BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 10.6 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 2
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
10	0.04	BITUMEN							
	0.1	BASECOURSE - dark brown grey clayey sand, with some gravel, crushed orange sandstone and trace charcoal		A	0.2		PID=2ppm		
	0.4	FILLING - dark grey sand filling, moist							
		FILLING - light grey sand filling		A	0.5		PID=2ppm		
	0.6	SAND - orange and medium brown sand, with trace clay, moist (possibly filling)							
	1			A	1.0		PID=2ppm		1
	1.1	SAND - dark brown sand, with trace clay, moist							
9				A	1.5		PID=1ppm		
	2								2
	2.0	CLAYEY SAND - orange clayey sand, moist to wet							
8		- mottled light brown from 2.5m							
	3			A	3.0		PID=2ppm		3
	3.0	Bore discontinued at 3.0m - target depth reached							
7									
	4								4
6									

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 3.0m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 7.4 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 3
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
7	0.5	FILLING - brown clayey sand filling, with some gravel at surface, moist							
		SILTY CLAY - grey brown silty clay, with trace sand, moist to wet		A	0.5	*Z2	PID=1ppm		
6	1			A	1.5		PID=2ppm		1
5	2	2.0 SILTY CLAYEY SAND - dark grey silty, clayey, fine to medium grained, sand with trace organic matter, saturated		A	2.6		PID=2ppm	▼	2
	2.8	SANDY CLAY - light grey sandy clay							
4	3	3.0 Bore discontinued at 3.0m - target depth reached		A	3.0		PID=2ppm		3
3	4								4

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 3.0m

WATER OBSERVATIONS: Free groundwater observed at 2.0m

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04). *Indicates field replicate sample Z2 taken

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 9.8 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 4
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.0	FILLING - light brown slightly gravelly clayey sand filling, with trace brick fragments							
	0.3	FILLING - dark brown clayey silty sand filling							
	0.5	SAND - light grey sand, with trace clay (possibly fillilng)		A	0.5		PID=2ppm		
	0.7	CLAYEY SILTY SAND - dark brown clayey silty sand, wet to saturated		A	0.7		PID=3ppm		
				A	1.5	*Z1	PID=4ppm	▼	
	1.7	SANDY CLAY/CLAYEY SAND - grey sandy clay/clayey sand, saturated							
	3.0	Bore discontinued at 3.0m - target depth reached		A	3.0		PID=4ppm		

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 3.0m

WATER OBSERVATIONS: Free groundwater observed at 1.4m

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04). *Indicates field replicate sample Z1 taken

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep
		▼	Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 7.2 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 5
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
7	0.01	GRASS - grass and surficial fragments of ceramic tile							
		FILLING - grey mottled orange silty sandy clay filling							
	0.3	FILLING - grey clayey silty sand filling		A	0.3	*Z5	PID=2ppm		
	0.5	SILTY SAND - grey silty sand, wet to saturated						▼	
6	1								1
	1.5	Bore discontinued at 1.5m - target depth reached		A	1.5		PID=2ppm		
5	2								2
	3								3
4									
	4								4
3									

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 1.5m

WATER OBSERVATIONS: Free groundwater observed at 1.4m

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04). *Indicates field replicate sample Z5 taken

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 7.4 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 6
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
7	0.01	- surficial crushed terracotta, concrete and gravel							
		FILLING - dark grey sandy silty clay filling							
	0.2	FILLING - grey silty clayey sand filling		A	0.5		PID=4ppm	▼	
	0.7	SILTY SAND - light grey silty sand							
6	1.5	Bore discontinued at 1.5m - target depth reached		A	1.5		PID=2ppm		
5									
4									
3									

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 1.5m

WATER OBSERVATIONS: Free groundwater observed at 0.7m

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 5.8 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 7
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.01	GRASS							
		FILLING - dark grey brown silty sandy clay filling, with trace organic matter							
		- some composted plant matter		A	0.5		PID=1ppm		
	0.7	CLAYEY SAND - grey and light brown clayey sand, moist to wet							
				A	1.5		PID=1ppm	▼	
	1.6	SILTY SAND - light grey silty sand, with trace clay, saturated							
	3.0	Bore discontinued at 3.0m - target depth reached		A	3.0		PID=1ppm		

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 3.0m

WATER OBSERVATIONS: Free groundwater observed at 1.6m

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 6.0 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 8
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.1	FILLING - grey silty sand filling							
		FILLING - mottled grey and orange clayey sand filling, moist to wet							
	0.3	SANDY CLAY - mottled grey and orange sandy clay, moist		A	0.3		PID=2ppm		
				A	0.5		PID=1ppm		
	1.5	Bore discontinued at 1.5m - target depth reached		A	1.5		PID=1ppm		

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 1.5m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: JE
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 6.3 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 9
PROJECT No: 37273
DATE: 24 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.01	CRUSHED TERRACOTTA							
		FILLING - grey gravelly silty clayey sand filling, with crushed terracotta and trace organic matter			0.1		PID=1ppm		
				A					
	0.5	FILLING - grey sandy silty clay filling, with some mulched organic matter, saturated			0.5			▼	
	1.5	Bore discontinued at 1.5m - target depth reached		A	1.5	*Z7	PID=2ppm		

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 1.5m

WATER OBSERVATIONS: Free groundwater observed at 0.5m (probably due to drip watering in adjacent house)

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04). *Indicates field replicate sample Z7 taken

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 5.0 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 10
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.2	FILLING - brown and grey silty sand filling, with some crushed ceramic tiles, gravel and trace clay							
		FILLING - dark brown sandy clayey silt filling		A	0.2		PID=2ppm		
				A	0.5		PID=2ppm		
	0.6	SILTY SAND - dark grey silty sand, with trace clay, moist							
		- grading into							
	1.3	SILTY SAND - light brown silty sand, moist							
	1.5	Bore discontinued at 1.5m - target depth reached		A	1.5	*Z6	PID=1ppm		

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 1.5m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04). *Indicates field replicate sample Z6 taken

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 5.4 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 11
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.0	FILLING - grey silty sand filling, with trace clay							
	0.5	SILTY SAND - grey silty sand, moist to wet		A	0.5		PID=2ppm		
	1.3	SANDY SILTY CLAY - grey sandy silty clay						▼	
	1.5	Bore discontinued at 1.5m - target depth reached		A	1.5		PID=4ppm		

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 1.5m

WATER OBSERVATIONS: Free groundwater observed at ~1.3m

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 5.3 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 12
PROJECT No: 37273
DATE: 24 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.11	CONCRETE							
	0.2	FILLING - dark grey silty sandy clay filling, with trace crushed brick							
		FILLING - grey silty sand, with trace clay, moist to wet, faint sulphur odour		A	0.5	*Z8	PID=2ppm		
	0.6	SILTY SANDY CLAY - grey silty sandy clay, wet, faint sulphur odour		A	1.5		PID=3ppm		
	1.7	SILTY CLAY - dark grey silty clay, with trace sand and fain sulphur odour		A	2.0		PID=2ppm	▼	
	2.2	SILTY CLAY - yellow brown silty clay, some sand							
	3.0	Bore discontinued at 3.0m - target depth reached		A	3.0		PID=2ppm		

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 3.0m

WATER OBSERVATIONS: Free groundwater observed at 1.7m

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04). *Indicates field replicate sample Z8 taken

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 4.3 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 13
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.0	FILLING - light grey and brown clayey sand filling, with some gravel and brick fragments							
	0.4			A	0.4		PID=2ppm		
	0.5	FILLING - dark brown silty clay filling, with trace sand and organic matter							
		SILTY SANDY CLAY - grey silty sandy clay, with trace organic matter		A	1.0		PID=2ppm		
	1.1	SILTY CLAY - grey, orange and brown silty clay, with trace organic matter		A	1.5		PID=5ppm		
	3.0	Bore discontinued at 3.0m - target depth reached		A	3.0		PID=1ppm		

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 3.0m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 4.7 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 14
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.0	FILLING - dark brown grey sand filling, with some clay, moist		A	0.0 0.1		PID=1ppm		
	0.3	SILTY SAND - grey silty sand, moist (possibly filling) - with some clay from 0.5m						▼	
	1.0	SILTY CLAY - orange and brown silty clay, with trace sand		A	1.5		PID=2ppm		
	1.7	SILTY SANDY CLAY - grey silty sandy clay							
	3.0	Bore discontinued at 3.0m - target depth reached		A	3.0		PID=2ppm		

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 3.0m

WATER OBSERVATIONS: Free groundwater observed at 0.5m

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

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BOREHOLE LOG

CLIENT: Mirvac Homes (NSW) Pty Ltd
PROJECT: Warriewood Valley Sector 3 Rezoning
LOCATION: Macpherson Street, Warriewood

SURFACE LEVEL: 5.5 **
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 15
PROJECT No: 37273
DATE: 23 Sep 04
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - dark brown silty sandy clay, with trace organic matter and material (rags) [stockpile of filling material]		A	0.0	*Z4	PID=1ppm		
	0.8	FILLING - grey silty sandy clay filling, moist to wet			0.5				
	1.3	SILTY CLAY - orange and brown silty clay, with trace sand		A	1.5		PID=2ppm		
	1.6	SILTY CLAY - dark grey silty clay, with trace sand, moist							
	3.0	Bore discontinued at 3.0m - target depth reached		A	3.0		PID=1ppm		

RIG: Bobcat **DRILLER:** B Ellis **LOGGED:** NLE **CASING:** Uncased

TYPE OF BORING: 100mm diameter spiral flight auger to 3.0m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: **RL interpolated from survey plan (No: AM9702D - 13/9/04). *Indicates field replicate sample Z4 taken

SAMPLING & IN SITU TESTING LEGEND

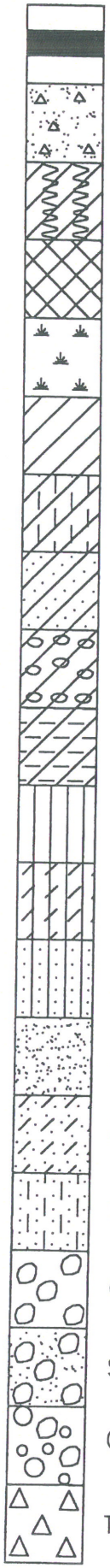
A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date: 25/10

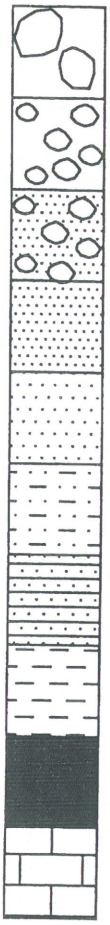
Douglas Partners
Geotechnics · Environment · Groundwater

GRAPHIC SYMBOLS FOR SOIL & ROCK

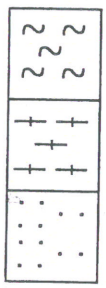
SOIL



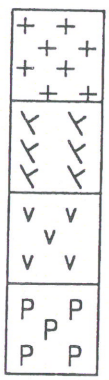
SEDIMENTARY ROCK



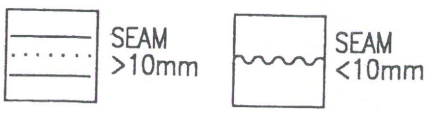
METAMORPHIC ROCK



IGNEOUS ROCK



SEAMS



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contractual situation, it may be
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always be pleased to provide
ervices for geotechnical aspects of
is related. This could range from
that conditions exposed are as
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NOTES R

Introduction

These notes
geotechnical repo
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are necessarily rele

Geotechnical re
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supplemented by
experience. For t
interpretive rather t
extent by the scope

Description an

The methods o
and rocks used i
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inclusions.

Soil types are de
particle size, quali
present (eg. sandy

Soil Classifica

Clay
Silt
Sand
Gravel

Cohesive soils
either by laborato
The strength terms

Classificati

Very soft
Soft
Firm
Stiff
Very stiff
Hard

Non-cohesive so
density, generally f
tests (SPT) or Dut
below:

Relative Density

Very loose
Loose
Medium dense
Dense
Very dense

Issued: October 1998

APPENDIX F
Laboratory Results and Chain of Custody Documentation

SGS

DOUGLAS PARTNERS

7 OCT 2004

1 October 2004

TEST REPORT

Douglas Partners Pty Ltd
96 Hermitage Road
WEST RYDE
NSW 2114

Your Reference: 37273, Warriewood
Report Number: 31963

Attention: Nerilee Edwards

Dear Nerilee
The following samples were received from you on the date indicated.

Samples:	Qty.	23 Soils, 1 Water
Date of Receipt of Samples:		24/09/04
Date of Receipt of Instructions:		24/09/04
Date Preliminary Report Faxed:		Not Issued

These samples were analysed in accordance with your written instructions.
A copy of the instructions is attached with the analytical report.

The results and associated quality control are contained in the following pages of this report. Unless otherwise stated, solid samples are expressed on a dry weight basis (moisture has been supplied for your information only), air and liquid samples as received.

Should you have any queries regarding this report please contact the undersigned.

For sample 31963-6 Chrysotile Asbestos detected found as a 2mm fibre bundle loose in the soil.

Yours faithfully
SGS ENVIRONMENTAL SERVICES

Tania Notaras

Tania Notaras
Manager – Sydney

SGS Australia Pty Ltd
ABN 44 000 964 278
Environmental Services Botany Industrial Park Gate 3, Denison Street, Matraville 2036 NSW Australia
t +61 (0)2 9666 1426 f +61 (0)2 9666 1364 url www.sgs.com

SGS Ref	Sample ID	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
---	---	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
31963-1	1/0.5	<3	<0.5	5	12	11	<0.05	6	32
31963-2	2/0.2	<3	<0.5	1	11	26	<0.05	0.8	46
31963-3	2/1.0	<3	<0.5	6	0.5	5	<0.05	2	0.7
31963-4	3/0.5	12	0.9	4	2	10	<0.05	1	7
31963-5	3/3.0	<3	<0.5	4	<0.5	4	<0.05	0.6	<0.5
31963-6	4/0.5	<3	<0.5	4	21	28	0.06	3	47
31963-7	5/0.3	4	<0.5	7	31	17	<0.05	1	5
31963-8	5/1.5	<3	<0.5	1	<0.5	<2	<0.05	0.3	<0.5
31963-9	6/0.5	<3	<0.5	1	4	9	<0.05	0.7	93
31963-10	7/0.5	6	<0.5	6	36	31	<0.05	2	48
31963-11	8/0.3	<3	<0.5	2	0.7	4	<0.05	0.4	1
31963-12	9/0.1-0.5	<3	<0.5	6	7	12	<0.05	3	86
31963-13	10/0.2	8	<0.5	9	23	34	0.08	6	170
31963-14	10/1.5	<3	<0.5	2	<0.5	2	<0.05	1	3
31963-15	11/0.5	3	<0.5	1	<0.5	2	<0.05	0.6	0.7
31963-16	12/0.5	<3	<0.5	3	<0.5	4	<0.05	0.5	2
31963-17	13/0.4	4	<0.5	6	4	39	<0.05	0.5	26
31963-18	14/0.1	<3	<0.5	3	2	5	<0.05	0.9	7
31963-19	15/0-0.5	12	<0.5	8	14	26	<0.05	3	45
31963-20	15/3.0	3	<0.5	12	8	16	<0.05	4	0.8
31963-21	Z3	<3	<0.5	7	14	12	<0.05	7	37
31963-22	Z8	<3	<0.5	3	<0.5	4	<0.05	0.5	2
31963-24	9/1.5	9	0.5	6	21	37	<0.05	3	240

SGS Ref	Sample ID	TRH C6 - C9 P&T	TRH C10 - C14	TRH C15 - C28	TRH C29 - C36	Benzene	Toluene	Ethylbenzene	Total Xylenes	Surrogate
---	---	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
31963-1	1/0.5	<20	<20	89	82	<0.50	<0.50	<0.50	<1.5	80
31963-2	2/0.2	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	89
31963-4	3/0.5	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	76
31963-6	4/0.5	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	82
31963-8	5/1.5	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	80
31963-9	6/0.5	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	78
31963-10	7/0.5	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	78
31963-11	8/0.3	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	75
31963-13	10/0.2	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	87
31963-15	11/0.5	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	70
31963-16	12/0.5	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	82
31963-17	13/0.4	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	88
31963-18	14/0.1	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	77
31963-19	15/0-0.5	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	72
31963-24	9/1.5	<20	<20	<50	<50	<0.50	<0.50	<0.50	<1.5	80

SGS Ref	Sample ID	HCB	alpha-BHC	gamma-BHC(Lindane)	Heptachlor	Aldrin	beta-BHC	delta-BHC	Heptachlor Epoxide	o,p'-DDE	alpha-Endosulfan	trans-Chlordane	cis-Chlordane	trans-Nonachlor	p,p'-DDE	Dieldrin
---	---	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
31963-1	1/0.5	<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
31963-2	2/0.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-4	3/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-6	4/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-8	5/1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-9	6/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-10	7/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.70	<0.10
31963-11	8/0.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-13	10/0.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-15	11/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-16	12/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-17	13/0.4	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-18	14/0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-19	15/0-0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
31963-24	9/1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

SGS Ref	Sample ID	Endrin	o,p'-DDD	o,p'-DDT	beta-Endosulfan	p,p'-DDD	p,p'-DDT	Endosulfan Sulphate	Endrin Aldehyde	Methoxychlor	Endrin Ketone	Surrogate
---	---	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
31963-1	1/0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	97
31963-2	2/0.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	109
31963-4	3/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	88
31963-6	4/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	98
31963-8	5/1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	88
31963-9	6/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	81
31963-10	7/0.5	<0.10	<0.10	0.20	<0.10	1.3	<0.10	<0.10	<0.10	<0.10	<0.10	102
31963-11	8/0.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	100
31963-13	10/0.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	109
31963-15	11/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	101
31963-16	12/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	103
31963-17	13/0.4	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	106
31963-18	14/0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	105
31963-19	15/0-0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	110
31963-24	9/1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	107

SGS Ref	Sample ID	Chlorpyrifos	Fenitrothion	Bromofos Ethyl	Ethion	Surrogate
---	---	mg/kg	mg/kg	mg/kg	mg/kg	%
31963-1	1/0.5	<0.2	<0.2	<0.2	<0.2	97
31963-2	2/0.2	<0.10	<0.10	<0.10	<0.10	109
31963-4	3/0.5	<0.10	<0.10	<0.10	<0.10	88
31963-6	4/0.5	<0.10	<0.10	<0.10	<0.10	98
31963-8	5/1.5	<0.10	<0.10	<0.10	<0.10	88
31963-9	6/0.5	<0.10	<0.10	<0.10	<0.10	81
31963-10	7/0.5	<0.10	<0.10	<0.10	<0.10	102
31963-11	8/0.3	<0.10	<0.10	<0.10	<0.10	100
31963-13	10/0.2	<0.10	<0.10	<0.10	<0.10	109
31963-15	11/0.5	<0.10	<0.10	<0.10	<0.10	101
31963-16	12/0.5	<0.10	<0.10	<0.10	<0.10	103
31963-17	13/0.4	<0.10	<0.10	<0.10	<0.10	106
31963-18	14/0.1	<0.10	<0.10	<0.10	<0.10	105
31963-19	15/0-0.5	<0.10	<0.10	<0.10	<0.10	110
31963-24	9/1.5	<0.10	<0.10	<0.10	<0.10	107

SGS Ref	Sample ID	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Arochlor 1262	Arochlor 1268	Surrogate
---	---	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
31963-1	1/0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	97
31963-2	2/0.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	109
31963-4	3/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	88
31963-6	4/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	98
31963-8	5/1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	88
31963-9	6/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	81
31963-10	7/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	102
31963-11	8/0.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	100
31963-13	10/0.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	109
31963-15	11/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	101
31963-16	12/0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	103
31963-17	13/0.4	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	106
31963-18	14/0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	105
31963-19	15/0-0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	110
31963-24	9/1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	107

SGS Ref	Sample ID	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo[a]anthracene	Chrysene	Benzo[b,k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[ah]anthracene	Benzo[ghi]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
31963-1	1/0.5	<0.1	0.3	<0.1	<0.1	0.1	0.5	2.7	2.6	1.6	1.4	2.8	2.4	2.8	0.2	1.5
31963-2	2/0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	<0.1	<0.1	<0.2	0.08	0.1	<0.1	<0.1
31963-4	3/0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
31963-6	4/0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
31963-8	5/1.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
31963-9	6/0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
31963-10	7/0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
31963-11	8/0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
31963-13	10/0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
31963-15	11/0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
31963-16	12/0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
31963-17	13/0.4	<0.1	0.1	<0.1	<0.1	0.2	0.1	0.6	0.6	0.4	0.3	0.5	0.3	0.4	<0.1	0.2
31963-18	14/0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
31963-19	15/0-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
31963-24	9/1.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2	0.1	<0.1	<0.2	0.08	<0.1	<0.1	<0.1

SGS Ref	Sample ID	Total +ve PAH's	Surrogate
---	---	mg/kg	%
31963-1	1/0.5	19	121
31963-2	2/0.2	0.58	121
31963-4	3/0.5	0.00	129
31963-6	4/0.5	0.00	125
31963-8	5/1.5	0.00	126
31963-9	6/0.5	0.00	126
31963-10	7/0.5	0.00	130
31963-11	8/0.3	0.00	120
31963-13	10/0.2	0.00	126
31963-15	11/0.5	0.00	123
31963-16	12/0.5	0.00	126
31963-17	13/0.4	3.7	123
31963-18	14/0.1	0.00	129
31963-19	15/0-0.5	0.00	131
31963-24	9/1.5	0.48	129

SGS Ref	Sample ID	Total Phenolics (as Ph
---	---	mg/kg
31963-1	1/0.5	<0.50
31963-6	4/0.5	<0.50
31963-8	5/1.5	<0.50
31963-9	6/0.5	<0.50
31963-10	7/0.5	<0.50
31963-15	11/0.5	<0.50
31963-17	13/0.4	<0.50
31963-19	15/0-0.5	<0.50

SGS Ref	Sample ID	Sample Description	Asbestos ID in soil
---	---		
31963-6	4/0.5	20g Sand, Soil, Rock	Chrysotile asbestos detected
31963-13	10/0.2	20g Sand, Soil, Rock	No asbestos detected
31963-16	12/0.5	20g Sand, Soil	No asbestos detected

Method ID	Methodology Summary
SEM-010	Metals - Determination of various metals by ICP-AES following aqua regia digest.
SEM-005	Mercury - Determination of Mercury by Cold Vapour Generation Atomic Absorption Spectroscopy.
SEO-017	BTEX/TRH C6-C9 - Determination by Purge and Trap Gas Chromatography with Flame Ionisation Detection (FID) and Photo Ionisation Detection (PID). The surrogate spike used is aaa-trifluorotoluene.
SEO-020	TRH - Determination of Total Recoverable Hydrocarbons by gas chromatography following extraction with DCM/Acetone for solids and DCM for liquids.
SEO-005	OC/OP/PCB - Determination of a suite of Organchlorine Pesticides, Chlorinated Organo-phosphorus Pesticides and Polychlorinated Biphenyls (PCB's) by sonication extraction using dichloromethane for waters or acetone / hexane for soils followed by Gas Chromatographic separation with Electron Capture Detection (GC /ECD). The surrogate spike used is 2,4,5,6-Tetrachloro-m-xylene.
SEO-030	PAHs by GC/MS - Determination of Polynuclear Aromatic Hydrocarbons (PAH's) by Gas Chromatography / Mass Spectrometry following extraction with dichloromethane or dichloromethane/acetone. The surrogate spike used is p-Terphenyl-d14.
SEI-065	Total Phenolics - determined colorimetrically following steam stripping of the sample. Based on APHA 20th ED, 5530-D.
SASB-002	Qualitative identification of asbestos type fibres in bulk using Polarised Light Microscopy and Dispersion Staining Techniques. Accreditation does not cover the identification of Synthetic Mineral Fibre.
SEP-001	Air Dry - Cover air drying at 40 C, moisture content at 103 C - 105 C, wet slurrying, compositing and preparation of a 1:5 soil suspension.

QUALITY CONTROL Acid Extractable Metals in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base+Duplicate+%RPD	Spike Sm#	Matrix Spike % Recovery Duplicate+% RPD
Arsenic	mg/kg	3	SEM-010	<3	31963-1	<3 || <3	31963-2	96 || 98 || RPD: 2
Cadmium	mg/kg	0.5	SEM-010	<0.5	31963-1	<0.5 || <0.5	31963-2	104 || 106 || RPD: 2
Chromium	mg/kg	0.5	SEM-010	<0.5	31963-1	5 || 6 || RPD: 18	31963-2	98 || 99 || RPD: 1
Copper	mg/kg	0.5	SEM-010	<0.5	31963-1	12 || 12 || RPD: 0	31963-2	102 || 102 || RPD: 0
Lead	mg/kg	2	SEM-010	<2	31963-1	11 || 11 || RPD: 0	31963-2	98 || 100 || RPD: 2
Mercury	mg/kg	0.05	SEM-005	<0.05	31963-1	<0.05 || <0.05	31963-2	96 || 98 || RPD: 2
Nickel	mg/kg	0.2	SEM-010	<0.2	31963-1	6 || 7 || RPD: 15	31963-2	98 || 100 || RPD: 2
Zinc	mg/kg	0.5	SEM-010	<0.5	31963-1	32 || 34 || RPD: 6	31963-2	100 || 98 || RPD: 2
QUALITY CONTROL TRH/BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base+Duplicate+%RPD	Spike Sm#	Matrix Spike % Recovery Duplicate+% RPD
TRH C_6 - C_9 P&T	mg/kg	20	SEO-017	<20	31963-11	<20 || <20	31963-17	70 || 64 || RPD: 9
TRH C_{10} - C_{14}	mg/kg	20	SEO-020	<20	31963-11	<20 || <20	31963-17	85 || 86 || RPD: 1
TRH C_{15} - C_{28}	mg/kg	50	SEO-020	<50	31963-11	<50 || <50	31963-17	81 || 80 || RPD: 1
TRH C_{29} - C_{36}	mg/kg	50	SEO-020	<50	31963-11	<50 || <50	31963-17	93 || 93 || RPD: 0
Benzene	mg/kg	0.5	SEO-017	<0.50	31963-11	<0.50 || <0.50	31963-17	72 || 64 || RPD: 12
Toluene	mg/kg	0.5	SEO-017	<0.50	31963-11	<0.50 || <0.50	31963-17	71 || 63 || RPD: 12
Ethylbenzene	mg/kg	0.5	SEO-017	<0.50	31963-11	<0.50 || <0.50	31963-17	67 || 69 || RPD: 3
Total Xylenes	mg/kg	1.5	SEO-017	<1.5	31963-11	<1.5 || <1.5	31963-17	81 || 76 || RPD: 6
Surrogate	%		SEO-017	[NT]	31963-11	75 || 88 || RPD: 16	31963-17	78 || 74 || RPD: 5

QUALITY CONTROL OC Pesticides in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base+Duplicate+% RPD	Spike Sm#	Matrix Spike % Recovery Duplicate+% RPD
HCB	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
alpha-BHC	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
gamma-BHC(Lindane)	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
Heptachlor	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	89 || 74 || RPD: 18
Aldrin	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	89 || 72 || RPD: 21
beta-BHC	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
delta-BHC	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	89 || 89 || RPD: 0
Heptachlor Epoxide	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
o,p'-DDE	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
alpha-Endosulfan	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
trans-Chlordane	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
cis-Chlordane	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
trans-Nonachlor	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
p,p'-DDE	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
Dieldrin	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	91 || 72 || RPD: 23
Endrin	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
o,p'-DDD	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
o,p'-DDT	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
beta-Endosulfan	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
p,p'-DDD	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
p,p'-DDT	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	91 || 88 || RPD: 3
Endosulfan Sulphate	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	94 || 72 || RPD: 27
Endrin Aldehyde	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
Methoxychlor	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]

QUALITY CONTROL OC Pesticides in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base+Duplicate+% RPD	Spike Sm#	Matrix Spike % Recovery Duplicate+% RPD
Endrin Ketone	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
Surrogate	%		SEO-005	[NT]	31963-4	88 || 82 || RPD: 7	31963-15	91 || 81 || RPD: 12
QUALITY CONTROL OP Pesticides in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base+Duplicate+%RPD	Spike Sm#	Matrix Spike % Recovery Duplicate+% RPD
Chlorpyrifos	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	93 || 76 || RPD: 20
Fenitrothion	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
Bromofos Ethyl	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
Ethion	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-15	[NT]
Surrogate	%		SEO-005	[NT]	31963-4	88 || 82 || RPD: 7	31963-15	91 || 81 || RPD: 12
QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base+Duplicate+%RPD	Spike Sm#	Matrix Spike % Recovery Duplicate+% RPD
Arochlor 1016	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-2	[NT]
Arochlor 1221	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-2	[NT]
Arochlor 1232	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-2	[NT]
Arochlor 1242	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-2	[NT]
Arochlor 1248	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-2	[NT]
Arochlor 1254	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-2	105 || 110 || RPD: 5
Arochlor 1260	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-2	[NT]
Arochlor 1262	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-2	[NT]
Arochlor 1268	mg/kg	0.1	SEO-005	<0.10	31963-4	<0.10 || <0.10	31963-2	[NT]
Surrogate	%		SEO-005	[NT]	31963-4	88 || 82 || RPD: 7	31963-2	83 || 80 || RPD: 4

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base+Duplicate+% RPD	Spike Sm#	Matrix Spike % Recovery Duplicate+% RPD
Naphthalene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	93 || 91 || RPD: 2
Acenaphthylene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	100 || 98 || RPD: 2
Acenaphthene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	93 || 91 || RPD: 2
Fluorene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	[NT]
Phenanthrene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	92 || 92 || RPD: 0
Anthracene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	111 || 112 || RPD: 1
Fluoranthene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	106 || 106 || RPD: 0
Pyrene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	108 || 108 || RPD: 0
Benzo[*a*]anthracene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	[NT]
Chrysene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	[NT]
Benzo[*b,k*]fluoranthene	mg/kg	0.20	SEO-030	<0.2	31963-11	<0.2 || <0.2	31963-16	[NT]
Benzo[*a*]pyrene	mg/kg	0.050	SEO-030	<0.05	31963-11	<0.05 || <0.05	31963-16	113 || 110 || RPD: 3
Indeno[*123-cd*]pyrene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	[NT]
Dibenzo[*ah*]anthracene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	[NT]
Benzo[*ghi*]perylene	mg/kg	0.10	SEO-030	<0.1	31963-11	<0.1 || <0.1	31963-16	[NT]
Total +ve PAH's	mg/kg	0	SEO-030	0.00	31963-11	0.00 || 0.00	31963-16	[NT]
Surrogate	%		SEO-030	[NT]	31963-11	120 || 125 || RPD: 4	31963-16	124 || 129 || RPD: 4

QUALITY CONTROL CN, Phenolics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base+Duplicate+% RPD	Spike Sm#	Matrix Spike % Recovery Duplicate+% RPD
Total Phenolics (as Phenol)	mg/kg	0.5	SEI-065	<0.50	31963-17	<0.50 || <0.50	31963-19	89 || 90 || RPD: 1

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base+Duplicate+%RPD
Moisture	%		SEP-001	[NT]	31963-4	13 || 13 || RPD: 0

QUALITY CONTROL Moisture	UNITS	Dup. Sm#	Duplicate Base:Duplicate:%RPD
Moisture	%	31963-11	12 || 12 || RPD: 0

Result Codes

[INS]	:	Insufficient Sample for this test	[HBG]	: Results not Reported due to High Background Interference
[NR]	:	Not Requested	*	: Not part of NATA Accreditation
[NT]	:	Not tested	[N/A]	: Not Applicable

Result Comments

ASBESTOS NB. Even after disintegration of certain bulk samples (vinyl tiles and bituminous type materials), the detection, of fibres may be difficult when using Polarised Light Microscopy and Dispersion Staining Techniques. This may be due to the matrix of the sample (uneven distribution), or fine fibres that are difficult to detect and positively identify.

OC/OP/PCBs in Soil level of reporting for Sample 1 raised due to matrix interference.

Date Organics extraction commenced: 28/09/04
NATA Accreditation No. 4361

Quality Control Protocol

Reagent Blank: Sample free reagents carried through the preparation/extraction/digestion procedure and analysed at the beginning of every sample batch analysis. For larger projects, a reagent blank is prepared and analysed with every 20 samples.

Duplicate: A separate portion of a sample being analysed which is treated the same as the other samples in the batch. A duplicate is prepared at least every 20 samples.

Matrix Spike Duplicates: Sample replicates spiked with identical concentrations of target analyte(s). The spiking occurs during the sample preparation and prior to the extraction/digestion procedure. They are used to document the precision and bias of a method in a given sample matrix. Where there is not enough sample available to prepare a spiked sample, another known soil/sand or water (or Milli-Q water) may be used. A duplicate spiked sample is prepared at least every 20 samples.

Surrogate Spike: Added to all samples requiring analysis for organics (where relevant) prior to extraction. Used to determine the extraction efficiency. They are organic compounds which are similar to the target analyte(s) in chemical composition and behaviour in the analytical process, but which are not normally found in environmental samples.

Internal Standard: Added to all samples requiring analysis for organics (where relevant) after the extraction process; the compounds serve to give a standard of retention time and response, which is invariant from run-to-run with the instruments.

Control Standards: Prepared from a source independent of the calibration standards. At least one control standard is included in each run to confirm calibration validity.

Additional QC Samples: A calibration standard and blank are run after every 20 samples of an instrumental analysis run to assess analytical drift.

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Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project Name: Wentworth
Project No: 21713
DP Contact Person: Kerrie
Prior Storage: esky / fridge / shelved (circle)

To: SGS Environmental Services
Botany Technical Centre, Orica Industrial Park
Gate 3, Denison Street, MATRAVILLE NSW 2036
Ph: 9666 1426 Fax: 9666 1364
Attn: Attn: Tania Notaras

Sample ID	Sample Type S-soil W-water	Lab ID	Inorganics: HM AS	Cd	Cr	Cu	Pb	Hg	Zn	Ni	Organics: Total / GS/MS Phenol	BTEX/ TPH	OCs/ OPs/ PCBs	PAHs	Other asbestos	TCLP	Notes
1/0.5	S	-1	✓								✓	✓	✓	✓			
2/0.2	↓	-2	✓									✓	✓	✓			
2/1.0		-3	✓														
3/0.5		-4	✓									✓	✓	✓			
3/3.0		-5	✓														
4/0.5		-6	✓								✓	✓	✓	✓	✓		
5/0.3		-7	✓														
5/1.5		-8	✓								✓	✓	✓	✓			
6/0.5		-9	✓								✓	✓	✓	✓			
7/0.5		-10	✓								✓	✓	✓	✓			
8/0.3	↓	-11	✓									✓	✓	✓			
PQL (S)	mg/kg		0.05	1	5	3	5	0.01	5		0.5/*	*	*	*		-	
PQL (W)	mg/L		0.001	0.01	0.05	0.03	0.05	0.0005	0.01		0.05/*	*	*	*		-	

PQL = practical quantitation limit, *As per Laboratory Method Detection Limit

Date relinquished: 24/9/04
Total number of samples in container: 22
Results required by: Standard
Relinquished by: N. Townsend
Signature:

SAMPLES RECEIVED
Please sign and date to acknowledge receipt of samples and return by fax

Signature: NG
Date: 24.9.04 Lab Ref: 31963

Send results to:
Douglas Partners Pty Ltd
Address:

Fax:

SGS
Received 24/09/04
By W.G
Time 4:15 am/pm
Samples intact yes/no
Ice/Cooler Pack yes/no
Comments: 31963

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project Name: Warriewood
Project No: 31213
DP Contact Person: Wenlee
Prior Storage: esky / fridge / shelved (circle)

To: SGS Environmental Services
Botany Technical Centre, Orica Industrial Park
Gate 3, Denison Street, MATRAVILLE NSW 2036
Ph: 9666 1426 Fax: 9666 1364
Attn: Attn: Tania Notaras

Sample ID	Sample Type S-soil W-water	Lab ID	Inorganics								Organics					TCLP	Notes
			~~As~~ Sb	Cd	Cr	Cu	Pb	Hg	Zn	Ni	Total / GS/MS Phenol	BTEX/ TPH	OCs/ OPs/ PCBs	PAHs	~~Other~~ Asbestos		
9/0.1-0.5	S	-12	✓									~~✓~~	~~✓~~	~~✓~~			
10/0.2		-13	✓									✓	✓	✓	✓		
10/1.5		-14	✓														
11/0.5		-15	✓								✓	✓	✓	✓			
12/0.5		-16	✓									✓	✓	✓	✓		
13/0.4		-17	✓								✓	✓	✓	✓			
14/0.5-1		-18	✓									✓	✓	✓			
15/0.2-0.5		-19	✓								✓	✓	✓	✓			
15/3.0		-20	✓														
Z3		-21	✓														
Z8	↓	-22	✓														
PQL (S)	mg/kg		0.05	1	5	3	5	0.01	5		0.5/*	*	*	*		-	
PQL (W)	mg/L		0.001	0.01	0.05	0.03	0.05	0.0005	0.01		0.05/*	*	*	*		-	

PQL = practical quantitation limit, *As per Laboratory Method Detection Limit

Date relinquished: 24/9/04
Total number of samples in container: 24
Results required by: Standard
Relinquished by: N. Edwards
Signature:

SAMPLES RECEIVED
Please sign and date to acknowledge receipt of samples and return by fax

Signature: WS
Date: 27.9.04 Lab Ref: 31963

Send results to:
Douglas Partners Pty Ltd
Address:

Fax:

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project Name: Wanneroo
Project No: 31271
DP Contact Person: Charles
Prior Storage: esky / fridge / shelved (circle)

To: SGS Environmental Services
Botany Technical Centre, Orica Industrial Park
Gate 3, Denison Street, MATRAVILLE NSW 2036
Ph: 9666 1426 Fax: 9666 1364
Attn: Attn: Tania Notaras

Sample ID	Sample Type S-soil W-water	Lab ID	Inorganics								Organics					TCLP	Notes
			~~As~~ X	Cd	Cr	Cu	Pb	Hg	Zn	Ni	Total / GS/MS Phenol	BTEX/ TPH	OCs/ OPs/ PCBs	PAHs	Other		
GW 12	W	-23															PLS filter & hold.
9/1:5	S	-24	✓									✓	✓	✓			
PQL (S)	mg/kg		0.05	1	5	3	5	0.01	5		0.5/*	*	*	*		-	
PQL (W)	mg/L		0.001	0.01	0.05	0.03	0.05	0.0005	0.01		0.05/*	*	*	*		-	

PQL = practical quantitation limit, *As per Laboratory Method Detection Limit

Date relinquished: 24/9/04
Total number of samples in container: 24
Results required by: Standard
Relinquished by: [illegible]
Signature: [signature]

SAMPLES RECEIVED
Please sign and date to acknowledge receipt of samples and return by fax

Signature: [signature]
Date: 24.9.04 Lab Ref: 31963

Send results to:
Douglas Partners Pty Ltd
Address:

Fax:

APPENDIX G
Quality Assurance and Quality Control

QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

Quality assurance/ quality control (QA/QC) procedures comprised an integral part of this Preliminary Contamination Assessment, and included both field and laboratory QA/QC procedures.

FIELD QA/QC RESULTS

Replicate Sampling

A measure of the consistency of laboratory results for replicate sampling is through the calculation of relative percentage differences (RPDs) between sample and replicate. It should be noted that this form of QA/QC check is, however, dependant on the sample and replicate containing identical portions of the contaminants measured. A RPD of 0 to ±30% is generally considered acceptable, although a wider range of RPD would be expected for volatile organics and also in some cases due to the replicate sampling process, which does not involve mixing or splitting of a parent sample to create sample and replicate. RPDs were calculated for field replicate samples. The comparative results of the replicate analysis are presented in the table below.

RPDs for Replicate Sample Pairs for Heavy Metals in Soils (mg/kg)

Sample ID	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn
1/0.5	<3	<0.5	5	12	11	<0.05	6	32
Z3	<3	<0.5	7	14	12	<0.05	7	37
Difference	0	0	2	2	1	0	1	5
RPD (%)	**0**	**0**	**33**	**15**	**9**	**0**	**15**	**14**
12/0.5	<3	<0.5	3	<0.5	4	<0.05	0.5	2
Z8	<3	<0.5	3	<0.5	4	<0.05	0.5	2
Difference	0	0	0	0	0	0	0	0
RPD (%)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

1. for the purpose of RPD calculation concentrations <PQL were taken to be zero;
2. shading indicates RPD > ±30%

The RPD values for the chemical species analysed fell within the acceptable RPD limits of ±30% for the replicate pairs with the exception of chromium in soil replicate pair 1/0.5 and

Z3. However, it is noted that the actual concentration differences between the samples was low and that replicate samples were analysed rather than duplicates to minimise loss of volatiles. It is therefore considered that the RPD exceedance does not adversely affect the integrity of the contaminant concentration data on which this assessment is based.

LABORATORY QA/QC RESULTS

The analytical laboratory is certified by the National Association of Testing Authorities (NATA) and is required to conduct in-house QA/QC procedures. These are normally incorporated into every analytical run and include the following:-

Reagent Blank

A reagent blank sample is prepared and analysed at the beginning of every analytical run, following calibration of the analytical apparatus. The laboratory results for reagent blanks for soil analyses indicated concentrations of all analytes to be below respective laboratory practical quantitation (detection) limits. These results are included in the laboratory report in Appendix F.

Spike Recovery

This is a sample replicate prepared by adding a known amount of analyte prior to analysis, and then treated exactly the same as all other samples. The recovery result indicates the proportion of the known concentration of the analyte that is detected during analysis (laboratory accuracy). These results are included in the laboratory reports in Appendix F. Acceptable spike recoveries were reported indicating that the analytical results are not significantly affected by matrix interference.

Duplicates

These are additional portions of a sample which are analysed in exactly the same manner as all other samples. The duplicate sample results are included in the laboratory results in Appendix F.