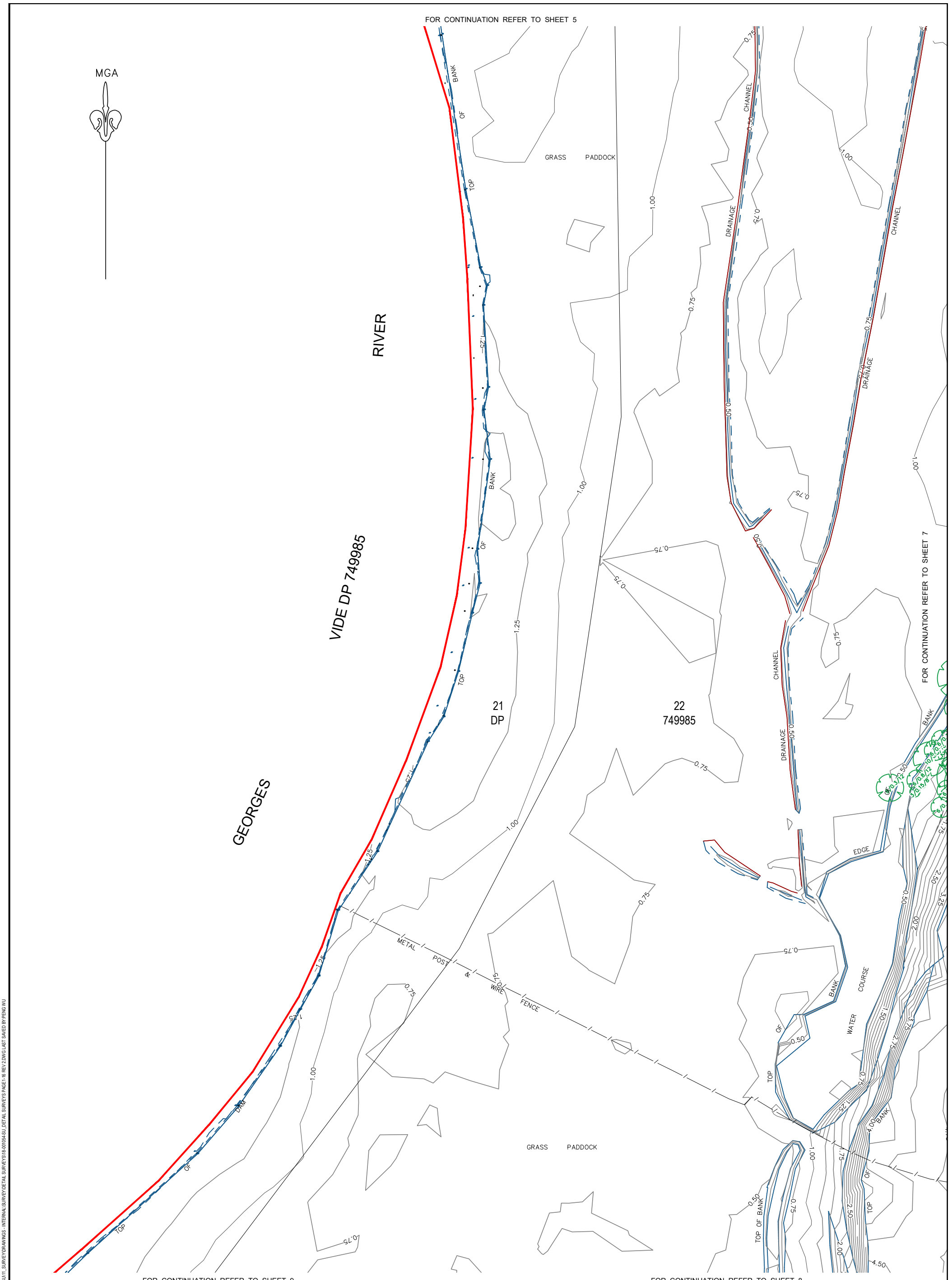
PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	05 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\S18-001054-SU_DETAIL SURVEYS PAGE1~16 REV 2.DWG LAST SAVED BY: PENG WU



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AMENDMENTS	0	GW	PW	DJH	DJH	07/01/2020
	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

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PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	06 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEYS\18-001054-SU_DETAIL SURVEYS PAGE1-16 REV 2.DWG LAST SAVED BY:PENG WU

FOR CONTINUATION REFER TO SHEET 4

MGA

232
DP 805826

22
DP 749985

1
DP 625013

736006

DP

3006

10
DP 731859

STOCKPILES

GRASS PADDOCK

SMALL STOCKPILES

BRICK BUILDING

GRASS AREA

CHANNEL

DRAINAGE

WATER COURSE

BANK

TOP

BOTTOM

OF

FENCE

MESH WIRE & POST

METAL

BITUMEN

TRACK

STCH/TPLD

FOR CONTINUATION REFER TO SHEET 6

FOR CONTINUATION REFER TO SHEET 8

FIRST ISSUE		DESIGN	DRAWN	CHECK	APPD.	DATE
		GW	PW	DJH	DJH	07/01/2020
AMENDMENTS	0	GW	PW	DJH	DJH	07/01/2020
	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

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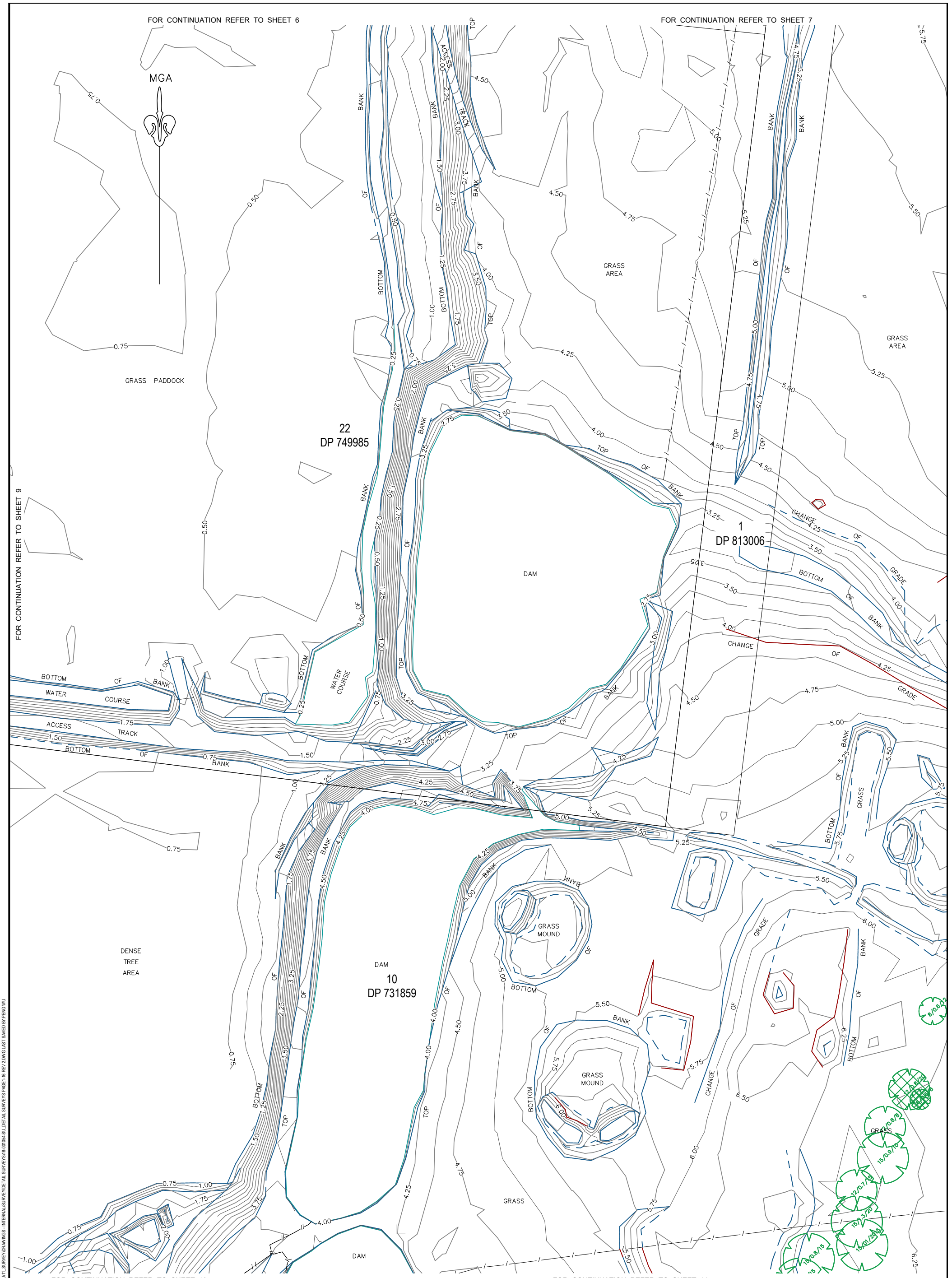
PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	07 OF 22		2

FILE: I:\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEYS\18-001054-SU_DETAIL SURVEYS PAGE1-16 REV 2.DWG LAST SAVED BY:PENG WU



FIRST ISSUE	DESIGN	DRAWN	CHECK	APPD.	DATE
	GW	PW	DJH	DJH	07/01/2020

AMENDMENTS	DESIGN	DRAWN	CHECK	APPD.	DATE
0	GW	PW	DJH	DJH	07/01/2020
1	GW	PW	DJH	DJH	05/02/2020
2	JA	PW	DJH	DJH	19/01/2021

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PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	08 OF 22		2

FILE: I:\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEYS\18-001054-SU_DETAIL SURVEYS PAGE1-16 REV 2.DWG LAST SAVED BY:PENG WU

FOR CONTINUATION REFER TO SHEET 6

MGA

RIVER

GEORGES

VIDE DP 749985

BANK
TOP
OF
BANK
0.75
1.00
1.25
0.50
0.25
TREE
AREA
21
DP 749985
22
DP 749985
GRASS PADDOCK
BOTTOM
WATER
COURSE
1.50
1.75
BOTTOM
AREA
OF DENSE
MANGROVES
10
DP 731859
DENSE VEGETATION

FOR CONTINUATION REFER TO SHEET 8

FOR CONTINUATION REFER TO SHEET 10

FIRST ISSUE		DESIGN	DRAWN	CHECK	APPD.	DATE
		GW	PW	DJH	DJH	07/01/2020
AMENDMENTS	0	GW	PW	DJH	DJH	07/01/2020
	1	GW	PW	DJH	DJH	05/02/2021
	2	JA	PW	DJH	DJH	19/01/2021

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PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	09 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEYS\18-001054-SU_DETAIL SURVEY'S PAGE 1-16 REV 2.DWG LAST SAVED BY PENG WU

FOR CONTINUATION REFER TO SHEET 9

FOR CONTINUATION REFER TO SHEET 8

MGA

MANGROVE AREA

DENSE TREE AREA

GRASS

10
DP 731859

GEORGES

VIDE DP 749985

RIVER

FOR CONTINUATION REFER TO SHEET 11

		DESIGN	DRAWN	CHECK	APPD.	DATE
FIRST ISSUE		GW	PW	DJH	DJH	07/01/2020
AMENDMENTS	0	GW	PW	DJH	DJH	07/01/2020
	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

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PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	10 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\S18-001054-SU_DETAIL SURVEYS PAGE1-16 REV 2.DWG LAST SAVED BY PENG WU

FOR CONTINUATION REFER TO SHEET 8

FOR CONTINUATION REFER TO SHEET 10

DAM

DAM

TIMBER POST & WIRE FENCE

TIMBER POST & WIRE FENCE

Ø1050 PIPE INVERT RL: 3.72

Ø1050 PIPE INVERT RL: 3.75

Ø1050

Ø1050

MGA

EXISTING SURVEY

GRASS

DRAINAGE EASEMENT 3.66 WIDE

10
DP 731859

TALL GRASS AREA

GRASS MOUND

GREEN

PATH

GRASS

TRACK

BITUMEN

CONC.

OLD GOLF CLUB HOUSE

5
DP 731859

Ø1050 PIPE INVERT RL: -0.5

GEORGES

VIDE DP 749985

RIVER

30
DP 827142

FIRST ISSUE		DESIGN	DRAWN	CHECK	APPD.	DATE
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	1	GW	PW	DJH	DJH	05/02/2021
	2	JA	PW	DJH	DJH	19/01/2021

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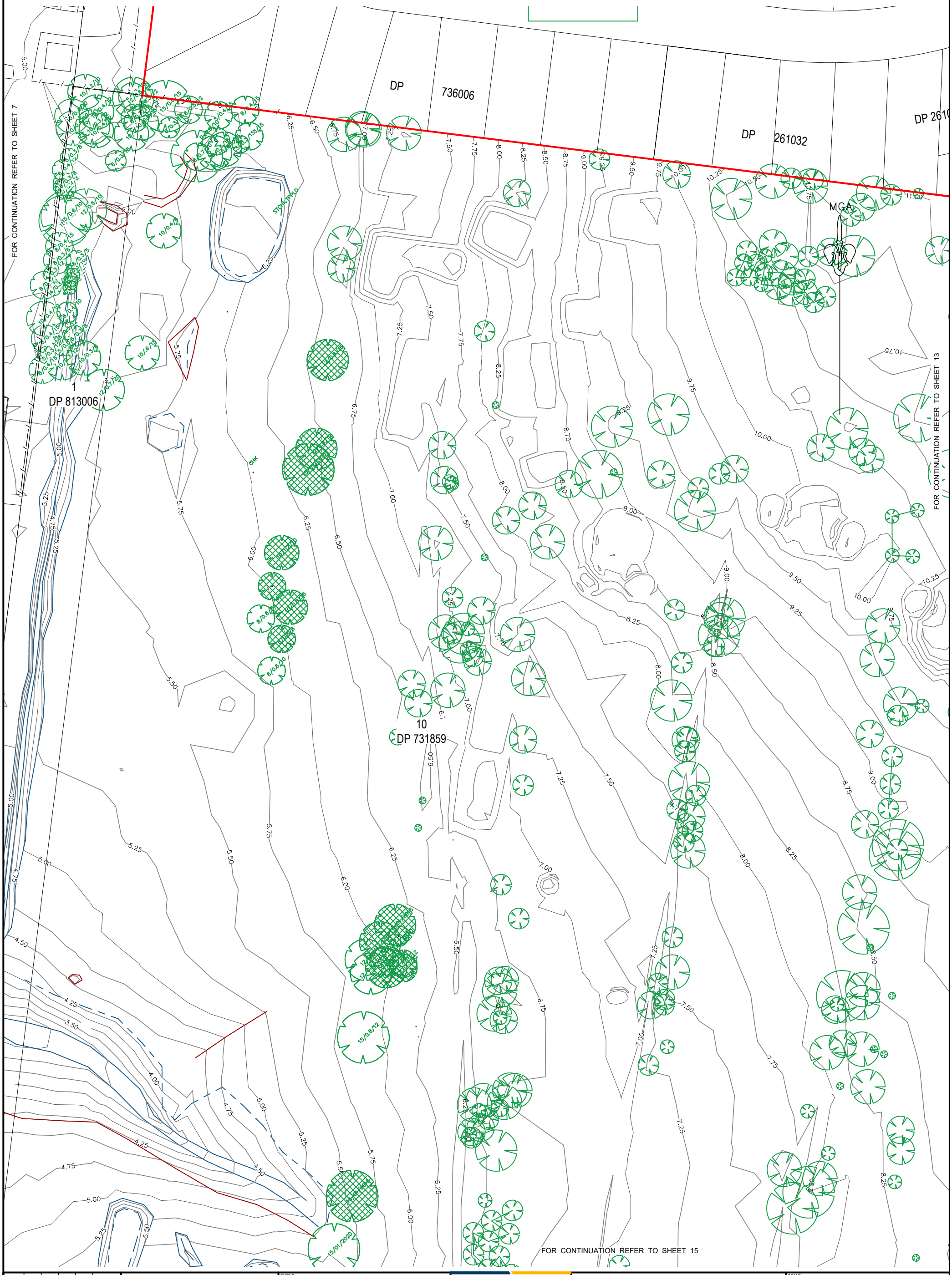
DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	11 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\18-001054-SU_DETAIL SURVEY.S PAGE 1:16 REV 2.DWG LAST SAVED BY:PENG WU


DP 736006
DP 261032
DP 2610
MGA
1
DP 813006
10
DP 731859
STORMWATER
STORMWATER
STORMWATER

FIRST ISSUE		DESIGN	DRAWN	CHECK	APPD.	DATE
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	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

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DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	13 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18001054-SU\11 SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\S18-001054-SU DETAIL SURVEY.S PAGE 1:16 REV 2.DWG LAST SAVED BY PENG WU

FOR CONTINUATION REFER TO SHEET 8

FOR CONTINUATION REFER TO SHEET 11

FOR CONTINUATION REFER TO SHEET 15

BOTTOM OF BANK

TOP OF BANK

GRASS

DRAINAGE CHANNEL

EXISTING

MGA

Ø1050 APPROX. PIPE INVERT RL: 5.99

Ø1050

DRAINAGE EASEMENT 3.66 WIDE

10
DP 731859

5
DP 731859

		DESIGN	DRAWN	CHECK	APPD.	DATE
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AMENDMENTS	0	GW	PW	DJH	DJH	07/01/2020
	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

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PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	14 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEYS\18-001054-SU_DETAIL SURVEYS PAGE1-16 REV 2.DWG LAST SAVED BY:PENG WU

FIRST ISSUE	DESIGN	DRAWN	CHECK	APPD.	DATE
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AMENDMENTS 0	GW	PW	DJH	DJH	07/01/2020
1	GW	PW	DJH	DJH	05/02/2020
2	JA	PW	DJH	DJH	19/01/2021

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PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	15 OF 22		2

FILE: I:\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\S18-001054-SU_DETAIL SURVEYS PAGE1-16 REV 2.DWG LAST SAVED BY:PENG WU

MGA

50
51
52
53
DP
7304
49
48
47
43
42
41
40
DP
1
DP 625013
101
DP 603087
DRIVING RANGE
KEYS
PARADE
RESECTION
CHK
BOTTOM
TOP
BANK
OF

FOR CONTINUATION REFER TO SHEET 3

FOR CONTINUATION REFER TO SHEET 18

FOR CONTINUATION REFER TO SHEET 4

		DESIGN	DRAWN	CHECK	APPD.	DATE
FIRST ISSUE		GW	PW	DJH	DJH	07/01/2020
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	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

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PROJECT: RIVERLANDS SITE MILPERRA

DRAWING TITLE: DETAIL SURVEY

SCALE
0 250 500 750 1000 1250 1500 1750 2000
SCALE 1:25000 (A1) SCALE 1:50000 (A3)

PROJECT No.	DRAWING No.	STAGE	REVISION
18-001054 SU	16 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11. SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\18-001054-SU_DETAIL SURVEYS PAGE1-16 REV 2.DWG LAST SAVED BY:PENG WU

NOTES

The levels and details on this plan have been determined by trigonometrical heighting methods and are within the general accepted accuracies for such surveys. All set out levels must be referred to the bench mark

Bearings and Distances are by title plan only and are subject to Final Survey. Except where shown by dimension, the relationship of improvements to boundaries is diagrammatic only. The true positions are subject to Final Survey.

Tree sizes are estimates and indicative only.

Services and utilities shown have been located by physical evidence and/or by reference to service plans from the relevant authorities. Pits may not have been opened to verify the type of utility. Excavation has not been carried out to confirm underground location. Service details should be confirmed with the relevant service authority during design and prior to commencement of construction.

As part of your duty of care, please contact the following where necessary :

AGL Gas Company	Ph. 131245
Dial Before You Dig	Ph. 1100
Energy Australia	Ph. 131535
Integral Energy	Ph. 131081
Optus Communications	Ph. 1800 505 777
Sydney Water	Ph. 132092 Telstra
Corporation	Ph. 132203

This plan has been prepared for the exclusive use of the client as listed in the title block.

Any construction on or near the boundaries will require further survey so that marks defining boundaries can be placed.

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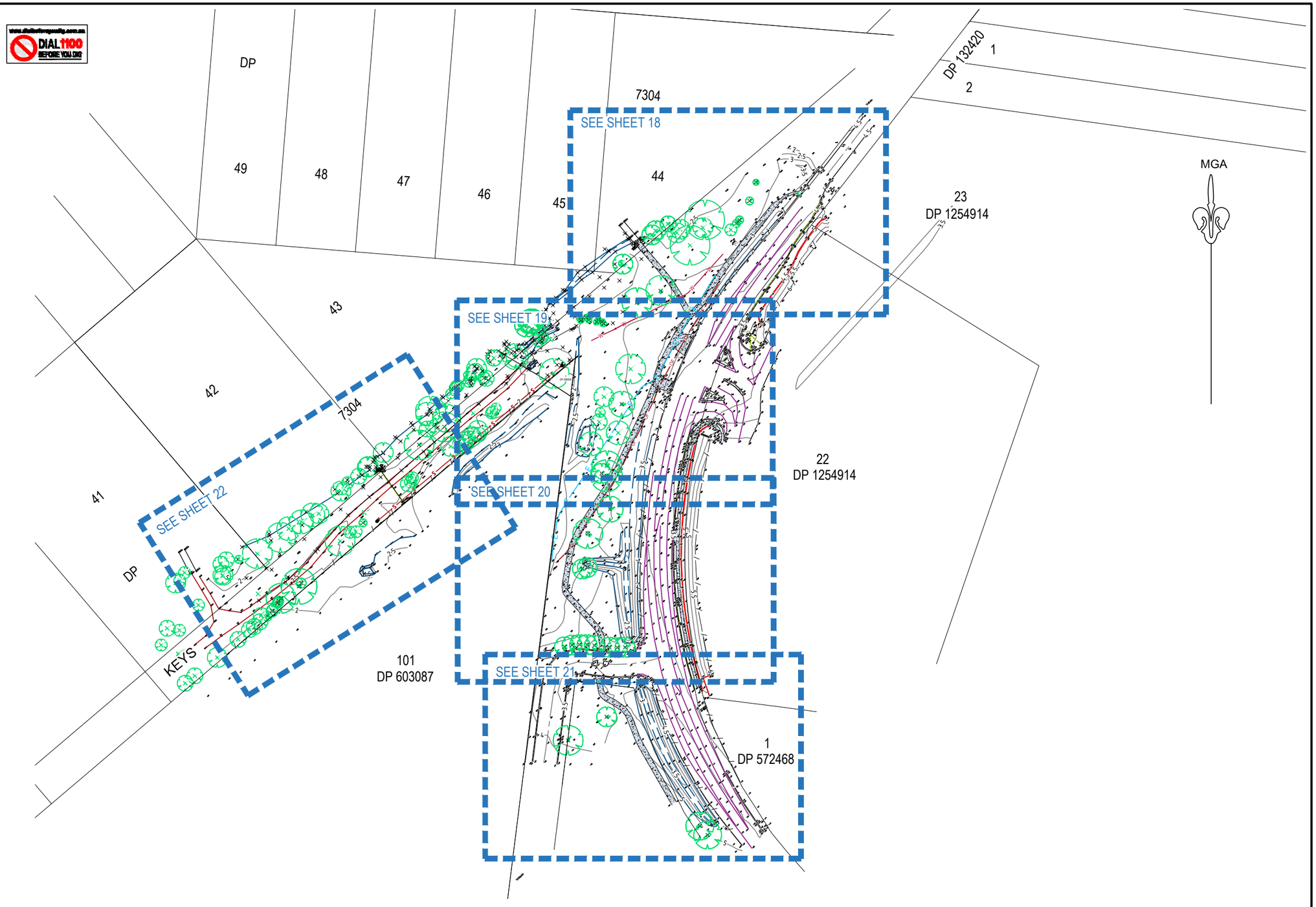
These notes must not be erased.

NOTES

1 AREAS AND DIMENSIONS SUBJECT TO FINAL SURVEY
2 NO BOUNDARY SURVEY HAS BEEN MADE
3 ORIGIN OF LEVELS PM 25366 RL 16.838 A.H.D. FROM SURVEY DATED 28/06/2019
4 UTILITY ALIGNMENTS PICKED UP BY LOCATOR. LOCATOR ONLY PROVIDES APPROXIMATE DEPTHS & LOCATION. ~~ONLY OBVERTS FROM POTHOLES~~ PROVIDE EXACT LOCATION & LEVEL OF UTILITIES

LEGEND:

- SEWER
- WATER
- ELECTRICITY
- CENTRELINE
- TOP OF BANK
- BOTTOM OF BANK
- OPTICAL FIBRE
- FENCELINE
- STORMWATER
- GATE
- 5/0.3 TREE(SPREAD/TRUNK/HEIGHT)
- DRAINAGE PIT
- PP POWER POLE
- EB ELECTRICAL PILLAR
- SV STOP VALVE
- HYD HYDRANT
- WC WATER CONNECTION
- SMH SEWER MAN HOLE



FIRST ISSUE	SURVEY	TRACED	CHECK	APPD	DATE	AMENDMENT DETAILS
0	GW	PW	DJH	DJH	07/01/2020	
1	GW	PW	DJH	DJH	05/02/2020	
2	JA	PW	DJH	DJH	19/01/2021	

STATUS

AUTHORISED FOR ISSUE:
BY: DANIEL JAMES HANNIGAN SIGN:
Registered Surveyor (No.1208)
DATE: 19/01/2021

SCALE
0 10 20 30 40 50 60 70 80
SCALE 1:1000 (A1) SCALE 1:2000 (A3)

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PROJECT
PLAN SHOWING SELECTED FEATURES & LEVELS ALONG HENRY LAWSON DRIVE BETWEEN AULD AVENUE & BORELLA ROAD

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DRAWING TITLE
DETAIL SURVEY

PROJECT No.	DRAWING No.	MILESTONE	REVISION
18-001054 SU	17 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11.SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEYS\18-001054-SU_DETAIL SURVEYS PAGE 17-22 REV 2.DWG LAST SAVED BY PBING (WU

45
DP

44
7304

43
DP 7304

23
DP 1254914

22
DP 1254914

MGA

CRASH BARRIER

KERB AND GUTTER

STORMWATER PIT SEALED

DRIVE

GRATED KERB INLET PIT PIT INVERT 1.12

GRATED KERB INLET PIT PIT INVERT 1.28

GRATED KERB INLET PIT PIT INVERT 1.37

LAWSON

HENRY

PEDESTRIAN BRIDGE

CONCRETE PEDESTRIAN SHARED CYCLEWAY

FOOTPATH

BANK

BITUMEN

EDGE

CRASH BARRIER

RETAINING WALL

FENCE

WIRE CHAIN

CONCRETE

BRICK

POTHOLE 2.98
WM250 OBV 2.45

LOCATOR
WM 0.8 DEEP

POTHOLE 3.26
ELECTRICAL
OBVERT 2.66

LOCATOR
WM 1.2 DEEP

POTHOLE 3.40
NO UNTILITY FD
INVERT 0.30

POTHOLE 2.88
WM2500 BV 2.32

LOCATOR
WM 0.8 DEEP

SEE SHEET 19 FOR CONTINUATION

	FIRST ISSUE	SURVEY	TRACED	CHECK	APPD	DATE
AMENDMENTS	0	GW	PW	DJH	DJH	07/01/2020
	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

AMENDMENT DETAILS

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SCALE
0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0
SCALE 1:200 (A1) SCALE 1:400 (A3)

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PROJECT
PLAN SHOWING SELECTED FEATURES & LEVELS ALONG HENRY LAWSON DRIVE BETWEEN AULD AVENUE & BORELLA ROAD

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DRAWING TITLE
DETAIL SURVEY

PROJECT No.	DRAWING No.	MILESTONE	REVISION
18-001054 SU	18 OF 22		2

FILE: \SYDNAS01\PROJECTS\18\18-001054-SU\11. SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\18-001054-SU_DETAIL SURVEYS PAGE 17-22 REV 2.DWG LAST SAVED BY:PBNG (WU

SEE SHEET 18 FOR CONTINUATION

MGA

1
DP 596508

22
DP 1254914

HENRY LAWSON DRIVE

LOCATOR 0.3m DEEP
LOCATOR 0.3m DEEP
LOCATOR 1.1m DEEP
POTHOLE 2.83 WM 250 OBV 2.14
LOCATOR 1.1m DEEP
BOLLADS
GATE
POTHOLE 3.74 ELECTRICAL OBVERT 2.79
POTHOLE 3.92 O/F OBVERT 2.03
RMS PIT
TRAFFIC LIGHT
VEHICLE CROSSING
CYCLEWAY
GUTTER
DRIVE
POTHOLE 4.0 O/F OBVERT 1.86
POTHOLE 3.45 ELECTRICAL OBVERT 2.68
POTHOLE 3.79 O/F OBVERT 2.40
LOCATOR 0.8m DEEP
POTHOLE 3.09 ELECTRICAL OBVERT 2.63
RMS PIT
TRAFFIC LIGHT
LOCATOR 0.5m DEEP
RMS PIT
POTHOLE 3.59 O/F OBVERT 2.02
LOCATOR 1.6m DEEP
LOCATOR 0.35m DEEP
POTHOLE 3.13 O/F OBVERT 1.61
LOCATOR 0.45m DEEP
LOCATOR 1.4m DEEP
LOCATOR 1.4m DEEP
LOCATOR 0.5m DEEP
LOCATOR 1.5m DEEP
SHARED PEDESTRIAN
BARRIER
BITUMEN
CONCRETE
KERB
GRATED KERB INLET PIT PINV 525 INVERT 1.49
GRATED KERB INLET PIT PINV 525 INVERT 1.58
SV
WM
HYD
BOOSTER HYDRANT
VALVE
STORMWATER PIT SEALED
GRATED KERB INLET PIT INV 2.48
OPTUS PIT
RMS PIT
GRATED KERB INLET PIT INV 2.29
KERB INLET W / SEALED LID
TRAFFIC LIGHT
KERB INLET PIT INVERT 1.94
KERB INLET PIT INVERT 2.40
KERB INLET W / SEALED LID
STORMWATER PIT SEALED
HYD
GRATED KERB INLET PIT INV 2.019 O / PINV 525 I / PINV 525
OPTUS PIT
PROPERTY SIGN
TELSTRA PIT
RMS PIT
GRATED KERB INLET PIT INV 2.095 O / PINV 525 I / PINV 450
OPTUS PIT
RMS TRAFFIC SIGNAL BOX
RMS PIT
GRATED KERB INLET PIT INV 2.15 O / PINV 450 I / PINV 450
GRATED KERB INLET PIT INV 2.23 O / PINV 450 I / PINV 450
BANK
BOTTOM
TOP
OF
WALL
BRICK
FENCE
WIRE
CHAIN
CRASH EDGE

SEE SHEET 20 FOR CONTINUATION

FIRST ISSUE	SURVEY	TRACED	CHECK	APPD	DATE
0	GW	PW	DJH	DJH	07/01/2020
1	GW	PW	DJH	DJH	05/02/2020
2	JA	PW	DJH	DJH	19/01/2021

AMENDMENTS

AMENDMENT DETAILS

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0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0
SCALE 1:200 (A1) SCALE 1:400 (A3)

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PROJECT
PLAN SHOWING SELECTED FEATURES & LEVELS ALONG HENRY LAWSON DRIVE BETWEEN AULD AVENUE & BORELLA ROAD

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DRAWING TITLE
DETAIL SURVEY

PROJECT No.	DRAWING No.	MILESTONE	REVISION
18-001054 SU	19 OF 22		2

FILE: \SYDNAS01\PROJECTS\18\18-001054-SU\11.SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\18-001054-SU DETAIL SURVEY1 PAGE 17-22 REV 2.DWG LAST SAVED BY PBNG WU

SEE SHEET 19 FOR CONTINUATION

MGA

101
DP 603087

22
DP 1254914

MILPERRA SPORTS CENTRE

HENRY LAWSON DRIVE

LINKS AVENUE

CYCLEWAY

SHARED PEDESTRIAN

CONCRETE

BRICK

CHAIN

WIRE

FENCE

WALL

RETAINING

KERB & GUTTER

BANK

BITUMEN

CRASH BARRIER

EDGE

BOTTOM

TOP

OF

PP

GATE

OPTUS PIT

UNKNOWN CONCRETE STRUCTURE APPROX. INV 1.39

CONCRETE HEADWALL
PINV 450 INV 2.45

GRATED KERB
INLET PIT INV 2.33
O / PINV 450
I / PINV 375

GRATED KERB
INLET PIT INV 2.47
O / PINV 375
I / PINV 375

GRATED KERB
INLET PIT INV 2.58
O / PINV 375
I / PINV 375

GRATED KERB
INLET PIT INV 2.72
O / PINV 375

LOCATOR
1.6m DEEP

LOCATOR
1.5m DEEP

LOCATOR
1.8m DEEP

LOCATOR
1.2m DEEP

SEE SHEET 21 FOR CONTINUATION

	FIRST ISSUE	SURVEY	TRACED	CHECK	APPD	DATE
AMENDMENTS	0	GW	PW	DJH	DJH	07/01/2020
	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

AMENDMENT DETAILS

STATUS

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DATE: 19/01/2021

SCALE
0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0
SCALE 1:200 (A1) SCALE 1:400 (A3)

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PROJECT
PLAN SHOWING SELECTED FEATURES & LEVELS ALONG HENRY LAWSON DRIVE BETWEEN AULD AVENUE & BORELLA ROAD

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DRAWING TITLE
DETAIL SURVEY

PROJECT No.	DRAWING No.	MILESTONE	REVISION
18-001054 SU	20 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11. SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\18-001054-SU_DETAIL SURVEY3 PAGE 17-22 REV 2.DWG LAST SAVED BY PBNG (WU

SEE SHEET 20 FOR CONTINUATION

22
DP 1254914

MGA

1
DP 572468

AVENUE

HENRY

LAWSON

DRIVE

LINKS

GRATED KERB
INLET PIT INV 1.37
PINV 1200

GRATED KERB
INLET PIT

POTHOLE 3.71
ELECTRICAL
OBVERT 3.07

POTHOLE 4.36
ELECTRICAL
OBVERT 3.67

CONCRETE
HEADWALL
PINV 450 INV 2.71

CONCRETE
HEADWALL
PINV 450 INV 3.55

TELSTRA PIT

NBN PITS

GUTTER

PEDESTRIAN

SHARED

CYCLEWAY

CONCRETE

KERB

BOTTOM

TOP

EDGE

CRASH

BARRIER

BANK

CHAIN

WIRE

FENCE

BITUMEN

OF

PP

FIRST ISSUE	SURVEY	TRACED	CHECK	APPD.	DATE
	GW	PW	DJH	DJH	07/01/2020
AMENDMENTS 0	GW	PW	DJH	DJH	07/01/2020
1	GW	PW	DJH	DJH	05/02/2020
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AMENDMENT DETAILS

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DRAWING TITLE
DETAIL SURVEY

PROJECT No.	DRAWING No.	MILESTONE	REVISION
18-001054 SU	21 OF 22		2

FILE: \SYDNAS01\PROJECTS\18\18-001054\SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\S18-001054-SU_DETAIL SURVEY'S PAGE 17-22 REV 2.DWG LAST SAVED BY PENG.WU

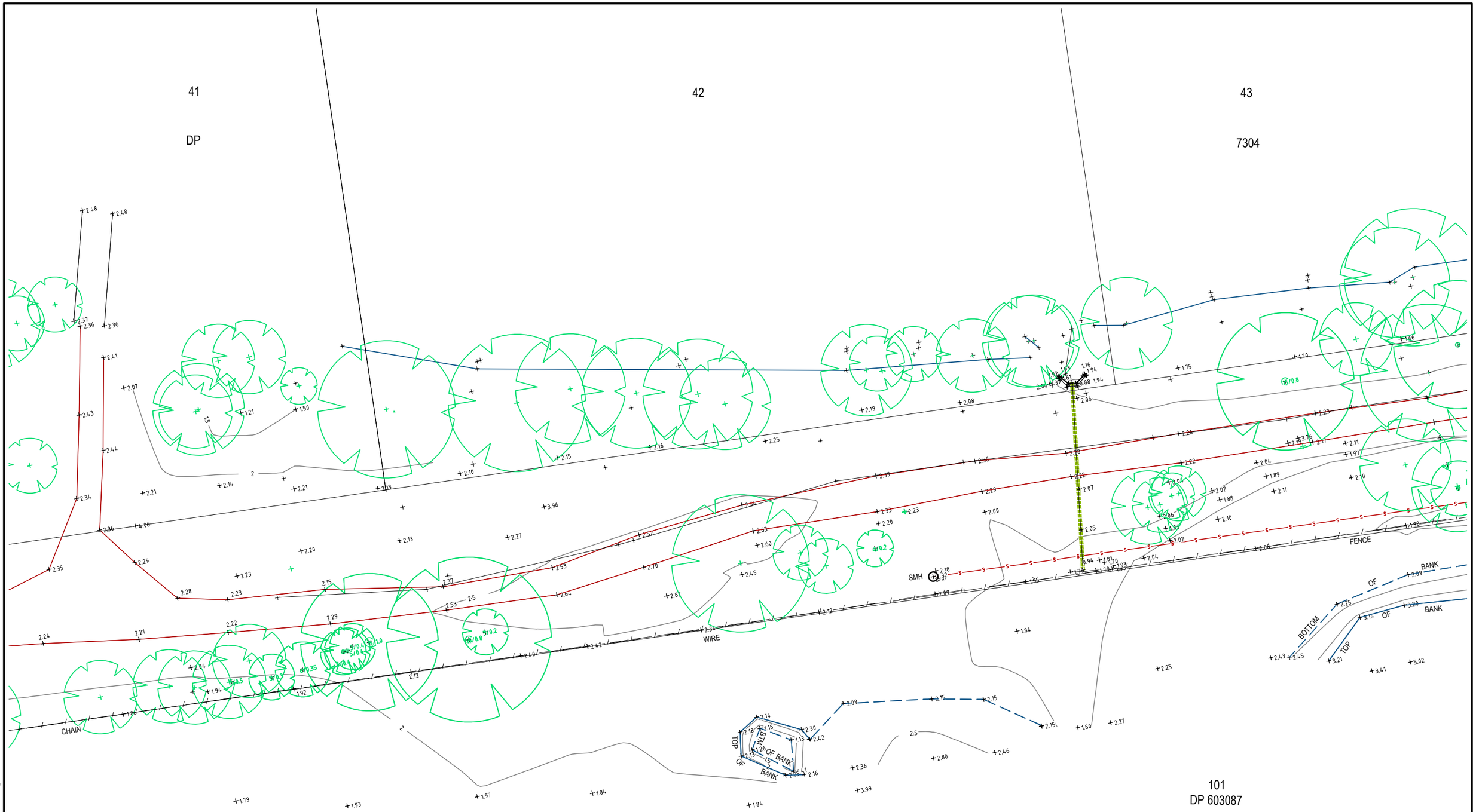
41

DP

42

43

7304



FIRST ISSUE		SURVEY	TRACED	CHECK	APPD.	DATE
AMENDMENTS	0	GW	PW	DJH	DJH	07/01/2020
	1	GW	PW	DJH	DJH	05/02/2020
	2	JA	PW	DJH	DJH	19/01/2021

AMENDMENT DETAILS

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Registered Surveyor (No.1208)
DATE: 19/01/2021

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SCALE 1:200 (A1) SCALE 1:400 (A3)

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PROJECT
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DRAWING TITLE
DETAIL SURVEY

PROJECT No.	DRAWING No.	MILESTONE	REVISION
18-001054 SU	22 OF 22		2

FILE: \\SYDNAS01\PROJECTS\18\18-001054-SU\11_SURVEY\DRAWINGS - INTERNAL\SURVEY\DETAIL SURVEY\18-001054-SU_DETAIL SURVEY.PAGE 17-22 REV 2.DWG LAST SAVED BY PENG WU

PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

MGA
SCIMS

(CI) EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH
(DI) RIGHT OF ACCESS VARIABLE WIDTH
(EI) RESTRICTION ON THE USE OF LAND (VAR. WIDTH)
(FI) POSITIVE COVENANT (VAR. WIDTH)
(C2) EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH
(D2) RIGHT OF ACCESS VARIABLE WIDTH
(E2) RESTRICTION ON THE USE OF LAND (VAR. WIDTH)
(F2) POSITIVE COVENANT (VAR. WIDTH)
(C3) EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH
(D3) RIGHT OF ACCESS VARIABLE WIDTH
(E3) RESTRICTION ON THE USE OF LAND (VAR. WIDTH)
(F3) POSITIVE COVENANT (VAR. WIDTH)
(G) EASEMENT FOR DRAINAGE OF WATER 5 WIDE
(M) EASEMENT FOR DRAINAGE OF WATER 5 WIDE & VARIABLE WIDTH
(N) RIGHT OF ACCESS VARIABLE WIDTH
(OI) EASEMENT FOR DRAINAGE OF WATER 3.66 WIDE
(O2) EASEMENT FOR DRAINAGE OF WATER 6 WIDE
(O3) EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH

NOTES:

IT IS INTENDED TO :
1. DEDICATE LOT 6 TO THE PUBLIC AS PUBLIC ROAD
2. CREATE LOT 4 AS PUBLIC RESERVE

(A) DRAINAGE EASEMENT 6.095 WIDE (DP 7304)
(AI) EASEMENT FOR DRAINAGE OF WATER 5 WIDE
(A2) EASEMENT FOR DRAINAGE OF WATER 8 WIDE
(A3) EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH
(APZ) POSITIVE COVENANT (10, 12 WIDE & VARIABLE WIDTH)
(B) RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES VARIABLE WIDTH (DP 736006)
(B2) RIGHT OF ACCESS 6 WIDE AND VARIABLE
(C) EASEMENT TO DRAIN WATER 5.0 WIDE (DP 749985)
(D) EASEMENT TO DRAIN WATER 2.5 WIDE (DP 639053)
(E) RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES 3.5 WIDE AND VARIABLE (DP 749985)
(F) RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES 3.5 WIDE (DP 640518)
(I) EASEMENT TO DRAIN WATER 2.5 WIDE (DP 749985)
(H) EASEMENT TO DRAIN WATER 2.5 WIDE (DP 749985)
(J) BENEFITED BY EASEMENT FOR DRAINAGE (A646541)
(K) BENEFITED BY RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES (DP 736006)
(L) BENEFITED BY RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES (DP 640518)
(PI) POSITIVE COVENANT (66 WIDE & VARIABLE WIDTH)
(P2) POSITIVE COVENANT (30 WIDE & VARIABLE WIDTH)
(T) RAILWAY COMMISSION EASEMENT 10.06 WIDE (D933625)
(U) EASEMENT FOR BATTER 16.5 WIDE & VARIABLE WIDTH
(UI) EASEMENT FOR ACCESS, MAINTENANCE AND SUPPORT 10, 12 WIDE & VARIABLE WIDTH
(V) EASEMENT TO DRAIN WATER 2.5 WIDE (S284191)
(W) RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES 20.115 WIDE (DP 805826)
(Y) EASEMENT FOR DRAINAGE 1.22 WIDE (DP 231642)
(Z) EASEMENT FOR TRANSMISSION LINE VARIABLE WIDTH (F313950)

NOTES:
1. DIMENSIONS AND AREAS ARE SUBJECT TO FINAL SURVEY.
2. EASEMENT WIDTHS MAY VARY SUBJECT TO FINAL WORKS AS CONSTRUCTED SURVEY.

SURVEYOR Name: DANIEL JAMES HANNIGAN, CALIBRE CONSULTING (NSW) P/L, T: (02) 8808 5000 Date of Survey: 20/05/2021 Reference: SURV-REF LPI File Ref: LPI-REF	PLAN OF SUBDIVISION OF LOT 1 DP 625013, LOT 10 DP 731859, LOTS 21 & 22 DP 749985, LOT 1 DP 813006, LOT 1 DP 813007, LOTS 231 & 232 DP 805826 AND LOTS 23-27, 38-41, 50-59 DP 7304.	L.G.A.: CANTERBURY-BANKSTOWN Locality: MILPERRA Reduction Ratio: 1:4000 Lengths are in metres	Registered DRAFT	DP 1261511

\\sydnas01\projects\18\18-001054-SU\11_Survey\DP & 88B REGISTRATION\FS1\DP Drawing\DWG\18-001054 DP 20220324.dwg Saved: 28.03.2022, By: peng wu

24 March 2021

Bill Anthony
Development Manager
Mirvac Homes (NSW) Pty Ltd
Level 28, 200 George Street
Sydney, NSW 2000

Cumberland Ecology
PO Box 2474
Carlingford Court 2118
NSW Australia
Telephone (02) 9868 1933
ABN 14 106 144 647
Web: www.cumberlandecology.com.au

Riverlands residential subdivision: Vegetation Assessment for Bushfire Classification

Dear Bill,

The purpose of this letter is to provide a supplementary ecological assessment of the vegetation within parts of the Riverlands site for the purposes of bushfire classifications.

The Riverlands site is located in the suburb of Milperra and is generally bounded by the Georges River to the west and north-west, the M5 Southwest Motorway and an area of land owned by Canterbury-Bankstown Council (known as Lot 5) to the south, residential development to the east, and public open space/Vale of Ah Reserve to the north.

The Riverlands site is currently zoned as a mix of R2 (Low density residential), RE2 (Private Recreation) and RE1 (Public Recreation). The R2 zoned land is limited to the south-eastern parts of the Riverlands site and is wholly contained within areas of the former golf course area. RE1 zoned land is limited to a narrow 20m wide band along the length of the Georges River at the western boundary of the Riverlands site. The remainder of the Riverlands site is zoned RE2.

The ecological studies conducted to date have found that the vegetation within the Riverlands site comprises a mix of remnant/regrowth communities, including some areas that conform to Threatened Ecological Communities (TECs) as listed under the NSW *Biodiversity Conservation Act 2016* (BC Act), modified areas consisting largely of canopy trees only within the former golf course area and planted areas. These vegetation communities were assigned to Plant Community Types (PCTs), including 'best-fit' PCTs for areas of planted and/or modified vegetation, in accordance with the Biodiversity Assessment Method (BAM). The mapping of PCTs and vegetation condition classes is shown in **Figure 1**. The mapped 'Residential subdivision footprint' encompasses the entirety of R2 zoned land as well as adjacent parts of RE2 zoned land while the Keys Parade Connector Road footprint lies entirely in RE2 zoned land. The condition classes of the mapped PCTs within the site are summarised in **Table 1**.

Table 1 PCTs and condition classes of vegetation within the Riverlands Site

Plant Community	Location within Riverlands Site
Cumberland Plain Woodland Remnant Trees (PCT 849)	Largely confined to R2 zoned land with minor patches in RE2 land along the RE2/R2 land boundary
Riverflat Eucalypt Forest (PCT 835)	RE2 land and parts of RE1 land
Riverflat Eucalypt Forest Remnant trees (PCT 835)	Largely confined to R2 zoned land with minor patches in RE2 land along the RE2/R2 land boundary
Swamp Oak Forest (PCT 1232)	RE2 land and parts of RE1 land
Scribbly Gum Woodland Remnant Trees (PCT 883)	Largely confined to R2 zoned land with minor patches in RE2 land along the RE2/R2 land boundary
Planted Casuarinas (PCT 1800)	Largely confined to R2 zoned land with minor patches in RE2 land along the RE2/R2 land boundary as well as along existing Keys Parade and developed areas north of the Northern Creekline
Planted non-endemic natives (PCT 1083)	Confined to R2 zoned land
Mangrove Forest (PCT 920)	Confined to RE2 and RE1 lands along the banks of the Georges River
Phragmites regrowth (PCT 1232)	Confined to RE2 and RE1 lands along the banks of the Georges River
Planted Trees (PCT 835)	Confined to RE2 land fronting Auld avenue
Cumberland Plain Woodland (PCT 849)	Not present within Riverlands site – confined to adjacent Council Lot 5.

The vegetation within the Riverlands site has long been modified and disturbed from its original condition from historic and current land uses such as the former golf course, the former sand extraction quarry and current cattle grazing. The surveys conducted by Cumberland Ecology between 2018 – 2020 as well as prior surveys by Clements in 2012 found no indication of regeneration across the majority of the site. The field surveys to date have found regrowth/regeneration to be limited to the large patch of Mangrove and Swamp Oak vegetation extending from the Georges River as well as along the two creeklines where alluvial soils are still present.

The historic land uses, primarily importation of soils for the former golf course, has significantly altered the soil profile and much of the original soil seedbank has been lost across the majority of the site, thereby severely limiting any potential for natural regeneration. Potential regeneration is further restricted by current land uses for grazing as well as presence of fungal soil pathogens. Due to the loss of the original seedbank as well as presence of fungal soil pathogens, onsite communities are considered unlikely to naturally regenerate, even with cessation of current grazing practises.

Although some of the mapped communities within the Riverlands site are technically classified as 'Forest' type communities, some sections of the onsite occurrences of these communities have densities/formations that are more akin to 'Grassy and Semi-arid Woodland' communities (referred to as 'Woodland' communities) due to the historic clearing, soil modification and current cattle grazing activities.

The areas outside of the proposed development boundary specifically assessed as meeting the requirements to be classed as 'Woodland' for bushfire purposes as per Figure A1.2 – Description of vegetation formations of PBP 2019 - i.e. vegetation is dominated by an open to sparse layer of eucalypts with the crowns rarely touching, typically 15-35m high, diverse ground cover of grasses and herbs, shrubs are sparsely distributed, usually on flat or undulating ground – are shown in **Figure 1** (hatched areas).

A summary of the condition of the vegetation assessed as meeting 'Woodland' classification requirements within this hatched area is detailed in **Table 2**. Photographs of examples of the occurrences of these communities within the hatched area in **Figure 1** are provided in **Appendix A**.

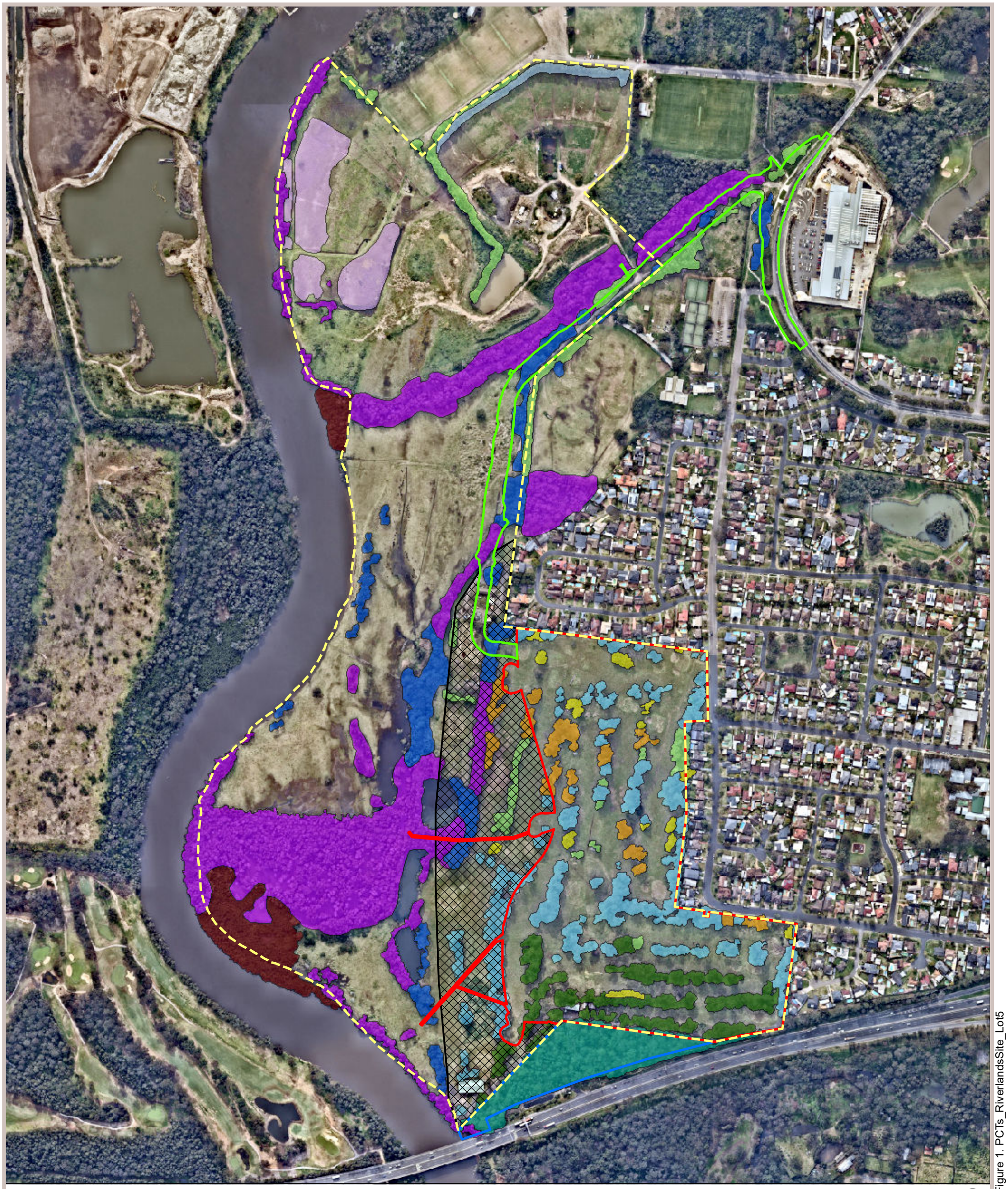


Figure 1. Plant Community types within the Riverlands Site and adjacent Council Lot 5

Table 2 Assessment of PCTs/Vegetation Communities as 'Woodland' for bushfire purposes

PCT/Veg zone	Figure 1 Map unit colour	Vegetation formation of PCT	Vegetation class of PCT	PBP (2019) classification of PCT***	Onsite condition of PCT/Vegetation
Cumberland Plain Woodland Remnant Trees (PCT 849)	Dark Green	Grassy Woodlands	Coastal Valley Grassy Woodlands	Grassy and Semi-arid Woodland (including Mallee)	Scattered trees over largely exotic grassland in former golf course areas. Onsite occurrence fits PBP Vegetation definition of Woodland as onsite occurrence has an open to sparse layer of eucalypts, clustered in discrete clumps. Shrub layer is absent. Understorey is predominantly grasses with scattered occurrences of herbs and forbs
Riverflat Eucalypt Forest (PCT 835)	Dark Blue	Forested Wetlands	Coastal Floodplain Wetlands	Forested Wetland (excluding Coastal Swamp Forest)	Scattered trees with disturbed understorey along drainage channels immediately adjacent to the former gold course areas. Occurrence within hatched areas (Figure 1) has some young regrowth resulting in a higher tree density than adjacent vegetation communities in the former golf course. However, it still meets the PBP requirements for Woodland as it is dominated by an open layer of eucalypts, has a sparse to absent shrub layer and occurs on flat to undulating ground.
Riverflat Eucalypt Forest Remnant trees (PCT 835)	Light Blue	Forested Wetlands	Coastal Floodplain Wetlands	Forested Wetland (excluding Coastal Swamp Forest)	Scattered trees over largely exotic grassland in former golf course areas. Onsite occurrence fits PBP Vegetation definition of Woodland as onsite occurrence has an open to sparse layer of eucalypts, clustered in discrete clumps. Shrub layer is absent.

PCT/Veg zone	Figure 1 Map unit colour	Vegetation formation of PCT	Vegetation class of PCT	PBP (2019) classification of PCT***	Onsite condition of PCT/Vegetation
					Understorey is predominantly grasses with scattered occurrences of herbs and forbs.
Swamp Oak Forest (PCT 1232)	Purple	Forested Wetlands	Coastal Swamp Forests	Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and sub-alpine woodland	Occurrence within hatched areas (Figure 1) comprises regrowth along the drainage channel and around the existing dams. The regrowth results in a higher tree density than adjacent vegetation communities in the former golf course. The occurrence of this community within the hatched areas doesn't fully fit PBP Vegetation definition of Woodland in that it is not dominated by Eucalypts. However, it still meets the PBP Woodland requirements of an open layer of trees, sparse to absent shrub layer and occurring on flat to undulating ground. Further occurrences of this community in the wider Riverlands site, west of the hatched areas, do not meet definitions of Woodland as these areas comprise coastal swamp forests

PCT/Veg zone	Figure 1 Map unit colour	Vegetation formation of PCT	Vegetation class of PCT	PBP (2019) classification of PCT***	Onsite condition of PCT/Vegetation
Scribbly Gum Woodland Remnant Trees (PCT 883)	Orange	Dry Sclerophyll Forests (Shrubby sub-formation)	Sydney Sand Flats Dry Sclerophyll Forests	Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and sub-alpine woodland	Scattered trees over largely exotic grassland in former golf course areas. Onsite occurrence fits PBP Vegetation definition of Woodland as onsite occurrence has an open to sparse layer of eucalypts, clustered in discrete clumps. Shrub layer is absent. Understorey is predominantly grasses with scattered occurrences of herbs and forbs
Planted Casuarinas (PCT 1800)	Light Green	Forested Wetlands	Coastal Floodplain Wetlands	Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and sub-alpine woodland	Scattered planted trees over largely exotic grassland in former golf course areas, no shrub layer. Onsite occurrence doesn't fully fit PBP Vegetation definition of Woodland as onsite occurrence is not composed of eucalypts. However planted Casuarinas occur in rows near eucalypts and have a similar tree density with no shrub layer and so could be classified as a woodland.
Planted non-endemic natives (PCT 1083)	Yellow	Dry Sclerophyll Forests (Shrubby sub-formation)	Sydney Coastal Dry Sclerophyll Forests	Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and sub-alpine woodland	Scattered planted trees over largely exotic grassland in former golf course areas, no shrub layer. Onsite occurrence fits PBP Vegetation definition of Woodland as onsite occurrence has an open to sparse layer dominated by eucalypts with other Myrtaceae species, clustered in discrete clumps.

*** *as per Appendix 1; Section A1.12 Comprehensive APZ, BAL and vegetation class tables*

In addition to the vegetation within the Riverlands site assessed above, it is noted that vegetation within the adjacent Council Lot 5 also occurs in close proximity to the proposed residential development. The vegetation within Council Lot 5 has been mapped as Cumberland Plain Woodland (PCT 849), which is classified as a Grassy Woodland community. This area is therefore also assumed to meet the PBP vegetation definition of woodland, despite the higher levels of shrub cover (see **Photograph 5** in **Appendix A**) compared to areas in the Riverlands site.

Based on field observations and field data, we conclude that the different remnant woody vegetation types within the hatched areas shown in Figure 1 meet the requirements of 'Woodland' vegetation under PBP 2019 due to highly modified states from historic and current land uses, despite some of the communities technically being classified as Forest or Forested wetland community types.

If you have any queries or wish to discuss the contents of this letter further, please do not hesitate to contact me, or Gitanjali Katrak, via email or at our Sydney office on (02) 9868 1933.

Yours sincerely

David Robertson

David Robertson
Director
david.robertson@cumberlandecology.com.au

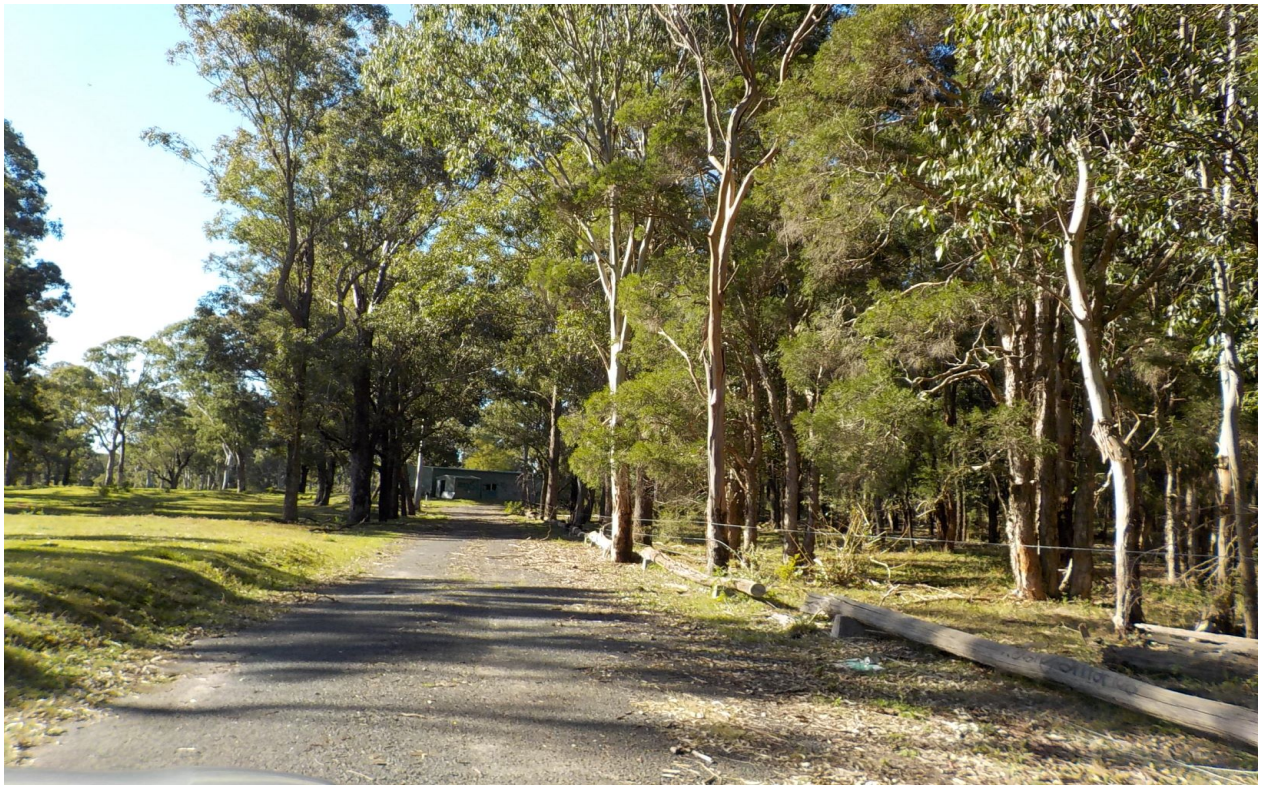
APPENDIX A :
Photographs

Photograph 1 Vegetation condition at 'junction' of PCT 883 (orange) PCT 835 (dark blue) and PCT 1232 (purple) adjacent to residential subdivision footprint (Eucalypts in left of photo = PCT 883; Eucalypts in foreground on right = PCT 835; Casuarinas in background on right = PCT 1232)

Photograph 2 Eucalypts in foreground of photo = PCT 883, Casuarinas/Eucalypts in drainage line and background = intergrade of PCT 835 and PCT 1232

Photograph 3 Example of Swamp Oak Forest (PCT 1232) around northernmost dam with River-flat Eucalypt Forest (PCT 835 – dark blue map unit) in background

Photograph 4 Cumberland Plain Woodland Remnant Trees (PCT 849 – dark green map unit) in Riverlands site (left) and Cumberland Plain Woodland (PCT 849 – blue/green map unit) in Council Lot 5 (right)



Photograph 5 Example of Cumberland Plain Woodland (PCT 849 – blue/green map unit) within Council Lot 5

5 July 2021

Bill Anthony
Mirvac Homes (NSW) Pty Ltd
Level 28, 200 George Street
Sydney, NSW 2000

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Carlingford Court 2118
NSW Australia
Telephone (02) 9868 1933
ABN 14 106 144 647
Web: www.cumberlandecology.com.au

Riverlands: Supplementary Assessment of proposed connector road alignment along Keys Parade

Dear Bill,

The purpose of this letter is to provide a supplementary ecological assessment to support the procedural development application (DA) being submitted by Mirvac Homes (NSW) Pty Ltd (Mirvac) for the proposed alignment of the connector road along Keys Parade within the site known as the 'Riverlands site' at 56 Prescot Parade, Milperra, NSW.

i. Background

The Riverlands site is situated on the eastern shore of the Georges River, in the Canterbury-Bankstown Local Government Area (LGA). The Riverlands site is subject to Clause 6.11 of the Bankstown *Local Environment Plan 2015* (BLEP 2015), which includes provisions to enable the redevelopment of the Riverlands site, particularly residential development in the south to south-eastern parts of the site.

The Riverlands site is also subject to an executed Voluntary Planning Agreement (VPA), which contains several works that are to be implemented within the Riverlands site, including (but not limited to):

- Staged infrastructure works including construction of a connecting road network and road infrastructure upgrades;
- Bank stabilisation works on the Georges River;
- Construction of a foreshore walkway/cycleway along the Georges River; and
- Revegetation and enhancement of riparian corridors along the Georges River and Northern creek line.

The overall development of the Riverlands site (hereafter referred to as the 'Project') is proposed to be conducted in stages and will ultimately involve the subdivision of land into residential lots and 'pocket' park areas with associated infrastructure (roads,

drainage basins) within the development footprint. The road infrastructure will comprise a road network within the residential subdivision as well as a primary 'connector' road (known as Keys Parade) that will link the proposed residential area with a main road – Henry Lawson Drive. Other staged works for the Project include bank stabilisation works, construction of a shared cycleway/pathway along the Georges River and rehabilitation of riparian corridors in accordance with the executed VPA.

The Project is currently the subject of four related Class 1 Land and Environment Court (LEC) proceedings known as Mirvac Homes (NSW) Pty Ltd (Mirvac) v Canterbury Bankstown Council ('Council') (Case numbers 2020/00267217, 2020/00267229, 2020/00267230 and 2020/00267231). Ecological issues for the DA raised in Council's Statement of Facts and Contentions (SoFC) for the four cases largely relate to alleged insufficient ecological investigations of impacts on threatened species and ecological communities as listed under the NSW *Biodiversity Conservation Act 2016* (BC Act). They also relate to alleged non-compliance with specific clauses and requirements of the *Bankstown Local Environment Plan 2015* (BLEP 2015) and the *Bankstown Development Control Plan 2015* (BDCP 2015).

ii. Development Applications

The following development applications were submitted to Canterbury-Bankstown Council (Council) by Mirvac:

- DA No. 1107/2019 seeking consent for Re-subdivision of existing 27 lots into 6 lots under Torrens title (no works), now LEC case 2020/00267217;
- DA No. 4/2020 seeking consent for Subdivision of Proposed Lot 1 and Lot 2 (proposed to be created under DA-1107/2019) into residential allotments and residue lots, with the creation of open space, bulk earthworks, construction of internal roads, drainage and associated services over three (3) construction stages (the Residential subdivision DA), now LEC case 2020/00267229;
- DA No. 108/2020 seeking consent for construction and extension of Keys Parade roadway and associated works connecting to an upgraded signalised intersection of Keys Parade at Henry Lawson Drive (the Keys Parade Connector Road DA), now LEC case 2020/00267230; and
- DA No. 370/2020 seeking consent for Bank stabilisation works along the Georges River foreshore (being Proposed Lot 4 under DA-1107/2019 and land under the M5 Motorway bridge over the Georges River), and remediation and environmental rehabilitation works on the Riverlands Golf Course Site (the Bank Stabilisation DA), now LEC case 2020/00267231.

DA 1107/2019 was submitted prior to all other DAs and comprised a procedural DA in relation to the requisite Keys Parade 'connector' road. This procedural DA effectively comprised a paper subdivision for the proposed road alignment and no physical works are proposed as part of the procedural DA.

Nonetheless, prior to the submission of the Residential subdivision and Keys Parade connector road DAs and subsequent LEC proceedings, Council requested information on the biodiversity values of the proposed alignment to determine the suitability of the alignment in relation to preservation of trees. The purpose of this letter is to provide a high-level assessment of the biodiversity values of the proposed road alignment, as requested by Council, to support the procedural DA (DA 1107/2019). The detailed ecological assessments in relation to direct and indirect impacts associated with physical works for the road construction are addressed

in the Biodiversity Development Assessment Report (BDARs) prepared for the Residential subdivision (DA 4/2020) and the Keys Parade Connector Road (DA 108/2020).

iii. Ecological Assessment for DA 1107/2019

As part of the BDAR process for the Residential subdivision and Keys Parade connector road DAs, Cumberland Ecology has conducted extensive vegetation mapping surveys, flora plots and habitat assessments in accordance with the Biodiversity Assessment Method (BAM) within the Riverlands site.

The survey results verify that the vegetation within the Riverlands site comprises a mix of remnant or regrowth plant communities and planted vegetation. Some areas with native vegetation are intact enough to conform to threatened ecological communities (TECs) listed under the *Biodiversity Conservation Act 2016* (BC Act), while others are heavily modified areas consisting almost entirely of canopy trees with no understorey on the former golf course area. There are also plantings of non-local Australian native trees and shrubs that were used originally for landscaping of the golf course. These vegetation communities have either been assigned to Plant Community Types (PCTs) or have been assessed as Planted vegetation not requiring allocation to a PCT, in accordance with BAM 2020. The condition classes of the mapped PCTs within the site are summarised in **Table 1** below and the distribution of the PCTs across the Riverlands site is shown in **Figure 1**.

Table 1 PCTs and number of conditions classes recorded within the Riverlands site

Plant Community Type	# of vegetation condition classes
849 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	1 condition class: Best fit PCT for Modified vegetation (canopy trees only). Not a TEC
835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	3 condition classes: Class 1 = Remnant/regrowth vegetation that conforms to a TEC; Class 2 = Best fit PCT for Modified vegetation (canopy trees only). Not a TEC Class 3 = Best fit PCT for Planted Endemic Canopy trees. Not a TEC
1232 - Swamp Oak floodplain swamp forest, Sydney Basin Bioregion and South East Corner Bioregion	2 condition classes: Class 1 = Remnant/regrowth vegetation that conforms to a TEC Class 2 = Regrowth understorey reedland that remains part of the TEC
883 – Castlereagh Scribbly Gum Woodland	1 condition class: Best fit PCT for Modified vegetation (canopy trees only). Not a TEC
1800 - Swamp Oak open forest on river flats of the Cumberland Plain and Hunter valley	1 condition class: Best fit PCT for planted vegetation. Not a TEC
920 - Mangrove Forests in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion	1 condition class: Remnant/regrowth vegetation. Not a TEC
Planted non-endemic natives – not required to be allocated to a PCT under BAM 2020	-

Due to the distribution of existing vegetation as well as other non-ecological constraints (such as engineering requirements and topography), complete avoidance of vegetation clearing for the proposed connector road is not feasible. Although some regrowth vegetation will be cleared, the current road alignment largely passes through exotic pasture and cleared areas along Keys Parade, thus minimising the extent of vegetation removal (see Photographs in **Appendix A**).

It is acknowledged that the current alignment will result in the removal of some vegetation that conforms to a TEC. However, the proposed alignment has been sited to pass through relatively narrow bands of PCT 1232 and PCT 835 thus minimising the extent of TEC clearing for the connector road. Furthermore, a large proportion of the vegetation to be removed along Keys Parade comprises planted vegetation that does not conform to a TEC.

The vegetation to be removed along the road alignment, particularly along Keys Parade, currently provides very limited habitat for native fauna species. This is because it is largely comprised of young trees that lack key habitat features such as tree hollows and as the understorey and ground stratum is heavily modified and weed infested.

Therefore, based on the distribution of vegetation, particularly TECs, and with due consideration to non-ecological requirements such as engineering requirements and topography, the current proposed road alignment is an acceptable ecological outcome as it maximises avoidance of vegetation removal and associated fauna habitats via utilisation of cleared areas and existing roads/tracks.

If you require any further information or clarification, please do not hesitate to contact either me, or David Robertson, at our Sydney office on (02) 9868 1933.

Yours sincerely,

Gitanjali Katrak
Senior Project Manager/Ecologist
gitanjali.katrak@cumberlandecology.com.au

APPENDIX A :
Site Photographs

Photograph 1: Planted Casuarinas along south to south-western sections of Keys Parade

Photograph 2: Mix of regrowth and planted vegetation lacking fauna habitat features in north to north-eastern sections of Keys Parade

Photograph 3: Cleared areas within Riverlands site

FIGURES

Legend

- Riverlands Site
- Residential Development Area
- Connector Road Development Area
- Bank Stabilisation Works

Plant Community Type

- PCT 849_Cumberland Plain Woodland Remnant Trees
- PCT 835_Riverflat Eucalypt Forest
- PCT 835_ Riverflat Eucalypt Forest Remnant Trees
- PCT 1232_Swamp Oak Forest
- PCT 883_Scribbly Gum Woodland Remnant Trees
- PCT 1800_Planted Casuarinas
- PCT 920_Mangrove forest
- PCT 1232_Phragmites regrowth
- PCT 835_Planted Trees
- Planted non-endemic natives

Coordinate System: MGA Zone 56 (GDA 94)

Image Source:
Image © Nearmap (2020)
Dated: 23/01/2020

cumberland ecology

I:\...\19126\Figures\Letter 9\20210703\Figure 1. PCTs_Riverlands Site

Figure 1. Vegetation (PCTs) within the Riverlands Site

0 50 100 150 200 m

Building Code & Bushfire Hazard Solutions

(Pty. Limited) ABN 19 057 337 774
PO Box 124, Berowra NSW 2081
Telephone: (02) 9457 6530
www.bushfirehazardsolutions.com.au

Mirvac Homes (NSW) Pty Ltd
Level 28, 200 George Street
SYDNEY NSW 2000

5th July 2021
Our Ref. 200332C

Attention: Bill Anthony

Re: PROPOSED FACILITATING SUBDIVISION (DA-1107/2019 (CNR-7033))
56 PRESCOT PARADE, MILPERRA NSW
BUSHFIRE ASSESSMENT – REQUEST FOR REVIEW

Dear Bill,

This report has been prepared in accordance with Division 2 of Pt 31 of the Uniform Civil Procedure Rules (**UCPR**) and the Expert Witness Code of Conduct in Schedule 7 of the UCPR. I have read the Expert Witness Code of Conduct and agree to be bound by it.

The Development Application (DA) seeks approval for a facilitating subdivision which involves the re-subdivision of existing 27 lots into 6 lots under Torrens title. The proposal includes the following specific works:

a) Consolidation of existing 27 lots that currently make up the site identified as the former Riverlands Golf Course site, under Clause 6.11(1) of the Bankstown Local Environmental Plan 2015.
b) Subdivision into 6 new lots, to reflect the proposed ongoing stages of development of parts of the Riverlands Golf Course site, as follows:
c) Proposed Lot 1 – Residential Subdivision and Development
a) Proposed Lot 2 – Separate allotment to the west of Proposed Lot 1, intended to accommodate some stormwater drainage infrastructure associated with development on Proposed lot 1
b) Proposed Lot 3 – separate lot to west of Proposed Lot 2, no intended development at this time
c) Proposed Lot 4 – creation of a strip of land 20m wide along the Georges River foreshore, for dedication to Council
d) Proposed Lot 5 – separate lot to the north of the existing site, no indication of any intended future development at this time.
e) Proposed Lot 6 – construction of Keys Pde roadway in a modified alignment, and dedication to Council.
f) No physical works are proposed

The NSW Rural Fire Service (NSW RFS) has issued General Terms of Approval, under Division 4.8 of the *Environmental Planning and Assessment Act 1979*, and a Bush Fire Safety Authority, under section 100B of the *Rural Fires Act 1997* for this application (RFS ref DA20200519001724-Original-1).

On 14 September 2020, the Applicant filed proceedings with the NSW Land and Environment Court appealing against Canterbury-Bankstown Council's deemed refusal of the Applications.

While there are no physical changes to this application, only the addition of various easements, the applicant would like to take this opportunity to request a review the conditions of consent detailed in the General Terms of Approval and a Bush Fire Safety Authority issued by the NSW RFS (DA20200519001724-Original-1), being;

1. *At the issue of a subdivision certificate and in perpetuity, to ensure ongoing protection from the impact of bush fires, the entirety of the proposed Lot 1 zoned R2 Low Density Residential must be managed as an Inner Protection Area (IPA) in accordance with the requirements of Appendix 4 of Planning for Bush Fire Protection 2019. When establishing and maintaining an IPA the following requirements apply:*

    - *tree canopy cover should be less than 15% at maturity;*
    - *trees at maturity should not touch or overhang the building;*
    - *lower limbs should be removed up to a height of 2 metres above the ground;*
    - *tree canopies should be separated by 2 to 5 metres;*
    - *preference should be given to smooth barked and evergreen trees;*
    - *large discontinuities or gaps in vegetation should be provided to slow down or break the progress of fire towards buildings;*
    - *shrubs should not be located under trees;*
    - *shrubs should not form more than 10% ground cover;*
    - *clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.*
    - *grass should be kept mown (as a guide grass should be kept to no more than 100 mm in height); and*
    - *leaves and vegetation debris should be removed*

2. *At the issue of a subdivision certificate, the proposed Lots 2, 3, 4 & 5 zoned RE2 Private Recreation within the subdivision shall be hazard reduced with vegetation managed as an outer protection area (OPA), except the Coastal Management areas (SEPP 2008) and existing riparian areas, in accordance with Appendix 4 of Planning for Bush Fire Protection 2019. A suitably worded instrument(s) created pursuant to section 88 of the Conveyancing Act 1919 or an adopted Council Plan of Management must be placed on the proposed lots which requires each lot to be continued to be managed as an OPA. The instrument may be extinguished from individual lots where a lot has been developed and the hazard has been removed.*

    When establishing and maintaining an OPA the following requirements apply:

    - *trees tree canopy cover should be less than 30%;*
    - *canopies should be separated by 2 to 5 metres.*
    - *shrubs should not form a continuous canopy;*
    - *shrubs should form no more than 20% of ground cover;*
    - *grass should be kept mown to a height of less than 100 mm; and*
    - *leaf and other debris should be removed.*

    The name of authority empowered to release, vary or modify any instrument shall be Canterbury Bankstown Council.

3. *Access roads must comply with the following general requirements of Table 5.3b of Planning for Bush Fire Protection 2019 and the following:*

    - *subdivisions of three or more allotments have more than one access in and out of the development;*
    - *perimeter roads are two-way sealed roads with minimum 8 metre carriageway width kerb to kerb;*
    - *non-perimeter roads to have minimum 5.5 metre carriageway width kerb to kerb;*
    - *dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;*
    - *one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression;*
    - *traffic management devices are constructed to not prohibit access by emergency services vehicles;*
    - *maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient;*
    - *where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road;*
    - *the capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/causeways are to clearly indicate load rating.*
    - *hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;*
    - *hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005 - Fire hydrant installations System design, installation and commissioning.*

4. *At each stage of the subdivision, temporary turning heads shall be provided to temporary dead end roads incorporating either a minimum 12 metre radius turning circle or turning bay with arms of 15 metres deep and 6 metres wide from the centreline of the road and have a turning radius of no less than 6 metres. The turning area can be removed upon opening of future proposed through roads.*

In accordance with due process we submit this information and ask it be referred to the NSW RFS.

It is acknowledged that since the time this application was lodged *Planning for Bush Fire Protection 2019* has come into effect and is applicable to all applications lodged on or after 1st March 2020.

In accordance with NSW Government Planning Circular 'Planning for Bushfire Protection 2019' (PS 20-001, March 2020) as the subject development application was lodged before 1st March 2020 it is to continue to have regard to Planning for Bush Fire Protection 2006.

The above conditions are either considered onerous or not relevant to the subject application.

In relation to conditions 1 and 2 the smaller lot residential subdivision of DA-4/2020, which is being assessed concurrently to this application, provides the relevant minimum required Asset Protection Zones (APZs) entirely within that allotment (proposed Lot 1).

To supplement the APZs for the small lot residential subdivision (DA-4/2020) an easement (variable width) has been proposed along the eastern boundary of proposed Lot 2. This easement is to facilitate the nominated area being managed in accordance with an APZ. The extent of the proposed easement is shown on Figure 01 below.

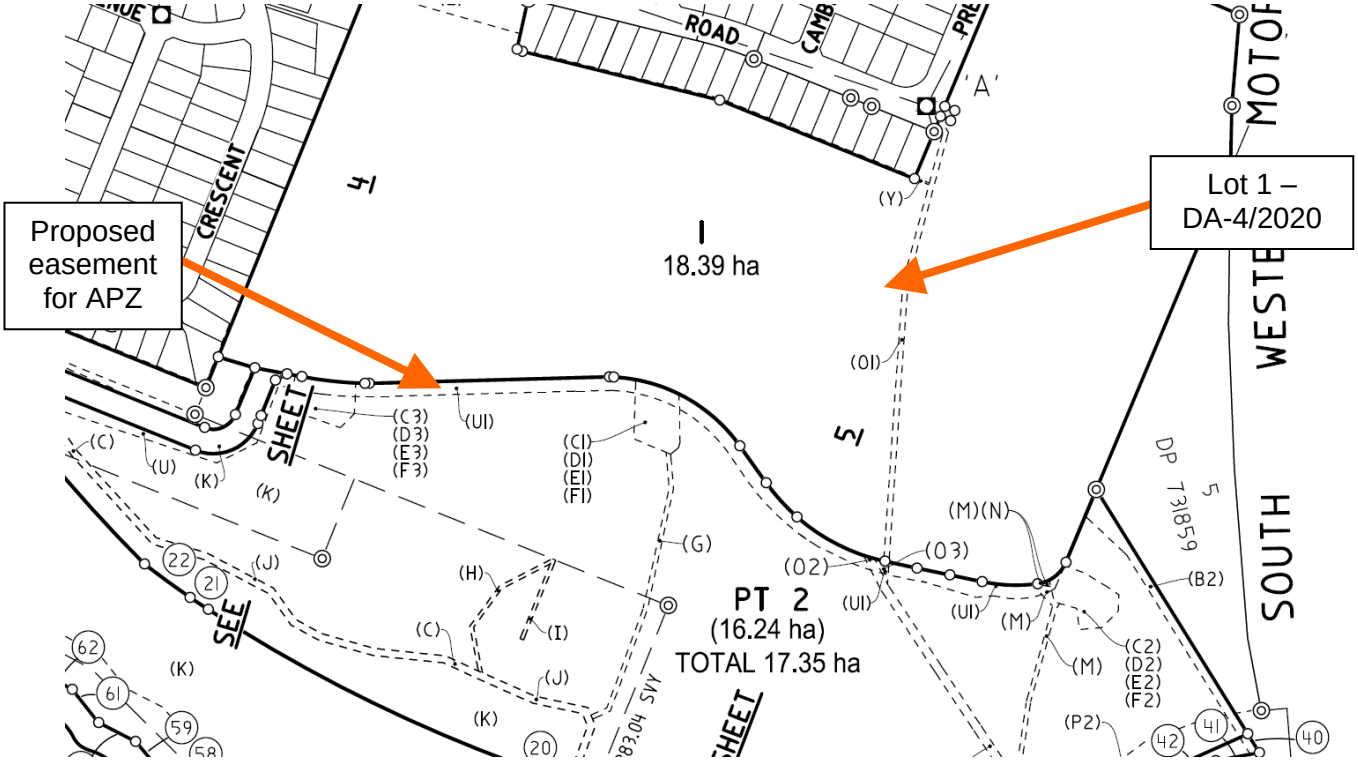

Figure 01: Extract from the Plan of Subdivision showing location of proposed easements

The provision of this easement is considered above the minimum requirements to satisfy *Planning for Bush Fire Protection 2019*.

Specific to condition 1 as part of the development assessment process an expanded environmental study for the site was undertaken by Cumberland Ecology (2021) which identified an area of vegetation which will be retained and protected. Part of this area is on land zoned R2 Low Density Residential within proposed Lot 1.

A condition to manage the entirety of the proposed Lot 1 zoned R2 Low Density Residential as an Inner Protection Area (IPA) subsequently conflicts with the newly identified Southern Park. The newly created Southern Park area has been addressed in the Supplementary Bushfire Assessment Report for the small lot residential subdivision (DA-4/2020) within the relevant APZs applied within proposed Lot 1.

Finally in relation to conditions 3 and 4 as there are no physical works as part of this application these conditions are not applicable. The access requirements are addressed in the small lot residential subdivision (DA-4/2020).

We respectively request that the NSW RFS delete conditions 1, 2, 3 and 4 of their General Terms of Approval, under Division 4.8 of the *Environmental Planning and Assessment Act 1979*, and a Bush Fire Safety Authority, under section 100B of the *Rural Fires Act 1997.*

If you have any questions regarding this assessment please contact the undersigned directly.

Prepared by
Building Code & Bushfire Hazard Solutions P/L

Stuart McMonnies
Manager - Bushfire Section
G. D. Design in Bushfire Prone Areas.
Certificate IV Fire Technology
Fire Protection Association of Australia BPAD – L3 Accredited Practitioner
Accreditation number – BPAD9400

Quote from Planning for Bush Fire Protection 2019, '*While the material within this publication is current at the time of writing changes in circumstances after the time of publication may impact on the accuracy of the material. Individuals are responsible for ensuring they have the most current version of this publication.*

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Similarly the interpretations and opinions provided by Building Code and Bushfire Hazard Solutions in regard to bushfire design, protection and mitigation are also given in the same good faith.

CANTERBURY BANKSTOWN

Development Application

Section 4.12 & Part 4 Environmental Planning & Assessment Act 1979

SECTION A. Details of the Applicant

Company Name (if applicable)	Mirvac Homes (NSW) Pty Ltd	ABN (if applicable)	22 006 992 998

Mr ☐ Ms ☐ Mrs ☐ Miss ☐

First Name		Family Name	
Email Preferred communications	elyse.debrincat@mirvac.com		
Unit No.		Street No. 200	Street George Street
Suburb	Sydney	State NSW	Postcode 2000
Mobile	0466390856	Daytime Phone	

SECTION B. Location and Title Description of the Property

Unit No.		Street No. 56	Street Prescot Parade
Suburb	Milperra	State NSW	Postcode 2214
Lot No.	1/DP813006, 1/DP813007, 231/DP805826, 21/[	Section No.	
Deposited Plan/Strata Plan No.			

SECTION C. Description of the Proposed Development

What do you propose to do?

Procedural paper re-subdivision of lots (no works)

If a building, what will it be used for?					
If residential, how many dwellings/units?		Building Class		How many floors?	

SECTION D. Development Type Please tick the appropriate box(es)

- ☐ 1. Residential – Alterations and Additions
- ☐ 2. Residential – Single New Dwelling
- ☐ 3. Residential – New Second Occupancy (Secondary Dwelling or Dual Occupancy)
- ☐ 4. Residential – New Multi Unit
- ☐ 5. Residential – Seniors Living
- ☐ 6. Residential – Other (eg. Boarding Houses)
- ☐ 7. Tourist and Visitor Accomodation
- ☐ 8. Commercial/Retail/Office
- ☐ 9. Mixed Use (eg. Commercial/Residential)
- ☐ 10. Infrastructure
- ☐ 11. Industrial
- ☐ 12. Community Facility
- ☑ 13. Subdivision Only
- ☑ 14. Other (including Demolition only) Environmental remediation

SECTION E. Estimated Cost of the Development

Please state the full contract price for labour and materials or a realistic estimate provided by an architect.

Note: If the value of the development is over $500k or the scale of residential development is similar or larger to a Dual Occupancy, a Quantity Surveyor's Report is required.

$ 20,000.00

SECTION F. Architect or Designer Details

Company Name		Contact Person's Name	
Phone		Mobile	
Email			

SECTION G. Other Approvals

Is the application required to be determined by a Planning Panel?	☐ Yes	☑ No
Is the application accompanied by a Voluntary Planning Agreement (VPA)?	☐ Yes	☑ No
Does the application propose a variation to a development standard in a Local Environmental Plan (LEP)?	☐ Yes	☑ No
Is the development an Integrated Development?	☑ Yes	☐ No

If you answered Yes to an Integrated Development, will the development involve any of the following?

- ☐ Item or place subject to an interim or Permanent Conservation Order
- ☑ Earthworks within 40 metres of foreshore or a watercourse
- ☐ Earthworks, hoardings or structures within a public road
- ☐ An EPA licensed activity
- ☐ Dredging or reclamation of any waters
- ☐ Destruction or damage to an Aboriginal relic
- ☐ Removal or damage to marine vegetation
- ☐ Extraction or use of ground water
- ☐ Bushfire prone land
- ☐ Assessment under any State Environmental Planning Policy (eg. SEPP33)
- ☐ Critical habitat
- ☐ Threatened Species
- ☐ Other (specify)

Is any of the following proposed?

- ☐ Stormwater drainage work
- ☐ Place of public entertainment
- ☐ Building waste container on footpath
- ☐ Temporary
- ☐ Domestic oil/solid fuel heater
- ☐ Moveable dwelling, manufactured home
- ☐ Septic tank, waste treatment system

What type of consent is sought?

☑ Immediate commencement ☐ Deferred commencement ☐ Staged consent

Is your application affected by the Biodiversity Conservation Act 2016? If Yes, include details as outlined in our DA Guideline ☐ Yes ☑ No

SECTION H. Checklist

Have you discussed this application with a Council Officer? If ☑ Yes ☐ No

Yes, who did you speak to? Samantha Mitchell

Have you completed the Application Checklist? ☑ Yes ☐ No

SECTION I. Probity and Political Donations

Have you or any person with a financial interest in this application, made a political donation or gift (greater than $1000) in the previous two years?

☐ Yes ☑ No

Are you a staff member, Councillor, Contractor or related to someone who is a staff member, Councillor or Contractor of Canterbury Bankstown Council?

☐ Yes If Yes, state relationship ☑ No

Does the owner, applicant or their family member have any conflict of interest with a Councillor, Council staff or Council contractor?

☐ Yes If Yes, state name of party and relationship ☑ No

SECTION J. Owner(s) Consent

As owner(s) of the land to which this application relates, I/we consent to this application. I/we also give consent for authorised Council Officers or agents to enter (without prior notice) the land to carry out inspections (original signatures required).

Name(s) 1.	Demian Holdings Pty Ltd	2. Riverlands Estate Pty Ltd
Owners Signature(s) 1.		2.
Date	17-Dec-2019	17-Dec-2019
Owner 1.email		
Owner 2. email		

If you are signing on the owner's behalf as the owner's legal representative, please state the nature of your legal authority and attach documentary evidence.

(e.g. Power of attorney, executor, trustee, company director, ASIC search)

ABN

SECTION K. Copyright Declaration

To be signed by the copyright owner eg: the architect, NOT the land owner.

I allow A4 sized plans of the external configuration of this proposal to be used and copied for public exhibition purposes, publication on Council's website and for GIPA Act 2009 purposes.

Name Date

Organisation

Signature

SECTION L Applicant's Declaration

To be signed by the applicant, if a Company/Owner's Association, this must be signed by a director/secretary or authorised delegate.

- ☑ I apply for consent to carry out the development described in this application.
- ☑ I declare that all the information given is true and correct.
- ☑ I declare that the electronic data provided is a true copy of all plans and associated documents submitted.
- ☑ I declare that the plans and documents lodged are prepared in accordance with the requirements detailed in Council's DA Guide including the level of detail and naming convention for plans and documents.
- ☑ I understand that the information supplied on this form and any related document will be made accessible to the public on Council's website and may be copied at Council under the GIPA Act 2009.
- ☑ I understand that if incomplete the application may be delayed, rejected or returned and that more information may be requested
- ☑ I understand Councils preferred method of communication is email and hard copy documents will not be generated

Name	Daniel Seraglio
Signature	
Date	17-Dec-2019

HOW TO LODGE THIS APPLICATION

Address the application to: City of Canterbury Bankstown

Postal Address
PO Box 8
BANKSTOWN NSW 1885

Email: council@cbcity.nsw.gov.au

Street Address
Bankstown Customer Service Centre
Upper Ground Level
Bankstown Civic Tower
66-72 Rickard Road
BANKSTOWN NSW 2200

Campsie Customer Service Centre
137 Beamish Street
CAMPSIE NSW 2194

How to contact us:
Ph: (02) 9707 9000

Development Applications are required to be lodged in a digitised format only. This means you need to complete the Development Application form as published on our website and save it onto a USB device together with digital copies of your plans and reports on that same device using the naming convention in the DA Guide and submit that USB device to Council. Hard copies will not be accepted.

Amended Statement of Environmental Effects
Consolidation of 27 Lots and
Re-subdivision into 6 Lots.
56 Prescott Parade, Milperra.

March 2022

Mersonn Pty Ltd
20 Wylde Street
Potts Point NSW 2011

Contents

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1.0 Introduction

This report has been prepared on behalf of Mirvac Homes (NSW) Pty Ltd by Mersonn Pty Ltd and is submitted to the Canterbury Bankstown Council in support of an amended development application to re-subdivide the existing 27 lots into 6 lots under Torrens title (no works are proposed under this development application) at 56 Prescott Parade, Milperra (Lot 10 DP 731859, Lot 1 DP 625013, Lot 1 DP 813006, Lot 1 DP 813007, Lots 231 & 232 DP 805826, Lots 23-27, 38-42 & 50-59 DP 7304).

The overall development of the land at 56 Prescot Parade, Milperra is proposed to be conducted in stages and will ultimately involve the subdivision of land into a Community Title residential subdivision including a 1,935m^2 Southern Reserve (to integrate with the Council owned Cumberland Plain Woodland Reserve on Lot 5 DP 731859 south of the subject site), residential lots and 'pocket' park areas with associated infrastructure (roads, drainage basins) within the development footprint. A Vegetation Management Plan has been completed for the Southern Reserve. The road infrastructure will comprise a road network within the residential subdivision as well as a primary 'connector' road, known as Keys Parade, that will link the proposed residential area with a main road, Henry Lawson Drive. Other staged works include bank stabilisation works, construction of a shared cycleway/pathway along the Georges River and rehabilitation of riparian corridors in accordance with a Voluntary Planning Agreement. The development is Integrated Development for the purpose of Section 100B of the Rural Fires Act 1997.

A Voluntary Planning Agreement (VPA) was executed as part of the rezoning process. An amended VPA has subsequently been approved by the Council and executed 21st of October 2020 and registered at LRS Dealing AQ743720. The details of the VPA included a number of commitments for the delivery of road infrastructure, environmental management works, remediation of the site and dedication of land.

The following works were proposed:

- Bank stabilisation works at locations across proposed Lot 4;
- Construction of connecting road network – Keys Parade, Raleigh Road and Pozieres Avenue;
- Road infrastructure upgrades - Pozieres Parade improvements, raised junctions, school zone, roundabout, public shared access to public foreshore walkway;
- Foreshore walkway embellishment – pedestrian/cycleway;
- Build a pedestrian/cyclist crossing over the northern creek and southern mangroves on the Zone RE1 land;
- Riparian Corridor along the Foreshore Walk and Zone RE2 land;
- Riparian Corridor along the Northern Creek;
- Road infrastructure upgrades - Keys Parade and Henry Lawson Drive intersection;
- Dedication of land known as proposed Lot 4.

The delivery of the VPA is aligned to the delivery of lots. Given the proposed staging of the construction, certain works will need to be undertaken prior to the release of those stages.

The Keys Parade extension, residential subdivision and Georges River Bank Stabilisation works comprise three separate development applications.

Amended Development Application No. 1107/2019 seeks consent for:

Re-subdivision of existing 27 lots into 6 lots under Torrens title (no works are proposed under this development application).

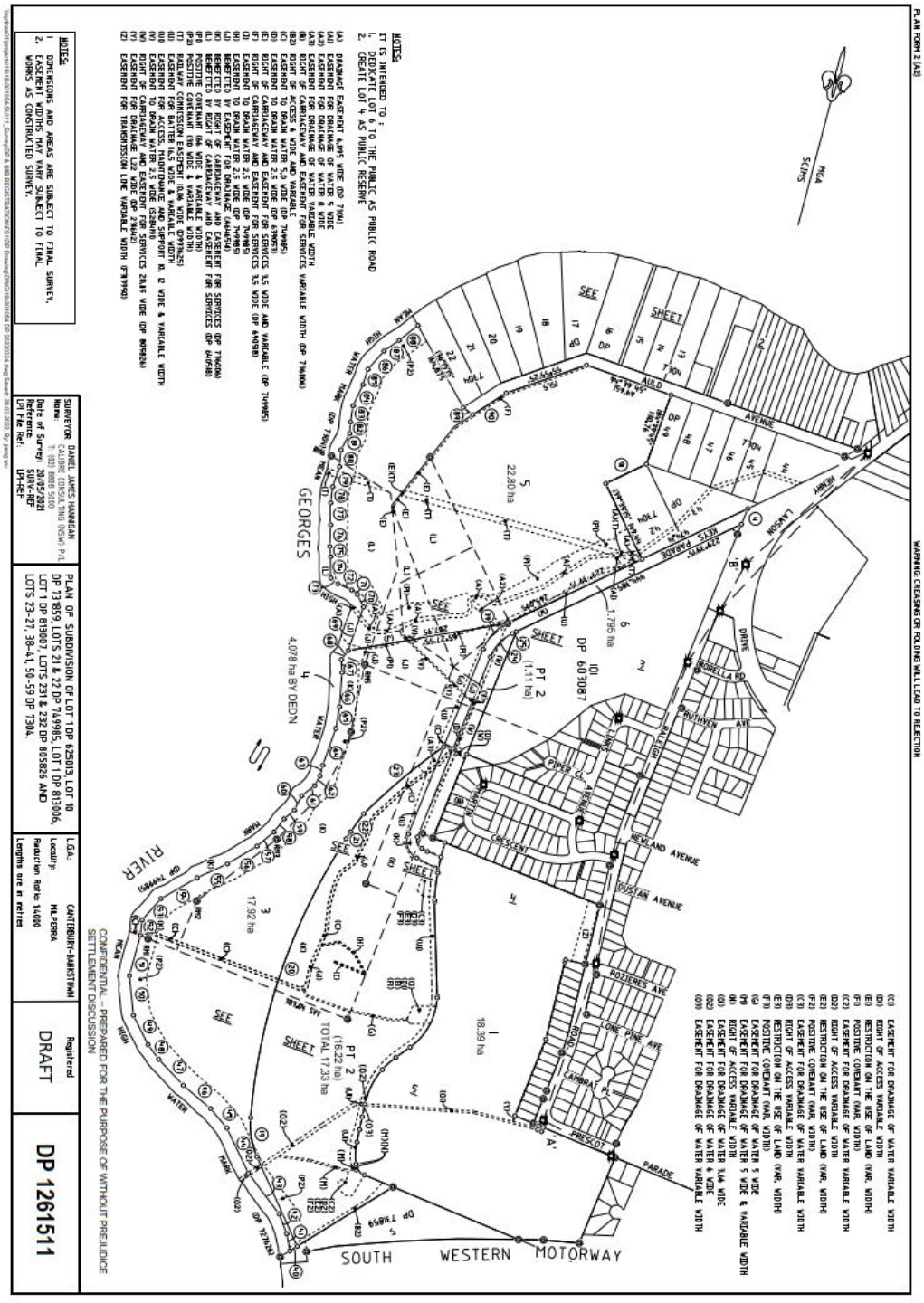
The proposal is Integrated Development as defined in section 4.46 of the Environmental Planning and Assessment Act, 1979, because an approval is required in accordance with the Rural Fires Act, 1997.

The proposal includes the following specific works:

- Consolidation of existing 27 lots that currently make up the site identified as the former Riverlands Golf Course site, under Clause 6.11(1) of the Bankstown Local Environmental Plan 2015.
- Subdivision into 6 new lots, to reflect the proposed ongoing stages of development of parts of the Riverlands Golf Course site, as follows:
    - Proposed Lot 1 – Residential Subdivision and Development.
    - Proposed Lot 2 – Separate allotment to the west of Proposed Lot 1, intended to accommodate some stormwater drainage infrastructure associated with development on Proposed lot 1.
    - Proposed Lot 3 – separate lot to west of Proposed Lot 2, no intended development at this time.
    - Proposed Lot 4 – creation of a strip of land 20m wide along the Georges River foreshore.
    - It is proposed to dedicate lot 4 as a public reserve.
    - Proposed Lot 5 – separate lot to the north of the existing site, no indication of any intended future development at this time.
    - Proposed Lot 6 – construction of Keys Pde roadway in a modified alignment.
    - It is proposed to dedicate lot 6 as a public road.
- No physical works are proposed.
- The amended development application also includes the following series of proposed and existing easements, rights of way and covenants to facilitate the functionality of the proposed lots.
    - (C1) Easement For Drainage Of Water Variable Width;
    - (D1) Right Of Access Variable Width;
    - (E1) Restriction On The Use Of Land (Var. Width);
    - (F1) Positive Covenant (Var. Width);
    - (C2) Easement For Drainage Of Water Variable Width;
    - (D2) Right Of Access Variable Width;
    - (E2) Restriction On The Use Of Land (Var. Width);
    - (F2) Positive Covenant (Var. Width);

- (C3) Easement For Drainage Of Water Variable Width;
- (D3) Right Of Access Variable Width;
- (E3) Restriction On The Use Of Land (Var. Width);
- (F3) Positive Covenant (Var. Width);
- (G) Easement For Drainage Of Water 5 Wide;
- (M) Easement For Drainage Of Water Variable Width;
- (N) Right Of Access Variable Width;
- (O1) Easement For Drainage Of Water 3.66 Wide;
- (O2) Easement For Drainage Of Water 6 Wide;
- (O3) Easement For Drainage Of Water Variable Width;
- (A) Drainage Easement 6.095 Wide (DP 7304);
- (A1) Easement For Drainage Of Water 5 Wide;
- (A2) Easement For Drainage Of Water 8 Wide;
- (A3) Easement For Drainage Of Water Variable Width;
- (B) Right Of Carriageway And Easement For Services Variable Width (DP 736006);
- (B2) Right Of Access 6 Wide And Variable;
- (C) Easement To Drain Water 5.0 Wide (DP 749985);
- (D) Easement To Drain Water 2.5 Wide (DP 639053);
- (E) Right Of Carriageway And Easement For Services 3.5 Wide And Variable (DP 749985);
- (F) Right Of Carriageway And Easement For Services 3.5 Wide (DP 6405l8);
- (I) Easement To Drain Water 2.5 Wide (DP 749985);
- (H) Easement To Drain Water 2.5 Wide (DP 749985);
- (J) Benefited By Easement For Drainage (A646541);
- (K) Benefited By Right Of Carriageway And Easement For Services (DP 736006);
- (L) Benefited By Right Of Carriageway And Easement For Services (DP 640518);
- (P1) Positive Covenant (66 Wide & Variable Width);
- (P2) Positive Covenant (30 Wide & Variable Width);
- (T) Railway Commission Easement 10.06 Wide (D933625);
- (U) Easement For Batter 16.5 Wide & Variable Width;
- (U1) Easement For Access, Maintenance And Support 10, 12 Wide & Variable Width;

- (V) Easement To Drain Water 2.5 Wide (S284191);
- (W) Right Of Carriageway And Easement For Services 20.115 Wide (DP 805826);
- (Y) Easement For Drainage 1.22 Wide (DP 2131642);
- (Z) Easement For Transmission Line Variable Width (F313950).



Proposed Plan of Subdivision

Source: Calibre 2022

This Statement has been prepared pursuant to Section 4.12 of the Environmental Planning and Assessment Act, 1979 and Clause 50 of the Environmental Planning and Assessment Regulation, 2000. The purpose of this document is to describe the existing improvements on the site, detail the proposed development, review the applicable planning regime relating to the proposal, assess the degree of compliance and examine the environmental effects of the development when measured against the Evaluation Criteria prescribed under Section 4.15(1) of the Environmental Planning and Assessment Act, 1979. In respect of the assessment of the proposal, where impacts are identified, measures proposed to mitigate any harm to environmental amenity have been addressed in this report.

This report should be read in conjunction with:

- Amended Detail Survey Plan prepared by Calibre Consulting dated 19 January 2021;
- Amended Plan of Subdivision prepared by Calibre Consulting dated 28 March2022;
- Amended Ecology Letter Assessment of Proposed Connector Road Alignment Along Keys Parade prepared by Cumberland Ecology dated 5 July 2021;
- Amended Vegetation Assessment for Bushfire Classification prepared by Cumberland Ecology dated 24 March 2021;
- Amended Bushfire Assessment Report prepared by Building Code and Bushfire Hazard Solutions Pty Ltd dated 5 July 2021;
- Amended Contamination Assessment Report prepared by Sullivan Environmental Sciences dated 21 March 2022;

Source: six maps

Figure 1: Aerial View of the Subject Site

Source: SixMaps 2022

2.0 The Site and Context

Figure 2: Location Plan
Source: SixMaps 2022

The site is located within the residential suburb of Milperra located between Liverpool to the north-west and Bankstown to the north-east. Milperra is approximately 9 kilometres south-west of Bankstown and 10 kilometres south-east of Liverpool. Each of these centres provide significant levels of services and amenities for local residents, with heavy rail connecting the centres to the broader metropolitan area. Milperra is connected to each centre via bus services on Pozieres Avenue and Henry Lawson Drive.

The site is located on the northern side of the South-Western M5 Motorway and fronts the Georges River to the west. The site comprises

Lot 10 DP 731859, Lot 1 DP 625013, Lot 1 DP 813006, Lot 1 DP 813007, Lots 231 & 232 DP 805826, Lots 23-27, 38-41 & 50-59 DP 7304).

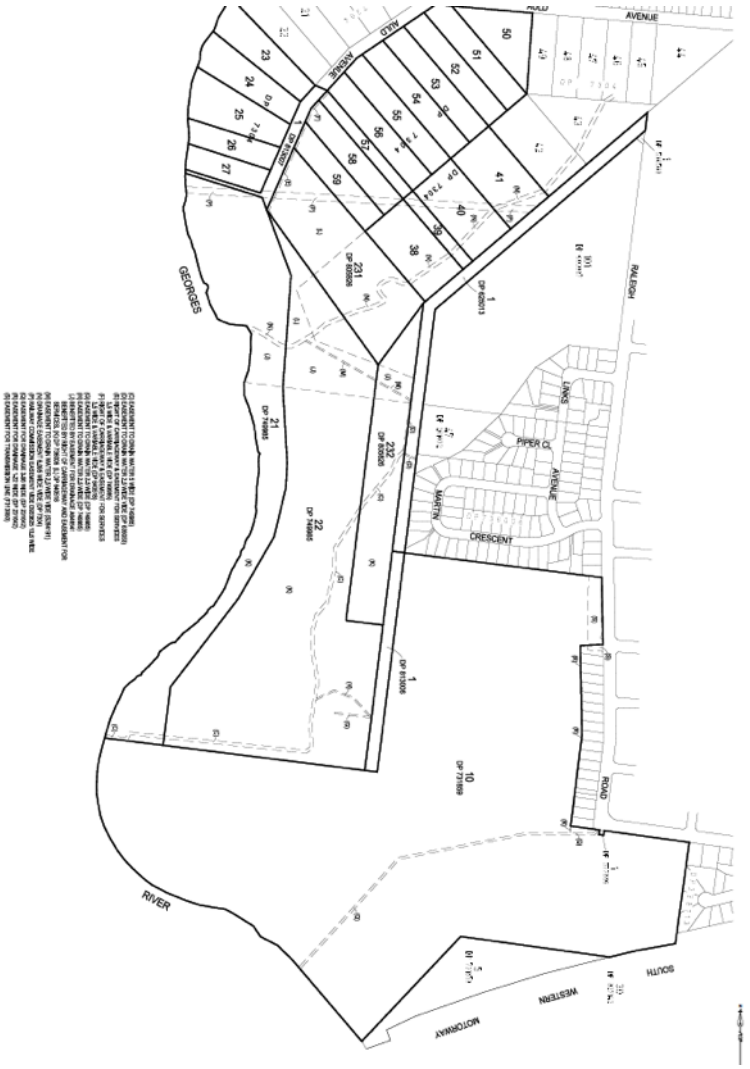


Figure 3: Survey Extract
PCB Surveyors 2019

The subject site is best understood by the survey extract below which highlights the six proposed lots.

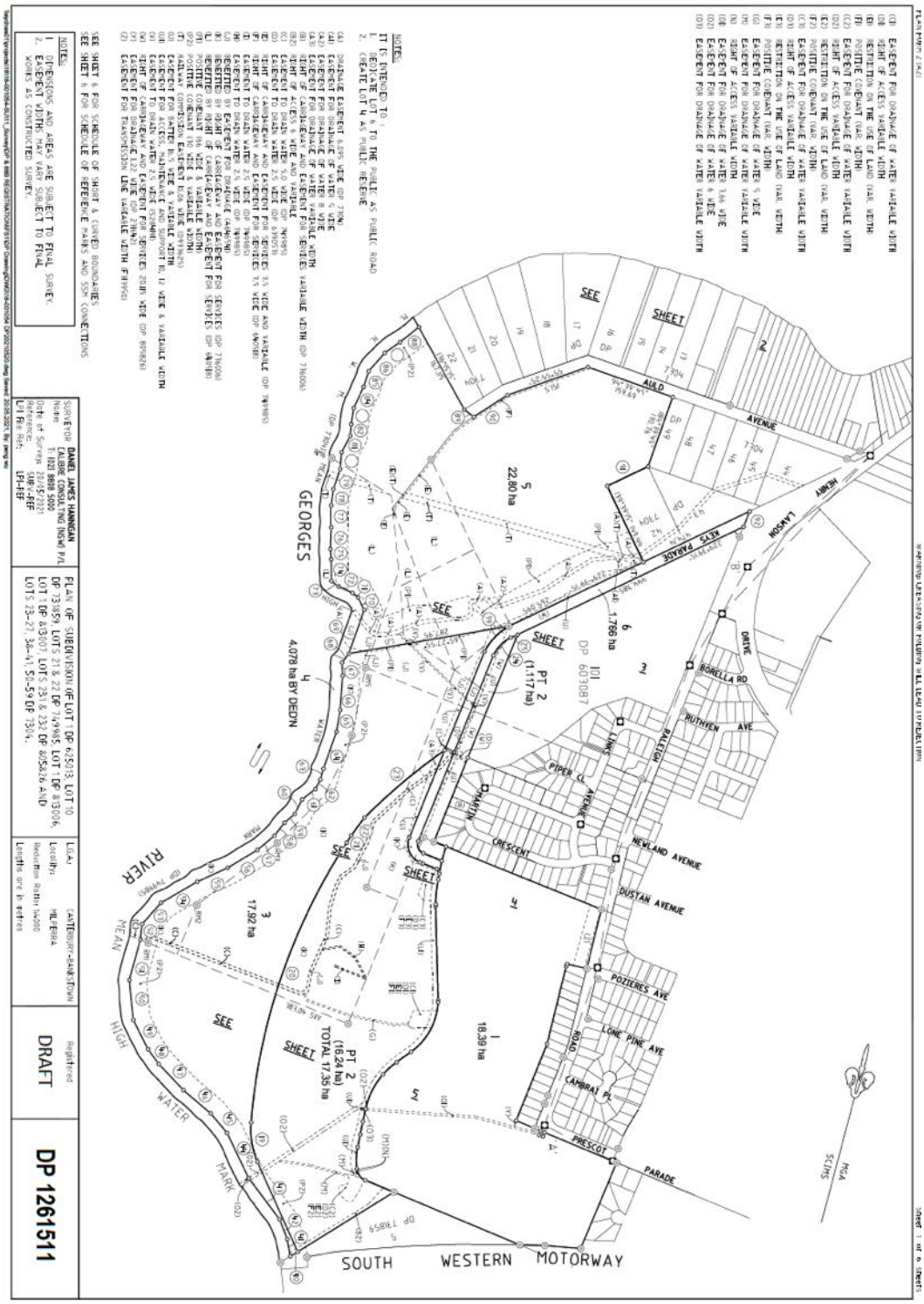


Figure 4: Survey Extract

Calibre Consultants 2022

The Bankstown LEP 2015 zoning Map extract below demonstrates the zoning across the Riverlands Golf Course site.

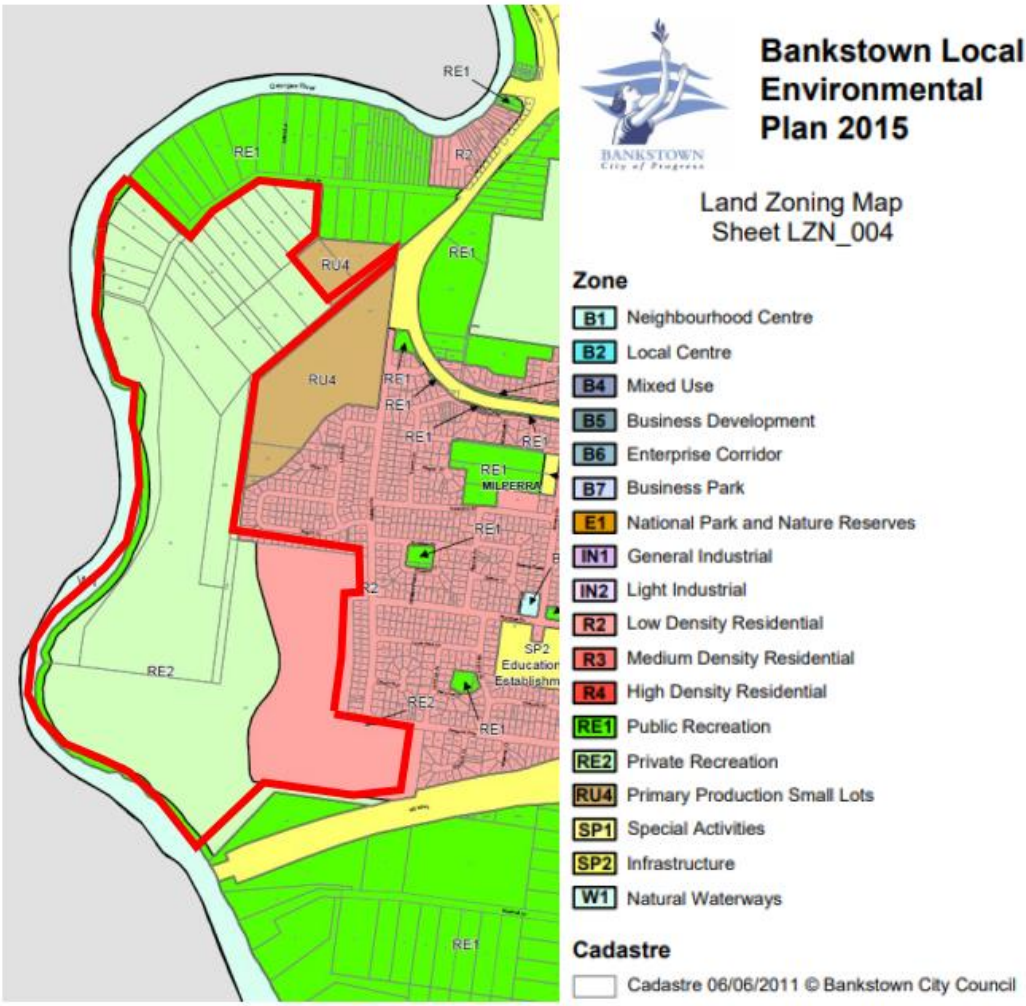


Figure 5: Zoning Map Extract
Bankstown LEP 2015

The Site contains part of the former Riverlands Golf Course and associated greens, fairways and minor built structures. The site contains over 800 trees and tree groups comprising several remnant local native species, exotic species and planted non-local native species of varying condition. Hollow-bearing trees have been identified that provide habitat to several fauna species.

The site and the surrounding area that once made up the Riverlands Golf Course is subject of this amended development application for the re-subdivision of 27 lots into 6 lots under Torrens title (DA-1107/2019). Under this subdivision application, the residential development site aligns with proposed Lot 1 as illustrated in Figure 4 above. The development of the site into residential lots (DA-4/2020) also requires the extension and opening of Keys Parade. The extension of Keys Parade is the subject of the second development application (DA-108/2020) and comprises the construction and extension of Keys Parade roadway and associated works connecting to an upgraded signalised intersection of Keys Parade at Henry Lawson Drive. A third development application (DA-370/2020) comprises bank stabilisation works along the Georges River foreshore and remediation and environmental rehabilitation works on the Riverlands Golf Course site.

Residential Context

The site adjoins the established residential settlement of Milperra to the north and east and has frontage to Raleigh Road and Prescot Parade and backs onto the rear of properties fronting Raleigh Road (in the east), Martin Crescent (in the north) and Maygar Close (in the south-east). The subject site adjoins the South-Western M5 Motorway (in the south-east) and the Council owned Cumberland Plain Woodland Reserve on Lot 5 DP 731859 to the south.

The immediate vicinity of the Site to the north and east is zoned R2 – Low Density Residential pursuant to the Bankstown LEP 2015. The immediate vicinity of the Site to the West is zoned RE2 – Private Recreation. The surrounding properties to the north (in Martin Crescent) and east (in Raleigh Road and Prescott Parade) are typified by single- and two-storey detached dwelling houses, interspersed with the dual occupancy and semi-detached dwellings. Milperra Public School is located approximately 350 metres from the site, to the east in Pozieres Avenue. The site is located approximately 500m from the intersection of the M5 Motorway and Henry Lawson Drive, to the east.

The Georges River to the west, Henry Lawson Drive to the north and east and the Western Motorway to the south define the broader area and serve to enclose and delineate its character. The broader residential area provides a range and mix of one and two storey single dwellings and dual occupancies. While the majority of the existing dwellings have street frontage, battle-axe allotments do occur within the deeper street blocks and particularly on the corners of the crescents.

The street pattern is generally curvilinear (characteristic of the age of the original subdivision) and consists of broad crescents and a fragmented grid generally oriented north-south. The fragmented grid is supplemented by sweeping crescents and then infilled in parts by some limited cul-de-sacs.

Generally, the main thoroughfares, being Raleigh Road (north-south) and Pozieres Avenue (east-west) have a carriageway of around 12 – 14m with 3 – 4m grassed verges on either side. Only the southern side of Pozieres Avenue is provided with a concrete footpath of 1.5 – 2m.

The secondary roads have a reduced carriageway of around 7 – 8m with 3 – 4m grassed verges on either side with the minor roads reducing down to carriageways of around 6.5m.

Vehicular entry into the broader area is limited to Pozieres Avenue and a connection just north of Treadgold Street to the east, and Amiens Avenue, the Ruthven Avenue connection and Raleigh Road to the north.

The local centre is set within the lower third and focuses on the local business centre at the corner of Pozieres Avenue and Amiens Avenue and the Milperra Public School opposite to the south.

The Milperra Public School has frontage to Pozieres Avenue and provides an extensive area of open space (approximately 2 hectares) interspersed with school facilities. The open space accommodates extensive mature tree canopy.

While the school has frontage to Pozieres Avenue, it directly adjoins the rear yards of a variety of single dwellings on lots generally in the order of 560m^2 to 580m^2. It is noted that the adjoining dwellings

accommodate very little in the way of mature plantings and the extensive canopy is mostly within the school grounds with the street planting having a much reduced canopy.

The Milperra Shopping Centre is located on the north-western corner of Pozieres Avenue and Amiens Avenue opposite the Milperra Public School. The centre has at grade parking for 34 cars with access from Pozieres Avenue and Amiens Avenue with service facilities to the west. The local centre contains a supermarket, bottle shop, bakery, café, fruit shop and local services. It is noted that the proximate local centre on the Flower Power site to the north of Henry Lawson Drive accommodates a number of very good grocery and produce stores within easy walking distance of the broader area.

Milperra Public School and the local business centre is within comfortable walking distance of all of the broader area with most dwellings being within a 530 – 845m radius of the local centre. All of the local roads have fairly direct connections to Prescot Parade, Raleigh Road, Nieuport Avenue, Amines Avenue and Pozieres Avenue offering easy pedestrian and bicycle access to the local centre and school.

It is noted that all of the streets rely on grass verges for pedestrian access and on the street carriageway for bicycle access. Only the southern side of Pozieres Avenue and a limited part of Amiens Avenue in the vicinity of the centre provide concrete pedestrian footpaths.

The residential fabric in the broader area is fairly homogenous low density residential development comprising single dwellings, detached and attached dual occupancies. There is no medium or high density residential development within the locality.

The subdivision pattern and character comprise lot sizes which are predominantly in the mid-500m^2; with larger lots on the corners and radii of the curves.

It is readily apparent that a later wave of subsequent subdivision of dual occupancies has occurred following the Bankstown Local

Environmental Plan Clause 4.1A which allows the subdivision of attached dual occupancies down to 250m^2 and detached dual occupancies down to 350m^2. This wave of further subdivision change is well advanced and is continuing to develop. This is particularly characteristic of attached dual occupancies subdividing the 550m^2 sites to 250m^2 plus Torrens title lots.

The character of the residential dwellings in the area is fairly homogenous, low density residential development comprising single dwellings, detached and attached dual occupancies. The single dwellings vary between single and two storey, with a characteristic of first floor additions added to what would have originally been single storey dwellings. The dual occupancies tend to be predominately double storey in both attached and detached form.

The subdivision pattern reflects a character of battle-axe blocks on the corners and curves of the crescents with narrow driveway frontages with dwellings located behind and the rear of the dwellings fronting the streets.

Biodiversity Environment[1]

Riverlands site comprises a mix of remnant/regrowth communities, including some areas that conform to Threatened Ecological Communities (TECs) as listed under the NSW Biodiversity Conservation Act 2016 (BC Act), modified areas consisting largely of canopy trees only within the former golf course area and planted areas. These vegetation communities were assigned to Plant Community Types (PCTs), including 'best-fit' PCTs for areas of planted and/or modified vegetation, in accordance with the Biodiversity Assessment Method (BAM). The mapped 'Residential subdivision footprint' encompasses the entirety of R2 zoned land as well as adjacent parts of RE2 zoned land while the Keys Parade Connector Road footprint lies entirely in RE2 zoned land. The condition classes of the mapped PCTs within the site are summarised in Table 1.

[1] Cumberland Ecology Riverlands Residential Subdivision Development Vegetation Assessment for Bushfire Classification 2021 p1

The vegetation within the Riverlands site has long been modified and disturbed from its original condition from historic and current land uses such as the former golf course, the former sand extraction quarry and current cattle grazing. The surveys conducted by Cumberland Ecology between 2018 – 2020 as well as prior surveys by Clements in 2012 found no indication of regeneration across the majority of the site. The field surveys to date have found regrowth/regeneration to be limited to the large patch of Mangrove and Swamp Oak vegetation extending from the Georges River as well as along the two creek lines where alluvial soils are still present.

The historic land uses, primarily importation of soils for the former golf course, has significantly altered the soil profile and much of the original soil seedbank has been lost across the majority of the site, thereby severely limiting any potential for natural regeneration. Potential regeneration is further restricted by current land uses for grazing as well as presence of fungal soil pathogens. Due to the loss of the original seedbank as well as presence of fungal soil pathogens, onsite communities are considered unlikely to naturally regenerate, even with cessation of current grazing practises.

Although some of the mapped communities within the Riverlands site are technically classified as ‘Forest’ type communities, some sections of the onsite occurrences of these communities have densities/formations that are more akin to ‘Grassy and Semi-arid Woodland’ communities (referred to as ‘Woodland’ communities) due to the historic clearing, soil modification and current cattle grazing activities.

The areas outside of the proposed development boundary specifically assessed as meeting the requirements to be classed as ‘Woodland’ for bushfire purposes as per Figure A1.2 – Description of vegetation formations of PBP 2019 - i.e. vegetation is dominated by an open to sparse layer of eucalypts with the crowns rarely touching, typically 15-35m high, diverse ground cover of grasses and herbs, shrubs are

sparsely distributed, usually on flat or undulating ground – are shown in Figure 6 (hatched areas).

Table 1

PCTs and Condition Classes Of Vegetation Within The Riverlands Site

Plant Community	Location within the Riverlands Site
Cumberland Plain Woodland Remnant Trees (PCT 849)	Largely confined to R2 zoned land with minor patches in RE2 land along the RE2/R2 land boundary
Riverflat Eucalypt Forest (PCT 835)	RE2 land and parts of RE1 land
Riverflat Eucalypt Forest Remnant trees (PCT 835)	Largely confined to R2 zoned land with minor patches in RE2 land along the RE2/R2 land boundary
Swamp Oak Forest (PCT 1232)	RE2 land and parts of RE1 land
Scribbly Gum Woodland Remnant Trees (PCT 883)	Largely confined to R2 zoned land with minor patches in RE2 land along the RE2/R2 land boundary
Planted Casuarinas (PCT 1800)	Largely confined to R2 zoned land with minor patches in RE2 land along the RE2/R2 land boundary as well as along existing Keys Parade and developed areas north of the Northern Creek line
Planted non-endemic natives (PCT 1083)	Confined to R2 zoned land
Mangrove Forest (PCT 920)	Confined to RE2 and RE1 lands along the banks of the Georges River
Phragmites regrowth (PCT 1232)	Confined to RE2 and RE1 lands along the banks of the Georges River
Planted Trees (PCT 835)	Confined to RE2 land fronting Auld avenue
Cumberland Plain Woodland (PCT 849)	Not present within Riverlands site – confined to adjacent Council Lot 5

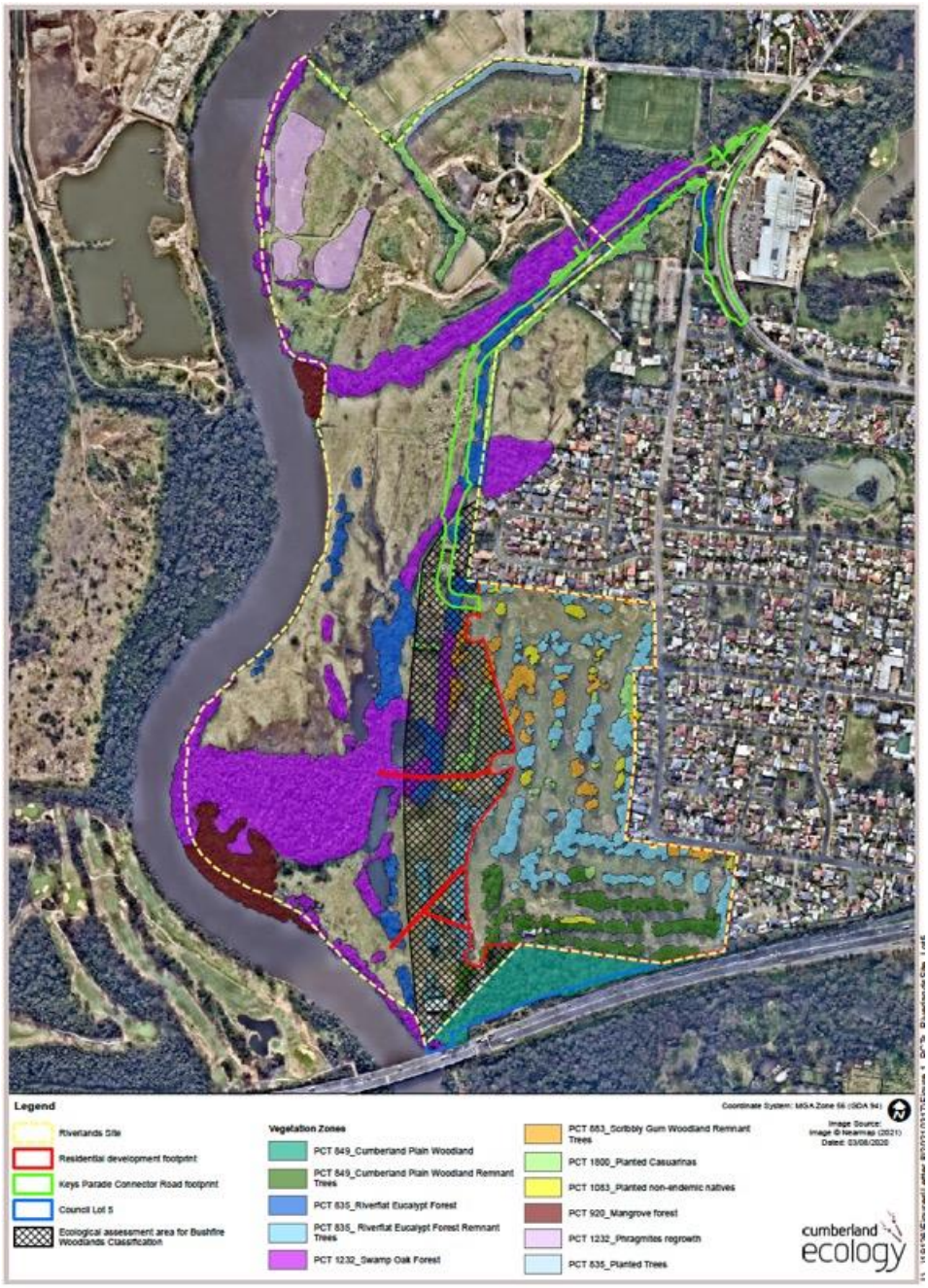


Figure 6

Plant Community Types

Source: Amended Vegetation Assessment for Bushfire Classification prepared by Cumberland Ecology dated 24 March 2021 p4

Topography and Soils

The subject land and wider Riverlands site have a relatively flat topography, with elevations ranging between approximately 0 m Australian Height Datum near the Georges River to about 20 m above the Australian Height Datum in the disused Golf Course.

The Soil Landscapes of the Penrith 1:100 000 Sheet Map (Hazelton, Bannerman, & Tille, 1989) and soil landscapes available on eSpade (DPIE, 2020) indicates that the Riverlands site is mapped as a mix of the Richmond soil landscape and the Blacktown soil landscape. The Richmond soil landscape is generally flat with poorly structured clay loams, clays and sands. The Blacktown soil landscape comprises gently undulating rises on Wianamatta Group shales with red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines.

However, the landform has been reshaped for the disused Riverlands golf course which has been subject to extensive filling, with unconsolidated fill material covering large parts of the disused golf course to depths between 20cm and 150cm. The former sand extraction between the golf course and the Georges River has also resulted in a general lowering of the land surface.

Hydrology

The hydrology of the Riverlands site is dominated by the Georges River, a major river that occurs directly adjacent to the western boundary, and all surface water ultimately drains into this river.

The drainage patterns and hydrology of the proposed residential area have been substantially changed by the historic works for the old golf course. These included forest clearance, deposition of fill, re-contouring and the construction of drainage channels and fill.

Two minor unnamed streams are present within the Riverlands site. One stream, which comprises a 1st order stream as per the Strahler System of ordering watercourses is present towards the southern parts of the

Riverlands site and drains into a series of dams. Previous studies of the 1st order stream determined that it was a constructed drainage channel that was likely formed between 1961 and 1965 as part of soil extraction activities, to collect and redirect runoff from higher areas to the river without affecting the extraction activities (Clements, 2012).
A second un-named stream is present towards the northern parts of the Riverlands site near Keys Parade. This stream comprises a 2nd order stream as per the Strahler System of ordering watercourses. This stream flows from residential areas to the east and discharges into the Georges River in the vicinity of the former sand extraction areas.

Vegetation

The vegetation of the Canterbury-Bankstown LGA and greater Western Sydney area have been heavily cleared for urban development. Although large areas of the pre-existing vegetation have been historically cleared native forest vegetation is still found along parts of the Georges River, particularly in flood-prone sites unsuitable for residential development. However, these areas are generally heavily modified and/or disturbed from surrounding land uses.
Several recent ecological studies have been conducted within the Riverlands site as part of a Planning Proposal for the rezoning of the Riverlands site under the Bankstown Local Environment Plan 2015 (BLEP 2015). Under the BLEP 2015, remnant vegetation outside of the disused golf course and extraction areas was largely mapped as 'Biodiversity' based on the flora assessment study by Anne Clements and Associates (2012) that determined that the remnant vegetation conformed to the Threatened Ecological Community (TEC) Swamp Oak FlooDPlain Forest. While the vegetation within the disused golf course area was assessed as not conforming to any listed TEC, the vegetation was nonetheless considered to be locally significant due to the size and/or age of trees within a highly developed landscape.

Bushfire Environment[2]

[2] Building Code and Bushfire Hazard Solutions P/L Supplementary Bushfire Assessment Report *Proposed:* Residential Development 56 Prescot Parade, Milperra NSW 2021 p12

The subject site was formally a golf course (Riverlands Golf Course) with the previous fairways still visible. At the time of our inspection the eastern portion of the site was found to be used for grazing.
The vegetation identified as being the hazard is located to the south and west of the proposed residential allotments within neighbouring allotments and the residue part of the subject site.

It is acknowledged as part of a Voluntary Planning Agreement that, amongst other items, a 50 metre riparian corridor is required to be established along the Georges River. This future riparian corridor is located outside the 140 metre assessment area from the proposed residential allotments.

The site has been identified by Cumberland Ecology as containing the following Plant Community Types (PCTs):

- *PCT 849: Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion;*
- *PCT 835: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion (in two condition classes or vegetation zones);*
- *PCT 1232: Swamp Oak flooDPlain swamp forest, Sydney Basin Bioregion and South East Corner Bioregion;*
- PCT 1800: Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley; and
- *PCT 1083 Red Bloodwood - Scribbly Gum heathy woodland on sandstone plateaux of the Sydney Basin Bioregion.*

It is understood that the extent of vegetation embellishment onsite will be concentrated along the Georges River within the required 50 metre riparian corridor.

An expanded environmental study for the site was undertaken by Cumberland Ecology (2022) and advice provided which supports a ‘worst case’ Woodland classification for part of the ‘RE2 Private Recreation’ zoned land to the west of the proposed residential allotments.

The vegetation posing a hazard to the south is located within an existing allotment zoned 'RE1 Public Recreation' and the subject site. The mapped vegetation PCT is associated with Cumberland Plain Woodland (CPW), a critically endangered ecological community (CEEC) listed under the *Biodiversity Conservation Act 2016* and the *Environment Protection and Biodiversity Conservation Act 1999*. CPW is classified as a Grassy Woodland formation and our site observations are consistent with this classification.

For the purpose of assessment the vegetation posing a hazard to the south and west was determined to be Woodland.

The slope that would most significantly affect bushfire behaviour within the hazard must be assessed for at least 100 metres. The effective slopes were determined using 1 metre LiDar contour mapping of the subject area in conjunction with site observations to be 0 – 5 degrees down to the south and west.

The minimum required Asset Protection Zones were determined from Table A2.4 of Planning for Bush Fire Protection 2006 (PBP) to be 15 metres to the south and west. The available APZs consist of the land entirely within the subject site (including proposed roads). All proposed residential allotments can accommodate a building footprint exceeding the minimum required Asset Protection Zone for Residential Subdivisions under Appendix 2 of PBP.

Geotechnical Environment[3]

The purpose of the investigation was to assess the subsurface conditions at thirty two borehole locations and, based on the information obtained, to present our comments and recommendations on earthworks, preliminary site classifications to AS2870-2011, flexible road pavements and additional investigations.

[3] JKGeotechnics Geotechnical Investigation Riverland's Residential Subdivision 2020 p2

Generally, the boreholes encountered fill overlying natural soil. Weathered shale bedrock was encountered at relatively shallow depths in JK19, JK25, JK27 and JK29 (southern end of the site). Reference should be made to the attached borehole logs for details at each specific location. A summary of the encountered subsurface characteristics is provided below:

- *Fill*, predominantly comprising sandy soils, was encountered in all boreholes to depths ranging from 0.2m (JK30 & JK31) to 2.2m (JK32). In JK32, the basal fill profile comprised clayey soils. The fill at all borehole locations was grass covered.
- *Natural soil*, predominantly comprising silty clay, sandy clay and silty sandy clay, and to a lesser extent silty sand (JK8 only), sand (JK9 only), clayey sand (JK1 only) and sandy gravel (JK5 only), was encountered below the fill in all boreholes. The natural clays were of variable plasticity and of stiff to hard strength. The natural sands were medium dense to dense.
- *Weathered shale bedrock* was encountered in JK19, JK25, JK27 and JK29 at depths ranging from 1.7m (JK29) to 3.15m (JK19). The shale on first contact was extremely weathered and of extremely low ('hard' soil) strength. In JK27 and JK29, the shale improved with depth to low and medium strength.
- *Groundwater seepage* was encountered during and on completion of drilling in JK12, JK16 and JK30 at depths of 3.4m, 3.3m and 3.2m, respectively. The remaining boreholes were 'dry' during and on completion of drilling. We note that the groundwater levels may not have stabilised within the limited observation period. No long-term groundwater level monitoring was carried out.

Following removal of all trees (including their root balls), demolition of the existing sheds, slabs and pavements, all grass, topsoil, root affected soils and any deleterious fill or contaminated soil should be stripped. Based on the results of the investigation, topsoil/root affected soil should be stripped to a nominal depth of about 0.1m. We note that it is difficult to accurately assess the depth of topsoil and root affected soils in a 100mm diameter borehole. If considered to be an important

contractual issue, we recommend that a number of shallow test pits be excavated across the site to more accurately confirm the topsoil/root affected soil stripping depth. or alternatively a geotechnical inspection could be carried out after initial stripping to confirm the depth. Stripped topsoil and root affected soils should be stockpiled separately as they are considered unsuitable for reuse as engineered fill. Reference should be made to Section 6 for guidance on the offsite disposal of soil.

For the same reasons why we have recommended the early removal of trees in Section 4.3, we strongly also recommend that the sheds, floor slabs, concrete hardstand and all AC pavements (including the access road) at the southern end of site be demolished as early as possible ahead of construction.

As the trees are mostly found within 'corridors' (between fairways), we envisage that the removal of the 'over-dry' clay soils will occur as trenches, excavated using large dozers and/or large excavators. We recommend that test pits be excavated across the site area and adjacent to several trees to confirm the width and depth of excavations.

Care must be taken not to undermine or remove support from the site boundaries during stripping and subsequent bulk excavation works.

Site Contamination Environment[4]

Residential Estate

The Residential Estate site history was adequately described by Environmental Strategies Phase 1 (ES, 2014a). Detailed investigations conducted across the proposed Residential Estate has sufficiently characterised soil and groundwater to assess the land for low-density residential land use. We conclude that:

- Environmental Strategies Phase 2 (ES, 2014b) showed that soils at a localised area of the site at BH17 were impacted by oils (hydrocarbons) posing a potential health risk to future users of the site. It is recommended the localised soils at BH17 be removed,

[4] Sullivan Environmental Sciences Riverlands Contamination Assessment 2021 pvi

the aboveground storage tanks be decommissioned and removed and soils underneath this area validated. It is also recommended any identified fragments of potential asbestos containing materials (ACMs) should also be collected from the ground surface and removed.

- Site soils exhibiting discolouration, abnormal consistency (wastes, ash and slag fill) present an aesthetic issue requiring remediation and or management as part of the remediation of the Residential Estate site. Soils requiring remediation for aesthetic considerations include:
    - The soils under the golf greens in northeast corner of the site delineated by test pits TP10, TP11, TP12 and previous location BH5B (ES, 2014b) contain buried ash/slag wastes.
    - The soils under the golf greens in the south east corner of the site, delineated by test pits TP41, TP42, TP43 and TP44, contain buried ash/slag wastes.
    - Two additional areas contain minor amounts of ash/slag fill at TP14 (former chemical sheds) and TP49 (entrance road off Prescot Parade).
    - A small fill mound with mixed anthropogenic waste was located at TP27.
- Detections of pesticides in a localised area near the existing chemical store adjoining the Greenkeepers Shed have been observed. The RAP for the Residential Estate will describe the testing requirements and potential remediation and validation testing to cover off this item.
- Items raised by the Site Auditor in Interim Advice (dated 15 Sept 2019) requiring closeout will be presented in the updated Residential Estate RAP including:
    - “Remove and remediate the septic tank system at the greenkeepers/maintenance shed”.
- The proposed Residential Estate development land is suitable for future residential dwellings, subject to updating and implementing the existing RAP (Revision A – 1 Feb 2020) and existing Addendum RAP (Revision A – 31 Jan 2020) to cover the following items:

- Remediation of petroleum impacts in surface soils at BH17 (ES, 2014b).
- Decommissioning and removing the two ASTs and fuel bowser.
- Decommissioning and removing the sewerage tank system.
- Removal of all abandoned buried services.
- Management of ash/slag wastes buried under the two identified golf greens.
- Management of anthropogenic waste buried in a localised stockpile at TP27, and other smaller quantities of ash/slag buried at TP14 and TP49.
- Verification sampling for the presence of pesticides near the existing chemical store.
- Any other items raised in the Site Auditors Interim Advice (15 Sept 2019).

Keys Parade

The Keys Parade site history was adequately described by Environmental Strategies Phase 1 (ES, 2014a). Detailed investigations conducted across the proposed Keys Parade has sufficiently characterised soil and groundwater to assess the land for open space land use consistent with a public road corridor. We conclude that:

- Ash filling greater than 0.5m is present along the length of the embankment in the Keys Parade area delineated by B15A, B18A, B20A, B22A, B24A and B25A. The ash fill is present as thick, black and grey layers of cinders and some slags. The ash and slag pose an aesthetic risk requiring remediation to be suitable for the future open space landuse. These soils require removal offsite or amelioration to improve its appearance and geotechnical suitability if it is to be retained onsite and used in the subsurfaces.
- Non-bonded asbestos was reported within the ash fill associated with sample location B18A. The non-bonded asbestos containing ash fill requires remediation to remove the potential health risk to future occupants of the proposed development. The non-

bonded asbestos impacts at B18A should be further assessed to define the vertical and lateral extent of the impacts prior to remediating these soils.

- Anthropogenic wastes, in the form of plastic, bricks, bitumen and timber, was observed within the Keys Parade embankment at locations KP01 and KP03. The presence of anthropogenic wastes at these locations pose an aesthetic issue requiring removal offsite.
- Keys Parade sampling locations KP05, KP06 and KP07 were positioned within an area of multiple small soil stockpiles. A large fragment of cement fibro sheeting containing bonded asbestos was identified at KP05. The stockpiles require characterisation for reuse onsite or for disposal offsite. The presence of bonded and or non-bonded asbestos in this area must be considered for all the mounds during remediation of Keys Parade development.
- The proposed Keys Parade development land is suitable as a future roadway and footpath construction (under an open space public land use), subject to updating and implementing the existing RAP (Revision A – 1 Feb 2020) to cover the following items:
    - Remediation of asbestos contaminated ash/slag wastes buried at B18A (Sullivan-ES,2018).
    - Management of ash/slag/anthropogenic waste filling used to construct the embankment at the south end of the proposed Keys Parade alignment.
    - Soil stockpiles present in the central portion of the proposed Keys Parade could contain fragments of bonded asbestos sheeting in addition to the fragment already identified.

Foreshore

The Foreshore site history was adequately described by Environmental Strategies Phase 1 (ES, 2014a). While past and present investigations of the Foreshore provide an adequate level of characterisation to

assess contamination risks, there are human and ecological health risks related to wastes used as landfilling along the Foreshore. Due to the presence of the sensitive ecology (e.g. No-Go zones such as mangroves, protected trees, sensitive terrestrial and aquatic organisms, etc) in the Foreshore land, the recommended remediation should target only those accessible areas where there is potential health risk from chemical contamination and or aesthetic issues requiring remediation due to gross anthropogenic materials/wastes. The remediation strategy is to be considerate of removing contamination to the extent practicable while preserving the sensitive environment within the Foreshore. A number of options will be proposed to satisfy this goal.

Of specific concern are the landfill wastes present at FP10 (and proximal to that location) containing concentrations of PCB and non-bonded forms of asbestos. Other locations including FP05 and FP11 contain similar landfill wastes (and detectable residues of asbestos (FP05) and PCB (FP11)). These areas are considered areas of concern for human and ecological health based on the presence of these wastes alone.

Detectable residues of PCBs were also reported at FP13, FP14 and FP15 in Area 2 of the Foreshore which adds to the level of risk. While not considered particularly deep, the depth of wastes used as landfilling has not been determined, specifically at areas of high contamination risk at FP05, FP10 and FP11.

It should be noted that soil materials containing concentrations of PCBs at levels greater than 2mg/kg are subject to regulation under the Polychlorinated Biphenyl (PCB) Chemical Control Order 1997 (PCB CCO 1997). The PCB CCO 1997 sets out the requirements for:

- defining non-scheduled and scheduled PCB materials and wastes (Clauses 4.25 and 4.26);
- defining priority areas (Clause 4.23);
- conveying of PCB material and PCB waste (Clause 6.4); and
- disposing of PCB waste (Clause 6.5).

Based on the concentration of PCB at location FP10 and the expected very shallow depth to groundwater along the Foreshore zone leaching to the immediate underlying groundwater was considered a plausible risk. We conducted neutral leaching analysis at this location. Results showed the PCB at this location did not leach under a neutral deionised water solution (to emulate rainfall), being less than the laboratory detection (<1.0 µg/L). This indicates there is a low risk of PCBs migrating from the Foreshore waste into the underlying watertable and then discharging into the adjoing Georges River aquatic ecosystem.

We conclude that existing data demonstrates that remediation to clean up contamination on the Foreshore is necessary because the presence of landfilling wastes and associated contamination poses a high health risk in localised areas to human and ecological health, although additional work would be required to delineate the extent of remediation required.

- Based on existing information, the proposed Foreshore development land is suitable for future open space public land use, subject to updating and implementing the existing RAP (Sullivan-ES, Dec 2019) to cover the following items:
    - To the extent practicable, delineate contaminated wastes in both Areas 1 and 2, as well as other accessible locations along the Foreshore, to ascertain the full extent of landfilling of wastes.
    - In consideration of sensitive ecological receptors, and to the extent practicable so as not to cause irreversible damage to those receptors, remediate contaminated wastes used as landfilling in Area 1 and Area 2. These wastes contain concentrations of asbestos, heavy metals and PCBs at levels that pose a human and ecological health risk.
    - Management of anthropogenic waste strewn across and protruding from ground surfaces to remove the aesthetic impacts to the Foreshore. In particular, wastes and

general refuse that has washed up from Georges River accumulating within low lying swampy areas.

Acoustic Environment[5]

The noise modelling identified areas where the external noise goals were not met. Therefore, the affected areas of residential dwellings are to be designed to meet the relevant internal noise criteria.

The following provides in-principle noise control recommendations to reduce road traffic noise intrusion for residential premises. The recommendations are based on a number of assumptions relating to the built form. The advice provided here is in respect of acoustics only. Supplementary professional advice should be sought in respect of fire ratings, structural design, buildability, fitness for purpose and the like.

Dwellings constructed in road traffic noise affected areas can be designed so that their layouts minimise noise in living and sleeping areas. Less sensitive rooms (such as kitchens, laundries and bathrooms) are recommended to be placed on the side of the building fronting the nearest noise source (being the road).

The acoustic requirements for windows and doors have been provided on an RW basis so as to allow flexibility with the developer and variations in design due to other design requirements such as thermal performance. The RW rating sets the basis of the recommended acoustic performance and the constructions are provided for guidance only. The acoustic performance of specific building components should be confirmed by manufactures or suitably qualified professional prior to installation.

Unless otherwise specified, the base building envelope of dwellings is considered to be of standard constructions which are assumed to consist of the following:

[5] Renzo Tonin & Associates Milperra Riverlands Masterplan DA Acoustic Assessment 2020 p11

- Walls of brick veneer construction, double brick, or light weight clad construction which could consist of fibre-cement cladding on the outside of timber stud walls and internal plasterboard lining. All walls are assumed to have minimum R1.5 insulation in the cavity. It is noted that both brick veneer and cavity double brick construction are of significantly higher acoustic performance than light weight cladding systems. In higher road traffic noise areas, there may be a requirement to upgrade light weight systems. These instances will be noted in the acoustic recommendations.
- Roof to be pitched, with concrete or terracotta tile or sheet metal roof with sarking, R3.0 insulation in the roof space (combination of below roof and above ceiling), and one layer of 10mm thick standard plasterboard fixed to ceiling joists.
- External doors to be solid core timber or glazed, fitted with acoustic seals around the perimeter. Pivot style doors are not recommended as full perimeter acoustic seals are not readily incorporated. The performance of any external doors should have the same acoustic performance as that required for general glazing.
- Acoustically rated fences on the boundary of the lots should be considered if appropriate. Acoustically rated boundary fences are also recommended 'between' dwellings.

Acid Sulfate Soil Environment[6]

The soil profile of the areas in lower lying areas on the site and in close vicinity to the river were found to be marine deposited, and therefore pose a threat of actual and potential acid sulfate soils.

The NSW Natural Resource Atlas Acid Sulfate Soil Map indicates that areas of the site range between Class 2 - Works below the ground surface, Class 3 – Work 1m below the ground surface and Class 5 – Works within 500m to Classes 1 – 4. The boundary of Class 2 and Class 5 has been set based on site elevation alone, making a site-specific

[6] SESL Australia Acid Sulfate Soil Management Plan 2019 p8

assessment of acid sulfate soils necessary to determine if the boundary is correct and determine accurately the risk posed by any excavation or construction within the site.

Based on the findings of the detailed, intrusive soil investigation undertaken as part of the ASSI, SESL concluded the following:

- From the results obtained in this ASSI, the soil encountered in the region of the proposed rezoning for residential development purposes shows no indication of the presence of acid sulfate soils. This refers to the areas intended for residential lots.
- The occurrence of acid sulfate soils is to the west of the boundary of proposed residential rezoning (the proposed residential lots) and will not require consideration for ongoing works in the residential area. No acid sulfate soil management plans will be required during construction in this residential zone (the residential lots), unless work extends to the west of the proposed rezoning boundary for utility infrastructure placement (as are proposed in the detailed design drawings provided by the client).
- It is the recommendation of SESL that an Acid Sulfate Soil Management Plan (ASSMP) be developed for the region to the west of the proposed residential rezoning, in the event that intrusive works are scheduled at a later date. The information gathered by the ASSI is sufficient for the ASSMP to be developed.

Aboriginal Heritage Environment[7]

In May 2012, Archaeological & Heritage Management Solutions (AHMS) completed an Aboriginal Heritage Study of an area which encompasses the study area, to support a planning proposal to rezone the project area from rural and open space to a Residential (2A) zone. AHMS identified an area of moderate-high archaeological sensitivity in

[7] Artefact Riverlands Milperra Aboriginal Archaeological Assessment 2021 pii

the southeast portion of the project area (the study area) and recommended that archaeological test excavations be completed to identify any subsurface Aboriginal objects.

In January 2020, Comber Consultants completed an additional Aboriginal Archaeological Assessment of the Riverlands Golf Course on behalf of the proponent. The assessment confirmed the findings of AHMS (2012) and identified an area of moderate-high archaeological sensitivity within the study area. Comber 2020 recommended that test excavations be completed in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (Department of Environment, Climate Change & Water [DECCW] 2010a) (Code of Practice).

Subsequently, Artefact Heritage Services Pty Ltd (Artefact Heritage) was engaged by the Proponent to prepare a test excavation methodology (Artefact Heritage 2020a) for the area of area of moderate- high archaeological sensitivity. During preparation of the test excavation methodology, the area of moderate-high archaeological sensitivity was registered on the Aboriginal Heritage Information Management Systems (AHIMS) database as a Potential Archaeological Deposit (PAD). The area of moderate-high archaeological sensitivity is registered on the AHIMS site register as the Riverlands Golf Course PAD (AHIMS ID 45-5-5286).

A test excavation program was completed within the Riverlands Golf Course PAD (AHIMS ID 45-5- 5286) in March 2020. The results of the excavation program were documented in an Archaeological Test Excavation Report (ATER) prepared by Artefact Heritage (2020b). The ATER found one Aboriginal site, RGC2020-AS01 (AHIMS ID 45-5-5334), which was considered to be of low scientific significance. The ATER recommended that an Aboriginal Cultural Heritage Assessment Report (ACHAR) be completed to support an application for an Aboriginal Heritage Impact Permit (AHIP) that would authorise impacts to RGC2020-AS01 (AHIMS ID 45-5-5334) through the proposed works. It was also recommended that recommendations for the long-term

management of the RGC2020-AS01 (AHIMS ID 45-5-5334) be included in ACHAR in consultation with the RAPs.

- A study area based AHIP should be sought to authorise impacts to RGC2020-AS01 (AHIMS ID 45-5-5334)
- No works that impact the ground surface should be undertaken within the established site extent of RGC2020-AS01 (AHIMS ID 45-5-5334) until an approved AHIP has been issued.
- This ACHAR and appendices should be submitted to NSW Heritage, DPC to support the AHIP application.
- No further archaeological investigations will be required.
- The assemblage retrieved from the test excavation should be reburied on site. Reburial should occur within an area which will not be impacted by future ground disturbing works. Reburial should be undertaken in accordance with the Code of Practice and comments received from the RAPs.
- If human skeletal material is identified works should cease and the unexpected finds policy for the project would be implemented. Impacts to human skeletal remains would not be approved under the AHIP.
- The AHIP boundary must be marked on site work plans to ensure that works do not extend outside the approved AHIP area.

3.0 Proposed Amended Development

This section should be read in conjunction with the Proposed Plan of Subdivision prepared by Calibre Consulting.

Amended Development Application No. 1107/2019 seeks consent for:

Re-subdivision of existing 27 lots into 6 lots under Torrens title (no works are proposed under this development application).

The proposal is Integrated Development as defined in section 4.46 of the Environmental Planning and Assessment Act, 1979, because an approval is required in accordance with the Rural Fires Act, 1997.

The proposal includes the following specific works:

- Consolidation of existing 27 lots that currently make up the site identified as the former Riverlands Golf Course site, under Clause 6.11(1) of the Bankstown Local Environmental Plan 2015.
- Subdivision into 6 new lots, to reflect the proposed ongoing stages of development of parts of the Riverlands Golf Course site, as follows:
    - Proposed Lot 1 – Residential Subdivision and Development.
    - Proposed Lot 2 – Separate allotment to the west of Proposed Lot 1, intended to accommodate some stormwater drainage infrastructure associated with development on Proposed lot 1.
    - Proposed Lot 3 – separate lot to west of Proposed Lot 2, no intended development at this time.
    - Proposed Lot 4 – creation of a strip of land 20m wide along the Georges River foreshore.
    - It is proposed to dedicate lot 4 as a public reserve.
    - Proposed Lot 5 – separate lot to the north of the existing site, no indication of any intended future development at this time.

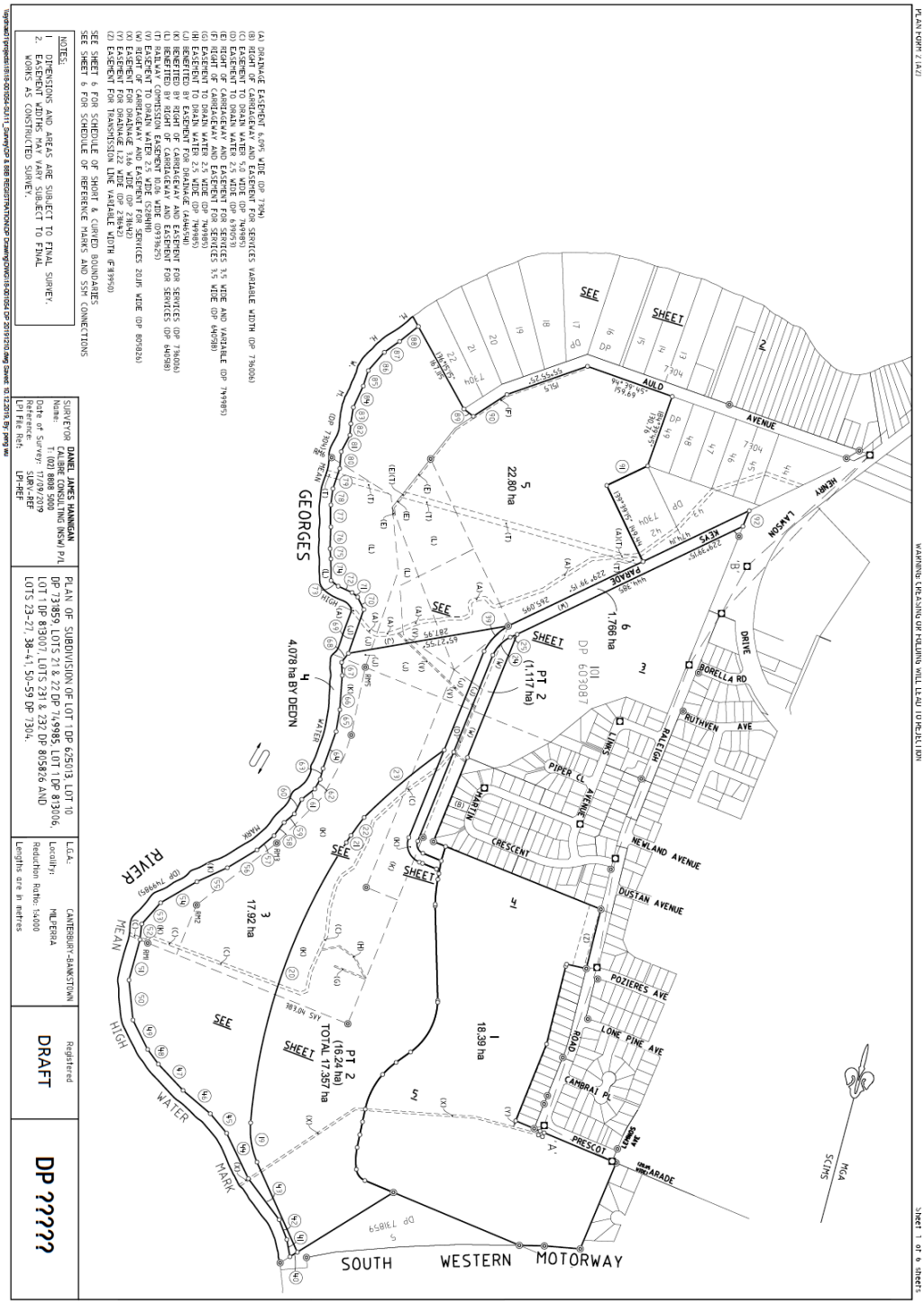
- Proposed Lot 6 – construction of Keys Pde roadway in a modified alignment.
- It is proposed to dedicate lot 6 as a public road.

- No physical works are proposed.
- The amended development application also includes the following series of existing and proposed easements, rights of way and covenants to facilitate the functionality of the proposed lots.
  - (C1) Easement For Drainage Of Water Variable Width;
  - (D1) Right Of Access Variable Width;
  - (E1) Restriction On The Use Of Land (Var. Width);
  - (F1) Positive Covenant (Var. Width);
  - (C2) Easement For Drainage Of Water Variable Width;
  - (D2) Right Of Access Variable Width;
  - (E2) Restriction On The Use Of Land (Var. Width);
  - (F2) Positive Covenant (Var. Width);
  - (C3) Easement For Drainage Of Water Variable Width;
  - (D3) Right Of Access Variable Width;
  - (E3) Restriction On The Use Of Land (Var. Width);
  - (F3) Positive Covenant (Var. Width);
  - (G) Easement For Drainage Of Water 5 Wide;
  - (M) Easement For Drainage Of Water Variable Width;
  - (N) Right Of Access Variable Width;
  - (O1) Easement For Drainage Of Water 3.66 Wide;
  - (O2) Easement For Drainage Of Water 6 Wide;
  - (O3) Easement For Drainage Of Water Variable Width;
  - (A) Drainage Easement 6.095 Wide (DP 7304);
  - (A1) Easement For Drainage Of Water 5 Wide;
  - (A2) Easement For Drainage Of Water 8 Wide;
  - (A3) Easement For Drainage Of Water Variable Width;
  - (B) Right Of Carriageway And Easement For Services Variable Width (DP 736006);
  - (B2) Right Of Access 6 Wide And Variable;
  - (C) Easement To Drain Water 5.0 Wide (DP 749985);
  - (D) Easement To Drain Water 2.5 Wide (DP 639053);

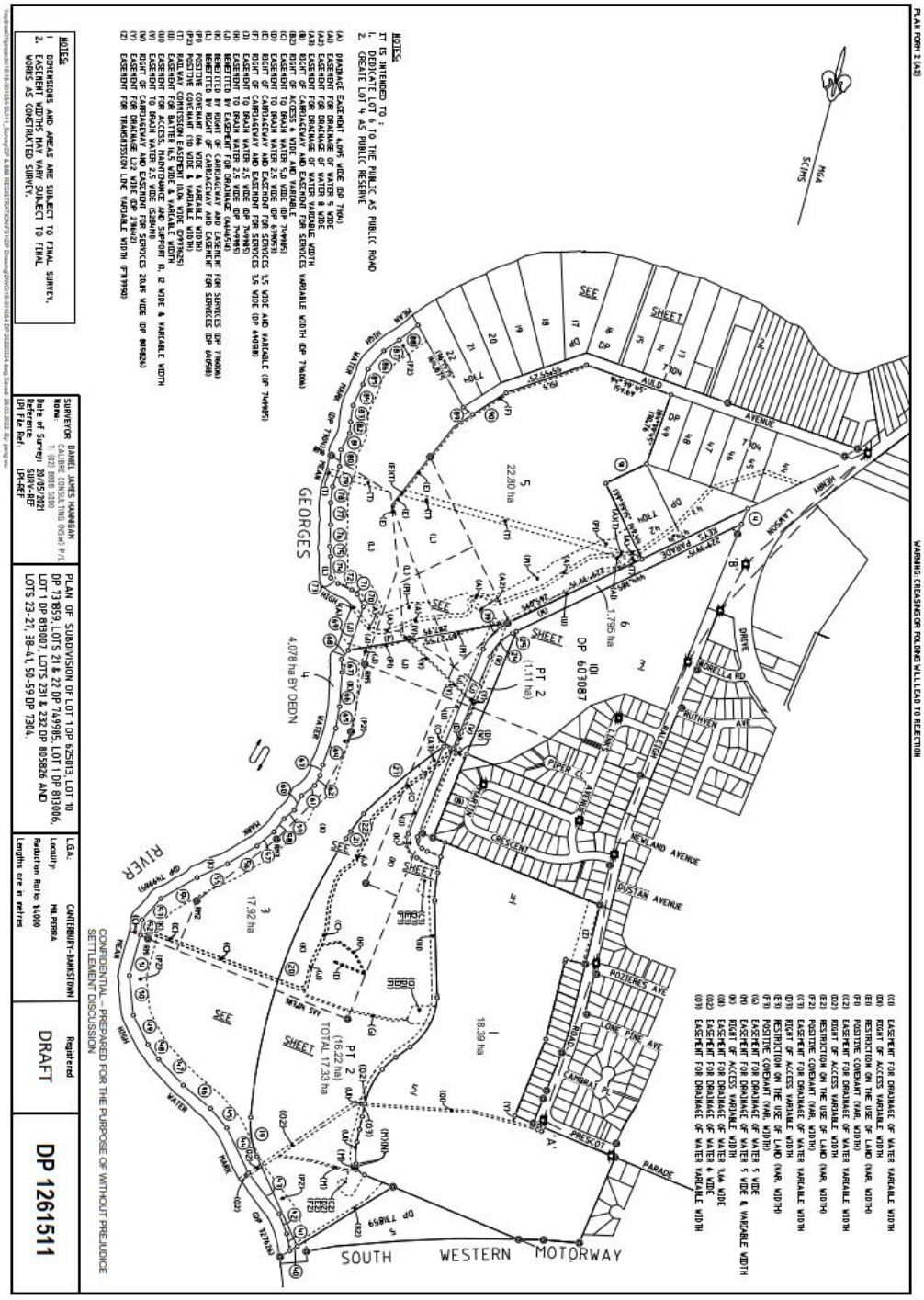
- (E) Right Of Carriageway And Easement For Services 3.5 Wide And Variable (DP 749985);
- (F) Right Of Carriageway And Easement For Services 3.5 Wide (DP 6405l8);
- (I) Easement To Drain Water 2.5 Wide (DP 749985);
- (H) Easement To Drain Water 2.5 Wide (DP 749985);
- (J) Benefited By Easement For Drainage (A646541);
- (K) Benefited By Right Of Carriageway And Easement For Services (DP 736006);
- (L) Benefited By Right Of Carriageway And Easement For Services (DP 640518);
- (P1) Positive Covenant (66 Wide & Variable Width);
- (P2) Positive Covenant (30 Wide & Variable Width);
- (T) Railway Commission Easement 10.06 Wide (D933625);
- (U) Easement For Batter 16.5 Wide & Variable Width;
- (U1) Easement For Access, Maintenance And Support 10, 12 Wide & Variable Width;
- (V) Easement To Drain Water 2.5 Wide (S284191);
- (W) Right Of Carriageway And Easement For Services 20.115 Wide (DP 805826);
- (Y) Easement For Drainage 1.22 Wide (DP 2131642);
- (Z) Easement For Transmission Line Variable Width (F313950).

Detail Description

General Arrangement Plan



Original Development Application Plan of Subdivision



Amended Development Application Plan of Subdivision

4.0 Planning Controls

The proposed development has been assessed against the relevant requirements and guidelines set by Canterbury Bankstown Council. These are contained within the:

- SEPP Coastal Management 2018
- SEPP 55 – Remediation of Land
- Bankstown Local Environmental Plan 2000
- Bankstown Local Environmental Plan 2015
- Bankstown Development Control Plan – Subdivision 2000
- Bankstown Development Control Plan 2015

4.1 SEPP Coastal Management 2018

The SEPP requires consideration to be given to the following matters when an application for development within the are identified on the Coastal Zone Map as partly Coastal Use and partly Wetlands and Littoral Rainforest and Coastal Environment Area.

10 Development on certain land within coastal wetlands and littoral rainforests area

(1) The following may be carried out on land identified as “coastal wetlands” or “littoral rainforest” on the *Coastal Wetlands and Littoral Rainforests Area Map* only with development consent:

(a) the clearing of native vegetation within the meaning of Part 5A of the *Local Land Services Act 2015*,

(b) the harm of marine vegetation within the meaning of Division 4 of Part 7 of the *Fisheries Management Act 1994*,

(c) the carrying out of any of the following:

(i) earthworks (including the depositing of material on land),

(ii) constructing a levee,

(iii) draining the land,

(iv) environmental protection works,

(d) any other development.

Note.

Clause 17 provides that, for the avoidance of doubt, nothing in this Part:

(a) permits the carrying out of development that is prohibited development under another environmental planning instrument, or

(b) permits the carrying out of development without development consent where another environmental planning instrument provides that the development may be carried out only with development consent.

(2) Development for which consent is required by subclause (1), other than development for the purpose of environmental protection works, is declared to be designated development for the purposes of the Act.

(3) Despite subclause (1), development for the purpose of environmental protection works on land identified as "coastal wetlands" or "littoral rainforest" on the *Coastal Wetlands and Littoral Rainforests Area Map* may be carried out by or on behalf of a public authority without development consent if the development is identified in:

(a) the relevant certified coastal management program, or

(b) a plan of management prepared and adopted under Division 2 of Part 2 of Chapter 6 of the *Local Government Act 1993*, or

(c) a plan of management approved and in force under Division 6 of Part 5 of the *Crown Lands Act 1989*.

(4) A consent authority must not grant consent for development referred to in subclause (1) unless the consent authority is satisfied that sufficient measures have been, or will be, taken to protect, and where possible enhance, the biophysical, hydrological and ecological integrity of the coastal wetland or littoral rainforest.

(5) Nothing in this clause requires consent for the damage or removal of a priority weed within the meaning of clause 32 of Schedule 7 to the *Biosecurity Act 2015*.

(6) This clause does not apply to the carrying out of development on land reserved under the *National Parks and Wildlife Act 1974* if the proposed development is consistent with a plan of management prepared under that Act for the land concerned.

11 Development on land in proximity to coastal wetlands or littoral rainforest

Note.

The *Coastal Wetlands and Littoral Rainforests Area Map* identifies certain land that is inside the coastal wetlands and littoral rainforests area as “proximity area for coastal wetlands” or “proximity area for littoral rainforest” or both.

(1) Development consent must not be granted to development on land identified as “proximity area for coastal wetlands” or “proximity area for littoral rainforest” on the *Coastal Wetlands and Littoral Rainforests Area Map* unless the consent authority is satisfied that the proposed development will not significantly impact on:

(a) the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or

(b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.

(2) This clause does not apply to land that is identified as “coastal wetlands” or “littoral rainforest” on the *Coastal Wetlands and Littoral Rainforests Area Map*.

13 Development on land within the coastal environment area

(1) Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:

(a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,

(b) coastal environmental values and natural coastal processes,

(c) the water quality of the marine estate (within the meaning of the *Marine Estate Management Act 2014*), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,

(d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,

(e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,

(f) Aboriginal cultural heritage, practices and places,

(g) the use of the surf zone.

(2) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:

(a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1), or

(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or

(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

(3) This clause does not apply to land within the Foreshores and Waterways Area within the meaning of *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*.

14 Development on land within the coastal use area

(1) Development consent must not be granted to development on land that is within the coastal use area unless the consent authority:

(a) has considered whether the proposed development is likely to cause an adverse impact on the following:

(i) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,

(ii) overshadowing, wind funnelling and the loss of views from public places to foreshores,

(iii) the visual amenity and scenic qualities of the coast, including coastal headlands,

(iv) Aboriginal cultural heritage, practices and places,

(v) cultural and built environment heritage, and

(b) is satisfied that:

(i) the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or

(ii) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or

(iii) if that impact cannot be minimised—the development will be managed to mitigate that impact, and

(c) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development.

(2) This clause does not apply to land within the Foreshores and Waterways Area within the meaning of Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005.

The study area is mapped as a Coastal Wetlands and these are each surrounded by a buffer zone identified as Proximity Areas for Coastal Wetlands.

Coastal Environment Area

The management objectives for the Coastal Environment Area are:

- To protect and enhance the coastal environmental values and natural processes of coastal waters, estuaries, coastal lakes, and coastal lagoons;
- To enhance natural character, scenic value, biological diversity, and ecosystem integrity;
- To reduce threats to, and improve the resilience of, coastal waters, estuaries, coastal lakes, and coastal lagoons, including in response to climate change;
- To maintain and improve water quality and estuary health;
- To support the social and cultural values of coastal waters, estuaries, coastal lakes, and coastal lagoons;
- To maintain the presence of beaches, dunes, and the natural features of foreshores, taking into account the beach system;
- To maintain and, where practicable, improve public access, amenity and use of beaches, foreshores, headlands, and rock platforms.

The project has been designed to retain and conserve the ecologically sensitive areas of the subject site that includes Georges River and the vegetation within the buffer zone. The project will reduce the current threats of grazing and uses that impact on water quality and riverine health through conservation of the study area and removal of cattle from the property. Further improvements to water quality are predicted to occur through the implementation of an environmentally sensitive urban water design that is incorporated into the stormwater management plan, including the use of bioretention basins to filter runoff that currently flows untreated directly into Georges River. The

project will improve public access to the Georges River through construction of access to areas of the river banks which are currently inaccessible to the public. Therefore, the project is considered consistent with the management objectives of the Coastal Environment Area.

Coastal Wetlands and Littoral Rainforest Area
The management objectives for the Coastal Wetlands and Littoral Rainforests Area are:

- To protect coastal wetlands and littoral rainforests in their natural state, including their biological diversity and ecosystem integrity;
- To promote the rehabilitation and restoration of degraded coastal wetlands and littoral rainforests;
- To improve the resilience of coastal wetlands and littoral rainforests to the impacts of climate change, including opportunities for migration;
- To support the social and cultural values of coastal wetlands and littoral rainforest; and
- To promote the objectives of State policies and programs for wetlands or littoral rainforest management.

No area of coastal wetlands or littoral rainforest occurs within the development footprint. The project has been situated in such a way to avoid impacts to these communities.

The proposed development will not significantly impact on the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.

The proposed development is of a type, scale and size which is consistent with its context and surrounding subdivision pattern so that it is considered appropriate to its coastal location.

The proposal does not hinder existing access to the coastal foreshore and is not of a type that lends itself to providing increased access at this point in time. A consideration of the impacts of the proposal demonstrate that there will be no significant impact on the coastal foreshore and that the public domain will not be affected by the proposal.

The proposal is not considered to adversely affect scenic qualities, conservation measures, wildlife corridors, coastal processes or coastal hazards. The proposal is not considered to give rise to any potential conflict with water-based activities or adversely impact on water quality.

It is considered that the proposal is consistent with the requirements of the Policy.

4.2 SEPP 55 – Remediation of Land

The greater site area has been assessed against the requirements of SEPP 55. In relation to land contamination and remediation, Sullivan Sciences Contamination Assessment Report 2021 considered the site's suitability to accommodate future development and analysed the inground conditions.

All of the work for the Contamination Assessment and the Remediation Action plans was undertaken in accordance with the regulatory framework.

SEPP 55 requires that:
7 Contamination and remediation to be considered in determining development application
(1) A consent authority must not consent to the carrying out of any development on land unless—

(a) it has considered whether the land is contaminated, and
(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state

(or will be suitable, after remediation) for the purpose for which the development is proposed
to be carried out, and

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

(2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subclause (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.

(3) The applicant for development consent must carry out the investigation required by subclause (2) and must provide a report on it to the consent authority. The consent authority may require the applicant to carry out, and provide a report on, a detailed investigation (as referred to in the contaminated land planning guidelines) if it considers that the findings of the preliminary investigation warrant such an investigation.

(4) The land concerned is—

(a) land that is within an investigation area,

(b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,

(c) to the extent to which it is proposed to carry out development on it for residential, educational, recreational or child care purposes, or for the purposes of a hospital land—

(i) in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and

(ii) on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge).

The site has the benefit of detailed site investigations prepared for the purposes of assisting the consent authority to discharge its functions under SEPP 55. These investigations reveal some contamination to be present associated with pesticide and chemical storage associated with the now dormant golf club use and also some landfill waste underneath the area closer to the foreshore. These matters are discussed in significant details in the investigations that accompany these amended development applications. Importantly, the detailed site investigations conclude that the land can be made suitable for its intended uses. The detailed site investigations comprehensively include both the requirement for a preliminary investigation of land required for a change of use as specified in clause 7(2) of SEPP 55 and also the detailed investigation recommends the preparation of a remediation action plan that satisfies the requirements of clause 7(1((b) and (c) of SEPP 55.

4.3 Bankstown Local Environmental Plan 2015

The subject site is Zoned RE1 Public Recreation, RE2 Private Recreation and R2 Low Density Residential Zone under Bankstown Local Environmental Plan 2015. The specific objectives of the *zones are:*

Zone RE1 Public Recreation

1 *Objectives of zone*

- *To enable land to be used for public open space or recreational purposes.*
- *To provide a range of recreational settings and activities and compatible land uses.*
- *To protect and enhance the natural environment for recreational purposes.*

2 *Permitted without consent*

Nil

3 *Permitted with consent*

Aquaculture; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Car parks; Caravan parks; Centre-based child care facilities; Charter and tourism boating facilities; Community facilities; Eco-tourist facilities; Emergency services facilities; Entertainment facilities; Environmental facilities; Environmental protection works; Extensive agriculture; Flood mitigation works; Food and drink premises; Function centres; Information and education facilities; Intensive plant agriculture; Jetties; Kiosks; Marinas; Markets; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Respite day care centres; Roads; Water recreation structures; Water supply systems; Wharf or boating facilities

Zone RE2 Private Recreation

1 *Objectives of zone*

- *To enable land to be used for private open space or recreational purposes.*
- *To provide a range of recreational settings and activities and compatible land uses.*
- *To protect and enhance the natural environment for recreational purposes.*

2 Permitted without consent

Nil

3 Permitted with consent

Aquaculture; Building identification signs; Business identification signs; Car parks; Community facilities; Environmental facilities; Environmental protection works; Flood mitigation works; Helipads; Kiosks; Marinas; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Registered clubs; Roads; Water supply systems

4 Prohibited

Any development not specified in item 2 or 3

Zone R2 Low Density Residential

1 Objectives of zone

- *To provide for the housing needs of the community within a low density residential environment.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
- *To allow for certain non-residential development that is compatible with residential uses and does not adversely affect the living environment or amenity of the area.*
- *To allow for the development of low density housing that has regard to local amenity.*
- *To require landscape as a key characteristic in the low density residential environment.*

2 Permitted without consent

Home occupations

3 Permitted with consent

Bed and breakfast accommodation; Boarding houses; Boat sheds; Building identification signs; Business identification signs; Car parks; Centre-based child care facilities; Community facilities; Dual occupancies; Dwelling houses; Emergency services facilities; Environmental facilities; Environmental protection works; Exhibition homes; Flood mitigation works; Group homes; Health consulting rooms; Home-based child care; Home businesses; Hospitals; Information and education facilities; Jetties; Oyster aquaculture; Places of public worship; Pond-based aquaculture; Public administration buildings; Recreation areas; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Seniors housing; Tank-based aquaculture; Water recreation structures; Water supply systems

4 Prohibited
Any development not specified in item 2 or 3

The proposal as a site amalgamation and procedural subdivision conforming with the zoning boundaries and permissible uses is consistent with the objectives of the zones and it is noted that no work is proposed under this amended development application.

The proposal is assessed under the relevant clauses of this LEP 2015 in the table below.

TABLE 1: Compliance with LEP 2015

4.1 Minimum subdivision lot size (1) The objectives of this clause are as follows— (a) to ensure lots are of sufficient size to accommodate certain development that is consistent with relevant planning provisions without adversely impacting on residential amenity, (b) to ensure the subdivision of low density residential sites reflects and reinforces the predominant subdivision pattern of the area. (2) This clause applies to a subdivision of any land shown on the Lot Size Map that requires development consent and that is carried out after the commencement of this Plan.

(3) The size of any lot resulting from a subdivision of land to which this clause applies is not to be less than the minimum size shown on the Lot Size Map in relation to that land. (3A) If a lot is a battle-axe lot or other lot with an access handle, the area of the access handle is not to be included when calculating the size of the lot for the purposes of this clause. (4) This clause does not apply in relation to the subdivision of any land— (a) by the registration of a strata plan or strata plan of subdivision under the *Strata Schemes Development Act 2015*, or (b) by any kind of subdivision under the *Community Land Development Act 1989*.
The proposed development provides for 6 allotments all of which comfortably comply with the minimum lot size.
4.1A Minimum lot sizes and special provisions for dual occupancies (1) The objectives of this clause are as follows— (a) to ensure that lot sizes are sufficient to accommodate development that is consistent with the objectives and planning provisions for dual occupancies, (b) to minimise any likely adverse impact of development on the amenity of the area. (2) Development consent must not be granted to development for the following purposes— (a) a dual occupancy (attached) on a lot in Zone R2 Low Density Residential unless the lot has an area of at least 500 square metres and is at least 15 metres wide at the front building line, (b) a dual occupancy (detached) on a lot in Zone R2 Low Density Residential unless the lot has an area of at least 700 square metres and is at least 20 metres wide at the front building line, (c) a dual occupancy on a lot being land identified as “Area 2” on the Special Provisions Map. (3) Despite subclause (2), development consent must not be granted to development for the purpose of a dual occupancy unless the

consent authority is satisfied that each dwelling will have a frontage to a road. (4) The consent authority may grant development consent for the subdivision of— (a) a dual occupancy (attached), if the size of each lot to be created will be at least 250 square metres, or (b) a dual occupancy (detached), if the size of each lot to be created will be at least 350 square metres.
Not applicable. No work is proposed.
4.1AA Minimum subdivision lot size for community title schemes (1) The objectives of this clause are as follows— (a) to ensure lots are of sufficient size to accommodate certain development that is consistent with relevant planning provisions without adversely impacting on residential amenity. (2) This clause applies to a subdivision (being a subdivision that requires development consent) under the *Community Land Development Act 1989* of land in any of the following zones— (a) Zone R2 Low Density Residential, but does not apply to a subdivision by the registration of a strata plan. (3) The size of any lot resulting from a subdivision of land to which this clause applies (other than any lot comprising association property within the meaning of the *Community Land Development Act 1989*) is not to be less than the minimum size shown on the Lot Size Map in relation to that land. (4) This clause applies despite clause 4.1.
Not applicable. The procedural subdivision is for Torrens title lots only.
4.3 Height of buildings (1) The objectives of this clause are as follows— (a) to ensure that the height of development is compatible with the character, amenity and landform of the area in which the development will be located,

(b) to maintain the prevailing suburban character and amenity by limiting the height of development to a maximum of two storeys in Zone R2 Low Density Residential, (c) to provide appropriate height transitions between development, particularly at zone boundaries, (d) to define focal points by way of nominating greater building heights in certain locations. (2) The height of a building on any land is not to exceed the maximum height shown for the land on the Height of Buildings Map. (2A) Despite subclause (2)— (a) for land in Zone B2 Local Centre—if a lot is in "Area 1" as identified on the Height of Buildings Map and has a width of less than 20 metres at the road frontage, the maximum building height is 17 metres, and (b) for land in Zone B6 Enterprise Corridor—if a lot is in "Area 2" as identified on the Height of Buildings Map and has an area less than 5,000 square metres, the maximum building height is 11 metres. (2B) Despite subclause (2), the following restrictions apply to development on land in Zone R2 Low Density Residential— (a) for a secondary dwelling that is separate from the principal dwelling—the maximum building height is 6 metres and the maximum wall height is 3 metres, (b) for a dwelling house or a dual occupancy—the maximum wall height is 7 metres, (c) for boarding houses— (i) the maximum building height for a dwelling facing a road is 9 metres and the maximum wall height is 7 metres, and (ii) the maximum building height for all other dwellings at the rear of the lot is 6 metres and the maximum wall height is 3 metres. (2C) In this clause, *wall height* means the vertical distance between ground level (existing) and the underside of the eaves at the wall line or the top of the parapet or the flat roof (whichever is the highest).
Not applicable subdivision only.
4.4 Floor space ratio (1) The objectives of this clause are as follows—

(a) to establish the bulk and maximum density of development consistent with the capacity and character of the locality of a development site,

(b) to ensure the bulk of non-residential development in or adjoining a residential zone is compatible with the prevailing suburban character and amenity of the residential zone,

(c) to encourage lot consolidations in commercial centres to facilitate higher quality built form and urban design outcomes.

(2) The maximum floor space ratio for a building on any land is not to exceed the floor space ratio shown for the land on the Floor Space Ratio Map.

(2A) Despite subclause (2), the maximum floor space ratio for non-residential development on land in Zone R2 Low Density Residential is 0.4:1.

(2B) Despite subclause (2), the maximum floor space ratio for development for the purpose of high technology industries on land in Zone R2 Low Density Residential and identified as “Area 6” on the Floor Space Ratio Map is 0.6:1.

(2C) Despite subclause (2), the maximum floor space ratio for development on land in Zone B2 Local Centre—

(a) that has a width of less than 20 metres at the front building line and is identified as “Area 1” on the Floor Space Ratio Map is 1:1, and

(b) that has a width of less than 18 metres at the front building line and is identified as “Area 7” on the Floor Space Ratio Map is 2:1.

(2D) Despite subclause (2), the maximum floor space ratio for development on land in Zone B4 Mixed Use that has a width of less than 30 metres at the front building line and is identified as “Area 4” on the Floor Space Ratio Map is 2:1.

(2E) Despite subclause (2), the maximum floor space ratio for development on land in Zone B4 Mixed Use that has a width of less than 18 metres at the front building line and is identified as “Area 2” on the Floor Space Ratio Map is 1:1.

(2F) Despite subclause (2), the maximum floor space ratio for development on land in Zone B4 Mixed Use that has a width of less than 18 metres at the front building line and is identified as “Area 3” on the Floor Space Ratio Map is 2:1.

(2G) Despite subclause (2), the maximum floor space ratio for development on land in Zone B4 Mixed Use that does not provide at least a 20 metre wide mid-block connection for public use and is identified as “Area 5” on the Floor Space Ratio Map is 2:1.
Not applicable subdivision only.
5.10 Heritage conservation Note— Heritage items (if any) are listed and described in Schedule 5. Heritage conservation areas (if any) are shown on the Heritage Map as well as being described in Schedule 5. (1) Objectives The objectives of this clause are as follows— (a) to conserve the environmental heritage of Bankstown, (b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views, (c) to conserve archaeological sites, (d) to conserve Aboriginal objects and Aboriginal places of heritage significance. (2) Requirement for consent Development consent is required for any of the following— (a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance)— (i) a heritage item, (ii) an Aboriginal object, (iii) a building, work, relic or tree within a heritage conservation area, (b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item, (c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,

(d) disturbing or excavating an Aboriginal place of heritage significance,

(e) erecting a building on land—

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,

(f) subdividing land—

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.

(3) When consent not required However, development consent under this clause is not required if—

(a) the applicant has notified the consent authority of the proposed development and the consent authority has advised the applicant in writing before any work is carried out that it is satisfied that the proposed development—

(i) is of a minor nature or is for the maintenance of the heritage item, Aboriginal object, Aboriginal place of heritage significance or archaeological site or a building, work, relic, tree or place within the heritage conservation area, and

(ii) would not adversely affect the heritage significance of the heritage item, Aboriginal object, Aboriginal place, archaeological site or heritage conservation area, or

(b) the development is in a cemetery or burial ground and the proposed development—

(i) is the creation of a new grave or monument, or excavation or disturbance of land for the purpose of conserving or repairing monuments or grave markers, and

(ii) would not cause disturbance to human remains, relics, Aboriginal objects in the form of grave goods, or to an Aboriginal place of heritage significance, or

(c) the development is limited to the removal of a tree or other vegetation that the Council is satisfied is a risk to human life or property, or

(d) the development is exempt development.

(4) Effect of proposed development on heritage significance The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).

(5) Heritage assessment The consent authority may, before granting consent to any development—

(a) on land on which a heritage item is located, or

(b) on land that is within a heritage conservation area, or

(c) on land that is within the vicinity of land referred to in paragraph (a) or (b),

require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.

(6) Heritage conservation management plans The consent authority may require, after considering the heritage significance of a heritage item and the extent of change proposed to it, the submission of a heritage conservation management plan before granting consent under this clause.

(7) Archaeological sites The consent authority must, before granting consent under this clause to the carrying out of development on an archaeological site (other than land listed on the State Heritage Register or to which an interim heritage order under the *Heritage Act 1977* applies)—

(a) notify the Heritage Council of its intention to grant consent, and

(b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.

(8) Aboriginal places of heritage significance The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance—

(a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and

(b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.

(9) Demolition of nominated State heritage items The consent authority must, before granting consent under this clause for the demolition of a nominated State heritage item—

(a) notify the Heritage Council about the application, and

(b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.

(10) Conservation incentives The consent authority may grant consent to development for any purpose of a building that is a heritage item or of the land on which such a building is erected, or for any purpose on an Aboriginal place of heritage significance, even though development for that purpose would otherwise not be allowed by this Plan, if the consent authority is satisfied that—

(a) the conservation of the heritage item or Aboriginal place of heritage significance is facilitated by the granting of consent, and

(b) the proposed development is in accordance with a heritage management document that has been approved by the consent authority, and

(c) the consent to the proposed development would require that all necessary conservation work identified in the heritage management document is carried out, and

(d) the proposed development would not adversely affect the heritage significance of the heritage item, including its setting, or the heritage significance of the Aboriginal place of heritage significance, and

(e) the proposed development would not have any significant adverse effect on the amenity of the surrounding area.

Not applicable as no works are proposed.

6.1 Acid sulfate soils

(1) The objective of this clause is to ensure that development does not disturb, expose or drain acid sulfate soils and cause environmental damage.

(2) Development consent is required for the carrying out of works described in the table to this subclause on land shown on the Acid Sulfate Soils Map as being of the class specified for those works.

Class of land	Works
1	Any works.
2	Works below the natural ground surface. Works by which the watertable is likely to be lowered.
3	Works more than 1 metre below the natural ground surface. Works by which the watertable is likely to be lowered more than 1 metre below the natural ground surface.
4	Works more than 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered more than 2 metres below the natural ground surface.
5	Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

(3) Development consent must not be granted under this clause for the carrying out of works unless an acid sulfate soils management plan has been prepared for the proposed works in accordance with the Acid Sulfate Soils Manual and has been provided to the consent authority.

(4) Despite subclause (2), development consent is not required under this clause for the carrying out of works if—

(a) a preliminary assessment of the proposed works prepared in accordance with the Acid Sulfate Soils Manual indicates that an acid sulfate soils management plan is not required for the works, and (b) the preliminary assessment has been provided to the consent authority and the consent authority has confirmed the assessment by notice in writing to the person proposing to carry out the works. (5) Despite subclause (2), development consent is not required under this clause for the carrying out of any of the following works by a public authority (including ancillary work such as excavation, construction of access ways or the supply of power)— (a) emergency work, being the repair or replacement of the works of the public authority, required to be carried out urgently because the works have been damaged, have ceased to function or pose a risk to the environment or to public health and safety, (b) routine maintenance work, being the periodic inspection, cleaning, repair or replacement of the works of the public authority (other than work that involves the disturbance of more than 1 tonne of soil), (c) minor work, being work that costs less than $20,000 (other than drainage work). (6) Despite subclause (2), development consent is not required under this clause to carry out any works if— (a) the works involve the disturbance of less than 1 tonne of soil, and (b) the works are not likely to lower the watertable
Not applicable as no works are proposed.
6.2 Earthworks (1) The objective of this clause is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land. (2) Development consent is required for earthworks unless—

(a) the earthworks are exempt development under this Plan or another applicable environmental planning instrument, or (b) the earthworks are ancillary to development that is permitted without consent under this Plan or to development for which development consent has been given. (3) In deciding whether to grant development consent for earthworks (or for development involving ancillary earthworks), the consent authority must consider the following matters— (a) the likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development, (b) the effect of the development on the likely future use or redevelopment of the land, (c) the quality of the fill or the soil to be excavated, or both, (d) the effect of the development on the existing and likely amenity of adjoining properties, (e) the source of any fill material and the destination of any excavated material, (f) the likelihood of disturbing relics, (g) the proximity to, and potential for adverse impacts on, any waterway, drinking water catchment or environmentally sensitive area, (h) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development. Note— The *National Parks and Wildlife Act 1974*, particularly section 86, deals with harming Aboriginal objects
Not applicable as no works are proposed.
6.3 Flood planning (1) The objectives of this clause are as follows— (a) to minimise the flood risk to life and property associated with the use of land, (b) to allow development on land that is compatible with the land's flood hazard, taking into account projected changes as a result of climate change,

(c) to avoid significant adverse impacts on flood behaviour and the environment. (2) This clause applies to land at or below the flood planning level. (3) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development— (a) is compatible with the flood hazard of the land, and (b) will not significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and (c) incorporates appropriate measures to manage risk to life from flood, and (d) will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and (e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding. (4) A word or expression used in this clause has the same meaning as it has in the *FlooDPlain Development Manual (*ISBN 0 7347 5476 0*)* published by the NSW Government in April 2005, unless it is otherwise defined in this clause. (5) In this clause— *flood planning level* means the level of a 1:100 ARI (average recurrent interval) flood event plus 0.5 metre freeboard.
Not applicable as no works are proposed.
6.4 Biodiversity (1) The objective of this clause is to maintain terrestrial and aquatic biodiversity by— (a) protecting native fauna and flora, and (b) protecting the ecological processes necessary for their continued existence, and (c) encouraging the conservation and recovery of native fauna and flora and their habitats.

(2) This clause applies to land identified as “Biodiversity” on the Terrestrial Biodiversity Map. (3) In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must consider— (a) whether the development is likely to have— (i) any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and (ii) any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and (iii) any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and (iv) any adverse impact on the habitat elements providing connectivity on the land, and (b) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development. (4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that— (a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or (b) if that impact cannot be reasonably avoided by adopting feasible alternatives—the development is designed, sited and will be managed to minim
Not applicable as no works are proposed.
6.4A Riparian land and watercourses (1) The objective of this clause is to protect and maintain the following— (a) water quality within watercourses, (b) the stability of the bed and banks of watercourses, (c) aquatic and riparian habitats, (d) ecological processes within watercourses and riparian areas. (2) This clause applies to all of the following—

(a) land identified as “Riparian land” on the Riparian Lands and Watercourses Map, (b) land identified as “Watercourse” on that map. (3) In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must consider— (a) whether or not the development is likely to have any adverse impact on the following— (i) the water quality and flows within the watercourse, (ii) aquatic and riparian species, habitats and ecosystems of the watercourse, (iii) the stability of the bed and banks of the watercourse, (iv) the free passage of fish and other aquatic organisms within or along the watercourse, (v) any future rehabilitation of the watercourse and riparian areas, and (b) whether or not the development is likely to increase water extraction from the watercourse, and (c) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development. (4) Development consent must not be granted for development on land to which this clause applies unless the consent authority is satisfied that— (a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or (b) if that impact cannot be avoided by adopting feasible alternatives—the development is designed, sited and will be managed to minimise that impact
Not applicable as no works are proposed.
6.5 Limited development on foreshore area (1) The objective of this clause is to ensure that development in the foreshore area will not impact on natural foreshore processes or affect the significance and amenity of the area.

(2) Development consent must not be granted for development on land in the foreshore area except for the following purposes— (a) the extension, alteration or rebuilding of an existing building wholly or partly in the foreshore area, (b) boat sheds, sea retaining walls, wharves, slipways, jetties, waterway access stairs, swimming pools, fences, cycleways, walking trails, picnic facilities or other recreation facilities (outdoors). (3) Development consent must not be granted under this clause unless the consent authority is satisfied that— (a) the development will contribute to achieving the objectives for the zone in which the land is located, and (b) the appearance of any proposed structure, from both the waterway and adjacent foreshore areas, will be compatible with the surrounding area, and (c) the development will not cause environmental harm such as— (i) pollution or siltation of the waterway, or (ii) an adverse effect on surrounding uses, marine habitat, wetland areas, fauna and flora habitats, or (iii) an adverse effect on drainage patterns, and (d) the development will not cause congestion or generate conflict between people using open space areas or the waterway, and (e) opportunities to provide continuous public access along the foreshore and to the waterway will not be compromised, and (f) any historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance of the land on which the development is to be carried out and of surrounding land will be maintained, and (g) in the case of development for the alteration or rebuilding of an existing building wholly or partly in the foreshore area—the alteration or rebuilding will not have an adverse impact on the amenity or aesthetic appearance of the foreshore, and (h) sea level rise or change of flooding patterns as a result of climate change has been considered
Not applicable as no works are proposed.

6.11 Development on Riverlands Golf Course site

(1) This clause applies to the following land at Milperra (known as the Riverlands Golf Course site)—

(a) Lots 23–27, 38–41 and 50–59, DP 7304, Lots 21 and 22, DP 749985, Lots 231 and 232, DP 805826 and Lot 1, DP 813007, being 67, 67A, 80, 80A, 90 and 100 Auld Avenue,

(b) Lot 1, DP 625013 and Lot 1, DP 813006, being 123 and 123A Raleigh Road,

(c) Lot 10, DP 731859, being 56 Prescott Parade, Milperra.

(2) The objectives of this clause are as follows—

(a) to ensure that development on the site reflects the low density residential character of the surrounding area,

(b) to ensure that traffic generated by development of the site does not adversely affect the efficiency and safety of Henry Lawson Drive and surrounding local roads,

(c) to ensure that development protects and conserves the cultural heritage, ecological and habitat values of the site and the scenic values of the surrounding waterways and riparian corridors,

(d) to ensure that development integrates with the landform, vegetation, overland flow path and landscape of the site.

(3) Development consent must not be granted for development on land to which this clause applies unless the consent authority is satisfied of the following—

(a) that the development is consistent with the low density residential scale and character of the surrounding area,

(b) that the development will not significantly impact on the efficiency and safety of the surrounding road network,

(c) that the development of the site integrates with the road, pedestrian and cycle networks of the surrounding established Milperra neighbourhood area,

(d) that the development, including any lots created by the development, will be compatible with the topography of the site and integrate with the landform, vegetation and landscape of the site,

(e) that the development is appropriate given the environmental capabilities of, and environmental constraints that affect, the site

(including, but not limited to, flood risks, land contamination, acid sulfate soils and bushfire risks), (f) that the development will protect the cultural heritage values of the site and the scenic values of the surrounding waterways and riparian and biodiversity corridors, (g) that the development will protect and conserve the ecological communities and areas on the site, (h) that adequate provision has been made for protecting and conserving hollow bearing trees on the site, (i) that any adverse impacts of stormwater on the site, or caused by stormwater runoff on adjoining properties, native vegetation, wetlands or waterways, are properly managed or mitigated, (j) that any lot created by the development will be compatible with the stormwater management measures on the site
The proposal as a site amalgamation and procedural subdivision conforming with the zoning boundaries and it is noted that no work is proposed under this amended development application. The considerations under 6.11(3) (a) – (c) relate to development works and no works are proposed. (d) The development, which reduces the existing 27 lots to 6 lots, will be compatible with the topography of the site and integrate with the landform, vegetation and landscape of the site and the lots are consistent with the various uses and zonings of the site and respond to the environmental and arboricultural research. (e) The development is appropriate given the environmental capabilities of, and environmental constraints that affect, the site (including, but not limited to, flood risks, land contamination, acid sulfate soils and bushfire risks), where these matters are addressed in the individual amended development applications for the nominated uses where the subject application proposes no work.

(f) The development is for subdivision only and will protect the cultural heritage values of the site and the scenic values of the surrounding waterways and riparian and biodiversity corridors proposing no works and no change.
(g) The development is for subdivision only and will protect and conserve the ecological communities and areas on the site proposing no works and no change.
(h) The development is for subdivision only and no trees are removed so that adequate provision has been made for protecting and conserving hollow bearing trees on the site.
(i) The development is for subdivision only and any adverse impacts of stormwater on the site, or caused by stormwater runoff on adjoining properties, native vegetation, wetlands or waterways, are properly managed or mitigated through the creation of the proposed easements, rights of way and covenants included with the proposed subdivision.
(j) The proposed lots to be created by the development will be compatible with the stormwater management measures on the site through the creation of the proposed easements, rights of way and covenants included with the proposed subdivision.

It is considered that these provisions are satisfied by the amended development application.

It can be seen from the table that the proposal either complies with the relevant provisions of the LEP or the objectives of those provisions, where relevant.

4.4 Bankstown Development Control Plan 2015

The proposed development is assessed under the relevant controls of DCP 2015 as follows:

Bankstown DCP 2015

Part A – Precinct Controls
Part A3 – Key Infill Development Sites
Section 6 Riverlands Golf Course Site
Subdivision 6.1 Development that proposes the subdivision of land must submit a concept subdivision plan, landscape plan and detailed tree survey to the satisfaction of Council. These plans must be prepared by suitably qualified persons in the field of town planning, architecture and landscape architecture.
The proposal is only the procedural subdivision so that these provisions are not considered to apply until the detailed subdivision of the land for residential use.
6.2 The intended outcomes of the concept subdivision plan, landscape plan and detailed tree survey are: (a) to identify the overall strategic vision and guiding principles to the subdivision and development of the site; (b) to demonstrate the opportunities and constraints of the site; (c) to contribute to the sustainable growth of the city; and (d) to respond and contribute to the local context and the urban structure of the city.
The proposal is only the procedural subdivision so that these provisions are not considered to apply until the detailed subdivision of the land for residential use.
6.3 The concept subdivision plan, landscape plan and detailed tree survey must consist of a written statement (supported by plans or illustrations) explaining how the design and layout of the streets, lots and subsequent development on the site have regard to the following:

(a) Design principles

The design and layout of the streets, lots and subsequent development must have regard to the design principles drawn from the site analysis and local context including:

(i) Context and character studies.

(ii) Visual assessment of the site and the local context.

(iii) Survey of the site and neighbouring buildings.

(iv) Survey of the topography, stormwater and drainage systems, trees, vegetation and landscape.

(b) The studies which informed the planning proposal

The design and layout of the streets, lots and subsequent development are to conform to the studies and their recommendations which informed the planning proposal (PP_2011_BANKS_001) for the site including:

(i) The 'Flora Assessment: Updated Study of the approximately 82 ha site of the Riverlands Golf Course site at Milperra', dated 23 January 2012, prepared by Anne Clements and Associates.

(ii) The 'Fauna Habitat & Species Constraints to Potential Redevelopment of the Riverlands Golf Course, Milperra', dated 22 January 2012, prepared by Ambrose Ecological Services.

(iii) The 'Fauna Investigation and Tree Retention Advice', dated June 2015, prepared by NGH Environmental.

(iv) The 'Riverlands Flood Study and Evacuation Plan', dated April 2012, prepared by BMT WBM.

(v) The 'Bushfire Assessment', dated 30 April 2012, prepared by Eco Logical Australia.

(vi) The 'Aboriginal Heritage Study', dated May 2012, prepared by Archaeological & Heritage Management Solutions.

This includes the need for subdivision development to undertake additional archaeological investigations in accordance with relevant statutory requirements and guidelines.

(vii) The 'Phase 2 Environmental Site Assessment–Riverlands

Environmental Site Assessment', dated July 2015, prepared by Environmental Strategies.

(viii) The 'Acid Sulfate Soil Preliminary Site Investigation', dated December 2011, prepared by Sydney Environmental & Soil Laboratory.

(ix) The 'River Bank Stabilisation Study', dated April 2014, prepared by National Project Consultants.

(x) The Riverlands Golf Course voluntary planning agreement and corresponding vegetation management plan

(c) Sustainability and energy efficiency outcomes

The design and layout of the streets, lots and subsequent development must have regard to the sustainability and energy efficiency outcomes through design including:

(i) The integration of the streets and development with the topography, stormwater, biodiversity and riparian corridors, native vegetation and hollow bearing trees, and landscape of the site.

(ii) Lot orientation. In assessing proposals for residential subdivisions, Council places major emphasis on the ease with which future dwellings with good solar access can be erected on the proposed lots. In general, this condition is best fulfilled when the side boundaries of the majority of the lots are on or near a north–south axis; however, there may be other solutions. It is important to strive for a future residential area in which the great majority of dwellings can achieve good solar access.

(iii) The provision of deep soil zones and landscaping.

(iv) Passive surveillance.

(d) Built form and character

The design and layout of the streets, lots and subsequent development must:

(i) Provide for mostly dwelling houses or a balanced mix of dwelling houses and dual occupancies on the site that is compatible with the character, amenity and built form of the established Milperra neighbourhood area.

(ii) Provide for a variety of lot widths other than 15 metres to

encourage a diversity of house and dual occupancy designs.

(e) Traffic and access

The design and layout of the streets, lots and subsequent development must have regard to traffic and access including:

(i) The links between the site and the surrounding pedestrian, cycle, public transport and road access and circulation networks.

This includes details of the internal and external movement networks, the public transport access routes, the pedestrian and cycle paths, linkages to external networks and pedestrian through–site links. The internal street network should avoid cul–de–sac roads.

(ii) The links to the road access to the site being Keys Parade, Pozieres Avenue and Prescott Parade. Road access is not to be provided through Martin Crescent.

(iii) The pedestrian / cycle link between the site and the public open space on the foreshore.

(iv) The evacuation routes for residents during flooding.

(f) Infrastructure and stormwater management

The design and layout of the streets, lots and subsequent development must have regard to infrastructure and stormwater

management including:

(i) The works to be undertaken in accordance with the Riverlands Golf Course voluntary planning agreement and corresponding vegetation management plan.

(ii) The minimum 17 metre road width for public roads. This comprises a 10 metre wide carriageway and a 3.5 metre wide footpath on each side of the carriageway.

(iii) Access for Council's waste trucks and emergency vehicles.

(iv) The integration of the streets and development with the overland flow paths shown in Figure 2.

(v) The incorporation of water sensitive urban design principles in the street and development design to attenuate runoff and promote water quality. Consideration may be

given to treating stormwater runoff from the site by establishing wetlands, or installing bioswales or bio–retention basins prior to surface discharge. (vi) The siting of the electricity power lines and telecommunication lines underground in accordance with the bushfire assessment, and urban design and streetscape guidelines.
The proposal is only the procedural subdivision so that these provisions are not considered to apply until the detailed subdivision of the land for residential use.
Development – general requirements 6.4 In deciding whether to grant development consent, Council must be satisfied that development on the site conforms to the concept subdivision plan, landscape plan and detailed tree survey approved by Council.
The proposal is only the procedural subdivision so that these provisions are not considered to apply until the detailed subdivision of the land for residential use.
6.5 Development on the site must provide for mostly dwelling houses on the site, or a balanced mix of dwelling houses and dual occupancies on the site that is compatible with the character, amenity and built form of the established Milperra neighbourhood area.
Not applicable as no works are proposed.
6.6 Development on the site must locate the electricity power lines and telecommunication lines underground.
Not applicable as no works are proposed.
6.7 Development on the site must submit an Environmental Management Plan detailing the extent to which the development will impact on the site during construction in accordance with the flora and fauna studies which informed the planning proposal

(PP_2011_BANKS_001) for the site and the Bankstown Demolition and Construction Guidelines.
Not applicable as no works are proposed.
Biodiversity protection 6.8 In deciding whether to grant development consent, Council must be satisfied that development on the site conforms to the studies which informed the planning proposal (PP_2011_BANKS_001) for the site including: (a) The 'Flora Assessment: Updated Study of the approximately 82 ha site of the Riverlands Golf Course site at Milperra', dated 23 January 2012, prepared by Anne Clements and Associates. (b) The 'Fauna Habitat & Species Constraints to Potential Redevelopment of the Riverlands Golf Course, Milperra', dated 22 January 2012, prepared by Ambrose Ecological Services. (c) The 'Fauna Investigation and Tree Retention Advice', dated June 2015, prepared by NGH Environmental. (d) The Riverlands Golf Course voluntary planning agreement and corresponding vegetation management plan.
Not applicable as no works are proposed.
6.9 Development on the site must protect the hollow bearing trees shown in Figure 3 in accordance with the 'Fauna Investigation and Tree Retention Advice', dated June 2015, prepared by NGH Environmental. In deciding whether to grant development consent, Council must be satisfied that the development is designed, and will be sited and managed, to avoid any potentially adverse environmental impact or, if a potentially adverse environmental impact cannot be avoided: (a) the development minimises disturbance and adverse impacts on the native vegetation and habitat; and (b) measures have been considered to maintain native vegetation and habitat in parcels of a size, condition and configuration that will facilitate biodiversity protection and native flora and fauna movement through biodiversity corridors; and

(c) measures have been considered to achieve no net loss of significant native vegetation or habitat. In this clause, biodiversity corridor means an area that facilitates the connection and maintenance of native fauna and flora habitats and, within the urban landscape, includes areas that may be broken by roads and other urban elements and may include remnant trees and associated native and exotic vegetation.
Not applicable as no works are proposed and no trees are removed under this amended development application.
Stormwater and water sensitive urban design 6.10 Development on the site must submit a Water Management Plan that provides the following details: (i) the stormwater management methods during construction and post construction; and (ii) how the water sensitive urban design methods will be used to meet the stormwater reduction targets set out in the Botany Bay and Catchment Water Quality Improvement Plan for greenfield development / large redevelopment.
Not applicable as no works are proposed.
6.11 In deciding whether to grant development consent to development on the site, Council must be satisfied that: (a) water sensitive urban design principles are incorporated into the design of the development; and (b) riparian, stormwater and flooding measures are integrated; and (c) the stormwater management system includes all reasonable management actions to avoid any adverse impacts on the land to which the development is to be carried out, adjoining properties, native bushland, waterways and groundwater systems; and (d) if a potential adverse environmental impact cannot be feasibly avoided, the development minimises and mitigates the adverse impacts of stormwater runoff on adjoining properties, native bushland, waterways and groundwater systems. For the purposes of this clause, the water sensitive urban design

principles are: (i) protection and enhancement of natural waterways; (ii) protection and enhancement of water quality, by improving the quality of stormwater runoff from urban catchments; (iii) minimisation of harmful impacts of urban development on water balance and on surface and groundwater flow regimes; (iv) integration of stormwater management systems into the landscape in a manner that provides multiple benefits, including water quality protection, stormwater retention and detention, biodiversity / habitat provision, public open space, and recreational and visual amenity; (v) retention, where practical, of on–site stormwater for use as an alternative supply to mains water, groundwater or river water; (vi) reduce peak flows through storage and infiltration.
Not applicable as no works are proposed.
B11 – Tree management order Works Requiring a Permit 2.1 A person must not cut down, fell, uproot, kill, poison, ringbark, burn or otherwise destroy, lop or otherwise remove a substantial part of any prescribed tree defined in clause 2.3 or carry out excavation and earthworks within the tree protection zone except with a permit from Council and subject to any conditions specified in the permit. 2.2 Development consent is required to remove any tree: (a) located on a property listed as a heritage item in Schedule 5 of Bankstown Local Environmental Plan 2015; or (b) located on biodiversity lands listed on the Biodiversity Protection Map under the Bankstown Local Environmental Plan 2015. Prescribed Trees. 2.3 Part B11 applies to the following trees: (a) All trees that are 5.0 metres or more in height; and

(b) All mangroves, regardless of size; and (c) All trees, regardless of size, listed as Vulnerable or Endangered or a component of an Endangered Ecological Community listed under the Biodiversity Conservation Act 2016; and (d) All trees, regardless of size, listed under the Environmental Protection and Biodiversity Conservation Act 1999; and (e) All trees, regardless of size, located on lands included on the Terrestrial Biodiversity Map under Bankstown Local Environmental Plan 2015; and (f) All trees, regardless of size, located on properties listed as a heritage item in Schedule 5 of Bankstown Local Environmental Plan 2015; and (g) All trees, regardless of size, located in the foreshore area under the Bankstown Local Environmental Plan 2015.
Not applicable as no works are proposed and no trees are removed under this amended development application.
B12 – Flood risk management 2.2.3 Low flood risk precinct Low Flood Risk Precinct is defined as all other land within the floodplain (within the extent of the probable maximum flood) but not identified within either the High Flood Risk or the Medium Flood Risk Precinct. The risk of damages due to flood event in low flood risk precinct is low for most of the land uses. (a) The proposed development should not result in any significant increase in risk to human life, or in a significant increase in economic or social costs as a result of flooding. (b) The proposal should only be permitted where effective warning time and reliable access is available to an area free of risk from flooding, consistent with any relevant Flood Plan or flood evacuation strategy.

(c) Development should not significantly increase the potential for damage or risk other properties either individually or in combination with the cumulative impact of development that is likely to occur in the same floodplain. (d) Motor vehicles are able to be relocated, undamaged, to an area with substantially less risk from flooding, within effective warning time. (e) Procedures would be in place, if necessary, (such as warning systems, signage or evacuation drills) so that people are aware of the need to evacuate and relocate motor vehicles during a flood and are capable of identifying the appropriate evacuation route. (f) To minimise the damage to property, including motor vehicles arising from flooding. (g) Development should not result in significant impacts upon the amenity of an area by way of unacceptable overshadowing of adjoining properties, privacy impacts (e.g. by unsympathetic house–raising) or by being incompatible with the streetscape or character of the locality.
Not applicable as no works are proposed.

5.0 Environmental Planning Assessment

Section 4.15(1) of the Environmental Planning and Assessment Act 1979 as amended specifies the matters which a consent authority must consider when determining a development application.

5.1 s.4.15(1)(a)(i) the provision of any Environmental Planning Instrument (EPI)
Consideration of LEP 2015 are discussed under Section 4.

5.2 s.4.15(1)(a)(ii) the provision of any draft Environmental Planning Instruments
Not applicable to this application.

5.3 s.4.15(1)(a)(iii) any development control plan
Consideration of Development Control Plan 2015 is discussed under Section 4.

5.4 s.4.15(1)(a)(iv) any matters prescribed by the regulations
Not applicable to this application.

5.5 s.4.15(1)(b) the likely impacts of the development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality

- Context and Setting

The location is characterised by residential development and open space the proposal responds to this context with the proposed 6 lot subdivision.

- Access, Transport and Traffic

No works are proposed.

- Public Domain
- No works are proposed. Lots 4 and 6 are proposed to be

dedicated for public use.

- Utilities
- No works are proposed.

- Heritage
- No works are proposed.

- Other Land Resources

Not applicable to this application.

- Natural Hazards

A bushfire threat assessment has been undertaken and concludes that the proposed lots could reasonably accommodate the proposed subdivision.

- Technological Hazards

Not applicable to this application.

- Social Impact in the Locality

The proposal is not expected to have an adverse social impact on the locality.

- Economic Impact in the Locality

The proposal will increase the value of the subject site and create local jobs.

- Site Design and Internal Design

The proposal has been designed in keeping with the orientation of the site, and measures have been taken in order to create the best possible outcome within the constraints of the site. Therefore it is considered that the proposal is an appropriate development solution to the use of the site.

- Cumulative Impacts

The subject allotments are generously sized, shaped and orientated to accommodate future development. It is anticipated that the proposal will have a negligible cumulative effects.

5.6 s.4.15(1)(c) suitability of the site for development

Having regard to the location of the proposal, the site will adequately accommodate the proposed development.

5.7 s.4.15(1)(d) submissions made in accordance with the Act or the Regulations

The Consent authority will need to consider the submissions received in response to the public exhibition of the proposed development.

5.8 s.4.15(1)(e) the public interest

There are no known Federal and/or state Government policy statements and/or strategies other than those discussed in this report that are of relevance to this particular case. We are not aware of any other circumstances that are relevant to the consideration of this development application.

6.0 Conclusion

The proposed development comprises an amended development application to re-subdivide the existing 27 lots into 6 lots under Torrens title (no works are proposed under this development application) at 56 Prescott Parade, Milperra (Lot 10 DP 731859, Lot 1 DP 625013, Lot 1 DP 813006, Lot 1 DP 813007, Lots 231 & 232 DP 805826, Lots 23-27, 38-41 and 50-59 DP 7304).

The overall development of the land at 56 Prescot Parade, Milperra is proposed to be conducted in stages and will ultimately involve the subdivision of land into a Community Title residential subdivision including a 1,935m^2 Southern Reserve (to integrate with the Council owned Cumberland Plain Woodland reserve on Lot 5 DP 731859 south of the subject site), residential lots and 'pocket' park areas with associated infrastructure (roads, drainage basins) within the development footprint. The road infrastructure will comprise a road network within the residential subdivision as well as a primary 'connector' road, known as Keys Parade, that will link the proposed residential area with a main road, Henry Lawson Drive. Other staged works include bank stabilisation works, construction of a shared cycleway/pathway along the Georges River and rehabilitation of riparian corridors in accordance with a Voluntary Planning Agreement. The development is Integrated Development for the purpose of Section 100B of the Rural Fires Act 1997.

A Voluntary Planning Agreement (VPA) was executed as part of the rezoning process. An amended VPA has subsequently been approved by the Council and executed 21st of October 2020 and registered at LRS Dealing AQ743720. The details of the VPA included a number of commitments for the delivery of road infrastructure, environmental management works, remediation of the site and dedication of land.

The following works were proposed:

- Bank stabilisation works at locations across proposed Lot 4;

- Construction of connecting road network – Keys Parade, Raleigh Road and Pozieres Avenue;
- Road infrastructure upgrades - Pozieres Parade improvements, raised junctions, school zone, roundabout, public shared access to public foreshore walkway;
- Foreshore walkway embellishment – pedestrian/cycleway;
- Build a pedestrian/cyclist crossing over the northern creek and southern mangroves on the Zone RE1 land;
- Riparian Corridor along the Foreshore Walk and Zone RE2 land;
- Riparian Corridor along the Northern Creek;
- Road infrastructure upgrades - Keys Parade and Henry Lawson Drive intersection;
- Dedication of land known as proposed Lot 4.

The delivery of the VPA is aligned to the delivery of lots. Given the proposed staging of the construction, certain works will need to be undertaken prior to the release of those stages.

The Keys Parade extension, residential subdivision and Georges River Bank Stabilisation works comprise three separate development applications.

Amended Development Application No. 1107/2019 seeks consent for:

Re-subdivision of existing 27 lots into 6 lots under Torrens title (no works are proposed under this development application).

The proposal is Integrated Development as defined in section 4.46 of the Environmental Planning and Assessment Act, 1979, because an approval is required in accordance with the Rural Fires Act, 1997.

The proposal includes the following specific works:

- Consolidation of existing 27 lots that currently make up the site identified as the former Riverlands Golf Course site, under Clause 6.11(1) of the Bankstown Local Environmental Plan 2015.

- Subdivision into 6 new lots, to reflect the proposed ongoing stages of development of parts of the Riverlands Golf Course site, as follows:
    - Proposed Lot 1 – Residential Subdivision and Development.
    - Proposed Lot 2 – Separate allotment to the west of Proposed Lot 1, intended to accommodate some stormwater drainage infrastructure associated with development on Proposed lot 1.
    - Proposed Lot 3 – separate lot to west of Proposed Lot 2, no intended development at this time.
    - Proposed Lot 4 – creation of a strip of land 20m wide along the Georges River foreshore.
    - It is proposed to dedicate lot 4 as a public reserve.
    - Proposed Lot 5 – separate lot to the north of the existing site, no indication of any intended future development at this time.
    - Proposed Lot 6 – construction of Keys Pde roadway in a modified alignment.
    - It is proposed to dedicate lot 6 as a public road.
- No physical works are proposed.
- The amended development application also includes the following series of existing and proposed easements, rights of way and covenants to facilitate the functionality of the proposed lots:
    - (C1) Easement For Drainage Of Water Variable Width;
    - (D1) Right Of Access Variable Width;
    - (E1) Restriction On The Use Of Land (Var. Width);
    - (F1) Positive Covenant (Var. Width);
    - (C2) Easement For Drainage Of Water Variable Width;
    - (D2) Right Of Access Variable Width;
    - (E2) Restriction On The Use Of Land (Var. Width);
    - (F2) Positive Covenant (Var. Width);
    - (C3) Easement For Drainage Of Water Variable Width;
    - (D3) Right Of Access Variable Width;
    - (E3) Restriction On The Use Of Land (Var. Width);

- (F3) Positive Covenant (Var. Width);
- (G) Easement For Drainage Of Water 5 Wide;
- (M) Easement For Drainage Of Water Variable Width;
- (N) Right Of Access Variable Width;
- (O1) Easement For Drainage Of Water 3.66 Wide;
- (O2) Easement For Drainage Of Water 6 Wide;
- (O3) Easement For Drainage Of Water Variable Width;
- (A) Drainage Easement 6.095 Wide (DP 7304);
- (A1) Easement For Drainage Of Water 5 Wide;
- (A2) Easement For Drainage Of Water 8 Wide;
- (A3) Easement For Drainage Of Water Variable Width;
- (B) Right Of Carriageway And Easement For Services Variable Width (DP 736006);
- (B2) Right Of Access 6 Wide And Variable;
- (C) Easement To Drain Water 5.0 Wide (DP 749985);
- (D) Easement To Drain Water 2.5 Wide (DP 639053);
- (E) Right Of Carriageway And Easement For Services 3.5 Wide And Variable (DP 749985);
- (F) Right Of Carriageway And Easement For Services 3.5 Wide (DP 6405l8);
- (I) Easement To Drain Water 2.5 Wide (DP 749985);
- (H) Easement To Drain Water 2.5 Wide (DP 749985);
- (J) Benefited By Easement For Drainage (A646541);
- (K) Benefited By Right Of Carriageway And Easement For Services (DP 736006);
- (L) Benefited By Right Of Carriageway And Easement For Services (DP 640518);
- (P1) Positive Covenant (66 Wide & Variable Width);
- (P2) Positive Covenant (30 Wide & Variable Width);
- (T) Railway Commission Easement 10.06 Wide (D933625);
- (U) Easement For Batter 16.5 Wide & Variable Width;
- (U1) Easement For Access, Maintenance And Support 10, 12 Wide & Variable Width;
- (V) Easement To Drain Water 2.5 Wide (S284191);
- (W) Right Of Carriageway And Easement For Services 20.115 Wide (DP 805826);

- (Y) Easement For Drainage 1.22 Wide (DP 2131642);
- (Z) Easement For Transmission Line Variable Width (F313950).

The proposal has been designed in accordance with the LEP 2015 and Council's policies and planning instruments and will make a positive contribution to the neighbourhood and broader locality.

The proposal also addresses the matters for consideration under Section 4.15 of the Environmental Planning and Assessment Act, 1979. It will deliver a suitable and appropriate development and is worthy of approval.

Amended Statement of Environmental Effects prepared by:

Name:	Andrew Darroch of Mersonn Pty Ltd
Qualification:	BA (Enviro. Sc.) Master City and Regional Planning Grad. Dip Urban Estate Management MPIA, MEPLA, MPCA
Address:	6/20 Wylde Street, Potts Point

In respect of the following Development Application:

Land to be developed:	56 Prescott Parade, Milperra
Proposed development:	Consolidation of 27 Lots and Re-subdivision into 6 Lots.

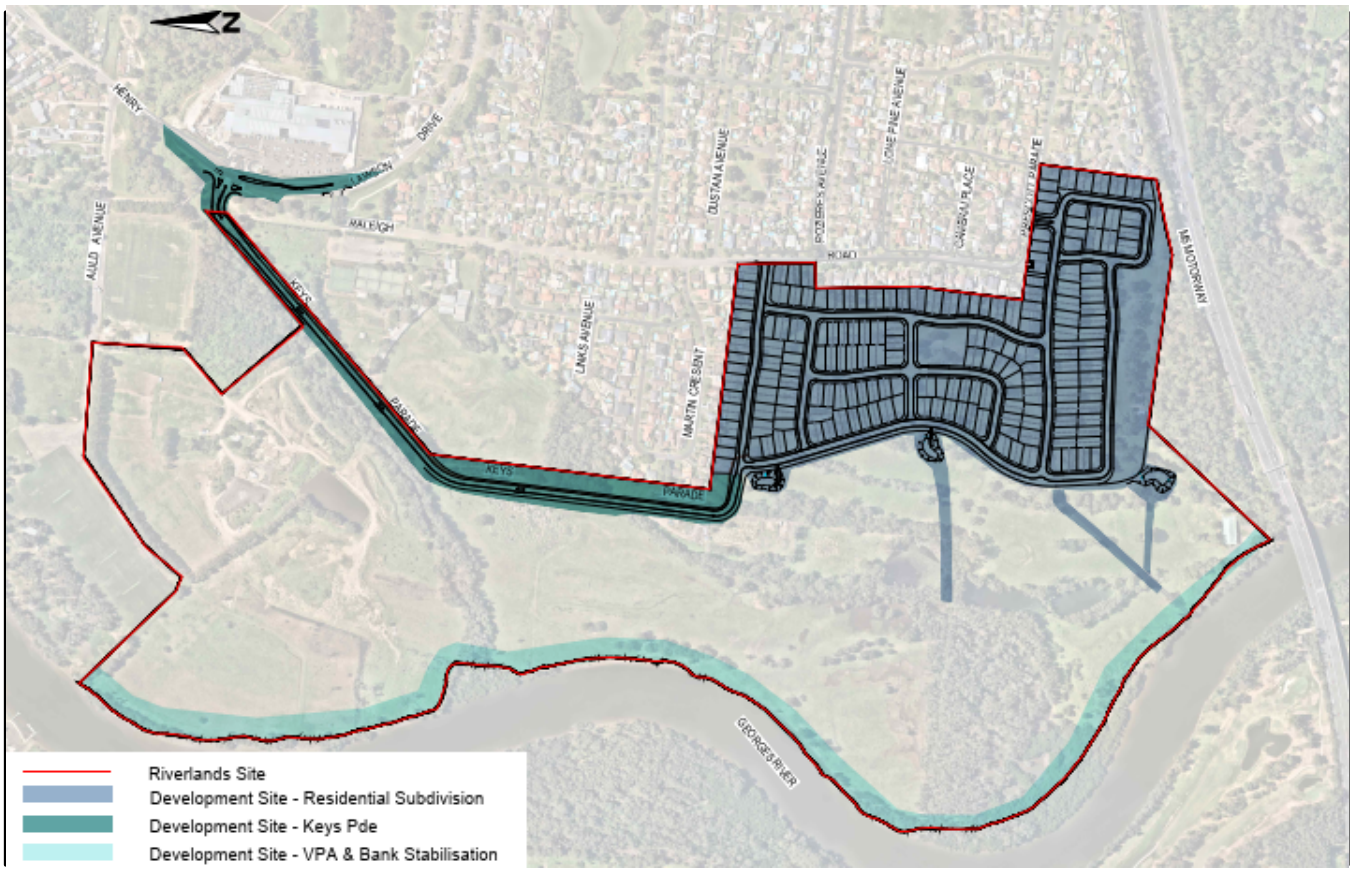
Declaration: I declare that I have prepared this Statement and to the best of my knowledge:

1. The Statement has been prepared in accordance with clause 4.12 of the EP & A Act and Clause 50 of the EP & A Regulations.
2. The Statement contains all available information that is relevant to the environmental assessment of the development to which this Statement relates, and
3. That the information contained in the Statement is neither false nor misleading.

Signature:

Name: Andrew Darroch

Date: March 2022



Contamination Assessment of Proposed Development Lands
Riverlands New Residential Project, Milperra NSW

21 MARCH 2022

Prepared for:

Mirvac Homes (NSW) Pty Ltd

Level 28, 200 George Street
Sydney NSW 2000

Project # SES_539

Prepared/Approved by:

Mr Adam Sullivan

Site Contamination Specialist
Certified Environmental Practitioner
Certification No. SC40944

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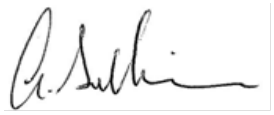

.....
Adam Sullivan
Principal Scientist
CEnvP-SC (#40944)

Date: **21 March 2022**
Reference: **SES_539**
Status: **Final.03**

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Executive Summary

Mirvac Homes (NSW) Pty Ltd (Mirvac) engaged Sullivan Environmental Sciences (Sullivan-ES) to conduct a Contamination Assessment of proposed development land known as the Riverlands New Residential Project in Milperra NSW; henceforth referred to as 'the site'. The site comprises the following three distinct areas:

1. Residential Estate - part Lot 10 in DP731859.
2. Keys Parade – part Lot 1 in DP813006, part Lot 232 in DP805826 and part Lot 1 in DP625013,
3. Foreshore - part Lot 10 in DP731859, part Lot 21 in DP749985, part Lot 1 in DP813007, and part Lots 23, 24, 25, 26, 27 in DP7304.

The site is located off Prescot Parade, Milperra NSW and was historically used predominately as part of Riverlands golf course and commercial landscaping supply activities.

The proposed development includes subdivision of land for residential lots and consolidation of other areas, as well as provision of parkland, associated bulk earthworks, road construction works, tree clearing, foreshore bank stabilisation, soil remediation works, construction and installation of stormwater, sewerage and other utility services.

The site is subject to a statutory site audit under the Contaminated Land Management Act 1997 (NSW). A NSW EPA accredited Site Auditor has been engaged to perform the audit work and thereafter issue a Site Audit Statement (SAS) concluding that the site is suitable for the proposed uses.

This report has been prepared for the purposes of clause 7 of State Environmental Planning Policy No 55—Remediation of Land (SEPP 55) and constitutes the findings of a detailed investigation of land and subsequent findings of additional investigations. The work has been carried out in accordance with SEPP55 Planning Guidelines. The objectives of the Contamination Assessment were to appraise the site's history, characterise the nature of contamination within the proposed development lands with up-to-date sampling results in addition to existing information, and thereafter assess the suitability of the proposed development lands under their proposed future uses as either low density residential, or recreational open space public land. Our objective was to also provide conclusions and recommendations to update existing remedial approaches for each of the three proposed development areas.

The scope of work included a review of background documents, a detailed inspection of development lands, sampling and analysis of soils for a suite of contaminants, and preparation of a contamination report in general accordance with State and Federal reporting guidelines.

In accordance with SEPP 55, the following issues were considered as part of this investigation of land:

- Whether the information about the site's history is adequate.
- Whether the information available conforms with the relevant EPA guidelines, including *Managing Land Contamination Planning Guidelines SEPP 55–Remediation of Land (SEPP 55 Planning Guidelines*).
- Whether contamination or a contaminating activity (previous or existing) is confirmed and whether the proponent conducted a detailed investigation to further define the extent and degree of contamination.
- Where the site history suggests that the site (or certain areas) is unlikely to be contaminated but there are gaps in the historical information relating to use of the site for a purpose described in

Table 1 of the SEPP 55 Planning Guidelines, whether other uses were permissible under the zoning during historical periods.
- Whether limited site sampling was needed to confirm the site is not contaminated and whether consultation with a site auditor is necessary.
- Whether this site poses a significant threat to human health or the environment.
- Whether a site audit of the detailed investigation was necessary.
- If there is sufficient information to satisfy the planning authority that the site is suitable for the proposed use, the planning process should proceed in the normal way.

The following conclusions and recommendations are made based on the analytical data and field observations resulting from this assessment and previous reports, subject to the limitations presented in Section 10.

Residential Estate

The Residential Estate site history was adequately described by Environmental Strategies Phase 1 (ES, 2014a). Detailed investigations conducted across the proposed Residential Estate has sufficiently characterised soil and groundwater to assess the land for low-density residential land use. We conclude that:

- Environmental Strategies Phase 2 (ES, 2014b) showed that soils at a localised area of the site at BH17 were impacted by oils (hydrocarbons) posing a potential health risk to future users of the site. It is recommended the localised soils at BH17 be removed, the aboveground storage tanks be decommissioned and removed and soils underneath this area validated. It is also recommended any identified fragments of potential asbestos containing materials (ACMs) should also be collected from the ground surface and removed.
- Site soils exhibiting discolouration, abnormal consistency (wastes, ash and slag fill) present an aesthetic issue requiring remediation and or management as part of the remediation of the Residential Estate site. Soils requiring remediation for aesthetic considerations include:
    - The soils under the golf greens in northeast corner of the site delineated by test pits TP10, TP11, TP12 and previous location BH5B (ES, 2014b) contain buried ash/slag wastes.
    - The soils under the golf greens in the south east corner of the site, delineated by test pits TP41, TP42, TP43 and TP44, contain buried ash/slag wastes.
    - Two additional areas contain minor amounts of ash/slag fill at TP14 (former chemical sheds) and TP49 (entrance road off Prescot Parade).
    - A small fill mound with mixed anthropogenic waste was located at TP27.
- Detections of pesticides in a localised area near the existing chemical store adjoining the Greenkeepers Shed have been observed. The RAP for the Residential Estate will describe the testing requirements and potential remediation and validation testing to cover off this item.
- Items raised by the Site Auditor in Interim Advice (dated 15 Sept 2019) requiring closeout will be presented in the updated Residential Estate RAP including:
    - "*Remove and remediate the septic tank system at the greenkeepers/maintenance shed"*.
- The proposed Residential Estate development land is suitable for future residential dwellings, subject to implementing the existing Residential Estate RAP (22 March 2022) to cover the following items:
    - Remediation of petroleum impacts in surface soils at BH17 (ES, 2014b).

- Decommissioning and removing the two ASTs and fuel bowser.
- Decommissioning and removing the sewerage tank system.
- Removal of all abandoned buried services.
- Management of ash/slag wastes buried under the two identified golf greens.
- Management of anthropogenic waste buried in a localised stockpile at TP27, and other smaller quantities of ash/slag buried at TP14 and TP49.
- Verification sampling for the presence of pesticides near the existing chemical store.
- Any other items raised in the Site Auditors Interim Advice (15 Sept 2019).

Keys Parade

The Keys Parade site history was adequately described by Environmental Strategies Phase 1 (ES, 2014a). Detailed investigations conducted across the proposed Keys Parade has sufficiently characterised soil and groundwater to assess the land for open space land use consistent with a public road corridor. We conclude that:

- Ash filling greater than 0.5m is present along the length of the embankment in the Keys Parade area delineated by B15A, B18A, B20A, B22A, B24A and B25A. The ash fill is present as thick, black and grey layers of cinders and some slags. The ash and slag pose an aesthetic risk requiring remediation to be suitable for the future open space landuse. These soils require removal offsite or amelioration to improve its appearance and geotechnical suitability if it is to be retained onsite and used in the subsurfaces.
- Non-bonded asbestos was reported within the ash fill associated with sample location B18A. The non-bonded asbestos containing ash fill requires remediation to remove the potential health risk to future occupants of the proposed development. The non-bonded asbestos impacts at B18A should be further assessed to define the vertical and lateral extent of the impacts prior to remediating these soils.
- Anthropogenic wastes, in the form of plastic, bricks, bitumen and timber, was observed within the Keys Parade embankment at locations KP01 and KP03. The presence of anthropogenic wastes at these locations pose an aesthetic issue requiring removal offsite.
- Keys Parade sampling locations KP05, KP06 and KP07 were positioned within an area of multiple small soil stockpiles. A large fragment of cement fibro sheeting containing bonded asbestos was identified at KP05. The stockpiles require characterisation for reuse onsite or for disposal offsite. The presence of bonded and or non-bonded asbestos in this area must be considered for all the mounds during remediation of Keys Parade development.
- The proposed Keys Parade development land is suitable as a future roadway and footpath construction (under an open space public land use), subject to implementing the existing Keys Parade RAP (23 March 2022) to cover the following items:
    - Remediation of asbestos contaminated ash/slag wastes buried at B18A (Sullivan-ES, 2018).
    - Management of ash/slag/anthropogenic waste filling used to construct the embankment at the south end of the proposed Keys Parade alignment.
    - Soil stockpiles present in the central portion of the proposed Keys Parade could contain fragments of bonded asbestos sheeting in addition to the fragment already identified. Management of the soil stockpiles is required during removal or reuse of these materials.

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Foreshore

The Foreshore site history was adequately described by Environmental Strategies Phase 1 (ES, 2014a). While past and present investigations of the Foreshore provide an adequate level of characterisation to assess contamination risks, there are human and ecological health risks related to wastes used as landfilling along the Foreshore. Due to the presence of the sensitive ecology (e.g. No-Go zones such as mangroves, protected trees, sensitive terrestrial and aquatic organisms, etc) in the Foreshore land, the recommended remediation should target only those accessible areas where there is potential health risk from chemical contamination and or aesthetic issues requiring remediation due to gross anthropogenic materials/wastes. The remediation strategy is to be considerate of removing contamination to the extent practicable while preserving the sensitive environment within the Foreshore. A number of options will be proposed to satisfy this goal.

Of specific concern are the landfill wastes present at FP10 (and proximal to that location) containing concentrations of PCB and non-bonded forms of asbestos. Other locations including FP05 and FP11 contain similar landfill wastes (and detectable residues of asbestos (FP05) and PCB (FP11)). These areas are considered areas of concern for human and ecological health based on the presence of these wastes alone.

Detectable residues of PCBs were also reported at FP13, FP14 and FP15 in Area 2 of the Foreshore which adds to the level of risk. While not considered particularly deep, the depth of wastes used as landfilling has not been determined, specifically at areas of high contamination risk at FP05, FP10 and FP11.

It should be noted that soil materials containing concentrations of PCBs at levels greater than 2mg/kg are subject to regulation under the Polychlorinated Biphenyl (PCB) Chemical Control Order 1997 (PCB CCO 1997). The PCB CCO 1997 sets out the requirements for:

- defining non-scheduled and scheduled PCB materials and wastes (Clauses 4.25 and 4.26);
- defining priority areas (Clause 4.23);
- conveying of PCB material and PCB waste (Clause 6.4); and
- disposing of PCB waste (Clause 6.5).

Based on the concentration of PCB at location FP10 and the expected very shallow depth to groundwater along the Foreshore zone leaching to the immediate underlying groundwater was considered a plausible risk. We conducted neutral leaching analysis at this location. Results showed the PCB at this location did not leach under a neutral deionised water solution (to emulate rainfall), being less than the laboratory detection (<1.0 µg/L). This indicates there is a low risk of PCBs migrating from the Foreshore waste into the underlying watertable and then discharging into the adjoing Georges River aquatic ecosystem.

We conclude that existing data demonstrates that remediation to clean up contamination on the Foreshore is necessary because the presence of landfilling wastes and associated contamination poses ahigh health risk in localised areas to human and ecological health, although additional work would be required to delineate the extent of remediation required.

- Based on existing information, the proposed Foreshore development land is suitable for future open space public land use, subject to implementing the existing Foreshore RAP (24 March 2022) to cover the following items:

Executive Summary

- To the extent practicable, delineate contaminated wastes in both Areas 1 and 2, as well as other accessible locations along the Foreshore, to ascertain the full extent of landfilling of wastes.
- In consideration of sensitive ecological receptors, and to the extent practicable so as not to cause irreversible damage to those receptors, remediate contaminated wastes used as landfilling in Area 1 and Area 2. These wastes contain concentrations of asbestos, heavy metals and PCBs at levels that pose a human and ecological health risk.
- Management of anthropogenic waste strewn across and protruding from ground surfaces to remove the aesthetic impacts to the Foreshore. In particular, wastes and general refuse that has washed up from Georges River accumulating within low lying swampy areas.

1

Introduction

Mirvac Homes (NSW) Pty Ltd (Mirvac) engaged Sullivan Environmental Sciences (Sullivan-ES) to conduct a Contamination Assessment of proposed development land known as the Riverlands New Residential Project in Milperra NSW; henceforth referred to as 'the site'. The site comprises the following three distinct areas:

1. Residential Estate - part Lot 10 in DP731859.
2. Keys Parade – part Lot 1 in DP813006, part Lot 232 in DP805826 and part Lot 1 in DP625013,
3. Foreshore - part Lot 10 in DP731859, part Lot 21 in DP749985, part Lot 1 in DP813007, and part Lots 23, 24, 25, 26, 27 in DP7304.

A site locality map and proposed development lands are shown on figures in **Appendix A**.

The site is located off Prescot Parade, Milperra NSW and was historically used predominately as part of Riverlands golf course and commercial landscaping supply activities.

The proposed development includes subdivision of land for residential lots and consolidation of other areas, as well as provision of parkland, associated bulk earthworks, road construction works, tree clearing, foreshore stabilisation, soil remediation works at specific locations within the Residential Estate, Keys Parade and Foreshore Area and installation of stormwater, sewerage and other utility services.

The site is subject to a statutory site audit under the Contaminated Land Management Act 1997 (NSW). A NSW EPA accredited Site Auditor has been engaged to perform the audit work and thereafter issue a Site Audit Statement (SAS) concluding that the site is suitable for the proposed uses.

1.1 Objectives

This Contamination Assessment is prepared for the purposes of clause 7 of SEPP 55 and constitutes the findings of a detailed investigation of land and subsequent findings of additional investigations. The work has been carried out in accordance with SEPP55 Planning Guidelines.

The objectives of the contamination assessment were to appraise the site's history, characterise the nature of contamination within the proposed development lands with up-to-date sampling results in addition to existing information (refer to section 2.3), and thereafter assess the suitability of the proposed development lands under their proposed future uses as either low density residential, or recreational open space public land.

Subject to the findings of this assessment, our objective was to also provide conclusions and recommendations to update existing remedial approaches (refer to section 2.4) for each of the three proposed development areas.

1.2 Scope of Work

The scope of work for the Contamination Assessment consisted of:

- Reviewing all previous documents and contamination reports relevant to the development lands.
- Preparing an WHS work plan for all field-based work to be performed at the site.
- Mobilise to the site and conduct clearance of underground utilities using Dial Before You Dig plans and a Telstra accredited pipe locating subcontractor, to clear and confirm soil sampling locations.

- Using a backhoe machine, collect soil samples at nominated locations within the proposed development land areas on a systematic sampling pattern, primarily targeting filling materials.
- Dispatch collected samples for chemical analysis by a NATA accredited laboratory on a range of chemicals of potential concern.
- Preparing a Contamination Assessment report in consideration of contaminated land guidelines made or approved by NSW EPA under the Contaminated Land Management Act (NSW), the NSW EPA Site Auditor engaged for the project, Interim Advice (dated 15 Sept 2019) and SEPP55.

1.3 Regulatory Framework

The Contamination Assessment was conducted in consideration of the following regulatory framework and guideline documents:

- Contaminated Land Management Act 1997 (CLM Act).
- State Environmental Planning Policy No.55 – Remediation of Land 1998 (SEPP55).
- Managing Land Contamination Planning Guidelines SEPP 55–Remediation of Land.
- National Environment Protection (Assessment of Site Contamination) Measure 2013 (ASC NEPM 2013).
- Contaminated Land Guidelines: Consultants Reporting on Contaminated Land, 2020 (NSW EPA 2020)
- Sampling Design Guidelines, 1995 (NSW EPA 1995).
- Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017 (NSW EPA 2017).

1.4 Consultant's Competency and Certification

All contamination assessment work and reporting was conducted by the professionally trained team at Sullivan-ES.

Our Principal Scientist (Adam Sullivan) is a qualified professional with over 20 years' experience in contaminated land assessment and remediation. Adam has achieved tertiary qualifications in Soil Science and Environmental Law. He is also a certified Site Contamination Specialist (CenvP-SC) (Certification # SC40944) under the EIANZ Certified Environmental Practitioner Scheme (www.cenvp.org). Adam Sullivan has reviewed and approved this report in the capacity as a CenvP-SC.

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2

Site Information

2.1 Site Identification

The following identifies the proposed development areas in the Local Government Area of the City of Canterbury Bankstown Council:

- Residential Estate – part Lot 10 in DP731859 and zoned R2 Low Density Residential (Bankstown Local Environmental Plan 2015).
- Keys Parade – part Lot 1 in DP813006, part Lot 232 in DP805826 and part Lot 1 in DP625013, and zoned RE2 Private Recreation (Bankstown Local Environmental Plan 2015).
- Foreshore – part Lot 10 in DP731859, part Lot 21 in DP749985, part Lot 1 in DP813007, and part Lots 23, 24, 25, 26, 27 in DP7304, and zoned RE1 Public Recreation (Bankstown Local Environmental Plan 2015).

2.2 Site Features and Environmental Setting

The current layout of each proposed development area is shown on the figures presented in **Appendix A**.

Residential Estate

- The Residential Estate is located within the grounds of the former golf course including, greens, tees, fairways and sand bunkers and generally open space turfed land. The former Clubhouse is located approximately 200m offsite to the southwest.
- Entry is gained through the main gates off Prescot Parade in the eastern corner of the site. An internal access road consisting a two-coat bitumen sealed surface runs from the main gate down the eastern boundary, along the southern boundary bordering the M5 Motorway, past two sheds then south to the old Clubhouse (offsite).
- Two sheds are present, identified as the greenkeepers/maintenance sheds, that are constructed predominately of sheet metal and a concrete slab floor.
- An underground septic tank exists adjoining the southern side of the sheds.
- Two ASTs and dispenser bowser are present. The ASTs have a combined capacity of approximately 1,000L and are bunded.
- A small shed off the larger maintenance shed is a chemical store, with chemical residues on a table and the floor.
- A small area of concrete slab foundations and brickwork was identified in the area suspected to be the former greenkeepers/maintenance shed.

Keys Parade

- Keys Parade is accessed off Martin Crescent and is a former landscape supplier operation, now used as a central base for the farming tenant for cattle agistment across the Riverlands site.
- A single-storey house occupies the area along with a few sheds and farming equipment.
- A sealed driveway runs from the entry gates off Martin Crescent round the house then down to the lower lying grasslands.
- An open area is used to store equipment of various nature such as scaffolding, mechanical parts, metal fencing and sheets, old cars, gates, trailers, and other equipment for farming or construction work.

- The area is relatively flat. The western edge of the area is characterised by a 3-4m embankment down to a drainage gully then flat open grasslands used for cattle grazing.
- A chain wire fence runs along the top of the embankment.
- The northern end of the access driveway slopes down to the north then links up with the low-lying grasslands area. Keys Parade road alignment follows the existing bitumen sealed internal access road heading north adjoining the neighbouring golf range complex. The road bends off to the east in a straight line out towards the proposed new intersection with Henry Lawson Drive.

Foreshore

- The foreshore runs the entire length of Georges River, limited at the northern and southern extents by the existing property boundaries. For the purposes of the proposed development and subdivision, the Foreshore is defined as 20 lineal metres inland from the western cadastral boundary of the following Deposited Plans part Lot 10 in DP731859, part Lot 21 in DP749985, part Lot 1 in DP813007, and part Lots 23, 24, 25, 26, 27 in DP7304..
- Area 1 and Area 2 (Figure 7) identify the two separate areas subject to sampling under this Assessment.
- Area 1 at the southern end of the Foreshore consisted of various mounds and irregular surfaces indicating stockpiling and landfilling. These materials were observed extending up to the north of Area 1 into the heavily vegetated and mangrove areas.
- Area 2 is characterised by a stretch of land cleared of trees and scrub vegetation with a grass covering. Clearing in the northern half of Area 2 is set back from the Foreshore embankment by a stand of trees. D.K. May 2016 reported that at inspection pit D16 proximal to the foreshore area *"…natural subsurface soils were overlain by building demolition rubble, in which AC[1] chips were evident."*

2.2.1 Surrounding Land

The lands surrounding the proposed development areas is represented by the overall property boundaries as shown on Figure 1 (**Appendix A**) and subsequent figures specific for the three development areas. In general, land uses surrounding the development include:

- **North** –Commercially run facility for materials management/stockpiling (this is a separate north portion of the Riverlands property), open space parks/recreational areas, and residential properties of Milperra.
- **East** – Predominately residential properties of Milperra off the Residential Estate and Keys Parade, while east of the Foreshore is the remaining parts of the former Riverlands golf course and the commercial facility (same as north surrounding land).
- **South** – South Western Motorway (M5) as well as residual englobo land/bush reserve.
- **West** – Off the Residential Estate and Keys Parade are the remaining parts of the former Riverlands golf course and the commercial facility (same as north surrounding land), while west of the Foreshore is Georges River

2.2.2 Topography

The Residential Estate is relatively flat across the southern portion with a gentle fall to the west. The northern and central portions fall moderately to the west and south west. Several ephemeral creeks and

[1] AC – asbestos cement.

drainage channels are present on the site, all surface water appears to drain in a westerly direction, discharging into storage dams to the west of this area then on to Georges River.

Keys Parade is relatively flat across the southern and northern sections. A steep embankment slopes down to the adjoining pasture lands/flood plains to the west.

The Foreshore is a narrow strip of land that adjoins Georges River. It is expected that the Foreshore land becomes inundated and submerged by tidal changes at various times throughout the year.

2.2.3 Geology

In accordance with NSW Govt eSPADE[2] (Planning, Industry and Environment), the western portion of the Residential Estate, Keys Parade and the Foreshore overlie a Richmond soil landscape characterised by relatively flat, Quaternary terraces of Nepean and Georges River. Soils are typically poorly structured orange to red clay loams, clay and sands. Texture may increase with depth. Ironstone nodules may be present.

The eastern portion of the Residential Estate overlies a Blacktown soil landscape characterised by gently undulating rises on Wianamatta Group shales. Soils are typically shallow to moderately deep, hard setting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and drainage lines.

2.2.4 Groundwater

In accordance with NSW Govt eSPADE, the development lands are situated within Parramatta/Georges River and the Moorebank Hydrological Landscapes and are characterised by the following traits:

Parramatta/Georges River Hydrological Landscapes

The Parramatta/Georges River Hydrogeological Landscape is characterised by the low-lying Quaternary and Tertiary Alluvial floodplains of the Parramatta and Georges Rivers and features flat extensive floodplains and alluvial plains with some ponding. Groundwater flow is unconfined through unconsolidated alluvial sediments. Localised perching of water tables occur above clay lenses during wetter periods. Hydraulic conductivity and transmissivity are moderate to high.

- Aquifer Type: Unconfined in unconsolidated alluvial sediments. Vertical and lateral flow components. Local perching above clay-rich layers (seasonal).
- Depth to Watertable: Shallow to intermediate (seasonal), (range: 0–8m).
- Hydraulic Conductivity: Moderate to high (range: 10^{-2} – 10 m/day).
- Salinity: Brackish to saline (range: 1.6 - >4.8 dS/m).

Moorebank Hydrological Landscapes

The Moorebank Hydrogeological Landscape is characteristic of areas of Neogene (Pliocene) alluvial deposits contained within the floodplain of the Georges River. Groundwater flow in this HGL is unconfined through unconsolidated alluvial sediments. Localised perching of water tables occur above clay lenses during wetter periods. Unconfined to semi-confined flow also occurs along structures (bedding, joints, faults) in the fractured bedrock. Hydraulic conductivity is moderate to high and transmissivity is moderate.

[2] https://www.environment.nsw.gov.au/eSpade2WebApp#

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- Aquifer Type: Unconfined in unconsolidated alluvial sediments. Unconfined to semi-confined in fractured rock along structures. Local perching above clay-rich layers (seasonal).
- Depth to Watertable: Shallow to intermediate (range: 0–8 m).
- Hydraulic Conductivity: Moderate to high (range: 10-30 m/day).
- Salinity: Fresh to marginal (range: <0.8-1.6 dS/m).

The local groundwater conditions across the proposed development lands has been assessed as part of Environmental Strategies investigation (ES 2014b) and Sullivan-ES investigations between 2016 and 2020.

Environmental Strategies (ES 2014b) observed groundwater standing water level in the proposed residential area between 1.21m AHD (MW7) and 3.65m AHD (MW3). ES noted during groundwater well installation, groundwater strikes were generally encountered in red and grey mottled plastic clays on the western and northern portion of the proposed residential development (MW2, MW3, MW6, and MW7). The groundwater water strike on the eastern and southern portion of the proposed residential development was observed to generally be in weathered shale (MW1 and MW4).

Environmental Strategies laboratory testing within the Residential Estate only recorded heavy metal impacts above the adopted marine water criteria as follows:

- Cadmium at MW1, and MW4
- Copper at MW2, and MW4
- Nickel at MW1, and MW4
- Zinc at MW1, MW2 and MW4

Environmental Strategies considered the identified groundwater exceedances for metals to be consistent with urban background conditions.

Sullivan-ES's Phase 2 investigation in 2016 (Revised to 2019) installed a groundwater well in the southern most point of the Foreshore Area (GW1) and one also in the southern portion of Keys Parade Area (GW4). Foreshore Area groundwater was observed at 1.93 m below ground surface and was found to have copper, nickel and zinc impacts corroborating ES 2014b results. Keys Parade groundwater was observed at 4.19 m below ground surface and was found to have only zinc impacts. Sullivan-ES considered

- The elevated levels of copper, zinc and nickel metals are common in galvanised and metallic structures in urbanised areas.
- The fill/soil materials show very low concentrations of these metals, therefore the fill/soils are not posing a contamination source.
- The likely sources could be natural occurrences, or the endemic sources in urbanised areas.

The Data Gap Investigation by Sullivan-ES (May 2020) resampled the groundwater wells installed by Environmental Strategies. Heavy metal impacts, particularly nickel and zinc, were observed in MW1, MW3A and MW4A at similar concentrations to those recorded by Environmental Strategies (ES 2014b). Further, the resulted show nickel and zinc impacts reduce by an order of magnitude between MW1 and MW4A, a distance of approximately 200m. Sullivan-ES considered, the same level of attenuation could occur between MW4A and the Georges River which may reduce the metal concentration to a level that poses limited risk to the receiving water.

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2.3 Previous Findings Relevant to Proposed Development

2.3.1 Phase 1 – Entire Riverlands Property

Environmental Strategies (ES) conducted a Phase I (ES 2014a) of the former Riverlands Golf Course and surrounding rural and open space land. ES's investigation area is presented in **Appendix D**. The primary objective of ES's investigation was to identify potential issues, concerns, environmental risks and liabilities associated with the present and historical uses of the subject site, with particular focus on potential for soil and groundwater. The report was to supplement previous work to meet Bankstown City Council requirements.

Environmental Strategies made the following conclusions:

- *"The earliest use of the subject site appears to have been as a golf course (southern portion) and agriculture/grazing lands (northern portion). The golf course portion of the subject site appears largely unchanged since prior to 1951 and makes up the bulk of the subject site area.*
- *Commercial activities have occurred on the north portion of the site. These activities have included sand mining/refinery and landscape supplies.*
- *Land to the east (upgradient) of the subject site was subjected to extensive redevelopment to residential land from the 1970s.*
- *The landscape of the golf course was re-contoured with filled during construction of the fairways and greens. The source and quality of landscaping material was unknown.*
- *From the age of the buildings and construction products and practices of the time, the presence of asbestos containing materials and leaded paint cannot be discounted. Soil validation should occur when the buildings are demolished.*
- *Validation of soils /and or groundwater should also occur when the fuel storage, greenkeepers areas and the landscape supply areas are to be demolished in support of future development consent.*
- *Observed areas of soil overburden stockpiling containing very minor ACM building rubble have been identified on the northern and western portions of the site.*
- *Anecdotal evidence suggested that a portion of the subject site is currently leased for grazing land for sheep and cattle. It is understood that sheep protection from parasites was completed in the former Landscaping Supply Company Area (APEC2). ES has been informed that this was achieved by direct manual-mouth injection. No observations of a sheep dip or spray booth was noted during the site walkover."*

ES recommended a Phase II ESA is completed into the future low density residential subject site to determine its suitability for the proposed development. The Phase II ESA should include:

- *"Assessment of soil acidification of the pond requested by Council;*
- *An intrusive Phase II assessment of the proposed residential site;*
- *Removal of the identified above ground storage tanks (ASTs) and validation of underlying soils when required or scheduled; and*
- *A HAZMAT analysis of all building structures to support demolition activities when required or scheduled and validation of soils in those areas."*

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2.3.2 Phase 2 – Residential Estate.

Environmental Strategies Pty Ltd (ES) completed a Phase II (ES 2014b) of a proposed residential development on the former Riverlands Golf Course. Relevant sampling locations to the Residential Estate area collected by ES are BH1 to BH28, and MW1 to MW7 and presented in Historical Figures (**Appendix D**)

In consultation with Bankstown City Council (now City of Canterbury Bankstown Council) the primary objective of this investigation was to identify issues, concerns, environmental risks and liabilities associated with the present and historical uses of the proposed residential development, with particular focus on potential for soil and groundwater contamination.

Environmental Strategies made the following conclusions:

- *"A number of areas of potential environmental concern (APEC) were identified on the subject site during the ES (June, 2014) Phase I investigation, including fuel and chemical storage, hazardous materials, uncontrolled fill materials and stockpiles.*
- *This Phase II ESA was limited to the proposed residential development area only. Therefore only one (1) of the APEC was assessed.*
- *This Phase II ESA identified one (1) location of hydrocarbon impact in soil (likely to be less than three cubic metres of impact) and minor heavy metal impact in groundwater.*
- *Based on the reported chemical analysis of the soils, the proposed residential development may be made suitable, pending the recommendations in this report are completed.*
- *The low variability in soil contaminant conditions and limited contamination potential within the Phase II assessment area gives ES confidence that the sampling density is acceptable."*

Environmental Strategies recommended the following further works are completed on the proposed residential development to ensure it is suitable for development.

- *"Removal and validation of the identified soil where SAC was exceeded; and*
- *Removal of the identified above ground storage tanks (ASTs) and validation of underlying soils."*

2.3.3 Phase 2 – Remainder of Riverlands Property

Sullivan-ES conducted a Phase 2 contamination investigation (2016 – Revised to 2019) at the property known as the Riverlands Stage 2 Project located on Prescot Parade, Milperra NSW. Sullivan-ES's investigation area and sampling locations area are presented in **Appendix D**. Relevant sampling locations collected by Sullivan-ES in the Foreshore Area are B1C, B2C, B4C, B6C, and D16 (Geotech bore only), and in the Keys Parade Area are B14A, B15A, B16A, B17A, B18A, B9B, and B10B, refer to Figures 5 and 7 (**Appendix A**)

The objective of the Phase 2 investigation was to assess the soils and groundwater for contamination risks to a residential use standard, such that maximum reuse potential of soils on the site could be realised in the Riverlands Stage 2 works.

The scope of work consisted of review and summarising previous investigation reports, conducting a detailed site inspection followed by a program of soil and groundwater sampling comprising:

- 56 test pit and soil bores.
- 17 test pits within onsite stockpile mounds.
- 8 temporary groundwater monitoring wells targeting the shallow groundwater table.
- 6 sediment samples from the onsite dams.

- Inspection of the surface materials within an area of bare soil in Area D (northern portion of the site).
- Chemical analysis of soil and groundwater samples for a suite of chemicals commensurate with potential contamination from current and historical activities.

Sullivan-ES concluded based on the findings of this Phase 2 contamination investigation and previous investigations, the site soils are of relatively good quality and generally meet the assessment land use criteria for a residential use. This statement was made with the following considerations:

Relevant to the Keys Parade Area

- *"Ash and slag gravels were observed at sampling locations B15A, B17A and B18A* (relevant to Keys Parade) *at the north end of Area A. This location is expected to be a significantly filled area of up to 4m thick forming an embankment down to the low-lying Area B. These ash materials are generally of poor quality, potentially extensive and deep, and considering the presence of asbestos, amongst other potential contaminants, the ash would pose a health risk requiring remediation or management to control risks. The ashy impacted area would require delineation to understand the extent of the asbestos impacts and ash material.*
- *Stockpile mounds at the north end of Area B* (relevant to Keys Parade) *could be considered for reuse with caution given the identified lead (Pb) impacts in one area and general presence of extraneous materials. These materials should be subject to screening, then sampling and analysis to verify the quality of the soil for reuse potential.*
- *Natural soil materials in low lying areas of Area B* (relevant to Keys Parade)*, Area C, Area D and the onsite dam sediments have been confirmed as ASS or PASS. These materials can be made suitable for reuse, subject to neutralisation treatment and validation.*
- *The water table in Area A* (relevant to south end of Keys Parade) *is relatively deep at approximately 4-5m below existing ground levels, compared to levels in Area B* (relevant to middle and north portions of Keys Parade) *and Area C which are predominately within 2m of the ground surface.*
- *Detectable contaminants in the groundwater at various locations are very low in concentration and considered to be naturally occurring, endemic urban sources or anomalies and not significant to warrant further assessment. The site groundwater would pose no unacceptable risk to human or ecological health."*

Relevant to the Foreshore Area

- *"The natural soils in Area B* (relevant to Foreshore) *and Area C* (relevant to Foreshore) *generally possess limited contamination risk and limited impediment for potential reuse, subject to consideration and treatment of the PASS/ASS.*
- *Natural soil materials in low lying areas of Area B* (relevant to Foreshore)*, Area C* (relevant to Foreshore)*, Area D* (relevant to Foreshore) *and the onsite dam sediments have been confirmed as ASS or PASS. These materials can be made suitable for reuse, subject to neutralisation treatment and validation.*
- *Stockpiles within Area C* (relevant to Foreshore) *should be subject to rigorous, screening and sampling to address the presence of asbestos in fibro cement sheets throughout the stockpiles prior to any consideration for reuse."*
- *Detectable contaminants in the groundwater at various locations are very low in concentration and considered to be naturally occurring, endemic urban sources or anomalies and not significant to*

warrant further assessment. The site groundwater would pose no unacceptable risk to human or ecological health."

2.3.4 Delineation Investigation – Ash-filled Embankment

Sullivan-ES was engaged to delineate an area of concern within the proposed Riverlands Development Project. Sullivan-ES's investigation area and sampling locations area are presented in **Appendix D**. Relevant sampling locations collected by Sullivan-ES in the Keys Parade Area are B19A to B32A, refer to Figure 5 (**Appendix A**).

The delineated area is situated in Keys Parade and comprised an ash-filled embankment previously identified in the Phase 2 Investigation (Revision A – 2019). The delineated embankment contained thick layers of ash fill material up to 4.0m thick in some areas. Asbestos was also identified within the ash fill at one previous sampling location.

The objective was to address recommendations presented in the Phase 2 (Revision A – 2019) by delineating the extent of ash fill and identified asbestos within the area of concern such that contamination risks can be assessed with respect to proposed future development at the Riverlands site.

The scope of work included drilling and sampling of twelve (12) soil bores and two (2) hand augers at locations supplementary to the previous investigation (Revision A – 2019), dispatching collected samples of soil to a NATA accredited laboratory for chemical analysis for a suite of contaminants and preparing a contamination report in accordance with state and national environmental guidelines and standards.

Sullivan-ES made the following conclusions and recommendations:

- *"The findings of this investigation have delineated the ash filled embankment and the presence of asbestos materials. Ash filling is present along the length of the embankment in the area of concern. Significant ash fill, identified as thicknesses greater than 0.5m, is present in the central portion of the embankment as identified at sample locations B15A, B18A, B20A, B22A, B24A and B25A.*
- *Ash fill appears to be chemically inert* (confirmed to be inert in Sullivan, Dec 2019) *and therefore based on chemical results alone would pose limited risk to human or ecological receptors. However, ash is present as thick, black and grey layers of cinders and some slags and would therefore pose an aesthetic issue to the proposed development requiring removal offsite or amelioration to improve its appearance if it is to be retained onsite.*
- *The ash fill should be geotechnically assessed to ensure it is suitable as foundation ground for the proposed development or if amendments are needed to improve its suitability in that regard.*
- *Asbestos fibres were detected in ash fill at sample location B18A in the previous investigation (May 2016); however, no asbestos was observed or detected in this investigation. Asbestos materials are therefore likely to be a localised impact around B18A.*
- *The identified asbestos in May 2016 was reported by the laboratory to be in a friable form, as such, any disturbance of this area requires appropriate measures to follow Health and Safety regulations to prevent generation of airborne asbestos fibres.*
- *Ash fill should be remediated to remove the potential health risk to future occupants of the proposed development or ameliorated to improve its appearance as it is an aesthetic issue to the development in its current state.*

- *Asbestos impacts at sample location B18A should be further assessed to define the extent of asbestos proximal to this sample location prior to remediating the area.*
- *A Remedial Action Plan (RAP) should be prepared to document the measures required to remediate asbestos impacted fill and ameliorate ash fill as recommended above."*

2.3.5 Data Gap Investigation

Mirvac engaged Sullivan-ES to conduct a Data Gap Investigation (DGI) of land contamination risks for the Riverlands Residential Development Project. Sullivan-ES's investigation area and sampling locations area are presented in **Appendix D**. Relevant sampling locations collected by Sullivan-ES in Residential Estate Area are TP1 to TP87, refer to Figure 3 (**Appendix A**).

The objectives of the DGI were to investigate for the presence of soil and/or groundwater contamination on the site to address data gaps and additional work identified by the Site Auditor. The scope of work included detailed inspections, replacing groundwater wells, sampling and analysis of soils and groundwater for a suite of contaminants, and preparation of the DGI report to assess potential health risks for the sites suitability for proposed residential use, providing recommendations for additional investigations or remediation, if required.

Sullivan-ES made the following conclusions based on the analytical data and field observations resulting from this investigation:

- *"Soils in the vicinity of the northeast corner contain buried ash/slag fill. This area was delineated by testpits TP10, TP11, TP12 and previous location BH5B (ES, 2014b).*
- *Soils in the vicinity of the southeast corner similarly contain buried ash/slag fill. This area was delineated by testpits TP41, TP42, TP43 and TP44.*
- *Two additional areas contain minor amounts of ash/slag fill at TP14 and TP49, while a small fill mound with mixed anthropogenic waste was located at TP27.*
- *Ash/slag waste and identified fill do not contain chemicals in concentrations exceeding the adopted soil criteria, and therefore are relatively inert. However, soils which exhibit discolouration, abnormal consistency (wastes, ash and slag fill) present an aesthetic issue and will require remediation and or management as part of the remediation of the site.*
- *Consideration should be given to excavated ash/slag material for reuse onsite in subterranean drainage layers (or similar) subject to blending with other suitable material types and geotechnical assessment by a competent geotechnical consultant.*
- *Sullivan-ES do not consider run-on water originating from the M5 Motorway is contributing to the heavy metal impacts observed in groundwater within the southern portion of the site (MW1 and MW4A).*
- *Fill materials proximal to MW1 and MW4A are not the source of heavy metal (predominately nickel and zinc) impacts in groundwater at those locations.*
- *No asbestos containing materials (ACM) were identified at any location assessed under this DGI and therefore asbestos is not considered a contaminant of potential concern for the site. As a contingency measure however, an unexpected finds protocol, including asbestos, should be prepared for the remediation of the site.*
- *Chlordane was detected above the HIL A criterion in the surface soils associated with the former greenskeeper shed (TP17_0.1-0.2). The concentration is less than the hotspot criterion, however it should be further investigated at this location to determine the potential extent of contamination.*

- *Low level concentrations of other recalcitrant pesticides were detected around the existing chemical store (TP5, TP6 and TP7) and on some golf greens, albeit well below the adopted soil criteria.*
- *Detections of pesticides near the existing chemical store warrant additional assessment given the potential for this area to be a source of pesticide concentrate.*
- *No soil results above the adopted residential criteria were reported in any other areas investigated within the site.*
- *Animal burial pits and ACM containing services were not observed onsite as part of the DGI.*
- *The HazMat Survey identified two items requiring management:*
    - *One ACM sheet leaning against the internal wall of the large maintenance shed; and*
    - *Lead-based paint on the fuel bowser pump outside the large maintenance shed.*

Sullivan-ES made the following recommendations to close out additional data gaps relating to pesticide contamination in localised soils and to include additional items in remediation activities:

- *Delineate the extent of the chlordane impacts identified at TP17 and any other recalcitrant pesticides for the purposes of assessing human health risks and prior to remediation planning.*
- *Conduct targeted sampling of soil in and around the existing chemical store to characterise soils for the presence of pesticides and any potential contamination.*
- *Areas of ash/slag wastes and other areas of identified anthropogenic waste should be added to the items requiring remediation. A second addendum to the RAP (2016) should be prepared to document additional items required to be remediated.*
- *Prior to demolition, all hazardous building materials should be removed from all structures in accordance with WH&S regulations."*

2.3.6 Earlier Contamination Investigations

Two earlier investigations were conducted at the site by Environmental Investigations Australia (EIA) Pty Ltd (EIA, 2006 and 2008). Subsequent work, as summarised in the preceding sections, conducted by Environmental Strategies and Sullivan-ES supersedes and updates the earlier EIA reports rendering their conclusions redundant, therefore we have not summarised the findings of those reports. In addition, the previous sampling locations conducted by EIA were not geo-referenced therefore sampling locations could not be relocated regardless of the sampling results.

2.4 Previous Remedial Action Plans

2.4.1 RAP - Greenkeepers Sheds - Residential Estate

Sullivan-ES was engaged to prepare a Remedial Action Plan (RAP) (Revision A – 1 Feb 2020) for soil remediation work for localised remediation zones near the former Greenkeepers Sheds located at the southern end of the Residential Estate. Previous investigations showed:

- Localised soils around BH17 were impacted by oils (hydrocarbons) that pose a potential health risk to future users of the site. The previous assessment (ES 2014b) recommended that the localised soils at BH17 be removed.
- The aboveground storage tanks be removed and soils underneath this area validated.
- Any identified fragments of potential asbestos containing materials (ACMs) should also be collected from the ground surface and removed.

As a result of above, the site soils proximal to the Greenkeepers Sheds required remediation to make the area suitable for residential land use.

The preferred remedial approach is to excavate and dispose of the contaminated soil offsite at an EPA licensed facility, as well as any identified fragments of ACMs. The ASTs are to be decommissioned and also removed from the site.

2.4.2 Addendum RAP - Residential Estate

Sullivan-ES was engaged to prepare an Addendum Remedial Action Plan (RAP) (Revision A – 31 January) for soil remediation work documented in the original RAP (refer to section 2.4.1 above).

The NSW EPA accredited Site Auditor issued an interim advice report (IAR, 15 Sept 2019) to provide a review of previous reports prepared for the site so that an addendum to the previous RAP could be prepared allowing an unconditional Section B site audit statement (SAS) to be issued. The Site Auditor recommended that additional investigation and remediation work is to be included in the Addendum RAP before the Section B SAS could be issued. The Addendum RAP was prepared to satisfy Site Auditor requirements.

The IAR listed the work that should be conducted to include:

- *"The remediation of additional aesthetically impacted or contaminated soil identified by the additional investigation (listed above) including black furnace/coal slag layer identified at BH5B, and aesthetically impacted or contaminated soils in/around the greenkeepers/maintenance shed area.*
- *The removal of all abandoned buried services from the Stage 1 area.*
- *The removal and remediation of the septic tank at the greenkeepers / maintenance shed.*
- *Consideration of remediation criteria for asbestos contamination in soils and any risk caused by legacy residual asbestos in soil.*
- *Establish a material tracking system for removal of wastes offsite (or otherwise) sufficient for Site Auditor approval and confirmation.*
- *Preparation of a Validation Report in accordance with NSW EPA guidance and documented at the completion of remediation end points.*
- *Contingency measures documented in the RAP (Sullivan-ES, Nov 2016) should be extended to include any new contamination or Unexpected Finds discovered during subsequent bulk earthworks within the Stage 1 Area. The term 'Unexpected Finds' is to be defined as 'contamination whose presence at a site is unlikely and cannot reasonably be found by investigations undertaken in accordance with regulatory requirements'."*

2.4.3 RAP - Ash-Filled Embankment

Sullivan-ES was engaged to prepare a Remedial Action Plan (Revision A – 1 Feb 2020) for remediation of ash and asbestos contaminated fill material located in an embankment at the proposed Riverlands Development Project.

Previous assessments identified a filled embankment within a small portion of the proposed development site that was impacted with ash and slag fill materials by historical activities; as well as an asbestos hotspot, that poses a potential health risk to future occupants of the development site warranting remediation.

The preferred remedial options were:

- Asbestos contaminated fill: excavation of contaminated soils and disposal offsite to a licenced landfill.
- Ash containing fill: excavate, blend and re-use onsite as blended backfill at depth where possible.

2.4.4 RAP – Foreshore Restoration Works

Sullivan-ES was engaged by Mirvac to prepare a Remedial Action Plan (Dec 2019) for remediation of stockpiled soils and anthropogenic wastes located along the Georges River Foreshore land.

Specific to the Foreshore land, previous assessments identified stockpiled fill and soil materials and other anthropogenic wastes at specified locations on the Foreshore land. These areas of the Foreshore require remediation to make the Foreshore land suitable for dedication to Council for future open space recreational use.

The proposed remedial methods for the Foreshore consist of:

- Characterisation and waste classification sampling, followed by either:
    - transporting offsite as waste for disposal or, if suitable
    - relocating to other parts of the Riverlands site for reuse as a soil resource.

2.5 Integrity Evaluation of Previous Reports

Information was collected from a number of sources to evaluate the risk of land contamination to the proposed development. Historical reports reviewed are considered accurate at the time they were issued. Government information sources are considered accurate and without bias. Sullivan-ES therefore consider the background information to be of an acceptable standard for evaluating contamination risk in accordance with the requirements under SEPP 55 and the SEPP 55 Guidelines.

3

Methodology

3.1 Data Quality Objectives

Step 1 - State the Problem

The problems under investigation were:

- Unknown extent of pesticide (chlordane) impacted surface soils at the former greenskeeper/maintenance shed;
- Unknown presence of soil contamination along the Keys Parade road alignment; and
- Unknown presence of soil contamination and extent of wastes along the Foreshore.

Step 2 – Identify the Decision

The principal study questions that arise from Step 1 were:

- Has the presence and extent of contamination in the various environmental media been defined onsite?
- Are or will human and environmental receptors be exposed to contamination and is the risk posed by contamination unacceptable requiring intervention?
- Is the site suitable, in the context of land contamination, for the proposed residential land use scenario?

Step 3 – Identify the Inputs to the Decision

The primary inputs required to make a decision relevant to Step 2 were:

- Relevant background data and any relevant data obtained from previous investigations.
- New data collected and observations made during field works.
- Results of chemical analyses of samples collected.
- Statistical data of new and existing data sets.
- Assessment of the suitability of new data for the purposes of environmental assessment through application of data quality indicators (DQIs).
- Assessment of the data in the context of the adopted investigation criteria.
- Characterisation of risk to human and ecological receptors.

Step 4 – Define the Study Boundaries

Spatial boundaries were limited to:

- Lateral – Defined by the proposed development boundary of the three development areas, namely the Residential Estate, Keys Parade and the Foreshore; as shown on figures (**Appendix A**).
- Vertical – collection of new data was confined to the surface and fill layers in soil.

Previous, existing and anecdotal data would be used to supplement the study boundaries as required.

Temporal boundaries are limited to the proposed fieldwork timeframes of last quarter 2020.

Step 5 – Develop a Decision Rule

The decision rule was:

- If the concentration of identified contamination in collected environmental samples exceed investigation criteria; then characterise and assess risk to human and environmental receptors.

A decision on the acceptance of the analytical data would be made on the basis of the Data Quality Indicators (DQI) in the context of the PARCC parameters for field-based activities.

Field-Based Activities

Precision: A quantitative measure of the variability (or reproducibility) of data. Intra and Inter laboratory duplicates were collected at a rate of one duplicate per 10 primary samples collected (i.e. 10% or an equivalent of 5% each). The relative percent difference (RPD) of the detected concentrations in the parent and duplicate was calculated with the following acceptable limits.

- No RPD limit <10 times LOR.
- 50% RPD limit 10-20 times LOR.
- 30% RPD limit >20 times LOR.

Accuracy: A quantitative measure of the closeness of reported data to the "true" value, applying the following acceptable limits.

- Rinsate and/or field blanks <LOR.

Representativeness: The confidence (expressed qualitatively) that data are representative of each media present on site, with the following conditions met.

- Appropriate sampling methods adopted, and media sampled, and chemicals analysed (Step 7).

Completeness: A measure of the amount of useable data from a data collection activity, with the following conditions met.

- Appropriate Standard Operating Procedures (SOPs), and experienced staff (> 2yrs experienced), and documentation collected (logs, COC, instrument calibration, water monitoring readings). Refer Step 7.

Comparability: The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event, with the following conditions met.

- Appropriate Standard Operating Procedures (SOPs), and experienced staff (> 2yrs experienced). Refer Step 7.
- Appropriate sample handling and preservation, and field conditions (Step 7).

Analytical Laboratory-Based Activities

Analytical laboratories operating under a NATA accreditation were assessed based on their internal and accreditation performance. As standard, a suitable internal QA/QC program is employed to include analysis of method blanks, matrix spikes, surrogate spikes, laboratory control samples and laboratory duplicates. The laboratory will report on whether the QA/QC analysis meets the laboratory's adopted internal data quality objectives.

Step 6 – Specify Limits on Decision Errors

Specific limits for this project are in accordance with the appropriate guidance made or endorsed by state and national regulations, appropriate indicators of data quality, and industry standard procedures for field sampling and handling.

This step also examines the certainty of conclusive statements based on the available new site data collected. This includes the following points to quantify tolerable limits:

- A decision can be made based on a certainty assumption of 95% confidence in any given data set. A limit on the decision error will be 5% that a conclusive statement may be a false positive or false negative.

In order for decision rules to be sound, they were designed to minimise decision errors. The risk of decision error was mitigated by:

- Ensuring fieldwork tasks were undertaken by suitably experienced field staff and sub-contractors, with reference to the DQOs presented in this report;
- Ensuring laboratory analyses were undertaken by NATA accredited laboratories; and
- Ensuring interpretation of data was undertaken by suitably experienced environmental consultants and/or outsourcing interpretation to technical experts (if warranted).

Step 7 – Optimise the Design

The sampling program presented in the Contamination Assessment was aimed at obtaining the necessary data to allow the identified decisions in Step 2 to be made. Subsequent sections of the report detail the sampling program employed.

3.2 Basis to Sampling

The sampling approach was based on a systematic sampling pattern. Patterns were either grid-based or lineal in approach as shown in Table 3-1.

Table 3-1 Sampling Patterns for Scope

Scope Item Name	Sampling Pattern Adopted
Residential Estate – Pesticide impacted area	Grid-based for delineation
Keys Parade	Lineally evenly spaced along new road reserve alignment
Foreshore	Lineally evenly spaced along dedicated Foreshore land

3.3 Field Sampling Program

Details of the field sampling program are presented below.

Table 3-2 Soil Sampling Works Summary

Activity/Item	Details
Date of Field Activities	17 December 2020 - test pitting of Keys Parade 23 December 2020 – test pit sampling of Foreshore and Pesticide impacted area.
Soil Logging and Inspection of Material	Soil classifications and descriptions are based on Australian Standard AS1726-1993 Geotechnical Site Investigations.

Methodology

Activity/Item	Details
	All material exposed at each sample/inspection location (testpit) was thoroughly inspected for the presence of ACM. Soil descriptions for the lithology encountered during sampling are presented in test pit logs (**Appendix C)**.
Soil Sampling	Soil samples were taken directly from the centre of the backhoe bucket (400mm wide) using single use disposable nitrile gloves.
Decontamination Procedures	Sampling tools were decontaminated between sampling locations with potable water and a solution of Decon 90. Single use disposable nitrile gloves were worn at all times and changed between each soil sample.
Sample Preservation	Samples were placed in laboratory-supplied jars containing appropriate preservatives or suitable asbestos sampling bags. Samples were stored on ice in a cooler while on-site and in transit to the laboratory.
Disposal of Soil Cuttings and Materials	Soil cuttings/spoil was used to backfill test pits once samples had been collected. Single use materials used during sampling were placed into garbage bags and disposed off-site.

3.3.1 Sample Analyses

Samples were analysed in accordance with the table below.

Table 3-3 Sample Analysis Schedule

	TRH/TPH	BTEXN	PAHs	Metals	Asbestos ID	PCBs	Neutral DI leach (PCB)	OCPs and OPPs
Residential Estate								
Primary soil samples	0	0	0	12	0	12	0	12
QA/QC – Intra-lab and Inter-lab field duplicates	0	0	0	1	0	1	0	1
Keys Parade								
Primary soil samples	20	20	20	20	18	8	0	8
Material sample (fibro)	0	0	0	0	1	0	0	0
QA/QC – Intra-lab and Inter-lab field duplicates	3	3	3	3	0	0	0	0
Foreshore								

	TRH/TPH	BTEXN	PAHs	Metals	Asbestos ID	PCBs	Neutral DI leach (PCB)	OCPs and OPPs
Primary soil samples	19	19	19	19	10	13	1	8
Material sample (fibro)	0	0	0	0	3	0	0	0
QA/QC – Intra-lab and Inter-lab field duplicates	3	3	3	3	0	2	0	2
Blanks/spikes	0	4	0	0	0	0	0	0
Total all samples	**45**	**49**	**45**	**58**	**32**	**36**	**1**	**31**

Table notes: Total Petroleum/Recoverable Hydrocarbons (TPH/TRH), Benzene, Toluene, Ethylbenzene, Total Xylenes and Naphthalene (BTEXN), Polycyclic Aromatic Hydrocarbons (PAHs), Metals (As, Cd, Cr (total), Cu, Hg, Ni, Pb, Zn), Organochlorine Pesticides (OCPs), Organophosphorous pesticides (OPPs) and Polychlorinated biphenyls (PCBs).

3.4 Quality Assurance and Quality Control

Quality Assurance and Quality Control (QA/QC) was governed on the basis of the Data Quality Indicators (DQI) using PARCC parameters as listed in the DQOs (Step 5) and reproduced as follows:

- Precision: A quantitative measure of the variability (or reproducibility) of data.
- Accuracy: A quantitative measure of the closeness of reported data to the “true” value.
- Representativeness: The confidence (expressed qualitatively) that data are representative of each media present on site.
- Completeness: A measure of the amount of useable data from a data collection activity.
- Comparability: The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event.

The Assessment was completed following standard operating procedures for conducting site contamination investigations. Standards followed included:

- General field documentation
- Health and safety
- Use of Personal Protective Equipment (PPE)
- Representative sample collection and labelling
- Equipment calibration
- Chain of Custody documentation for analytical samples
- Decontamination
- Collection of quality control samples (that may include: intra laboratory, inter laboratory, rinsates, blanks, spikes).

The data validation adopted for this assessment was based on the following guidance documents:

Methodology

- Schedule B2 of the National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM 2013).
- Australian Standard 4482.1 Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds, 2005.
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA 540-R-10-011, dated January 2010).
- USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA 540/R-99/008, dated June 2008).

The data validation process involves the checking of analytical procedure compliance and the assessment of the accuracy and precision of analytical data from a range of quality control measurements generated from both field sampling and analytical programs. Specific elements that have been checked and assessed for this project include:

- preservation and storage of samples upon collection and during transport to the laboratory
- holding times
- use of appropriate analytical procedures
- required LOR
- frequency of conducting quality control measurements
- laboratory blanks
- field duplicates
- laboratory duplicates
- matrix spike/matrix spike duplicates (MS/MSDs)
- surrogates (or System Monitoring Compounds)
- the occurrence of apparently unusual or anomalous results.

4

Soil Assessment Criteria

4.1 Residential Estate

The Residential Estate is proposed for development as a low-density residential estate with associated minor open space parkland areas. The adopted assessment criteria reflects the sensitive nature of human and environmental receptors as occupants and inhabitants of low-density residential land with accessible soils and gardens.

The following criteria will be adopted from ASC NEPM 2013 for assessing soils in the Residential Estate as listed in Table 1 (**Appendix B**):

- HIL A and HSL A - Residential with garden/accessible soil also including childcare centres, preschools and primary schools.
- EIL/ESL – Urban residential/public open space.
- Mgmt Limits – Residential, park land and public open space.
- Asbestos HSLs – Residential A.
- Soil Aesthetics.

4.2 Keys Parade and Foreshore

Keys Parade includes road verges and footpaths considered to be public open space with accessible soils along road verges. Foreshore is considered recreational public open space with accessible soils.

The following criteria will be adopted from ASC NEPM 2013 for assessing soil in Keys Parade and the Foreshore as listed in Table 2 and 3 (**Appendix B**):

- HIL C and HSL C – Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths.
- EIL/ESL – Urban residential/public open space.
- Mgmt Limits – Residential, park land and public open space.
- Asbestos HSLs – Recreational C.
- Soil Aesthetics.

4.3 Notes on Adopted Criteria

Health-based Investigation Levels (HILs)

The National Environment Protection (Assessment of Site Contamination) Measure 2013 (ASC NEPM 2013) Health-based Investigation Levels (HILs) (Schedule B1) provides a framework that is applicable for assessing human health risk via all relevant pathways of exposure and covers a broad range of metals and organic substances. Different levels are provided for a variety of exposure settings based on the land use scenario at a particular site.

Health Screening Levels (HSLs)

The ASC NEPM 2013 HILs do not provide criteria for petroleum hydrocarbon chemicals, therefore the Health Screening Levels (HSLs) were developed and form part of the ASC NEPM 2013 in Schedule B1. The ASC NEPM 2013 – HSLs are designed to be protective of human health and are applicable to assessing human health risk via the inhalation pathway. The HSLs used in this report have not been adjusted for site specific parameters such as moisture content for this phase of work. HSLs are available for various depth profiles and predominant lithology (sand, silt and clay).

Soil Assessment Criteria

HSLs relevant to the top 2.0m of soil with a sandy consistency were adopted.

HSLs for direct contact were adopted from Table 4 of CRC CARE Technical Report No. 10 by Friebel and Nadebaum (2011).

Ecological Investigation/Screening Levels

The ASC NEPM 2013 Ecological Investigation levels and Ecological Screening Levels (EILs and ESLs) have been developed for selected metals and organic substances and are applicable for assessing risk to terrestrial ecosystems. EILs depend on specific soil physicochemical properties, whereas ESLs do not, and both are relevant to land use scenarios and apply to the top two metres of soil. EILs take into account soil texture and age of the impacts, whereas ESLs account only for soil texture.

Specific EILs were calculated using the ASC NEPM EIL Calculation Spreadsheet using the following assumed values to calculate EILs for aged contamination sources:

- CEC (20cmol(+)/kg).
- pH (7).
- OC (1%).
- Clay (20%).
- Low traffic volumes.

Asbestos Health Screening Levels

The ASC NEPM 2013 asbestos HSLs have been developed for managing land use impacts associated with asbestos and are applicable for assessing risk to human health. The guideline has been derived from the Western Australian Department of Health (WA DoH 2009) guidance. The guidance covers bonded Asbestos Containing Material (bonded ACM), Fibrous Asbestos (FA) and Asbestos Fines (AF).

Note that the quantitative criteria (i.e. percentage of asbestos materials) were not used in this assessment given that the analysis was to determine the presence of asbestos only and not to quantify asbestos materials in soils. Visual identification and subsequent laboratory analysis were used to assess for potential asbestos containing materials (ACMs) such as fibro sheeting. The ASC NEPM 2013 Asbestos HSLs include a qualitative approach such that no visible asbestos should be at the soil surface for all forms of asbestos. This qualitative approach was also adopted for this investigation.

Management Limits

The ASC NEPM 2013 Management Limits in Schedule B1 are relevant for TRH contaminants only. The Management Limits are specific for soil types (coarse and fine) and land uses. If adopted on a site, Management Limits are intended to avoid or minimise the potential effects of the following and require consideration of site-specific factors to determine the maximum depth to which the limits should apply:

- Formation of observable light non-aqueous phase liquids (LNAPL).
- Fire and explosive hazards.
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services by hydrocarbons.

Soil Assessment Criteria

Aesthetic Considerations

In accordance with the ASC NEPM 2013 in Schedule B1 the aesthetic state of sites is required to be taken into account. Aesthetic issues generally relate to the presence of materials with a negligible risk or non-hazardous inert foreign material in soil or fill resulting from human activity. Sites that have been assessed as being acceptable from a human health and environmental perspective may still contain such foreign anthropogenic material. An assessment of the site aesthetics requires consideration of the natural state of soil on any given site, and a comparison between it and the soil encountered during investigations.

In particular, soils on site should not exhibit discolouration (staining), a malodorous nature (odours), abnormal consistency (rubble and trash) or show visible evidence of industrial wastes.

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5 Results and Discussion

5.1 Field Observations

The following observations were made while conducting fieldwork sampling:

5.1.1 Residential Estate – Delineation of Pesticide Impacted Area

Soils within this defined area of the site (as shown on Figure 3) were consistent with previous sampling in and around the former shed. No evidence of ashy fill was observed in this area, other than TP14 from the previous DGI (May 2020) and a very thin layer of ash at location D06. The old building slab was noted to be buried under surface topsoils at locations D04, D05 and D06, while a metal pipe was unearthed at location D01.

5.1.2 Keys Parade

Sampling locations are shown on Figure 5.

- Sample locations were positioned along the proposed alignment of Keys Parade which at present is an asphalt sealed internal access road.
- Underlying materials of the access road typically consist coarse gravels and ashy fill (variable thin and thick layers), underlain by natural sandy/silty clays.
- Locations KP01 and KP03 were positioned on an embankment that comprises soil and ash mixtures with some foreign matter.
- Locations KP05, KP06 and KP07 were positioned within and area of multiple small soil stockpiles. These stockpiles predominately comprised sandy material with minor foreign matter. A large fragment of cement fibro sheeting suspected to contain bonded asbestos was observed at KP05.
- No other fragments of fibro cement sheeting were noted at any other sampling location or on ground surfaces.

5.1.3 Foreshore

Sampling locations are shown on Figure 7.

- Sample locations FP01 to FP09 were positioned along the southern portion of the Foreshore, while locations FP10 to FP17 were positioned along the northern portion. These portions were labelled **Area 1** (southern end) and **Area 2** (northern end) of the Foreshore.

Area 1

- Area 1 is characterised by the presence of numerous stockpiles of soil mixtures and areas landfilled with soil to build up the ground elevation. The soils mixtures used for stockpiling and landfilling contained various amounts and types of foreign matter waste including plastics (soft and hard), scrap metal, brick, tile and concrete (whole pieces and rubble), timber (offcuts and large tree logs), ash and slag waste, and glass/ceramic shrapnel.
- These wastes were observed protruding from the ground surfaces at multiple locations.
- Fragments of cement fibro sheets suspected as ACM were observed on the ground surface at various places in Area 1. Subsequent laboratory testing confirmed the presence of bonded asbestos, refer to Section 5.2 below.
- Fill material typically comprises wastes as described above in a gravelly clay and/or silty clay matrix.

- Two locations (FP05 and FP07) were positioned at locations that would be submerged during the tide cycle (at some stage). The locations resembled swampy/sloppy sediments with mixtures of wastes as described.
- Depth of filling varies from approximately 0.6m (FP05 – landfilled area) to greater than 2.2m (FP02 – soil stockpile), noting that fill depth various significantly between soil stockpiles and landfilled areas.

Area 2

- Area 2 is characterised by a stretch of land cleared of tree and scrub vegetation with a grass covering. To the north half of Area 2 the clearing is set back from the Foreshore embankment by a stand of trees.
- A drainage channel and culvert intersect this area between sample locations FP13 and FP14, which essentially separates this area into north and south halves.
- In the southern half (FP10 to FP13), protruding from the Foreshore embankment are two long timbers, resembling a remnant wharf. The foreshore riverbed and immediate area below and either side of the old wharf timbers are hundreds of brick pieces.
- The embankment in the southern half appears eroded which shows the Foreshore has been landfilled with brick, ash waste and other rubble proximal to the old wharf.
- Landfilling is more prominent at FP10 and FP11 than FP12 and FP13 along the southern half of Area 2. Landfilling at these locations contained various amounts waste including plastics (soft and hard), scrap metal, brick, tile and concrete rubble, ash and slag waste, and glass/ceramic shrapnel.
- Landfilling along the northern half (FP14 to FP17) was predominately a layer of topsoil/clay underlain by ashy fill with some minor brick and tile pieces.
- No fragments of cement fibro sheets were observed in Area 2.

5.2 Soil Results

Soil analytical results are presented in Tables 1, 2 and 3 (**Appendix B**) while laboratory analytical reports are provided in **Appendix F**. The soil results show the following:

Residential Estate – Delineation of Pesticide Impacted Area

- The Chlordane impacted soil at TP17 that exceeded soil criteria identified in the previous DGI (May 2020) has been delineated and appears localised at TP17 only.
- All other results show detections of OC pesticides well below the adopted soil criteria or not detected.
- The 95% UCL of the arithmetic mean of Chlordane in soils in this area of the Residential Estate was calculated to be 18.48mg/kg (95% Chebyshev), as such the concentrations of Chlordane within the impacted area meets the adopted soil criterion and would pose negligible human health risk. The ProUCL output sheet is presented in **Appendix E**.
- All other results for metals, OP pesticides and PCBs were reported below the adopted soil criteria or below the LOR.

Keys Parade

- Bonded asbestos was detected in a fragment of cement fibro collected from location KP05.

- Copper was detected at 525mg/kg at KP15 (0.1-0.2m) which exceeds the adopted EIL criterion of 270mg/kg. We do not consider this detection to be a cause for concern in the context of the proposed development of this area to be a public road.
- A detection of carcinogenic PAH (BaP TEQ) was reported at KP18 at a concentration above the adopted soil criteria. Other PAHs constituents were reported at KP18 and at other sample locations but well below the adopted soil criteria for Total PAHs. While there were some thin ashy material layers observed, we suspect that the source of PAHs is likely to be the surface bitumen gravels that has inadvertently mixed with the analysed sample collected at a shallow depth immediately underneath the bitumen (i.e. KP11 to KP20). In accordance with ASC NEPM 2013, BaP occurring in bitumen is immobile and does not present a health risk.
- TRH fraction F3 (TRH >C16-C34) was detected at KP15 (0.1-0.2m) at a concentration of 1,770mg/kg which is above the ESL criterion of 300mg/kg. While this detection is above the hotspot level (i.e. 250% of criterion) for ecological health, we do not consider this detection to be a cause for concern given the localised nature and limited filling thickness of the likely source of TRH, and in the context of the proposed development of Keys Parade to be a public road.
- BaP was detected at a number of locations in exceedance of the ESL criterion of 0.7mg\kg, consistent with the carcinogenic PAH detections above. Again, similar to PAHs above, we suspect the source of BaP to be bitumen fragments and therefore there is no cause for concern based on these detections.

Foreshore

Asbestos – Human Health:

- Asbestos was detected in fragments of cement fibro collected from location FP05 (F01), FP06 (F02) and FP07 (F03). All fragments were collected from surface and near surface landfilling waste.
- Non-Bonded asbestos was detected in a soil sample collected from FP10 (0.3-0.4m depth) in landfill waste. The detection was reported as below the LOR of 0.1g/kg, however the detection confirms the presence of asbestos in the sample regardless. The asbestos material in this sample was described as two pieces of asbestos fibre board approximately 5x3x1mm in size. This type of material is considered an asbestos fine (AF) under ASC NEPM 2013 as it is <7mm in size and therefore present in a non-bonded asbestos (friable) form.

Human Health:

- Arsenic was detected at FP05 (0.5-0.6m depth) in landfill waste at 436mg/kg exceeding the adopted HIL C criterion of 300mg/kg.
- Chromium was detected at FP05 (0.5-0.6m depth) and FP10 (0.3-0.4m depth) at concentrations of 367mg/kg and 396mg/kg, respectively, that exceeded the adopted HIL C criterion of 300mg/kg. The samples represent landfill waste at these locations. We note that the adopted criterion is specific for Chromium (VI), while our results represent Total Chromium of which Chromium (VI) would be a smaller portion of the total and likely to be less than the criterion. As such we do not consider there to be a cause for concern for human health from Chromium (VI) at these locations.
- Lead was detected at FP10 (0.3-0.4m depth) and FP11 (0.3-0.4m depth) at concentrations of 775mg/kg and 1,460mg/kg, respectively, that exceeded the adopted HIL C criterion of 600mg/kg. The samples represent landfill waste at these locations.

Results and Discussion

- PCB (total) was detected at FP10 (0.3-0.4m depth) in landfill waste at 125mg/kg exceeding the adopted HIL C criterion of 1.0mg/kg. PCBs detected at this location are 125 times greater than the adopted criterion and considered a PCB contamination hotspot of significance requiring intervention.
- Neutral leaching test results for PCBs from sample FP10 (0.3-0.4m depth) was below the laboratory detection limit (1.0 µg/L).
- PCB (total) was also detected in landfill waste at FP11 (0.3-0.4m depth) at 0.4mg\kg, at FP13 (0.3-0.4m depth) at 0.2mg/kg, FP14 (0.2-0.3m depth) at 0.4mg/kg and at FP15 (0.2-0.3m depth) at 0.6mg/kg. These results are below the adopted human health soil criterion for PCB in soils.

Ecological Health:

- Arsenic was detected at FP05 (0.5-0.6m depth) at 436mg/kg exceeding the adopted EIL criterion of 100mg/kg and considered a hotspot of Arsenic contamination (i.e. > 250% of criterion) for ecological health.
- Copper was detected in landfilling waste materials at the following locations exceeding the adopted EIL criterion of 230mg/kg:
    - FP05 (0.5-0.6m depth) – 1,330mg/kg – contamination hotspot for ecological health;
    - FP10 (0.3-0.4m depth) – 2,330mg/kg – contamination hotspot for ecological health;
    - FP11 (0.3-0.4m depth) – 545mg/kg; and
    - FP12 (0.3-0.4m depth) – 400mg/kg.
- Nickel was detected at FP05 (0.5-0.6m depth) at 990mg/kg exceeding the adopted EIL criterion of 270mg/kg and considered a hotspot of Nickel contamination (i.e. > 250% of criterion) for ecological health.
- Zinc was detected in landfilling waste materials at the following locations exceeding the adopted EIL criterion of 770mg/kg:
    - FP07 (0.2-0.3m depth) – 857mg/kg;
    - FP10 (0.3-0.4m depth) – 1,430mg/kg; and
    - FP11 (0.3-0.4m depth) – 8,810mg/kg – contamination hotspot for ecological health.

6

Conceptual Site Model

A Conceptual Site Model (CSM) has been developed in consideration of existing results. The CSM takes into account the future uses of the land as predominately low-density residential dwellings within the Residential Estate, and open space public land within Keys Parade and the Foreshore.

6.1 Contamination Sources and Contaminants of Concern

Onsite Sources

Residential Estate

- Localised areas of aesthetically impacted soils in the following locations:
    - Northeast corner under golf green – ash/slag gravels
    - Southeast corner under golf green – ash/slag gravels
    - Former greenkeepers/maintenance shed – TP14 layer of ash/slag gravels
    - Eastern corner under access road at TP49 – layer of ash/slag gravels
    - Fill mound containing anthropogenic waste at TP27.
- Contaminated soil at TP17 at the former Greenskeeper Shed – Chlordane pesticide.
- Potential pesticide soil impacts in/around existing chemical store.
- Contaminated surface soils at BH17 (ES, 2014b) – Petroleum hydrocarbons.

Keys Parade

- Fragments of bonded and non-bonded ACM - Asbestos
- Ash and slag fill – Asbestos, aesthetics
- Anthropogenic buried waste - Aesthetics
- Stockpile mounds – Asbestos, aesthetics

Foreshore

- Anthropogenic buried waste:
    - Inorganic heavy metals (Arsenic, Copper, Lead, Nickel, Zinc)
    - Asbestos in bonded and non-bonded forms.
    - Polychlorinated Biphenyls (PCBs).
- Anthropogenic surface wastes – aesthetics (plastics and general refuse)
- Natural soil materials in low lying areas have been confirmed as ASS/PASS

Offsite Sources

Buried landfilling wastes inland of the 20m dedicated foreshore zone.

6.2 Receptors and Exposure Pathway

- Construction/site worker – acute exposure
    - direct contact/ingestion of soil.
    - direct contact/ingestion of potentially contaminated shallow groundwater.
- Future residential occupants – Chronic exposure - direct contact/ingestion of soil. Aesthetic impact at ground surface.
- Future open space users – Chronic exposure - direct contact/ingestion of soil. Aesthetic impact at ground surface.
- Terrestrial organisms along Foreshore - direct contact with soil.

- Aquatic ecosystem of Georges River - direct contact with potentially contaminated groundwater.

6.3 Source-Pathway-Receptor Linkages

Residential Estate

- There is a link between hydrocarbon contaminated surfaces soil at BH17 and future residents requiring intervention.
- There is a link between the aesthetic impacts caused by ashy and anthropogenic wastes and future residents requiring intervention.
- There will be no link between future residents and the localised chlordane impact at TP17 because the source of chlordane contamination does not exceed the adopted human health soil criterion as shown by calculation of the 95%UCL.

Keys Parade

- There is a plausible link between non-bonded (friable) asbestos contaminated ash fill and construction workers requiring intervention.
- Similarly, the presence of bonded asbestos in fibro cement sheeting in stockpiled soils is a cause for concern for construction workers disturbing these stockpiles.
- There is a link between the aesthetic impacts caused by ashy and anthropogenic wastes and future users of Keys Parade. No waste should be used at the ground surfaces.

Foreshore

- There is a plausible link between contaminated buried wastes/soils/potentially contaminated groundwater and construction/site workers (during development) and future open space users/terrestrial and aquatic organisms, specifically along the Foreshore. Intervention to remedy the linkages is warranted.
- Potential link between PASS/ASS natural soils and terrestrial and aquatic organisms if the underlying natural soils are exhumed and allowed to oxidise specifically along the Foreshore. Intervention to remedy the linkages maybe warranted if PASS/ASS soils are encountered during the foreshore remediation works.

6.4 Data Paucity

Sufficient data has been gathered over past and current contamination assessments to characterise the proposed development land areas. However, recent findings raises additional concerns with respect to the Foreshore given that the extent of buried wastes along the Foreshore has not been determined. In addition, soils around the existing chemical store require verification to confirm they do not contain concentrations of pesticides at levels that pose a health risk to future residents.

7

Quality of Analytical Data

Analytical data validation is the process of assessing whether the data is in compliance with method requirements and project specifications. The primary objective of this process is to ensure that data of known quality are reported, and to identify if data can be used to fulfil the overall project objectives.

On the basis of the analytical data validation procedure employed, the overall quality of the analytical data produced is considered to be of an acceptable standard for interpretive use. The table below provides a summary of the data validation.

Table 7-1 Data Quality

Requirement	Compliance	Comments
Field Duplicates	Yes	Intra-laboratory duplicate samples were collected by splitting a sample into the primary and duplicate sample containers. A total of 7 intra-laboratory duplicates were collected for 51 primary samples resulting in greater than 1 duplicate per 10 primary samples analysed (i.e. >10%) in accordance with AS4482.1: 2005. Refer Tables 1, 2 and 3. No inter-laboratory duplicate samples were collected for this project.
RPDs	Yes	All calculated RPDs fall within the acceptable limits of <30% to <50% (Tables 1, 2 and 3). The exception to this was: • Zinc 32.6% (FP13_0.3-0.4 and QZ03) should be <30% when conc. > 20x LOR; • Zn 103% (D04_0.2-0.3 and QZ02) should be <50% when conc. > 10x but <20x LOR; and • Total PAHs 96.4% (KP20_0.1-0.2 and DUP C) should be <50% when conc. >10x but < 20x LOR. The resultant RPDs of the three samples are not significantly excessive, nor do any values exceed the adopted criteria. Minor to moderate heterogeneity of samples is the likely cause. Given the large data set and very minor number of non-compliance, we do not see that it would impact the veracity of the data quality in this instance. Where concentrations of either sample was <LOR or <10 times the LOR, then no RPD was calculated. This evaluation is in accordance with section 8 of AS4482.1: 2005.
Rinsate Blanks	N/A	No dedicated sampling equipment was used to collected samples, therefore no rinsate blank samples were collected.
Blanks/Spikes	Yes	Trip blanks and trip spikes were collected and dispatched to the laboratory the two separate sample batches (Table 2 and 3). Trip blanks reported all volatile analytes below the LOR. Trip spikes reported recoveries within acceptable limits (70%-130%).

Quality of Analytical Data

Requirement	Compliance	Comments
Sampling equipment properly decontaminated	Yes	Disposable equipment used. Although no dedicated sampling equipment was used, any sampling tools used were decontaminated between sampling locations with a solution of Decon 90 and rinsed with potable water.
Sample Preservation	Yes	Samples were properly preserved. Samples were compliant with required storage temperature. Refer laboratory SRN.
Samples delivered to laboratory within sample holding times.	Yes	Confirmed from COCs and laboratory reports.
Equipment Calibration	N/A	No field instruments requiring calibration were used.
Analytical procedures	Yes	All NATA accredited. All analyses meet compliance requirements. No laboratory outliers were observed for the primary laboratory. The exception was matrix spike outliers existed for ALS Batch ES2045293 for Lead and Zinc analytes from anonymous samples. The matrix spike recovery was not determined because the background level was greater than or equal to 4x spike level. Given the large data set and very minor number of non-compliance, we do not see that it would impact the veracity of the data quality in this instance.
SOPs and competent field personnel	Yes	Sampling procedures follow industry standards, and field staff (Adam Sullivan – more than 20 years' experience. Sean Guenther – 15 years' experience) are competent in sampling methods and QA/QC protocols.

8

Conclusions and Recommendations

The following conclusions are made based on the findings of this Contamination Assessment and previous reports; subject to the limitations presented in Section 10:

8.1 Residential Estate

The Residential Estate site history was adequately described by Environmental Strategies Phase 1 (ES, 2014a). Detailed investigations conducted across the proposed Residential Estate has sufficiently characterised soil and groundwater to assess the land for low-density residential land use. We conclude that:

- Environmental Strategies Phase 2 (ES, 2014b) showed that soils at a localised area of the site at BH17 were impacted by oils (hydrocarbons) posing a potential health risk to future users of the site. It is recommended the localised soils at BH17 be removed, the aboveground storage tanks be decommissioned and removed and soils underneath this area validated. It is also recommended any identified fragments of potential asbestos containing materials (ACMs) should also be collected from the ground surface and removed.
- Site soils exhibiting discolouration, abnormal consistency (wastes, ash and slag fill) present an aesthetic issue requiring remediation and or management as part of the remediation of the Residential Estate site. Soils requiring remediation for aesthetic considerations include:
    - The soils under the golf greens in northeast corner of the site delineated by test pits TP10, TP11, TP12 and previous location BH5B (ES, 2014b) contain buried ash/slag wastes.
    - The soils under the golf greens in the south east corner of the site, delineated by test pits TP41, TP42, TP43 and TP44, contain buried ash/slag wastes.
    - Two additional areas contain minor amounts of ash/slag fill at TP14 (former chemical sheds) and TP49 (entrance road off Prescot Parade).
    - A small fill mound with mixed anthropogenic waste was located at TP27.
- Detections of pesticides near the existing chemical store adjoining the Greenkeepers Shed have been observed. The RAP for the Residential Estate describes delineation testing and potential remediation and validation of the local area.
- Items raised by the Site Auditor in Interim Advice (dated 15 Sept 2019) requiring closeout will be presented in the updated Residential Estate RAP including:
    - Remove and remediate the septic tank system at the greenkeepers/maintenance shed.
- The proposed Residential Estate development land is suitable for future residential dwellings, subject to implementing the existing Residential Estate RAP (22 March 2022) to cover the following items:
    - Remediation of petroleum impacts in surface soils at BH17 (ES, 2014b).
    - Decommissioning and removing the two ASTs and fuel bowser.
    - Decommissioning and removing the sewerage tank system.
    - Removal of all abandoned buried services.
    - Management of ash/slag wastes buried under the two identified golf greens.
    - Management of anthropogenic waste buried in a localised stockpile at TP27, and other smaller quantities of ash/slag buried at TP14 and TP49.
    - Verification sampling for the presence of pesticides near the existing chemical store.

8.2 Keys Parade

The Keys Parade site history was adequately described by Environmental Strategies Phase 1 (ES, 2014a). Detailed investigations conducted across the proposed Keys Parade has sufficiently characterised soil and groundwater to assess the land for open space land use consistent with a public road corridor. We conclude that:

- Ash filling greater than 0.5m is present along the length of the embankment in the Keys Parade area delineated by B15A, B18A, B20A, B22A, B24A and B25A. The ash fill is present as thick, black and grey layers of cinders and some slags. The ash and slag pose an aesthetic risk requiring remediation to be suitable for the future open space land use. These soils require removal offsite or amelioration to improve its appearance if it is to be retained onsite.
- Non-bonded asbestos was recorded within the ash fill associated with B18A. The non-bonded asbestos containing ash fill requires remediation to remove the potential health risk to future occupants of the proposed development. The non-bonded asbestos impacts at B18A should be further assessed to define the vertical and lateral extent of the impacts prior to remediating these soils.
- Anthropogenic wastes, in the form of plastic, bricks, bitumen and timber, was observed within the Keys Parade embankment at locations KP01 and KP03. The presence of anthropogenic wastes at these locations pose an aesthetic issue requiring removal offsite.
- Keys Parade sampling locations KP05, KP06 and KP07 were positioned within an area of multiple small soil stockpiles. A large fragment of cement fibro sheeting containing bonded asbestos was identified at FP05. The stockpiles require characterisation for reuse onsite or for disposal offsite. The presence of bonded and or non-bonded asbestos in this area must be considered for all the mounds during remediation of the Keys Parade Development Lands
- The proposed Keys Parade development land is suitable as a future roadway and footpath construction (under an open space public land use), subject to implementing the existing Keys Parade RAP (23 March 2022) to cover the following items:
    - Remediation of asbestos contaminated ash/slag wastes buried at B18A (Sullivan-ES, 2018)
    - Management of ash/slag/anthropogenic waste filling used to construct the embankment at the south end of the proposed Keys Parade alignment.
    - Soil stockpiles present in the central portion of the proposed Keys Parade could contain fragments of bonded asbestos sheeting in addition to the fragment already identified. Management of the soil stockpiles is required during removal or reuse of these materials.

8.3 Foreshore

The Foreshore site history was adequately described by Environmental Strategies Phase 1 (ES, 2014a). While past and present investigations of the Foreshore provide an adequate level of characterisation to assess contamination risks, there are human and ecological health risks related to wastes used as landfilling along the Foreshore. Due to the presence of the sensitive ecology (e.g. No-Go zones such as mangroves, protected trees, sensitive terrestrial and aquatic organisms, etc) in the Foreshore land, the recommended remediation should target only those accessible areas where there is potential health risk from chemical contamination and or aesthetic issues requiring remediation due to gross anthropogenic materials/wastes. The remediation strategy is to be considerate of removing contamination to the extent

practicable while preserving the sensitive environment within the Foreshore. A number of options will be proposed to satisfy this goal.

Of specific concern are the landfill wastes present at FP10 (and proximal to that location) containing concentrations of PCB and non-bonded forms of asbestos. Other locations including FP05 and FP11 contain similar landfill wastes (and detectable residues of asbestos (FP05) and PCB (FP11)). These areas are considered areas of concern for human and ecological health based on the presence of these wastes alone.

Detectable residues of PCBs were also reported at FP13, FP14 and FP15 in Area 2 of the Foreshore which adds to the level of risk.

While not considered particularly deep, the depth of wastes used as landfilling has not been determined, specifically at areas of high contamination risk at FP05, FP10 and FP11.

Soil materials containing concentrations of PCBs at levels greater than 2mg/kg are subject to regulation under the Polychlorinated Biphenyl (PCB) Chemical Control Order 1997 (PCB CCO 1997). The PCB CCO 1997 sets out the requirements for:

- defining non-scheduled and scheduled PCB materials and wastes (Clauses 4.25 and 4.26)
- defining priority areas (Clause 4.23)
- conveying of PCB material and PCB waste (Clause 6.4) and
- disposing of PCB waste (Clause 6.5).

Based on the concentration of PCB at location FP10 and the expected very shallow depth to groundwater along the Foreshore zone, leaching to the immediate underlying groundwater was considered a plausible risk. We conducted neutral leaching analysis at this location. Results showed the PCB at this location did not leach under a neutral deionised water solution (to emulate rainfall), being less than the laboratory detection (<1.0 µg/L). This indicates there is a low risk of PCBs migrating from the Foreshore waste into the underlying watertable and then discharging into the Georges River aquatic ecosystem.

We conclude that existing data demonstrates that remediation to clean up contamination on the Foreshore is necessary because the presence of landfilling wastes and associated contamination poses a high health risk in localised areas to human and ecological health, although additional work would be required to delineate the extent of remediation required.

- Based on existing information, the proposed Foreshore development land is suitable for future open space public land use, subject to implementing the existing Foreshore RAP (24 March 2022) to cover the following items:
    - To the extent practicable, delineate contaminated wastes in both Areas 1 and 2, as well as other accessible locations along the Foreshore, to ascertain the full extent of landfilling of wastes.
    - In consideration of sensitive ecological receptors, and to the extent practicable so as not to cause irreversible damage to those receptors, remediate contaminated wastes used as landfilling in Area 1 and Area 2. These wastes contain concentrations of asbestos, heavy metals and PCBs at levels that pose a human and ecological health risk.
    - Management of anthropogenic waste strewn across and protruding from ground surfaces to remove the aesthetic impacts to the Foreshore. In particular, wastes and

general refuse that has washed up from Georges River accumulating within low lying swampy areas.

9

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Limitations

Sullivan Environmental Sciences Pty Ltd (Sullivan-ES) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Mirvac Homes (NSW) Pty Ltd and only those third parties who have been authorised in writing by Sullivan-ES to rely on this Report.

It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this Report.

Where this Report indicates that information has been provided to Sullivan-ES by third parties, Sullivan-ES has made no independent verification of this information except as expressly stated in the Report. Sullivan-ES assumes no liability for any inaccuracies in or omissions to that information.

This Report was prepared between 17 December 2020 and 1 July 2021 and is based on the conditions encountered and information reviewed at the time of preparation. Sullivan-ES disclaims responsibility for any changes that may have occurred after this time.

Investigations undertaken in respect of this Report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and contamination may have been identified in this Report.

Subsurface conditions can vary across a particular site and cannot be exhaustively defined by the investigations described in this Report.

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It is the responsibility of third parties to independently make inquiries or seek advice in relation to their particular requirements and proposed use of the site.

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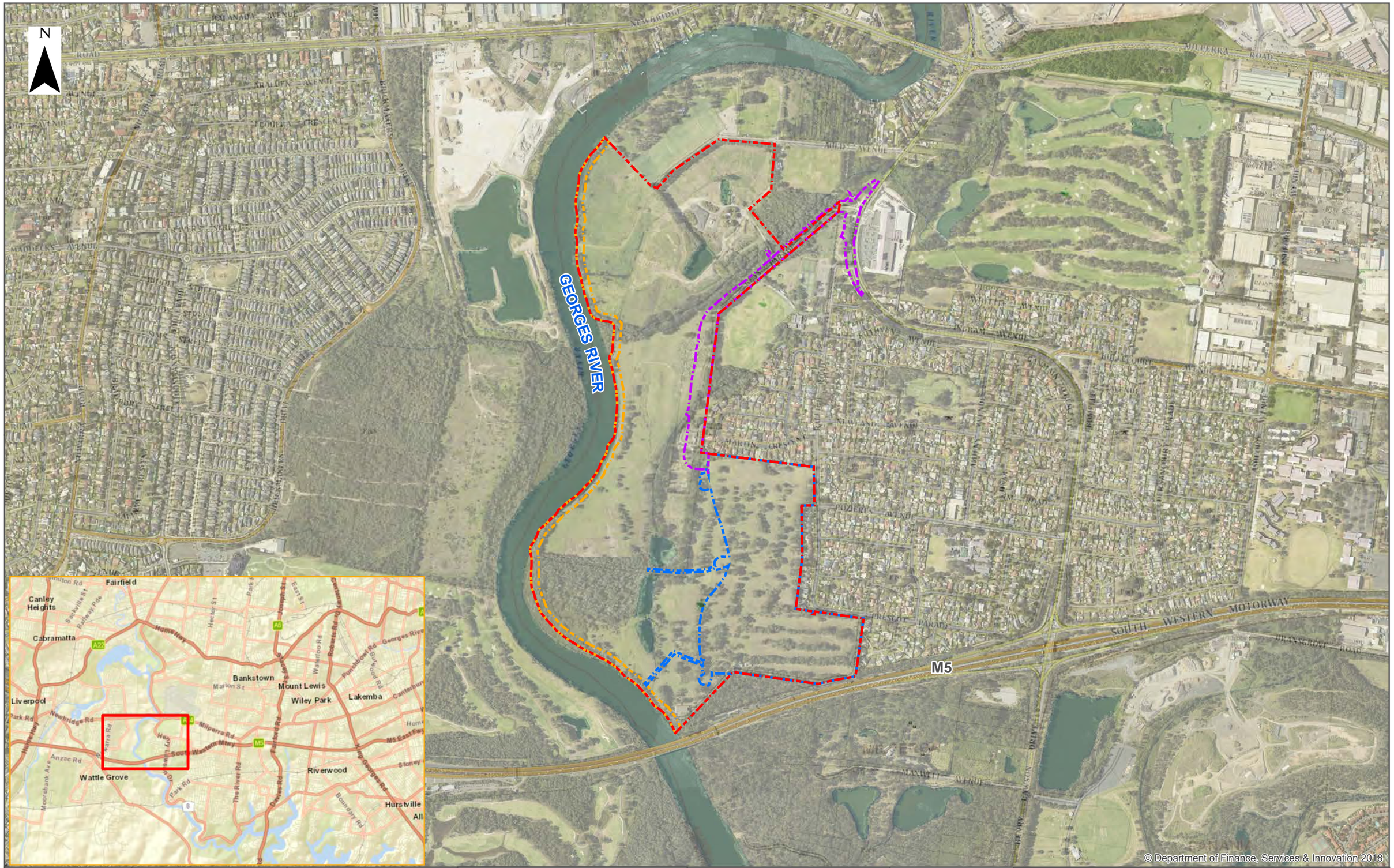
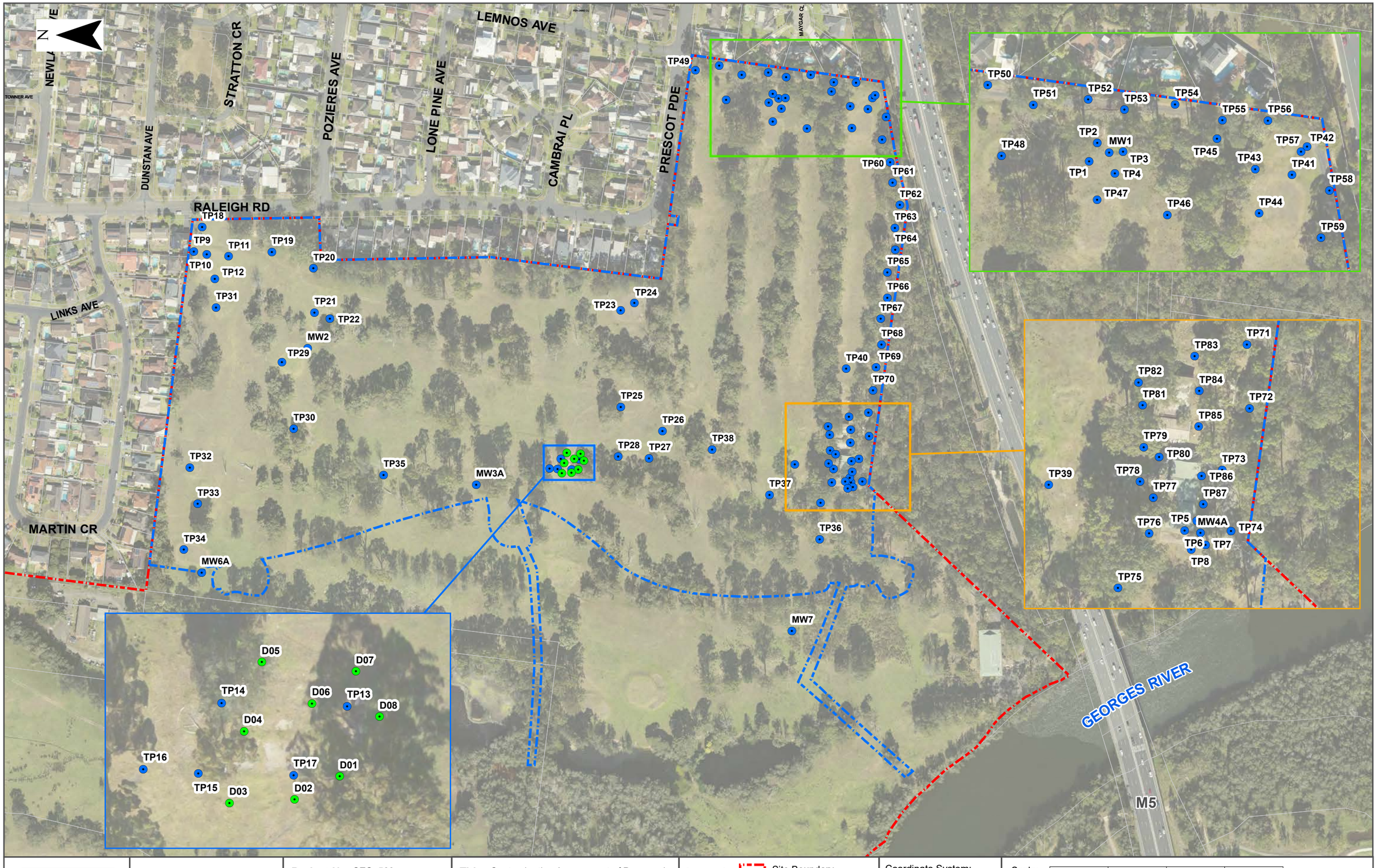
Appendix A Figures



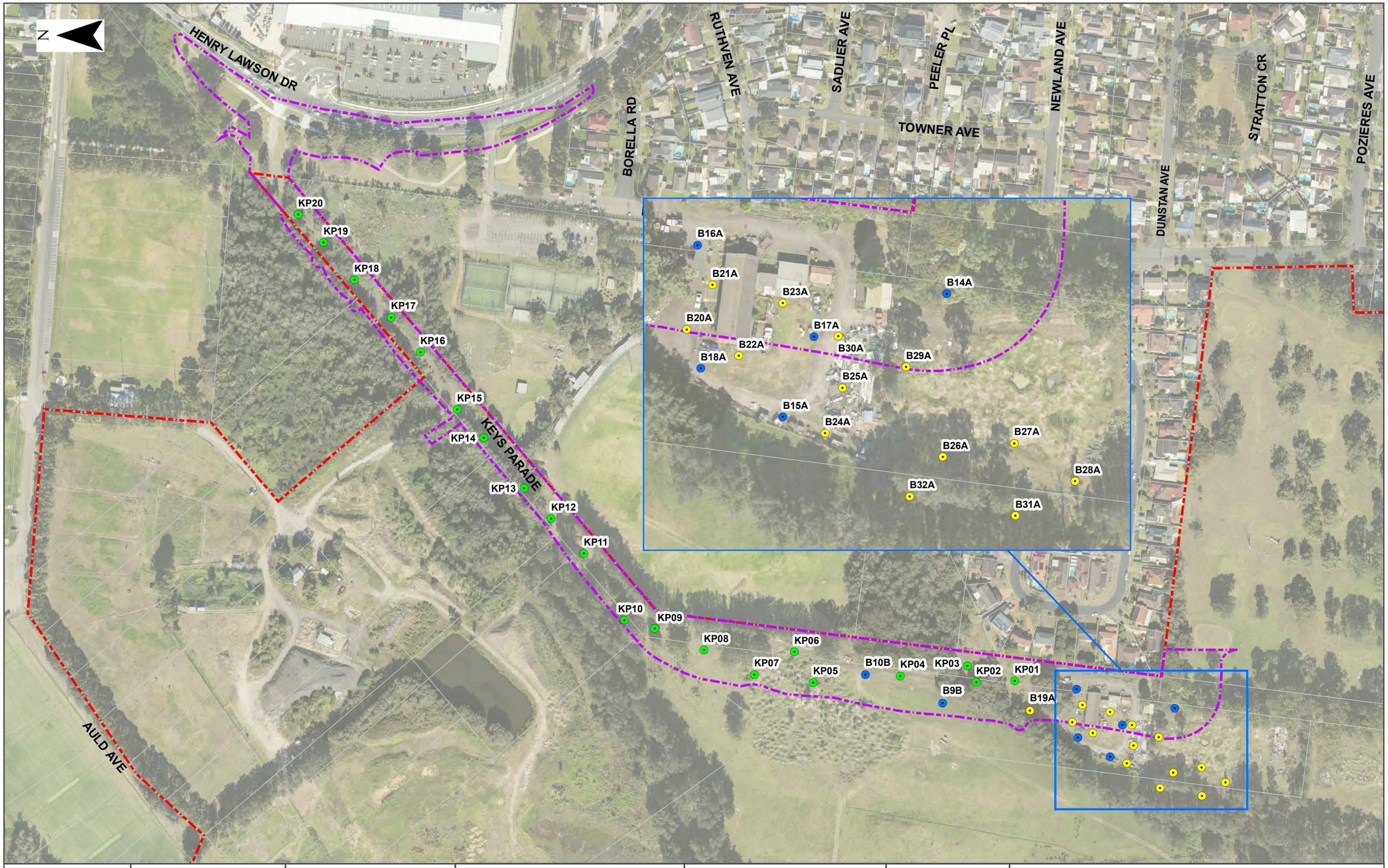
		Project No: SES_539	**Title:** Contamination Assessment of Proposed Development Lands, Riverlands New Residential Project, Milperra NSW	**Legend:** Site Boundary; Keys Parade Area; Residential Area; ForeshoreArea	Coordinate System: GDA 1994 MGA Zone 56	Scale: 0 200 400 600 800 Meters
		Figure 1: Site Location			Date: 08 January 2021	Data Sources: Aerial Imagery: Aerometrex Pty Ltd. Base Map © NSW Department Finance, Services & Innovation 2021 Topo Map: © Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
		Client: Mirvac Homes (NSW) Pty Ltd	**Address:** Prescot Parade, Milperra, NSW			

SULLIVAN environmental sciences	**Project No:** SES_539	**Title:** Contamination Assessment of Proposed Development Lands, Riverlands New Residential Project, Milperra NSW	**Legend:** Site Boundary; Residential Area; Property Boundary	Coordinate System: GDA 1994 MGA Zone 56	Scale: 0 50 100 150 200 Meters	
	Figure 2: Residential Area Layout			Date: 08 January 2021	Data Sources: Aerial Imagery: Aerometrex Pty Ltd. Property Boundaries © NSW Department Finance, Services & Innovation 2021	
	Client: Mirvac Homes (NSW) Pty Ltd	**Address:** Prescot Parade, Milperra, NSW				



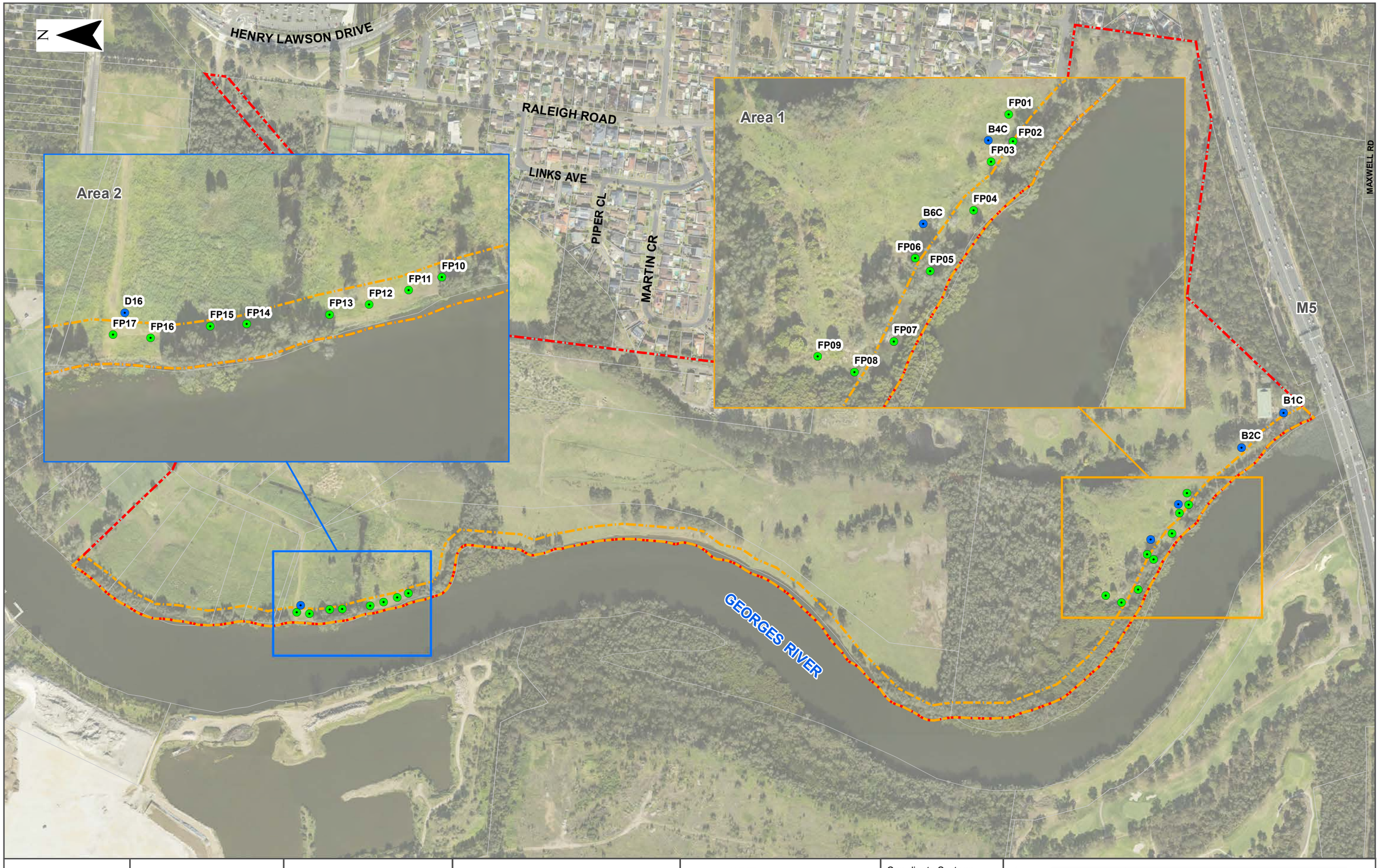
		Project No: SES_539	**Title:** Contamination Assessment of Proposed Development Lands, Riverlands New Residential Project, Milperra NSW	**Legend:** Site Boundary; Residential Area; Sample Locations (May 2020); Sample Locations (Dec 2020)	Coordinate System: GDA 1994 MGA Zone 56	Scale: 0 50 100 150 200 Meters
		Figure 3: Residential Area Sampling Locations				
		Client: Mirvac Homes (NSW) Pty Ltd	**Address:** Prescot Parade, Milperra, NSW		Date: 08 January 2021	Data Sources: Aerial Imagery: Aerometrex Pty Ltd. Property Boundaries © NSW Department Finance, Services & Innovation 2021

		Project No: SES_539	**Title:** Contamination Assessment of Proposed Development Lands, Riverlands New Residential Project, Milperra NSW	**Legend:** Site Boundary; Keys Parade Area; Property Boundary	Coordinate System: GDA 1994 MGA Zone 56	Scale: 0 50 100 150 200 Meters	
		Figure 4: Keys Parade Area Layout			Date: 08 January 2021	Data Sources: Aerial Imagery: Aerometrex Pty Ltd. Property Boundaries © NSW Department Finance, Services & Innovation 2021	
		Client: Mirvac Homes (NSW) Pty Ltd	**Address:** Prescot Parade, Milperra, NSW				

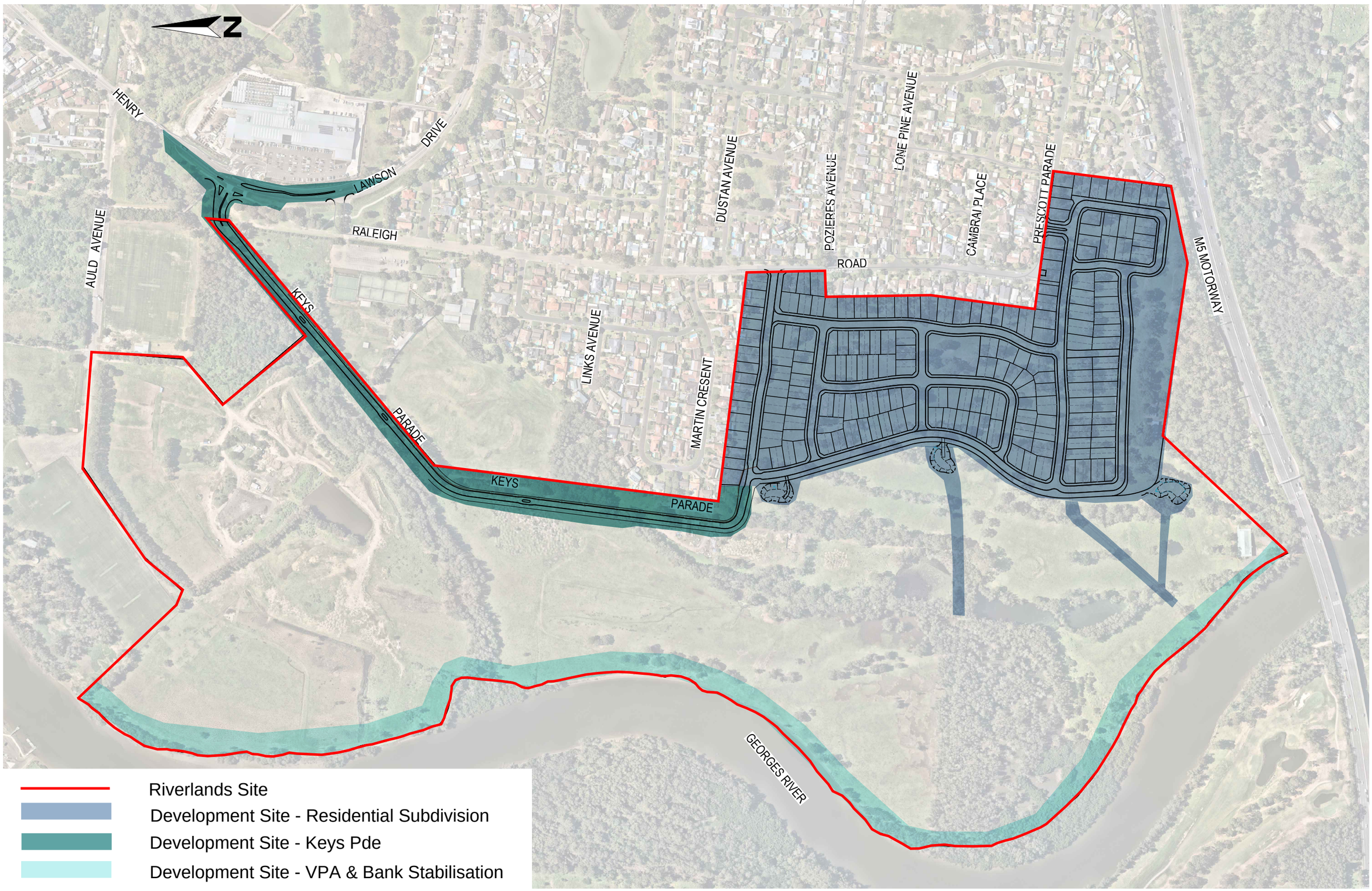


		Project No: SES_539	**Title:** Contamination Assessment of Proposed Development Lands, Riverlands New Residential Project, Milperra NSW	**Legend:** Site Boundary; Keys Parade Area; Sample Locations (2016); Sample Locations (2018); Sample Locations (2020)	Coordinate System: GDA 1994 MGA Zone 56	Scale: 0 50 100 150 200 Meters
		Figure 5: Keys Parade Area Sampling Locations				
		Client: Mirvac Homes (NSW) Pty Ltd	**Address:** Prescot Parade, Milperra, NSW		Date: 08 January 2021	Data Sources: Aerial Imagery: Aerometrex Pty Ltd. Property Boundaries © NSW Department Finance, Services & Innovation 2021

		Project No: SES_539	**Title:** Contamination Assessment of Proposed Development Lands, Riverlands New Residential Project, Milperra NSW	**Legend:** Site Boundary; Foreshore Area; Property Boundary	Coordinate System: GDA 1994 MGA Zone 56	Scale: 0 100 200 300 400 Meters
		Figure 6: Foreshore Area Layout			Date: 08 January 2021	Data Sources: Aerial Imagery: Aerometrex Pty Ltd. Property Boundaries © NSW Department Finance, Services & Innovation 2021
		Client: Mirvac Homes (NSW) Pty Ltd	**Address:** Prescot Parade, Milperra, NSW			



SULLIVAN environmental sciences	**Project No:** SES_539	**Title:** Contamination Assessment of Proposed Development Lands, Riverlands New Residential Project, Milperra NSW	**Legend:** Site Boundary; Foreshore Area; Sample Locations (2016); Sample Locations (2020)	Coordinate System: GDA 1994 MGA Zone 56	Scale: 0 100 200 300 400 Meters	
	Figure 7: Foreshore Area Sampling Locations			Date: 08 January 2021	Data Sources: Aerial Imagery: Aerometrex Pty Ltd. Property Boundaries © NSW Department Finance, Services & Innovation 2021	
	Client: Mirvac Homes (NSW) Pty Ltd	**Address:** Prescot Parade, Milperra, NSW				



Riverlands Site

Development Site - Residential Subdivision

Development Site - Keys Pde

Development Site - VPA & Bank Stabilisation

STATUS: FOR INFORMATION AUTHORISED FOR ISSUE: BY: BRANA TOMIC Senior Project Manager SIGN: DATE:	Disclaimer and Copyright: ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE. NOT FOR CONSTRUCTION UNLESS STAMPED BY CERTIFYING AUTHORITY UNLESS NOTED OTHERWISE.	calibre ©2021 calibregroup.com	SCALE 0 25 50 75 100 125 150 175 200 SCALE 1:2500 (A1) SCALE 1:5000 (A3)	TITLE RIVERLANDS GOLF COURSE MASTERPLAN DRAWING 19-00908.05_MASTERPLAN_SK08_REV4 DATE 25/11/2021 REV 4	

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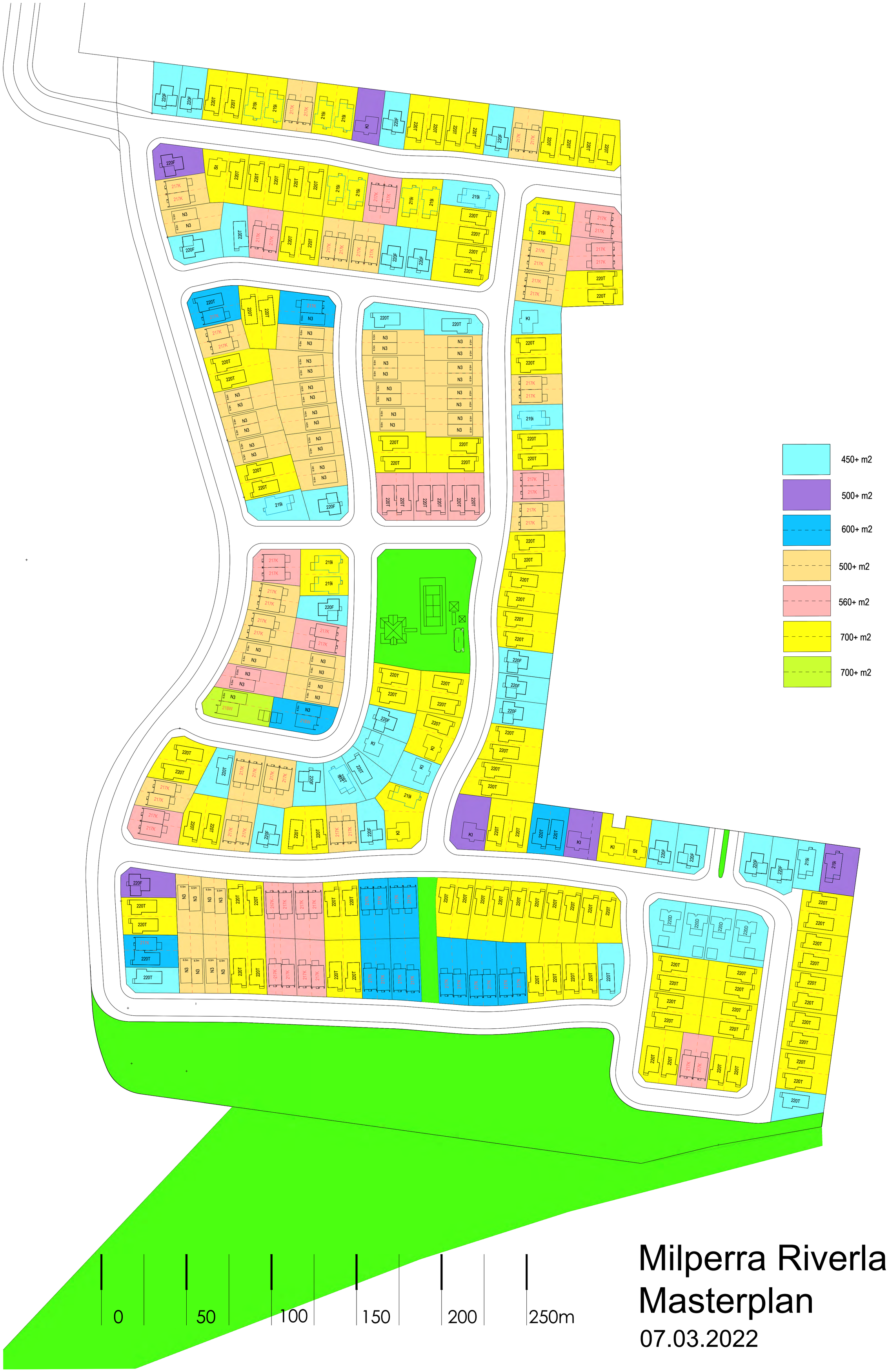

Milperra Riverlands Masterplan

07.03.2022

B

Appendix B Results Summary Tables

Table 1
SES_539 - Residential Area Soil Results
Development Lands Contamination Assessment - Milperra

	Moisture Content	Asbestos Identification in Bulk Solids								Asbestos Identification in Soils							Total Metals by ICP-AES							Hg by FIMS	TRH - Semivolatile Fraction										TRH Volatiles/BTEX										PCB	PAH/Phenols (SIM											
		Asbestos Detected	Asbestos Type	Asbestos (Trace)	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Asbestos Detected	Asbestos (Trace)	Asbestos Type	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Nickel	Zinc	Mercury	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	C6-C9 Fraction	Naphthalene	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	PCBs (Sum of total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene
	%	Fibres	g/kg	g/kg	-	--	-	g	g/kg	Fibres	g/kg	g/kg	-	Detect	--	-	g	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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	1	5	0.1	0.1				0.01		5	0.1	0.1					0.01	5	1	2	5	5	2	5	0.1	50	50	100	100	50	50	100	100	50	10	10	10	1	0.2	0.5	0.5	0.5	0.5	0.5	0.2	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HILs Res A Soil	-	Y	-	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	100[#5]	20	100	6,000	300[#6]	400	7,400	40[#4]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1[#3]	-	-	-	-	-	-	-	-	-	-	-
CRC Care HSL-A Residential (Low Density)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,300	4,500	6,300	-	-	-	-	-	4,400	-	1400	100	14,000	4,500	-	-	12,000	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	110[#8]	-	-	-	-	-	-	-	45[#9]	-	3	0.5	160	55	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-
1-2m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240[#8]	-	-	-	-	-	-	-	70[#9]	-	NL (9)	0.5	220	NL (64)	-	-	60	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100[#10]	-	510	230	1100	270	770	-	-	-	-	-	-	-	-	-	-	-	-	-	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120[#11]	[#12]	300	2,800	-	-	-	-	-	180[#9]	-	-	50	85	70	-	-	105	-	-	-	-	-	0.7	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000[#11]	-	2,500	10,000	-	-	-	-	700[#13]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pesticide Delineation Samples - 2020																																																						
Field ID	**Date**	**Depth**																																																						
D01_0.1-0.2	23/12/2020	0.1 - 0.2	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	1	3	5	15	<2	49	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
D01_0.4-0.5	23/12/2020	0.4 - 0.5	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	<1	5	5	5	<2	28	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
D02_0.1-0.2	23/12/2020	0.1 - 0.2	5.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	<1	<2	<5	<5	<2	9	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
D02_0.4-0.5	23/12/2020	0.4 - 0.5	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	2	<5	<5	<2	<5	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
D03_0.1-0.2	23/12/2020	0.1 - 0.2	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	7	4	11	68	2	63	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
D04_0.2-0.3	23/12/2020	0.2 - 0.3	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	<1	<2	<5	<5	<2	77	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
QZ02	23/12/2020	-	21.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41	1	6	19	64	4	242	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
RPD%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***103***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D04_0.4-0.5	23/12/2020	0.4 - 0.5	5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	<1	<2	<5	<5	<2	18	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
D05_0.2-0.3	23/12/2020	0.2 - 0.3	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	2	<5	<5	<2	82	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
D06_0.2-0.3	23/12/2020	0.2 - 0.3	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	4	2	<5	22	<2	207	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
D06_0.4-0.5	23/12/2020	0.4 - 0.5	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	3	<2	<5	<5	<2	15	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
D07_0.1-0.2	23/12/2020	0.1 - 0.2	8.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	2	5	6	<2	14	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
D08_0.1-0.2	23/12/2020	0.1 - 0.2	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	7	4	8	12	2	54	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
Data Gap Investigation Samples - 2020																																																						
Sample ID	**Depth**	**Date**																																																					
TP01_0.4-0.5	0.4-0.5	4/02/2020	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	4	<5	<5	<2	<5	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Q01	-	4/02/2020	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	6	<5	<5	<2	<5	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP02_0.1-0.2	0.1-0.2	4/02/2020	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	5	<5	18	<2	18	0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP03_0.2-0.3	0.2-0.3	4/02/2020	3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	3	<5	<5	<2	<5	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP04_0.2-0.3	0.2-0.3	4/02/2020	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	8	<5	7	<2	<5	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP05_0.4-0.5	0.4-0.5	4/02/2020	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	7	7	22	5	24	0.6	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP06_0.5-0.6	0.5-0.6	4/02/2020	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	2	<5	<5	<2	7	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP07_0-0.1	0.0-0.1	4/02/2020	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	4	5	9	<2	14	0.3	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP08_0.2-0.3	0.2-0.3	4/02/2020	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	5	8	5	<2	11	0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Q03	-	4/02/2020	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<4	<0.4	5	7	6	4	14	<0.1	<25	<50	<100	<100	<50	<50	<100	<100	<50	<25	<25	<25	<3	<0.2	<0.5	<0.5	<1	<2	<1	<3	<1	-	<0.1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1
TP10_0.4-0.6	0.4-0.6	4/02/2020	6.8	-	-	-	-	-	-	-	No	No		No	No	28.2	Black soil.	A.SMYLIE	<5	<1	8	16	<5	12	7	0.7	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP10_1.1-1.2	1.1-1.2	4/02/2020	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A.SMYLIE	<5	<1	6	<5	<5	<2	<5	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP11_0.5-0.6	0.5-0.6	4/02/2020	8.5	-	-	-	-	-	-	-	No	No	-	No	No	31.7	Black soil.	A.SMYLIE	<5	<1	6	21	7	22	10	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP12_0.6-0.7	0.6-0.7	4/02/2020	4.5	-	-	-	-	-	-	-	No	No	-	No	No	24.9	Black soil.	A.SMYLIE	<5	<1	6	22	13	16	15	0.2	<10	<50	180	<100	180	<50	120	<100	120	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9
TP12_0.9-1.0	0.9-1.0	4/02/2020	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	4	<5	<5	<2	<5	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP13_0.1-0.2	0.1-0.2	4/02/2020	3.5	-	-	-	-	-	-	-	No	No	-	No	No	360	Mid brown soil.	A.SMYLIE	<5	<1	4	7	37	<2	87	3.4	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP14_0.1-0.2	0.1-0.2	4/02/2020	5.4	-	-	-	-	-	-	-	No	No	-	No	No	282	Mid brown soil.	A.SMYLIE	16	<1	3	14	38	4	382	25.9	<10	<50	110	110	220	<50	<100	110	110	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Q04	-	4/02/2020	8.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	<1	3	12	33	3	388	17.5	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP15_0.1-0.2	0.1-0.2	4/02/2020	1.8	-	-	-	-	-	-	-	No	No	-	No	No	410	Mid brown soil.	A.SMYLIE	16	3	4	11	52	4	158	0.7	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP17_0.1-0.2	0.1-0.2	4/02/2020	2.2	-	-	-	-	-	-	-	No	No	-	No	No	443	Mid brown soil.	A.SMYLIE	35	1	3	14	26	<2	112	4.9	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP18_0.2-0.4	0.2-0.4	4/02/2020	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	5	<5	7	<2	7	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19_0.1-0.2	0.1-0.2	4/02/2020	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	7	<5	8	<2	16	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21_0.3-0.4	0.3-0.4	5/02/2020	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	<2	<5	<5	<2	10	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP22_0.4-0.5	0.4-0.5	5/02/2020	19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	<1	11	14	11	4	29	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Q05	-	5/02/2020	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	<0.4	13	15	13	4	14	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP23_0.1-0.2	0.1-0.2	5/02/2020	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	2	7	8	8	<2	20	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP26_0-0.1	0.0-0.1	5/02/2020	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	3	6	12	<2	20	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP27_0.4-0.5	0.4-0.5	5/02/2020	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	6	<5	31	<2	18	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP28_0.6-0.8	0.6-0.8	5/02/2020	13.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	15	13	14	<2	6	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP29_0-0.1	0.0-0.1	5/02/2020	3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	1	8	8	9	<2	20	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP30_0-0.1	0_0-0.1	5/02/2020	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	9	6	8	<2	12	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP32_0.5-0.6	0.5-0.6	5/02/2020	15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	7	<5	9	<2	<5	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP33_0.5-0.7	0.5-0.7	5/02/2020	12.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	8	30	54	7	118	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP34_0-0.1	0.0-0.1	5/02/2020	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	13	11	10	<2	16	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP35_0-0.1	0.0-0.1	5/02/2020	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	2	<5	6	<2	7	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP36_0.1-0.2	0.1-0.2	5/02/2020	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	2	<5	6	<2	7	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP37_0-0.1	0.0-0.1	5/02/2020	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	2	<5	9	<2	12	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP38_0.1-0.2	0.1-0.2	5/02/2020	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	<2	<5	<5	<2	5	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP39_0.2-0.3	0.2-0.3	5/02/2020	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	1	2	<5	5	<2	11	17.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Q06	-	5/02/2020	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	4	5	5	<2	9	9.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP40_0.4-0.6	0.4-0.6	5/02/2020	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	<1	4	11	25	<2	22	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP41_0.3-0.4	0.3-0.4	5/02/2020	6.1	-	-	-	-	-	-	-	No	No	-	No	No	481	Mid brown soil.	A.SMYLIE	<5	<1	4	<5	8	2	7	4.2	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP41_1.3-1.4	1.3-1.4	5/02/2020	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	6	26	13	20	15	0.6	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP41_1.5-1.6	1.5-1.6	5/02/2020	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	7	<5	6	<2	<5	<0.1	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP45_0.1-0.2	0.1-0.2	5/02/2020	2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	6	<5	14	2	27	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP46_0.2-0.3	0.2-0.3	5/02/2020	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	3	<5	5	<2	6	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP47_0.1-0.2	0.1-0.2	5/02/2020	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	<2	<5	<5	<2	<5	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 1
SES_539 - Residential Area Soil Results
Development Lands Contamination Assessment - Milperra

				Asbestos Identification in Bulk Solids									Asbestos Identification in Soils								Total Metals by ICP-AES							Hg by FIMS	TRH - Semivolatile Fraction														TRH Volatiles/BTEX								PCB	PAH/Phenols (SIM															
			Moisture Content	Asbestos Detected	Asbestos Type	Asbestos (Trace)	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Asbestos Detected	Asbestos (Trace)	Asbestos Type	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Nickel	Zinc	Mercury	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	C6-C9 Fraction	Naphthalene	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	PCBs (Sum of total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene
			%	Fibres	g/kg	g/kg	-	--	-	g	g/kg	Fibres	g/kg	g/kg	-	Detect	--	-	g	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	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			1	5	0.1	0.1				0.01		5	0.1	0.1					0.01	5	1	2	5	5	2	5	0.1	50	50	100	100	50	50	100	100	50	10	10	10	1	0.2	0.5	0.5	0.5	0.5	0.5	0.2	0.1	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
NEPM 2013 Table 1A(1) HILs Res A Soil			-	Y	-	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	100[#5]	20	100	6,000	300[#6]	400	7,400	40[#4]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1[#3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRC Care HSL-A Residential (Low Density)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,300	4,500	6,300	-	-	-	-	-	4,400	-	1400	100	14,000	4,500	-	-	12,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	110[#8]	-	-	-	-	-	-	-	45[#9]	-	3	0.5	160	55	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1-2m			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240[#8]	-	-	-	-	-	-	-	70[#9]	-	NL (9)	0.5	220	NL (64)	-	-	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100[#10]	-	510	230	1100	270	770	-	-	-	-	-	-	-	-	-	-	-	-	-	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120[#11]	[#12]	300	2,800	-	-	-	-	-	180[#9]	-	-	50	85	70	-	-	105	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000[#11]	-	2,500	10,000	-	-	-	-	-	700[#13]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP58_0.15-0.3	0.15-0.3	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	555	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP59_0.1-0.2	0.1-0.2	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	652	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP60_0.05-0.2	0.05-0.2	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	508	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP57_0.3-0.4	0.3-0.4	18/02/2020	8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	4	9	6	7	14	0.1	<10	<50	150	120	270	<50	<100	120	120	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	0.5	<0.5	0.6
TP61_0.1-0.3	0.1-0.3	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	524	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP63_0.05-0.15	0.05-0.15	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	601	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP64_0.05-0.2	0.05-0.2	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	468	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP65_0.1-0.3	0.1-0.3	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	451	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP66_0.1-0.3	0.1-0.3	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	426	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP67_0.1-0.3	0.1-0.3	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	478	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP68_0-0.2	0.0-0.2	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	567	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP70_0-0.2	0.0-0.2	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	429	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP71_0-0.1	0.0-0.1	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	422	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP73_0-0.1	0.0-0.1	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	448	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP74_0-0.1	0.0-0.1	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	336	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP75_0-0.1	0.0-0.1	18/02/2020	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	<2	<5	<5	<2	<5	0.4	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2		<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
TP76_0-0.2	0.0-0.2	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	457	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP77_0.1-0.2	0.1-0.2	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	532	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP78_0.2-0.4	0.2-0.4	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	469	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP79_0.4-0.5	0.4-0.5	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	439	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP80_0.1-0.3	0.1-0.3	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	374	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP81_0.1-0.3	0.1-0.3	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	394	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP83_0.2-0.4	0.2-0.4	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	410	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP84_0-0.2	0.0-0.2	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	394	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP85_0-0.1	0.0-0.1	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	297	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP86_0-0.2	0.0-0.2	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	444	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP87_0-0.1	0.0-0.1	18/02/2020	-	-	-	-	-	-	-	-	-	No	No	-	No	No	350	Mid brown soil.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* A Non Detect Multiplier of 0.5 has been applied.

Comments
#1 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the conc of each carc. PAH in sample by its BaP TEF (ref Table 1A(1)) & summing
#2 Total PAHs: Based on sum of 16 most common reported (WHO 98)
#3 PCBs: HIL refers to non-dioxin like PCBs only.
#4 Elemental mercury: HIL does not address elemental mercury.
#5 Arsenic: HIL assumes 70% oral bioavailability.
#6 Lead: HILs A,B,C based on blood lead models
#7 Derived soil HSL exceeds soil saturation concentraiton
#8 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#10 Aged values apply to arsenic contamination present in soil > 2 years. Refer Schedule B5c for < 2 years.
#11 ERRATA Updated 30 April 2014 . Naphthalene should not be subtracted.
#12 Errata 30 April 2014. Naphthalene should not be subtracted from >C
#13 Separate management limits for BTEX & naphthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

Table 1
SES_539 - Residential Area Soil Results
Development Lands Contamination Assessment - Milperra

| | A) | | | | | | | | | Pesticides by GCMS | | | | | | | | |

Table 1
SES_539 - Residential Area Soil Results
Development Lands Contamination Assessment - Milperra

| | | | PAHs (Sum of total) | | | | | | | | | Pesticides by GCMS | | | | | | | | |

Table 2
SES_539 - Keys Parade Area Soil Results
Development Lands Contamination Assessment - Milperra

	Moisture Content	Asbestos Identification in Bulk Solids								Asbestos Identification in Soils								Total Metals by ICP-AES							Hg by FIMS	TRH - Semivolatile Fraction								
	Moisture Content	Asbestos Detected	Asbestos Type	Asbestos (Trace)	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Asbestos Detected	Asbestos (Trace)	Asbestos Type	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Nickel	Zinc	Mercury	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)
	%	Fibres	g/kg	g/kg	-	--	-	g	g/kg	Fibres	g/kg	g/kg	-	Detect	--	-	g	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	1	5	0.1	0.1				0.01		5	0.1	0.1					0.01	5	1	2	5	5	2	5	0.1	50	50	100	100	50	50	100	100	50
NEPM 2013 Table 1A(1) HILs C - Open Space	-	Y	-	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	300[#5]	90	300	17,000	600[#6]	1,200	30,000	80[#4]	-	-	-	-	-	-	-	-	-
CRC Care HSL-C Open Space, Sand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3800	5300	7400	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NL (560)	-	-	-	-	-	-	-
1-2m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NL (560)	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100[#10]	-	510	230	1100	270	770	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120[#11]	[#12]	300	2,800	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000[#13]	-	2,500	10,000	-	-	-	-	-
Keys Parade Samples																																		
Field ID	**Date**	**Depth**																																
KP01_0.5-0.6	17/12/2020	0.5 - 0.6	6.8	-	-	-	-	-	-	-	-	No	No	NA	No	No	48.9	Mid brown soil.	A. SMYLIE	6	<1	13	23	36	12	122	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
DUPA	17/12/2020		6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	<1	14	17	34	12	117	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***4.2***	-	-	-	-	-	-	-	-	-
KP02_0.2-0.3	17/12/2020	0.2 - 0.3	5.9	-	-	-	-	-	-	-	-	No	No	NA	No	No	63.4	Mid brown soil.	A. SMYLIE	<5	<1	16	9	11	19	27	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP03_0.7-0.8	17/12/2020	0.7 - 0.8	6.6	-	-	-	-	-	-	-	-	No	No	NA	No	No	69.9	Mid brown soil.	A. SMYLIE	<5	<1	10	17	11	15	23	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP04_0.4-035	17/12/2020	0.4 - 35	16.5	-	-	-	-	-	-	-	-	No	No	NA	No	No	30.4	Mid brown soil.	A. SMYLIE	<5	<1	8	11	6	10	13	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP05_0.5-0.6	17/12/2020	0.5 - 0.6	3.2	-	-	-	-	-	-	-	-	No	No	NA	No	No	52.3	Mid brown soil.	A. SMYLIE	<5	<1	5	10	25	3	83	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
FOA	17/12/2020			Yes	Ch + Am	N/A	No	No	4.5	One piece of asbestos cement sheeting approximately 50x20x10mm.	A. SMYLIE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP06_0.3-0.4	17/12/2020	0.3 - 0.4	1.1	-	-	-	-	-	-	-	-	No	No	NA	No	No	52.6	Mid brown soil.	A. SMYLIE	<5	<1	<2	<5	<5	<2	20	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP06_0.9-1.0	17/12/2020	0.9 - 1	14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	<1	46	34	87	34	130	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP07_0.5-0.6	17/12/2020	0.5 - 0.6	3.1	-	-	-	-	-	-	-	-	No	No	NA	No	No	55.6	Mid brown soil.	A. SMYLIE	<5	<1	4	6	15	2	36	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP08_0.2-0.3	17/12/2020	0.2 - 0.3	6.9	-	-	-	-	-	-	-	-	No	No	NA	No	No	32.8	Mid brown soil.	A. SMYLIE	<5	<1	10	12	37	8	38	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP09_0.3-0.4	17/12/2020	0.3 - 0.4	4.7	-	-	-	-	-	-	-	-	No	No	NA	No	No	72.6	Mid brown soil.	A. SMYLIE	13	<1	10	17	34	6	61	0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP10_0.2-0.3	17/12/2020	0.2 - 0.3	4.8	-	-	-	-	-	-	-	-	No	No	NA	No	No	76.6	Mid brown soil.	A. SMYLIE	<5	<1	12	18	32	9	68	0.2	<50	<50	<100	<100	<50	<50	<100	<100	<50
DUPB	17/12/2020		5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	14	17	28	10	64	7.4	<50	<50	100	<100	100	<50	<100	<100	<50
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***6.1***	-	-	-	-	-	-	-	-	-
KP11_0.1-0.2	17/12/2020	0.1 - 0.2	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	<1	10	6	14	6	17	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP12_0.1-0.2	17/12/2020	0.1 - 0.2	7.1	-	-	-	-	-	-	-	-	No	No	NA	No	No	54.2	Mid brown soil.	A. SMYLIE	7	<1	26	21	23	25	51	<0.1	<50	<50	260	170	430	<50	110	210	320
KP14_0.1-0.2	17/12/2020	0.1 - 0.2	11.8	-	-	-	-	-	-	-	-	No	No	NA	No	No	40.3	Mid brown soil.	A. SMYLIE	7	<1	17	8	16	6	18	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP15_0.1-0.2	17/12/2020	0.1 - 0.2	10.9	-	-	-	-	-	-	-	-	No	No	NA	No	Yes	69.3	Mid brown soil.	A. SMYLIE	<5	<1	33	525	117	30	229	<0.1	<50	<50	1,770	470	2,240	<50	1,190	880	2,070
KP16_0.2-0.3	17/12/2020	0.2 - 0.3	14.7	-	-	-	-	-	-	-	-	No	No	NA	No	No	48.8	Mid brown soil.	A. SMYLIE	7	<1	36	22	96	29	70	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP17_0.1-0.2	17/12/2020	0.1 - 0.2	6.3	-	-	-	-	-	-	-	-	No	No	NA	No	No	51.2	Mid brown soil.	A. SMYLIE	5	<1	15	18	49	14	69	<0.1	<50	<50	190	150	340	<50	100	150	250
KP18_0.1-0.2	17/12/2020	0.1 - 0.2	7	-	-	-	-	-	-	-	-	No	No	NA	No	No	67.8	Mid brown soil.	A. SMYLIE	<5	<1	19	18	37	16	43	<0.1	<50	<50	150	<100	150	<50	<100	<100	<50
KP19_0.1-0.2	17/12/2020	0.1 - 0.2	10.2	-	-	-	-	-	-	-	-	No	No	NA	No	No	68.3	Mid brown soil.	A. SMYLIE	6	<1	28	21	33	23	53	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
KP20_0.1-0.2	17/12/2020	0.1 - 0.2	7.8	-	-	-	-	-	-	-	-	No	No	NA	No	No	61.3	Mid brown soil.	A. SMYLIE	6	<1	24	16	28	14	47	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
DUPC	17/12/2020	-	6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	<1	30	21	29	23	48	<0.1	<50	<50	110	<100	110	<50	<100	<100	<50
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***22.2***	-	-	-	-	-	-	-	-	-	-	-	-
TRIP BLANK	15/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIP SPIKE 4	15/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TSC 4	15/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Recovery			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Delineation Assessment 2018																																		
Field ID	**Date**	**Depth**																																
B19A_0.3-0.5	27/11/2018	0.3 - 0.5	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	5	7	<5	9	7	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
Q100	27/11/2018		1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	9	7	6	12	10	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B19A_0.9-1.1	27/11/2018	0.9 - 1.1	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	35	7	6	19	12	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B20A_1.3-1.6	27/11/2018	1.3 - 1.6	12.6	-	-	-	-	-	-	-	-	No	No	NA	No	No	42.6	Dark brown sandy soil.	A. SMYLIE	<5	<1	11	8	8	9	14	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B20A_3.1-3.4	27/11/2018	3.1 - 3.4	24.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	3	9	13	6	25	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B21A_0.1-0.2	27/11/2018	0.1 - 0.2	5.2	-	-	-	-	-	-	-	-	No	No	NA	No	No	40.5	Dark brown sandy soil.	A. SMYLIE	<5	<1	8	24	39	10	38	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B22A_1.4-1.5	27/11/2018	1.4 - 1.5	23.3	-	-	-	-	-	-	-	-	No	No	NA	No	No	20.1	Mid brown sandy soil.	A. SMYLIE	<5	<1	<2	<5	<5	4	9	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B22A_3.0-3.5	27/11/2018	3 - 3.5	32.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	<2	<5	<5	3	7	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B23A - No Sample																																		
B24A - No Sample?																																		
B25A_0.9-1.1	27/11/2018	0.9 - 1.1	22	-	-	-	-	-	-	-	-	No	No	NA	No	No	22.4	Grey sandy soil.	A. SMYLIE	<5	<1	<2	<5	<5	3	6	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B26A_0.9-1.1	27/11/2018	0.9 - 1.1	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	8	18	31	8	68	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B27A_1.5-1.7	27/11/2018	1.5 - 1.7	23.6	-	-	-	-	-	-	-	-	No	No	NA	No	No	29.5	Grey sandy soil.	A. SMYLIE	<5	<1	7	53	41	8	47	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B30A_0.3-0.5	27/11/2018	0.3 - 0.5	21.9	-	-	-	-	-	-	-	-	No	No	NA	No	No	28.9	Dark grey sandy soil.	A. SMYLIE	<5	<1	3	9	10	5	20	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
Q101	27/11/2018		20.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	4	14	20	6	27	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B31A_0.2-0.4	27/11/2018	0.2 - 0.4	3.8	-	-	-	-	-	-	-	-	No	No	NA	No	No	39.1	Mid brown sandy soil.	A. SMYLIE	<5	<1	5	11	8	6	24	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50

Table 2
SES_539 - Keys Parade Area Soil Results
Development Lands Contamination Assessment - Milperra

			Moisture Content	Asbestos Identification in Bulk Solids								Asbestos Identification in Soils								Total Metals by ICP-AES							Hg by FIMS	TRH - Semivolatile Fraction									
			Moisture Content	Asbestos Detected	Asbestos Type	Asbestos (Trace)	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Asbestos Detected	Asbestos (Trace)	Asbestos Type	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Nickel	Zinc	Mercury	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)
			%	Fibres	g/kg	g/kg	-	--	-	g	g/kg	Fibres	g/kg	g/kg	-	Detect	--	-	g	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			1	5	0.1	0.1				0.01		5	0.1	0.1					0.01	5	1	2	5	5	2	5	0.1	50	50	100	100	50	50	100	100	50
NEPM 2013 Table 1A(1) HILs C - Open Space			-	Y	-	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	300[#5]	90	300	17,000	600[#6]	1,200	30,000	80[#4]	-	-	-	-	-	-	-	-	-
CRC Care HSL-C Open Space, Sand			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3800	5300	7400	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NL (560)	-	-	-	-	-	-	-
1-2m			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NL (560)	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100[#10]	-	510	230	1100	270	770	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120[#11]	[#12]	300	2,800	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000[#13]	-	2,500	10,000	-	-	-	-	-
Soil Assessment 2016 (revised to 2019)																																				
Sample ID	**Depth**	**Sample date:**																																		
B14A_0.4-0.6	0.4-0.6	26/02/2016	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	7	6	8	5	16	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B15A_0.5	0.5	29/02/2016	17.6	-	-	-	-	-	-	-	-	No	-	-	-	-	20.1	Mid grey clay soil with grey rocks and slag debris.	S.SPOONER	<5	<1	10	12	11	17	31	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B15A_2.8-3.0	2.8-3.0	29/02/2016	29.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	3	8	<5	7	12	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B16A_0.1-0.3	0.1-0.3	29/02/2016	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	<1	85	30	29	53	73	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B17A_0.2	0.2	29/02/2016	15.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	6	13	22	8	35	0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B18A_1.3	1.3	29/02/2016	13.6	-	-	-	-	-	-	-	-	Yes	-	Ch + Am	-	-	38.9	Dark grey soil with slag debris with one loose bundle of friable asbestos fibres approx 3 x 1 x 0.5 mm.	S.SPOONER	<5	<1	14	20	29	14	56	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B18A_3.0	3	29/02/2016	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	<1	8	5	8	3	6	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B9B_0.6-0.8	0.6-0.8	26/02/2016	23.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	<1	4	<5	6	<2	<5	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50
B10B_0.6-0.9	0.6-0.9	26/02/2016	28.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	<1	16	13	25	9	22	<0.1	<50	<50	110	<100	110	<50	<100	<100	<50
BSP1_1	Stockpile	29/02/2016	2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	<1	6	126	321	4	266	1.3	<50	<50	<100	<100	<50	<50	<100	<100	<50
Q3	Stockpile	29/02/2016	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	<1	6	79	384	5	303	1.4	<50	<50	<100	<100	<50	<50	<100	<100	<50
BSP1_4	Stockpile	29/02/2016	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	<1	18	53	155	21	284	0.3	<50	<50	140	<100	140	<50	<100	<100	<50
BSP1_7	Stockpile	29/02/2016	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	4	10	32	5	91	<0.1	<50	<50	140	<100	140	<50	<100	<100	<50
BSP1_8	Stockpile	29/02/2016	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	<1	23	6	15	2	15	<0.1	<50	<50	<100	<100	<50	<50	<100	<100	<50

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the conc of each carc. PAH in sample by its BaP TEF (ref Table 1A(1)) & summing
#2 Total PAHs: Based on sum of 16 most common reported (WHO 98)
#3 PCBs: HIL refers to non-dioxin like PCBs only.
#4 Elemental mercury: HIL does not address elemental mercury.
#5 Arsenic: HIL assumes 70% oral bioavailability.
#6 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered.
#7 Derived soil HSL exceeds soil saturation concentraiton
#8 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#10 Aged values apply to arsenic contamination present in soil > 2 years. Refer Schedule B5c for < 2 years.
#11 ERRATA Updated 30 April 2014 . Naphthalene should not be subtracted.
#12 Errata 30 April 2014. Naphthalene should not be subtracted from >C
#13 Separate management limits for BTEX & naphthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

Table 2
SES_539 - Keys Parade Area Soil Results
Development Lands Contamination Assessment - Milperra

	TRH Volatiles/BTEX											PCB	PAH/Phenols (SIM)																						
	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	C6-C9 Fraction	Naphthalene	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	PCBs (Sum of total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of total)	4,4-DDE	a-BHC	Aldrin
	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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	10	10	10	1	0.2	0.5	0.5	0.5	0.5	0.5	0.2	0.1	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	0.05	0.05	0.05
NEPM 2013 Table 1A(1) HILs C - Open Space	-	-	-	-	-	-	-	-	-	-	-	1[#3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	3[#1]	3[#1]	3[#1]	300[#2]	-	-	-
CRC Care HSL-C Open Space, Sand	-	5100	-	2200	140	21000	5900	-	-	17000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NL (9)	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m	-	NL (950)	-	NL (9)	NL (360)	NL (560)	NL (64)	-	-	NL (300)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NL (9)	-	-	-	-	-	-	-	-	-
1-2m	-	NL (950)	-	NL (9)	NL (360)	NL (560)	NL (64)	-	-	NL (300)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NL (9)	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space	-	-	-	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170	-	-	-	-	-	-	180	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)	-	180[#9]	-	-	50	85	70	-	-	105	-	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil	700[#13]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Keys Parade Samples																																			
Field ID	**Date**	**Depth**																																	
KP01_0.5-0.6	17/12/2020	0.5 - 0.6	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<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	<0.5	<0.5	<0.05	<0.05	<0.05
DUPA	17/12/2020		<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<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	<0.5	<0.5	-	-	-
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP02_0.2-0.3	17/12/2020	0.2 - 0.3	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<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	<0.5	<0.5	-	-	-
KP03_0.7-0.8	17/12/2020	0.7 - 0.8	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<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	<0.5	<0.5	<0.05	<0.05	<0.05
KP04_0.4-035	17/12/2020	0.4 - 35	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<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	<0.5	<0.5	-	-	-
KP05_0.5-0.6	17/12/2020	0.5 - 0.6	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<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	<0.5	<0.5	<0.05	<0.05	<0.05
FOA	17/12/2020		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP06_0.3-0.4	17/12/2020	0.3 - 0.4	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<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	<0.5	<0.5	-	-	-
KP06_0.9-1.0	17/12/2020	0.9 - 1	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<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	<0.5	<0.5	-	-	-
KP07_0.5-0.6	17/12/2020	0.5 - 0.6	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<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	<0.5	<0.5	<0.05	<0.05	<0.05
KP08_0.2-0.3	17/12/2020	0.2 - 0.3	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	0.8	0.6	1.2	<0.5	2.1	-	-	-
KP09_0.3-0.4	17/12/2020	0.3 - 0.4	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	0.9	1	1.1	0.7	<0.5	0.8	<0.5	2.2	<0.5	0.5	<0.5	1.3	2.1	1.5	1.8	1.3	10.6	<0.05	<0.05	<0.05
KP10_0.2-0.3	17/12/2020	0.2 - 0.3	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.5	<0.5	<0.5	0.5	0.6	0.7	<0.5	<0.5	0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	1.1	1	1.3	0.7	4.4	-	-	-
DUPB	17/12/2020		<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	0.9	0.6	1.2	<0.5	2.3	-	-	-
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP11_0.1-0.2	17/12/2020	0.1 - 0.2	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<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	<0.5	<0.5	-	-	-
KP12_0.1-0.2	17/12/2020	0.1 - 0.2	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	0.9	1.6	1.3	1.5	0.6	0.6	1.4	<0.5	3.9	<0.5	0.5	<0.5	3.2	3.3	2	2.2	1.7	18.8	<0.05	<0.05	<0.05
KP14_0.1-0.2	17/12/2020	0.1 - 0.2	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<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	<0.5	<0.5	-	-	-
KP15_0.1-0.2	17/12/2020	0.1 - 0.2	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<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	<0.5	<0.5	<0.05	<0.05	<0.05
KP16_0.2-0.3	17/12/2020	0.2 - 0.3	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.5	<0.5	<0.5	1	0.8	1	<0.5	<0.5	0.8	<0.5	2.2	<0.5	<0.5	<0.5	1.6	2.2	1.3	1.6	1	9.6	-	-	-
KP17_0.1-0.2	17/12/2020	0.1 - 0.2	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.5	<0.5	<0.5	0.8	1	1.2	0.7	<0.5	0.8	<0.5	1.8	<0.5	0.5	<0.5	0.7	1.8	1.5	1.8	1.3	9.3	-	-	-
KP18_0.1-0.2	17/12/2020	0.1 - 0.2	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.5	<0.5	0.5	1.8	2	2.2	1.2	0.8	1.6	<0.5	3.6	<0.5	0.9	<0.5	1.2	3.9	2.8	3.1	2.6	19.7	-	-	-
KP19_0.1-0.2	17/12/2020	0.1 - 0.2	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	0.7	0.6	1.2	<0.5	1.4	<0.05	<0.05	<0.05
KP20_0.1-0.2	17/12/2020	0.1 - 0.2	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.5	<0.5	<0.5	0.6	0.6	0.8	<0.5	<0.5	0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	1.3	1	1.4	0.7	5	-	-	-
DUPC	17/12/2020	-	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.5	<0.5	<0.5	1.3	1.4	1.6	0.8	0.6	1.1	<0.5	2.8	<0.5	0.7	<0.5	1.1	2.9	2.1	2.3	1.8	14.3	-	-	-
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***96.4***	-	-	-
TRIP BLANK	15/12/2020	-	-	-	-	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIP SPIKE 4	15/12/2020	-	-	-	-	<1	0.3	16.7	2.4	12.5	5.1	17.6	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TSC 4	15/12/2020	-	-	-	-	<1	0.3	16.6	2.4	12.5	5.1	17.6	36.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Recovery			-	-	-	-	100%	99%	100%	100%	100%	100%	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Delineation Assessment 2018																																			
Field ID	**Date**	**Depth**																																	
B19A_0.3-0.5	27/11/2018	0.3 - 0.5	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<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	<0.5	<0.5	-	-	-
Q100	27/11/2018		<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<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	<0.5	<0.5	-	-	-
B19A_0.9-1.1	27/11/2018	0.9 - 1.1	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<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	<0.5	<0.5	<0.2	<0.2	<0.2
B20A_1.3-1.6	27/11/2018	1.3 - 1.6	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<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	<0.5	<0.5	<0.2	<0.2	<0.2
B20A_3.1-3.4	27/11/2018	3.1 - 3.4	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<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	<0.5	<0.5	<0.2	<0.2	<0.2
B21A_0.1-0.2	27/11/2018	0.1 - 0.2	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	1.1	<0.5	0.6	1.2	<0.5	1.7	<0.2	<0.2	<0.2
B22A_1.4-1.5	27/11/2018	1.4 - 1.5	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<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	<0.5	<0.5	<0.2	<0.2	<0.2
B22A_3.0-3.5	27/11/2018	3 - 3.5	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<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	<0.5	<0.5	<0.2	<0.2	<0.2
B23A - No Sample																																			
B24A - No Sample?																																			
B25A_0.9-1.1	27/11/2018	0.9 - 1.1	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<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	<0.5	0.5	<0.2	<0.2	<0.2
B26A_0.9-1.1	27/11/2018	0.9 - 1.1	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<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	<0.5	<0.5	<0.2	<0.2	<0.2
B27A_1.5-1.7	27/11/2018	1.5 - 1.7	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<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	<0.5	<0.5	<0.2	<0.2	<0.2
B30A_0.3-0.5	27/11/2018	0.3 - 0.5	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<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	<0.5	<0.5	<0.2	<0.2	<0.2
Q101	27/11/2018		<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<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	<0.5	<0.5	<0.2	<0.2	<0.2
B31A_0.2-0.4	27/11/2018	0.2 - 0.4	<50	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<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	<0.5	<0.5	-	-	-

Table 2
SES_539 - Keys Parade Area Soil Results
Development Lands Contamination Assessment - Milperra

			TRH Volatiles/BTEX											PCB	PAH/Phenols (SIM)																								
			C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	C6-C9 Fraction	Naphthalene	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	PCBs (Sum of total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of total)	4,4-DDE	a-BHC	Aldrin
			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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			10	10	10	1	0.2	0.5	0.5	0.5	0.5	0.5	0.2	0.1	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	0.05	0.05	0.05
NEPM 2013 Table 1A(1) HILs C - Open Space			-	-	-	-	-	-	-	-	-	-	-	1[#3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	3[#1]	3[#1]	3[#1]	300[#2]	-	-	-
CRC Care HSL-C Open Space, Sand			-	5100	-	2200	140	21000	5900	-	-	17000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NL (9)	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m			-	NL (950)	-	NL (9)	NL (360)	NL (560)	NL (64)	-	-	NL (300)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NL (9)	-	-	-	-	-	-	-	-	-
1-2m			-	NL (950)	-	NL (9)	NL (360)	NL (560)	NL (64)	-	-	NL (300)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NL (9)	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space			-	-	-	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170	-	-	-	-	-	180	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)			-	180[#9]	-	-	50	85	70	-	-	105	-	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil			700[#13]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Assessment 2016 (revised to 2019)																																						
Sample ID	**Depth**	**Sample date:**																																					
B14A_0.4-0.6	0.4-0.6	26/02/2016	<10	<10	<10	<1	<0.2	<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	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-
B15A_0.5	0.5	29/02/2016	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.6	<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	<0.05	<0.05	<0.05
B15A_2.8-3.0	2.8-3.0	29/02/2016	<10	<10	<10	<1	<0.2	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05
B16A_0.1-0.3	0.1-0.3	29/02/2016	<10	<10	<10	<1	<0.2	<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	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-
B17A_0.2	0.2	29/02/2016	<10	<10	<10	<1	<0.2	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05
B18A_1.3	1.3	29/02/2016	<10	<10	<10	<1	<0.2	<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	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-
B18A_3.0	3	29/02/2016	<10	<10	<10	<1	<0.2	<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	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-
B9B_0.6-0.8	0.6-0.8	26/02/2016	<10	<10	<10	<1	<0.2	<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	<0.5	<0.5	0.6	1.2	<0.5	<0.05	<0.05	<0.05
B10B_0.6-0.9	0.6-0.9	26/02/2016	<10	<10	<10	<1	<0.2	<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	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	0.6	1.2	1.2	<0.05	<0.05	<0.05
BSP1_1	Stockpile	29/02/2016	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	0.9	0.8	1	<0.5	<0.5	0.8	<0.5	1.6	<0.5	<0.5	<0.5	0.8	1.6	1.3	1.6	1.0	7.5	-	-	-
Q3	Stockpile	29/02/2016	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	0.6	<0.5	0.6	<0.5	<0.5	0.6	<0.5	1	<0.5	<0.5	<0.5	<0.5	1.1	0.7	1.2	<0.5	3.9	-	-	-
BSP1_4	Stockpile	29/02/2016	<10	<10	<10	<1	<0.2	<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	0.8	<0.5	<0.5	<0.5	<0.5	0.8	0.6	1.2	<0.5	1.6	-	-	-
BSP1_7	Stockpile	29/02/2016	<10	<10	<10	<1	<0.2	<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	<0.5	<0.5	<0.5	<0.5	0.7	0.6	1.2	<0.5	1.3	-	-	-
BSP1_8	Stockpile	29/02/2016	<10	<10	<10	<1	<0.2	<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	<0.5	0.6	1.2	<0.5	<0.5	-	-	-

* A Non Detect Multiplier of 0.5 has been applied.

Comments
#1 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref S
#2 Total PAHs: Based on sum of 16 most common reported (WHO 98)
#3 PCBs: HIL refers to non-dioxin like PCBs only.
#4 Elemental mercury: HIL does not address elemental mercury.
#5 Arsenic: HIL assumes 70% oral bioavailability.
#6 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead
#7 Derived soil HSL exceeds soil saturation concentraiton
#8 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fr
#10 Aged values apply to arsenic contamination present in soil > 2 years. Refe
#11 ERRATA Updated 30 April 2014 . Naphthalene should not be subtracted.
#12 Errata 30 April 2014. Naphthalene should not be subtracted from >C
#13 Separate management limits for BTEX & naphthalene are not available he

Table 2
SES_539 - Keys Parade Area Soil Results
Development Lands Contamination Assessment - Milperra

	Pesticides by GCMS																																							
	Aldrin + Dieldrin	Azinophos methyl	b-BHC	Bromophos-ethyl	Carbophenothion	Chlordane	Chlordane (cis)	Chlordane (trans)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	d-BHC	DDD	DDT	DDT+DDE+DDD	Demeton-S-methyl	Diazinon	Dichlorvos	Dieldrin	Dimethoate	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Ethion	Fenamiphos	Fenthion	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Malathion	Methoxychlor	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos
	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	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	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	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	0.2	0.2	0.2	0.05	0.05
NEPM 2013 Table 1A(1) HILs C - Open Space	10	-	-	-	-	70	-	-	-	250	-	-	-		400	-	-	-	-	-	340	-	-	-	20	-	-	-	-	-	-	10	-	10	-	400	-	-	-	-	-
CRC Care HSL-C Open Space, Sand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1-2m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space	-	-	-	-	-	-	-	-	-	-	-	-	180	180	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Keys Parade Samples																																								
Field ID / **Date** / **Depth**																																								
KP01_0.5-0.6 / 17/12/2020 / 0.5 - 0.6	<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	<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	<0.2	<0.2	<0.2	<0.05	<0.05
DUPA / 17/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD% (for data >10 times EQL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP02_0.2-0.3 / 17/12/2020 / 0.2 - 0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP03_0.7-0.8 / 17/12/2020 / 0.7 - 0.8	<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	<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	<0.2	<0.2	<0.2	<0.05	<0.05
KP04_0.4-035 / 17/12/2020 / 0.4 - 35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP05_0.5-0.6 / 17/12/2020 / 0.5 - 0.6	<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	<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	<0.2	<0.2	<0.2	<0.05	<0.05
FOA / 17/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP06_0.3-0.4 / 17/12/2020 / 0.3 - 0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP06_0.9-1.0 / 17/12/2020 / 0.9 - 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP07_0.5-0.6 / 17/12/2020 / 0.5 - 0.6	<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	<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	<0.2	<0.2	<0.2	<0.05	<0.05
KP08_0.2-0.3 / 17/12/2020 / 0.2 - 0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP09_0.3-0.4 / 17/12/2020 / 0.3 - 0.4	<0.05	<0.05	<0.05	<0.05	<0.05	0.23	0.1	0.13	<0.05	<0.05	<0.05	<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	<0.2	<0.2	<0.2	<0.05	<0.05
KP10_0.2-0.3 / 17/12/2020 / 0.2 - 0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DUPB / 17/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD% (for data >10 times EQL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP11_0.1-0.2 / 17/12/2020 / 0.1 - 0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP12_0.1-0.2 / 17/12/2020 / 0.1 - 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	<0.2	<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	<0.2	<0.2	<0.2	<0.05	<0.05
KP14_0.1-0.2 / 17/12/2020 / 0.1 - 0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP15_0.1-0.2 / 17/12/2020 / 0.1 - 0.2	0.44	<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	<0.05	<0.05	<0.05	<0.05	0.44	<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	<0.2	<0.2	<0.2	<0.05	<0.05
KP16_0.2-0.3 / 17/12/2020 / 0.2 - 0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP17_0.1-0.2 / 17/12/2020 / 0.1 - 0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP18_0.1-0.2 / 17/12/2020 / 0.1 - 0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KP19_0.1-0.2 / 17/12/2020 / 0.1 - 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	<0.2	<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	<0.2	<0.2	<0.2	<0.05	<0.05
KP20_0.1-0.2 / 17/12/2020 / 0.1 - 0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DUPC / 17/12/2020 / -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD% (for data >10 times EQL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIP BLANK / 15/12/2020 / -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIP SPIKE 4 / 15/12/2020 / -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TSC 4 / 15/12/2020 / -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Recovery	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Delineation Assessment 2018																																								
Field ID / **Date** / **Depth**																																								
B19A_0.3-0.5 / 27/11/2018 / 0.3 - 0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Q100 / 27/11/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B19A_0.9-1.1 / 27/11/2018 / 0.9 - 1.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B20A_1.3-1.6 / 27/11/2018 / 1.3 - 1.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B20A_3.1-3.4 / 27/11/2018 / 3.1 - 3.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B21A_0.1-0.2 / 27/11/2018 / 0.1 - 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B22A_1.4-1.5 / 27/11/2018 / 1.4 - 1.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B22A_3.0-3.5 / 27/11/2018 / 3 - 3.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B23A - No Sample																																								
B24A - No Sample?																																								
B25A_0.9-1.1 / 27/11/2018 / 0.9 - 1.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B26A_0.9-1.1 / 27/11/2018 / 0.9 - 1.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B27A_1.5-1.7 / 27/11/2018 / 1.5 - 1.7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B30A_0.3-0.5 / 27/11/2018 / 0.3 - 0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Q101 / 27/11/2018	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B31A_0.2-0.4 / 27/11/2018 / 0.2 - 0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2
SES_539 - Keys Parade Area Soil Results
Development Lands Contamination Assessment - Milperra

| | | | Pesticides by GCMS | | |

Table 3
SES_539 -Foreshore Area Soil Results
Development Lands Contamination Assessment - Milperra

	Moisture Content	Asbestos Identification in Bulk Solids								Asbestos Identification in Soils								Total Metals by ICP-AES							Hg by FIMS
	Moisture Content	Asbestos Detected	Asbestos Type	Asbestos (Trace)	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Asbestos Detected	Asbestos (Trace)	Asbestos Type	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Nickel	Zinc	Mercury
	%	g/kg	-	Fibres	g/kg	g/kg	g	-	-	g/kg	Fibres	-	g/kg	g/kg	g	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	1	0.1		5	0.1	0.1	0.01	-	-	0.1	5		0.1	0.1	0.01	-	-	5	1	2	5	5	2	5	0.1
NEPM 2013 Table 1A(1) HILs C - Open Space	-	Y	-	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	300[#5]	90	300	17,000	600[#6]	1,200	30,000	80[#4]
CRC Care HSL-C Open Space (Direct Contact)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1-2m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100[#10]	-	510	230	1100	270	770	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foreshore Area Samples																									
Field ID	**Date**	**Depth**																							
FP01_0.2-0.3	23/12/2020	0.2 - 0.3	15.4	-	-	-	-	-	-	-	-	No	No	-	No	No	59.8	Mid brown soil.	A. SMYLIE	12	<1	8	36	19	19	100	<0.1
QZ01	23/12/2020	-	16.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	<1	19	28	24	14	65	<0.1
RPD% (for data >10 times EQL)			***6.3***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***42.4***	-
FP01_1.5	23/12/2020	1.5	27.6	-	-	-	-	-	-	-	-	No	No	-	No	No	56.3	Mid brown soil.	A. SMYLIE	22	<1	13	56	45	9	143	0.4
FP02_0.3-0.4	23/12/2020	0.3 - 0.4	12.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	8	8	16	6	35	<0.1
FP03_0.3-04	23/12/2020	0.3 - 4	5.9	-	-	-	-	-	-	-	-	No	No	-	No	No	71.9	Mid brown soil.	A. SMYLIE	<5	<1	5	11	11	5	45	0.2
FP04_0.2-0.3	23/12/2020	0.2 - 0.3	15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	<1	30	<5	12	2	9	<0.1
FP05_0.5-0.6	23/12/2020	0.5 - 0.6	61.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	436	2	367	1330	98	990	232	<0.1
FP05_F01	23/12/2020	-		Yes	Ch	N/A	No	No	16.3	One piece of asbestos cement sheeting approximately 55x35x5mm.	B.SCHRADER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP06_0.3-0.4	23/12/2020	0.3 - 0.4	16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	<1	15	13	19	4	56	<0.1
FP06_F02	23/12/2020	-		Yes	Ch	N/A	No	No	66.4	One piece of asbestos cement sheeting approximately 85x40x5mm.	B.SCHRADER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP07_0.2-0.3	23/12/2020	0.2 - 0.3	42.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	<1	18	103	85	22	857	0.1
FP07_F03	23/12/2020	-		Yes	Ch	N/A	No	No	66	One piece of asbestos cement sheeting approximately 155x85x5mm.	B.SCHRADER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP08_0.1-0.2	23/12/2020	0.1 - 0.2	23.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	<1	33	18	312	5	467	<0.1
FP09_0.1-0.2	23/12/2020	0.1 - 0.2	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	<1	16	36	17	15	71	<0.1
FP09_0.8-0.9	23/12/2020	0.8 - 0.9	9.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	7	11	9	3	30	<0.1
FP10_0.3-0.4	23/12/2020	0.3 - 0.4	14	-	-	-	-	-	-	-	-	No*	No	Am	No	No	48.2	Mid brown soil containing two pieces of asbestos fibre board approximately 5x3x1mm.	A. SMYLIE	31	5	396	2330	775	244	1430	1.3
FP11_0.3-0.4	23/12/2020	0.3 - 0.4	9.2	-	-	-	-	-	-	-	-	No	No	-	No	No	73.3	Mid brown soil.	A. SMYLIE	30	21	111	545	1,460	62	8810	3.9
FP12_0.3-0.4	23/12/2020	0.3 - 0.4	37.2	-	-	-	-	-	-	-	-	No	No	-	No	No	29.6	Mid brown soil.	A. SMYLIE	<5	<1	5	400	48	2	358	0.1
FP13_0.3-0.4	23/12/2020	0.3 - 0.4	16.5	-	-	-	-	-	-	-	-	No	No	-	No	No	38.4	Mid brown soil.	A. SMYLIE	<5	<1	19	67	37	17	207	0.2
QZ03	23/12/2020	-	18.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	<1	24	78	45	16	149	0.1

Table 3
SES_539 -Foreshore Area Soil Results
Development Lands Contamination Assessment - Milperra

			Moisture Content	Asbestos Identification in Bulk Solids								Asbestos Identification in Soils								Total Metals by ICP-AES							Hg by FIMS
			Moisture Content	Asbestos Detected	Asbestos Type	Asbestos (Trace)	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Asbestos Detected	Asbestos (Trace)	Asbestos Type	Synthetic Mineral Fibre	Organic Fibre	Sample weight (dry)	Description	APPROVED IDENTIFIER:	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Nickel	Zinc	Mercury
			%	g/kg	-	Fibres	g/kg	g/kg	g	-	-	g/kg	Fibres	-	g/kg	g/kg	g	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			1	0.1		5	0.1	0.1	0.01	-	-	0.1	5		0.1	0.1	0.01	-	-	5	1	2	5	5	2	5	0.1
NEPM 2013 Table 1A(1) HILs C - Open Space			-	Y	-	Y	-	-	-	-	-	Y	Y	-	-	-	-	-	-	300[#5]	90	300	17,000	600[#6]	1,200	30,000	80[#4]
CRC Care HSL-C Open Space (Direct Contact)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1-2m			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100[#10]	-	510	230	1100	270	770	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD% (for data >10 times EQL)			***9.8***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***15.2***	-	-	***32.6***	-
FP14_0.2-0.3	23/12/2020	0.2 - 0.3	18.8	-	-	-	-	-	-	-	-	No	No	-	No	No	30.7	Mid brown soil.	A. SMYLIE	<5	<1	7	31	42	14	117	<0.1
FP15_0.2-0.3	23/12/2020	0.2 - 0.3	14.7	-	-	-	-	-	-	-	-	No	No	-	No	No	26.3	Mid brown soil.	A. SMYLIE	7	<1	12	134	401	13	477	0.5
FP16_0.1-0.2	23/12/2020	0.1 - 0.2	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	<1	20	37	56	8	74	<0.1
QZ04	23/12/2020	-	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	<1	16	28	45	7	67	<0.1
RPD% (for data >10 times EQL)			***12.4***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***9.9***	-
FP17_0.4-0.5	23/12/2020	0.4 - 0.5	15.3	-	-	-	-	-	-	-	-	No	No	-	No	No	29.4	Mid brown soil.	A. SMYLIE	<5	<1	5	25	5	24	43	<0.1
TRIP BLANK	17/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIP SPIKE 5	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TSC5	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Recovery			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Assessment 2016 (revised to 2019)																											
Sample ID	**Depth**	**Sample date:**																									
B1C_0.3-0.5	0.3-0.5	26/02/2016	13.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	<1	18	6	12	2	6	<0.1
B2C_0.4-0.7	0.4-0.7	26/02/2016	23.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	<1	20	10	10	4	13	<0.1
Q5		26/02/2016	21.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	<1	18	12	12	4	20	<0.1
B4C_0.2-0.5	0.2-0.5	26/02/2016	13.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	<1	12	15	17	4	32	<0.1

* Asbestos identified but below LOR of 0.1g/kg.

Comments

#1 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the conc of each carc. PAH in sample by its BaP TEF (ref Table 1A(1)) & summing
#2 Total PAHs: Based on sum of 16 most common reported (WHO 98)
#3 PCBs: HIL refers to non-dioxin like PCBs only.
#4 Elemental mercury: HIL does not address elemental mercury.
#5 Arsenic: HIL assumes 70% oral bioavailability.
#6 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered.
#7 Derived soil HSL exceeds soil saturation concentraiton
#8 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#10 Aged values apply to arsenic contamination present in soil > 2 years. Refer Schedule B5c for < 2 years.
#11 ERRATA Updated 30 April 2014 . Naphthalene should not be subtracted.
#12 Errata 30 April 2014. Naphthalene should not be subtracted from >C
#13 Separate management limits for BTEX & naphthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

Table 3
SES_539 -Foreshore Area Soil Results
Development Lands Contamination Assessment - Milperra

	TRH - Semivolatile Fraction									TRH Volatiles/BTEX											PCB								
	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	C6-C9 Fraction	Naphthalene	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	PCBs (Sum of total)	PCBs (DI water leach)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene
	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	ug/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	50	50	100	100	50	50	100	100	50	10	10	10	1	0.2	0.5	0.5	0.5	0.5	0.5	0.2	0.1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HILs C - Open Space	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1[#3]	-	-	-	-	-	-	-	-
CRC Care HSL-C Open Space (Direct Contact)	-	3800	5300	7400	-	-	-	-	-	-	5100	-	2200	140	21000	5900	-	-	17000	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m	-	NL (560)	-	-	-	-	-	-	-	-	NL (950)	-	NL (9)	NL (360)	NL (560)	NL (64)	-	-	NL (300)	-	-	-	-	-	-	-	-	-	-
1-2m	-	NL (560)	-	-	-	-	-	-	-	-	NL (950)	-	NL (9)	NL (360)	NL (560)	NL (64)	-	-	NL (300)	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space	-	-	-	-	-	-	-	-	-	-	-	-	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)	120[#11]	[#12]	300	2,800	-	-	-	-	-	-	180[#9]	-	-	50	85	70	-	-	105	-	-	-	-	-	-	-	0.7	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil	1,000[#13]	-	2,500	10,000	-	-	-	-	-	700[#13]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foreshore Area Samples																													
Field ID	**Date**	**Depth**																											
FP01_0.2-0.3	23/12/2020	0.2 - 0.3	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
QZ01	23/12/2020	-	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP01_1.5	23/12/2020	1.5	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP02_0.3-0.4	23/12/2020	0.3 - 0.4	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP03_0.3-04	23/12/2020	0.3 - 4	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP04_0.2-0.3	23/12/2020	0.2 - 0.3	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP05_0.5-0.6	23/12/2020	0.5 - 0.6	<50	<50	150	<100	150	<50	<100	100	100	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	-	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
FP05_F01	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP06_0.3-0.4	23/12/2020	0.3 - 0.4	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP06_F02	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP07_0.2-0.3	23/12/2020	0.2 - 0.3	<50	<50	210	<100	210	<50	140	120	260	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP07_F03	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP08_0.1-0.2	23/12/2020	0.1 - 0.2	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP09_0.1-0.2	23/12/2020	0.1 - 0.2	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP09_0.8-0.9	23/12/2020	0.8 - 0.9	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP10_0.3-0.4	23/12/2020	0.3 - 0.4	<50	<50	260	<100	260	<50	220	<100	220	30	16	24	<1	<0.2	<0.5	3.4	7.6	3.4	11	14.4	125	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP11_0.3-0.4	23/12/2020	0.3 - 0.4	<50	<50	180	150	330	<50	<100	150	150	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	0.4	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP12_0.3-0.4	23/12/2020	0.3 - 0.4	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP13_0.3-0.4	23/12/2020	0.3 - 0.4	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	0.2	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
QZ03	23/12/2020	-	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Table 3
SES_539 -Foreshore Area Soil Results
Development Lands Contamination Assessment - Milperra

			TRH - Semivolatile Fraction									TRH Volatiles/BTEX											PCB								
			>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	C6-C9 Fraction	Naphthalene	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	PCBs (Sum of total)	PCBs (DI water leach)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene
			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	ug/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			50	50	100	100	50	50	100	100	50	10	10	10	1	0.2	0.5	0.5	0.5	0.5	0.5	0.2	0.1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HILs C - Open Space			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1[#3]	-	-	-	-	-	-	-	-
CRC Care HSL-C Open Space (Direct Contact)			-	3800	5300	7400	-	-	-	-	-	-	5100	-	2200	140	21000	5900	-	-	17000	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m			-	NL (560)	-	-	-	-	-	-	-	-	NL (950)	-	NL (9)	NL (360)	NL (560)	NL (64)	-	-	NL (300)	-	-	-	-	-	-	-	-	-	-
1-2m			-	NL (560)	-	-	-	-	-	-	-	-	NL (950)	-	NL (9)	NL (360)	NL (560)	NL (64)	-	-	NL (300)	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space			-	-	-	-	-	-	-	-	-	-	-	-	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)			120[#11]	[#12]	300	2,800	-	-	-	-	-	-	180[#9]	-	-	50	85	70	-	-	105	-	-	-	-	-	-	-	0.7	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil			1,000[#13]	-	2,500	10,000	-	-	-	-	-	700[#13]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP14_0.2-0.3	23/12/2020	0.2 - 0.3	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	0.4	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FP15_0.2-0.3	23/12/2020	0.2 - 0.3	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	0.6	-	<0.5	<0.5	<0.5	<0.5	0.5	0.6	<0.5
FP16_0.1-0.2	23/12/2020	0.1 - 0.2	<50	<50	120	<100	120	<50	<100	110	110	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
QZ04	23/12/2020	-	<50	<50	130	130	260	<50	<100	110	110	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP17_0.4-0.5	23/12/2020	0.4 - 0.5	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TRIP BLANK	17/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	-	-	-	-	-	-	-	-
TRIP SPIKE 5	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<0.2	10.5	1.7	10.7	3.4	14.1	26.3	-	-	-	-	-	-	-	-	-
TSC5	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	0.2	14.1	2	11.5	3.7	15.2	31.5	-	-	-	-	-	-	-	-	-
% Recovery			-	-	-	-	-	-	-	-	-	-	-	-	-	-	74%	85%	93%	92%	93%	83%	-	-	-	-	-	-	-	-	-
Soil Assessment 2016 (revised to 2019)																															
Sample ID	**Depth**	**Sample date:**																													
B1C_0.3-0.5	0.3-0.5	26/02/2016	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
B2C_0.4-0.7	0.4-0.7	26/02/2016	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Q5		26/02/2016	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
B4C_0.2-0.5	0.2-0.5	26/02/2016	<50	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<10	<1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

* Asbestos identified but below LOR of 0.1g/kg.

Comments

#1 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Scl
#2 Total PAHs: Based on sum of 16 most common reported (WHO 98)
#3 PCBs: HIL refers to non-dioxin like PCBs only.
#4 Elemental mercury: HIL does not address elemental mercury.
#5 Arsenic: HIL assumes 70% oral bioavailability.
#6 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead m
#7 Derived soil HSL exceeds soil saturation concentraiton
#8 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fra
#10 Aged values apply to arsenic contamination present in soil > 2 years. Refer
#11 ERRATA Updated 30 April 2014 . Naphthalene should not be subtracted.
#12 Errata 30 April 2014. Naphthalene should not be subtracted from >C
#13 Separate management limits for BTEX & naphthalene are not available her

Table 3
SES_539 -Foreshore Area Soil Results
Development Lands Contamination Assessment - Milperra

			PAH/Phenols (SIM)																																	
			Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of total)	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	Azinophos methyl	b-BHC	Bromophos-ethyl	Carbophenothion	Chlordane	Chlordane (cis)	Chlordane (trans)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	d-BHC	DDD	DDT
			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	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	0.05	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
NEPM 2013 Table 1A(1) HILs C - Open Space			-	-	-	-	-	-		-	-	3[#1]	3[#1]	3[#1]	300[#2]	-	-	-	6	-	-	-	-	50	-	-	-	160	-	-	-	
CRC Care HSL-C Open Space (Direct Contact)			-	-	-	-	-	-	2200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m			-	-	-	-	-	-	NL (9)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1-2m			-	-	-	-	-	-	NL (9)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space			-	-	-	-	-	-	170	-	-	-	-	-	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180	180
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foreshore Area Samples																																				
Field ID	**Date**	**Depth**																																		
FP01_0.2-0.3	23/12/2020	0.2 - 0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<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
QZ01	23/12/2020	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<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
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP01_1.5	23/12/2020	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP02_0.3-0.4	23/12/2020	0.3 - 0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP03_0.3-04	23/12/2020	0.3 - 4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<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
FP04_0.2-0.3	23/12/2020	0.2 - 0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP05_0.5-0.6	23/12/2020	0.5 - 0.6	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	1	1.9	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP05_F01	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP06_0.3-0.4	23/12/2020	0.3 - 0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<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
FP06_F02	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP07_0.2-0.3	23/12/2020	0.2 - 0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP07_F03	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP08_0.1-0.2	23/12/2020	0.1 - 0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP09_0.1-0.2	23/12/2020	0.1 - 0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<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
FP09_0.8-0.9	23/12/2020	0.8 - 0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<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
FP10_0.3-0.4	23/12/2020	0.3 - 0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	0.12	<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	0.18	<0.2
FP11_0.3-0.4	23/12/2020	0.3 - 0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP12_0.3-0.4	23/12/2020	0.3 - 0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP13_0.3-0.4	23/12/2020	0.3 - 0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.05	<0.05	<0.05	0.08	<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
QZ03	23/12/2020	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<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

Table 3
SES_539 -Foreshore Area Soil Results
Development Lands Contamination Assessment - Milperra

			PAH/Phenols (SIM)																																
			Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of total)	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	Azinophos methyl	b-BHC	Bromophos-ethyl	Carbophenothion	Chlordane	Chlordane (cis)	Chlordane (trans)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	d-BHC	DDD	DDT
			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	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	0.05	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
NEPM 2013 Table 1A(1) HILs C - Open Space			-	-	-	-	-	-		-	-	3[#1]	3[#1]	3[#1]	300[#2]	-	-	-	6	-	-	-	-	50	-	-	-	160	-	-	-					
CRC Care HSL-C Open Space (Direct Contact)			-	-	-	-	-	-	2200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m			-	-	-	-	-	-	NL (9)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1-2m			-	-	-	-	-	-	NL (9)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space			-	-	-	-	-	-	170	-	-	-	-	-	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180	180		
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP14_0.2-0.3	23/12/2020	0.2 - 0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP15_0.2-0.3	23/12/2020	0.2 - 0.3	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	0.8	0.9	1.2	0.6	2.7	0.06	<0.05	<0.05	0.11	<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
FP16_0.1-0.2	23/12/2020	0.1 - 0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QZ04	23/12/2020	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP17_0.4-0.5	23/12/2020	0.4 - 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIP BLANK	17/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIP SPIKE 5	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TSC5	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Recovery			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Assessment 2016 (revised to 2019)																																			
Sample ID	**Depth**	**Sample date:**																																	
B1C_0.3-0.5	0.3-0.5	26/02/2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<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
B2C_0.4-0.7	0.4-0.7	26/02/2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Q5		26/02/2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4C_0.2-0.5	0.2-0.5	26/02/2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<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

* Asbestos identified but below LOR of 0.1g/kg.

Comments

#1 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Scl
#2 Total PAHs: Based on sum of 16 most common reported (WHO 98)
#3 PCBs: HIL refers to non-dioxin like PCBs only.
#4 Elemental mercury: HIL does not address elemental mercury.
#5 Arsenic: HIL assumes 70% oral bioavailability.
#6 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead m
#7 Derived soil HSL exceeds soil saturation concentraiton
#8 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fra
#10 Aged values apply to arsenic contamination present in soil > 2 years. Refer
#11 ERRATA Updated 30 April 2014 . Naphthalene should not be subtracted.
#12 Errata 30 April 2014. Naphthalene should not be subtracted from >C
#13 Separate management limits for BTEX & naphthalene are not available her

Table 3
SES_539 -Foreshore Area Soil Results
Development Lands Contamination Assessment - Milperra

	Pesticides by GCMS																										
	DDT+DDE+DDD	Demeton-S-methyl	Diazinon	Dichlorvos	Dieldrin	Dimethoate	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Ethion	Fenamiphos	Fenthion	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Malathion	Methoxychlor	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos
	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	0.05	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	0.05	0.2	0.2	0.2	0.2	0.05	0.05
NEPM 2013 Table 1A(1) HILs C - Open Space	240	-	-	-	-	-	270	-	-	-	10	-	-	-	-	-	-	6	-	10	-	300	-	-	-	-	-
CRC Care HSL-C Open Space (Direct Contact)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1-2m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foreshore Area Samples																											
Field ID	**Date**	**Depth**																									
FP01_0.2-0.3	23/12/2020	0.2 - 0.3	<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	<0.05	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
QZ01	23/12/2020	-	<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	<0.05	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP01_1.5	23/12/2020	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP02_0.3-0.4	23/12/2020	0.3 - 0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP03_0.3-04	23/12/2020	0.3 - 4	<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	<0.05	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
FP04_0.2-0.3	23/12/2020	0.2 - 0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP05_0.5-0.6	23/12/2020	0.5 - 0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP05_F01	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP06_0.3-0.4	23/12/2020	0.3 - 0.4	<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	<0.05	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
FP06_F02	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP07_0.2-0.3	23/12/2020	0.2 - 0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP07_F03	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP08_0.1-0.2	23/12/2020	0.1 - 0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP09_0.1-0.2	23/12/2020	0.1 - 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	<0.05	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
FP09_0.8-0.9	23/12/2020	0.8 - 0.9	<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	<0.05	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
FP10_0.3-0.4	23/12/2020	0.3 - 0.4	0.3	<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	0.11	<0.05	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
FP11_0.3-0.4	23/12/2020	0.3 - 0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP12_0.3-0.4	23/12/2020	0.3 - 0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP13_0.3-0.4	23/12/2020	0.3 - 0.4	<0.05	<0.05	<0.05	<0.05	0.08	<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	<0.2	<0.2	<0.2	<0.05	<0.05
QZ03	23/12/2020	-	<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	<0.05	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05

Table 3
SES_539 -Foreshore Area Soil Results
Development Lands Contamination Assessment - Milperra

			Pesticides by GCMS																											
			DDT+DDE+DDD	Demeton-S-methyl	Diazinon	Dichlorvos	Dieldrin	Dimethoate	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Ethion	Fenamiphos	Fenthion	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Malathion	Methoxychlor	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos
			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			0.05	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	0.05	0.2	0.2	0.2	0.2	0.05	0.05
NEPM 2013 Table 1A(1) HILs C - Open Space			240	-	-	-	-	-	270	-	-	-	10	-	-	-	-	-	-	6	-	10	-	300	-	-	-	-	-
CRC Care HSL-C Open Space (Direct Contact)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(3) Open Space for Vapour Intrusion, Sand			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1-2m			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space			180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil (0-2m)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP14_0.2-0.3	23/12/2020	0.2 - 0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP15_0.2-0.3	23/12/2020	0.2 - 0.3	0.06	<0.05	<0.05	<0.05	0.11	<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	<0.2	<0.2	<0.2	<0.05	<0.05
FP16_0.1-0.2	23/12/2020	0.1 - 0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QZ04	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD% (for data >10 times EQL)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FP17_0.4-0.5	23/12/2020	0.4 - 0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIP BLANK	17/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIP SPIKE 5	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TSC5	23/12/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Recovery			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Assessment 2016 (revised to 2019)																														
Sample ID	**Depth**	**Sample date:**																												
B1C_0.3-0.5	0.3-0.5	26/02/2016	<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	<0.05	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
B2C_0.4-0.7	0.4-0.7	26/02/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Q5		26/02/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4C_0.2-0.5	0.2-0.5	26/02/2016	<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	<0.05	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05

* Asbestos identified but below LOR of 0.1g/kg.

Comments

#1 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Scl
#2 Total PAHs: Based on sum of 16 most common reported (WHO 98)
#3 PCBs: HIL refers to non-dioxin like PCBs only.
#4 Elemental mercury: HIL does not address elemental mercury.
#5 Arsenic: HIL assumes 70% oral bioavailability.
#6 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead m
#7 Derived soil HSL exceeds soil saturation concentraiton
#8 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fra
#10 Aged values apply to arsenic contamination present in soil > 2 years. Refer
#11 ERRATA Updated 30 April 2014 . Naphthalene should not be subtracted.
#12 Errata 30 April 2014. Naphthalene should not be subtracted from >C
#13 Separate management limits for BTEX & naphthalene are not available her

C

Appendix C Test Pit Logs

TEST PIT DESCRIPTION LOG D01

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Pesticide Delineation Area - Riverlands Residential Area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Topsoil and Turf Metal pipe observed	
		D01_0.1-0.2					
						Sand	
							No suspected asbestos containing materials or odours observed
		D01_0.4-0.5					
0.5						End of Testpit at 0.5m	

TEST PIT DESCRIPTION LOG D02

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Pesticide Delineation Area - Riverlands Residential Area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Topsoil and Turf	
		D02_0.1-0.2					
						Sand	
							No suspected asbestos containing materials or odours observed
		D02_0.4-0.5					
0.5						End of Testpit at 0.5m	

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TEST PIT DESCRIPTION LOG D03

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Pesticide Delineation Area - Riverlands Residential Area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		D03_0.1-0.2				Topsoil and Turf Metal pipe observed	
						Sand	No suspected asbestos containing materials or odours observed
0.5						End of Testpit at 0.5m	

TEST PIT DESCRIPTION LOG D04

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Pesticide Delineation Area - Riverlands Residential Area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Topsoil and Turf	
						Concrete slab	
		D04_0.2-0.3 (QZ02)				Sandy soil	No suspected asbestos containing materials or odours observed
		D04_0.4-0.5					
0.5						End of Testpit at 0.5m	

TEST PIT DESCRIPTION LOG D05

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Pesticide Delineation Area - Riverlands Residential Area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Topsoil and Turf	
						Concrete slab	
		D05_0.2-0.3				Sandy soil	No suspected asbestos containing materials or odours observed
0.5						End of Testpit at 0.5m	

TEST PIT DESCRIPTION LOG D06

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Pesticide Delineation Area - Riverlands Residential Area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Topsoil and Turf	
						Concrete slab	
		D06_0.2-0.3				Thin layer of ash under slab then Sandy soil	No suspected asbestos containing materials or odours observed
		D06_0.4-0.5					
0.5						End of Testpit at 0.5m	

TEST PIT DESCRIPTION LOG D07

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Pesticide Delineation Area - Riverlands Residential Area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		D07_0.1-0.2				Topsoil and Turf	
						Sand	No suspected asbestos containing materials or odours observed
0.5						End of Testpit at 0.5m	

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TEST PIT DESCRIPTION LOG D08

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Pesticide Delineation Area - Riverlands Residential Area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		D08_0.1-0.2				Topsoil and Turf	
						Sand	No suspected asbestos containing materials or odours observed
0.5						End of Testpit at 0.5m	

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TEST PIT DESCRIPTION LOG KP01

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 1.0m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Grass and sandy topsoil FILL: Soil and concrete chunks, dry. Some foreign materials observed	Anthroprogenic items observed include Hose and wire pieces, soft plastics, timber and rocks. No suspected Asbestos Containing materials observed
0.5		KP01_0.5-0.6 (DUPA)				FILL: Ash and soil mixture, with some slag materials, grey to dark grey	
1						NATURAL: Clay; medium plasticity, brown and grey, stiff, moist.	
						End of Testpit at 1.0m	

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TEST PIT DESCRIPTION LOG KP02

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.7m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		KP02_0.2_0.3				FILL: Sandy soil and ash mixture, grey to dark grey, dry some slag materials. Trace foreign materials observed	Anthroprogenic items observed include 1x piece of scrap metal No suspected Asbestos Containing materials observed
						NATURAL: Sandy Clay; high sand content, orange, low plasticity, stiff to firm.	
1						End of Testpit at 0.7m	

TEST PIT DESCRIPTION LOG KP03

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 1.1m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Grass FILL: Sandy topsoil, dry, brown, medium dense	
0.5		KP03_0.7-0.8				FILL: Ashy soil mixture, some slag, grey to white, some brick and bitumen pieces	Anthroprogenic items observed include Brick and bitumen pieces No suspected Asbestos Containing materials observed
1						NATURAL: Clay; medium plasticity, brown and grey, stiff, moist.	
						End of Testpit at 1.1m	

TEST PIT DESCRIPTION LOG KP04

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.8m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						FILL: Silty Sandy topsoil, dry, brown, firm	
						FILL: Ashy soil mixture, some slag and other gravels, grey to white, brick and iron bar	Anthroprogenic items observed include Brick and iron bar pieces No suspected Asbestos Containing materials observed
		KP04_0.4-0.5					
0.5						NATURAL: Sandy Clay; low plasticity, orange, stiff to firm	
						End of Testpit at 0.8m	
1							

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TEST PIT DESCRIPTION LOG KP05

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 1.2m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		KP05_0.5-0.6				FILL: Sand fill; grey, some concrete chunks and minor gravels and rocks. Large chunk of fibro (FOA) observed, no other foreign materials observed	Testpit into small stockpile
1							
						End of Testpit at 1.2m	

TEST PIT DESCRIPTION LOG KP06

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 1.0m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						FILL: Sand, brown, loose, uniform, dry. Some gravel pieces	
		KP06_0.3-0.4					Small soil pile off track, sampled into pile
0.5							
		KP06_0.9-1.0				NATURAL: Clay, very dry, hard, unknown plasticity, dark grey to brown	
1						End of Testpit at 1.0m	

TEST PIT DESCRIPTION LOG KP07

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 1.6m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		KP07_0.5-0.6				FILL: Sand fill; grey, some concrete chunks and minor gravels and rocks. No foreign materials or suspected asbestos containing materials observed	Testpit into small soil pile
1							
1.5						NATURAL: Clay; very dry, hard, unknown plasticity, dark grey to brown	
						End of Testpit at 1.6m	

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TEST PIT DESCRIPTION LOG KP08

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.8m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		KP08_0.2-0.3				FILL: Soil mixture, some clay, brick and rocks, very dry. No suspected asbestos containing materials observed	
						NATURAL: Sandy Clay; low plasticity, brown, dry	
1						End of Testpit at 0.8m	
1.5							

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TEST PIT DESCRIPTION LOG KP09

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.8m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		KP09_0.3-0.4				Thin soil layer then: FILL: Crushed sandstone, rocks, ashy fill, scrap metal, ballast, brick and pipe, glass mixture No suspected asbestos containing materials observed	
						NATURAL: Sandy Clay; low plasticity, brown, dry	
1						End of Testpit at 0.8m	
1.5							

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TEST PIT DESCRIPTION LOG KP10

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.6m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		KP10_0.2-0.3 (DUPB)				Thin soil layer then: FILL: Crushed sandstone, rocks, ashy fill, scrap metal, ballast, brick and pipe, glass mixture No suspected asbestos containing materials observed	
0.5						NATURAL: Sandy Clay; low plasticity, brown, dry	
						End of Testpit at 0.6m	
1							
1.5							

Disclaimer This log is intended for environmental not geotechnical purposes.

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TEST PIT DESCRIPTION LOG KP11

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.3m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Two coat bitumen seal	
		KP11_0.1-0.2				NATURAL: Silty Clay, brown, unknown plasticity, very dry, hard and brittle/friable	
0.5						End of Testpit at 0.3m	
1							
1.5							

TEST PIT DESCRIPTION LOG KP12

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.35m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Two coat bitumen seal	
		KP12_0.1-0.2				FILL: Sandy soil mixture, some bitumen pieces and charcoal. No foreign materials or suspected asbestos containing materials observed	
						NATURAL: Silty Clay, brown, unknown plasticity, very dry, hard, brittle/friable	
0.5						End of Testpit at 0.35m	
1							
1.5							

TEST PIT DESCRIPTION LOG KP13

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.3m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Two coat bitumen seal	No sample collected
						FILL: Sandy gravelly mixture, some sandstone rocks	
						NATURAL: Silty Clay, brown, unkown plasticity, very dry, hard, brittle/friable	
						End of Testpit at 0.3m	
0.5							
1							
1.5							

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TEST PIT DESCRIPTION LOG KP14

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.2m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Two coat bitumen seal	
		KP14_0.1-0.2				NATURAL: Silty Clay, brown, unkown plasticity, very dry, hard, brittle/friable	
0.5						End of Testpit at 0.2m	
1							
1.5							

Disclaimer This log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 21 Dec 2020

TEST PIT DESCRIPTION LOG KP15

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.3m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						Two coat bitumen seal	
		KP15_0.1-0.2				Ash layer and some slag	
						NATURAL: Silty Clay, brown, unkown plasticity, very dry, hard, brittle/friable	
0.5						End of Testpit at 0.3m	
1							
1.5							

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TEST PIT DESCRIPTION LOG KP16

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		KP16_0.2-0.3				FILL: Sandy gravels, some ashy materials in thin lenses with crushed sandstone rock	
						NATURAL: Silty Clay, brown, unkown plasticity, very dry, hard, brittle/friable	
0.5						End of Testpit at 0.5m	
1							
1.5							

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produced by ESlog.ESdat.net on 21 Dec 2020

TEST PIT DESCRIPTION LOG KP17

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.3m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		KP17_0.1-0.2				FILL: Crushed sandstone rock and sands	
						NATURAL: Silty Clay, brown, unkown plasticity, very dry, hard, brittle/friable	
						End of Testpit at 0.3m	
0.5							
1							
1.5							

TEST PIT DESCRIPTION LOG KP18

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.45m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		KP18_0.1-0.2				FILL: Crushed sandstone rock and sands	
						NATURAL: Silty Clay, brown, unkown plasticity, very dry, hard, brittle/friable	
0.5						End of Testpit at 0.45m	
1							
1.5							

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TEST PIT DESCRIPTION LOG KP19

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.35m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		KP19_0.1-0.2				FILL: Crushed sandstone rock and sands	
						Ash layer	
						NATURAL: Silty Clay, brown, unkown plasticity, very dry, hard, brittle/friable	
						End of Testpit at 0.35m	
0.5							
1							
1.5							

Disclaimer This log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 21 Dec 2020

TEST PIT DESCRIPTION LOG KP20

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development lands

DRILLING DATE 17/12/2020
DRILLING COMPANY Oliveri Civil & Demo P/L
DRILLING METHOD Excavator

TRENCH SIZE 0.6m wide
TOTAL DEPTH 0.35m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits along Keys Parade alignment

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		KP20_0.1-0.2 (DUPC)				FILL: Crushed sandstone rock and sands	
						NATURAL: Silty Clay, brown, unknown plasticity, very dry, hard, brittle/friable	
0.5						End of Testpit at 0.35m	
1							
1.5							

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produced by ESlog.ESdat.net on 21 Dec 2020

TEST PIT DESCRIPTION LOG FP01

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 1.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		FP01_0.2-0.3 (QZ01)				Turf layer then; FILL: Gravelly Clay, low plasticity, brown, moist, firm. Significant foreign materials observed including scrap metal, plastic (golf balls), concrete chunks, bricks, tile pieces and timber	Tespit located in raised tee off pad, 10m x 15m No asbestos containing materials or odours observed
0.5						FILL: Sand fill material with some clays; grey. significant foreign materials observed including; large concrete chunks, plastic wrap, bricks, irrigation pipe, metal pipes and timber.	
1						Becoming wet	
1.5						End of Testpit at 1.5m	
2							

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TEST PIT DESCRIPTION LOG FP02

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 2.2m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						FILL: Sandy gravelly Clay; low plasticity, moist, browns and reds, sandstone rocks. No foreign material observed.	Tespit located west end of stockpile ~2.5m high No asbestos containing materials or odours observed
		FP02_0.3-0.4					
0.5							
1						FILL: as above with foreign materials observed including; agg pipe and hose off-cuts, some soft plastics	
1.5							
2						FILL: as above with foreign materials observed including; bricks and large wooden tree trunk or pier/pylon.	
						End of Testpit at 2.2m	

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TEST PIT DESCRIPTION LOG FP03

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 1.3m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		FP03_0.3-0.4				FILL: Silty Sand; loose, dry, brown, charcoal pieces throughout. No foreign material observed.	Tespit located within small mound amongst a dozen or so similar mounds. No asbestos containing materials or odours observed
1						FILL: Gravelly Clay, moist, low plasticity, brown Suspected wire cable observed	
1.5						(Natural?) Silty Sandy Clay	
2						End of Testpit at 1.3m	

TEST PIT DESCRIPTION LOG FP04

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.8m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		FP04_0.2-0.3				Turf and Silty topsoil - tree roots FILL: Gravelly Clay, moist, low plasticity, yellow/brown, stiff. Brick and a star picket observed Wet, timber and wood waste and one piece of steel observed	Concrete and bricks protruding from surface No asbestos containing materials or odours observed
1 1.5 2						End of Testpit at 0.8m	

TEST PIT DESCRIPTION LOG FP05

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.9m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						FILL: Silty Clay fill; medium plasticity, wet, dark brown, roots	Testpit located in swamp area
						FILL: Waste fill, brick, plastic, timber, rotting anoxic smell	Suspected asbestos containing material - Fibro piece observed
0.5		FP05_0.5-0.6 FP05_F01				▽ FILL: Waste as above and Clays/sands mixture below water	Saturated at 0.6m
1						End of Testpit at 0.9m	
1.5							
2							

TEST PIT DESCRIPTION LOG FP06

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.7m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		FP06_0.3-0.4 FP06_F02				FILL: Gravelly Clay fill with some brick and tile waste, fibro observed	Testpit located in higher ground near FP05 Suspected asbestos containing material - Fibro piece observed
1 1.5 2						End of Testpit at 0.7m	

TEST PIT DESCRIPTION LOG FP07

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.6m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		FP07_0.2-0.3 FP07_F03				FILL: Clay fill with brick on surface, wet and rotting matter, timber, plastic, glass, old tyre and 1x large piece of fibro observed	Testpit located in higher ground near FP05 Suspected asbestos containing material - Fibro piece observed Water seepage at 0.5m
1 1.5 2						End of Testpit at 0.6m	

TEST PIT DESCRIPTION LOG FP08

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		FP08_0.1-0.2				FILL: Silty Sandy Clay mixture with brick rubble, concrete, tree roots and logs. Minor pieces of soft plastics	No suspected asbestos containing material observed
0.5						End of Testpit at 0.5m	
1							
1.5							
2							

TEST PIT DESCRIPTION LOG FP09

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 1.3m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		FP09_0.1-0.2				FILL: Gravelly Clay, low plasticity, brown, most, firm	No suspected asbestos containing material observed
1		FP09_0.8-0.9				FILL: Sand; orange yellow, strange odour, large green slag gravels present within sand matrix	
1.5						End of Testpit at 1.3m	
2							

TEST PIT DESCRIPTION LOG FP10

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
						FILL: Gravelly Clay and waste mixture. Glass, plastic and ashy materials observed with scrap metal	No suspected asbestos containing material observed
		FP10_0.3-0.4				FILL: Strange coloured sands; burnt odour, ashy, large green slag gravels present within sand matrix, glass and metal observed.	
0.5						End of Testpit at 0.5m	
1							
1.5							
2							

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TEST PIT DESCRIPTION LOG FP11

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.7m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		FP11_0.3-0.4				Sandy Topsoil FILL: Brick and rubble waste in sandy matrix. Scrap metal and glass, some ashy appearance material FILL: Shaley Clay and gravels with some plastic waste	No suspected asbestos containing material observed
1 1.5 2						End of Testpit at 0.7m	

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TEST PIT DESCRIPTION LOG FP12

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.7m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		FP12_0.3-0.4				FILL: Silty Clay topsoil. Some brick, tile, ceramics and metals. Ashy materials observed FILL: White Clayey substance observed (Natural?) Clay material	No suspected asbestos containing material observed
1 1.5 2						End of Testpit at 0.7m	

TEST PIT DESCRIPTION LOG FP13

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.8m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		FP13_0.3-0.4 (QZ03)				FILL: Silty Clay topsoil. Some brick and metal waste. FILL: Ashy clay mixture Brick and ashy waste	No suspected asbestos containing material observed
1 1.5 2						End of Testpit at 0.8m	

TEST PIT DESCRIPTION LOG FP14

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.5m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
		FP14_0.2-0.3				FILL: Silty Clay topsoil then brick and ashy slag mixture	No suspected asbestos containing material observed
						NATURAL: Silty Clay, brown, stiff, moist	
0.5						End of Testpit at 0.5m	
1							
1.5							
2							

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TEST PIT DESCRIPTION LOG FP15

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.8m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		FP15_0.2-0.3				FILL: Silty Clay topsoil then brick and ashy wastes mixture	No suspected asbestos containing material observed
						NATURAL: Silty Clay, brown, stiff, moist	
1						End of Testpit at 0.8m	
1.5							
2							

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TEST PIT DESCRIPTION LOG FP16

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 0.7m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0.5		FP16_0.1-0.2 (QZ04)				FILL: Silty Clay, low plasticity, tan brown, dry and soft	No suspected asbestos containing material observed
1 1.5 2						End of Testpit at 0.7m	

TEST PIT DESCRIPTION LOG FP17

PROJECT NUMBER SES_539
CLIENT Mirvac Developments
LOCATION Prescot Parade, Milperra NSW
PROJECT NAME Contamination Assessment of Proposed Development Lands

DRILLING DATE 23/12/2020
DRILLING COMPANY Arax Civil
DRILLING METHOD Backhoe Excavator

TRENCH SIZE 0.4m wide
TOTAL DEPTH 1.1m
LOGGED BY A.S.
CHECKED BY S.G.

COMMENTS Testpits within Foreshore area

Depth (m)	PID	Testpit Samples	Is Analysed?	Graphic Log	USCS	General Material Description	Other Observations
0						FILL: Silty Clay and sand fill mixture	No suspected asbestos containing material observed
		FP17_0.4-0.5				FILL: Ash, slag and cinders with bricks	
0.5						FILL: Clays dry brown	
1						NATURAL: Silty Sand, dry, brown colours, dense	
						End of Testpit at 1.1m	
1.5							
2							

D

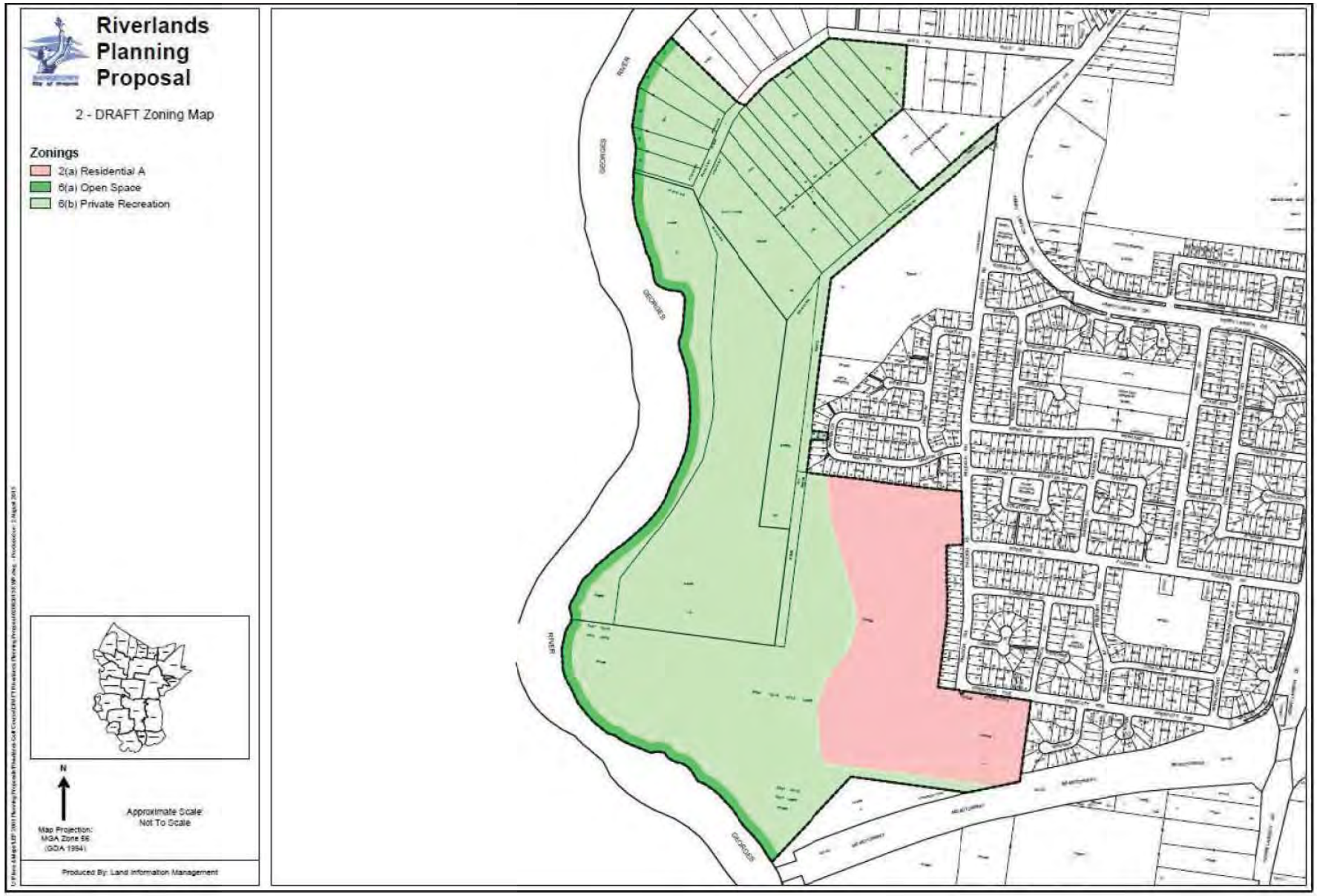
Appendix D Historical Sampling Location Figures

Phase 1 – Environmental Strategies (ES, 2014a) - Figures

Project: 14050 Riverlands GC

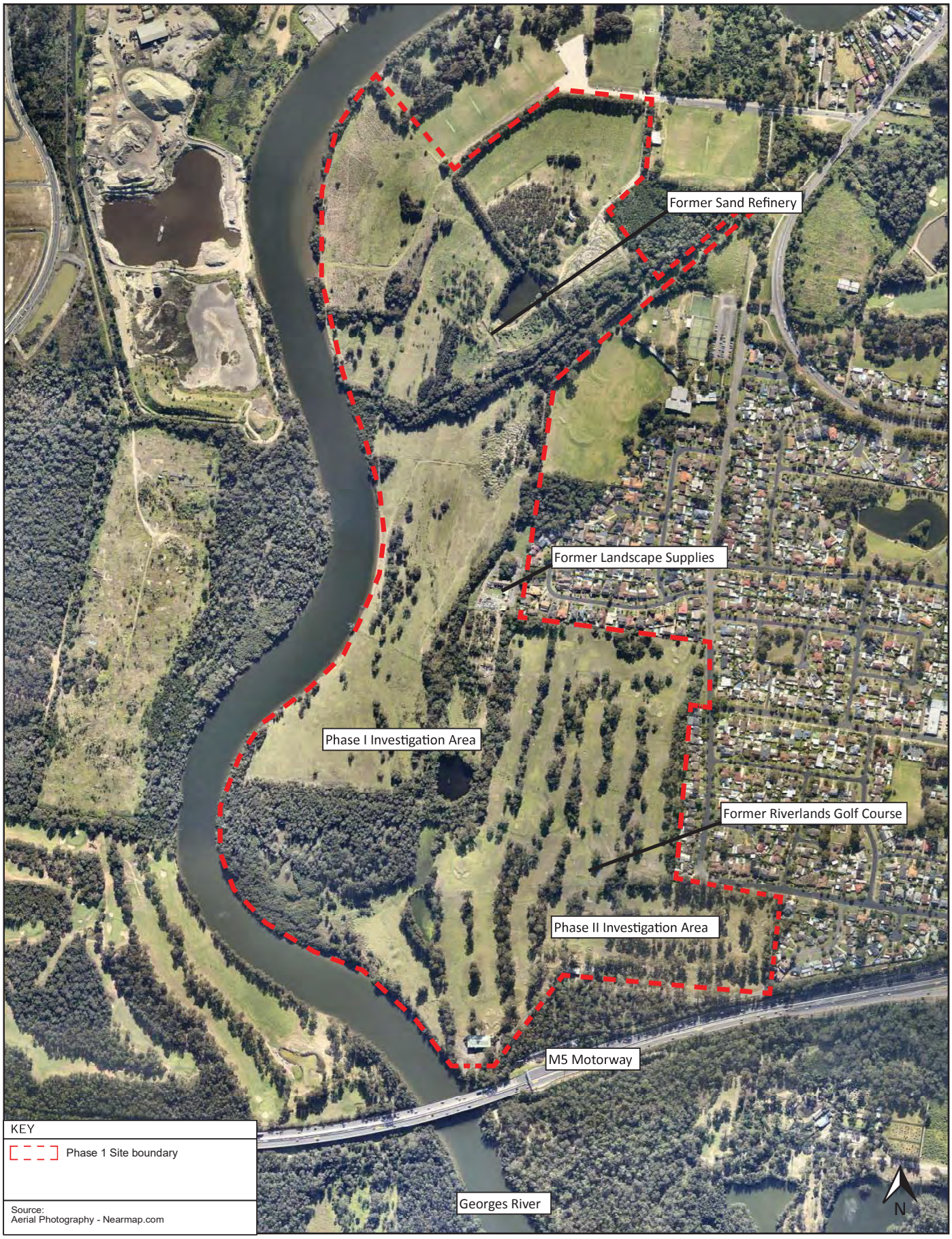
Project: 14050 Riverlands GC

0 150 300 450 600 750m
Approximate Scale



Basemap Source: Bankstown City Council

Project: 14050 Riverlands GC



Project: 14050 Riverlands GC

0 150 300 450 600 750m
Approximate Scale

Phase 2 – Residential estate land only (ES 2014b) - Figures

Project: 14050 Riverlands GC

0 400 800 1200 1600 2000m
Approximate Scale

Project: 14050 Riverlands GC

0 150 300 450 600 750m
Approximate Scale

Site Cadastral Boundaries | Figure 3

Riverlands Development, Milperra, NSW, 2214

Project: 14050 Riverlands GC

0 90 180 270 360 450m

Approximate Scale

Project: 14050 Riverlands GC

0 150 300 450 600 750m
Approximate Scale

SPA2 (b)
SPA1(B)
SPA1 (C)
SPA1 (A)
SPA2 (C)
SPA2(A)
APEC 1 (A) Building rubble
APEC 1
APEC 1 (A) ACM observed
APEC 1
APEC 1 (C) Building rubble
SPA2 (D)
SPA3 (B)
SPA3
SPA4 (B)
SPA3 (A)
SPA4 2nd Levee
SPA4 (a)
SPA5
SPA4 1st Levee
SPA6
APEC 2
SP7 (A)
SP7 (B)
APEC 2
SP7 (D)
SP8 (A)
SP8 (C)
APEC 3
SP8 (B)
SP8 (D)
SP9 (Berm)
SP9 (A)
SP9 (B)
APEC 4
Key
Site Boundary
Areas of Potential Envionmental Concern
Stockpile Area (SPA)
Asbestos Containing Material identified
Asbestos Containing Material not identified
0
100
200
300
400
500 m
Approximate Scale
N

EnvironmentalStrategies

Sample Location Plan | Figure 6

Riverlands Development, Milperra, NSW, 2214

Project: 14050 Riverlands GC

Exceedances of the Site Assessment Criteria in Soil | Figure 7

Riverlands Development, Milperra, NSW, 2214

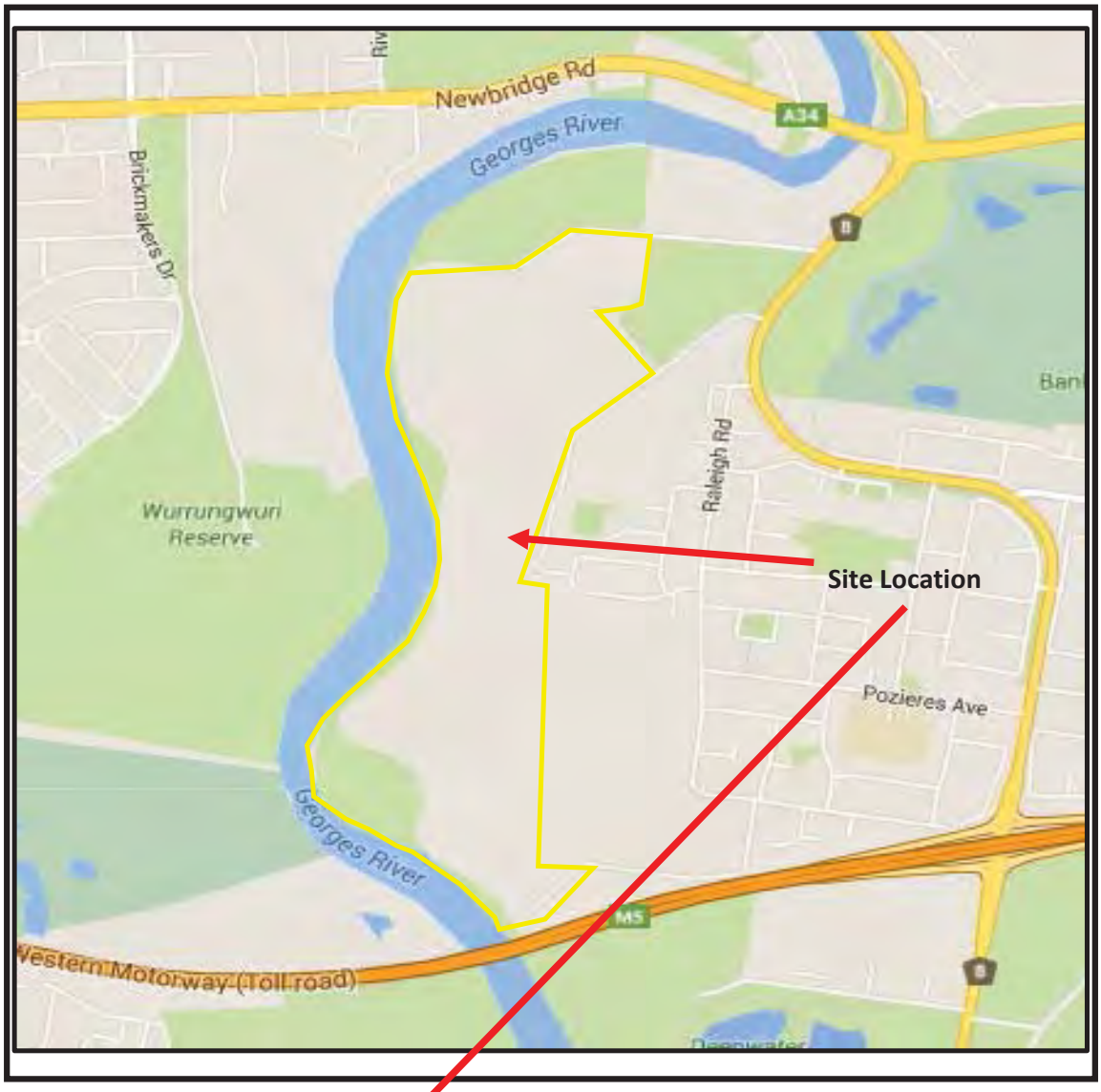
Project: 14050 Riverlands GC

Exceedances of the Site Assessment Criteria in Water | Figure 8

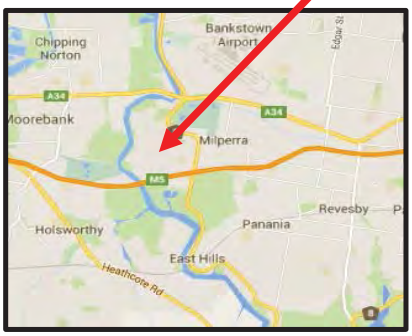
Riverlands Development, Milperra, NSW, 2214

Project: 14050 Riverlands GC

Phase 2 (Revision A) – remainder of property only (Sullivan-ES, May 2016) - Figures



Imagery: Google Maps 2016



N

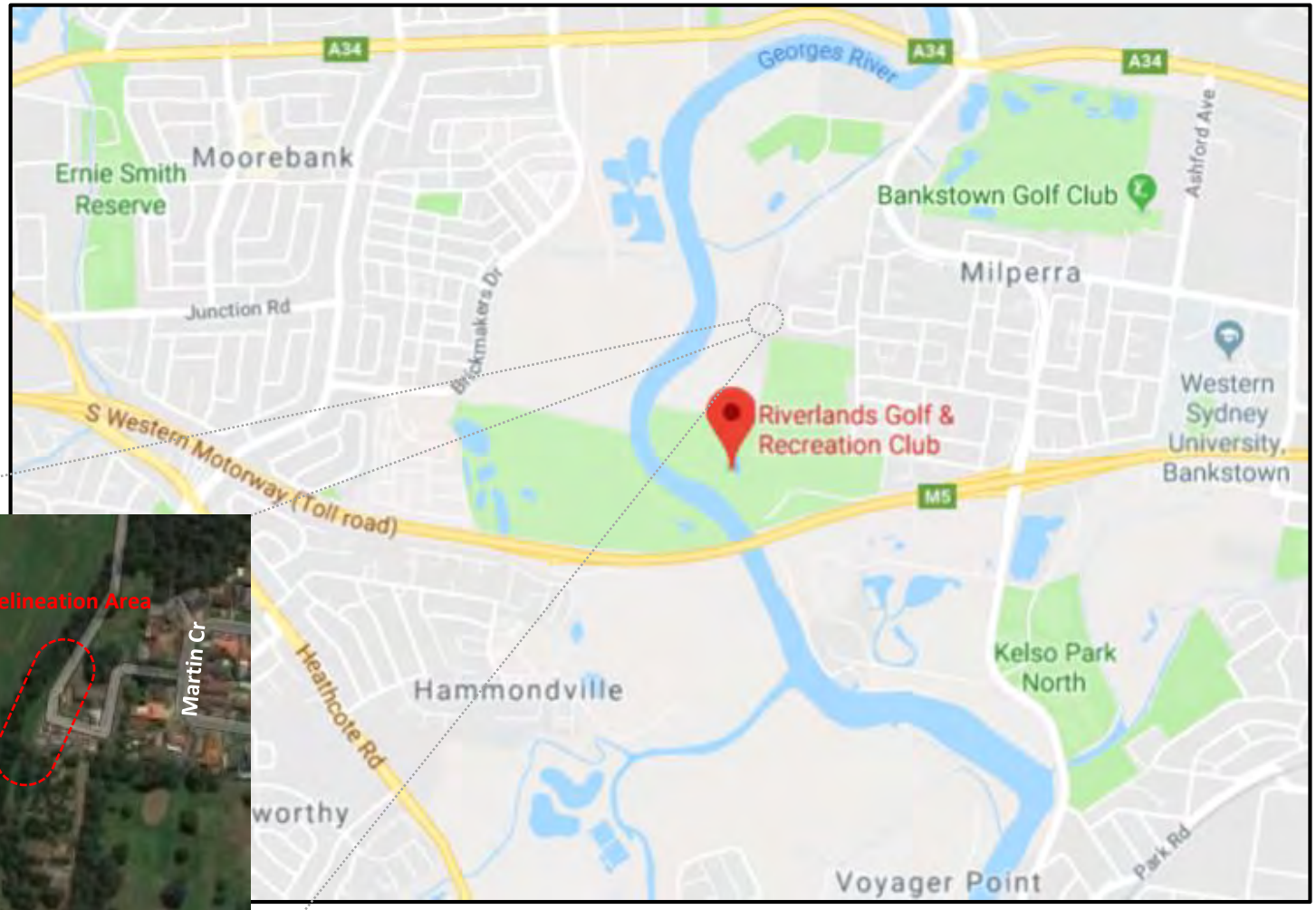
Not to scale

SULLIVAN environmental sciences	**Client:** Statewide Planning Pty Ltd	**Figure 1:** Site Location
	Project: Phase 2 Contamination Investigation	
Project # SES_439	**Location:** Prescot Parade, Milperra NSW	**Date:** 18/5/2016

Figure 2
Previous location
N
Area B
Area A
Area C
Dense vegetation
Riverlands
Stage 1
Area
Georges
River
BH57
B27B (GW8)
TP2
BH58
B26B
B11B
B10B
BH60
B9B
B28B
B12B
B8B
B18A
B13B
B15A (GW4)
B7B
BH56
B17A
B14B
B6B
B14A
BH59
BH61
TP3
B15B
B13A
B23B
B16B (GW6)
TP8
B12A (GW5)
BH55
B22B
B17B
B3B
BH54
B1A
B21B
TP4
B18B
B25B
B2B
B11A
TP7
B20B
B19B (GW7)
B24B
D1_1
B2A
B1B
D1_2
B3A
BH21
D2_1
BH64
B10A
B4A
D2_2
B9A
D3_1
TP5
B8C
B7A (GW3)
B9C (GW2)
B7C
D3_2
B5C
MW7
B6C
TP6
B8A
B10C
B4C
B6A
B5A
B3C
B2C
B1C (GW1)
© 2016 Google

Figure 3
Vale of Ah Reserve
Auld Ave
D11
D10
D12
D9
D13
D8
D14
D7
D15
D3
D16
D4
D2
D5
D1
D6
Area D
Waste material observed
Fill and fibro chips observed (D.K May 2016)
Surface inspection
Dam
N
Image © 2016 DigitalGlobe

Delineation – Ash-filled embankment land (Sullivan-ES, Dec 2018) - Figures

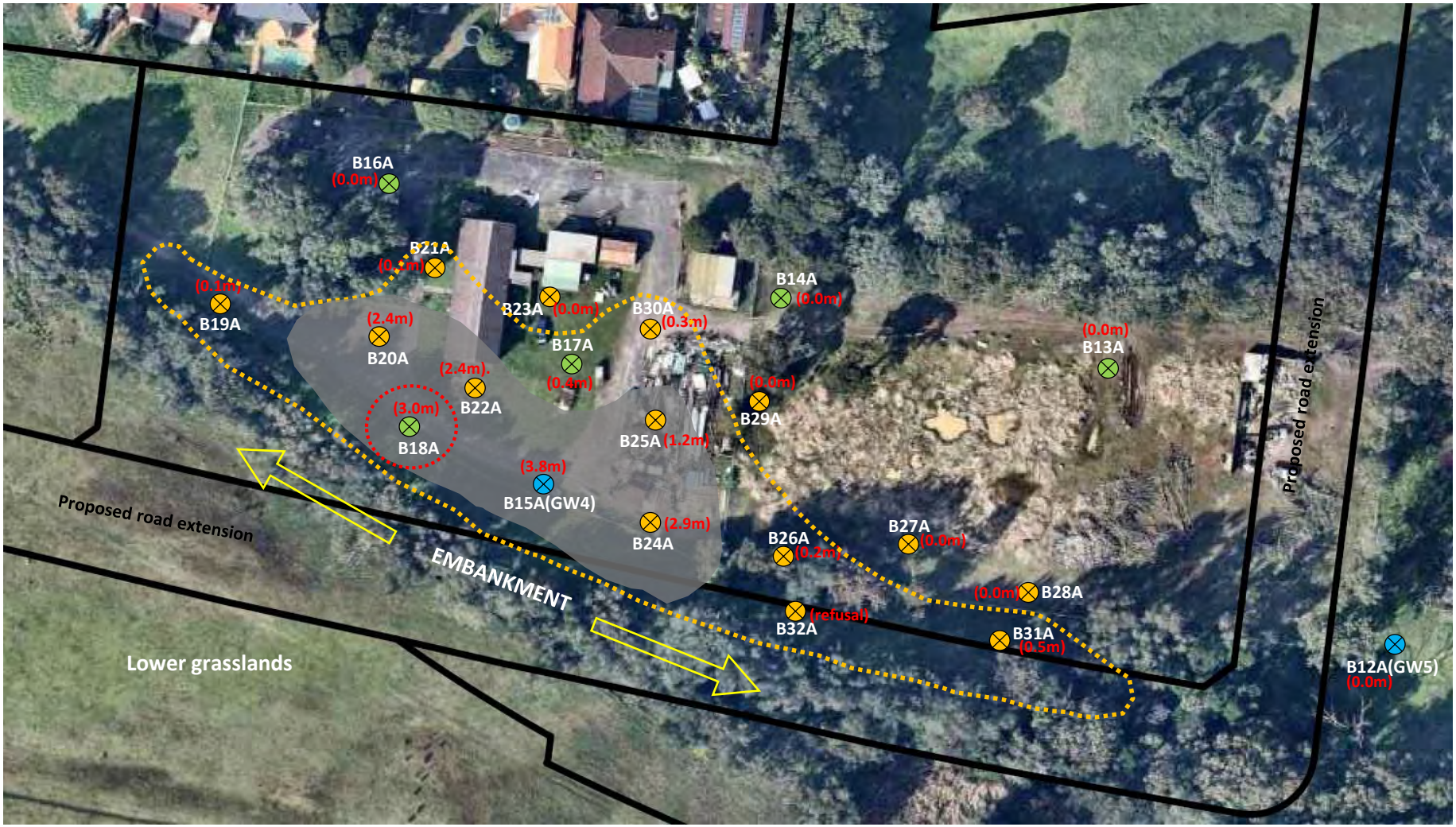


N

Not to scale Date: 14/12/18

Source: Google Maps 2018

SULLIVAN environmental sciences	Project #: **SES_439**	Title: **Delineation Investigation**
	Figure 1: **Site Location**	Address: **Riverlands Development Project, Milperra NSW**



Not to scale

Date: 18/12/2018

Source: PCB Pty Ltd (09/01/2018

Soil bore location (2018)

Soil bore location (2016)

Soil and groundwater bore location (2016)

All added locations shown are approximate

Approx. extent of ash fill

Approx. extent of asbestos impacts (not defined)

Approx. extent of thick ash fill (>0.5m thick)

(2.4m) Ash fill thickness (not depth)

N

SULLIVAN environmental sciences

Project #: **SES_439**

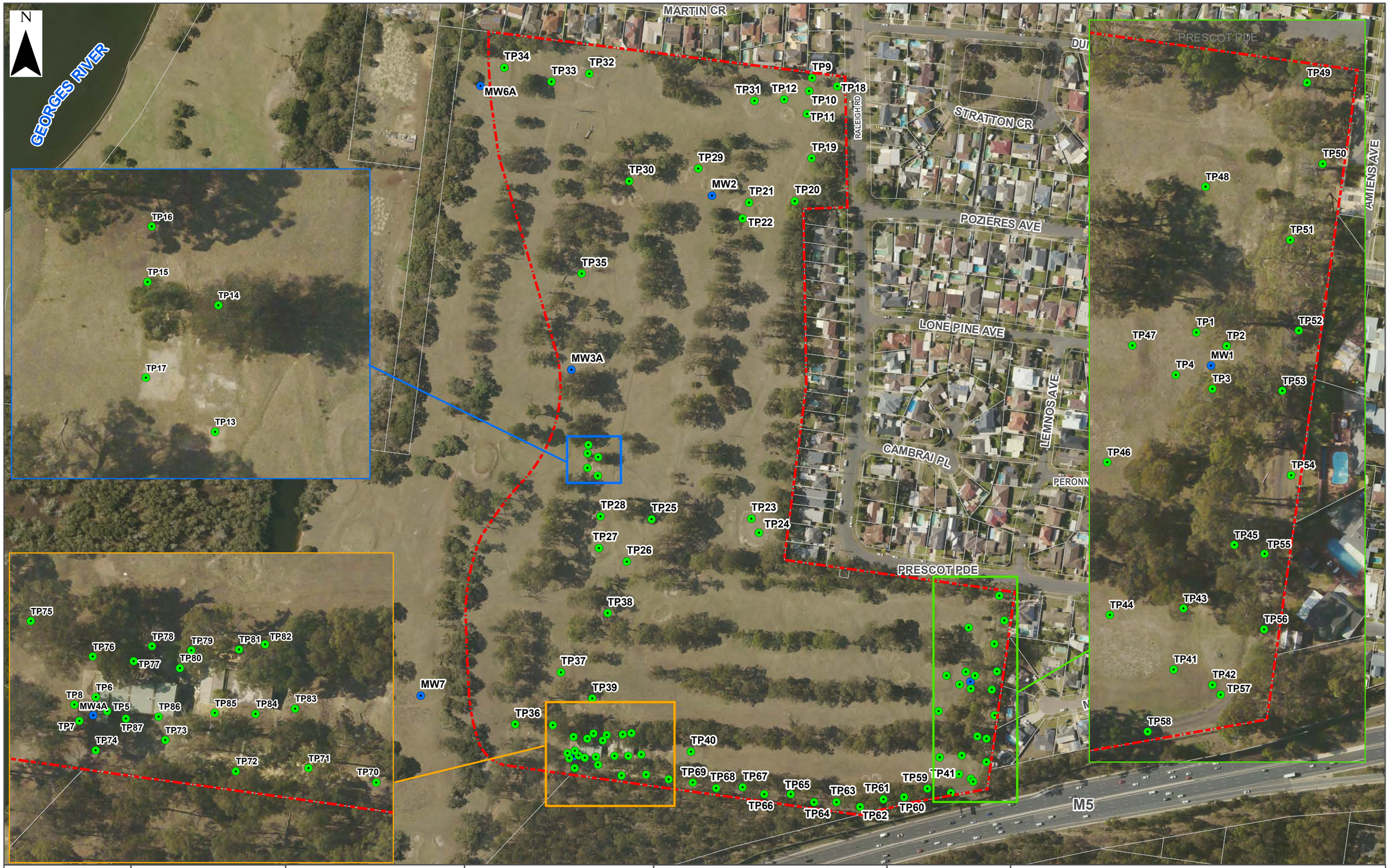
Title: **Delineation Investigation**

Figure 2: **Site Layout and Sampling Locations**

Address: **Riverlands Development Project, Milperra NSW**

Data Gap Investigation, (Sullivan-ES, May 2020) - Figures

		Project: SES_539 - Data Gap Investigation	**Title:** Riverlands Residential Development	**Legend:** Site Boundary	Coordinate System: GDA 1994 MGA Zone 56	Scale: 0 150 300 450 600 Meters
		Figure: Site Location	**Address:** 53 Prescot Parade, Milperra NSW		Date: 25 March 2020	Data Sources: Aerial Imagery: Aerometrex Pty Ltd. Base Map © NSW Department Finance, Services & Innovation 2020 Topo Map: © Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



		Project: SES_539 - Data Gap Investigation	**Title:** Riverlands Residential Development	**Legend:** Monitoring Well; Test Pit; Site Boundary; Property Boundary	Coordinate System: GDA 1994 MGA Zone 56	Scale: 0 50 100 150 200 Meters	
		Figure: Sampling Locations	**Address:** 53 Prescot Parade, Milperra NSW		Date: 25 March 2020	Data Sources: Aerial Imagery: Aerometrex Pty Ltd. Property Boundaries © NSW Department Finance, Services & Innovation 2020	

		Project: SES_539 - Data Gap Investigation	**Title:** Riverlands Residential Development	**Legend:** Monitoring Well; Inferred GW Flow Direction; Site Boundary; Property Boundary	Coordinate System: GDA 1994 MGA Zone 56	Scale: 0 50 100 150 200 Meters	
		Figure: Inferred Groundwater Flow Direction	**Address:** 53 Prescot Parade, Milperra NSW		Date: 25 March 2020	Data Sources: Aerial Imagery: Aerometrex Pty Ltd. Property Boundaries © NSW Department Finance, Services & Innovation 2020	

E

Appendix E ProUCL 95% UCL Output Sheet - Chlordane

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	5/01/2021 4:17:59 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

C0

General Statistics

Total Number of Observations	17	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	0.025	Mean	3.791
Maximum	57.4	Median	0.025
SD	13.9	Std. Error of Mean	3.371
Coefficient of Variation	3.667	Skewness	4.044

Normal GOF Test

Shapiro Wilk Test Statistic	0.304	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.892	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.481	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.215	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	9.676	95% Adjusted-CLT UCL (Chen-1995)	12.87
		95% Modified-t UCL (Johnson-1978)	10.23

Gamma GOF Test

A-D Test Statistic	4.859	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.902	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.506	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.233	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.183	k star (bias corrected MLE)	0.19
Theta hat (MLE)	20.76	Theta star (bias corrected MLE)	20
nu hat (MLE)	6.207	nu star (bias corrected)	6.445
MLE Mean (bias corrected)	3.791	MLE Sd (bias corrected)	8.706
		Approximate Chi Square Value (0.05)	1.871
Adjusted Level of Significance	0.0346	Adjusted Chi Square Value	1.625

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	13.06	95% Adjusted Gamma UCL (use when n<50)	15.03

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.483	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.892	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.483	**Lilliefors Lognormal GOF Test**

55	5% Lilliefors Critical Value					0.215	Data Not Lognormal at 5% Significance Level					
56	**Data Not Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59	Minimum of Logged Data					-3.689	Mean of logged Data					-2.756
60	Maximum of Logged Data					4.05	SD of logged Data					2.27
61												
62	**Assuming Lognormal Distribution**											
63	95% H-UCL					13.4	90% Chebyshev (MVUE) UCL					1.646
64	95% Chebyshev (MVUE) UCL					2.139	97.5% Chebyshev (MVUE) UCL					2.824
65	99% Chebyshev (MVUE) UCL					4.167						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data do not follow a Discernible Distribution (0.05)**											
69												
70	**Nonparametric Distribution Free UCLs**											
71	95% CLT UCL					9.336	95% Jackknife UCL					9.676
72	95% Standard Bootstrap UCL					N/A	95% Bootstrap-t UCL					N/A
73	95% Hall's Bootstrap UCL					N/A	95% Percentile Bootstrap UCL					N/A
74	95% BCA Bootstrap UCL					N/A						
75	90% Chebyshev(Mean, Sd) UCL					13.9	95% Chebyshev(Mean, Sd) UCL					18.48
76	97.5% Chebyshev(Mean, Sd) UCL					24.84	99% Chebyshev(Mean, Sd) UCL					37.33
77												
78	**Suggested UCL to Use**											
79	99% Chebyshev (Mean, Sd) UCL					37.33						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
84	For additional insight the user may want to consult a statistician.											
85												

F

Appendix F Laboratory Analytical Reports

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2100374**	Page	: 1 of 6
Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Contact	: Loren Schiavon
Address	: PO Box 5248 TURRAMURRA NSW 2074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: SES_539	Date Samples Received	: 24-Dec-2020 11:30
Order number	: ----	Date Analysis Commenced	: 08-Jan-2021
C-O-C number	: ----	Issue Date	: 13-Jan-2021 09:40
Sampler	: Adam Sullivan		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 6		
No. of samples analysed	: 6		

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, unless the sampling was conducted by ALS. 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*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

- EP066: Positive PCB results have been confirmed by re-extraction and re-analysis.

Analytical Results

Sub-Matrix: **DI WATER LEACHATE** (Matrix: **WATER**)				Sample ID	**FP10_0.3-0.4**	**----**	**----**	**----**	**----**
				Sampling date / time	23-Dec-2020 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES2100374-001**	**--------**	**--------**	**--------**	**--------**
					Result	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
^ **Total Polychlorinated biphenyls**	----	1	µg/L		<1	**----**	**----**	**----**	**----**
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		**86.9**	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	FP10_0.3-0.4	FP05_0.5-0.6	FP07_0.2-0.3	FP11_0.3-0.4	FP12_0.3-0.4
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2100374-001	ES2100374-002	ES2100374-003	ES2100374-004	ES2100374-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**----**	**63.7**	**51.9**	**6.0**	**35.2**
EN60-DI: Bottle Leaching Procedure - Inorganics/Non-Volatile Organics (Glass Vessel)								
Final pH	----	0.1	pH Unit	**7.3**	**----**	**----**	**----**	**----**
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	**----**	<0.1	<0.1	**0.4**	<0.1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**----**	**63.3**	**81.7**	**74.9**	**77.9**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)				Sample ID	**FP14_0.2-0.3**	**----**	**----**	**----**	**----**
				Sampling date / time	23-Dec-2020 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES2100374-006**	**--------**	**--------**	**--------**	**--------**
					Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**17.9**	**----**	**----**	**----**	**----**
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		**0.4**	**----**	**----**	**----**	**----**
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**69.0**	**----**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **DI WATER LEACHATE**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	45	134

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2100374**	Page	: 1 of 3
Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Contact	: Loren Schiavon
Address	: PO Box 5248 TURRAMURRA NSW 2074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: SES_539	Date Samples Received	: 24-Dec-2020
Order number	: ----	Date Analysis Commenced	: 08-Jan-2021
C-O-C number	: ----	Issue Date	: 13-Jan-2021
Sampler	: Adam Sullivan		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 6		
No. of samples analysed	: 6		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3452874)									
ES2100374-002	FP05_0.5-0.6	EA055: Moisture Content	----	0.1	%	63.7	74.4	15.5	0% - 20%
ES2100438-024	Anonymous	EA055: Moisture Content	----	0.1	%	8.6	8.6	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3452512)									
ES2100374-002	FP05_0.5-0.6	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3452512)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	107	62.0	126

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3456759)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	94.7	68.9	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3452512)							
ES2100374-002	FP05_0.5-0.6	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	103	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2100374**	Page	: 1 of 5
Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Telephone	: +61 2 8784 8555
Project	: SES_539	Date Samples Received	: 24-Dec-2020
Site	: ----	Issue Date	: 13-Jan-2021
Sampler	: Adam Sullivan	No. of samples received	: 6
Order number	: ----	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
Soil Glass Jar - Unpreserved						
FP05_0.5-0.6, FP07_0.2-0.3, FP11_0.3-0.4, FP12_0.3-0.4, FP14_0.2-0.3	----	----	----	08-Jan-2021	06-Jan-2021	**2**
EN60-DI: Bottle Leaching Procedure - Inorganics/Non-Volatile Organics (Glass Vessel)						
Non-Volatile Leach: 14 day HT(e.g. SV organics)						
FP10_0.3-0.4	11-Jan-2021	06-Jan-2021	**5**	----	----	----
EP066: Polychlorinated Biphenyls (PCB)						
Soil Glass Jar - Unpreserved						
FP05_0.5-0.6, FP07_0.2-0.3, FP11_0.3-0.4, FP12_0.3-0.4, FP14_0.2-0.3	08-Jan-2021	06-Jan-2021	**2**	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
FP05_0.5-0.6, FP07_0.2-0.3, FP11_0.3-0.4, FP12_0.3-0.4, FP14_0.2-0.3	**23-Dec-2020**	**----**	----	----	**08-Jan-2021**	06-Jan-2021	×

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60-DI: Bottle Leaching Procedure - Inorganics/Non-Volatile Organics (Glass Vessel)							
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN60-DIa-G)							
FP10_0.3-0.4	**23-Dec-2020**	**11-Jan-2021**	06-Jan-2021	×	**----**	----	----
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
FP05_0.5-0.6, FP07_0.2-0.3, FP11_0.3-0.4, FP12_0.3-0.4, FP14_0.2-0.3	**23-Dec-2020**	**08-Jan-2021**	06-Jan-2021	×	**08-Jan-2021**	17-Feb-2021	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
FP10_0.3-0.4	**11-Jan-2021**	**12-Jan-2021**	18-Jan-2021	✓	**12-Jan-2021**	21-Feb-2021	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Polychlorinated Biphenyls (PCB)	EP066	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Polychlorinated Biphenyls (PCB)	EP066	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Polychlorinated Biphenyls (PCB)	EP066	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).

Preparation Methods	Method	Matrix	Method Descriptions
Deionised Water Leach - Glass Leaching Vessel	EN60-Dla-G	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
Separatory Funnel Extraction of Liquids	ORG14	SOIL	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES2100374**		
Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Contact	: Loren Schiavon
Address	: PO Box 5248 TURRAMURRA NSW 2074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: adam@sullivan-es.com.au	E-mail	: Loren.Schiavon@ALSGlobal.com
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: SES_539	Page	: 1 of 2
Order number	: ----	Quote number	: ES2015SULENV0034 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: Adam Sullivan		

Dates

Date Samples Received	: 24-Dec-2020 11:30	Issue Date	: 08-Jan-2021
Client Requested Due Date	: 11-Jan-2021	Scheduled Reporting Date	: **11-Jan-2021**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 6 / 6

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **(08/01/2021) This is an updated SRN with corrections to sales items**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EN60-Dla-G Deionised Water Leach - Glass Leaching Vessel	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP066-PCB-WA Polychlorinated Biphenyls (PCB)
ES2100374-001	23-Dec-2020 00:00	FP10_0.3-0.4		✓		✓
ES2100374-002	23-Dec-2020 00:00	FP05_0.5-0.6	✓		✓	
ES2100374-003	23-Dec-2020 00:00	FP07_0.2-0.3	✓		✓	
ES2100374-004	23-Dec-2020 00:00	FP11_0.3-0.4	✓		✓	
ES2100374-005	23-Dec-2020 00:00	FP12_0.3-0.4	✓		✓	
ES2100374-006	23-Dec-2020 00:00	FP14_0.2-0.3	✓		✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ADAM SULLIVAN

- *AU Certificate of Analysis - NATA (COA)	Email	adam@sullivan-es.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	adam@sullivan-es.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	adam@sullivan-es.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	adam@sullivan-es.com.au
- A4 - AU Tax Invoice (INV)	Email	adam@sullivan-es.com.au
- Chain of Custody (CoC) (COC)	Email	adam@sullivan-es.com.au
- EDI Format - ENMRG (ENMRG)	Email	adam@sullivan-es.com.au
- EDI Format - ESDAT (ESDAT)	Email	adam@sullivan-es.com.au
- EDI Format - XTab (XTAB)	Email	adam@sullivan-es.com.au

SEAN

- *AU Certificate of Analysis - NATA (COA)	Email	sean@sullivan-es.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sean@sullivan-es.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sean@sullivan-es.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sean@sullivan-es.com.au
- Chain of Custody (CoC) (COC)	Email	sean@sullivan-es.com.au
- EDI Format - ENMRG (ENMRG)	Email	sean@sullivan-es.com.au
- EDI Format - ESDAT (ESDAT)	Email	sean@sullivan-es.com.au
- EDI Format - XTab (XTAB)	Email	sean@sullivan-es.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2045931**	Page	: 1 of 30
Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Contact	: Loren Schiavon
Address	: PO Box 5248 TURRAMURRA NSW 2074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: SES_539	Date Samples Received	: 24-Dec-2020 11:24
Order number	: ----	Date Analysis Commenced	: 24-Dec-2020
C-O-C number	: ----	Issue Date	: 04-Jan-2021 16:51
Sampler	: ADAM SULLIVAN		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 41		
No. of samples analysed	: 41		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive 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*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Alex Rossi	Organic Chemist	Sydney Inorganics, Smithfield, NSW
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP066 : Positive PCB results are confirmed by re-extraction and re-analysis.
- EP080: Result for FP10_0.3-0.4 has been confirmed by re-analysis.
- EG035: Positive Hg results for ES2045931 #13,32,38 have been confirmed by reanalysis.
- EP075(SIM): LOR raised due to the high amount of moisture present.
- **EA200 Legend**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EP080: The trip spike and its control have been analysed for volatile TPH and BTEXN only. The trip spike and control were prepared in the lab using reagent grade sand spiked with petrol. The spike was dispatched from the lab and the control retained.
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

- EA200: N/A - Not Applicable

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	FP01_0.2-0.3	QZ01	FP01_1.5	FP02_0.3-0.4	FP03_0.3-04
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-001	ES2045931-002	ES2045931-003	ES2045931-004	ES2045931-005
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		15.4	16.4	27.6	12.8	5.9
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	No	----	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	----	No	----	No
Asbestos Type	1332-21-4	-	--		-	----	-	----	-
Sample weight (dry)	----	0.01	g		59.8	----	56.3	----	71.9
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	----	A. SMYLIE	----	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg		No	----	No	----	No
Organic Fibre	----	0.1	g/kg		No	----	No	----	No
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		12	11	22	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		8	19	13	8	5
Copper	7440-50-8	5	mg/kg		36	28	56	8	11
Lead	7439-92-1	5	mg/kg		19	24	45	16	11
Nickel	7440-02-0	2	mg/kg		19	14	9	6	5
Zinc	7440-66-6	5	mg/kg		100	65	143	35	45
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	0.4	<0.1	0.2
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	FP01_0.2-0.3	QZ01	FP01_1.5	FP02_0.3-0.4	FP03_0.3-04
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-001	ES2045931-002	ES2045931-003	ES2045931-004	ES2045931-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	----	----	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	FP01_0.2-0.3	QZ01	FP01_1.5	FP02_0.3-0.4	FP03_0.3-04
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-001	ES2045931-002	ES2045931-003	ES2045931-004	ES2045931-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**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
>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)				Sample ID	FP01_0.2-0.3	QZ01	FP01_1.5	FP02_0.3-0.4	FP03_0.3-04
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-001	ES2045931-002	ES2045931-003	ES2045931-004	ES2045931-005
					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	%		111	101	----	----	97.3
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		86.0	79.4	----	----	78.8
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		75.5	70.1	----	----	71.0
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		79.0	79.9	86.5	86.5	84.7
2-Chlorophenol-D4	93951-73-6	0.5	%		80.5	81.6	86.2	86.3	84.8
2.4.6-Tribromophenol	118-79-6	0.5	%		69.1	69.9	73.4	72.2	70.2
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		92.9	92.6	97.8	98.2	96.3
Anthracene-d10	1719-06-8	0.5	%		91.6	92.5	97.4	96.8	96.6
4-Terphenyl-d14	1718-51-0	0.5	%		84.7	85.0	90.1	90.4	88.6
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		78.4	88.5	85.5	91.1	93.6
Toluene-D8	2037-26-5	0.2	%		77.4	88.2	85.6	89.3	93.9
4-Bromofluorobenzene	460-00-4	0.2	%		86.8	89.5	89.2	88.0	94.6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	FP04_0.2-0.3	FP05_0.5-0.6	FP06_0.3-0.4	FP07_0.2-0.3	FP08_0.1-0.2
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-006	ES2045931-007	ES2045931-008	ES2045931-009	ES2045931-010
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		15.6	61.1	16.8	42.2	23.3
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		9	436	7	12	21
Cadmium	7440-43-9	1	mg/kg		<1	2	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		30	367	15	18	33
Copper	7440-50-8	5	mg/kg		<5	1330	13	103	18
Lead	7439-92-1	5	mg/kg		12	98	19	85	312
Nickel	7440-02-0	2	mg/kg		2	990	4	22	5
Zinc	7440-66-6	5	mg/kg		9	232	56	857	467
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	0.1	<0.1
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	----	----
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	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	FP04_0.2-0.3	FP05_0.5-0.6	FP06_0.3-0.4	FP07_0.2-0.3	FP08_0.1-0.2
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-006	ES2045931-007	ES2045931-008	ES2045931-009	ES2045931-010
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
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	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	<0.05	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	<0.05	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	<0.2	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	<0.05	----	----
Diazinon	333-41-5	0.05	mg/kg		----	----	<0.05	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	<0.05	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	<0.2	----	----
Malathion	121-75-5	0.05	mg/kg		----	----	<0.05	----	----
Fenthion	55-38-9	0.05	mg/kg		----	----	<0.05	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	<0.05	----	----
Parathion	56-38-2	0.2	mg/kg		----	----	<0.2	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	<0.05	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	<0.05	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	<0.05	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	<0.05	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	<0.05	----	----
Ethion	563-12-2	0.05	mg/kg		----	----	<0.05	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	<0.05	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	<0.05	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	FP04_0.2-0.3	FP05_0.5-0.6	FP06_0.3-0.4	FP07_0.2-0.3	FP08_0.1-0.2
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-006	ES2045931-007	ES2045931-008	ES2045931-009	ES2045931-010
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.8	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**1.0**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.9**	**1.2**	**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	**140**	<100
C29 - C36 Fraction	----	100	mg/kg		<100	**100**	<100	**120**	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	**100**	<50	**260**	<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	**150**	<100	**210**	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	**150**	<50	**210**	<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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	FP04_0.2-0.3	FP05_0.5-0.6	FP06_0.3-0.4	FP07_0.2-0.3	FP08_0.1-0.2
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045931-006	ES2045931-007	ES2045931-008	ES2045931-009	ES2045931-010
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
^ 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	%	----	----	99.8	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	81.4	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	71.3	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	83.8	79.8	85.5	84.0	86.3
2-Chlorophenol-D4	93951-73-6	0.5	%	85.0	76.9	83.8	82.6	85.8
2.4.6-Tribromophenol	118-79-6	0.5	%	69.0	76.1	71.8	77.9	74.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	95.4	88.1	94.6	93.2	95.0
Anthracene-d10	1719-06-8	0.5	%	95.0	92.0	96.2	95.7	97.1
4-Terphenyl-d14	1718-51-0	0.5	%	87.8	83.4	88.0	86.2	87.4
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	92.0	84.4	100	98.7	98.0
Toluene-D8	2037-26-5	0.2	%	95.4	74.8	101	95.2	94.0
4-Bromofluorobenzene	460-00-4	0.2	%	92.5	85.5	110	98.4	96.3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	FP09_0.1-0.2	FP09_0.8-0.9	FP10_0.3-0.4	FP11_0.3-0.4	FP12_0.3-0.4
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045931-011	ES2045931-012	ES2045931-013	ES2045931-014	ES2045931-015
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	17.0	9.1	14.0	9.2	37.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No*	No	No
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	No	No
Asbestos Type	1332-21-4	-	--	----	----	Am	-	-
Sample weight (dry)	----	0.01	g	----	----	48.2	73.3	29.6
APPROVED IDENTIFIER:	----	-	--	----	----	A. SMYLIE	A. SMYLIE	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	No	No	No
Organic Fibre	----	0.1	g/kg	----	----	No	No	No
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	9	<5	31	30	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	5	21	<1
Chromium	7440-47-3	2	mg/kg	16	7	396	111	5
Copper	7440-50-8	5	mg/kg	36	11	2330	545	400
Lead	7439-92-1	5	mg/kg	17	9	775	1460	48
Nickel	7440-02-0	2	mg/kg	15	3	244	62	2
Zinc	7440-66-6	5	mg/kg	71	30	1430	8810	358
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	1.3	3.9	0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	125	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.11	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	FP09_0.1-0.2	FP09_0.8-0.9	FP10_0.3-0.4	FP11_0.3-0.4	FP12_0.3-0.4
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045931-011	ES2045931-012	ES2045931-013	ES2045931-014	ES2045931-015
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	**0.12**	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	**0.18**	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	**0.30**	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	FP09_0.1-0.2	FP09_0.8-0.9	FP10_0.3-0.4	FP11_0.3-0.4	FP12_0.3-0.4
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-011	ES2045931-012	ES2045931-013	ES2045931-014	ES2045931-015
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	**24**	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	**220**	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	**150**	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	**220**	**150**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	**30**	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	**16**	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	**260**	**180**	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	**150**	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	**260**	**330**	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	FP09_0.1-0.2	FP09_0.8-0.9	FP10_0.3-0.4	FP11_0.3-0.4	FP12_0.3-0.4
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-011	ES2045931-012	ES2045931-013	ES2045931-014	ES2045931-015
					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	**3.4**	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	**7.6**	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	**3.4**	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	**14.4**	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	**11.0**	<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	%		**97.2**	**99.2**	**96.0**	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**77.6**	**77.5**	**82.2**	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**70.2**	**63.2**	**87.0**	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**86.1**	**86.4**	**86.1**	**87.4**	**87.4**
2-Chlorophenol-D4	93951-73-6	0.5	%		**85.4**	**85.2**	**85.7**	**86.2**	**86.3**
2.4.6-Tribromophenol	118-79-6	0.5	%		**71.4**	**69.8**	**70.2**	**74.6**	**73.2**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**95.8**	**95.4**	**98.7**	**96.2**	**95.6**
Anthracene-d10	1719-06-8	0.5	%		**97.6**	**95.8**	**99.2**	**96.8**	**98.3**
4-Terphenyl-d14	1718-51-0	0.5	%		**88.6**	**87.8**	**92.2**	**88.0**	**88.8**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**91.3**	**92.3**	**94.2**	**88.7**	**84.6**
Toluene-D8	2037-26-5	0.2	%		**90.8**	**92.1**	**93.5**	**87.3**	**86.0**
4-Bromofluorobenzene	460-00-4	0.2	%		**91.8**	**91.7**	**89.4**	**84.0**	**85.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	FP13_0.3-0.4	QZ03	FP14_0.2-0.3	FP15_0.2-0.3	FP16_0.1-0.2
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045931-016	ES2045931-017	ES2045931-018	ES2045931-019	ES2045931-020
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	16.5	18.2	18.8	14.7	18.0
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	No	No	----
Asbestos (Trace)	1332-21-4	5	Fibres	No	----	No	No	----
Asbestos Type	1332-21-4	-	--	-	----	-	-	----
Sample weight (dry)	----	0.01	g	38.4	----	30.7	26.3	----
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	----	A. SMYLIE	A. SMYLIE	----
Synthetic Mineral Fibre	----	0.1	g/kg	No	----	No	No	----
Organic Fibre	----	0.1	g/kg	No	----	No	No	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	7	8
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	24	7	12	20
Copper	7440-50-8	5	mg/kg	67	78	31	134	37
Lead	7439-92-1	5	mg/kg	37	45	42	401	56
Nickel	7440-02-0	2	mg/kg	17	16	14	13	8
Zinc	7440-66-6	5	mg/kg	207	149	117	477	74
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.2	0.1	<0.1	0.5	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	0.2	<0.1	----	0.6	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	FP13_0.3-0.4	QZ03	FP14_0.2-0.3	FP15_0.2-0.3	FP16_0.1-0.2
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-016	ES2045931-017	ES2045931-018	ES2045931-019	ES2045931-020
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Dieldrin	60-57-1	0.05	mg/kg		**0.08**	<0.05	----	**0.11**	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	**0.06**	----
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		**0.08**	<0.05	----	**0.11**	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	----	**0.06**	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	FP13_0.3-0.4	QZ03	FP14_0.2-0.3	FP15_0.2-0.3	FP16_0.1-0.2
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-016	ES2045931-017	ES2045931-018	ES2045931-019	ES2045931-020
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	**0.8**	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	**0.8**	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	**0.6**	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	**0.5**	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	**2.7**	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	**0.6**	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.9**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**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	**110**
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	**110**
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	**120**
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	**120**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	FP13_0.3-0.4	QZ03	FP14_0.2-0.3	FP15_0.2-0.3	FP16_0.1-0.2
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045931-016	ES2045931-017	ES2045931-018	ES2045931-019	ES2045931-020
				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	%	**82.0**	**96.6**	**----**	**104**	**----**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**82.0**	**79.0**	**----**	**84.0**	**----**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**79.5**	**75.0**	**----**	**79.0**	**----**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**83.9**	**83.0**	**84.8**	**86.4**	**86.0**
2-Chlorophenol-D4	93951-73-6	0.5	%	**84.7**	**82.0**	**83.4**	**85.4**	**85.8**
2.4.6-Tribromophenol	118-79-6	0.5	%	**73.4**	**72.6**	**69.5**	**72.8**	**78.4**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**95.1**	**94.9**	**95.9**	**96.5**	**94.9**
Anthracene-d10	1719-06-8	0.5	%	**94.7**	**92.9**	**96.0**	**97.1**	**96.8**
4-Terphenyl-d14	1718-51-0	0.5	%	**87.8**	**86.5**	**87.9**	**89.3**	**87.5**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**92.6**	**88.1**	**87.3**	**86.7**	**88.9**
Toluene-D8	2037-26-5	0.2	%	**89.5**	**85.4**	**87.1**	**85.1**	**89.4**
4-Bromofluorobenzene	460-00-4	0.2	%	**87.9**	**78.1**	**83.2**	**82.2**	**88.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QZ04	FP17_0.4-0.5	D01_0.1-0.2	D01_0.4-0.5	D02_0.1-0.2
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045931-021	ES2045931-022	ES2045931-026	ES2045931-027	ES2045931-028
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	15.9	15.3	7.0	4.9	5.1
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	----	----	----
Asbestos Type	1332-21-4	-	--	----	-	----	----	----
Sample weight (dry)	----	0.01	g	----	29.4	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	A. SMYLIE	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	----	No	----	----	----
Organic Fibre	----	0.1	g/kg	----	No	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	6	<5	<5	10	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	1	<1	<1
Chromium	7440-47-3	2	mg/kg	16	5	3	5	<2
Copper	7440-50-8	5	mg/kg	28	25	5	5	<5
Lead	7439-92-1	5	mg/kg	45	5	15	5	<5
Nickel	7440-02-0	2	mg/kg	7	24	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	67	43	49	28	9
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.6	0.5	0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QZ04	FP17_0.4-0.5	D01_0.1-0.2	D01_0.4-0.5	D02_0.1-0.2
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-021	ES2045931-022	ES2045931-026	ES2045931-027	ES2045931-028
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Dieldrin	60-57-1	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		----	----	<0.2	<0.2	<0.2
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		----	----	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QZ04	FP17_0.4-0.5	D01_0.1-0.2	D01_0.4-0.5	D02_0.1-0.2
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-021	ES2045931-022	ES2045931-026	ES2045931-027	ES2045931-028
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		**110**	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		**110**	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		**130**	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		**130**	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		**260**	<50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QZ04	FP17_0.4-0.5	D01_0.1-0.2	D01_0.4-0.5	D02_0.1-0.2
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045931-021	ES2045931-022	ES2045931-026	ES2045931-027	ES2045931-028
				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	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	107	121	114
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	96.1	89.3	86.9
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	104	106	102
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	89.9	83.4	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	88.3	83.4	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	82.2	73.0	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	99.5	96.2	----	----	----
Anthracene-d10	1719-06-8	0.5	%	102	95.6	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	90.9	88.9	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	96.1	100	----	----	----
Toluene-D8	2037-26-5	0.2	%	90.8	98.4	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	104	100	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	D02_0.4-0.5	D03_0.1-0.2	D04_0.2-0.3	QZ02	D04_0.4-0.5
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045931-029	ES2045931-030	ES2045931-031	ES2045931-032	ES2045931-033
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	3.2	5.5	8.7	21.9	5.8
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	9	41	6
Cadmium	7440-43-9	1	mg/kg	<1	7	<1	1	<1
Chromium	7440-47-3	2	mg/kg	2	4	<2	6	<2
Copper	7440-50-8	5	mg/kg	<5	11	<5	19	<5
Lead	7439-92-1	5	mg/kg	<5	68	<5	64	<5
Nickel	7440-02-0	2	mg/kg	<2	2	<2	4	<2
Zinc	7440-66-6	5	mg/kg	<5	63	77	242	18
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.4	0.2	4.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	0.08	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	D02_0.4-0.5	D03_0.1-0.2	D04_0.2-0.3	QZ02	D04_0.4-0.5
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045931-029	ES2045931-030	ES2045931-031	ES2045931-032	ES2045931-033
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	**0.08**	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**120**	**109**	**111**	**122**	**119**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**89.2**	**78.4**	**90.2**	**91.1**	**89.3**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**92.3**	**105**	**106**	**102**	**73.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	D05_0.2-0.3	D06_0.2-0.3	D06_0.4-0.5	D07_0.1-0.2	D08_0.1-0.2
				Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045931-034	ES2045931-035	ES2045931-036	ES2045931-037	ES2045931-038
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		8.7	8.7	5.2	8.1	7.6
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	4	3	<1	7
Chromium	7440-47-3	2	mg/kg		2	2	<2	2	4
Copper	7440-50-8	5	mg/kg		<5	<5	<5	5	8
Lead	7439-92-1	5	mg/kg		<5	22	<5	6	12
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	<2	2
Zinc	7440-66-6	5	mg/kg		82	207	15	14	54
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	0.1	<0.1	0.1	2.6
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	D05_0.2-0.3	D06_0.2-0.3	D06_0.4-0.5	D07_0.1-0.2	D08_0.1-0.2
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045931-034	ES2045931-035	ES2045931-036	ES2045931-037	ES2045931-038
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	101	110	107	126	117
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	75.0	85.2	82.5	97.7	103
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	71.7	77.8	80.4	92.2	122

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	TRIP BLANK	TRIP SPIKE 5	TSC5	----	----
			Sampling date / time	15-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2045931-039	ES2045931-040	ES2045931-041	--------	--------
				Result	Result	Result	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	**0.2**	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	**10.5**	**14.1**	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	**1.7**	**2.0**	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	**10.7**	**11.5**	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	**3.4**	**3.7**	----	----
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	**26.3**	**31.5**	----	----
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	**14.1**	**15.2**	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**87.4**	**86.8**	**80.4**	----	----
Toluene-D8	2037-26-5	0.2	%	**91.4**	**78.5**	**94.6**	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**92.3**	**99.9**	**82.7**	----	----

Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)			Sample ID	FP05_F01	FP06_F02	FP07_F03	----	----
			Sampling date / time	23-Dec-2020 00:00	23-Dec-2020 00:00	23-Dec-2020 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2045931-023	ES2045931-024	ES2045931-025	--------	--------
				Result	Result	Result	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	**Yes**	**Yes**	**Yes**	**----**	**----**
Asbestos Type	1332-21-4	-	--	**Ch**	**Ch**	**Ch**	**----**	**----**
Asbestos (Trace)	1332-21-4	5	Fibres	**N/A**	**N/A**	**N/A**	**----**	**----**
Sample weight (dry)	----	0.01	g	**16.3**	**66.4**	**66.0**	**----**	**----**
Synthetic Mineral Fibre	----	0.1	g/kg	**No**	**No**	**No**	**----**	**----**
Organic Fibre	----	0.1	g/kg	**No**	**No**	**No**	**----**	**----**
APPROVED IDENTIFIER:	----	-	--	**B.SCHRADER**	**B.SCHRADER**	**B.SCHRADER**	**----**	**----**

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	FP01_0.2-0.3 - 23-Dec-2020 00:00	Mid brown soil.
EA200: Description	FP01_1.5 - 23-Dec-2020 00:00	Mid brown soil.
EA200: Description	FP03_0.3-04 - 23-Dec-2020 00:00	Mid brown soil.
EA200: Description	FP10_0.3-0.4 - 23-Dec-2020 00:00	Mid brown soil containing two pieces of asbestos fibre board approximately 5x3x1mm.
EA200: Description	FP11_0.3-0.4 - 23-Dec-2020 00:00	Mid brown soil.
EA200: Description	FP12_0.3-0.4 - 23-Dec-2020 00:00	Mid brown soil.
EA200: Description	FP13_0.3-0.4 - 23-Dec-2020 00:00	Mid brown soil.
EA200: Description	FP14_0.2-0.3 - 23-Dec-2020 00:00	Mid brown soil.
EA200: Description	FP15_0.2-0.3 - 23-Dec-2020 00:00	Mid brown soil.
EA200: Description	FP17_0.4-0.5 - 23-Dec-2020 00:00	Mid brown soil.

Sub-Matrix: **SOLID**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	FP05_F01 - 23-Dec-2020 00:00	One piece of asbestos cement sheeting approximately 55x35x5mm.
EA200: Description	FP06_F02 - 23-Dec-2020 00:00	One piece of asbestos cement sheeting approximately 85x40x5mm.
EA200: Description	FP07_F03 - 23-Dec-2020 00:00	One piece of asbestos cement sheeting approximately 155x85x5mm.

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2045931**	Page	: 1 of 19
Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Contact	: Loren Schiavon
Address	: PO Box 5248 TURRAMURRA NSW 2074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: SES_539	Date Samples Received	: 24-Dec-2020
Order number	: ----	Date Analysis Commenced	: 24-Dec-2020
C-O-C number	: ----	Issue Date	: 04-Jan-2021
Sampler	: ADAM SULLIVAN		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 41		
No. of samples analysed	: 41		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Alex Rossi	Organic Chemist	Sydney Inorganics, Smithfield, NSW
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3441007)									
ES2045767-010	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	7	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	6	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	123	102	18.4	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	30	30	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	198	199	0.566	0% - 20%
ES2045931-029	D02_0.4-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	2	2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3441296)									
ES2045858-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	35	40	12.4	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	30	32	6.93	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	13	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	15	12.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	24	26	6.74	No Limit
ES2045931-009	FP07_0.2-0.3	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	15	19.5	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	22	14	48.6	0% - 50%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3441296) - continued									
ES2045931-009	FP07_0.2-0.3	EG005T: Arsenic	7440-38-2	5	mg/kg	12	15	21.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	103	94	9.42	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	85	104	19.9	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	857	750	13.3	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3441298)									
ES2045931-019	FP15_0.2-0.3	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	17	36.9	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	13	19	36.3	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	8	20.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	134	125	7.12	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	401	419	4.48	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	477	564	16.6	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3442163)									
ES2045373-022	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	31	31	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	5	5	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	9	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	6	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	11	11	0.00	No Limit
ES2045373-035	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	24	20	19.7	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	5	4	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	5	<5	0.00	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3441010)									
ES2045910-002	Anonymous	EA055: Moisture Content	----	0.1	%	10.5	10.6	1.28	0% - 50%
ES2045931-032	QZ02	EA055: Moisture Content	----	0.1	%	21.9	20.6	5.89	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3441302)									
ES2045824-001	Anonymous	EA055: Moisture Content	----	0.1	%	17.0	18.2	6.34	0% - 20%
ES2045931-006	FP04_0.2-0.3	EA055: Moisture Content	----	0.1	%	15.6	16.2	3.99	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3441303)									
ES2045931-015	FP12_0.3-0.4	EA055: Moisture Content	----	0.1	%	37.2	36.1	3.02	0% - 20%
ES2045962-006	Anonymous	EA055: Moisture Content	----	0.1	%	30.4	32.6	6.93	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3442168)									
ES2045373-024	Anonymous	EA055: Moisture Content	----	0.1	%	4.3	4.6	8.13	No Limit
ES2045373-039	Anonymous	EA055: Moisture Content	----	0.1	%	8.2	8.3	1.27	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3441008)									
ES2045767-010	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2045931-029	D02_0.4-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3441297)									
ES2045858-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2045931-009	FP07_0.2-0.3	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.2	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3441299)									
ES2045931-019	FP15_0.2-0.3	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.5	0.5	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3442162)									
ES2045373-022	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2045373-035	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3440886)									
ES2045931-026	D01_0.1-0.2	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2045931-036	D06_0.4-0.5	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3440891)									
ES2045931-001	FP01_0.2-0.3	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3440885)									
ES2045931-026	D01_0.1-0.2	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
ES2045931-036	D06_0.4-0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3440885) - continued									
ES2045931-036	D06_0.4-0.5	EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3440892)									
ES2045931-001	FP01_0.2-0.3	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3440892) - continued									
ES2045931-001	FP01_0.2-0.3	EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3440885)									
ES2045931-026	D01_0.1-0.2	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
ES2045931-036	D06_0.4-0.5	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3440892)									
ES2045931-001	FP01_0.2-0.3	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3440889)									
ES2045931-011	FP09_0.1-0.2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3440889) - continued									
ES2045931-001	FP01_0.2-0.3	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3441930)									
ES2045931-021	QZ04	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3441930) - continued									
ES2045931-021	QZ04	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3440888)									
ES2045931-001	FP01_0.2-0.3	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2045931-011	FP09_0.1-0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3440890)									
ES2045931-011	FP09_0.1-0.2	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES2045931-001	FP01_0.2-0.3	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3441929)									
ES2045931-021	QZ04	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	110	100	9.60	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3441996)									
ES2045373-011	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2045373-080	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3440888)									
ES2045931-001	FP01_0.2-0.3	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2045931-011	FP09_0.1-0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3440890)									
ES2045931-011	FP09_0.1-0.2	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES2045931-001	FP01_0.2-0.3	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3441929)									
ES2045931-021	QZ04	EP071: >C16 - C34 Fraction	----	100	mg/kg	130	140	9.93	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	130	110	10.3	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3441996)									
ES2045373-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2045373-080	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 3440888)									
ES2045931-001	FP01_0.2-0.3	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 3440888) - continued									
ES2045931-001	FP01_0.2-0.3	EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES2045931-011	FP09_0.1-0.2	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 3441996)									
ES2045373-011	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES2045373-080	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3441007)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	100	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	99.7	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	109	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	99.4	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	95.9	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	92.2	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	77.1	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3441296)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	110	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	92.5	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	97.9	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	100	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	97.4	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	91.7	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	75.5	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3441298)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	88.7	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	82.0	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	89.4	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	90.4	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	84.2	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	80.3	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	67.3	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3442163)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	93.4	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	109	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	113	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	94.8	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	104	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	104	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	81.5	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3441008)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	94.5	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3441297)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3441297) - continued								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	95.5	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3441299)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	75.6	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3442162)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	108	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3440886)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	81.8	62.0	126
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3440891)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	84.2	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 3440885)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.7	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	96.7	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	88.2	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	86.2	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	82.9	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	77.8	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	80.6	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	84.0	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	85.1	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.5	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	82.0	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.6	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	89.7	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.2	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	93.0	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	81.1	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	98.2	54.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3440892)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	81.0	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	75.3	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	83.1	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	76.3	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	82.1	67.0	115

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 3440892) - continued								
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	79.5	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	89.1	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	70.6	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.7	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	78.6	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	77.3	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	77.7	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	75.8	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	76.0	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	76.3	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	70.3	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	79.3	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	70.5	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3440885)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	71.5	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.1	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	74.7	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	89.4	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	87.3	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	78.7	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	89.5	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	90.1	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	85.8	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	86.2	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	93.1	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	86.7	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.6	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	82.5	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	84.9	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	84.0	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	83.1	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	82.6	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	84.9	41.0	123
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3440892)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	84.7	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.0	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	68.9	54.0	126

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3440892) - continued								
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	70.0	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	78.4	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	75.9	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	78.9	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	79.3	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	84.6	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	78.6	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	84.5	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	80.4	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.7	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	93.2	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	82.1	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	84.4	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	70.2	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	75.4	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3440889)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	92.4	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	86.4	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	86.7	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	89.1	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	94.4	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	95.6	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	95.2	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	93.8	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	86.3	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	86.2	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	81.9	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	88.5	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	79.1	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	85.2	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	83.7	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	84.3	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3441930)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	91.6	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	91.4	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	86.5	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	89.8	72.0	126

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3441930) - continued								
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	94.2	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	95.6	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	96.2	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	94.1	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	88.2	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	86.6	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	85.3	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	88.3	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	81.6	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	84.9	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	82.8	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	83.1	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3440888)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	85.3	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3440890)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	95.3	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	91.6	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	88.6	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3441929)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	116	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	101	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	94.3	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3441996)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	121	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3440888)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	85.6	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3440890)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	95.9	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	89.2	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	80.5	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3441929)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	108	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	98.1	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	82.1	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3441996)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	121	68.4	128

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 3440888)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	85.4	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	88.3	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	88.5	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	89.3	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	92.4	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	89.1	63.0	119
EP080: BTEXN (QCLot: 3441996)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	86.0	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	105	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	94.0	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	97.7	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	95.7	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	111	63.0	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3441007)							
ES2045767-010	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	90.4	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	90.7	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	90.7	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	94.1	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	91.1	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	92.3	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	85.2	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3441296)							
ES2045858-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	81.8	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	84.9	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	85.2	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	92.5	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	92.3	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	84.5	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3441296) - continued							
ES2045858-001	Anonymous	EG005T: Zinc	7440-66-6	250 mg/kg	90.2	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3441298)							
ES2045931-019	FP15_0.2-0.3	EG005T: Arsenic	7440-38-2	50 mg/kg	98.4	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	81.7	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	86.4	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	92.7	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	82.7	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	82.4	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	121	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3442163)							
ES2045373-022	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	85.1	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.3	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	86.2	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	88.4	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	99.3	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	97.4	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	98.4	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3441008)							
ES2045767-010	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	84.2	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3441297)							
ES2045858-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	82.0	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3441299)							
ES2045931-019	FP15_0.2-0.3	EG035T: Mercury	7439-97-6	5 mg/kg	82.0	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3442162)							
ES2045373-022	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	80.6	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3440886)							
ES2045931-026	D01_0.1-0.2	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	81.4	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3440891)							
ES2045931-001	FP01_0.2-0.3	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	80.9	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3440885)							
ES2045931-026	D01_0.1-0.2	EP068: gamma-BHC	58-89-9	0.5 mg/kg	107	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	110	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	70.9	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	86.2	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	90.0	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	100	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 3440892)							
ES2045931-001	FP01_0.2-0.3	EP068: gamma-BHC	58-89-9	0.5 mg/kg	88.2	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	83.3	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	94.1	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	82.7	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	74.7	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	76.0	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3440885)							
ES2045931-026	D01_0.1-0.2	EP068: Diazinon	333-41-5	0.5 mg/kg	84.8	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	80.0	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	79.6	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	70.1	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	85.6	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3440892)							
ES2045931-001	FP01_0.2-0.3	EP068: Diazinon	333-41-5	0.5 mg/kg	106	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	80.4	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	83.4	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	89.2	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	97.0	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3440889)							
ES2045931-001	FP01_0.2-0.3	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	77.6	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	84.9	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3441930)							
ES2045931-021	QZ04	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	77.7	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	87.3	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3440888)							
ES2045931-001	FP01_0.2-0.3	EP080: C6 - C9 Fraction	----	32.5 mg/kg	84.9	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3440890)							
ES2045931-001	FP01_0.2-0.3	EP071: C10 - C14 Fraction	----	523 mg/kg	104	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	111	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	124	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3441929)							
ES2045931-021	QZ04	EP071: C10 - C14 Fraction	----	523 mg/kg	102	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	112	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	125	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3441996)							
ES2045373-011	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	114	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3440888)							
ES2045931-001	FP01_0.2-0.3	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	83.1	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3440890)							
ES2045931-001	FP01_0.2-0.3	EP071: >C10 - C16 Fraction	----	860 mg/kg	102	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	114	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	129	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3441929)							
ES2045931-021	QZ04	EP071: >C10 - C16 Fraction	----	860 mg/kg	108	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	118	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	120	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3441996)							
ES2045373-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	109	70.0	130
EP080: BTEXN (QCLot: 3440888)							
ES2045931-001	FP01_0.2-0.3	EP080: Benzene	71-43-2	2.5 mg/kg	78.7	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	80.8	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	82.7	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	82.1	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	83.7	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	83.5	70.0	130
EP080: BTEXN (QCLot: 3441996)							
ES2045373-011	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	86.3	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	80.0	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.5	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	83.3	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	93.0	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	77.1	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2045931**	Page	: 1 of 11
Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Telephone	: +61 2 8784 8555
Project	: SES_539	Date Samples Received	: 24-Dec-2020
Site	: ----	Issue Date	: 04-Jan-2021
Sampler	: ADAM SULLIVAN	No. of samples received	: 41
Order number	: ----	No. of samples analysed	: 41

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
D01_0.1-0.2,	D01_0.4-0.5,	**23-Dec-2020**	**----**	----	----	**24-Dec-2020**	06-Jan-2021	✓
D02_0.1-0.2,	D02_0.4-0.5,							
D03_0.1-0.2,	D04_0.2-0.3,							
QZ02,	D04_0.4-0.5,							
D05_0.2-0.3,	D06_0.2-0.3,							
D06_0.4-0.5,	D07_0.1-0.2,							
D08_0.1-0.2								
Soil Glass Jar - Unpreserved (EA055)								
FP01_0.2-0.3,	QZ01,	**23-Dec-2020**	**----**	----	----	**27-Dec-2020**	06-Jan-2021	✓
FP01_1.5,	FP02_0.3-0.4,							
FP03_0.3-04,	FP04_0.2-0.3,							
FP05_0.5-0.6,	FP06_0.3-0.4,							
FP07_0.2-0.3,	FP08_0.1-0.2,							
FP09_0.1-0.2,	FP09_0.8-0.9,							
FP10_0.3-0.4,	FP11_0.3-0.4,							
FP12_0.3-0.4,	FP13_0.3-0.4,							
QZ03,	FP14_0.2-0.3,							
FP15_0.2-0.3,	FP16_0.1-0.2							
Soil Glass Jar - Unpreserved (EA055)								
QZ04,	FP17_0.4-0.5	**23-Dec-2020**	**----**	----	----	**29-Dec-2020**	06-Jan-2021	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)								
FP01_0.2-0.3,	FP01_1.5,	**23-Dec-2020**	**----**	----	----	**30-Dec-2020**	21-Jun-2021	✓
FP03_0.3-04,	FP10_0.3-0.4,							
FP11_0.3-0.4,	FP12_0.3-0.4,							
FP13_0.3-0.4,	FP14_0.2-0.3,							
FP15_0.2-0.3,	FP17_0.4-0.5							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
D01_0.1-0.2, D01_0.4-0.5, D02_0.1-0.2, D02_0.4-0.5, D03_0.1-0.2, D04_0.2-0.3, QZ02, D04_0.4-0.5, D05_0.2-0.3, D06_0.2-0.3, D06_0.4-0.5, D07_0.1-0.2, D08_0.1-0.2	**23-Dec-2020**	**24-Dec-2020**	21-Jun-2021	✓	**30-Dec-2020**	21-Jun-2021	✓
Soil Glass Jar - Unpreserved (EG005T)							
FP01_0.2-0.3, QZ01, FP01_1.5, FP02_0.3-0.4, FP03_0.3-04, FP04_0.2-0.3, FP05_0.5-0.6, FP06_0.3-0.4, FP07_0.2-0.3, FP08_0.1-0.2, FP09_0.1-0.2, FP09_0.8-0.9, FP10_0.3-0.4, FP11_0.3-0.4, FP12_0.3-0.4, FP13_0.3-0.4, QZ03, FP14_0.2-0.3, FP15_0.2-0.3, FP16_0.1-0.2	**23-Dec-2020**	**27-Dec-2020**	21-Jun-2021	✓	**29-Dec-2020**	21-Jun-2021	✓
Soil Glass Jar - Unpreserved (EG005T)							
QZ04, FP17_0.4-0.5	**23-Dec-2020**	**29-Dec-2020**	21-Jun-2021	✓	**29-Dec-2020**	21-Jun-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
D01_0.1-0.2, D01_0.4-0.5, D02_0.1-0.2, D02_0.4-0.5, D03_0.1-0.2, D04_0.2-0.3, QZ02, D04_0.4-0.5, D05_0.2-0.3, D06_0.2-0.3, D06_0.4-0.5, D07_0.1-0.2, D08_0.1-0.2	**23-Dec-2020**	**24-Dec-2020**	20-Jan-2021	✓	**30-Dec-2020**	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EG035T)							
FP01_0.2-0.3, QZ01, FP01_1.5, FP02_0.3-0.4, FP03_0.3-04, FP04_0.2-0.3, FP05_0.5-0.6, FP06_0.3-0.4, FP07_0.2-0.3, FP08_0.1-0.2, FP09_0.1-0.2, FP09_0.8-0.9, FP10_0.3-0.4, FP11_0.3-0.4, FP12_0.3-0.4, FP13_0.3-0.4, QZ03, FP14_0.2-0.3, FP15_0.2-0.3, FP16_0.1-0.2	**23-Dec-2020**	**27-Dec-2020**	20-Jan-2021	✓	**30-Dec-2020**	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EG035T)							
QZ04, FP17_0.4-0.5	**23-Dec-2020**	**29-Dec-2020**	20-Jan-2021	✓	**30-Dec-2020**	20-Jan-2021	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
D01_0.1-0.2, D01_0.4-0.5, D02_0.1-0.2, D02_0.4-0.5, D03_0.1-0.2, D04_0.2-0.3, QZ02, D04_0.4-0.5, D05_0.2-0.3, D06_0.2-0.3, D06_0.4-0.5, D07_0.1-0.2, D08_0.1-0.2	**23-Dec-2020**	**24-Dec-2020**	06-Jan-2021	✓	**29-Dec-2020**	02-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP066)							
FP01_0.2-0.3, QZ01, FP03_0.3-04, FP06_0.3-0.4, FP09_0.1-0.2, FP09_0.8-0.9, FP10_0.3-0.4, FP13_0.3-0.4, QZ03, FP15_0.2-0.3	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**30-Dec-2020**	07-Feb-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
D01_0.1-0.2, D01_0.4-0.5, D02_0.1-0.2, D02_0.4-0.5, D03_0.1-0.2, D04_0.2-0.3, QZ02, D04_0.4-0.5, D05_0.2-0.3, D06_0.2-0.3, D06_0.4-0.5, D07_0.1-0.2, D08_0.1-0.2	**23-Dec-2020**	**24-Dec-2020**	06-Jan-2021	✓	**29-Dec-2020**	02-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP068)							
FP01_0.2-0.3, QZ01, FP03_0.3-04, FP06_0.3-0.4, FP09_0.1-0.2, FP09_0.8-0.9, FP10_0.3-0.4, FP13_0.3-0.4, QZ03, FP15_0.2-0.3	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**30-Dec-2020**	07-Feb-2021	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
D01_0.1-0.2, D01_0.4-0.5, D02_0.1-0.2, D02_0.4-0.5, D03_0.1-0.2, D04_0.2-0.3, QZ02, D04_0.4-0.5, D05_0.2-0.3, D06_0.2-0.3, D06_0.4-0.5, D07_0.1-0.2, D08_0.1-0.2	**23-Dec-2020**	**24-Dec-2020**	06-Jan-2021	✓	**29-Dec-2020**	02-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP068)							
FP01_0.2-0.3, QZ01, FP03_0.3-04, FP06_0.3-0.4, FP09_0.1-0.2, FP09_0.8-0.9, FP10_0.3-0.4, FP13_0.3-0.4, QZ03, FP15_0.2-0.3	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**30-Dec-2020**	07-Feb-2021	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
FP01_0.2-0.3, QZ01, FP01_1.5, FP02_0.3-0.4, FP03_0.3-04, FP04_0.2-0.3, FP05_0.5-0.6, FP06_0.3-0.4, FP07_0.2-0.3, FP08_0.1-0.2, FP09_0.1-0.2, FP09_0.8-0.9, FP10_0.3-0.4, FP11_0.3-0.4, FP12_0.3-0.4, FP13_0.3-0.4, QZ03, FP14_0.2-0.3, FP15_0.2-0.3, QZ04, FP16_0.1-0.2, FP17_0.4-0.5	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**30-Dec-2020**	07-Feb-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
QZ04, FP17_0.4-0.5	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**29-Dec-2020**	06-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP071)							
FP01_0.2-0.3, QZ01, FP01_1.5, FP02_0.3-0.4, FP03_0.3-04, FP04_0.2-0.3, FP05_0.5-0.6, FP06_0.3-0.4, FP07_0.2-0.3, FP08_0.1-0.2, FP09_0.1-0.2, FP09_0.8-0.9, FP10_0.3-0.4, FP11_0.3-0.4, FP12_0.3-0.4, FP13_0.3-0.4, QZ03, FP14_0.2-0.3, FP15_0.2-0.3, FP16_0.1-0.2	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**30-Dec-2020**	07-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP080)							
FP01_0.2-0.3, QZ01, FP01_1.5, FP02_0.3-0.4, FP03_0.3-04, FP04_0.2-0.3, FP05_0.5-0.6, FP06_0.3-0.4, FP07_0.2-0.3, FP08_0.1-0.2, FP09_0.1-0.2, FP09_0.8-0.9, FP10_0.3-0.4, FP11_0.3-0.4, FP12_0.3-0.4, FP13_0.3-0.4, QZ03, FP14_0.2-0.3, FP15_0.2-0.3, FP16_0.1-0.2	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**31-Dec-2020**	06-Jan-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
QZ04, FP17_0.4-0.5	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**29-Dec-2020**	06-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP071)							
FP01_0.2-0.3, QZ01, FP01_1.5, FP02_0.3-0.4, FP03_0.3-04, FP04_0.2-0.3, FP05_0.5-0.6, FP06_0.3-0.4, FP07_0.2-0.3, FP08_0.1-0.2, FP09_0.1-0.2, FP09_0.8-0.9, FP10_0.3-0.4, FP11_0.3-0.4, FP12_0.3-0.4, FP13_0.3-0.4, QZ03, FP14_0.2-0.3, FP15_0.2-0.3, FP16_0.1-0.2	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**30-Dec-2020**	07-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP080)							
FP01_0.2-0.3, QZ01, FP01_1.5, FP02_0.3-0.4, FP03_0.3-04, FP04_0.2-0.3, FP05_0.5-0.6, FP06_0.3-0.4, FP07_0.2-0.3, FP08_0.1-0.2, FP09_0.1-0.2, FP09_0.8-0.9, FP10_0.3-0.4, FP11_0.3-0.4, FP12_0.3-0.4, FP13_0.3-0.4, QZ03, FP14_0.2-0.3, FP15_0.2-0.3, FP16_0.1-0.2	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**31-Dec-2020**	06-Jan-2021	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
TRIP BLANK	**15-Dec-2020**	**29-Dec-2020**	29-Dec-2020	✓	**29-Dec-2020**	29-Dec-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
QZ04, FP17_0.4-0.5, TRIP SPIKE 5, TSC5	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**29-Dec-2020**	06-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP080)							
FP01_0.2-0.3, QZ01, FP01_1.5, FP02_0.3-0.4, FP03_0.3-04, FP04_0.2-0.3, FP05_0.5-0.6, FP06_0.3-0.4, FP07_0.2-0.3, FP08_0.1-0.2, FP09_0.1-0.2, FP09_0.8-0.9, FP10_0.3-0.4, FP11_0.3-0.4, FP12_0.3-0.4, FP13_0.3-0.4, QZ03, FP14_0.2-0.3, FP15_0.2-0.3, FP16_0.1-0.2	**23-Dec-2020**	**29-Dec-2020**	06-Jan-2021	✓	**31-Dec-2020**	06-Jan-2021	✓

Matrix: **SOLID**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **SOLID**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)							
FP05_F01, FP06_F02, FP07_F03	**23-Dec-2020**	**----**	----	----	**30-Dec-2020**	21-Jun-2021	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	8	77	**10.39**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	3	22	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	3	23	**13.04**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	3	23	**13.04**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	7	62	**11.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	7	60	**11.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	22	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	62	**6.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	60	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	62	**6.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	60	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	62	**6.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	60	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2045931**

Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Contact	: Loren Schiavon
Address	: PO Box 5248 TURRAMURRA NSW 2074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: adam@sullivan-es.com.au	E-mail	: Loren.Schiavon@ALSGlobal.com
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: SES_539	Page	: 1 of 3
Order number	: ----	Quote number	: ES2015SULENV0034 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: ADAM SULLIVAN		

Dates

Date Samples Received	: 24-Dec-2020 11:24	Issue Date	: 24-Dec-2020
Client Requested Due Date	: 04-Jan-2021	Scheduled Reporting Date	: **04-Jan-2021**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 4.6'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 41 / 41

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200G Asbestos Identification in Soils -	SOIL - EP080 BTEXN	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-13 OC/OP/PCB	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2045931-001	23-Dec-2020 00:00	FP01_0.2-0.3	✓	✓			✓	✓
ES2045931-002	23-Dec-2020 00:00	QZ01	✓				✓	✓
ES2045931-003	23-Dec-2020 00:00	FP01_1.5	✓	✓				✓
ES2045931-004	23-Dec-2020 00:00	FP02_0.3-0.4	✓					✓
ES2045931-005	23-Dec-2020 00:00	FP03_0.3-04	✓	✓			✓	✓
ES2045931-006	23-Dec-2020 00:00	FP04_0.2-0.3	✓					✓
ES2045931-007	23-Dec-2020 00:00	FP05_0.5-0.6	✓					✓
ES2045931-008	23-Dec-2020 00:00	FP06_0.3-0.4	✓				✓	✓
ES2045931-009	23-Dec-2020 00:00	FP07_0.2-0.3	✓					✓
ES2045931-010	23-Dec-2020 00:00	FP08_0.1-0.2	✓					✓
ES2045931-011	23-Dec-2020 00:00	FP09_0.1-0.2	✓				✓	✓
ES2045931-012	23-Dec-2020 00:00	FP09_0.8-0.9	✓				✓	✓
ES2045931-013	23-Dec-2020 00:00	FP10_0.3-0.4	✓	✓			✓	✓
ES2045931-014	23-Dec-2020 00:00	FP11_0.3-0.4	✓	✓				✓
ES2045931-015	23-Dec-2020 00:00	FP12_0.3-0.4	✓	✓				✓
ES2045931-016	23-Dec-2020 00:00	FP13_0.3-0.4	✓	✓			✓	✓
ES2045931-017	23-Dec-2020 00:00	QZ03	✓				✓	✓
ES2045931-018	23-Dec-2020 00:00	FP14_0.2-0.3	✓	✓				✓
ES2045931-019	23-Dec-2020 00:00	FP15_0.2-0.3	✓	✓			✓	✓
ES2045931-020	23-Dec-2020 00:00	FP16_0.1-0.2	✓					✓
ES2045931-021	23-Dec-2020 00:00	QZ04	✓					✓
ES2045931-022	23-Dec-2020 00:00	FP17_0.4-0.5	✓	✓				✓
ES2045931-026	23-Dec-2020 00:00	D01_0.1-0.2	✓			✓	✓	
ES2045931-027	23-Dec-2020 00:00	D01_0.4-0.5	✓			✓	✓	
ES2045931-028	23-Dec-2020 00:00	D02_0.1-0.2	✓			✓	✓	
ES2045931-029	23-Dec-2020 00:00	D02_0.4-0.5	✓			✓	✓	
ES2045931-030	23-Dec-2020 00:00	D03_0.1-0.2	✓			✓	✓	
ES2045931-031	23-Dec-2020 00:00	D04_0.2-0.3	✓			✓	✓	
ES2045931-032	23-Dec-2020 00:00	QZ02	✓			✓	✓	
ES2045931-033	23-Dec-2020 00:00	D04_0.4-0.5	✓			✓	✓	
ES2045931-034	23-Dec-2020 00:00	D05_0.2-0.3	✓			✓	✓	
ES2045931-035	23-Dec-2020 00:00	D06_0.2-0.3	✓			✓	✓	
ES2045931-036	23-Dec-2020 00:00	D06_0.4-0.5	✓			✓	✓	
ES2045931-037	23-Dec-2020 00:00	D07_0.1-0.2	✓			✓	✓	
ES2045931-038	23-Dec-2020 00:00	D08_0.1-0.2	✓			✓	✓	

			SOIL - EA055-103 Moisture Content	SOIL - EA200G Asbestos Identification in Soils -	SOIL - EP080 BTEXN	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-13 OC/OP/PCB	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2045931-039	15-Dec-2020 00:00	TRIP BLANK			✓			
ES2045931-040	23-Dec-2020 00:00	TRIP SPIKE 5			✓			
ES2045931-041	23-Dec-2020 00:00	TSC5			✓			

Matrix: **SOLID**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOLID - EA200B Asbestos Identification in Bulk Solids (Excluding
ES2045931-023	23-Dec-2020 00:00	FP05_F01	✓
ES2045931-024	23-Dec-2020 00:00	FP06_F02	✓
ES2045931-025	23-Dec-2020 00:00	FP07_F03	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ADAM SULLIVAN

- *AU Certificate of Analysis - NATA (COA)	Email	adam@sullivan-es.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	adam@sullivan-es.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	adam@sullivan-es.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	adam@sullivan-es.com.au
- A4 - AU Tax Invoice (INV)	Email	adam@sullivan-es.com.au
- Chain of Custody (CoC) (COC)	Email	adam@sullivan-es.com.au
- EDI Format - ENMRG (ENMRG)	Email	adam@sullivan-es.com.au
- EDI Format - XTab (XTAB)	Email	adam@sullivan-es.com.au

SEAN

- *AU Certificate of Analysis - NATA (COA)	Email	sean@sullivan-es.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sean@sullivan-es.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sean@sullivan-es.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sean@sullivan-es.com.au
- A4 - AU Tax Invoice (INV)	Email	sean@sullivan-es.com.au
- Chain of Custody (CoC) (COC)	Email	sean@sullivan-es.com.au
- EDI Format - ENMRG (ENMRG)	Email	sean@sullivan-es.com.au
- EDI Format - XTab (XTAB)	Email	sean@sullivan-es.com.au

Environmental Division
Sydney
Work Order Reference
ES2045931

Telephone : + 61-2-8784 8555

Sheet 1 of 4

CHAIN OF CUSTODY FORM

THIS COLUMN FOR LAB USE ONLY

Job Code:

Due Date:

FROM: Sullivan Environmental Sciences
DATE: 24/12/20

PO Box 5248
Turramurra NSW 2074
Ph: 0400 500 264
Email: adam@sullivan-es.com.au and sean@sullivan-es.com.au

TO: ALS Environmental
Smithfield

Project No: SES_539
Project Manager: A.Sullivan
Agreement No: EN/222/19

Sampler(s): Adam Sullivan
Signature(s):
Checked:

Custody seal intact? YES / NO
Sample cold? YES / NO

Released by:
Date: 24/12/20 Time: 12pm

Received by:
Date: 24/12/20 Time: 11:30

Lab identification	Date	Time	Matrix	Sample Number	Comments	Total no	Tick required analytes: Size / Type* / Preservative Code / Analytes	S-26	S-13	Asbestos ID	BTEXN	HOLD	S-2
1	23/12/20		Soil	FP01_0.2-0.3	+ Bag	2		X	X	X			
2				QZ01		1		X	X				
3				FP01_1.5	+ Bag	2		X		X			
4				FP02_0.3-0.4		1		X					
5				FP03_0.3-0.4	+ Bag	2		X	X	X			
6				FP04_0.2-0.3		1		X					
7				FP05_0.5-0.6		1		X					
8				FP06_0.3-0.4		1		X	X				
9				FP07_0.2-0.3		1		X					
10				FP08_0.1-0.2		1		X					
11				FP09_0.1-0.2		1		X	X				
12				FP09_0.8-0.9		1		X	X				
					TOTAL	15		12	6	3	0	0	0

Remarks:

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle

Courier Job No:

Specify Turnaround Time: 2 Day TAT

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

CHAIN OF CUSTODY FORM

THIS COLUMN FOR LAB USE ONLY

FROM: Sullivan Environmental Sciences
PO Box 5248
Turramurra NSW 2074
Ph: 0400 500 264

DATE: 24/12/20

TO: ALS Environmental Smithfield

Email: adam@sullivan-es.com.au and sean@sullivan-es.com.au

Job Code:

Due Date:

Project No: SES_539
Project Manager: A.Sullivan
Agreement No: EN/222/19

Sampler(s): Adam Sullivan
Signature(s):
Checked:

Custody seal intact? YES / NO

Sample cold? YES / NO

Released by:
Date: 24/12/20 Time: 12pm

Received by:
Date: 24/12/20 Time: 11:30

Container Size, Type, Preservative and Analysis

Container Identification

Lab identification	Date	Time	Matrix	Sample Number	Comments	Total no	Tick required analytes						
Size													
Type*													
Preservative Code													
Analytes							S-26	S-13	Asbestos ID	BTEXN	Hold	S-2	
13	23/12/20		Soil	FP10_0.3-0.4	+ Bag	2	X	X	X				
14				FP11_0.3-0.4	+ Bag	2	X		X				
15				FP12_0.3-0.4	+ Bag	2	X		X				
16				FP13_0.3-0.4	+ Bag	2	X	X	X				
17				QZ03		1	X	X					
18				FP14_0.2-0.3	+ Bag	2	X		X				
19				FP15_0.2-0.3	+ Bag	2	X	X	X				
20				FP16_0.1-0.2		1	X						
21				QZ04		1	X						
22				FP17_0.4-0.5	+ Bag	2	X		X				
23			Bulk	FP05_F01		1			X				
24			"	FP06_F02		1			X				
					TOTAL	19	10	4	9	0	0	0	

Remarks:

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; ~~VS = Sulfuric Acid Preserved Vial~~; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle

Courier Job No:

Specify Turnaround Time: 2 Day TAT

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

CHAIN OF CUSTODY FORM

THIS COLUMN FOR LAB USE ONLY

FROM: Sullivan Environmental Sciences
DATE: 24/12/20
TO: ALS Environmental Smithfield

PO Box 5248
Turramurra NSW 2074
Ph: 0400 500 264
Email: adam@sullivan-es.com.au and sean@sullivan-es.com.au

Job Code:
Due Date:
Project No: SES_539
Project Manager: A.Sullivan
Agreement No: EN/222/19
Sampler(s): Adam Sullivan
Signature(s):
Checked:

Custody seal intact? YES / NO
Sample cold? YES / NO
Released by:
Date: 24/12/20 Time: 12pm
Received by:
Date: 24/12/20 Time: 11:30

Container Size, Type, Preservative and Analysis

Container Identification							
Size							
Type*							
Preservative Code							
Analytes	S-26	S-13	Asbestos ID	BTEXN	HOLD	S-2	

Lab identification	Date	Time	Matrix	Sample Number	Comments	Total no	Tick required analytes						
25	23/12/20		Bulk	FP07_F03		1			X				
26			SOIL	D01_0.1-0.2				X				X	
27				D01_0.4-0.5				X				X	
28				D02_0.1-0.2				X				X	
29				D02_0.4-0.5				X				X	
30				D03_0.1-0.2				X				X	
31				D04_0.2-0.3				X				X	
32				QZ02				X				X	
33				D04_0.4-0.5				X				X	
34				D05_0.2-0.3				X				X	
35				D06_0.2-0.3				X				X	
36				D06_0.4-0.5				X				X	
					TOTAL	12	0	11	1	0	0	11	

Remarks:

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle

Courier Job No:

Specify Turnaround Time: 2 Day TAT

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

CHAIN OF CUSTODY FORM

THIS COLUMN FOR LAB USE ONLY

Job Code:

Due Date:

FROM: Sullivan Environmental Sciences

PO Box 5248
Turramurra NSW 2074
Ph: 0400 500 264

DATE: 24/12/20

TO: ALS Environmental Smithfield

Email: adam@sullivan-es.com.au and sean@sullivan-es.com.au

Project No: SES_539

Project Manager: A.Sullivan

Agreement No: EN/222/19

Sampler(s): Adam Sullivan

Signature(s):

Checked:

Custody seal intact? YES / NO

Sample cold? YES / NO

Released by:

Date: 24/12/20 **Time:** 12pm

Received by: TAS

Date: 24/12/20 **Time:** 11:30

Container Size, Type, Preservative and Analysis

Container Identification						
Size						
Type*						
Preservative Code						
Analytes	S-26	S-13	Asbestos ID	BTEXN	HOLD	S-2

Lab identification	Date	Time	Matrix	Sample Number	Comments	Total no	Tick required analytes					
37	23/12/20		soil	SD7_0.1-0.2		1		X				X
38	↓		↓	SD8_0.1-0.2		1		X				X
39				Trip Blank		1				X		
40				Trip Spike - S		1				X		
41				TSK								

Remarks:

TOTAL 4 | 0 | 2 | 0 | 2 | 0 | 2

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle

Courier Job No:

Specify Turnaround Time: 2 Day TAT

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2045293**	Page	: 1 of 25
Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Contact	: Loren Schiavon
Address	: PO Box 5248 TURRAMURRA NSW 2074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: SES_539	Date Samples Received	: 18-Dec-2020 17:49
Order number	: ----	Date Analysis Commenced	: 19-Dec-2020
C-O-C number	: ----	Issue Date	: 22-Dec-2020 21:23
Sampler	: ADAM SULLIVAN		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 27		
No. of samples analysed	: 27		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive 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*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP068: Positive results have been confirmed by re-extraction and re-analysis.
- EP071: Results of sample DUPB, DUPC and KP15_0.1-0.2 have been confirmed by re-extraction and re-analysis.
- EG035: Positive Hg result ES2045293 #13 has been confirmed by reanalysis.
- **EA200 Legend**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EP080: The trip spike and its control have been analysed for volatile TPH and BTEXN only. The trip spike and control were prepared in the lab using reagent grade sand spiked with petrol. The spike was dispatched from the lab and the control retained.
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.
- EA200: N/A - Not Applicable

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	KP01_0.5-0.6	DUPA	KP02_0.2-0.3	KP03_0.7-0.8	KP04_0.4-035
			Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045293-001	ES2045293-002	ES2045293-003	ES2045293-004	ES2045293-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	6.8	6.7	5.9	6.6	16.5
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres	No	----	No	No	No
Asbestos Type	1332-21-4	-	--	-	----	-	-	-
Sample weight (dry)	----	0.01	g	48.9	----	63.4	69.9	30.4
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	----	A. SMYLIE	A. SMYLIE	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg	No	----	No	No	No
Organic Fibre	----	0.1	g/kg	No	----	No	No	No
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	6	5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	13	14	16	10	8
Copper	7440-50-8	5	mg/kg	23	17	9	17	11
Lead	7439-92-1	5	mg/kg	36	34	11	11	6
Nickel	7440-02-0	2	mg/kg	12	12	19	15	10
Zinc	7440-66-6	5	mg/kg	122	117	27	23	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
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	----
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	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	KP01_0.5-0.6	DUPA	KP02_0.2-0.3	KP03_0.7-0.8	KP04_0.4-035
				Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045293-001	ES2045293-002	ES2045293-003	ES2045293-004	ES2045293-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
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	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	<0.05	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	KP01_0.5-0.6	DUPA	KP02_0.2-0.3	KP03_0.7-0.8	KP04_0.4-035
				Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045293-001	ES2045293-002	ES2045293-003	ES2045293-004	ES2045293-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**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
>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)			Sample ID	KP01_0.5-0.6	DUPA	KP02_0.2-0.3	KP03_0.7-0.8	KP04_0.4-035
			Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045293-001	ES2045293-002	ES2045293-003	ES2045293-004	ES2045293-005
				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	%	**93.1**	----	----	**101**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**105**	----	----	**86.0**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**106**	----	----	**84.1**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**83.0**	**77.2**	**90.4**	**85.3**	**82.5**
2-Chlorophenol-D4	93951-73-6	0.5	%	**78.2**	**72.2**	**86.9**	**81.5**	**80.2**
2.4.6-Tribromophenol	118-79-6	0.5	%	**59.5**	**55.0**	**75.1**	**61.6**	**66.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**92.7**	**87.3**	**95.8**	**96.1**	**92.4**
Anthracene-d10	1719-06-8	0.5	%	**90.0**	**84.1**	**94.2**	**96.4**	**93.0**
4-Terphenyl-d14	1718-51-0	0.5	%	**84.0**	**78.5**	**85.8**	**85.6**	**83.6**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**112**	**89.0**	**84.9**	**85.7**	**94.9**
Toluene-D8	2037-26-5	0.2	%	**105**	**82.9**	**85.6**	**86.7**	**87.9**
4-Bromofluorobenzene	460-00-4	0.2	%	**102**	**90.0**	**96.1**	**84.4**	**73.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	KP05_0.5-0.6	KP06_0.3-0.4	KP06_0.9-1.0	KP07_0.5-0.6	KP08_0.2-0.3
			Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045293-006	ES2045293-007	ES2045293-008	ES2045293-009	ES2045293-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	3.2	1.1	14.7	3.1	6.9
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	----	No	No
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	----	No	No
Asbestos Type	1332-21-4	-	--	-	-	----	-	-
Sample weight (dry)	----	0.01	g	52.3	52.6	----	55.6	32.8
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	A. SMYLIE	----	A. SMYLIE	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg	No	No	----	No	No
Organic Fibre	----	0.1	g/kg	No	No	----	No	No
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	15	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	5	<2	46	4	10
Copper	7440-50-8	5	mg/kg	10	<5	34	6	12
Lead	7439-92-1	5	mg/kg	25	<5	87	15	37
Nickel	7440-02-0	2	mg/kg	3	<2	34	2	8
Zinc	7440-66-6	5	mg/kg	83	20	130	36	38
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
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	----
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	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	KP05_0.5-0.6	KP06_0.3-0.4	KP06_0.9-1.0	KP07_0.5-0.6	KP08_0.2-0.3
				Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045293-006	ES2045293-007	ES2045293-008	ES2045293-009	ES2045293-010
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
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**	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	<0.05	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	KP05_0.5-0.6	KP06_0.3-0.4	KP06_0.9-1.0	KP07_0.5-0.6	KP08_0.2-0.3
				Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045293-006	ES2045293-007	ES2045293-008	ES2045293-009	ES2045293-010
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.8**
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.8**
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.5**
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**2.1**
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**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
>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)			Sample ID	KP05_0.5-0.6	KP06_0.3-0.4	KP06_0.9-1.0	KP07_0.5-0.6	KP08_0.2-0.3
			Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045293-006	ES2045293-007	ES2045293-008	ES2045293-009	ES2045293-010
				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	%	**112**	----	----	**93.6**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**98.4**	----	----	**82.6**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**97.8**	----	----	**82.0**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**92.2**	**91.0**	**76.4**	**89.9**	**92.9**
2-Chlorophenol-D4	93951-73-6	0.5	%	**89.3**	**88.6**	**71.4**	**87.2**	**89.8**
2.4.6-Tribromophenol	118-79-6	0.5	%	**75.7**	**75.0**	**61.6**	**74.8**	**76.4**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**96.2**	**95.8**	**77.6**	**94.8**	**97.2**
Anthracene-d10	1719-06-8	0.5	%	**98.1**	**97.0**	**79.0**	**96.4**	**99.1**
4-Terphenyl-d14	1718-51-0	0.5	%	**86.1**	**86.6**	**70.2**	**85.0**	**87.4**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**87.8**	**117**	**75.1**	**96.2**	**92.6**
Toluene-D8	2037-26-5	0.2	%	**90.0**	**105**	**82.1**	**87.1**	**78.2**
4-Bromofluorobenzene	460-00-4	0.2	%	**101**	**86.8**	**97.6**	**106**	**94.3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	KP09_0.3-0.4	KP10_0.2-0.3	DUPB	KP11_0.1-0.2	KP12_0.1-0.2
			Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045293-011	ES2045293-012	ES2045293-013	ES2045293-014	ES2045293-015
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	4.7	4.8	5.4	7.8	7.1
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	----	----	No
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	----	----	No
Asbestos Type	1332-21-4	-	--	-	-	----	----	-
Sample weight (dry)	----	0.01	g	72.6	76.6	----	----	54.2
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	A. SMYLIE	----	----	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg	No	No	----	----	No
Organic Fibre	----	0.1	g/kg	No	No	----	----	No
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	13	<5	<5	5	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	10	12	14	10	26
Copper	7440-50-8	5	mg/kg	17	18	17	6	21
Lead	7439-92-1	5	mg/kg	34	32	28	14	23
Nickel	7440-02-0	2	mg/kg	6	9	10	6	25
Zinc	7440-66-6	5	mg/kg	61	68	64	17	51
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.1	0.2	7.4	<0.1	<0.1
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
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	0.23	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	0.13	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	0.10	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	KP09_0.3-0.4	KP10_0.2-0.3	DUPB	KP11_0.1-0.2	KP12_0.1-0.2
				Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045293-011	ES2045293-012	ES2045293-013	ES2045293-014	ES2045293-015
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
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**	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	----	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	KP09_0.3-0.4	KP10_0.2-0.3	DUPB	KP11_0.1-0.2	KP12_0.1-0.2
				Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045293-011	ES2045293-012	ES2045293-013	ES2045293-014	ES2045293-015
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		**1.3**	<0.5	<0.5	<0.5	**3.2**
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.9**
Fluoranthene	206-44-0	0.5	mg/kg		**2.2**	**1.0**	**0.8**	<0.5	**3.9**
Pyrene	129-00-0	0.5	mg/kg		**2.1**	**1.1**	**0.9**	<0.5	**3.3**
Benz(a)anthracene	56-55-3	0.5	mg/kg		**0.9**	**0.5**	<0.5	<0.5	**1.6**
Chrysene	218-01-9	0.5	mg/kg		**0.8**	**0.5**	<0.5	<0.5	**1.4**
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		**1.1**	**0.7**	**0.6**	<0.5	**1.5**
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.6**
Benzo(a)pyrene	50-32-8	0.5	mg/kg		**1.0**	**0.6**	<0.5	<0.5	**1.3**
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		**0.5**	<0.5	<0.5	<0.5	**0.5**
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		**0.7**	<0.5	<0.5	<0.5	**0.6**
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		**10.6**	**4.4**	**2.3**	<0.5	**18.8**
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		**1.3**	**0.7**	<0.5	<0.5	**1.7**
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**1.5**	**1.0**	**0.6**	**0.6**	**2.0**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.8**	**1.3**	**1.2**	**1.2**	**2.2**
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	**110**
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	**210**
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	**320**
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	**260**
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	**170**
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	**100**	<50	**430**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	KP09_0.3-0.4	KP10_0.2-0.3	DUPB	KP11_0.1-0.2	KP12_0.1-0.2
			Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045293-011	ES2045293-012	ES2045293-013	ES2045293-014	ES2045293-015
				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	%	**95.4**	----	----	----	**112**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**86.1**	----	----	----	**95.2**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**83.8**	----	----	----	**91.3**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**87.5**	**93.9**	**88.1**	**82.2**	**91.8**
2-Chlorophenol-D4	93951-73-6	0.5	%	**84.2**	**90.0**	**84.9**	**77.8**	**90.0**
2.4.6-Tribromophenol	118-79-6	0.5	%	**73.7**	**78.7**	**75.2**	**68.7**	**77.5**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**91.9**	**96.4**	**90.9**	**82.3**	**98.5**
Anthracene-d10	1719-06-8	0.5	%	**92.3**	**99.9**	**93.8**	**87.2**	**98.6**
4-Terphenyl-d14	1718-51-0	0.5	%	**82.5**	**87.1**	**82.8**	**74.8**	**89.1**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**89.8**	**93.8**	**78.3**	**81.5**	**121**
Toluene-D8	2037-26-5	0.2	%	**92.8**	**83.1**	**84.6**	**82.8**	**111**
4-Bromofluorobenzene	460-00-4	0.2	%	**104**	**76.0**	**94.8**	**87.9**	**108**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	KP14_0.1-0.2	KP15_0.1-0.2	KP16_0.2-0.3	KP17_0.1-0.2	KP18_0.1-0.2
			Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045293-016	ES2045293-017	ES2045293-018	ES2045293-019	ES2045293-020
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	11.8	10.9	14.7	6.3	7.0
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	40.3	69.3	48.8	51.2	67.8
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg	No	No	No	No	No
Organic Fibre	----	0.1	g/kg	No	Yes	No	No	No
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	<5	7	5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	17	33	36	15	19
Copper	7440-50-8	5	mg/kg	8	525	22	18	18
Lead	7439-92-1	5	mg/kg	16	117	96	49	37
Nickel	7440-02-0	2	mg/kg	6	30	29	14	16
Zinc	7440-66-6	5	mg/kg	18	229	70	69	43
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
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	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	KP14_0.1-0.2	KP15_0.1-0.2	KP16_0.2-0.3	KP17_0.1-0.2	KP18_0.1-0.2
			Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045293-016	ES2045293-017	ES2045293-018	ES2045293-019	ES2045293-020
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	----	**0.44**	----	----	----
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	----	**0.44**	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	KP14_0.1-0.2	KP15_0.1-0.2	KP16_0.2-0.3	KP17_0.1-0.2	KP18_0.1-0.2
				Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045293-016	ES2045293-017	ES2045293-018	ES2045293-019	ES2045293-020
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	**1.6**	**0.7**	**1.2**
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.5**
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	**2.2**	**1.8**	**3.6**
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	**2.2**	**1.8**	**3.9**
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	**1.0**	**0.8**	**1.8**
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	**0.8**	**0.8**	**1.6**
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	**1.0**	**1.2**	**2.2**
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.8**
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	**0.8**	**1.0**	**2.0**
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	**0.5**	**0.9**
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	**0.7**	**1.2**
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	**9.6**	**9.3**	**19.7**
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	**1.0**	**1.3**	**2.6**
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**1.3**	**1.5**	**2.8**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.6**	**1.8**	**3.1**
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	**1190**	<100	**100**	<100
C29 - C36 Fraction	----	100	mg/kg		<100	**880**	<100	**150**	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	**2070**	<50	**250**	<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	**1770**	<100	**190**	**150**
>C34 - C40 Fraction	----	100	mg/kg		<100	**470**	<100	**150**	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	**2240**	<50	**340**	**150**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	KP14_0.1-0.2	KP15_0.1-0.2	KP16_0.2-0.3	KP17_0.1-0.2	KP18_0.1-0.2
			Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045293-016	ES2045293-017	ES2045293-018	ES2045293-019	ES2045293-020
				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	%	----	117	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	122	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	112	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	93.2	89.9	91.9	90.3	90.0
2-Chlorophenol-D4	93951-73-6	0.5	%	89.7	85.5	87.8	86.0	86.1
2.4.6-Tribromophenol	118-79-6	0.5	%	79.9	73.7	82.3	82.3	78.4
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	96.1	95.1	94.6	91.3	92.2
Anthracene-d10	1719-06-8	0.5	%	99.6	94.9	97.5	94.6	94.9
4-Terphenyl-d14	1718-51-0	0.5	%	86.6	88.4	85.8	82.9	84.4
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	110	114	78.3	121	103
Toluene-D8	2037-26-5	0.2	%	107	103	78.4	111	96.1
4-Bromofluorobenzene	460-00-4	0.2	%	105	95.1	92.0	108	80.9

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	KP19_0.1-0.2	KP20_0.1-0.2	DUPC	TRIP BLANK	TRIP SPIKE 4
			Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	15-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045293-021	ES2045293-022	ES2045293-023	ES2045293-025	ES2045293-026
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	10.2	7.8	6.7	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	----	----	----
Asbestos Type	1332-21-4	-	--	-	-	----	----	----
Sample weight (dry)	----	0.01	g	68.3	61.3	----	----	----
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	A. SMYLIE	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	No	No	----	----	----
Organic Fibre	----	0.1	g/kg	No	No	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	6	6	5	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	28	24	30	----	----
Copper	7440-50-8	5	mg/kg	21	16	21	----	----
Lead	7439-92-1	5	mg/kg	33	28	29	----	----
Nickel	7440-02-0	2	mg/kg	23	14	23	----	----
Zinc	7440-66-6	5	mg/kg	53	47	48	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
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	----	----	----	----
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	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	KP19_0.1-0.2	KP20_0.1-0.2	DUPC	TRIP BLANK	TRIP SPIKE 4
				Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	15-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045293-021	ES2045293-022	ES2045293-023	ES2045293-025	ES2045293-026
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
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	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	KP19_0.1-0.2	KP20_0.1-0.2	DUPC	TRIP BLANK	TRIP SPIKE 4
				Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	15-Dec-2020 00:00
Compound	CAS Number	LOR	Unit		ES2045293-021	ES2045293-022	ES2045293-023	ES2045293-025	ES2045293-026
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	**1.1**	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		**0.7**	**1.2**	**2.8**	----	----
Pyrene	129-00-0	0.5	mg/kg		**0.7**	**1.3**	**2.9**	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	**0.6**	**1.3**	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	**0.5**	**1.1**	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	**0.8**	**1.6**	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	**0.6**	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	**0.6**	**1.4**	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	**0.7**	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	**0.8**	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		**1.4**	**5.0**	**14.3**	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	**0.7**	**1.8**	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**1.0**	**2.1**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.4**	**2.3**	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	**110**	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	**110**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	KP19_0.1-0.2	KP20_0.1-0.2	DUPC	TRIP BLANK	TRIP SPIKE 4
			Sampling date / time	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	17-Dec-2020 00:00	15-Dec-2020 00:00
Compound	CAS Number	LOR	Unit	ES2045293-021	ES2045293-022	ES2045293-023	ES2045293-025	ES2045293-026
				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	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	0.3
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	16.7
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	2.4
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	12.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	5.1
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	37.0
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	17.6
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	113	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	95.9	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	92.1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	83.1	81.7	87.2	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	79.1	80.9	82.7	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	64.2	71.1	72.2	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	99.2	95.4	96.0	----	----
Anthracene-d10	1719-06-8	0.5	%	95.4	92.9	93.2	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	85.2	82.5	82.5	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	104	108	106	113	118
Toluene-D8	2037-26-5	0.2	%	100	106	101	103	115
4-Bromofluorobenzene	460-00-4	0.2	%	107	112	103	109	121

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TSC 4	----	----	----	----
				Sampling date / time	15-Dec-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2045293-027	--------	--------	--------	--------
					Result	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		**0.3**	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		**16.6**	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		**2.4**	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		**12.5**	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		**5.1**	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		**36.9**	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		**17.6**	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**110**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**110**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**114**	----	----	----	----

Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)				Sample ID	FOA	----	----	----	----
				Sampling date / time	17-Dec-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2045293-024	--------	--------	--------	--------
					Result	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg		**Yes**	----	----	----	----
Asbestos Type	1332-21-4	-	--		**Ch + Am**	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres		**N/A**	----	----	----	----
Sample weight (dry)	----	0.01	g		**4.50**	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg		**No**	----	----	----	----
Organic Fibre	----	0.1	g/kg		**No**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		**A. SMYLIE**	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	KP01_0.5-0.6 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP02_0.2-0.3 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP03_0.7-0.8 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP04_0.4-035 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP05_0.5-0.6 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP06_0.3-0.4 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP07_0.5-0.6 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP08_0.2-0.3 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP09_0.3-0.4 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP10_0.2-0.3 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP12_0.1-0.2 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP14_0.1-0.2 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP15_0.1-0.2 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP16_0.2-0.3 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP17_0.1-0.2 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP18_0.1-0.2 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP19_0.1-0.2 - 17-Dec-2020 00:00	Mid brown soil.
EA200: Description	KP20_0.1-0.2 - 17-Dec-2020 00:00	Mid brown soil.

Sub-Matrix: **SOLID**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	FOA - 17-Dec-2020 00:00	One piece of asbestos cement sheeting approximately 50x20x10mm.

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2045293**	Page	: 1 of 16
Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Contact	: Loren Schiavon
Address	: PO Box 5248 TURRAMURRA NSW 2074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: SES_539	Date Samples Received	: 18-Dec-2020
Order number	: ----	Date Analysis Commenced	: 19-Dec-2020
C-O-C number	: ----	Issue Date	: 22-Dec-2020
Sampler	: ADAM SULLIVAN		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 27		
No. of samples analysed	: 27		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3431822)									
ES2044980-001	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	21400	23500	9.47	0% - 20%
ES2044980-003	Anonymous	EG005T: Lead	7439-92-1	5	mg/kg	4020	3390	17.1	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	43000	36300	17.0	0% - 20%
ES2044980-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	17	8.67	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	42	50	17.5	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	2650	3040	13.7	0% - 20%
ES2044980-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	7	7	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	51	51	0.00	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	4	<2	73.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	1660	1590	4.40	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3431824)									
ES2045293-017	KP15_0.1-0.2	EG005T: Nickel	7440-02-0	2	mg/kg	30	33	9.71	0% - 50%
		EG005T: Copper	7440-50-8	5	mg/kg	525	581	10.0	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	117	132	11.4	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	229	255	10.8	0% - 20%
ES2045293-007	KP06_0.3-0.4	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	20	20	0.00	No Limit
ES2045293-017	KP15_0.1-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3431824) - continued									
ES2045293-017	KP15_0.1-0.2	EG005T: Chromium	7440-47-3	2	mg/kg	33	21	42.4	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3431826)									
ES2044943-001	Anonymous	EA055: Moisture Content	----	0.1	%	57.6	57.4	0.505	0% - 20%
ES2044980-003	Anonymous	EA055: Moisture Content	----	0.1	%	7.9	8.0	0.00	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3431827)									
ES2045293-006	KP05_0.5-0.6	EA055: Moisture Content	----	0.1	%	3.2	2.9	6.90	No Limit
ES2045293-017	KP15_0.1-0.2	EA055: Moisture Content	----	0.1	%	10.9	10.2	6.54	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3431823)									
ES2044980-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2044980-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3431825)									
ES2045293-007	KP06_0.3-0.4	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2045293-017	KP15_0.1-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3431501)									
ES2045293-001	KP01_0.5-0.6	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3431506)									
ES2045293-021	KP19_0.1-0.2	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3431502)									
ES2045293-001	KP01_0.5-0.6	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3431502) - continued									
ES2045293-001	KP01_0.5-0.6	EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3431505)									
ES2045293-021	KP19_0.1-0.2	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3431502)									
ES2045293-001	KP01_0.5-0.6	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3431502) - continued									
ES2045293-001	KP01_0.5-0.6	EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3431505)									
ES2045293-021	KP19_0.1-0.2	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3431499)									
ES2045293-011	KP09_0.3-0.4	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.3	1.1	10.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	2.2	2.1	6.72	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	2.1	2.0	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.9	0.9	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.8	0.8	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	1.1	1.2	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	1.0	1.1	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	0.5	0.6	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3431499) - continued									
ES2045293-011	KP09_0.3-0.4	EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.7	0.7	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	10.6	10.5	0.948	0% - 20%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.3	1.4	9.06	No Limit
ES2045293-001	KP01_0.5-0.6	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3431504)									
ES2045293-021	KP19_0.1-0.2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	0.7	0.6	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.7	0.6	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3431504) - continued									
ES2045293-021	KP19_0.1-0.2	EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	1.4	1.2	15.4	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3431500)									
ES2045293-011	KP09_0.3-0.4	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES2045293-001	KP01_0.5-0.6	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3431503)									
ES2045293-021	KP19_0.1-0.2	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3431513)									
ES2045293-001	KP01_0.5-0.6	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2045293-011	KP09_0.3-0.4	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3431514)									
ES2045293-021	KP19_0.1-0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3431500)									
ES2045293-011	KP09_0.3-0.4	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES2045293-001	KP01_0.5-0.6	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3431503)									
ES2045293-021	KP19_0.1-0.2	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3431513)									
ES2045293-001	KP01_0.5-0.6	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2045293-011	KP09_0.3-0.4	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3431514)									
ES2045293-021	KP19_0.1-0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 3431513)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 3431513) - continued									
ES2045293-001	KP01_0.5-0.6	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES2045293-011	KP09_0.3-0.4	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 3431514)									
ES2045293-021	KP19_0.1-0.2	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3431822)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	89.0	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	106	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	101	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	92.9	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	85.1	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	90.2	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	70.9	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3431824)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	92.6	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	104	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	107	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	99.2	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	91.2	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	96.9	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	75.0	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3431823)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	124	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3431825)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	99.1	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3431501)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	89.4	62.0	126
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3431506)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	117	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 3431502)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	99.8	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	99.6	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.4	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.2	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.2	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	89.8	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	63.0	117

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 3431502) - continued								
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.2	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.9	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.2	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.9	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.9	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	97.7	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	101	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.2	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	102	54.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3431505)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	102	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.8	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	95.2	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	98.8	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.6	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.7	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	96.3	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	98.2	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	98.3	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	97.9	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.5	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.6	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.6	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	101	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	98.0	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.0	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	95.7	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3431502)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	102	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.5	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	102	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	87.1	67.0	119

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3431502) - continued								
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.0	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	89.7	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	98.4	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.9	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	95.9	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	88.6	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.4	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.2	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	84.1	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	103	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	41.0	123
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3431505)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	102	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	93.8	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.9	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	91.3	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	99.7	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	100	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	96.3	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	94.8	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	95.3	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.0	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.8	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	95.1	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	104	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3431499)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	91.9	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	93.1	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	87.4	73.0	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3431499) - continued								
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	91.1	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	94.9	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	99.6	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	95.7	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	96.4	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	88.0	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	89.4	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	85.2	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	88.9	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	88.0	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	87.8	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	88.9	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	87.9	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3431504)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	98.3	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	98.9	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	95.1	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	99.2	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	101	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	102	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	103	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	102	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	90.1	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	91.9	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	91.3	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	92.0	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	91.6	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	94.8	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	94.6	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	92.3	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3431500)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	104	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	102	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	94.5	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3431503)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	102	75.0	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3431503) - continued								
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	98.7	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	94.6	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3431513)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	105	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3431514)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	96.0	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3431500)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	102	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	101	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	79.7	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3431503)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	98.9	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	98.2	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	87.0	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3431513)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	107	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3431514)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	99.2	68.4	128
EP080: BTEXN (QCLot: 3431513)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	102	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	95.7	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	94.6	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	97.8	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	95.8	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	91.7	63.0	119
EP080: BTEXN (QCLot: 3431514)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	101	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	98.8	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	102	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	100	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	103	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	93.2	63.0	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3431822)							
ES2044980-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	92.2	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	87.4	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	99.0	68.0	132
		EG005T: Lead	7439-92-1	250 mg/kg	# Not Determined	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	88.2	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	# Not Determined	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3431824)							
ES2045293-007	KP06_0.3-0.4	EG005T: Arsenic	7440-38-2	50 mg/kg	104	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	104	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	105	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	102	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	105	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	104	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	105	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3431823)							
ES2044980-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	92.0	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3431825)							
ES2045293-007	KP06_0.3-0.4	EG035T: Mercury	7439-97-6	5 mg/kg	88.8	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3431501)							
ES2045293-001	KP01_0.5-0.6	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	103	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3431506)							
ES2045293-021	KP19_0.1-0.2	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	97.5	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3431502)							
ES2045293-001	KP01_0.5-0.6	EP068: gamma-BHC	58-89-9	0.5 mg/kg	86.1	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	74.0	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	84.2	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	103	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	90.5	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	99.2	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3431505)							
ES2045293-021	KP19_0.1-0.2	EP068: gamma-BHC	58-89-9	0.5 mg/kg	96.9	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	90.7	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	103	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 3431505) - continued							
ES2045293-021	KP19_0.1-0.2	EP068: Dieldrin	60-57-1	0.5 mg/kg	111	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	89.2	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	85.8	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3431502)							
ES2045293-001	KP01_0.5-0.6	EP068: Diazinon	333-41-5	0.5 mg/kg	114	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	90.2	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	87.5	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	79.7	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	87.3	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3431505)							
ES2045293-021	KP19_0.1-0.2	EP068: Diazinon	333-41-5	0.5 mg/kg	111	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	103	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	96.7	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	96.9	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	96.0	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3431499)							
ES2045293-001	KP01_0.5-0.6	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	76.7	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	74.6	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3431504)							
ES2045293-021	KP19_0.1-0.2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	92.0	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	92.4	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3431500)							
ES2045293-001	KP01_0.5-0.6	EP071: C10 - C14 Fraction	----	523 mg/kg	86.5	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	113	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	131	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3431503)							
ES2045293-021	KP19_0.1-0.2	EP071: C10 - C14 Fraction	----	523 mg/kg	94.2	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	114	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	124	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3431513)							
ES2045293-001	KP01_0.5-0.6	EP080: C6 - C9 Fraction	----	32.5 mg/kg	101	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3431514)							
ES2045293-021	KP19_0.1-0.2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	99.4	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3431500)							
ES2045293-001	KP01_0.5-0.6	EP071: >C10 - C16 Fraction	----	860 mg/kg	98.8	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	121	53.0	131

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3431500) - continued							
ES2045293-001	KP01_0.5-0.6	EP071: >C34 - C40 Fraction	----	1058 mg/kg	128	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3431503)							
ES2045293-021	KP19_0.1-0.2	EP071: >C10 - C16 Fraction	----	860 mg/kg	98.0	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	120	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	122	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3431513)							
ES2045293-001	KP01_0.5-0.6	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	97.9	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3431514)							
ES2045293-021	KP19_0.1-0.2	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	98.0	70.0	130
EP080: BTEXN (QCLot: 3431513)							
ES2045293-001	KP01_0.5-0.6	EP080: Benzene	71-43-2	2.5 mg/kg	81.5	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	88.5	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	89.3	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	83.5	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	80.4	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	106	70.0	130
EP080: BTEXN (QCLot: 3431514)							
ES2045293-021	KP19_0.1-0.2	EP080: Benzene	71-43-2	2.5 mg/kg	89.2	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	90.2	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	93.7	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	91.9	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	93.3	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	72.0	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2045293**	Page	: 1 of 10
Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Telephone	: +61 2 8784 8555
Project	: SES_539	Date Samples Received	: 18-Dec-2020
Site	: ----	Issue Date	: 22-Dec-2020
Sampler	: ADAM SULLIVAN	No. of samples received	: 27
Order number	: ----	No. of samples analysed	: 27

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005(ED093)T: Total Metals by ICP-AES	ES2044980--001	Anonymous	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	ES2044980--001	Anonymous	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
KP01_0.5-0.6,	DUPA,	**17-Dec-2020**	**----**	----	----	**19-Dec-2020**	31-Dec-2020	✓
KP02_0.2-0.3,	KP03_0.7-0.8,							
KP04_0.4-035,	KP05_0.5-0.6,							
KP06_0.3-0.4,	KP06_0.9-1.0,							
KP07_0.5-0.6,	KP08_0.2-0.3,							
KP09_0.3-0.4,	KP10_0.2-0.3,							
DUPB,	KP11_0.1-0.2,							
KP12_0.1-0.2,	KP14_0.1-0.2,							
KP15_0.1-0.2,	KP16_0.2-0.3,							
KP17_0.1-0.2,	KP18_0.1-0.2,							
KP19_0.1-0.2,	KP20_0.1-0.2,							
DUPC								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)								
KP01_0.5-0.6,	KP02_0.2-0.3,	**17-Dec-2020**	**----**	----	----	**22-Dec-2020**	15-Jun-2021	✓
KP03_0.7-0.8,	KP04_0.4-035,							
KP05_0.5-0.6,	KP06_0.3-0.4,							
KP07_0.5-0.6,	KP08_0.2-0.3,							
KP09_0.3-0.4,	KP10_0.2-0.3,							
KP12_0.1-0.2,	KP14_0.1-0.2,							
KP15_0.1-0.2,	KP16_0.2-0.3,							
KP17_0.1-0.2,	KP18_0.1-0.2,							
KP19_0.1-0.2,	KP20_0.1-0.2							
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
KP01_0.5-0.6,	DUPA,	**17-Dec-2020**	**19-Dec-2020**	15-Jun-2021	✓	**21-Dec-2020**	15-Jun-2021	✓
KP02_0.2-0.3,	KP03_0.7-0.8,							
KP04_0.4-035,	KP05_0.5-0.6,							
KP06_0.3-0.4,	KP06_0.9-1.0,							
KP07_0.5-0.6,	KP08_0.2-0.3,							
KP09_0.3-0.4,	KP10_0.2-0.3,							
DUPB,	KP11_0.1-0.2,							
KP12_0.1-0.2,	KP14_0.1-0.2,							
KP15_0.1-0.2,	KP16_0.2-0.3,							
KP17_0.1-0.2,	KP18_0.1-0.2,							
KP19_0.1-0.2,	KP20_0.1-0.2,							
DUPC								
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
KP01_0.5-0.6,	DUPA,	**17-Dec-2020**	**19-Dec-2020**	14-Jan-2021	✓	**22-Dec-2020**	14-Jan-2021	✓
KP02_0.2-0.3,	KP03_0.7-0.8,							
KP04_0.4-035,	KP05_0.5-0.6,							
KP06_0.3-0.4,	KP06_0.9-1.0,							
KP07_0.5-0.6,	KP08_0.2-0.3,							
KP09_0.3-0.4,	KP10_0.2-0.3,							
DUPB,	KP11_0.1-0.2,							
KP12_0.1-0.2,	KP14_0.1-0.2,							
KP15_0.1-0.2,	KP16_0.2-0.3,							
KP17_0.1-0.2,	KP18_0.1-0.2,							
KP19_0.1-0.2,	KP20_0.1-0.2,							
DUPC								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066)								
KP01_0.5-0.6,	KP03_0.7-0.8,	**17-Dec-2020**	**19-Dec-2020**	31-Dec-2020	✓	**21-Dec-2020**	28-Jan-2021	✓
KP05_0.5-0.6,	KP07_0.5-0.6,							
KP09_0.3-0.4,	KP12_0.1-0.2,							
KP15_0.1-0.2,	KP19_0.1-0.2							
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
KP01_0.5-0.6,	KP03_0.7-0.8,	**17-Dec-2020**	**19-Dec-2020**	31-Dec-2020	✓	**21-Dec-2020**	28-Jan-2021	✓
KP05_0.5-0.6,	KP07_0.5-0.6,							
KP09_0.3-0.4,	KP12_0.1-0.2,							
KP15_0.1-0.2,	KP19_0.1-0.2							
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068)								
KP01_0.5-0.6,	KP03_0.7-0.8,	**17-Dec-2020**	**19-Dec-2020**	31-Dec-2020	✓	**21-Dec-2020**	28-Jan-2021	✓
KP05_0.5-0.6,	KP07_0.5-0.6,							
KP09_0.3-0.4,	KP12_0.1-0.2,							
KP15_0.1-0.2,	KP19_0.1-0.2							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
KP01_0.5-0.6,	DUPA,	**17-Dec-2020**	**19-Dec-2020**	31-Dec-2020	✓	**21-Dec-2020**	28-Jan-2021	✓
KP02_0.2-0.3,	KP03_0.7-0.8,							
KP04_0.4-035,	KP05_0.5-0.6,							
KP06_0.3-0.4,	KP06_0.9-1.0,							
KP07_0.5-0.6,	KP08_0.2-0.3,							
KP09_0.3-0.4,	KP10_0.2-0.3,							
DUPB,	KP11_0.1-0.2,							
KP12_0.1-0.2,	KP14_0.1-0.2,							
KP15_0.1-0.2,	KP16_0.2-0.3,							
KP17_0.1-0.2,	KP18_0.1-0.2,							
KP19_0.1-0.2,	KP20_0.1-0.2,							
DUPC								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071)							
KP01_0.5-0.6, DUPA, KP02_0.2-0.3, KP03_0.7-0.8, KP04_0.4-035, KP05_0.5-0.6, KP06_0.3-0.4, KP06_0.9-1.0, KP07_0.5-0.6, KP08_0.2-0.3, KP09_0.3-0.4, KP10_0.2-0.3, DUPB, KP11_0.1-0.2, KP12_0.1-0.2, KP14_0.1-0.2, KP15_0.1-0.2, KP16_0.2-0.3, KP17_0.1-0.2, KP18_0.1-0.2, KP19_0.1-0.2, KP20_0.1-0.2, DUPC	**17-Dec-2020**	**19-Dec-2020**	31-Dec-2020	✓	**19-Dec-2020**	28-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP080)							
KP01_0.5-0.6, DUPA, KP02_0.2-0.3, KP03_0.7-0.8, KP04_0.4-035, KP05_0.5-0.6, KP06_0.3-0.4, KP06_0.9-1.0, KP07_0.5-0.6, KP08_0.2-0.3, KP09_0.3-0.4, KP10_0.2-0.3, DUPB, KP11_0.1-0.2, KP12_0.1-0.2, KP14_0.1-0.2, KP15_0.1-0.2, KP16_0.2-0.3, KP17_0.1-0.2, KP18_0.1-0.2, KP19_0.1-0.2, KP20_0.1-0.2, DUPC	**17-Dec-2020**	**19-Dec-2020**	31-Dec-2020	✓	**21-Dec-2020**	31-Dec-2020	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071)								
KP01_0.5-0.6,	DUPA,	**17-Dec-2020**	**19-Dec-2020**	31-Dec-2020	✓	**19-Dec-2020**	28-Jan-2021	✓
KP02_0.2-0.3,	KP03_0.7-0.8,							
KP04_0.4-035,	KP05_0.5-0.6,							
KP06_0.3-0.4,	KP06_0.9-1.0,							
KP07_0.5-0.6,	KP08_0.2-0.3,							
KP09_0.3-0.4,	KP10_0.2-0.3,							
DUPB,	KP11_0.1-0.2,							
KP12_0.1-0.2,	KP14_0.1-0.2,							
KP15_0.1-0.2,	KP16_0.2-0.3,							
KP17_0.1-0.2,	KP18_0.1-0.2,							
KP19_0.1-0.2,	KP20_0.1-0.2,							
DUPC								
Soil Glass Jar - Unpreserved (EP080)								
KP01_0.5-0.6,	DUPA,	**17-Dec-2020**	**19-Dec-2020**	31-Dec-2020	✓	**21-Dec-2020**	31-Dec-2020	✓
KP02_0.2-0.3,	KP03_0.7-0.8,							
KP04_0.4-035,	KP05_0.5-0.6,							
KP06_0.3-0.4,	KP06_0.9-1.0,							
KP07_0.5-0.6,	KP08_0.2-0.3,							
KP09_0.3-0.4,	KP10_0.2-0.3,							
DUPB,	KP11_0.1-0.2,							
KP12_0.1-0.2,	KP14_0.1-0.2,							
KP15_0.1-0.2,	KP16_0.2-0.3,							
KP17_0.1-0.2,	KP18_0.1-0.2,							
KP19_0.1-0.2,	KP20_0.1-0.2,							
DUPC								
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
TRIP SPIKE 4,	TSC 4	**15-Dec-2020**	**19-Dec-2020**	29-Dec-2020	✓	**21-Dec-2020**	29-Dec-2020	✓
Soil Glass Jar - Unpreserved (EP080)								
KP01_0.5-0.6,	DUPA,	**17-Dec-2020**	**19-Dec-2020**	31-Dec-2020	✓	**21-Dec-2020**	31-Dec-2020	✓
KP02_0.2-0.3,	KP03_0.7-0.8,							
KP04_0.4-035,	KP05_0.5-0.6,							
KP06_0.3-0.4,	KP06_0.9-1.0,							
KP07_0.5-0.6,	KP08_0.2-0.3,							
KP09_0.3-0.4,	KP10_0.2-0.3,							
DUPB,	KP11_0.1-0.2,							
KP12_0.1-0.2,	KP14_0.1-0.2,							
KP15_0.1-0.2,	KP16_0.2-0.3,							
KP17_0.1-0.2,	KP18_0.1-0.2,							
KP19_0.1-0.2,	KP20_0.1-0.2,							
DUPC,	TRIP BLANK							

Matrix: **SOLID**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)							
FOA	**17-Dec-2020**	**----**	----	----	**22-Dec-2020**	15-Jun-2021	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	4	32	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	3	23	**13.04**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	8	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	8	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	29	**13.79**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	7	32	**21.88**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	23	**13.04**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	26	**11.54**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	8	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	8	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	29	**6.90**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	32	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	8	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	8	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	29	**6.90**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	32	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	8	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	8	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	29	**6.90**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	32	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES2045293**		
Client	: **SULLIVAN ENVIRONMENTAL SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: ADAM SULLIVAN	Contact	: Loren Schiavon
Address	: PO Box 5248 TURRAMURRA NSW 2074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: adam@sullivan-es.com.au	E-mail	: Loren.Schiavon@ALSGlobal.com
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: SES_539	Page	: 1 of 3
Order number	: ----	Quote number	: ES2015SULENV0034 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: ADAM SULLIVAN		

Dates

Date Samples Received	: 18-Dec-2020 17:49	Issue Date	: 19-Dec-2020
Client Requested Due Date	: 22-Dec-2020	Scheduled Reporting Date	: **22-Dec-2020**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 14.8'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 27 / 27

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please note that the scheduled reporting date has not been confirmed with laboratory management due to the late arrival of the samples. If the scheduled reporting date is not achievable ALS will be in contact with you.
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200G Asbestos Identification in Soils -	SOIL - EP080 BTEXN	SOIL - S-13 OC/OP/PCB	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2045293-001	17-Dec-2020 00:00	KP01_0.5-0.6	✓	✓		✓	✓
ES2045293-002	17-Dec-2020 00:00	DUPA	✓				✓
ES2045293-003	17-Dec-2020 00:00	KP02_0.2-0.3	✓	✓			✓
ES2045293-004	17-Dec-2020 00:00	KP03_0.7-0.8	✓	✓		✓	✓
ES2045293-005	17-Dec-2020 00:00	KP04_0.4-035	✓	✓			✓
ES2045293-006	17-Dec-2020 00:00	KP05_0.5-0.6	✓	✓		✓	✓
ES2045293-007	17-Dec-2020 00:00	KP06_0.3-0.4	✓	✓			✓
ES2045293-008	17-Dec-2020 00:00	KP06_0.9-1.0	✓				✓
ES2045293-009	17-Dec-2020 00:00	KP07_0.5-0.6	✓	✓		✓	✓
ES2045293-010	17-Dec-2020 00:00	KP08_0.2-0.3	✓	✓			✓
ES2045293-011	17-Dec-2020 00:00	KP09_0.3-0.4	✓	✓		✓	✓
ES2045293-012	17-Dec-2020 00:00	KP10_0.2-0.3	✓	✓			✓
ES2045293-013	17-Dec-2020 00:00	DUPB	✓				✓
ES2045293-014	17-Dec-2020 00:00	KP11_0.1-0.2	✓				✓
ES2045293-015	17-Dec-2020 00:00	KP12_0.1-0.2	✓	✓		✓	✓
ES2045293-016	17-Dec-2020 00:00	KP14_0.1-0.2	✓	✓			✓
ES2045293-017	17-Dec-2020 00:00	KP15_0.1-0.2	✓	✓		✓	✓
ES2045293-018	17-Dec-2020 00:00	KP16_0.2-0.3	✓	✓			✓
ES2045293-019	17-Dec-2020 00:00	KP17_0.1-0.2	✓	✓			✓
ES2045293-020	17-Dec-2020 00:00	KP18_0.1-0.2	✓	✓			✓
ES2045293-021	17-Dec-2020 00:00	KP19_0.1-0.2	✓	✓		✓	✓
ES2045293-022	17-Dec-2020 00:00	KP20_0.1-0.2	✓	✓			✓
ES2045293-023	17-Dec-2020 00:00	DUPC	✓				✓
ES2045293-025	17-Dec-2020 00:00	TRIP BLANK			✓		
ES2045293-026	15-Dec-2020 00:00	TRIP SPIKE 4			✓		
ES2045293-027	15-Dec-2020 00:00	TSC 4			✓		

Matrix: **SOLID**

Laboratory sample ID	Sampling date / time	Sample ID	SOLID - EA200B Asbestos Identification in Bulk Solids (Excluding
ES2045293-024	17-Dec-2020 00:00	FOA	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ADAM SULLIVAN

- *AU Certificate of Analysis - NATA (COA)	Email	adam@sullivan-es.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	adam@sullivan-es.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	adam@sullivan-es.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	adam@sullivan-es.com.au
- A4 - AU Tax Invoice (INV)	Email	adam@sullivan-es.com.au
- Chain of Custody (CoC) (COC)	Email	adam@sullivan-es.com.au
- EDI Format - ENMRG (ENMRG)	Email	adam@sullivan-es.com.au
- EDI Format - XTab (XTAB)	Email	adam@sullivan-es.com.au

SEAN

- *AU Certificate of Analysis - NATA (COA)	Email	sean@sullivan-es.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sean@sullivan-es.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sean@sullivan-es.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sean@sullivan-es.com.au
- A4 - AU Tax Invoice (INV)	Email	sean@sullivan-es.com.au
- Chain of Custody (CoC) (COC)	Email	sean@sullivan-es.com.au
- EDI Format - ENMRG (ENMRG)	Email	sean@sullivan-es.com.au
- EDI Format - XTab (XTAB)	Email	sean@sullivan-es.com.au

Environmental Division
Sydney
Work Order Reference
ES2045293

Telephone : +61-2-8784 8555

Sheet 1 of 3

CHAIN OF CUSTODY FORM

THIS COLUMN FOR LAB USE ONLY	FROM: Sullivan Environmental Sciences	DATE: 18/12/20	TO: ALS Environmental Smithfield			Container Size, Type, Preservative and Analysis							
						Container Identification							
Job Code:	PO Box 5248 Turramurra NSW 2074												
	Ph: 0400 500 264	Email: adam@sullivan-es.com.au and sean@sullivan-es.com.au				Preservative Code							
Due Date:	Project No: SES_539 Project Manager: A.Sullivan Agreement No: EN/222/19	Sampler(s): Adam Sullivan Signature(s): Checked:				Analytes	S-26	S-13	BTEXN	HOLD	Asbestos ID		
Custody seal intact? YES NO Sample cold? YES NO	Released by: Date: 18/12/20 Time: 12pm	Received by: Date: Time:											

Lab identification	Date	Time	Matrix	Sample Number	Comments	Total no	Tick required analytes						
1	17/12/20		Soil	KP01_0.5-0.6	+ Bag	2	X	X			X		
2				DUPA		1	X						
3				KP02_0.2-0.3	+ Bag	2	X				X		
4				KP03_0.7-0.8	+ Bag	2	X	X			X		
5				KP04_0.4-0.5	+ Bag	2	X				X		
6				KP05_0.5-0.6	+ Bag	2	X	X			X		
7				KP06_0.3-0.4	+ Bag	2	X				X		
8				KP06_0.9-1.0		1	X						
9				KP07_0.5-0.6	+ Bag	2	X	X			X		
10				KP08_0.2-0.3	+ Bag	2	X				X		
11				KP09_0.3-0.4	+ Bag	2	X	X			X		
12				KP10_0.2-0.3	+ Bag	2	X				X		
Remarks:					TOTAL	22	12	5	0	0	10		

Forward to Lab / split WO
Lab Analysis: [illegible]
Organised by / Date:
Relinquished By / Date:
Courier/Courier:
WO No:
Attach by PO / Internal Sheet:

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle

Courier Job No:

Specify Turnaround Time: 2 DAY TAT

TAT

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

Rec: Sarin
18/12/20 @ 4:50 pm

CHAIN OF CUSTODY FORM

THIS COLUMN FOR LAB USE ONLY

Job Code:

Due Date:

FROM: Sullivan Environmental Sciences
PO Box 5248
Turramurra NSW 2074
Ph: 0400 500 264

DATE: 18/12/20

TO: ALS Environmental Smithfield

Email: adam@sullivan-es.com.au and sean@sullivan-es.com.au

Project No: SES_539
Project Manager: A.Sullivan
Agreement No: EN/222/19

Sampler(s): Adam Sullivan
Signature(s):
Checked:

Custody seal intact? YES / NO
Sample cold? YES / NO

Released by:
Date: 18/12/20 Time: 12pm

Received by:
Date: Time:

Container Size, Type, Preservative and Analysis

Container Identification							
Size							
Type*							
Preservative Code							
Analytes	S-26	S-13	BTEXN	HOLD	Asbestos ID		

Lab identification	Date	Time	Matrix	Sample Number	Comments	Total no	Tick required analytes						
13	17/12/20		Soil	DUPB		1	X						
14				KP11_0.1-0.2		1	X						
15				KP12_0.1-0.2	+ Bag	2	X	X			X		
16				KP14_0.1-0.2	+ Bag	2	X				X		
17				KP15_0.1-0.2	+ Bag	2	X	X			X		
18				KP16_0.2-0.3	+ Bag	2	X				X		
19				KP17_0.1-0.2	+ Bag	2	X				X		
20				KP18_0.1-0.2	+ Bag	2	X				X		
21				KP19_0.1-0.2	+ Bag	2	X	X			X		
22				KP20_0.1-0.2	+ Bag	2	X				X		
23				DUPC		1	X						
24			Bulk	FOA		1					X		
					TOTAL	20	11	3	0	0	9		

Remarks:

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle

Courier Job No:

Specify Turnaround Time: 2 DAY TAT

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

CHAIN OF CUSTODY FORM

Sheet 3 of 3

THIS COLUMN FOR LAB USE ONLY	FROM:	DATE:	TO:
Job Code:	Sullivan Environmental Sciences PO Box 5248 Turramurra NSW 2074 Ph: 0400 500 264	18/12/20 Email: adam@sullivan-es.com.au and sean@sullivan-es.com.au	ALS Environmental Smithfield
Due Date:	Project No: SES_539 Project Manager: A.Sullivan Agreement No: EN/222/19	Sampler(s): Adam Sullivan Signature(s): Checked:	
Custody seal intact? YES / NO Sample cold? YES / NO	Released by: Date: 18/12/20 Time: 12pm	Received by: Date: Time:	

Lab identification	Date	Time	Matrix	Sample Number	Comments	Total no	Container Size, Type, Preservative and Analysis — Container Identification: S-26	S-13	BTEX	HOLD	Asbestos ID			Tick required analytes
						Size								
						Type*								
						Preservative Code								
						Analytes	S-26	S-13	BTEX	HOLD	Asbestos ID			
25	17/12/20		soil	Trip Blank.		1			X					
26	"		"	Trip Spike & TSE		1			X					
27														
					TOTAL		2	0	0	2	0	0		

Remarks:

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle

Courier Job No:

Specify Turnaround Time: 2 DAY TAT

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES