

# APPENDIX B

## BORELOGS

# Soil Bore Log / Monitoring Well Log

Soil Bore/Monitoring Well # <b>MLA1-1-1</b>						Sheet <b>1</b> of <b>1</b>		<b>F-1-55-d</b>		
Job Number: <b>12-773</b>		Client: <b>Whitehaven Coal</b>		Easting _____		Logged by: <b>LK</b>				
Time & Date: <b>18/1/12</b>		Site Location: _____		Drilling Company: _____		South: _____		Checked by: _____		
Surface Cover: Concrete: Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( Grass ) mm										
Drilling Method: Hand Trowel (X) Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)  <small>Note: Record the depth that groundwater is encountered, depth of any fill</small>	Sampled Collected  Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Monitoring Well Installation
				CLAY	SAND					
				v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	v.loose loose m.dense dense v.dense					
Silt Sand Clay	X	MSC	Br	S	L	Matrix	Low	D = Dry	Roots, pebbles	
Gravel Clay	X	GC	Br/Or mottle	v.stiff (v.st)		PS	Medium	D = Dry	Hard clay, rocks, pebbles	
Clay	X	C	Br/Or/Black mottle	H		PS	Medium	D = Dry	Black mottle, pebbles/rocks	
Clay Sand	X	CS	Br/Or/Black mottle	VL		PS	Medium	D = Dry	Very loose, some sand only a few pebbles	
				END OF HOLE						
Borehole Abandonment: ( Y ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed										
Sandy Silt		Sandy Clay	Sand	Fill	Waste Management/Disposal: (Describe )					
Sand Silt Clay		Clay Sand	Rock	Gravel	Soil <u>Backfilled</u>					
Water _____										
Quality Control Samples <b>No</b>										
List: _____										
Well Development Method _____					Volume Purged: _____					







# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-1		Sheet 1 of 1		F-1-55-d						
<b>Job Number:</b> 12-773		<b>Client:</b> Whitehaven Coal		<b>Easting</b> _____						
<b>Time &amp; Date</b> 18/1/12		<b>Drilling Company</b> _____		<b>South</b> _____						
<b>Site Location:</b> _____		<b>Drilling Company</b> _____		<b>Elevation</b> _____						
<b>Surface Cover:</b> Concrete: Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( Grass ) mm										
<b>Drilling Method:</b> Hand Trowel (X) Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Monitoring Well Installation
				v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	v.loose loose m.dense dense v.dense					
	0.2 0.5 1 1.5	X X X X	MG CGM CM CM	Lt Br Br Br Br	L L L L	Matrix PS PS PS	L L L L	D D D D	Roots, gravel Small pebbles throughout Some minor red mottle/pebbles Some minor red mottle/pebbles	
				REFUSAL - ROCK/CLAY						
<b>Borehole Abandonment:</b> ( Y ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed						<b>Waste Management/Disposal:</b> (Describe )				
Sandy Silt  Sandy Clay  Sand  Fill Sand Silt Clay  Clay Sand  Rock  Gravel Clay Silt Silt						Soil <u>Backfilled</u>				
						Water _____				
						<b>Quality Control Samples</b> Yes				
						List: <u>1.5 D</u>				
<b>Well Development Method</b> _____						Volume Purged: _____				

# Soil Bore Log / Monitoring Well Log


F-1-55-d

Sheet 1 of 1

<b>Soil Bore/Monitoring Well #</b> MLA2-1-2			Easting _____ South _____ Elevation _____	
<b>Job Number:</b> 12-773	Logged by: <u>LK</u>			
<b>Client:</b> Whitehaven Coal	Checked by: _____			
<b>Time &amp; Date:</b> 18/1/12				
<b>Site Location:</b>	<b>Drilling Company:</b>			

**Surface Cover:** Concrete: ( ) mm Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( Grass ) mm

**Drilling Method:** Hand Trowel (X) Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)

Profile Depth in (m bgl)	Sampled Collected	Soil Type	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Monitoring Well Installation
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
	X	CMS	Br	L		PS	L	D = Dry	Some pebbles roots	
	X	CGM	Br	H		PS	M	D = Dry	Very hard clay with pebbles, rocks	
	X	CM	Br	H		PS	M	D = Dry	Very hard clay with pebbles, rocks	
	X	CM	Br	H		PS	M	D = Dry	Some red and white mottle	
				REFUSAL - VERY STIFF CLAY						

**Borehole Abandonment:** ( Y ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed

**Legend:**

Sandy Silt	Sandy Clay	Sand	Fill
Sand Silt Clay	Clay Sand	Rock	Gravel
Silt	Clay Silt		

**Waste Management/Disposal:** (Describe )

Soil Backfilled

Water \_\_\_\_\_

**Well Development Method** \_\_\_\_\_ **Volume Purged:** \_\_\_\_\_

**Quality Control Samples No**

List: \_\_\_\_\_

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-3		Sheet 1 of 1		F-1-55-d						
<b>Job Number:</b> 12-773		<b>Client:</b> Whitehaven Coal		<b>Easting</b> _____						
<b>Time &amp; Date</b> 18/1/12		<b>Site Location:</b> _____		<b>Drilling Company</b> _____						
				<b>South</b> _____						
				<b>Elevation</b> _____						
<b>Surface Cover:</b> Concrete: Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( Grass ) mm										
<b>Drilling Method:</b> Hand Trowel (X) Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Monitoring Well Installation
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="width: 100%; height: 20px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, red 2px, red 4px);"></div> <div style="width: 100%; height: 20px; background: repeating-linear-gradient(-45deg, transparent, transparent 2px, red 2px, red 4px);"></div> <div style="width: 100%; height: 20px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, red 2px, red 4px);"></div> <div style="width: 100%; height: 20px; background: repeating-linear-gradient(-45deg, transparent, transparent 2px, red 2px, red 4px);"></div> </div>	0.2	X	CMS	Br	L	PS	L	D	Roots, pebbles	
	0.5	X	CM	Br	MS	PS	L	D	Some odour, roots, pebbles	
	1	X	CM	Br	H	PS	L	D	Some white & red mottle/pebbles	
	1.5	X	CM	Br	H	PS	L	D	Some white & red mottle/pebbles	
						REFUSAL - HARD CLAY				
						ODOUR IN PIT				
<b>Borehole Abandonment:</b> ( Y ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed									<b>Waste Management/Disposal:</b> (Describe )	
<div style="display: flex; flex-wrap: wrap;"> <div style="width: 25%;">Sandy Silt </div> <div style="width: 25%;">Sandy Clay </div> <div style="width: 25%;">Sand </div> <div style="width: 25%;">Fill </div> <div style="width: 25%;">Sand Silt Clay </div> <div style="width: 25%;">Clay Sand </div> <div style="width: 25%;">Rock </div> <div style="width: 25%;">Gravel </div> <div style="width: 25%;">Silt </div> <div style="width: 25%;">Clay Silt </div> </div>									Soil <u>Backfilled</u>	
Well Development Method _____ Volume Purged: _____									Water _____	
									<b>Quality Control Samples No</b>	
									List: _____	
									_____	

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> <b>MLA2-1-4</b>		Sheet    1    of 1			F-1-55-d									
<b>Job Number:</b> 12-773		<b>Client:</b> Whitehaven Coal		<b>Easting</b> _____										
<b>Time &amp; Date</b> 18/1/12		<b>Drilling Company</b> _____		<b>South</b> _____										
<b>Site Location:</b> _____		<b>Drilling Company</b> _____		<b>Elevation</b> _____										
<b>Surface Cover:</b> Concrete: Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: (    Grass    ) mm														
<b>Drilling Method:</b> Hand Trowel (X)    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)														
Profile Depth in (m bgl)	Sampled Collected	Soil Type	Colour	Consistency		Particle / Soil Description	Plasticity	Moisture	Observations and Comments	Monitoring Well Installation				
				C = CLAY	M = SILT						S = SAND	G = GRAVEL	R = ROCK	F = FILL
				v. soft (vs)	v.loose						m. soft (s)	loose	m. stiff (ms)	m.dense
Note: Record the depth that groundwater is encountered, depth of any fill		e.g. black, red, grey, orange, yellow, dark, pale, mottled.		Very Angular	Sub-Angular	Well Rounded	Matrix	Poorly Sorted	Well Sorted	S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)			
Clay Silt Sand	0.2	X	CMS	Dk Br	VS L	M	M	M	Humus with roots					
Clay Silt Sand	0.5	X	CMS	Mottle DkBr/LtBr	VS L	PS	L	SM	Mix of previous layer and clays/roots/pebbles					
Clay Silt	1	X	CM	White/black/brown	VS L	PS	L	SM	White rocks, pebbles, white clay					
Clay Silt	1.5	X	CM	White/black/brown	VS L	PS	L	SM	White rocks, pebbles, white clay					
Clay Silt	2		CM	Lt Br	St L	PS	L	SM	Some pebbles and rocks					
Clay Sand	2.5		CS	Grey	VSt L	PS	M	SM	Hard clay some pebbles					
END OF TEST PIT														
<b>Borehole Abandonment:</b> ( Y ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed						<b>Waste Management/Disposal:</b> (Describe )								
<div style="font-size: x-small;"> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; background-color: white; margin-right: 5px;"></span> Sandy Silt                 <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; background-color: white; margin-left: 20px; margin-right: 5px;"></span> Sandy Clay                 <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; background-color: white; margin-left: 20px; margin-right: 5px;"></span> Sand                 <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; background-color: white; margin-left: 20px; margin-right: 5px;"></span> Fill                 <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; background-color: white; margin-left: 20px; margin-right: 5px;"></span> Rock                 <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; background-color: white; margin-left: 20px; margin-right: 5px;"></span> Gravel             </div> <div style="font-size: x-small; margin-top: 5px;"> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; background-color: white; margin-right: 5px;"></span> Silt                 <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; background-color: white; margin-left: 20px; margin-right: 5px;"></span> Clay Silt             </div>						Soil <u>Backfilled</u> Water    _____								
<b>Well Development Method</b> _____						<b>Quality Control Samples No</b>								
Volume Purged: _____						List: _____								

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> <b>MLA2-1-5</b>		Sheet    1    of 1			F-1-55-d					
<b>Job Number:</b> 12-773		Logged by: <u>LK</u>			Checked by:    _____					
<b>Client:</b> Whitehaven Coal										
<b>Time &amp; Date</b> 18/1/12		<b>Easting</b> _____			Checked by:    _____					
<b>Site Location:</b> _____		<b>South</b> _____								
		<b>Elevation</b> _____								
<b>Surface Cover:</b> Concrete: Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: (    Grass    ) mm										
<b>Drilling Method:</b> Hand Trowel (X)    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Monitoring Well Installation
				v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	v.loose loose m.dense dense v.dense					
	X	MSC	Br	S	L	M	L	M	Roots and pebbles	
	X	GCS	Br	L		PS	L	D	Rocks, pebbles	
	X	CMG	Br	L		PS	L	D	Very dry, loose with some pebbles, small amount of clay	
	X	GC	Br	L		PS	L	D	Gravel, stones	
									REFUSAL HARD CLAY	

**Borehole Abandonment:**    ( Y ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed

**Waste Management/Disposal:** (Describe )

Soil    Backfilled

Water    \_\_\_\_\_

**Quality Control Samples No**

List:    \_\_\_\_\_

\_\_\_\_\_

**Well Development Method**    \_\_\_\_\_    **Volume Purged:**    \_\_\_\_\_



# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-6		Sheet 1 of 1			F-1-55-d					
<b>Job Number:</b> 12-773		Logged by: <u>    LK    </u>			Checked by: <u>                    </u>					
<b>Client:</b> Whitehaven Coal										
<b>Time &amp; Date:</b> 18/1/12		<b>Easting</b> _____			Checked by: <u>                    </u>					
<b>Site Location:</b> _____		<b>South</b> _____								
		<b>Elevation</b> _____								
<b>Surface Cover:</b> Concrete: Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( Grass ) mm										
<b>Drilling Method:</b> Hand Trowel (X) Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Monitoring Well Installation
				CLAY	SAND					
				v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	v.loose loose m.dense dense v.dense					
	X	MSC	Br/Bi	L	PS	L	M	Rocks, pebbles, roots		
X	GCM	Br	L	PS	L	D	Pebbles, rocks, roots			
X	CM	Br	L	PS	L	D	Pebbles, rocks, roots			
X	GC	Br	L	PS	L	D	Pebbles, rocks, no roots			
X	GC	Br	L	PS	L	D	Pebbles, rocks, not roots			
				REFUSAL HARD CLAY						
<b>Borehole Abandonment:</b> ( Y ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed									<b>Waste Management/Disposal:</b> (Describe )  Soil <u>    Backfilled    </u>  Water _____	
<b>Quality Control Samples</b> Yes List: <u>    0.2D    </u>										
<b>Well Development Method</b> _____					<b>Volume Purged:</b> _____					

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> <b>MLA2-1-7</b>		Sheet    1    of 1	F-1-55-d																			
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Time &amp; Date:</b> 18/1/12		<b>Easting</b> _____ <b>South</b> _____ <b>Elevation</b> _____	<b>Logged by:</b> <u>LK</u>  <b>Checked by:</b> _____																			
<b>Site Location:</b> _____		<b>Drilling Company:</b> _____																				
<b>Surface Cover:</b> Concrete: Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: (    Grass    ) mm																						
<b>Drilling Method:</b> Hand Trowel (X)    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)																						
Profile Depth in (m bgl)	Sampled Collected	Soil Type	Colour	Consistency		Particle / Soil Description	Plasticity	Moisture	Observations and Comments	Monitoring Well Installation												
		C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	e.g. black, red, grey, orange, yellow, dark, pale, mottled.	CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense	Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	V.High High Medium Low	S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)													
Note: Record the depth that groundwater is encountered, depth of any fill  Clay Silt Sand	Mark (X)	0.2	X	CSM	Br	L	M	L	D	Roots, pebbles												
<b>Borehole Abandonment:</b> ( Y ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed																						
<table style="width:100%; border: none;"> <tr> <td style="width:10%;">Sandy Silt </td> <td style="width:10%;">Sandy Clay </td> <td style="width:10%;">Sand </td> <td style="width:10%;">Fill </td> </tr> <tr> <td>Sand Silt Clay </td> <td>Clay Sand </td> <td>Rock </td> <td>Gravel </td> </tr> <tr> <td>Silt </td> <td>Clay Silt </td> <td>Clay </td> <td></td> </tr> </table>											Sandy Silt	Sandy Clay	Sand	Fill	Sand Silt Clay	Clay Sand	Rock	Gravel	Silt	Clay Silt	Clay	
Sandy Silt	Sandy Clay	Sand	Fill																			
Sand Silt Clay	Clay Sand	Rock	Gravel																			
Silt	Clay Silt	Clay																				
<b>Waste Management/Disposal:</b> (Describe ) Soil <u>Backfilled</u> Water    _____																						
<b>Quality Control Samples</b> No List: _____																						
<b>Well Development Method</b> _____    Volume Purged: _____																						

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-8		Sheet    1    of 1	F-1-55-d							
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Time &amp; Date:</b> 18/1/12		<b>Easting</b> _____ <b>South</b> _____ <b>Elevation</b> _____	Logged by: <u>  LK  </u>  Checked by:    _____							
<b>Site Location:</b> _____		<b>Drilling Company:</b> _____								
<b>Surface Cover:</b> Concrete: Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: (    Grass    ) mm										
<b>Drilling Method:</b> Hand Trowel (X)    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected	Soil Type	Colour	Consistency		Particle / Soil Description	Plasticity	Moisture	Observations and Comments	Monitoring Well Installation
		C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	e.g. black, red, grey, orange, yellow, dark, pale, mottled.	CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense	Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	V.High High Medium Low	S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	
Note: Record the depth that groundwater is encountered, depth of any fill  <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 15px; height: 15px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, red 2px, red 4px); margin-right: 5px;"></div> <div style="font-size: 8px;">Clay Silt</div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="border: 1px solid black; width: 15px; height: 15px; background: repeating-linear-gradient(-45deg, transparent, transparent 2px, red 2px, red 4px); margin-right: 5px;"></div> <div style="font-size: 8px;">Sand</div> </div>	0.2	X	CSM	Br	L	PS	L	D	Roots, pebbles	
<b>Borehole Abandonment:</b> ( Y ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed										
<div style="font-size: 8px;">           Sandy Silt     Sandy Clay     Sand     Fill             Sand Silt Clay     Clay Sand     Rock     Gravel                Silt                Clay Silt     Clay  </div>										<b>Waste Management/Disposal:</b> (Describe )  Soil <u>  Backfilled  </u>  Water    _____
<b>Well Development Method</b> _____    Volume Purged:    _____										<b>Quality Control Samples</b> No  List:    _____    _____ _____    _____



# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-9	Sheet   1   of 1	<b>F-1-55-d</b>
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<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Time &amp; Date</b> 18/1/12					<b>Easting</b> _____ <b>South</b> _____ <b>Elevation</b> _____	<b>Logged by:</b> LK  <b>Checked by:</b> _____
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**Surface Cover:**      Concrete: Bitumen: (   ) mm      Gravel: (   ) mm      Roadbase: (   ) mm      Other: (   Grass   ) mm

**Drilling Method:**    Hand Trowel (X)    Hand Auger (   ) mm dia.    Push Tube (   ) mm dia.      Other e.g. Test Pit (   ) Size (m)

Profile Depth in (m bgl)  <small>Note: Record the depth that groundwater is encountered, depth of any fill</small>	Sampled Collected  Mark (X)	Soil Type  C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour  e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description  Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity  V.High High Medium Low	Moisture  S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments  e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Monitoring Well Installation
				CLAY	SAND					
				v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	v.loose loose m.dense dense v.dense					
<div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; border: 1px solid red; background: repeating-linear-gradient(45deg, transparent, transparent 2px, red 2px, red 4px); margin-right: 5px;"></div> <div style="font-size: 8px;">Clay Silt Sand</div> </div> 0.2	X	CSM	Dk Br	S	L	M	L	SM	Pebbles	

**Borehole Abandonment:**    ( Y ) Backfilled & Compacted    (   ) Resurfaced (Concrete/Bitumen)    (   ) Monitoring Well Installed

**Waste Management/Disposal:** (Describe )

Soil                      Backfilled

Water                    \_\_\_\_\_

**Quality Control Samples**    No

List: \_\_\_\_\_

**Well Development Method**                      \_\_\_\_\_      Volume Purged: \_\_\_\_\_



# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> <u>MLA2-1-11</u>				Sheet <u>1</u> of 1			F-1-55-d															
<b>Job Number:</b> <u>12-773</u>		<b>Client:</b> <u>Whitehaven Coal</u>		<b>Easting</b> _____		Logged by: <u>LK</u>																
<b>Time &amp; Date</b> <u>18/1/12</u>		<b>Drilling Company</b> _____		<b>South</b> _____		Checked by: _____																
<b>Site Location:</b> _____		<b>Drilling Company</b> _____		<b>Elevation</b> _____																		
<b>Surface Cover:</b> Concrete: <u>  </u> mm Bitumen: ( <u>  </u> ) mm Gravel: ( <u>  </u> ) mm Roadbase: ( <u>  </u> ) mm Other: ( <u>  </u> Grass <u>  </u> ) mm																						
<b>Drilling Method:</b> Hand Trowel ( <input checked="" type="checkbox"/> ) Hand Auger ( <u>  </u> ) mm dia. Push Tube ( <u>  </u> ) mm dia. Other e.g. Test Pit ( <u>  </u> ) Size ( <u>  </u> ) m																						
Profile Depth in (m bgl)	Sampled Collected	Soil Type	Colour	Consistency		Particle / Soil Description	Plasticity	Moisture	Observations and Comments	Monitoring Well Installation												
				CLAY	SAND						Particles	S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry										
Note: Record the depth that groundwater is encountered, depth of any fill	Mark (X)	C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	e.g. black, red, grey, orange, yellow, dark, pale, mottled.	v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	v.loose loose m.dense dense v.dense	Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	V.High High Medium Low		e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)													
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 20px; height: 20px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, red 2px, red 4px); margin-right: 5px;"></div> <div style="margin-right: 5px;">Clay Silt</div> </div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 20px; height: 20px; background: repeating-linear-gradient(-45deg, transparent, transparent 2px, red 2px, red 4px); margin-right: 5px;"></div> <div>Sand</div> </div>	0.2	X	CSM	Dk Br	S L	M	L	SM	Pebbles													
<b>Borehole Abandonment:</b> ( <input type="checkbox"/> ) Backfilled & Compacted ( <input type="checkbox"/> ) Resurfaced (Concrete/Bitumen) ( <input type="checkbox"/> ) Monitoring Well Installed																						
<table style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <td style="text-align: center;">Sandy Silt </td> <td style="text-align: center;">Sandy Clay </td> <td style="text-align: center;">Sand </td> <td style="text-align: center;">Fill </td> </tr> <tr> <td style="text-align: center;">Sand Silt Clay </td> <td style="text-align: center;">Clay Sand </td> <td style="text-align: center;">Rock </td> <td style="text-align: center;">Gravel </td> </tr> <tr> <td style="text-align: center;">Silt </td> <td style="text-align: center;">Clay Silt </td> <td style="text-align: center;">Clay </td> <td></td> </tr> </table>								Sandy Silt	Sandy Clay	Sand	Fill	Sand Silt Clay	Clay Sand	Rock	Gravel	Silt	Clay Silt	Clay		<b>Waste Management/Disposal:</b> (Describe )		
Sandy Silt	Sandy Clay	Sand	Fill																			
Sand Silt Clay	Clay Sand	Rock	Gravel																			
Silt	Clay Silt	Clay																				
<b>Well Development Method</b> _____ <b>Volume Purged:</b> _____								Soil <u>Backfilled</u> Water _____														
<b>Quality Control Samples</b> No								List: _____														

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> <b>MLA2-1-12</b>		Sheet    1    of 1	<b>F-1-55-d</b>
<b>Job Number:</b> 12-773		Logged by: <u>   LK   </u>	
<b>Client:</b> <u>   Whitehaven Coal   </u>			
<b>Time &amp; Date:</b> 18/1/12		Checked by:    _____	
<b>Site Location:</b>	<b>Drilling Company:</b>		
<b>Surface Cover:</b> Concrete: Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: (    Grass    ) mm			
<b>Drilling Method:</b>	Hand Trowel (X)    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)		

Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Monitoring Well Installation
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
Clay Silt Sand 0.2	X	CSM	Dk Br	S	L	M	L	SM	Pebbles	

<b>Borehole Abandonment:</b> (    Y    ) Backfilled & Compacted    (       ) Resurfaced (Concrete/Bitumen)    (       ) Monitoring Well Installed	<b>Waste Management/Disposal:</b> (Describe )
Sandy Silt     Sandy Clay     Sand     Fill Sand Silt Clay     Clay Sand     Rock     Gravel  Silt  Clay Silt     Clay	Soil <u>Backfilled</u>  Water    _____
<b>Quality Control Samples</b> No	
List:    _____    _____	
<b>Well Development Method</b> _____    Volume Purged:    _____	

<b>Soil Bore/Monitoring Well #</b> <span style="font-weight: normal;">MLA2-1-14</span>						Sheet _____ of _____	<b>F-1-55-b</b>
<b>Job Number:</b> <span style="font-weight: normal;">12-773</span>			<b>Client:</b> <span style="font-weight: normal;">Whitehaven Coal</span>			<b>Logged by:</b> <span style="font-weight: normal;">LK</span>	
<b>Project:</b> <span style="font-weight: normal;">Vickery EIS Stage 2</span>			<b>Drilling Company:</b> <span style="font-weight: normal;">Mannion Drilling</span>			<b>Checked by:</b> _____	
<b>Site Location:</b> _____		<b>Drilling Company:</b> <span style="font-weight: normal;">Mannion Drilling</span>		<b>Easting:</b> <span style="font-weight: normal;">144.1623867</span>		<b>Northing:</b> <span style="font-weight: normal;">30.76275935</span>	
<b>Surface Cover:</b> <span style="font-weight: normal;">Concrete: ( ) Bitumen: ( ) mm</span>		<b>Gravel:</b> ( ) mm		<b>Roadbase:</b> ( ) mm		<b>Other:</b> ( <span style="font-weight: normal;">100</span> ) mm <span style="font-weight: normal;">Soil and grass</span>	
<b>Drilling Method:</b> _____		<b>Hollow Flight Augers:</b> ( <input checked="" type="checkbox"/> ) mm dia.		<b>Hand Auger:</b> ( ) mm dia.		<b>Push Tube:</b> ( ) mm dia.	
<b>Profile Depth:</b> _____ in (m bgl)		<b>Soil Type:</b> _____		<b>Colour:</b> _____		<b>Consistency:</b> _____	
<b>Note:</b> Record the depth that groundwater is encountered, depth of any fill		<b>Soil Type Legend:</b> C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL		<b>Colour Legend:</b> e.g. black, red, grey, orange, yellow, dark, pale, mottled.		<b>Consistency Legend:</b> CLAY: v. soft (vs), soft (s), m. stiff (ms), stiff (st), v.stiff (v.st), hard (h) SAND: v.loose, loose, m.dense, dense, v.dense	
<b>Mark (X)</b>		<b>Sampled Collected</b>		<b>Particle / Soil Description</b>		<b>Plasticity</b>	
<b>Moisture</b>		<b>Observations and Comments</b>		<b>Well Construction Sketch</b>		<b>Other e.g. Test Pit ( ) Size (m)</b>	
<b>S = Saturated</b>		<b>V = Very Moist</b>		<b>M = Moist</b>		<b>SM = Slightly Moist</b>	
<b>D = Dry</b>		<b>e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)</b>		<b>Very Angular</b>		<b>Sub-Angular</b>	
<b>Well Sorted</b>		<b>Well Rounded</b>		<b>Matrix</b>		<b>Poorly Sorted</b>	
<b>20-30% gravel and roots</b>		<b>Minor sand, some gravel</b>		<b>Minor sand, some gravel</b>		<b>Cobbles, little clay (20%)</b>	
<b>2.5 X</b>		<b>S</b>		<b>Gr</b>		<b>PS/SR</b>	
<b>3 X</b>		<b>Conglomerate</b>		<b>Grey/Or/Br</b>		<b>Rock</b>	
<b>REFUSAL</b>		<b>Water used to auger - sourced from WERRIS CREEK. All samples exposed to water.</b>		<b>Sandy Silt</b>		<b>Sand Silt Clay</b>	
<b>Clay</b>		<b>Conglomerate</b>		<b>Sandy Clay</b>		<b>Clay Sand</b>	
<b>Sand</b>		<b>Rock</b>		<b>Fill</b>		<b>Gravel</b>	
<b>Well Construction Details</b>		<b>Gravel pack from:</b> _____ (m) to _____ (m)		<b>Grout from:</b> _____ (m) to _____ (m)		<b>Soil:</b> <span style="font-weight: normal;">Stored on plastic/refilled</span>	
<b>Total depth:</b> _____ (m)		<b>Gravel pack - type:</b> _____		<b>Grout type:</b> _____		<b>Water:</b> _____	
<b>Casing diameter:</b> ( ) 50mm ( ) 100mm		<b>Bentonite seal from:</b> _____ (m) to _____ (m)		<b>Flush mounted cover:</b> ( )		<b>Quality Control Samples ( ) Yes ( X ) No</b>	
<b>Screened from:</b> _____ (m) to _____ (m)		<b>Bentonite - type:</b> _____		<b>Monument:</b> ( )		<b>List:</b> _____	
<b>Blank pipe from:</b> _____ (m) to _____ (m)		<b>Backfill used? from:</b> _____ (m) to _____ (m)		<b>Locked/Secured:</b> ( )		<b>Well Development Method</b> _____	
<b>Volume Purged:</b> _____		<b>Well Construction Sketch</b>		<b>Well Development Method</b>		<b>Volume Purged:</b> _____	



<b>Soil Bore/Monitoring Well #</b> <b>MLA2-1-16</b>			Sheet _____ of _____	<b>F-1-55-b</b>						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting:</b> 144.1621947 <b>Northing:</b> 30.76285011 <b>Elevation:</b> 279 m	Logged by: <u>   LK   </u>  Checked by: _____							
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: ( ) mm    Bitumen: ( ) mm    Gravel: ( ) mm    Roadbase: ( ) mm    Other: ( ) mm										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger ( ) mm dia.    Push Tube ( ) mm dia.    Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)  Note: Record the depth that groundwater is encountered, depth of any fill	Sampled Collected  Mark (X)	Soil Type	Colour	Consistency		Particle / Soil Description	Plasticity	Moisture	Observations and Comments  e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
		C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	e.g. black, red, grey, orange, yellow, dark, pale, mottled.	CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense	Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	V.High High Medium Low	S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry		
Fining Upwards	2 X	C	Grey	hard (h)		PS/SR	High	M	Hard stiff grey clay	
	2.5 X	C	Grey	hard (h)		PS/SR	High	M	Hard stiff grey clay	
	3 X	C	Grey/minor yellow mottle	hard (h)		S/R	High	M	Fe emerging	
	3.5 X	C	Grey/yellow mottle	hard (h)		S	High	M	Fe mottle	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay		
		Sand Silt Clay	Clay Sand					Conglomerate		
<b>Borehole Abandonment:</b>		( ) Backfilled & Compacted    ( ) Resurfaced (Concrete/Bitumen)			( ) Monitoring Well Installed			<b>Waste Management/Disposal: (Describe )</b>		
Well Construction Details		Gravel pack from: _____(m) to _____(m)			Grout from: _____(m) to _____(m)			Soil _____ Backfilled		
Total depth: _____(m)		Gravel pack - type: _____			Grout type: _____			Water _____		
Casing diameter: ( ) 50mm ( ) 100mm		Bentonite seal from: _____(m) to _____(m)			Flush mounted cover: ( )			<b>Quality Control Samples ( ) Yes ( X ) No</b>		
Screened from: _____(m) to _____(m)		Bentonite - type: _____			Monument: ( )					
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)			Locked/Secured: ( )			List: _____		
<b>Well Development Method</b> _____		Volume Purged: _____			_____			_____		



# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-17		Sheet _____ of _____		F-1-55-b						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1621958 <b>Northing</b> 30.76281929 <b>Elevation</b> 279 m		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: (    ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( <input checked="" type="checkbox"/> ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    3    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	S/C/G	Dk br	L		PS	Low	M	Mottled, 20% gravel roots	
0.5	X	S/C/G	Dk Br	L		PS	Low	M	Mottled, 20% gravel roots	
1	X	S/C/G	Dk Br/White	St/L		PS	Low	M	Large rocks roots/grey white	
1.5	X	S/C	Dk Br	St		PS	Low	M	Roots, white rocks	
2	X	S/C	Dk Br	St		PS	High	M	Grey Clay	
2.5	X	C	Grey	hard (h)		PS	High	D	Fe mottle	
3	X	C	Grey/yellow	hard (h)		PS	High	D	Fe mottle	
		Sandy Silt Sand Silt Clay	Sandy Clay Clay Sand	Sand Rock	Fill Gravel			Clay Conglomerate		
<b>Borehole Abandonment:</b> (    ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed					<b>Waste Management/Disposal:</b> (Describe )					
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )		<b>Quality Control Samples</b> (    ) Yes ( <input checked="" type="checkbox"/> ) No				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )						
<b>Well Development Method</b> _____					Volume Purged: _____					
List: _____					_____					



<b>Soil Bore/Monitoring Well #</b> MLA2-1-18					Sheet _____ of _____	<b>F-1-55-b</b>				
<b>Job Number:</b> 12-773					Logged by: <u>   LK   </u>  Checked by: _____					
<b>Client:</b> Whitehaven Coal		<b>Easting</b> 144.1620899								
<b>Project:</b> Vickery EIS Stage 2		<b>Northing</b> 30.76272535								
<b>Site Location:</b>		<b>Drilling Company</b> Mannion Drilling			<b>Elevation</b> 277					
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: (    ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers (    X    ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    3    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	C/S/M	Reddish Br	S		PS	Medium		Humus	
0.5	X	C/S/M	Reddish Br	S		PS	Medium		Roots, gravel	
1	X	C/S	Grey Br	S		PS	Low		Limestone	
1.5	X	S/minor clay	Br	L		PS	Low		Gravel,sand	
2	X	Conglomerate	Mottled	hard (h)		PS	Low		Gravel, sand	
2.5	X	Conglomerate	Mottled	hard (h)		PS	Low		Rock	
3	X	C/S	Mottled	hard (h)		PS	Low		Conglomerate with minor clay and sand	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
		Sand Silt Clay	Clay Sand							
<b>Borehole Abandonment:</b> (    ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed							<b>Waste Management/Disposal:</b> (Describe )			
<b>Well Construction Details</b>		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )		<b>Quality Control Samples ( X ) Yes ( ) No</b> List: <u>  0.5D, 0.5T  </u> _____				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )						
<b>Well Development Method</b> _____							Volume Purged: _____			

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-19		Sheet _____ of _____		F-1-55-b						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1622595 <b>Northing</b> 30.76280374 <b>Elevation</b> _____		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: ( 3000 ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    3    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	C/S/G	Dk Br			PS	Low	M	Gravel/roots	
0.5	X	C/S/G	Dk Br			PS	Low	M	Gravel/roots	
1	X	C/S/G	Dk br/mottled			PS	Low	M	Some gravel	
1.5	X	S/C	Dk Br		stiff (st)	PS	Low	M	Some gravel	
2	X	C	Grey		stiff (st)	PS	High	M	Some gravel	
2.5	X	C	Grey		hard (h)	PS	High	M	Some gravel	
3	X	C	Grey/yellow		hard (h)	PS	High	D = Dry	Yellow mottle	
		Sandy Silt     Sand Silt Clay	Sandy Clay     Clay Sand	Sand     Rock	Fill     Gravel	Clay	Conglomerate			
<b>Borehole Abandonment:</b> (    ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed					<b>Waste Management/Disposal:</b> (Describe )					
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )		<b>Quality Control Samples</b> (    ) Yes ( X ) No				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )						
<b>Well Development Method</b> _____					Volume Purged: _____					
List: _____					_____					

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-20		Sheet _____ of _____			F-1-55-b					
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1622384 <b>Northing</b> -30.76284746 <b>Elevation</b> _____		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: ( 3000 ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit ( 3 ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	C/G	Br	VS		PS	High	SM	Roots/gravel	
0.5	X	C/S	Br	L		PS	Low	D	Gravel	
1	X	C/G	Gr	VS		PS	High	D	Gravel	
1.5	X	C/G	Gr	VS		PS	High	D	Gravel	
2	X	C/G	Gr	VS		PS	High	D	Gravel	
2.5	X	C/G	Gr	VS		PS	High	D	Gravel	
3	X									
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
<b>Borehole Abandonment:</b>		(    ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed			<b>Waste Management/Disposal:</b> (Describe )					
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )		<b>Quality Control Samples (    ) Yes (    ) No</b>				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )		List: <u>0.2D 0.2T</u> _____				
<b>Well Development Method</b> _____		Volume Purged: _____		_____		_____				

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-21					Sheet _____ of _____	<b>F-1-55-b</b>				
<b>Job Number:</b> 12-773					Logged by: <u>   </u> LK _____  Checked by: _____					
<b>Client:</b> Whitehaven Coal		<b>Easting</b> 144.1622268								
<b>Project:</b> Vickery EIS Stage 2		<b>Northing</b> 30.76288499								
<b>Site Location:</b> _____		<b>Drilling Company</b> Mannion Drilling			<b>Elevation</b> _____					
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: ( 3000 ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    3    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected	Soil Type	Colour	Consistency		Particle / Soil Description	Plasticity	Moisture	Observations and Comments	Well Construction Sketch
				CLAY	SAND					
Note: Record the depth that groundwater is encountered, depth of any fill  	Mark (X)	C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	e.g. black, red, grey, orange, yellow, dark, pale, mottled.	v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	v.loose loose m.dense dense v.dense	Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	V.High High Medium Low	S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	
	0.2 X	C/G	Br	hard (h)		PS	Medium	D	Roots/gravel	
	0.5 X	S/C/G	Br	L		PS	Low	D	High gravel/sand content	
	1 X	S/C/G	Br	L		PS	Low	D	High gravel/sand content	
	1.5 X	C/G	Grey	hard (h)		PS	High	SM = Slightly Moist	Gravel throughout	
	2 X	C/G	Grey	hard (h)		PS	High	SM = Slightly Moist	Gravel throughout	
	2.5 X	C/G	Grey	hard (h)		PS	High	SM = Slightly Moist	Gravel throughout	
	3 X	C/G	Grey	hard (h)		PS	High	SM = Slightly Moist	Gravel throughout	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay		
		Sand Silt Clay	Clay Sand					Conglomerate		
<b>Borehole Abandonment:</b> (    ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed							<b>Waste Management/Disposal:</b> (Describe )			
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )		<b>Quality Control Samples</b> (    ) Yes ( X ) No  List: _____				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )						
<b>Well Development Method</b> _____							Volume Purged: _____			

<b>Soil Bore/Monitoring Well #</b> MLA2-1-22		Sheet _____ of _____		F-1-55-b						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1623091 <b>Northing</b> 30.76286245 <b>Elevation</b> _____		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: ( 3000 ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit ( 3 ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	C/S/M	Br	L		PS	Low	D	Roots/gravel	
0.5	X	C/G	Lt Br	stiff (st)		PS	Medium	SM = Slightly Moist	Gravel 20%	
1	X	C/G	Lt Br	stiff (st)		PS	Low	D	Gravel 20%	
1.5	X	C/G	Lt Br	L		PS	Low	D	Gravel 80%	
2	X	C/G	Lt Br	L		PS	Low	D	Gravel 80%	
2.5	X	C/G	Grey	L		PS	Low	D	Gravel 80%	
3	X	C/G	Grey	L		PS	Low	D	95% Gravel, very small fraction clay	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
<b>Borehole Abandonment:</b>		(    ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed			<b>Waste Management/Disposal:</b> (Describe )					
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )		<b>Quality Control Samples</b> (    ) Yes ( X ) No				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )						
<b>Well Development Method</b> _____		Volume Purged: _____		List: _____						



<b>Soil Bore/Monitoring Well #</b> MLA2-1-23					Sheet _____ of _____	<b>F-1-55-b</b>												
<b>Job Number:</b> 12-773		<b>Client:</b> Whitehaven Coal			<b>Logged by:</b> __LK_____													
<b>Project:</b> Vickery EIS Stage 2		<b>Drilling Company:</b> Mannion Drilling			<b>Checked by:</b> _____													
<b>Site Location:</b>		<b>Drilling Company:</b> Mannion Drilling			<b>Easting:</b> 144.1623871													
					<b>Northing:</b> 30.76286046													
					<b>Elevation:</b> _____													
<b>Surface Cover:</b> Concrete: ( ) Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( 3000 ) mm concrete removed																		
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia. Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( 3 ) Size (m)																		
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch								
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense													
0.2	X	C/S/M	Lt Br	VL		PS	Low	D	Roots/small amount gravel 5%									
0.5	X	C/G	Mottled Lt Br	stiff (st)		PS	Medium	D	Gravel increasing 20%									
1	X	S/C/G	Or/Br	S L		PS	Low	AM	Sandy gravel									
1.5	X	C/G	Br	L		PS	Low	D	Gravel 80%, some minor sand (10%)									
2	X	C/G	Grey	L		PS	Low	D	Gravel 95%, Clay 2%, Sand 3%									
2.5	X	Rock	Grey															
<table style="width:100%; border: none;"> <tr> <td style="border: none;">Sandy Silt </td> <td style="border: none;">Sandy Clay </td> <td style="border: none;">Sand </td> <td style="border: none;">Fill </td> <td style="border: none;">Rock </td> <td style="border: none;">Gravel </td> <td style="border: none;">Clay </td> <td style="border: none;">Conglomerate </td> </tr> </table>											Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate
Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate											
<b>Borehole Abandonment:</b> ( ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed					<b>Waste Management/Disposal:</b> (Describe )													
<b>Well Construction Details</b>		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>												
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____												
Casing diameter: ( ) 50mm ( ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: ( )		<b>Quality Control Samples</b> ( ) Yes ( X ) No List: _____												
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: ( )														
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: ( )														
<b>Well Development Method</b> _____					Volume Purged: _____													

<b>Soil Bore/Monitoring Well #</b> MLA2-1-24		Sheet _____ of _____		F-1-55-b						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1621889 <b>Northing</b> 30.76291564 <b>Elevation</b> _____		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b>	<b>Drilling Company</b> Mannion Drilling									
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: ( 3000 ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    3    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	C/S/M	Br	S		PS	Medium	SM = Slightly Moist	Roots/small amount gravel 5%	
0.5	X	C/G	Grey	hard (h)		PS	Low	D	Gravel 20%	
1	X	G/S/C	Grey	S L		PS/SR	Medium	SM = Slightly Moist	Sandyclay with 20% gravel	
1.5	X	C/G	Grey	hard (h)		PS	Medium	D	Gravel 20%, some orange mottle	
2	X	C	Grey	MS		WS	High	SM = Slightly Moist	Gravel fraction low 5%	
2.5	X	C	Grey	MS		WS	High	SM = Slightly Moist	Gravel 10%, Fe present	
		Sandy Silt Sand Silt Clay	Sandy Clay Clay Sand	Sand Rock	Fill Gravel	Clay Conglomerate				
<b>Borehole Abandonment:</b> (    ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed					<b>Waste Management/Disposal:</b> (Describe )					
<b>Well Construction Details</b>		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )		<b>Quality Control Samples</b> (    ) Yes ( X ) No				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )		List: _____				
<b>Well Development Method</b> _____					Volume Purged: _____					

<b>Soil Bore/Monitoring Well #</b> MLA2-1-25		Sheet _____ of _____		<b>F-1-55-b</b>						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1621866 <b>Northing</b> 30.76296248 <b>Elevation</b> _____		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: ( 3000 ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	C/S/M	Br		L	PS	Low	D	Some gravel 5-10%	
0.5	X	C/G	Grey		hard (h)	PS	Medium	D	20% gravel	
1	X	C/G	Grey		hard (h)	PS	Medium	D	20% gravel	
1.5	X	C/G	Grey		hard (h)	PS	Medium	D	20% gravel	
2	X	C/G	Grey		hard (h)	PS	Medium	D	20% gravel	
2.5	X	C/G	Grey		hard (h)	PS	Medium	D	Gravel 50%	
		Sandy Silt     Sand Silt Clay	Sandy Clay     Clay Sand	Sand     Rock	Fill     Gravel	Clay	Conglomerate			
<b>Borehole Abandonment:</b> (    ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed					<b>Waste Management/Disposal:</b> (Describe )					
<b>Well Construction Details</b>		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )		<b>Quality Control Samples</b> (    ) Yes ( X ) No				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )		List: _____				
<b>Well Development Method</b> _____					Volume Purged: _____					



# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-26		Sheet _____ of _____			<b>F-1-55-b</b>					
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1622777 <b>Northing</b> 30.76291371 <b>Elevation</b> _____			Logged by: <u>   LK   </u>  Checked by: _____					
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: ( 3000 ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	C/S/M	Dk Br	L		Matrix	Low	SM = Slightly Moist	Humus with roots	
0.5	X	C/S/M	Br	S		PS	Low	SM = Slightly Moist	Roots and gravel	
1	X	C/G	Br	S		PS	Medium	SM = Slightly Moist	Clay with gravel	
1.5	X	C/G	Grey	St		PS	Medium	D	Clay with gravel	
2	X	C/G	Grey	St		PS	Medium	D	Clay with gravel	
2.5	X	C/G	Grey	St		PS	Medium	D	Clay with gravel	
3	X	C/G	Grey	hard (h)		PS	Medium	D	Clay with gravel	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
<b>Borehole Abandonment:</b>		( X ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed			<b>Waste Management/Disposal:</b> (Describe )					
Well Construction Details		Gravel pack from: _____(m) to _____(m)			Grout from: _____(m) to _____(m)			Soil <u>Backfilled</u>		
Total depth: _____(m)		Gravel pack - type: _____			Grout type: _____			Water _____		
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)			Flush mounted cover: (    )			<b>Quality Control Samples (    ) Yes ( X ) No</b>		
Screened from: _____(m) to _____(m)		Bentonite - type: _____			Monument: (    )					
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)			Locked/Secured: (    )					
<b>Well Development Method</b> _____		Volume Purged: _____			List: _____					

<b>Soil Bore/Monitoring Well #</b> MLA2-1-27						Sheet _____ of _____	<b>F-1-55-b</b>			
<b>Job Number:</b> 12-773					Logged by: <u>   LK   </u>		Checked by: _____			
<b>Client:</b> Whitehaven Coal										
<b>Project:</b> Vickery EIS Stage 2										
<b>Site Location:</b>		<b>Drilling Company:</b> Mannion Drilling			<b>Easting:</b> 144.1620276					
					<b>Northing:</b> 30.76280218					
					<b>Elevation:</b> _____					
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: ( 3000 ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY	SAND					
				v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	v.loose loose m.dense dense v.dense					
0.2	X	C/S/M	DkBr/Red	St		PS	Medium		High gravel - 50%	
0.5	X	C/G	Yellow/Br	St		PS	Medium		High gravel portion	
1	X	C/G	Br/White	hard (h)		PS	Low		Hard gravel	
1.5	X	C/G	Grey	hard (h)		PS	Medium		Hard clay with white rock	
2	X	Conglomerate	Grey	hard (h)		PS	Low		Conglomerate	
2.5	X	Conglomerate	Grey	hard (h)		PS	Low		Conglomerate	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
		Sand Silt Clay	Clay Sand							
<b>Borehole Abandonment:</b> ( X ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed								<b>Waste Management/Disposal:</b> (Describe )		
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )						
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )				<b>Quality Control Samples (    ) Yes ( X ) No</b>		
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )		List: _____				
<b>Well Development Method</b> _____				Volume Purged: _____						

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-28		Sheet _____ of _____		F-1-55-b						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1622841 <b>Northing</b> 30.76296859 <b>Elevation</b> _____		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: ( 3000 ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	C/S/M	Br/White	L		PS	Low	D = Dry	Roots/gravel	
0.5	X	C/G	Br/White	L		PS	Low	D = Dry	Roots/gravel	
1	X	C/G	Grey	hard (h)		PS	Medium	D = Dry	Gravel 30%	
1.5	X	C/G	Grey	hard (h)		PS	Medium	D = Dry	Gravel 30%	
2	X	C/G	Grey	hard (h)		PS	Medium	D = Dry	Gravel 30%	
2.5	X	C	Grey	hard (h)		PS	High	SM = Slightly Moist	Small portion gravel 5%	
3	X	C/G	Grey	hard (h)		PS	Low	D = Dry	Mottled minor clay mostly rock	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
<b>Borehole Abandonment:</b>		( X ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed			<b>Waste Management/Disposal:</b> (Describe )					
<b>Well Construction Details</b>		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )		<b>Quality Control Samples (X ) Yes (    ) No</b>				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )		List: <u>0.5D 0.5T</u> _____				
<b>Well Development Method</b> _____		Volume Purged: _____			_____					

<b>Soil Bore/Monitoring Well #</b> MLA2-1-29					Sheet _____ of _____	<b>F-1-55-b</b>																			
<b>Job Number:</b> 12-773					Logged by: <u>   LK   </u>  Checked by: _____																				
<b>Client:</b> Whitehaven Coal		<b>Easting</b> 144.1623928																							
<b>Project:</b> Vickery EIS Stage 2		<b>Northing</b> 30.76297989																							
<b>Site Location:</b> _____		<b>Drilling Company</b> Mannion Drilling			<b>Elevation</b> _____																				
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: ( 3000 ) mm concrete removed																									
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)																									
Profile Depth in (m bgl)	Mark (X)	Soil Type	Colour	Consistency		Particle / Soil Description	Plasticity	Moisture	Observations and Comments	Well Construction Sketch															
				Sampled Collected	C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL						e.g. black, red, grey, orange, yellow, dark, pale, mottled.	CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense	Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	V.High High Medium Low	S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)								
	0.2 X	C/S/M	Br		S L	Matrix	Low	SM = Slightly Moist	Roots/minor gravel																
	0.5 X	C/S/M	Lt Br		L	PS	Low	SM = Slightly Moist	Lots of sand																
	1 X	C/G	Grey		stiff (st)	PS	Low	D = Dry	Lots of gravel (70%)																
	1.5 X	C/G	Grey		stiff (st)	PS	Medium	D = Dry	Lots gravel (70%)																
	2 X	C/G	Grey		hard (h)	PS	Medium	D = Dry	Hard grey clay some gravel (50%)																
	2.5 X	Conglomerate	Grey		Rock	PS	Low	D = Dry	Rock																
					REFUSAL																				
<table style="width:100%; border: none;"> <tr> <td style="border: none;">Sandy Silt </td> <td style="border: none;">Sandy Clay </td> <td style="border: none;">Sand </td> <td style="border: none;">Fill </td> </tr> <tr> <td style="border: none;">Sand Silt Clay </td> <td style="border: none;">Clay Sand </td> <td style="border: none;">Rock </td> <td style="border: none;">Gravel </td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;">Clay </td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;">Conglomerate </td> </tr> </table>										Sandy Silt	Sandy Clay	Sand	Fill	Sand Silt Clay	Clay Sand	Rock	Gravel				Clay				Conglomerate
Sandy Silt	Sandy Clay	Sand	Fill																						
Sand Silt Clay	Clay Sand	Rock	Gravel																						
			Clay																						
			Conglomerate																						
<b>Borehole Abandonment:</b> ( X ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed					<b>Waste Management/Disposal:</b> (Describe )																				
Well Construction Details					Soil <u>Backfilled</u>																				
Total depth: _____(m)					Water _____																				
Casing diameter: (    ) 50mm (    ) 100mm																									
Screened from: _____(m) to _____(m)					<b>Quality Control Samples ( ) Yes ( ) No</b>																				
Blank pipe from: _____(m) to _____(m)					List: _____																				
<b>Well Development Method</b> _____					Volume Purged: _____																				

# Soil Bore Log / Monitoring Well Log

Soil Bore/Monitoring Well # <b>MLA2-1-30</b>					Sheet _____ of _____			F-1-55-b						
Job Number: <u>12-773</u>		Client: <u>Whitehaven Coal</u>			Easting: <u>144.16239</u>		Logged by: <u>__LK</u>							
Project: <u>Vickery EIS Stage 2</u>		Drilling Company: <u>Mannion Drilling</u>			Northing: <u>30.76292203</u>									
Site Location: <u>Dip</u>		Drilling Company: <u>Mannion Drilling</u>			Elevation: _____		Checked by: _____							
Surface Cover: Concrete: ( ) mm Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( ) mm concrete removed														
Drilling Method: Hollow Flight Augers ( <input checked="" type="checkbox"/> ) mm dia. Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)														
Profile Depth in (m bgl)	Mark (X)	Soil Type	Colour	Consistency		Particle / Soil Description	Plasticity	Moisture	Observations and Comments	Well Construction Sketch				
				CLAY							S	L		
				C = CLAY	M = SILT								S = SAND	G = GRAVEL

Note: Record the depth that groundwater is encountered, depth of any fill  	0.2	X	C/S/M	Br	S L	Matrix	Low	SM = Slightly Moist	Roots/minor gravel	
	0.5	X	C/S/G	Lt Br	L	PS	Low	SM = Slightly Moist	Lots of sand	
	1	X	C/S/G	Grey	stiff (st)	PS	Low	D = Dry	Lots of gravel (70%)	
	1.5	X	C/G	Grey	stiff (st)	PS	Medium	D = Dry	Lots gravel (70%)	
	2	X	Conglomerate	Grey	hard (h)	PS	Medium	D = Dry	Hard grey clay some gravel (50%)	
					REFUSAL					

Borehole Abandonment: ( <input checked="" type="checkbox"/> ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed	Waste Management/Disposal: (Describe )
Well Construction Details: Gravel pack from: _____(m) to _____(m) Grout from: _____(m) to _____(m)	Soil _____ Backfilled
Total depth: _____(m) Gravel pack - type: _____ Grout type: _____	Water _____
Casing diameter: ( ) 50mm ( ) 100mm Bentonite seal from: _____(m) to _____(m) Flush mounted cover: ( )	<b>Quality Control Samples ( ) Yes ( X ) No</b> List: _____
Screened from: _____(m) to _____(m) Bentonite - type: _____ Monument: ( )	
Blank pipe from: _____(m) to _____(m) Backfill used? from: _____(m) to _____(m) Locked/Secured: ( )	
Well Development Method: _____ Volume Purged: _____	



# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-31		Sheet _____ of _____		F-1-55-b																												
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1619773 <b>Northing</b> 30.7627237 <b>Elevation</b> _____		Logged by: <u>   LK   </u>  Checked by: _____																												
<b>Site Location:</b> Dip	<b>Drilling Company</b> Mannion Drilling																															
<b>Surface Cover:</b> Concrete: ( ) mm Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( ) mm concrete removed																																
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia. Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)																																
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch																						
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense																											
	0.2 X	C/S/M	Br	S		Matrix	Low		Humus orange mottle																							
	0.5 X	CS	Dr Br	L		PS	Low		Orange mottle, sand/gravel																							
	1 X	CS	Br	hard (h)		PS	Low		Large gravel																							
	1.5 X	CS	Br	hard (h)		PS	Low		Large gravel																							
	2 X	NO SAMPLE																														
	2.5 X	NO SAMPLE																														
	3 X	Conglomerate	Rock						Large gravel																							
<table style="width:100%; border: none;"> <tr> <td style="border: none;">Sandy Silt</td> <td style="border: none;"></td> <td style="border: none;">Sandy Clay</td> <td style="border: none;"></td> <td style="border: none;">Sand</td> <td style="border: none;"></td> <td style="border: none;">Fill</td> <td style="border: none;"></td> <td style="border: none;">Clay</td> <td style="border: none;"></td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">Sand Silt Clay</td> <td style="border: none;"></td> <td style="border: none;">Clay Sand</td> <td style="border: none;"></td> <td style="border: none;">Rock</td> <td style="border: none;"></td> <td style="border: none;">Gravel</td> <td style="border: none;"></td> <td style="border: none;">Conglomerate</td> <td style="border: none;"></td> <td style="border: none;"></td> </tr> </table>											Sandy Silt		Sandy Clay		Sand		Fill		Clay			Sand Silt Clay		Clay Sand		Rock		Gravel		Conglomerate		
Sandy Silt		Sandy Clay		Sand		Fill		Clay																								
Sand Silt Clay		Clay Sand		Rock		Gravel		Conglomerate																								
<b>Borehole Abandonment:</b> ( X ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed								<b>Waste Management/Disposal:</b> (Describe )																								
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil		Backfilled																								
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water		_____																								
Casing diameter: ( ) 50mm ( ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: ( )																												
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: ( )																												
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: ( )																												
<b>Well Development Method</b> _____				Volume Purged: _____																												
<b>Quality Control Samples</b> ( ) Yes ( X ) No List: _____																																

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-32		Sheet _____ of _____			F-1-55-b					
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1623085 <b>Northing</b> 30.76302756 <b>Elevation</b> _____		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b> Dip <b>Drilling Company:</b> Mannion Drilling										
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: (    ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( <input checked="" type="checkbox"/> ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	C/G	Grey	V St		PS	Medium	D = Dry	Lots of gravel 20%	
0.5	X	C/G/S	Grey	ST		PS	Medium	D = Dry	Gravel content 30%	
1	X	C/G/S	Grey	St		PS	Medium	D = Dry	Gravel content 30%	
1.5	X	C/G	Grey	V St		PS	Medium	D = Dry	Less gravel but larger stones	
2	X	C/G	Grey	V st		PS	Medium	D = Dry	Less gravel but larger stones	
2.5	X	C	Grey	H		WS	High	D = Dry	Mostly clay	
3	X	C	Grey	H		WS	High	D = Dry	Mostly clay	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
<b>Borehole Abandonment:</b>		( <input checked="" type="checkbox"/> ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed			<b>Waste Management/Disposal:</b> (Describe )					
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )		<b>Quality Control Samples (X ) Yes (    ) No</b>				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )		List: <u>0.5 F 0.5T</u> _____				
<b>Well Development Method</b> _____		Volume Purged: _____		_____						

Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-33					Sheet	of	F-1-55-b																						
<b>Job Number:</b> 12-773					Logged by: <u>   </u> LK <u>                    </u> Checked by: <u>                                    </u>																								
<b>Client:</b> Whitehaven Coal																													
<b>Project:</b> Vickery EIS Stage 2																													
<b>Site Location:</b> Dip		<b>Drilling Company:</b> Mannion Drilling			<b>Easting:</b> 144.1622207																								
					<b>Northing:</b> 30.76301057																								
					<b>Elevation:</b> <u>                    </u>																								
<b>Surface Cover:</b> Concrete: ( ) mm Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( ) mm concrete removed																													
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia. Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)																													
Profile Depth in (m bgl)	Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch																			
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense																								
	0.2 X	C/S/M	Dk Br	S L		PS	Low	M	Humus roots, some cobbles																				
	0.5 X	C/S/M	Br	S L		PS	Low	M	More gravel, lighter brown																				
	1 X	C/S	Lt Br/or	MS		Matrix	High	SM = Slightly Moist	Clay with some sand																				
	1.5 X	C/S	Grey	stiff (st)		PS	High	D = Dry	Hard, gravelly																				
	2 X	C/S	Grey	stiff (st)		PS	High	D = Dry	Orange gravel and sand (15%)																				
	2.5 X	C/S	Grey	stiff (st)		PS	High	D = Dry	Orange gravel and sand (15%)																				
	3 X	Conglomerate	Rock				High	D = Dry	Rock and sand																				
<table style="width:100%; border: none;"> <tr> <td style="border: none;">Sandy Silt</td> <td style="border: none;"></td> <td style="border: none;">Sandy Clay</td> <td style="border: none;"></td> <td style="border: none;">Sand</td> <td style="border: none;"></td> <td style="border: none;">Fill</td> <td style="border: none;"></td> <td style="border: none;">Clay</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">Sand Silt Clay</td> <td style="border: none;"></td> <td style="border: none;">Clay Sand</td> <td style="border: none;"></td> <td style="border: none;">Rock</td> <td style="border: none;"></td> <td style="border: none;">Gravel</td> <td style="border: none;"></td> <td style="border: none;">Conglomerate</td> <td style="border: none;"></td> </tr> </table>										Sandy Silt		Sandy Clay		Sand		Fill		Clay		Sand Silt Clay		Clay Sand		Rock		Gravel		Conglomerate	
Sandy Silt		Sandy Clay		Sand		Fill		Clay																					
Sand Silt Clay		Clay Sand		Rock		Gravel		Conglomerate																					
<b>Borehole Abandonment:</b> ( X ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed								<b>Waste Management/Disposal:</b> (Describe )																					
Well Construction Details								Soil <u>      </u> Backfilled																					
Total depth: _____(m)								Water _____																					
Casing diameter: ( ) 50mm ( ) 100mm								<b>Quality Control Samples</b> ( ) Yes ( X ) No																					
Gravel pack from: _____(m) to _____(m)																													
Grout from: _____(m) to _____(m)																													
Grout type: _____																													
Bentonite seal from: _____(m) to _____(m)								List: _____																					
Flush mounted cover: ( )																													
Monument: ( )																													
Screened from: _____(m) to _____(m)								_____																					
Bentonite - type: _____																													
Blank pipe from: _____(m) to _____(m)								_____																					
Backfill used? from: _____(m) to _____(m)																													
Locked/Secured: ( )								_____																					
Well Development Method _____																													
Volume Purged: _____								_____																					



# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-34						Sheet _____ of _____	<b>F-1-55-b</b>			
<b>Job Number:</b> 12-773										
<b>Client:</b> Whitehaven Coal					<b>Easting</b> 144.1621148		Logged by: <u>   LK   </u>			
<b>Project:</b> Vickery EIS Stage 2					<b>Northing</b> 30.76294775		Checked by: _____			
<b>Site Location:</b> Dip		<b>Drilling Company</b> Mannion Drilling			<b>Elevation</b> _____					
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: (    ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers (    X    ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY	SAND					
				v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	v.loose loose m.dense dense v.dense					
0.2	X	C/S/M	Dk br	S L		Matrix	Low	SM = Slightly Moist	Roots/gravel	
0.5	X	C/S/M	Dk Br	S L		Matrix	Low	SM	Higher sand fraction	
1	X	C/S	White/Br	stiff (st)		PS	Medium	D = Dry	Clay with white clay and white rock	
1.5	X	C/G	Br/White	stiff (st)		PS	Low	D = Dry	Clay with cobbles (70%)	
2	X	C/G	Grey	St		PS	Low	D = Dry	Lots of cobbles	
2.5	X	C/G	Grey	H		PS	Low	D = Dry	Lots of cobbles	
3	X	C/G	Grey	H		PS	Low	D = Dry	Lots of cobbles	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
		Sand Silt Clay	Clay Sand							
<b>Borehole Abandonment:</b> (    X    ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed								<b>Waste Management/Disposal:</b> (Describe )		
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )						
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )						
<b>Well Development Method</b> _____								Volume Purged: _____		
								<b>Quality Control Samples (    ) Yes (    X ) No</b>		
List: _____								_____		

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-35		Sheet _____ of _____			<b>F-1-55-b</b>					
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1621463 <b>Northing</b> 30.76283273 <b>Elevation</b> _____			Logged by: <u>   LK   </u>  Checked by: _____					
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: ( ) mm Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia. Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	C/S/G	Br/White	St		PS	Low	D = Dry	Roots/rocks	
0.5	X	C/S/G	Br/White	St		PS	Low	D = Dry	Roots/rocks, some white clay	
1	X	C/G/S	Br/White			PS	Low	D = Dry	Lots sand	
1.5	X	C/S	Br/White			PS	Medium	SM = Slightly Moist	Some gravel	
2	X	C/S	Grey			PS	Medium	D = Dry	Gravel present	
2.5	X	C/S	Grey			PS	Medium	D = Dry	Gravel present	
3	X	C/S	Grey			PS	Medium	D = Dry	Gravel present	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
<b>Borehole Abandonment:</b>		( X ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed			<b>Waste Management/Disposal:</b> (Describe )					
<b>Well Construction Details</b>		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: ( ) 50mm ( ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: ( )						
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: ( )		<b>Quality Control Samples ( X ) Yes ( ) No</b>				
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: ( )		List: <u>0.5D, 0.5 T</u> _____				
<b>Well Development Method</b> _____		Volume Purged: _____		_____		_____				

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-36		Sheet _____ of _____		F-1-55-b						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1621511 <b>Northing</b> 30.76273959 <b>Elevation</b> _____		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b>	<b>Drilling Company</b> Mannion Drilling									
<b>Surface Cover:</b> Concrete: ( ) mm Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia. Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	C/S/G	Br/White	H		PS	Low	D	Gravel roots	
0.5	X	C/G	White Br	H		PS	Low	D	Gravel 30%	
1	X	C/G	White Br	H		PS	Low	D	Gravel 50%	
1.5	X	C/G	White Br	H		PS	Low	D	Gravel 50%	
2	X	C/G/S	Grey	H		PS	Low	D	Higher sand fraction	
2.5	X	C/G/S	Grey	H		PS	Low	D	Clay, pebbles	
3	X	C/G/S	Grey	H		PS	Low	D	pebbles	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
<b>Borehole Abandonment:</b>		( X ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed			<b>Waste Management/Disposal:</b> (Describe )					
<b>Well Construction Details</b>		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: ( ) 50mm ( ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: ( )		<b>Quality Control Samples ( ) Yes ( X ) No</b>				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: ( )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: ( )		List: _____				
<b>Well Development Method</b> _____		Volume Purged: _____		_____						

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-37		Sheet _____ of _____		F-1-55-b						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1620921 <b>Northing</b> 30.76280972 <b>Elevation</b> _____		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: ( ) mm    Bitumen: ( ) mm    Gravel: ( ) mm    Roadbase: ( ) mm    Other: ( ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia.    Hand Auger ( ) mm dia.    Push Tube ( ) mm dia.    Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	CSM	Reddish Br	S L		Matrix	Low	SM	Roots/gravel	
0.5	X	CSM	Reddish Br	S L		Matrix	Low	SM	Roots/gravel	
1	X	CSG	Br	M St		PS	Medium	SM	Roots/gravel	
1.5	X	CG	Br/Grey	St		PS	Medium	SM	Some gravel	
2	X	C	Grey	St		PS	Medium	SM	Some orange mottle	
2.5	X	C	Grey	St		PS	Medium	SM	Some orange mottle	
3	X	Conglomerate	Rock			PS	Medium	SM	Rock and sand	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
<b>Borehole Abandonment:</b>		( X ) Backfilled & Compacted    ( ) Resurfaced (Concrete/Bitumen)    ( ) Monitoring Well Installed			<b>Waste Management/Disposal:</b> (Describe )					
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: ( ) 50mm ( ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: ( )		<b>Quality Control Samples ( ) Yes ( X ) No</b>				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: ( )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: ( )		List: _____				
<b>Well Development Method</b> _____		Volume Purged: _____		_____						



<b>Soil Bore/Monitoring Well #</b> MLA2-1-38		Sheet _____ of _____			F-1-55-b					
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting:</b> 144.161986 <b>Northing:</b> 30.76269377 <b>Elevation:</b> _____		Logged by: __LK_____  Checked by: _____						
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: ( ) Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia. Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)	Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	CSM	Br	L		PS	Low	D	Very silty	
0.5	X	CSG	Reddish Br	M St		PS	Medium	SM	Some gravel thru 30%	
1	X	CG	Br White	St		PS	Low	D	Mostly gravel 80%	
1.5	X	CG	Br White	H		PS	Low	D	Mostly gravel 80%	
2	X	CG	Br White	H		PS	Low	D	Mostly gravel 80%	
2.5	X	Conglomerate	Rock						Dry sand/gravel	
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
		Sand Silt Clay	Clay Sand							
<b>Borehole Abandonment:</b> ( X ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed									<b>Waste Management/Disposal:</b> (Describe )	
Well Construction Details						Gravel pack from: _____(m) to_____(m) Grout from: _____(m) to_____(m)			Soil _____ Backfilled	
Total depth: _____(m)						Gravel pack - type: _____ Grout type: _____			Water _____	
Casing diameter: ( ) 50mm ( ) 100mm						Bentonite seal from: _____(m) to _____(m) Flush mounted cover: ( )			<b>Quality Control Samples ( X ) Yes ( ) No</b>	
Screened from: _____(m) to _____(m)						Bentonite - type: _____ Monument: ( )				
Blank pipe from: _____(m) to _____(m)						Backfill used? from: _____(m) to _____(m) Locked/Secured: ( )				
<b>Well Development Method</b> _____						Volume Purged: _____			List: __1.0D 1.0T__ _____	

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-39		Sheet _____ of _____		F-1-55-b						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting</b> 144.1620073 <b>Northing</b> 30.7628415 <b>Elevation</b> _____		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b> _____		<b>Drilling Company</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: ( ) mm Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia. Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	CSM	Br White	S L		Matrix	Medium	SM	Roots, higher clay fraction	
0.5	X	CSMG	Reddish Br	St		Matrix	Medium	SM	Roots, higher clay fraction	
1	X	CG	Br White	St		PS	Low	D	80% gravel	
1.5	X	CGS	Br White	L		PS	Low	D	80% gravel	
2	X	CG	Grey	St		PS	Low	D	50% gravel	
2.5	X	S	Orange	VD		WS	Low	D	Oxidised sand	
				REFUSAL						
				On top of conglomerate						
		Sandy Silt	Sandy Clay	Sand	Fill	Rock	Gravel	Clay	Conglomerate	
<b>Borehole Abandonment:</b>		( X ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed			<b>Waste Management/Disposal:</b> (Describe )					
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>Backfilled</u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: ( ) 50mm ( ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: ( )		<b>Quality Control Samples ( ) Yes ( X ) No</b>				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: ( )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: ( )		List: _____				
<b>Well Development Method</b> _____		Volume Purged: _____		_____						

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-40		Sheet _____ of _____		F-1-55-b						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting:</b> 144.1619948 <b>Northing:</b> 30.76290634 <b>Elevation:</b> _____		Logged by: <u>   LK   </u>  Checked by: _____						
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: (    ) mm    Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: (    ) mm concrete removed										
<b>Drilling Method:</b> Hollow Flight Augers (    X    ) mm dia.    Hand Auger (    ) mm dia.    Push Tube (    ) mm dia.    Other e.g. Test Pit (    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
0.2	X	CSM	Br	S L		Matrix	Low	D	Roots, small gravel	
0.5	X	CS	White Br	V St		PS	Medium	D	Weathered white rock	
1	X	CS	White Br	V St		PS	Medium	D	Weathered white rock	
1.5	X	C	Br/Gr	H		PS	Medium	D	Mostly grey clay	
2	X	C	Grey	H		PS	Medium	D	Gravel/hard grey clay	
2.5	X	Conglomerate	Rock							
				On top of conglomerate						
		Sandy Silt     Sandy Clay Sand Silt Clay     Clay Sand	Sand     Fill Rock     Gravel	Clay Conglomerate						
<b>Borehole Abandonment:</b> (    X    ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed		<b>Waste Management/Disposal:</b> (Describe )								
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil <u>   Backfilled   </u>				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: (    ) 50mm (    ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: (    )		<b>Quality Control Samples (X ) Yes ( ) No</b>				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: (    )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: (    )		List: <u>   0.2D 0.2T   </u>				
<b>Well Development Method</b> _____		Volume Purged: _____								

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> MLA2-1-SP1		Sheet _____ of _____		F-1-55-b						
<b>Job Number:</b> 12-773 <b>Client:</b> Whitehaven Coal <b>Project:</b> Vickery EIS Stage 2		<b>Easting:</b> 150.16215 <b>Northing:</b> 30.76286 <b>Elevation:</b> 275 m		Logged by: _____  Checked by: _____						
<b>Site Location:</b> _____		<b>Drilling Company:</b> Mannion Drilling								
<b>Surface Cover:</b> Concrete: ( ) mm Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( ) mm										
<b>Drilling Method:</b> Hollow Flight Augers ( X ) mm dia. Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
SP	X	C/S/G	Br/mt	L		PS	Low	M	Roots - 30% Gravel	
Taken approx 200mm into stockpile										
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Sandy Silt </p> <p>Sand Silt Clay </p> </div> <div style="text-align: center;"> <p>Sandy Clay </p> <p>Clay Sand </p> </div> <div style="text-align: center;"> <p>Sand </p> <p>Rock </p> </div> <div style="text-align: center;"> <p>Fill </p> <p>Gravel </p> </div> </div>										
<b>Borehole Abandonment:</b> ( ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed									<b>Waste Management/Disposal:</b> (Describe )	
<b>Well Construction Details</b>			Gravel pack from: _____(m) to _____(m)			Grout from: _____(m) to _____(m)			Soil _____	
Total depth: _____(m)			Gravel pack - type: _____			Grout type: _____			Water _____	
Casing diameter: ( ) 50mm ( ) 100mm			Bentonite seal from: _____(m) to _____(m)			Flush mounted cover: ( )			<b>Quality Control Samples</b> ( ) Yes ( X ) No	
Screened from: _____(m) to _____(m)			Bentonite - type: _____			Monument: ( )				
Blank pipe from: _____(m) to _____(m)			Backfill used? from: _____(m) to _____(m)			Locked/Secured: ( )				
<b>Well Development Method</b> _____					Volume Purged: _____					List: _____



Soil Bore/Monitoring Well # <b>MLA2-1-SP2</b>			Sheet _____ of _____		F-1-55-b						
Job Number: 12-773		Client: Whitehaven Coal		Easting: 150.16215		Logged by: _____					
Project: Vickery EIS Stage 2		Drilling Company: Mannion Drilling		Northing: 30.76286		Checked by: _____					
Site Location: _____		Drilling Company: Mannion Drilling		Elevation: 275 m							
Surface Cover: Concrete: ( ) Bitumen: ( ) mm Gravel: ( ) mm Roadbase: ( ) mm Other: ( ) mm											
Drilling Method: Hollow Flight Augers ( X ) mm dia. Hand Auger ( ) mm dia. Push Tube ( ) mm dia. Other e.g. Test Pit ( ) Size (m)											
Profile Depth in (m bgl)	Sampled Collected	Soil Type	Colour	Consistency		Particle / Soil Description	Plasticity	Moisture	Observations and Comments	Well Construction Sketch	
				CLAY	SAND						
Note: Record the depth that groundwater is encountered, depth of any fill	X	C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	e.g. black, red, grey, orange, yellow, dark, pale, mottled.	v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	v.loose loose m.dense dense v.dense	Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	V.High High Medium Low	S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)		
	SP	X	C/S/G	Or/Br/mottled			PS/SR	Low	M	Roots - 30% Gravel	

Sandy Silt
  Sandy Clay
  Sand
  Fill
  Rock
  Gravel

Sand Silt Clay
  Clay Sand













Borehole Abandonment: ( ) Backfilled & Compacted ( ) Resurfaced (Concrete/Bitumen) ( ) Monitoring Well Installed			Waste Management/Disposal: (Describe )	
Well Construction Details			Soil _____	
Total depth: _____(m)			Water _____	
Gravel pack from: _____(m) to _____(m)				
Gravel pack - type: _____				
Grout from: _____(m) to _____(m)				
Grout type: _____				
Casing diameter: ( ) 50mm ( ) 100mm				
Bentonite seal from: _____(m) to _____(m)				
Flush mounted cover: ( )				
Screened from: _____(m) to _____(m)				
Bentonite - type: _____				
Monument: ( )			<b>Quality Control Samples ( ) Yes ( X ) No</b>	
Blank pipe from: _____(m) to _____(m)			List: _____	
Backfill used? from: _____(m) to _____(m)			_____	
Locked/Secured: ( )			_____	
Well Development Method _____			_____	
Volume Purged: _____			_____	

Soil Bore Log / Monitoring Well Log

Soil Bore/Monitoring Well # <b>MLA2-1-SP3</b>								F-1-55-b		
Job Number: 12-773 Client: Whitehaven Coal Project: Vickery EIS Stage 2								Sheet _____ of _____ Logged by: _____ Checked by: _____		
Site Location: _____ Drilling Company: Mannion Drilling			Easting: 150.16215 Northing: 30.76286 Elevation: 275 m							
Surface Cover: Concrete: ( ) mm   Bitumen: ( ) mm   Gravel: ( ) mm   Roadbase: ( ) mm   Other: ( ) mm										
Drilling Method: Hollow Flight Augers ( <input checked="" type="checkbox"/> ) mm dia.   Hand Auger ( ) mm dia.   Push Tube ( ) mm dia.   Other e.g. Test Pit ( ) Size (m)										
Profile Depth in (m bgl)  Note: Record the depth that groundwater is encountered, depth of any fill	Sampled Collected  Mark (X)	Soil Type C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	Colour e.g. black, red, grey, orange, yellow, dark, pale, mottled.	Consistency		Particle / Soil Description Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	Plasticity V.High High Medium Low	Moisture S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry	Observations and Comments e.g. report the presence of shells, organic matter, staining, odour mottling PID / FID reading in (ppm)	Well Construction Sketch
				CLAY v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	SAND v.loose loose m.dense dense v.dense					
SP	X	C/S	Mottled	S	L	PS	Low	M	20% Gravel	
Borehole Abandonment: ( ) Backfilled & Compacted   ( ) Resurfaced (Concrete/Bitumen)   ( ) Monitoring Well Installed		Waste Management/Disposal: (Describe )								
Well Construction Details		Gravel pack from: _____(m) to _____(m)		Grout from: _____(m) to _____(m)		Soil _____				
Total depth: _____(m)		Gravel pack - type: _____		Grout type: _____		Water _____				
Casing diameter: ( ) 50mm ( ) 100mm		Bentonite seal from: _____(m) to _____(m)		Flush mounted cover: ( )		<b>Quality Control Samples ( ) Yes ( X ) No</b>				
Screened from: _____(m) to _____(m)		Bentonite - type: _____		Monument: ( )						
Blank pipe from: _____(m) to _____(m)		Backfill used? from: _____(m) to _____(m)		Locked/Secured: ( )		List: _____				
Well Development Method _____		Volume Purged: _____								

Sandy Silt		Sandy Clay		Sand		Fill	
Sand Silt Clay		Clay Sand		Rock		Gravel	

# Soil Bore Log / Monitoring Well Log

<b>Soil Bore/Monitoring Well #</b> <b>MLA3-1-1</b>		Sheet    1    of 1	<b>F-1-55-d</b>							
<b>Job Number:</b> <u>12-773</u>	<b>Client:</b> <u>Whitehaven Coal</u>	<b>Easting</b> _____	<b>Logged by:</b> <u>LK</u>							
<b>Time &amp; Date</b> <u>18/1/12</u>		<b>South</b> _____								
<b>Site Location:</b> _____	<b>Drilling Company</b> _____	<b>Elevation</b> _____	<b>Checked by:</b> _____							
<b>Surface Cover:</b> Concrete: <input type="checkbox"/> Bitumen: (    ) mm    Gravel: (    ) mm    Roadbase: (    ) mm    Other: (    Grass    ) mm										
<b>Drilling Method:</b> <input type="checkbox"/> Hand Trowel (X) <input type="checkbox"/> Hand Auger (    ) mm dia. <input type="checkbox"/> Push Tube (    ) mm dia. <input type="checkbox"/> Other e.g. Test Pit (    ) Size (m)										
Profile Depth in (m bgl)	Sampled Collected	Soil Type	Colour	Consistency		Particle / Soil Description	Plasticity	Moisture	Observations and Comments	Monitoring Well Installation
		C = CLAY M = SILT S = SAND G = GRAVEL R = ROCK F = FILL	e.g. black, red, grey, orange, yellow, dark, pale, mottled.	CLAY		Particles Very Angular Sub-Angular Well Rounded Matrix Poorly Sorted Well Sorted	V.High High Medium Low	S = Saturated V = Very Moist M = Moist SM = Slightly Moist D = Dry		
				v. soft (vs) soft (s) m. stiff (ms) stiff (st) v.stiff (v.st) hard (h)	v.loose loose m.dense dense v.dense					
<b>Note:</b> Record the depth that groundwater is encountered, depth of any fill	Mark (X)									
Gravel/Sand    	0.2	X	GS	Br	L	PS	L	DRY	Roots, gravel, pebbles	
	0.5	X	MS	Br	L	PS	L	D	Rocks, pebbles, gravel	
	1	X	MS	Br	L	PS	L	D	River pebbles, large rocks	
	1.5	X	MS	Br	L	PS	L	D	River pebbles, large rocks	
					REFUSAL - ROCK					
<b>Borehole Abandonment:</b> ( Y ) Backfilled & Compacted    (    ) Resurfaced (Concrete/Bitumen)    (    ) Monitoring Well Installed		<b>Waste Management/Disposal:</b> (Describe )								
Sandy Silt  Sandy Clay  Sand  Fill  Sand Silt Clay  Clay Sand  Rock  Gravel 		Soil <u>Backfilled</u>								
Well Development Method _____		Volume Purged: _____								
		Quality Control Samples No								
		List: _____								
		_____								












# APPENDIX C

DIAL BEFORE YOU DIG



Overhead wires not shown LOOK UP & LIVE!

**LEGEND**

-  LV Underground Cable
-  HV Underground Cable
-  Underground Pipe
-  Underground Earth or Wires
-  Ground Substation
-  Pole
-  Cubicle
-  Pit
-  Proposed Construction
-  Critical\* Underground Cable
-  Critical\* Zone Substation

\* Critical Assets: Contact Essential Energy on 13 23 91

THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.  
If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)

ISSUE DATE: 08/11/2011

You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above












A4 SCALE: 1:21529





Overhead wires not shown LOOK UP & LIVE!

**LEGEND**

-  LV Underground Cable
-  HV Underground Cable
-  Underground Pipe
-  Underground Earth or Wires
-  Ground Substation
-  Pole
-  Cubicle
-  Pit
-  Proposed Construction
-  Critical\* Underground Cable
-  Critical\* Zone Substation

\* Critical Assets: Contact Essential Energy on 13 23 91

THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.  
If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)

ISSUE DATE: 08/11/2011

You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above

A4 SCALE: 1:21528


















Overhead wires not shown LOOK UP & LIVE!

**LEGEND**

-  LV Underground Cable
-  HV Underground Cable
-  Underground Pipe
-  Underground Earth or Wires
-  Ground Substation
-  Pole
-  Cubicle
-  Pit
-  Proposed Construction
-  Critical\* Underground Cable
-  Critical\* Zone Substation

\* Critical Assets: Contact Essential Energy on 13 23 91

THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.  
If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)

ISSUE DATE: 08/11/2011

You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above

A4 SCALE: 1:21372





Overhead wires not shown LOOK UP & LIVE!

- ### LEGEND
- - - LV Underground Cable
  - - - HV Underground Cable
  - - - Underground Pipe
  - ★ Underground Earth or Wires
  - ▲ Ground Substation
  - Pole
  - ⊠ Cubicle
  - Pit
  - ▨ Proposed Construction
  - - - Critical\* Underground Cable
  - ▩ Critical\* Zone Substation

\* Critical Assets: Contact Essential Energy on 13 23 91

THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.  
If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)

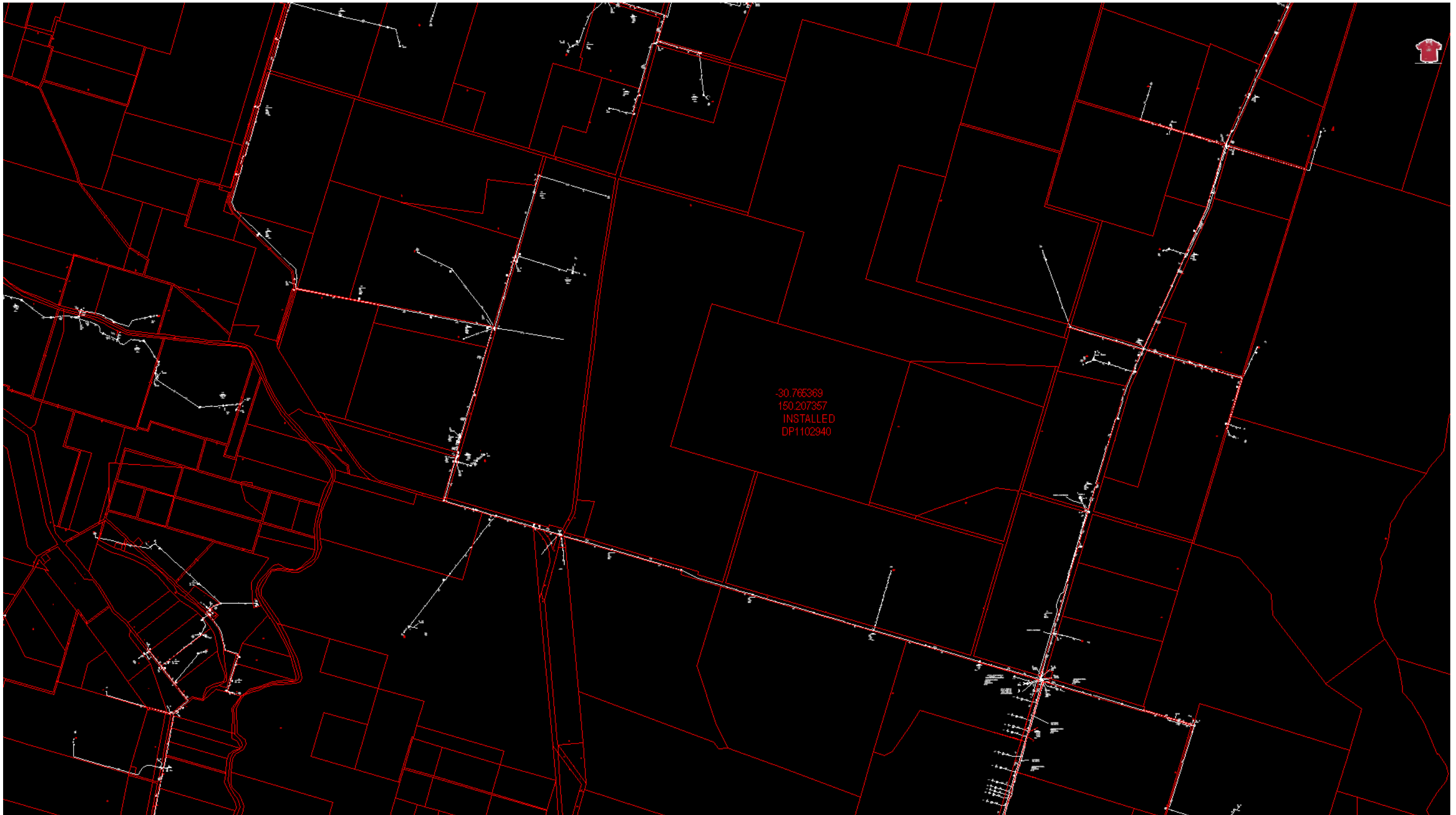
ISSUE DATE: 08/11/2011

You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above

A4 SCALE: 1:21409



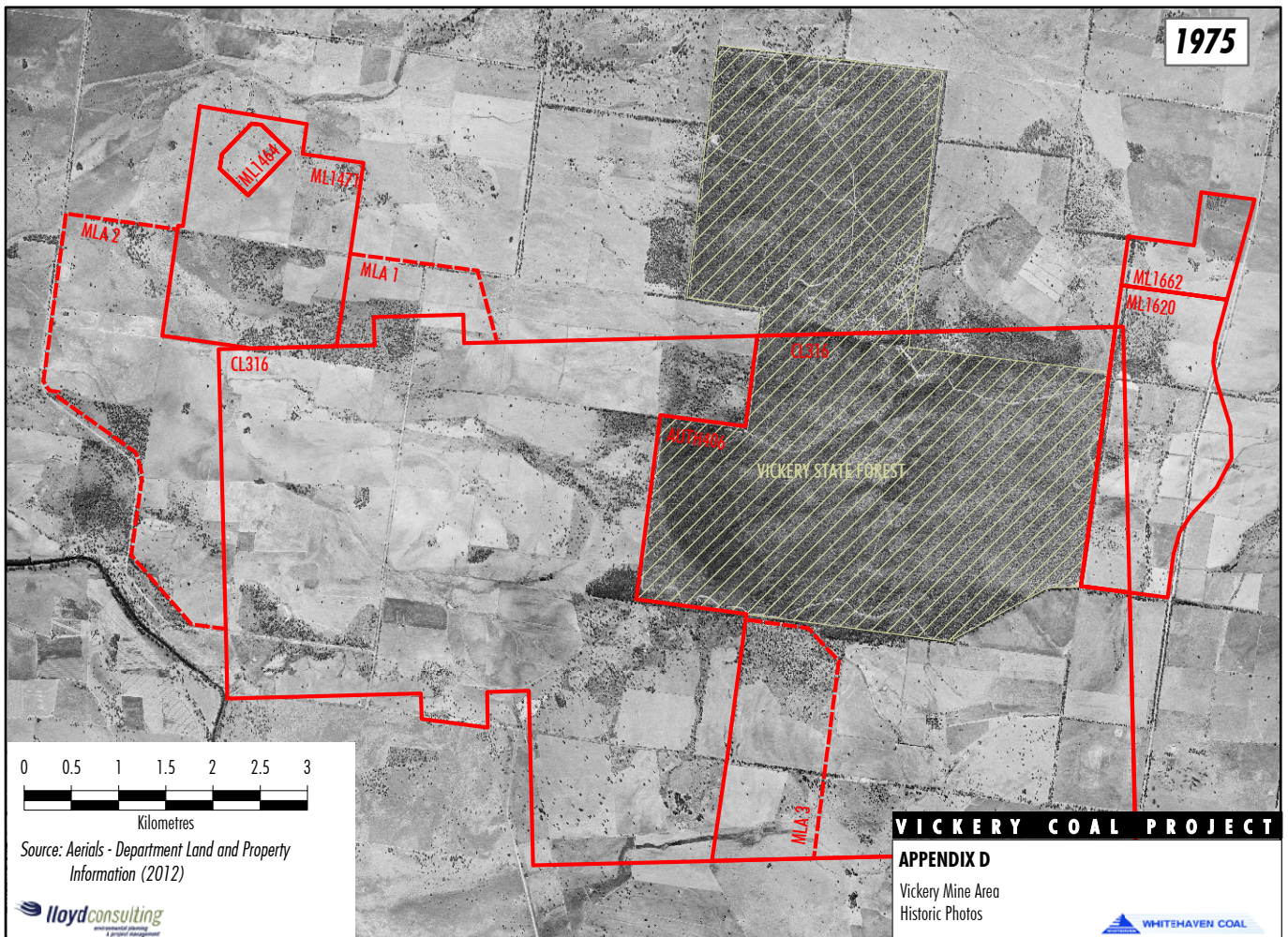
# TELSTRA INFRASTRUCTURE



# APPENDIX D

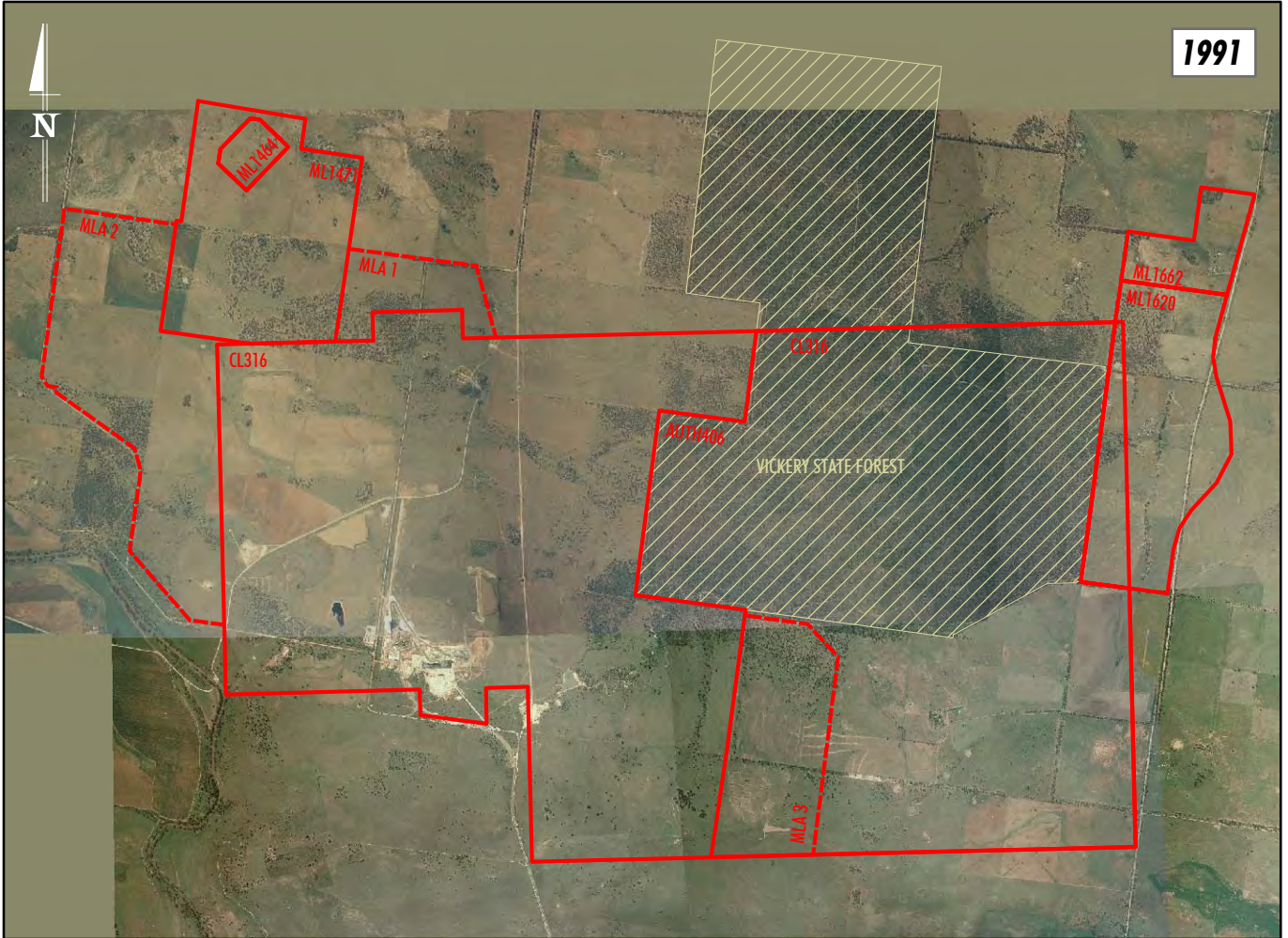
## HISTORICAL PHOTOS



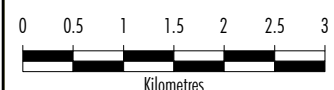
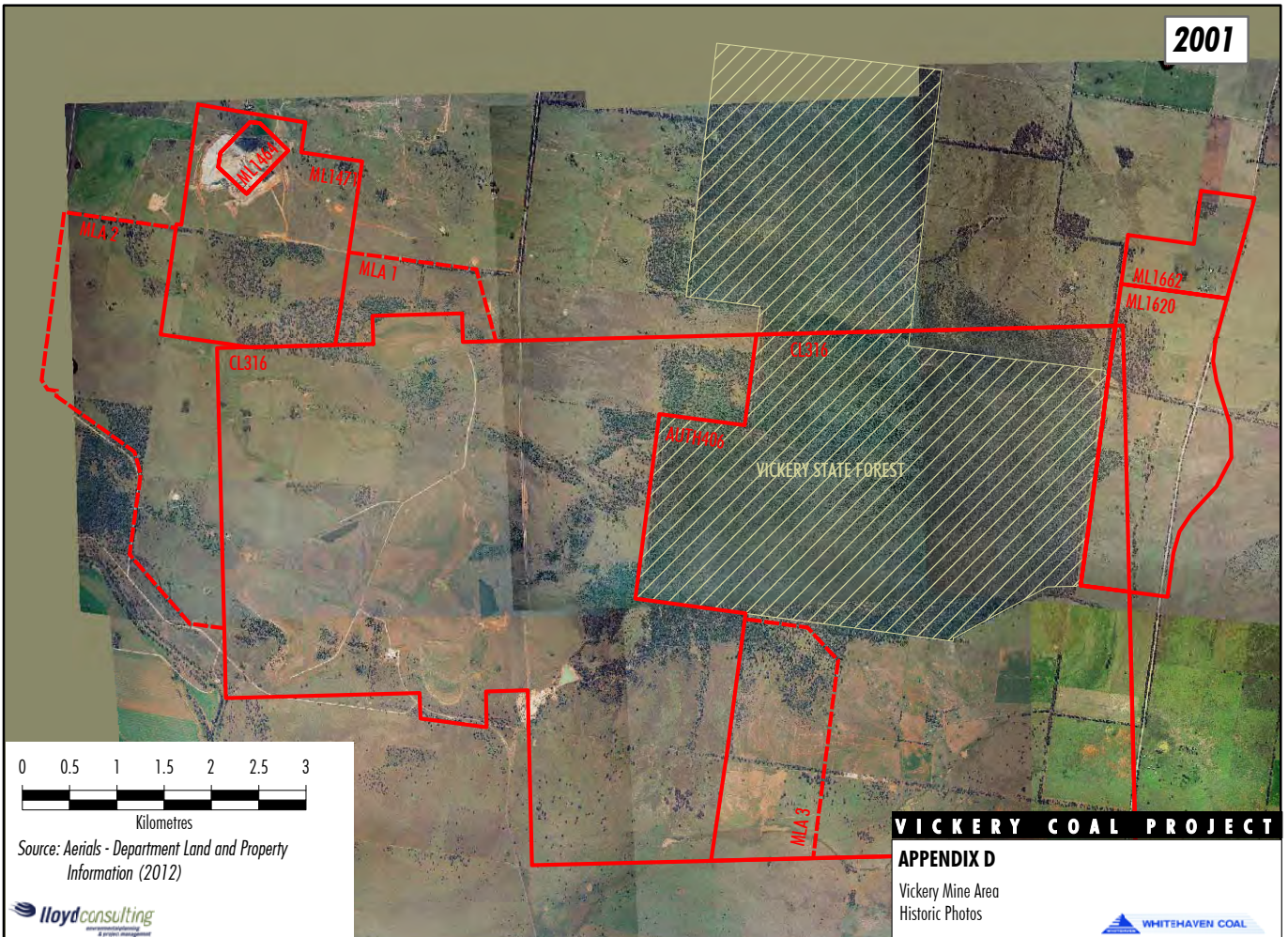




1991



2001



Source: Aerials - Department Land and Property Information (2012)



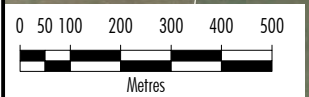
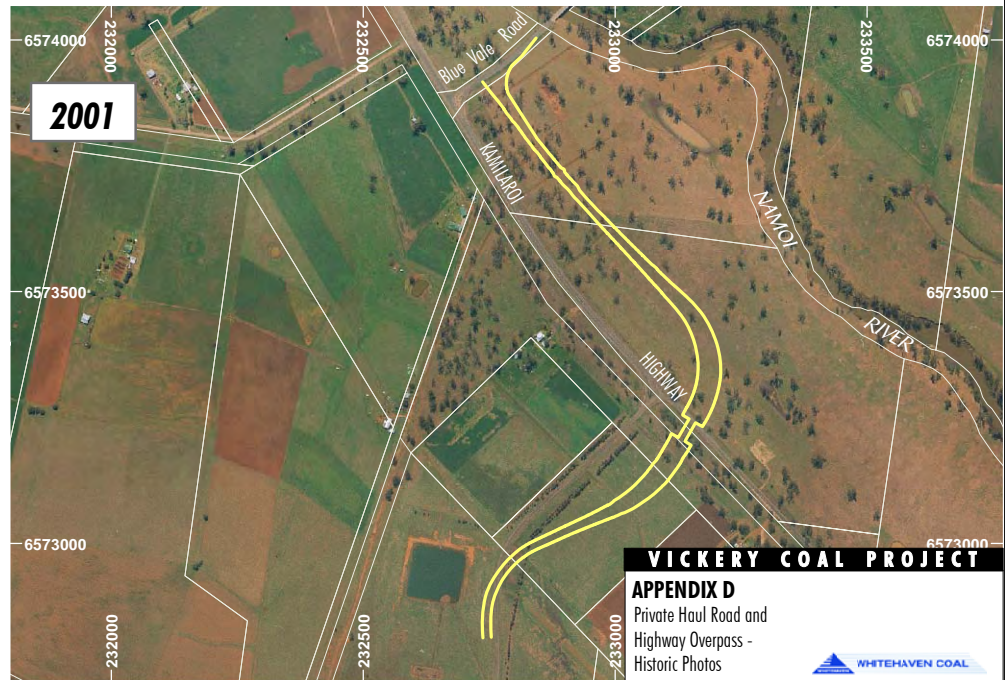
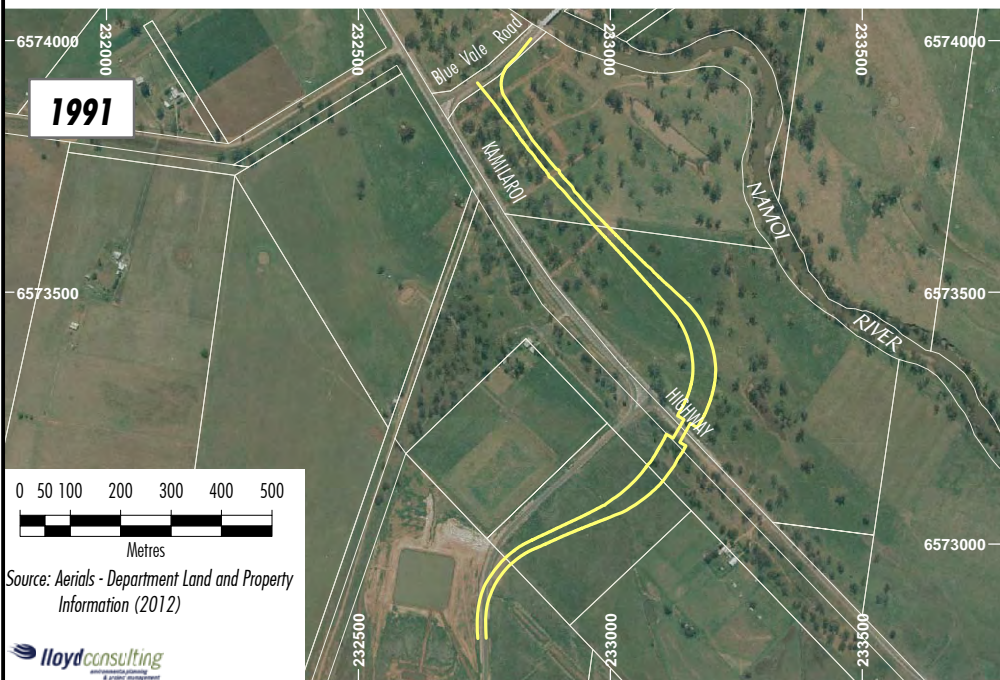
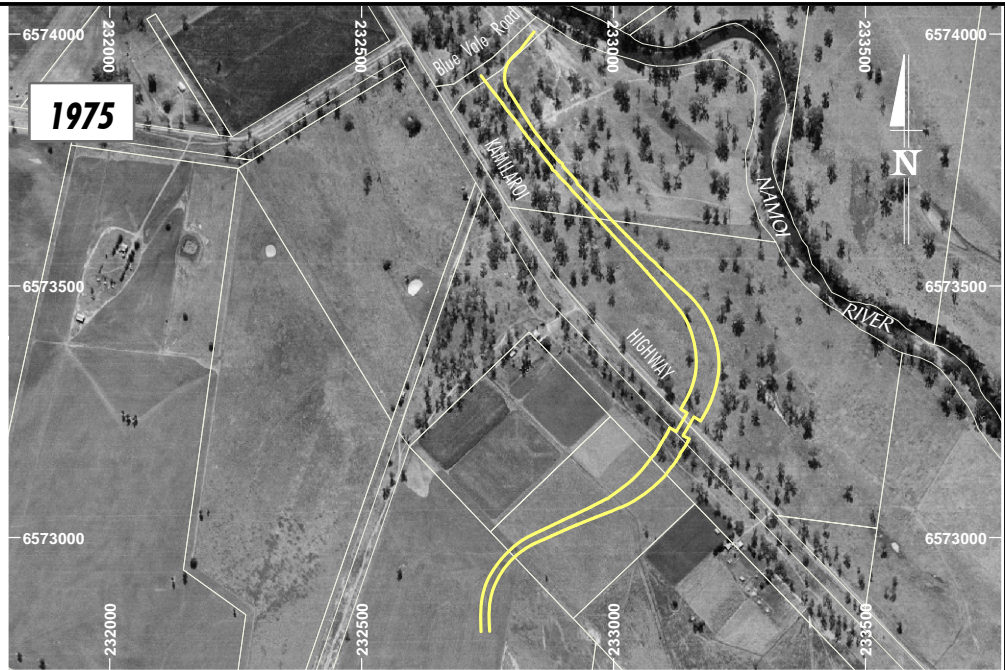
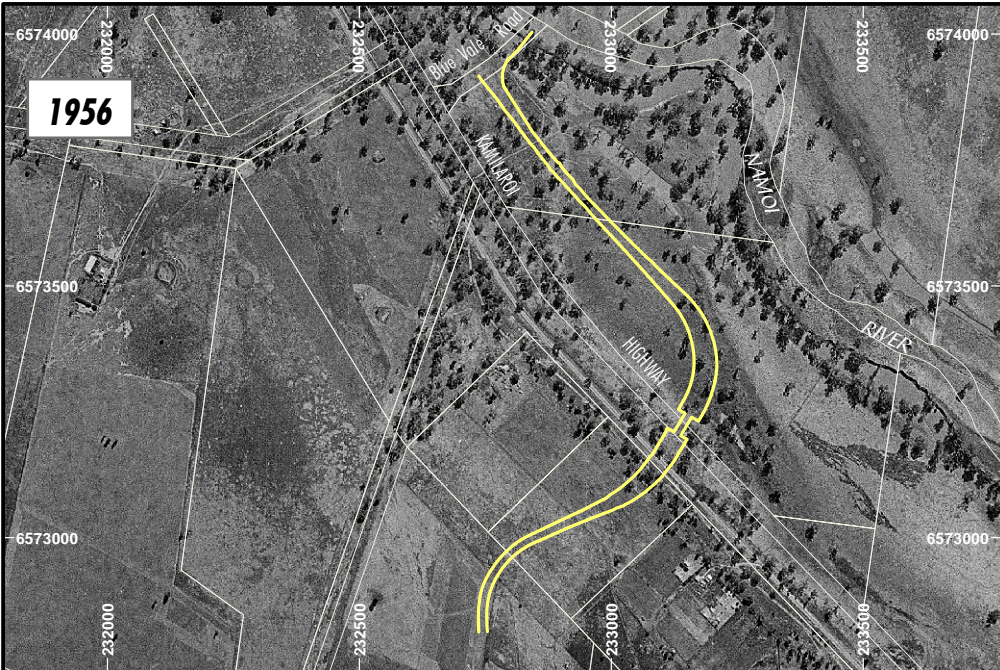
**VICKERY COAL PROJECT**

**APPENDIX D**

Vickers Mine Area  
Historic Photos







Source: Aerials - Department Land and Property Information (2012)



**VICKERY COAL PROJECT**

**APPENDIX D**  
Private Haul Road and  
Highway Overpass -  
Historic Photos





# APPENDIX E

## RESULTS TABLES

Table 1 - Stage 1 Metals

Sample ID	Date	Metals						
		Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
MLA3-1-1-0.2	18/01/2012	5	<1	6	11	18	23	32
MLA3-1-1-1.0	18/01/2012	7	<1	6	8	20	17	22
MLA1-2-1-0.2	18/01/2012	7	<1	33	42	27	15	342
MLA1-2-2-0.2	18/01/2012	6	<1	43	30	14	12	97
MLA1-1-1-0.2	18/01/2012	<5	<1	24	6	12	7	21
MLA2-1-1-0.2	17/01/2012	<5	<1	30	9	8	12	11
MLA2-1-1-0.5	17/01/2012	<5	<1	22	12	8	20	19
MLA2-1-1-1.0	17/01/2012	<5	<1	32	10	9	14	16
MLA2-1-1-1.5	17/01/2012	5	<1	34	10	8	16	47
MLA2-1-1-1.5D	17/01/2012	7	<1	34	13	10	16	53
MLA2-1-2-0.2	17/01/2012	93	<1	33	14	8	14	23
MLA2-1-2-1.0	17/01/2012	7	<1	46	12	11	18	22
MLA2-1-3-0.2	17/01/2012	2860	<1	22	15	12	7	40
MLA2-1-3-0.5	17/01/2012	146	<1	29	14	10	18	26
MLA2-1-3-1.0	17/01/2012	148	<1	26	14	10	16	41
MLA2-1-3-1.5	17/01/2012	9	<1	23	8	8	13	17
MLA2-1-4-0.2	18/01/2012	548	<1	25	21	10	21	73
MLA2-1-4-0.5	18/01/2012	194	<1	25	11	10	15	32
MLA2-1-4-1.0	18/01/2012	65	<1	16	8	6	12	19
MLA2-1-4-1.5	18/01/2012	387	<1	26	15	10	22	34
MLA2-1-4-2.0	18/01/2012	53	<1	24	8	7	11	13
MLA2-1-5-0.2	18/01/2012	53	<1	43	13	13	17	23
MLA2-1-5-1.0	18/01/2012	26	<1	34	15	11	23	26
MLA2-1-5-1.5	18/01/2012	6	<1	29	9	10	12	15
MLA2-1-6-0.2	18/01/2012	218	<1	39	11	10	9	17
MLA2-1-6-0.5	18/01/2012	18	<1	36	14	11	17	20
MLA2-1-6-0.2D	18/01/2012	204	<1	38	9	16	7	13
MLA2-1-6-1.0	18/01/2012	12	<1	38	17	9	20	25
MLA2-1-7-0.2	18/01/2012	89	<1	42	15	14	11	50
MLA2-1-8-0.2	18/01/2012	89	<1	24	22	15	11	41
MLA2-1-9-0.2	18/01/2012	30	<1	23	29	32	15	204
MLA2-1-10-0.2	18/01/2012	82	<1	112	72	54	15	196
MLA2-1-11-0.2	18/01/2012	35	<1	40	40	113	18	258
MLA2-1-12-0.2	18/01/2012	35	<1	24	28	33	19	202
LOR		5	1	2	5	5	2	5
NEPM EILs		20	3	400	100	600	60	200
NEPM HIL-A		100	20	12%*	1000	300	600	7000

\* The Chromium (III) criteria refers to percentage of overall soil volume

All results are displayed in mg/kg







Table 5 - Stage 1 Total Petroleum Hydrocabons Results

Sample ID	Date	Total Petroleum Hydrocabons					Total Recoverable Hydrocarbons - NEPM 2010				
							Draft				
		C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction (sum)	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction (sum)
MLA3-1-1-0.2	18/01/2012	<10	<50	<100	<100	<50	<10	<50	<100	<100	<50
MLA3-1-1-1.0	18/01/2012	<10	<50	<100	<100	<50	<10	<50	<100	<100	<50
MLA1-2-1-0.2	18/01/2012	<10	<50	<100	<100	<50	<10	<50	<100	<100	<50
MLA1-2-2-0.2	18/01/2012	<10	<50	<100	<100	<50	<10	<50	<100	<100	<50
MLA1-1-1-0.2	18/01/2012	<10	<50	<100	<100	<50	<10	<50	<100	<100	<50
MLA2-1-1-0.2	17/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-1-1.5	17/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-1-1.5D	17/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-2-0.2	17/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-2-1.0	17/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-3-0.2	17/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-3-1.0	17/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-4-0.2	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-4-1.5	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-5-0.2	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-5-1.0	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-6-0.2	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-6-1.0	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-7-0.2	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-8-0.2	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-9-0.2	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-10-0.2	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-11-0.2	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-12-0.2	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-6-0.2D	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-1-0.5	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-1-1.0	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-2-0.5	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-3-0.5	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-3-1.5	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-4-0.5	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-4-1.0	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-4-2.0	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-5-1.5	18/01/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-6-0.5	18/01/2012	-	-	-	-	-	-	-	-	-	-
LOR		10	50	100	100	50	10	50	100	100	50
OEH		65				1000					

All results are displayed in mg/kg

Table 6 - Stage 2 Metals

Sample ID	Date	Metals						
		Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
MLA2-1-SP1	20/02/2012	17	<1	18	7	6	9	21
MLA2-1-SP2	20/02/2012	78	<1	15	9	12	9	52
MLA2-1-SP3	20/02/2012	126	<1	23	9	11	11	86
MLA2-1-14-0.2	20/02/2012	<5	<1	23	8	7	16	12
MLA2-1-14-0.5	20/02/2012	<5	<1	26	8	8	12	13
MLA2-1-14-2.0	20/02/2012	<5	<1	6	<5	<5	5	8
MLA2-1-15-0.2	21/02/2012	<5	<1	20	9	7	9	11
MLA2-1-15-0.2D	21/02/2012	<5	<1	22	8	8	8	10
MLA2-1-15-0.5	21/02/2012	<5	<1	25	10	8	17	15
MLA2-1-15-2.0	21/02/2012	<5	<1	25	<5	7	7	14
MLA2-1-16-2.0	21/02/2012	5	<1	15	5	7	7	11
MLA2-1-16-3.0	21/02/2012	<5	<1	9	<5	7	4	9
MLA2-1-17-0.2	21/02/2012	101	<1	26	11	8	19	18
MLA2-1-17-0.5	21/02/2012	37	<1	18	9	9	13	14
MLA2-1-17-1.5	21/02/2012	<5	<1	24	5	7	8	12
MLA2-1-18-0.2	21/02/2012	9	<1	32	13	10	22	20
MLA2-1-18-0.5D	21/02/2012	10	<1	54	11	12	17	15
MLA2-1-18-0.5	21/02/2012	7	<1	36	10	11	15	14
MLA2-1-18-1.5	21/02/2012	7	<1	23	8	13	16	16
MLA2-1-19-0.2	21/02/2012	<5	<1	20	8	9	7	106
MLA2-1-19-0.5	21/02/2012	24	<1	19	11	10	16	39
MLA2-1-19-1.5	21/02/2012	7	<1	21	6	10	10	11
MLA2-1-20-0.2	21/02/2012	<5	<1	20	12	8	10	15
MLA2-1-20-0.2D	21/02/2012	<5	<1	25	10	8	8	12
MLA2-1-20-0.5	21/02/2012	<5	<1	16	8	6	8	14
MLA2-1-21-0.2	21/02/2012	86	<1	19	9	5	6	9
MLA2-1-21-0.5	21/02/2012	44	<1	25	8	5	8	11
MLA2-1-21-1.0	21/02/2012	48	<1	22	7	9	9	9
MLA2-1-21-1.5	21/02/2012	<5	<1	16	6	8	8	12
MLA2-1-22-0.2	22/02/2012	<5	<1	38	6	11	8	6
MLA2-1-22-0.5	22/02/2012	<5	<1	16	6	7	8	11
MLA2-1-22-0.5D	22/02/2012	5	<1	35	8	10	14	11
MLA2-1-23-0.2	22/02/2012	<5	<1	20	<5	6	3	<5
MLA2-1-23-0.5	22/02/2012	<5	<1	19	10	7	19	11
MLA2-1-23-1.5	22/02/2012	<5	<1	18	6	7	10	12
MLA2-1-24-0.2	22/02/2012	5	<1	34	13	10	13	20
MLA2-1-24-0.5	22/02/2012	<5	<1	20	8	8	14	19
MLA2-1-25-0.2	22/02/2012	<5	<1	28	10	8	8	12
MLA2-1-25-0.5	22/02/2012	<5	<1	24	11	8	18	24
MLA2-1-25-1.0	22/02/2012	<5	<1	19	7	7	12	23
MLA2-1-25-1.0D	22/02/2012	<5	<1	21	8	8	13	24
MLA2-1-25-1.0T	22/02/2012	<4	<0.5	21	9	11	16	24
MLA2-1-26-0.2	22/02/2012	<5	<1	30	14	9	24	20
MLA2-1-26-0.5	22/02/2012	<5	<1	26	13	12	17	24
MLA2-1-27-0.2	22/02/2012	6	<1	38	10	10	21	22
MLA2-1-27-0.5	22/02/2012	11	<1	49	14	10	19	18
MLA2-1-28-0.2	22/02/2012	7	<1	16	12	12	23	20
MLA2-1-28-0.5	22/02/2012	<5	<1	20	8	7	14	18
MLA2-1-28-0.5D	22/02/2012	<5	<1	18	8	6	12	18
MLA2-1-28-0.5T	22/02/2012	5	<0.5	21	8	10	15	12
MLA2-1-30-0.2	22/02/2012	8	<1	38	6	10	5	<5
MLA2-1-30-0.5	22/02/2012	6	<1	33	10	10	15	18
MLA2-1-29-0.2	22/02/2012	<5	<1	26	9	8	14	14
MLA2-1-29-0.5	22/02/2012	<5	<1	25	13	10	35	22
MLA2-1-29-1.0	22/02/2012	<5	<1	21	8	7	13	17
MLA2-1-31-0.2	23/02/2012	9	<1	40	23	12	26	24
MLA2-1-31-0.5	23/02/2012	5	<1	45	14	12	22	23
MLA2-1-32-0.2	23/02/2012	10	<1	28	10	10	15	18
MLA2-1-32-0.5	23/02/2012	<5	<1	27	8	8	13	14
MLA2-1-32-0.5D	23/02/2012	7	<1	41	10	12	16	15
MLA2-1-32-0.5T	23/02/2012	8	<0.5	36	8	13	13	11
MLA2-1-33-0.2	23/02/2012	<5	<1	10	<5	<5	4	7
MLA2-1-33-0.5	23/02/2012	7	<1	49	10	9	9	13
MLA2-1-34-0.2	23/02/2012	10	<1	47	9	7	11	14
MLA2-1-34-0.5	23/02/2012	7	<1	39	15	10	33	31
MLA2-1-35-0.2	23/02/2012	57	<1	41	12	8	13	19
MLA2-1-35-0.5	23/02/2012	9	<1	20	8	8	14	27
MLA2-1-35-0.5D	23/02/2012	8	<1	21	8	9	14	20
MLA2-1-35-0.5T	23/02/2012	5	<0.5	17	8	8	13	17
MLA2-1-36-0.2	23/02/2012	8	<1	34	10	10	19	18
MLA2-1-36-0.5	23/02/2012	<5	<1	24	8	8	17	21
MLA2-1-36-1.0	23/02/2012	9	<1	29	10	15	25	17
MLA2-1-37-0.2	23/02/2012	6	<1	54	9	9	13	14
MLA2-1-37-0.5	23/02/2012	<5	<1	21	10	8	15	25
MLA2-1-38-0.2	23/02/2012	<5	<1	38	6	7	5	7
MLA2-1-38-0.5	23/02/2012	7	<1	45	16	11	25	27
MLA2-1-38-1.0	23/02/2012	<5	<1	32	10	6	15	19
MLA2-1-38-1.0D	23/02/2012	<5	<1	20	8	5	14	16
MLA2-1-38-1.0T	23/02/2012	6	<0.5	39	8	13	13	12
MLA2-1-39-0.2	23/02/2012	6	<1	39	9	14	12	18
MLA2-1-39-0.5	23/02/2012	10	<1	48	15	12	26	28
MLA2-1-39-1.0	23/02/2012	<5	<1	31	11	11	18	28
MLA2-1-40-0.2	23/02/2012	6	<1	31	12	9	25	32
MLA2-1-40-0.2D	23/02/2012	10	<1	51	12	15	26	23
MLA2-1-40-0.2T	23/03/2012	4	<0.5	27	12	9	24	21
MLA2-1-40-0.5	23/02/2012	<5	<1	21	10	7	15	26
LOR		5	1	2	5	5	2	5
NEPM EILs		20	3	400	100	600	60	200
NEPM HIL-A		100	20	12%*	1000	300	600	7000

\* The Chromium (III) criteria refers to percentage of overall soil volume

All results are displayed in mg/kg



Table 7 - Stage 2 Organochlorine Pesticides Results

		Organochlorine Pesticides (OC)																						
Sample ID	Date	alpha-BHC	Hexachlorobenzene (HCB)	beta-BHC	gamma-BHC	delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4,4'-DDE	Endrin	beta-Endosulfan	4,4'-DDD	Endrin aldehyde	Endosulfan sulfate	4,4'-DDT	Endrin ketone	Methoxychlor	Sum of DDT, DDD & DDE	
MLA2-1-34-0.2	23/02/2012	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.2	<0.3	
MLA2-1-34-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-35-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-35-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-35-0.5D	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-36-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-36-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-36-1.0	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-37-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-37-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-38-0.2	23/02/2012	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.2	<0.3	
MLA2-1-38-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-38-1.0	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-38-1.0D	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-39-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-39-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-39-1.0	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-40-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-40-0.2D	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MLA2-1-40-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LOR		0.05	0.05	0.05	0.05	0.05	0.05	0.05	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	0.2	0.2	
NEPM HIL-E							20	20					20										400	
NEPM HIL-F							50	50					50										1000	

All results are displayed in mg/kg





Table 8 - Stage 2 Organophosphorous Pesticides Results

		Organophosphorus Pesticides (OP)																		
Sample ID	Date	Dichlorvos	Demeton-S-methyl	Monocrotophos	Dimethoate	Diazinon	Chlorpyrifos-methyl	Parathion-methyl	Malathion	Fenthion	Chlorpyrifos	Parathion	Pirimphos-ethyl	Chlorfenvinphos	Bromophos-ethyl	Fenamiphos	Prothiofos	Ethion	Carbophenothion	Azinphos Methyl
MLA2-1-28-0.5D	22/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-30-0.2	22/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-30-0.5	22/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-29-0.2	22/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-29-0.5	22/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-29-1.0	22/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-31-0.2	23/02/2012	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MLA2-1-31-0.5	23/02/2012	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MLA2-1-32-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-32-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-32-05D	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-33-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-33-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-34-0.2	23/02/2012	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MLA2-1-34-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-35-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-35-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-35-0.5D	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-36-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-36-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-36-1.0	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-37-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-37-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-38-0.2	23/02/2012	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MLA2-1-38-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-38-1.0	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-38-1.0D	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-39-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-39-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-39-1.0	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-40-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-40-0.2D	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MLA2-1-40-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOR		0.05	0.05	0.2	0.05	0.05	0.05	0.2	0.05	0.05	0.05	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
<b>USEPA Residential</b>		<b>1.7</b>	<b>2.4</b>		<b>12</b>	<b>43</b>	<b>610</b>		<b>1200</b>		<b>61</b>	<b>370</b>	<b>610</b>			<b>15</b>		<b>31</b>		

All results are displayed in mg/kg

Table 9 - Stage 2 Total Petroleum Hydrocarbons Results

Sample ID	Date	Total Petroleum Hydrocarbons					Total Recoverable Hydrocarbons - NEPM 2010 Draft				
		C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction (sum)	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction (sum)
MLA2-1-SP1	20/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-SP2	20/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-SP3	20/02/2012	<10	<50	<100	<100	<50	<10	<50	<100	<100	<50
MLA2-1-14-0.2	20/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-14-0.5	20/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-14-2.0	20/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-15-0.2	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-15-0.2D	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-15-0.5	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-15-2.0	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-16-2.0	21/02/2012	<10	<50	<100	<100	<50	<10	<50	<100	<100	<50
MLA2-1-16-3.0	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-17-0.2	21/02/2012	<10	<50	<100	<100	<50	<10	<50	<100	<100	<50
MLA2-1-17-0.5	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-17-1.5	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-18-0.2	21/02/2012	<10	<50	<100	<100	<50	<10	<50	<100	<100	<50
MLA2-1-18-0.5D	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-18-0.5	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-18-1.5	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-19-0.2	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-19-0.5	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-19-1.5	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-20-0.2	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-20-0.2D	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-20-0.5	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-21-0.2	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-21-0.5	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-21-1.0	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-21-1.5	21/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-22-0.2	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-22-0.5	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-22-0.5D	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-23-0.2	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-23-0.5	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-23-1.5	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-24-0.2	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-24-0.5	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-25-0.2	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-25-0.5	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-25-1.0	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-25-1.0D	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-26-0.2	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-26-0.5	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-27-0.2	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-27-0.5	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-28-0.2	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-28-0.5	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-28-0.5D	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-30-0.2	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-30-0.5	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-29-0.2	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-29-0.5	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-29-1.0	22/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-31-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-31-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-32-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-32-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-32-05D	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-33-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-33-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-34-0.2	23/02/2012	<10	<50	<100	<100	<50	<10	<50	<100	<100	<50
MLA2-1-34-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-35-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-35-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-35-0.5D	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-36-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-36-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-36-1.0	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-37-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-37-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-38-0.2	23/02/2012	<10	<50	<100	<100	<50	<10	<50	<100	<100	<50
MLA2-1-38-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-38-1.0	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-38-1.0D	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-39-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-39-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-39-1.0	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-40-0.2	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-40-0.2D	23/02/2012	-	-	-	-	-	-	-	-	-	-
MLA2-1-40-0.5	23/02/2012	-	-	-	-	-	-	-	-	-	-
LOR		10	50	100	100	50	10	50	100	100	50
OEH		65				1000					

All results are displayed in mg/kg



# APPENDIX F

## LABORATORY AND CALIBRATION CERTIFICATES



Chatswood NSW  
2067

EnviroLab

Lab Quote Ref. BN/299/10  
 Laboratory Address: 12 Ashley St, Chatswood, NSW 2067  
 Phone: (02) 9910 6200

Client: Lloyd Consulting  
 30 Heather Street, Wilston, Q. 4051  
 Project: 12-773  
 Turnaround Requirements: **SH**  
 Quote No.: **BN/299/10**  
 Order Number:  
 Project Manager: Trevor Lloyd  
 Contact PH: 07 33-82 7300  
 Sampler: Leona Kopitke  
 Sampler Mobile: 0410068796  
 C/C emailed to ALS? (YES / NO)  
 EDD Format (or default):  
 Email Reports to: leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au  
 Email invoice to (us above)

FOR LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comment:

RELINQUISHED BY: **LS**  
 RECEIVED BY: **LS**  
 DATE/TIME: **20/2/2012**  
 DATE/TIME: **20-2-2012**

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	metals								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc
69625-1	MLA2-1-32-0.5T	23/2/12	S										
-2	MLA2-1-35-0.5T	"	"	1	X								
-3	MLA2-1-38-1.0T	"	"	1	X								
-4	MLA2-1-40-0.2T	"	"	1	X								
-5	MLA2-1-25-0.5T	22/2/12	"	1	X								
-6	MLA2-1-25-1.0T	"	"	1	X								
				TOTAL	6								

EnviroLab Services  
 12 Ashley St  
 Chatswood NSW 2067  
 Ph: (02) 9910 6200  
 Job No: 69625  
 Date Received: 20-2-2012  
 Time Received: 12:00pm  
 Received by: LS  
 Temp: Cool/Ambient  
 Cooling: Ice/Icepack - none  
 Security: Intact/Broken/None

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag



**Envirolab Services Pty Ltd**  
ABN 37 112 535 645  
12 Ashley St Chatswood NSW 2067  
ph 02 9910 6200 fax 02 9910 6201  
enquiries@envirolabservices.com.au  
www.envirolabservices.com.au

**CERTIFICATE OF ANALYSIS**

**69625**

**Client:**

**Lloyd Consulting**  
30 Heather Street  
Wilston  
QLD 4051

**Attention:** Trevor Lloyd, Leona Kopittke

**Sample log in details:**

Your Reference: **12-773**  
No. of samples: **6 Soils**  
Date samples received / completed instructions received **28/02/2012 / 28/02/2012**


**Analysis Details:**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.  
***Please refer to the last page of this report for any comments relating to the results.***

**Report Details:**

Date results requested by: / Issue Date: **6/03/12 / 28/02/12**  
Date of Preliminary Report: **Not issued**  
NATA accreditation number 2901. This document shall not be reproduced except in full.  
Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with \*.**

**Results Approved By:**

  
Rhian Morgan  
Reporting Supervisor

Acid Extractable metals in soil Our Reference: Your Reference	UNITS -----	69625-1 MLA2-1-32- 0.5T	69625-2 MLA2-1-35- 0.5T	69625-3 MLA2-1-38- 1.0T	69625-4 MLA2-1-40- 0.2T	69625-5 MLA2-1-28- 0.5T
Date Sampled	-----	23/02/2012	23/02/2012	23/02/2012	23/02/2012	22/02/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	28/02/2012	28/02/2012	28/02/2012	28/02/2012	28/02/2012
Date analysed	-	28/02/2012	28/02/2012	28/02/2012	28/02/2012	28/02/2012
Arsenic	mg/kg	8	5	6	4	5
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	36	17	39	27	21
Copper	mg/kg	8	8	8	12	8
Lead	mg/kg	13	8	13	9	10
Nickel	mg/kg	13	13	13	24	15
Zinc	mg/kg	11	17	12	21	12

Acid Extractable metals in soil Our Reference: Your Reference	UNITS -----	69625-6 MLA2-1-25- 1.0T
Date Sampled	-----	22/02/2012
Type of sample		Soil
Date digested	-	28/02/2012
Date analysed	-	28/02/2012
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.5
Chromium	mg/kg	21
Copper	mg/kg	9
Lead	mg/kg	11
Nickel	mg/kg	16
Zinc	mg/kg	24

Moisture						
Our Reference:	UNITS	69625-1	69625-2	69625-3	69625-4	69625-5
Your Reference	-----	MLA2-1-32-0.5T	MLA2-1-35-0.5T	MLA2-1-38-1.0T	MLA2-1-40-0.2T	MLA2-1-28-0.5T
Date Sampled	-----	23/02/2012	23/02/2012	23/02/2012	23/02/2012	22/02/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/02/2012	28/02/2012	28/02/2012	28/02/2012	28/02/2012
Date analysed	-	28/02/2012	28/02/2012	28/02/2012	28/02/2012	28/02/2012
Moisture	%	21	21	18	21	15

Moisture		
Our Reference:	UNITS	69625-6
Your Reference	-----	MLA2-1-25-1.0T
Date Sampled	-----	22/02/2012
Type of sample		Soil
Date prepared	-	28/02/2012
Date analysed	-	28/02/2012
Moisture	%	19

MethodID	Methodology Summary
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.



Client Reference: 12-773

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base    Duplicate    %RPD		
Date digested	-			28/02/2012	69625-1	28/02/2012    28/02/2012	LCS-1	28/02/2012
Date analysed	-			28/02/2012	69625-1	28/02/2012    28/02/2012	LCS-1	28/02/2012
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	69625-1	8    9    RPD: 12	LCS-1	109%
Cadmium	mg/kg	0.5	Metals-020 ICP-AES	<0.5	69625-1	<0.5    <0.5	LCS-1	110%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	69625-1	36    45    RPD: 22	LCS-1	110%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	69625-1	8    8    RPD: 0	LCS-1	109%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	69625-1	13    14    RPD: 7	LCS-1	108%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	69625-1	13    13    RPD: 0	LCS-1	110%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	69625-1	11    11    RPD: 0	LCS-1	110%

QUALITYCONTROL	UNITS	PQL	METHOD	Blank
Moisture				
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

QUALITYCONTROL	UNITS	Dup. Sm#	Duplicate	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil			Base + Duplicate + %RPD		
Date digested	-	[NT]	[NT]	69625-2	28/02/2012
Date analysed	-	[NT]	[NT]	69625-2	28/02/2012
Arsenic	mg/kg	[NT]	[NT]	69625-2	97%
Cadmium	mg/kg	[NT]	[NT]	69625-2	86%
Chromium	mg/kg	[NT]	[NT]	69625-2	101%
Copper	mg/kg	[NT]	[NT]	69625-2	100%
Lead	mg/kg	[NT]	[NT]	69625-2	85%
Nickel	mg/kg	[NT]	[NT]	69625-2	87%
Zinc	mg/kg	[NT]	[NT]	69625-2	90%

**Report Comments:**

Asbestos ID was analysed by Approved Identifier: Not applicable for this job  
 Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

**Quality Control Definitions**

**Blank:** This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

**Duplicate:** This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

**Matrix Spike :** A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

**LCS (Laboratory Control Sample) :** This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

**Surrogate Spike:** Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

**Laboratory Acceptance Criteria**

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

# RENTALS

## Equipment Report – Aquameter- Water Quality Meter

This Aquameter Water Quality Instrument has been performance checked / calibrated\* as follows:

Electrodes cleaned/checked

pH (Acidity/Alkalinity)  pH 7.00       pH4.00

Electrical Conductivity  1413uS/cm       2570uS/cm       12880uS/cm

ORP  240 mV @20°C

Dissolved Oxygen  0.00ppm in Sodium Sulphite       100% Saturation in moist Air

Turbidity  0.00 NTU       1000NTU       Temperature

Battery ( x 5 AA ) 100 %

Aquameter S/N 105311827

Probe S/N 108410108

\* Calibration solution traceability information is available upon request.

Date: 17/2/12 Checked by: ROBERT  
Signed: RBLT

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$20 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Received	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aquameter unit
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aquameter Operations check / Battery <u>100</u> %.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Instruction Manual / Quick use guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Protective sleeve cap
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare Batteries x 5 (Alkaline / Rechargeable <u>8</u> volts)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aquameter flow cell (AQR200_____)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cross Head screw driver
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Software & USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Quick release lanyard (Blue shoulder strap)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ph/ORP cap (with red strap)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carry case
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Processors Signature/ Initials \_\_\_\_\_

TFS Quote Reference		Condition on return
Customer Ref		
Equipment ID	AQR800DEMO	
Return Date	/ /	
Return Time		

"We do more than give you great equipment... We give you great solutions!"

Phone: (Free Call) 1300 735 295		Environmental Assessment Technologies		Fax: (Free Call) 1800 675 123	
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## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>ES1201146</b></p> <p><b>Client</b> : <b>LLOYD CONSULTING</b></p> <p><b>Contact</b> : <b>TREVOR LLOYD</b></p> <p><b>Address</b> : <b>PO BOX 320 WILSTON QLD, AUSTRALIA 4057</b></p> <p><b>E-mail</b> : <b>trevor@lloydconsulting.com.au</b></p> <p><b>Telephone</b> : <b>+61 07 33527300</b></p> <p><b>Facsimile</b> : <b>----</b></p> <p><b>Project</b> : <b>12-773</b></p> <p><b>Order number</b> : <b>----</b></p> <p><b>C-O-C number</b> : <b>----</b></p> <p><b>Sampler</b> : <b>LK</b></p> <p><b>Site</b> : <b>----</b></p> <p><b>Quote number</b> : <b>BN/299/10</b></p>	<p><b>Page</b> : 1 of 13</p> <p><b>Laboratory</b> : Environmental Division Sydney</p> <p><b>Contact</b> : Client Services</p> <p><b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164</p> <p><b>E-mail</b> : sydney@alsglobal.com</p> <p><b>Telephone</b> : +61-2-8784 8555</p> <p><b>Facsimile</b> : +61-2-8784 8500</p> <p><b>QC Level</b> : NEPM 1999 Schedule B(3) and ALS QCS3 requirement</p> <p><b>Date Samples Received</b> : 18-JAN-2012</p> <p><b>Issue Date</b> : 27-JAN-2012</p> <p><b>No. of samples received</b> : 45</p> <p><b>No. of samples analysed</b> : 25</p>
--	--

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Evie.Sidarta	Inorganic Chemist	Sydney Inorganics
Raymond Commodor	Instrument Chemist	Sydney Inorganics



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## General Comments

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

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

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

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

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

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

- **EG-005T:LCS recovery for Copper and Lead falls outside ALS Dynamic Control Limit. However, they are within the acceptance criteria based on ALS DQO. No further action is required.**
  - **EP068: Poor matrix spike recovery due to sample matrix interferences.**
-





## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA3-1-1-0.2	MLA3-1-1-1.0	MLA1-2-1-0.2	MLA1-2-2-0.2	MLA1-1-1-0.2
				18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00
				ES1201146-001	ES1201146-002	ES1201146-003	ES1201146-004	ES1201146-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	6.9	6.4	18.1	14.2	11.3
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	5	7	7	6	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	6	6	33	43	24
Copper	7440-50-8	5	mg/kg	11	8	42	30	6
Lead	7439-92-1	5	mg/kg	18	20	27	14	12
Nickel	7440-02-0	2	mg/kg	23	17	15	12	7
Zinc	7440-66-6	5	mg/kg	32	22	342	97	21
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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
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
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
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA3-1-1-0.2	MLA3-1-1-1.0	MLA1-2-1-0.2	MLA1-2-2-0.2	MLA1-1-1-0.2
				18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00
				ES1201146-001	ES1201146-002	ES1201146-003	ES1201146-004	ES1201146-005
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
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
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	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
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	----	115
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	----	----	----	----	87.6
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	93.4	90.9	90.3	88.5	90.2
Toluene-D8	2037-26-5	0.1	%	81.0	83.0	79.0	80.0	81.2
4-Bromofluorobenzene	460-00-4	0.1	%	79.9	81.7	77.6	80.3	81.3



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-1-0.2	MLA2-1-1-1.5	MLA2-1-1-1.5D	MLA2-1-2-0.2	MLA2-1-2-1.0
				17-JAN-2012 15:00	17-JAN-2012 15:00	17-JAN-2012 15:00	17-JAN-2012 15:00	17-JAN-2012 15:00
				ES1201146-006	ES1201146-007	ES1201146-008	ES1201146-009	ES1201146-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	4.6	9.6	9.5	5.1	16.6
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	5	7	93	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	30	34	34	33	46
Copper	7440-50-8	5	mg/kg	9	10	13	14	12
Lead	7439-92-1	5	mg/kg	8	8	10	8	11
Nickel	7440-02-0	2	mg/kg	12	16	16	14	18
Zinc	7440-66-6	5	mg/kg	11	47	53	23	22
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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
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	0.10
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
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
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
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-1-0.2	MLA2-1-1-1.5	MLA2-1-1-1.5D	MLA2-1-2-0.2	MLA2-1-2-1.0
				17-JAN-2012 15:00	17-JAN-2012 15:00	17-JAN-2012 15:00	17-JAN-2012 15:00	17-JAN-2012 15:00
				ES1201146-006	ES1201146-007	ES1201146-008	ES1201146-009	ES1201146-010
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	114	110	109	118	105
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	74.2	81.3	76.8	89.8	108



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-3-0.2	MLA2-1-3-1.0	MLA2-1-4-0.2	MLA2-1-4-1.5	MLA2-1-5-0.2
				17-JAN-2012 15:00	17-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00
				ES1201146-011	ES1201146-012	ES1201146-013	ES1201146-014	ES1201146-015
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	12.4	12.8	14.0	17.7	8.0
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	2860	148	548	387	53
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	22	26	25	26	43
Copper	7440-50-8	5	mg/kg	15	14	21	15	13
Lead	7439-92-1	5	mg/kg	12	10	10	10	13
Nickel	7440-02-0	2	mg/kg	7	16	21	22	17
Zinc	7440-66-6	5	mg/kg	40	41	73	34	23
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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
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	0.46	0.16	0.26	<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
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
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
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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





## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-3-0.2	MLA2-1-3-1.0	MLA2-1-4-0.2	MLA2-1-4-1.5	MLA2-1-5-0.2
				17-JAN-2012 15:00	17-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00
				ES1201146-011	ES1201146-012	ES1201146-013	ES1201146-014	ES1201146-015
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	117	114	108	116	114
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	74.8	79.0	77.0	72.9	82.8



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-5-1.0	MLA2-1-6-0.2	MLA2-1-6-1.0	MLA2-1-7-0.2	MLA2-1-8-0.2
				18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00
				ES1201146-016	ES1201146-017	ES1201146-018	ES1201146-019	ES1201146-020
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	10.7	4.6	11.1	15.2	15.9
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	26	218	12	89	89
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	34	39	38	42	24
Copper	7440-50-8	5	mg/kg	15	11	17	15	22
Lead	7439-92-1	5	mg/kg	11	10	9	14	15
Nickel	7440-02-0	2	mg/kg	23	9	20	11	11
Zinc	7440-66-6	5	mg/kg	26	17	25	50	41
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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
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	0.06	<0.05	0.08	<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
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
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
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-5-1.0	MLA2-1-6-0.2	MLA2-1-6-1.0	MLA2-1-7-0.2	MLA2-1-8-0.2
				18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00
				ES1201146-016	ES1201146-017	ES1201146-018	ES1201146-019	ES1201146-020
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	123	120	123	122	114
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	96.0	75.7	78.0	87.1	78.0



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-9-0.2	MLA2-1-10-0.2	MLA2-1-11-0.2	MLA2-1-12-0.2	MLA2-1-6-0.2D
				18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00
				ES1201146-021	ES1201146-022	ES1201146-023	ES1201146-024	ES1201146-045
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	14.0	16.1	19.4	12.2	6.0
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	30	82	35	35	204
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	23	112	40	24	38
Copper	7440-50-8	5	mg/kg	29	72	40	28	9
Lead	7439-92-1	5	mg/kg	32	54	113	33	16
Nickel	7440-02-0	2	mg/kg	15	15	18	19	7
Zinc	7440-66-6	5	mg/kg	204	196	258	202	13
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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
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	0.08	0.12	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	0.86	2.54	0.29	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
4,4'-DDD	72-54-8	0.05	mg/kg	0.33	0.72	0.16	<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
4,4'-DDT	50-29-3	0.2	mg/kg	0.9	2.4	<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
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-9-0.2	MLA2-1-10-0.2	MLA2-1-11-0.2	MLA2-1-12-0.2	MLA2-1-6-0.2D
				18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00
				ES1201146-021	ES1201146-022	ES1201146-023	ES1201146-024	ES1201146-045
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	10	mg/kg	----	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	116	108	153	83.6	74.4
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	78.5	79.0	91.5	86.6	72.6
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	97.9	----	----	----
Toluene-D8	2037-26-5	0.1	%	----	88.7	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	87.7	----	----	----





### Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	19.5	167.0
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	22.7	163.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## QUALITY CONTROL REPORT

Work Order	: <b>ES1201146</b>	Page	: 1 of 13
Client	: <b>LLOYD CONSULTING</b>	Laboratory	: Environmental Division Sydney
Contact	: TREVOR LLOYD	Contact	: Client Services
Address	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: trevor@lloydconsulting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 07 33527300	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 12-773	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 18-JAN-2012
C-O-C number	: ----	Issue Date	: 27-JAN-2012
Sampler	: LK	No. of samples received	: 45
Order number	: ----	No. of samples analysed	: 25
Quote number	: BN/299/10		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Evie.Sidarta	Inorganic Chemist	Sydney Inorganics
Raymond Commodor	Instrument Chemist	Sydney Inorganics



### **General Comments**

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

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

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

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

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	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 2135492)</b>									
ES1201146-003	MLA1-2-1-0.2	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	18.1	15.6	14.4	0% - 50%
ES1201146-014	MLA2-1-4-1.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.7	15.5	13.4	0% - 50%
<b>EA055: Moisture Content (QC Lot: 2135493)</b>									
ES1201146-023	MLA2-1-11-0.2	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	19.4	20.1	3.4	0% - 20%
ES1201225-008	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	20.4	20.7	1.0	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2137441)</b>									
ES1200950-003	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	18	14	24.2	No Limit
ES1201110-002	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	39	87	# 75.2	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2137749)</b>									
EM1200505-037	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	49	46	6.3	0% - 20%
ES1201124-001	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	39	24	49.6	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2137751)</b>									
ES1201146-001	MLA3-1-1-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	23	22	0.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	11	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	18	17	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	31	4.8	No Limit
ES1201146-011	MLA2-1-3-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	22	32	36.9	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	7	6	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	2860	2560	10.9	0% - 20%
		EG005T: Copper	7440-50-8	5	mg/kg	15	14	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	10	27.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	40	52	25.6	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2139652)</b>									
ES1201146-020	MLA2-1-8-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	24	21	13.4	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	11	10	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	89	90	0.0	0% - 50%
		EG005T: Copper	7440-50-8	5	mg/kg	22	37	48.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	45	99.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	41	40	0.0	No Limit
ES1201184-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit



Sub-Matrix: **SOIL**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2139652) - continued</b>									
ES1201184-005	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	28	26	5.6	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	14	16	8.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	28	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	34	34	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	203	200	1.4	0% - 20%
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 2136722)</b>									
ES1201268-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<1.2	<1.2	0.0	No Limit
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<1.2	<1.2	0.0	No Limit		
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 2136724)</b>									
ES1201146-005	MLA1-1-1-0.2	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 2136724) - continued</b>									
ES1201146-005	MLA1-1-1-0.2	EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
ES1201146-015	MLA2-1-5-0.2	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2136722)</b>									
ES1201268-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<1.25	<1.25	0.0	No Limit





Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2136722) - continued</b>									
ES1201268-001	Anonymous	EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<1.25	<1.25	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<1.2	<1.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<1.2	<1.2	0.0	No Limit
EP068: Parathion	56-38-2	0.2	mg/kg	<1.2	<1.2	0.0	No Limit		
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2136724)</b>									
ES1201146-005	MLA1-1-1-0.2	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
ES1201146-015	MLA2-1-5-0.2	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2136724) - continued</b>									
ES1201146-015	MLA2-1-5-0.2	EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2135752)</b>									
ES1201146-001	MLA3-1-1-0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1201225-024	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2139863)</b>									
EM1200567-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1201362-005	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	5060	5520	8.6	0% - 20%
		EP071: C29 - C36 Fraction	----	100	mg/kg	1960	2000	2.0	0% - 20%
		EP071: C10 - C14 Fraction	----	50	mg/kg	260	340	27.1	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2135752)</b>									
ES1201146-001	MLA3-1-1-0.2	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1201225-024	Anonymous	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2139863)</b>									
EM1200567-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1201362-005	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	6180	6560	5.9	0% - 20%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	940	1030	8.8	0% - 50%
		EP071: >C10 - C16 Fraction	----	50	mg/kg	500	650	26.3	0% - 50%



## 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 Sample (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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 2137751)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.11 mg/kg	128	70	130	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	106	83.3	111	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.93 mg/kg	108	89.2	117	
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.68 mg/kg	105	90.1	114	
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.76 mg/kg	106	85.2	111	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.23 mg/kg	114	88.3	116	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	103.88 mg/kg	103	88.9	112	
<b>EG005T: Total Metals by ICP-AES (QCLot: 2139652)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.11 mg/kg	117	70	130	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	110	83.3	111	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.93 mg/kg	114	89.2	117	
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.68 mg/kg	# 115	90.1	114	
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.76 mg/kg	# 115	85.2	111	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.23 mg/kg	106	88.3	116	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	103.88 mg/kg	112	88.9	112	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2136722)</b>									
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	86.2	60.8	116	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	79.4	59.4	115	
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	83.3	59.8	117	
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	84.8	59.8	118	
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.9	65.8	114	
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.4	65.6	115	
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	67	113	
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	87.8	65.6	113	
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	87.4	60.7	113	
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.1	65.8	116	
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	57.3	120	
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	111	67.4	116	
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.9	67.5	114	
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.1	63	121	
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	80.4	66.1	117	
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.2	65.3	116	
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	74.1	57.3	115	
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.0	63.6	119	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2136722) - continued</b>									
EP068: 4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	89.8	58.4	127	
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	79.9	63.6	117	
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	96.7	50.4	132	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2136724)</b>									
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	97.8	60.8	116	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	102	59.4	115	
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	104	59.8	117	
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	99.6	59.8	118	
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	104	65.8	114	
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	65.6	115	
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	108	67	113	
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	108	65.6	113	
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	110	60.7	113	
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	109	65.8	116	
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	110	57.3	120	
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	111	67.4	116	
EP068: 4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	67.5	114	
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	63	121	
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	101	66.1	117	
EP068: 4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.2	65.3	116	
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	104	57.3	115	
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	111	63.6	119	
EP068: 4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	101	58.4	127	
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.9	63.6	117	
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	107	50.4	132	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2136722)</b>									
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	70.4	25.5	124	
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	107	10.1	159	
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	85.5	2.88	149	
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.8	48.6	126	
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	86.1	64.9	111	
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	80.5	65.1	111	
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	84.0	61.4	113	
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	87.4	60.4	127	
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	88.5	64.7	110	
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	87.9	64.2	111	
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	89.3	60	116	
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.3	64.8	111	
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.7	61.4	123	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2136722) - continued</b>									
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	87.5	64.3	114	
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	45.5	128	
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	87.4	65.4	111	
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.0	62	116	
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	102	59.5	119	
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	29.8	137	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2136724)</b>									
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	75.4	25.5	124	
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	100	10.1	159	
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	107	2.88	149	
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	93.2	48.6	126	
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.6	64.9	111	
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	103	65.1	111	
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	112	61.4	113	
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	60.4	127	
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	104	64.7	110	
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	99.1	64.2	111	
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	111	60	116	
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	107	64.8	111	
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	100	61.4	123	
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	107	64.3	114	
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	103	45.5	128	
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	103	65.4	111	
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	106	62	116	
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	103	59.5	119	
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	102	29.8	137	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2135752)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	84.7	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2139863)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	88.8	59	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	120	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	103	63	131	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2135752)</b>									
EP080: C6 - C10 Fraction	----	10	mg/kg	<10	31 mg/kg	86.7	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2139863)</b>									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	250 mg/kg	92.0	59	131	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	114	74	138	



Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
					Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit					LCS	Low
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2139863) - continued</b>									
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	----
		50	mg/kg	----	150 mg/kg	92.0	63	131	





### 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	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					MS	Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 2137751)</b>							
ES1201146-001	MLA3-1-1-0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	106	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	102	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	104	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	112	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	102	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	110	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	102	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 2139652)</b>							
ES1201146-020	MLA2-1-8-0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	123	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	103	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	112	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	119	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	104	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	106	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	102	70	130
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2136722)</b>							
ES1201268-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	97.9	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	# 52.9	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	# Not Determined	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	88.1	70	130
		EP068: Endrin	72-20-8	2 mg/kg	# 56.9	70	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	# Not Determined	70	130
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2136724)</b>							
ES1201146-005	MLA1-1-1-0.2	EP068: gamma-BHC	58-89-9	0.5 mg/kg	97.4	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	99.8	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	102	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	100	70	130
		EP068: Endrin	72-20-8	2 mg/kg	106	70	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	104	70	130
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2136722)</b>							
ES1201268-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	106	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	91.6	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	85.9	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	83.2	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	73.3	70	130



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2136724)</b>							
ES1201146-005	MLA1-1-1-0.2	EP068: Diazinon	333-41-5	0.5 mg/kg	87.0	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	93.7	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	98.8	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	96.9	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	98.4	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2135752)</b>							
ES1201146-001	MLA3-1-1-0.2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	105	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2139863)</b>							
EM1200567-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	79.9	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	91.1	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	72.9	52	132
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2135752)</b>							
ES1201146-001	MLA3-1-1-0.2	EP080: C6 - C10 Fraction	----	37.5 mg/kg	103	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2139863)</b>							
EM1200567-001	Anonymous	EP071: >C10 - C16 Fraction	----	850 mg/kg	95.3	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	85.2	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	52.2	52	132

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1201146</b>	Page	: 1 of 6
Client	: LLOYD CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: TREVOR LLOYD	Contact	: Client Services
Address	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: trevor@lloydconsulting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 07 33527300	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 12-773	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 18-JAN-2012
Sampler	: LK	Issue Date	: 27-JAN-2012
Order number	: ----		
Quote number	: BN/299/10	No. of samples received	: 45
		No. of samples analysed	: 25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> MLA2-1-1-0.2, MLA2-1-1-1.5D, MLA2-1-2-1.0, MLA2-1-3-1.0	MLA2-1-1-1.5, MLA2-1-2-0.2, MLA2-1-3-0.2	17-JAN-2012	----	----	----	20-JAN-2012	31-JAN-2012	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> MLA3-1-1-0.2, MLA1-2-1-0.2, MLA1-1-1-0.2, MLA2-1-4-1.5, MLA2-1-5-1.0, MLA2-1-6-1.0, MLA2-1-8-0.2, MLA2-1-10-0.2, MLA2-1-12-0.2,	MLA3-1-1-1.0, MLA1-2-2-0.2, MLA2-1-4-0.2, MLA2-1-5-0.2, MLA2-1-6-0.2, MLA2-1-7-0.2, MLA2-1-9-0.2, MLA2-1-11-0.2, MLA2-1-6-0.2D	18-JAN-2012	----	----	----	20-JAN-2012	01-FEB-2012	✓
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b> MLA2-1-1-0.2, MLA2-1-1-1.5D, MLA2-1-2-1.0, MLA2-1-3-1.0	MLA2-1-1-1.5, MLA2-1-2-0.2, MLA2-1-3-0.2	17-JAN-2012	23-JAN-2012	15-JUL-2012	✓	24-JAN-2012	15-JUL-2012	✓
<b>Soil Glass Jar - Unpreserved (EG005T)</b> MLA3-1-1-0.2, MLA1-2-1-0.2, MLA1-1-1-0.2, MLA2-1-4-1.5, MLA2-1-5-1.0, MLA2-1-6-1.0,	MLA3-1-1-1.0, MLA1-2-2-0.2, MLA2-1-4-0.2, MLA2-1-5-0.2, MLA2-1-6-0.2, MLA2-1-7-0.2	18-JAN-2012	23-JAN-2012	16-JUL-2012	✓	24-JAN-2012	16-JUL-2012	✓
<b>Soil Glass Jar - Unpreserved (EG005T)</b> MLA2-1-8-0.2, MLA2-1-10-0.2, MLA2-1-12-0.2,	MLA2-1-9-0.2, MLA2-1-11-0.2, MLA2-1-6-0.2D	18-JAN-2012	24-JAN-2012	16-JUL-2012	✓	25-JAN-2012	16-JUL-2012	✓



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	
<b>EP068A: Organochlorine Pesticides (OC)</b>								
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA2-1-1-0.2, MLA2-1-1-1.5D, MLA2-1-2-1.0, MLA2-1-3-1.0	MLA2-1-1-1.5, MLA2-1-2-0.2, MLA2-1-3-0.2	17-JAN-2012	23-JAN-2012	31-JAN-2012	✓	25-JAN-2012	03-MAR-2012	✓
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA1-1-1-0.2, MLA2-1-4-1.5, MLA2-1-5-1.0, MLA2-1-6-1.0, MLA2-1-8-0.2, MLA2-1-10-0.2, MLA2-1-12-0.2	MLA2-1-4-0.2, MLA2-1-5-0.2, MLA2-1-6-0.2, MLA2-1-7-0.2, MLA2-1-9-0.2, MLA2-1-11-0.2,	18-JAN-2012	23-JAN-2012	01-FEB-2012	✓	25-JAN-2012	03-MAR-2012	✓
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA2-1-6-0.2D		18-JAN-2012	24-JAN-2012	01-FEB-2012	✓	25-JAN-2012	04-MAR-2012	✓
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA2-1-1-0.2, MLA2-1-1-1.5D, MLA2-1-2-1.0, MLA2-1-3-1.0	MLA2-1-1-1.5, MLA2-1-2-0.2, MLA2-1-3-0.2,	17-JAN-2012	23-JAN-2012	31-JAN-2012	✓	25-JAN-2012	03-MAR-2012	✓
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA1-1-1-0.2, MLA2-1-4-1.5, MLA2-1-5-1.0, MLA2-1-6-1.0, MLA2-1-8-0.2, MLA2-1-10-0.2, MLA2-1-12-0.2	MLA2-1-4-0.2, MLA2-1-5-0.2, MLA2-1-6-0.2, MLA2-1-7-0.2, MLA2-1-9-0.2, MLA2-1-11-0.2,	18-JAN-2012	23-JAN-2012	01-FEB-2012	✓	25-JAN-2012	03-MAR-2012	✓
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA2-1-6-0.2D		18-JAN-2012	24-JAN-2012	01-FEB-2012	✓	25-JAN-2012	04-MAR-2012	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
<b>Soil Glass Jar - Unpreserved (EP071)</b> MLA3-1-1-0.2, MLA1-2-1-0.2, MLA1-1-1-0.2,	MLA3-1-1-1.0, MLA1-2-2-0.2, MLA2-1-10-0.2	18-JAN-2012	24-JAN-2012	01-FEB-2012	✓	25-JAN-2012	04-MAR-2012	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b> MLA3-1-1-0.2, MLA1-2-1-0.2, MLA1-1-1-0.2,	MLA3-1-1-1.0, MLA1-2-2-0.2, MLA2-1-10-0.2	18-JAN-2012	20-JAN-2012	01-FEB-2012	✓	23-JAN-2012	01-FEB-2012	✓



## 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(where) 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	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	3	22	13.6	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	40	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Pesticides by GCMS	EP068	2	22	9.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Pesticides by GCMS	EP068	2	22	9.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Pesticides by GCMS	EP068	2	22	9.1	5.0	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	ALS QCS3 requirement





## 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	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) 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 (1999) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) 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 (1999) Schedule B(3) (Method 504,505)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. 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 (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### 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
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EG005T: Total Metals by ICP-AES	2532402-002	----	<b>Copper</b>	7440-50-8	115 %	90.1-114%	<b>Recovery greater than upper control limit</b>
EG005T: Total Metals by ICP-AES	2532402-002	----	<b>Lead</b>	7439-92-1	115 %	85.2-111%	<b>Recovery greater than upper control limit</b>
<b>Matrix Spike (MS) Recoveries</b>							
EP068A: Organochlorine Pesticides (OC)	ES1201268-001	Anonymous	<b>Heptachlor</b>	76-44-8	52.9 %	70-130%	<b>Recovery less than lower data quality objective</b>
EP068A: Organochlorine Pesticides (OC)	ES1201268-001	Anonymous	<b>Aldrin</b>	309-00-2	Not Determined	----	<b>Matrix spike recovery not determined due to sample matrix interference.</b>
EP068A: Organochlorine Pesticides (OC)	ES1201268-001	Anonymous	<b>Endrin</b>	72-20-8	56.9 %	70-130%	<b>Recovery less than lower data quality objective</b>
EP068A: Organochlorine Pesticides (OC)	ES1201268-001	Anonymous	<b>4,4'-DDT</b>	50-29-3	Not Determined	----	<b>Matrix spike recovery not determined due to sample matrix interference.</b>

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.

#### Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	: <b>ES1201146</b>		
<b>Client</b>	: <b>LLOYD CONSULTING</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MS LEONA KOPITKE	<b>Contact</b>	: Client Services
<b>Address</b>	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: leona@lloydconsulting.com.au	<b>E-mail</b>	: sydney@alsglobal.com
<b>Telephone</b>	: +61 07 33527300	<b>Telephone</b>	: +61-2-8784 8555
<b>Facsimile</b>	: ----	<b>Facsimile</b>	: +61-2-8784 8500
<b>Project</b>	: 12-773	<b>Page</b>	: 1 of 3
<b>Order number</b>	: ----		
<b>C-O-C number</b>	: ----	<b>Quote number</b>	: EB2011LLOCON0012 (BN/299/10)
<b>Site</b>	: ----		
<b>Sampler</b>	: LK	<b>QC Level</b>	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

#### Dates

Date Samples Received	: 18-JAN-2012	Issue Date	: 21-JAN-2012 06:04
Client Requested Due Date	: 27-JAN-2012	Scheduled Reporting Date	: <b>27-JAN-2012</b>

#### Delivery Details

Mode of Delivery	: Carrier	Temperature	: 14°C - Ice bricks present
No. of coolers/boxes	: 5 HARD	No. of samples received	: 45
Security Seal	: Intact.	No. of samples analysed	: 25

#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **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).**
- **Samples #42 - #44 were received extra and placed on hold.**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exist.

### 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - S-01 7 Metals (incl. Digestion)	SOIL - S-12 OC/OP Pesticides	SOIL - TPH only TPH (C6 - C36)
ES1201146-001	18-JAN-2012 15:00	MLA3-1-1-0.2		✓		✓
ES1201146-002	18-JAN-2012 15:00	MLA3-1-1-1.0		✓		✓
ES1201146-003	18-JAN-2012 15:00	MLA1-2-1-0.2		✓		✓
ES1201146-004	18-JAN-2012 15:00	MLA1-2-2-0.2		✓		✓
ES1201146-005	18-JAN-2012 15:00	MLA1-1-1-0.2		✓	✓	✓
ES1201146-006	17-JAN-2012 15:00	MLA2-1-1-0.2		✓	✓	
ES1201146-007	17-JAN-2012 15:00	MLA2-1-1-1.5		✓	✓	
ES1201146-008	17-JAN-2012 15:00	MLA2-1-1-1.5D		✓	✓	
ES1201146-009	17-JAN-2012 15:00	MLA2-1-2-0.2		✓	✓	
ES1201146-010	17-JAN-2012 15:00	MLA2-1-2-1.0		✓	✓	
ES1201146-011	17-JAN-2012 15:00	MLA2-1-3-0.2		✓	✓	
ES1201146-012	17-JAN-2012 15:00	MLA2-1-3-1.0		✓	✓	
ES1201146-013	18-JAN-2012 15:00	MLA2-1-4-0.2		✓	✓	
ES1201146-014	18-JAN-2012 15:00	MLA2-1-4-1.5		✓	✓	
ES1201146-015	18-JAN-2012 15:00	MLA2-1-5-0.2		✓	✓	
ES1201146-016	18-JAN-2012 15:00	MLA2-1-5-1.0		✓	✓	
ES1201146-017	18-JAN-2012 15:00	MLA2-1-6-0.2		✓	✓	
ES1201146-018	18-JAN-2012 15:00	MLA2-1-6-1.0		✓	✓	
ES1201146-019	18-JAN-2012 15:00	MLA2-1-7-0.2		✓	✓	
ES1201146-020	18-JAN-2012 15:00	MLA2-1-8-0.2		✓	✓	
ES1201146-021	18-JAN-2012 15:00	MLA2-1-9-0.2		✓	✓	
ES1201146-022	18-JAN-2012 15:00	MLA2-1-10-0.2		✓	✓	✓
ES1201146-023	18-JAN-2012 15:00	MLA2-1-11-0.2		✓	✓	
ES1201146-024	18-JAN-2012 15:00	MLA2-1-12-0.2		✓	✓	
ES1201146-025	18-JAN-2012 15:00	MLA3-1-1-0.5	✓			
ES1201146-026	18-JAN-2012 15:00	MLA3-1-1-1.5	✓			
ES1201146-027	17-JAN-2012 15:00	MLA2-1-1-0.5	✓			
ES1201146-028	17-JAN-2012 15:00	MLA2-1-1-1.0	✓			
ES1201146-029	17-JAN-2012 15:00	MLA2-1-2-0.5	✓			
ES1201146-030	17-JAN-2012 15:00	MLA2-1-2-1.5	✓			
ES1201146-031	17-JAN-2012 15:00	MLA2-1-3-0.5	✓			
ES1201146-032	17-JAN-2012 15:00	MLA2-1-3-1.5	✓			
ES1201146-033	18-JAN-2012 15:00	MLA2-1-4-0.5	✓			
ES1201146-034	18-JAN-2012 15:00	MLA2-1-4-1.0	✓			
ES1201146-035	18-JAN-2012 15:00	MLA2-1-4-2.0	✓			



**Chain of Custody**

<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road Smithfield, Sydney 2164
BN / 299 / 10	Email: ALSenviro.Sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS:</b> <b>STANDARD</b>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.			Custody Seal Intact?	Yes No N/A
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Free ice / frozen ice bricks present upon receipt?
<b>ORDER NUMBER:</b>		COC 1 2 3 4 5 6 7		Yes No N/A
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	OF 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>B. Kelly</i>	<b>RELINQUISHED BY:</b> <i>B. Kelly</i>
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 18/1/12 3:10	<b>DATE/TIME:</b> 18-1-12 3:10	<b>RECEIVED BY:</b> <i>David</i>
<b>Email Reports to leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au</b>		<b>DATE/TIME:</b> 18-1-12 3:10		<b>DATE/TIME:</b> 19/1 1130
<b>Email Invoice to (as above)</b>				

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).			Additional Information
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	
	1	MLA3-1-1-0.2	18/1/12	S	1	X	X	
	2	MLA3-1-1-1.0	"	"	1	X	X	
(25)		MLA3-1-1-0.5	"	"	1	ON HOLD		
(26)		MLA3-1-1-1.5	"	"	1	ON HOLD		
	3	MLA1-2-1-0.2	"	"	1	X	X	#
	4	MLA1-2-2-0.2	"	"	1	X	X	
	5	MLA1-1-1-0.2	"	"	1	X	X	X
	6	MLA2-1-1-0.2	17/1/12	"	1		X	X
(27)		MLA2-1-1-0.5	"	"	1	ON HOLD		
(28)		MLA2-1-1-1.0	"	"	1	ON HOLD		
	7	MLA2-1-1-1.5	"	"	1		X	X
	8	MLA2-1-1-1.5D	"	"	1		X	X
<b>TOTAL</b>						5	8	4

Environmental Division  
Sydney  
Work Order  
**ES1201146**



Telephone : +61-2-8784 8555

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



**Chain of Custody**

<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road
<b>BN / 299 / 10</b>	Smithfield, Sydney 2164
	Email: <a href="mailto:ALSEnviro.Sydney@alsglobal.com">ALSEnviro.Sydney@alsglobal.com</a>

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS:</b> <b>STD</b>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.			Custody Seal Intact?	Yes No N/A
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Free ice / frozen ice bricks present upon receipt?
<b>ORDER NUMBER:</b>		COC: 1 2 3 4 5 6 7		Yes No N/A
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C
<b>SAMPLER:</b> Leona Kopitke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>B. Kelly</i>	<b>RELINQUISHED BY:</b>
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 18/11/23.10	<b>DATE/TIME:</b> 18-1-12 3:10pm	<b>RECEIVED BY:</b> <i>Dan J</i>
<b>Email Reports to:</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au				<b>DATE/TIME:</b> 19/1 1130
<b>Email Invoice to (as above)</b>				
<b>COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:</b>				

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 metals	DC/OPS							
9	MLA2-1-2-0.2	17/11/12	S	1		X	X							
29	MLA2-1-2-0.5	"	"	1		ON	HOLD							
10	MLA2-1-2-1.0	"	"	1		X	X							
30	MLA2-1-2-1.5	"	"	1		ON	HOLD							
11	MLA2-1-3-0.2	"	"	1		X	X							
31	MLA2-1-3-0.5	"	"	1		ON	HOLD							
12	MLA2-1-3-1.0	"	"	1		X	X							
32	MLA2-1-3-1.5	"	"	1		ON	HOLD							
13	MLA2-1-4-0.2	18/11/12	"	1		X	X							
33	MLA2-1-4-0.5	"	"	1		ON	HOLD							
34	MLA2-1-4-1.0	"	"	1		ON	HOLD							
14	MLA2-1-4-1.5	"	"	1		X	X							
<b>TOTAL</b>						6	6							

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

**Chain of Custody**



**Laboratory Details**  
 ALS Brisbane  
 Lab Quote Ref. 277-289 Woodpark Road  
 BN / 299 / 10 Smithfield, Sydney 2164  
 Email: ALSenviro.Sydney@atsglobal.com

CLIENT: Lloyd Consulting		TURNAROUND REQUIREMENTS : <b>STD</b>		FOR LABORATORY USE ONLY (Circle)		
OFFICE: 30 Heather Street, Wilston, Q, 4051.		QUOTE NO.: <b>BN / 299 / 10</b>		COC SEQUENCE NUMBER (Circle)		
PROJECT: 12-773		COC: 1 2 3 4 5 6 7		Custody Seal Intact? Yes No N/A		
ORDER NUMBER:		OF: 1 2 3 4 5 6 7		Free ice / frozen ice bricks present upon receipt? Yes No N/A		
PROJECT MANAGER: Trevor Lloyd		CONTACT PH: 07.3352 7300		Random Sample Temperature on Receipt: °C		
SAMPLER: Leona Kopittke		SAMPLER MOBILE: 0410068796		Other comment:		
COC emailed to ALS? ( YES / NO)		REDELIVERED BY: <i>[Signature]</i>		RECEIVED BY: <i>B. Kelly</i>		
Email Reports to leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au		DATE/TIME: <i>18/1/12 3.10</i>		DATE/TIME: <i>18-1-12 3:10pm</i>		
Email Invoice to (as above)		REDELIVERED BY:		RECEIVED BY: <i>Dave</i>		
		DATE/TIME:		DATE/TIME: <i>19/1 1130</i>		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)			ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OPs							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
<b>35</b>	MLA2-1-4-2.0	18/1/12	S	1										
<b>36</b>	MLA2-1-4-2.5	"	"	1										
15	MLA2-1-5-0.2	"	"	1			X X							
<b>37</b>	MLA2-1-5-0.5	"	"	1										
16	MLA2-1-5-1.0	"	"	1			X X							
<b>38</b>	MLA2-1-5-1.5	"	"	1										
	<del>MLA2-1-5-2.0</del>	<del>"</del>	<del>"</del>	<del>1</del>			<del>ON HOLD</del>							
17	MLA2-1-6-0.2	"	"	1			X X							
<b>39</b>	MLA2-1-6-0.5	"	"	1										
18	MLA2-1-6-1.0	"	"	1			X X							
<b>40</b>	MLA2-1-6-1.5	"	"	1										
<b>41</b>	MLA2-1-6-2.0	"	"	1										
				TOTAL			4 4							

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

**Chain of Custody**

<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road Smithfield, Sydney 2164
BN / 299 / 10	Email: ALSenviro.Sydney@atsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b> <i>STD</i>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.			Custody Seal Intact? Yes No N/A	
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Free ice / frozen ice bricks present upon receipt? Yes No N/A
<b>ORDER NUMBER:</b>		COC: 1 2 3 <u>4</u> 5 6 7		Random Sample Temperature on Receipt: °C
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	OF: 1 2 3 <u>4</u> 5 6 7		Other comment:
<b>SAMPLER:</b> Leona Kopitke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>B. Kelly</i>	<b>RELINQUISHED BY:</b>
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 18/1/12 3.10	<b>DATE/TIME:</b> 18/1/12 3:10pm	<b>RECEIVED BY:</b> <i>Daw</i>
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au		<b>DATE/TIME:</b>		<b>DATE/TIME:</b> 19/1 1130
<b>Email Invoice to (as above)</b>				

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information			
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OPS								
19	MLA2-1-7-0.2	18/1/12	S	1		X	X								
20	MLA2-1-8-0.2	"	"	1		X	X								
21	MLA2-1-9-0.2	"	"	1		X	X								
22	MLA2-1-10-0.2	"	"	1	X	X	X								
23	MLA2-1-11-0.2	"	"	1		X	X								
24	MLA2-1-12-0.2	"	"	1		X	X								
				<b>TOTAL</b>	1	6	6								

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

**Laboratory Details** ALS Brisbane  
**Lab Quote Ref.** 277-289 Woodpark Road  
 BN / 299 / 10 Smithfield, Sydney 2164  
 Email: ALS@enviro.syd@alsglobal.com


CLIENT: Lloyd Consulting	TURNAROUND REQUIREMENTS : <b>STANDARD</b>		FOR LABORATORY USE ONLY (Circle)	
OFFICE: 30 Heather Street, Wilston, Q. 4051.	QUOTE NO.: BN / 299 / 10	COC SEQUENCE NUMBER (Circle)		Custody Seal Intact? Yes No N/A
PROJECT: 12-773	ORDER NUMBER:	COC: 1 2 3 4 5 6 7		Free ice / frozen ice bricks present upon receipt? Yes No N/A
PROJECT MANAGER: Trevor Lloyd	CONTACT PH: 07 3352 7300	OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C
SAMPLER: Leona Kopitke	SAMPLER MOBILE: 0410068796	RELINQUISHED BY: <i>[Signature]</i>	RECEIVED BY: <i>B. Kelly</i>	RELINQUISHED BY: <i>B. Kelly</i>
COC emailed to ALS? ( YES / NO)	EDD FORMAT (or default):	DATE/TIME: 18/1/12 3:10	DATE/TIME: 18-1-12 3:10	RECEIVED BY: <i>David</i>
Email Reports to leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au				DATE/TIME: 19/1 1130
Email Invoice to (as above)				

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OPS						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	MLA3-1-1-0.2	18/1/12	S	1	X	X							
2	MLA3-1-1-1.0	"	"	1	X	X							
29	MLA3-1-1-0.5	"	"	1		ON HOLD							
26	MLA3-1-1-1.5	"	"	1		ON HOLD							
3	MLA1-2-1-0.2	"	"	1	X	X							
4	MLA1-2-2-0.2	"	"	1	X	X							
5	MLA1-1-1-0.2	"	"	1	X	X	X						
6	MLA2-1-1-0.2	17/1/12	"	1		X	X						
27	MLA2-1-1-0.5	"	"	1		ON HOLD							
28	MLA2-1-1-1.0	"	"	1		ON HOLD							
7	MLA2-1-1-1.5	"	"	1		X	X						
8	MLA2-1-1-1.5D	"	"	1		X	X						
TOTAL					5	8	4						

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division  
 Sydney  
 Work Order  
**ES1201146**



Telephone : +61-2-8784 8555

**Chain of Custody**

<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road
	Smithfield, Sydney 2164
	Email: ALS@enviro.Sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS:</b> STD		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.			Custody Seal Intact?	Yes No N/A
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COG SEQUENCE NUMBER (Circle)</b>		Free Ice / frozen ice bricks present upon receipt?
<b>ORDER NUMBER:</b>		COC: 1 2 3 4 5 6 7		Yes No N/A
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C
<b>SAMPLER:</b> Leona Kopitke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> B. Kelly	<b>RELINQUISHED BY:</b>
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 18/1/12 3.10	<b>DATE/TIME:</b> 18-1-12 3:10pm	<b>RECEIVED BY:</b> Dan J
<b>Email Reports to:</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au				<b>DATE/TIME:</b> 19/1 1130
<b>Email Invoice to (as above)</b>				

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 metals	DC/OPS							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
9	MLAZ-1-2-0.2	17/1/12	S	1		X	X							
29	MLAZ-1-2-0.5	"	"	1		ON	HOLD							
10	MLAZ-1-2-1.0	"	"	1		X	X							
30	MLAZ-1-2-1.5	"	"	1		ON	HOLD							
"	MLAZ-1-3-0.2	"	"	1		X	X							
31	MLAZ-1-3-0.5	"	"	1		ON	HOLD							
12	MLAZ-1-3-1.0	"	"	1		X	X							
32	MLAZ-1-3-1.5	"	"	1		ON	HOLD							
13	MLAZ-1-4-0.2	18/1/12	"	1		X	X							
33	MLAZ-1-4-0.5	"	"	1		ON	HOLD							
34	MLAZ-1-4-1.0	"	"	1		ON	HOLD							
14	MLAZ-1-4-1.5	"	"	1		X	X							
<b>TOTAL</b>						6	6							

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialion bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solis; B = Unpreserved Bag.

**Chain of Custody**



<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road Smithfield, Sydney 2164
	BN / 299 / 10
	Email: ALSEnviro.Sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b> <b>STD</b>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Custody Seal Intact? Yes No N/A
<b>PROJECT:</b> 12-773		COC: 1 2 3 4 5 6 7		Free ice / frozen ice bricks present upon receipt? Yes No N/A
<b>ORDER NUMBER:</b>		OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07.3352.7300	<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b>	<b>RECEIVED BY:</b>
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068796	<i>AR</i>	<i>B. Mulvey</i>	<i>Dave</i>
<b>COC emailed to ALS? ( YES / NO )</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 18/1/12 3:10	<b>DATE/TIME:</b> 18-1-12 3:19pm	<b>DATE/TIME:</b> 19/1 1130
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au				
<b>Email Invoice to (as above)</b>				
<b>COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:</b>				

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information		
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OPs						
(35)	MLA2-1-4-2.0	18/1/12	S	1			ON HOLD							
(36)	MLA2-1-4-2.5	"	"	1			ON HOLD							
15	MLA2-1-5-0.2	"	"	1			X X							
(37)	MLA2-1-5-0.5	"	"	1			ON HOLD							
16	MLA2-1-5-1.0	"	"	1			X X							
(38)	MLA2-1-5-1.5	"	"	1			ON HOLD							
	<del>MLA2-1-5-2.0</del>	<del>"</del>	<del>"</del>	<del>1</del>			<del>ON HOLD</del>							
17	MLA2-1-6-0.2	"	"	1			X X							
(39)	MLA2-1-6-0.5	"	"	1			ON HOLD							
18	MLA2-1-6-1.0	"	"	1			X X							
(40)	MLA2-1-6-1.5	"	"	1			ON HOLD							
(41)	MLA2-1-6-2.0	"	"	1			ON HOLD							
					TOTAL		4 4							

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



**Chain of Custody**



<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road Smithfield, Sydney 2164 Email: ALS@enviro.sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b> <i>STD</i>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Custody Seal Intact? Yes No N/A
<b>PROJECT:</b> 12-773		COC: 1 2 3 <u>4</u> 5 6 7		Free ice / frozen ice bricks present upon receipt? Yes No N/A
<b>ORDER NUMBER:</b>		OF: 1 2 3 <u>4</u> 5 6 7		Random Sample Temperature on Receipt: °C
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>B. Kelly</i>	<b>RECEIVED BY:</b> <i>Daw</i>
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068798	<b>DATE/TIME:</b> 18/1/12 3.10	<b>DATE/TIME:</b> 18/1/12 3:10 PM	<b>DATE/TIME:</b> 19/1 1130
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>Other comment:</b>		
<b>Email Reports to:</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au				
<b>Email Invoice to (as above)</b>				

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)			ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OPS							
19	MLA2-1-7-0-2	18/1/12	S	1		X	X							
20	MLA2-1-8-0-2	"	"	1		X	X							
21	MLA2-1-9-0-2	"	"	1		X	X							
22	MLA2-1-10-0-2	"	"	1	X	X	X							
23	MLA2-1-11-0-2	"	"	1		X	X							
24	MLA2-1-12-0-2	"	"	1		X	X							
42	MLA1-1-1-1.0	"	"	1										
43	MLA1-1-1-1.5	"	"	1										
44	MLA1-1-1-0.5	"	"	1										
45	MLA2-1-6-0-2 D.	"	"	1										
<b>TOTAL</b>					1	6	6							

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

## Wael Saleh

---

**From:** Jennifer Cullen  
**Sent:** Friday, 20 January 2012 2:38 PM  
**To:** Wael Saleh  
**Subject:** FW: ES1201146

Hi Wael,

Could you please arrange for the below testing to be added?

Thanks

How was your customer experience? [Please send us your feedback](#)

Kind Regards

**Jennifer Cullen**  
CLIENT SERVICES COORDINATOR

**ALS | Environmental Division**

**Address**  
277-289 Woodpark Road, Smithfield, NSW, 2164

PHONE +61 2 8784 8555  
DIRECT +61 2 8784 8509  
FAX +61 2 8784 8500

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 Please consider the environment before printing this email.

---

From: Leona Kopittke [mailto:Leona@lloydconsulting.com.au]  
Sent: Friday, 20 January 2012 2:28 PM  
To: Jennifer Cullen  
Subject: ES1201146

Hi,

Could I please have sample no. MLA2-1-6-0.2D analysed for 7 metals and OC/OP pesticides for work order number ES1201146 as well. Thanks.

Kind regards,  
Leona

**Leona Kopittke** [BSc (Env)]  
Senior Environmental Consultant  
**lloyd consulting**  
PO BOX 320 (30 Heather Street) Wilston QLD 4051  
T (07) 3352 7300 F (07) 3352 7333 M 0410 068 796  
E [leona@lloydconsulting.com.au](mailto:leona@lloydconsulting.com.au) W [www.lloydconsulting.com.au](http://www.lloydconsulting.com.au)  
P Please consider the environment before printing this email

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ALS Group: Click [here](#) to report this email as spam.

## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>ES1202047</b></p> <p><b>Client</b> : <b>LLOYD CONSULTING</b></p> <p><b>Contact</b> : <b>MS LEONA KOPITKE</b></p> <p><b>Address</b> : <b>PO BOX 320</b> <b>WILSTON QLD, AUSTRALIA 4057</b></p> <p><b>E-mail</b> : <b>leona@lloydconsulting.com.au</b></p> <p><b>Telephone</b> : <b>+61 07 33527300</b></p> <p><b>Facsimile</b> : <b>----</b></p> <p><b>Project</b> : <b>12-773</b></p> <p><b>Order number</b> : <b>Rebatch of ES1201146</b></p> <p><b>C-O-C number</b> : <b>----</b></p> <p><b>Sampler</b> : <b>----</b></p> <p><b>Site</b> : <b>----</b></p> <p><b>Quote number</b> : <b>BN/299/10</b></p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : Environmental Division Sydney</p> <p><b>Contact</b> : Client Services</p> <p><b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164</p> <p><b>E-mail</b> : sydney@alsglobal.com</p> <p><b>Telephone</b> : +61-2-8784 8555</p> <p><b>Facsimile</b> : +61-2-8784 8500</p> <p><b>QC Level</b> : NEPM 1999 Schedule B(3) and ALS QCS3 requirement</p> <p><b>Date Samples Received</b> : 01-FEB-2012</p> <p><b>Issue Date</b> : 08-FEB-2012</p> <p><b>No. of samples received</b> : 10</p> <p><b>No. of samples analysed</b> : 10</p>
--	---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Evie.Sidarta	Inorganic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



### **General Comments**

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

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

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

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

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

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



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-1-0.5	MLA2-1-1-1.0	MLA2-1-2-0.5	MLA2-1-3-0.5	MLA2-1-3-1.5
				18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00
				ES1202047-001	ES1202047-002	ES1202047-003	ES1202047-004	ES1202047-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	12.4	11.8	9.7	11.0	14.9
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	<5	14	146	9
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	22	32	42	29	23
Copper	7440-50-8	5	mg/kg	12	10	11	14	8
Lead	7439-92-1	5	mg/kg	8	9	12	10	8
Nickel	7440-02-0	2	mg/kg	20	14	18	18	13
Zinc	7440-66-6	5	mg/kg	19	16	13	26	17
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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
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
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
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
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	----	----	96.1	97.1	107
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	----	----	72.6	63.2	77.7





## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-4-0.5	MLA2-1-4-1.0	MLA2-1-4-2.0	MLA2-1-5-1.5	MLA2-1-6-0.5
				18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00	18-JAN-2012 15:00
				ES1202047-006	ES1202047-007	ES1202047-008	ES1202047-009	ES1202047-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	13.4	15.5	15.4	12.7	10.5
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	194	65	53	6	18
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	25	16	24	29	36
Copper	7440-50-8	5	mg/kg	11	8	8	9	14
Lead	7439-92-1	5	mg/kg	10	6	7	10	11
Nickel	7440-02-0	2	mg/kg	15	12	11	12	17
Zinc	7440-66-6	5	mg/kg	32	19	13	15	20
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.05	mg/kg	<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
beta-BHC	319-85-7	0.05	mg/kg	<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
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	<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
trans-Chlordane	5103-74-2	0.05	mg/kg	<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
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<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
Endrin	72-20-8	0.05	mg/kg	<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
4,4'-DDD	72-54-8	0.05	mg/kg	<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
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<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
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	----	<0.2
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	101	99.1	96.6	----	96.1
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	53.9	72.7	77.3	----	63.3



### Surrogate Control Limits

Sub-Matrix: <b>SOIL</b>		Recovery Limits (%)	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
<b>Dibromo-DDE</b>	21655-73-2	19.5	167.0
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
<b>DEF</b>	78-48-8	22.7	163.5

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1202047</b>	<b>Page</b>	<b>: 1 of 6</b>
<b>Client</b>	<b>: LLOYD CONSULTING</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: MS LEONA KOPITKE</b>	<b>Contact</b>	<b>: Client Services</b>
<b>Address</b>	<b>: PO BOX 320 WILSTON QLD, AUSTRALIA 4057</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: leona@lloydconsulting.com.au</b>	<b>E-mail</b>	<b>: sydney@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 07 33527300</b>	<b>Telephone</b>	<b>: +61-2-8784 8555</b>
<b>Facsimile</b>	<b>: ----</b>	<b>Facsimile</b>	<b>: +61-2-8784 8500</b>
<b>Project</b>	<b>: 12-773</b>	<b>QC Level</b>	<b>: NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>	<b>Date Samples Received</b>	<b>: 01-FEB-2012</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 08-FEB-2012</b>
<b>Sampler</b>	<b>: ----</b>	<b>No. of samples received</b>	<b>: 10</b>
<b>Order number</b>	<b>: Rebatch of ES1201146</b>	<b>No. of samples analysed</b>	<b>: 10</b>
<b>Quote number</b>	<b>: BN/299/10</b>		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Evie Sidarta	Inorganic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



### **General Comments**

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

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

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

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

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	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 2149897)</b>									
ES1201696-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	22.4	22.9	2.1	0% - 20%
ES1202047-004	MLA2-1-3-0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.0	11.1	1.5	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2151668)</b>									
ES1202040-016	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	116	108	6.9	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	79	73	7.9	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	37	35	3.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	9	12.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	57	52	10.0	0% - 50%
ES1202047-001	MLA2-1-1-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	22	25	12.4	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	20	20	0.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	9	59.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	12	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	13	50.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	19	16	17.5	No Limit
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 2149288)</b>									
ES1202047-003	MLA2-1-2-0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Page : 4 of 6  
 Work Order : ES1202047  
 Client : LLOYD CONSULTING  
 Project : 12-773



Sub-Matrix: **SOIL**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Recovery Limits (%)</i>
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 2149288) - continued</b>									
ES1202047-003	MLA2-1-2-0.5	EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	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 Sample (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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 2151668)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.11 mg/kg	123	70	130	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	103	83.3	111	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.93 mg/kg	109	89.2	117	
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.68 mg/kg	110	90.1	114	
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.76 mg/kg	102	85.2	111	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.23 mg/kg	109	88.3	116	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	103.88 mg/kg	93.9	88.9	112	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2149288)</b>									
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	82.2	60.8	116	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	86.6	59.4	115	
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	76.2	59.8	117	
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	59.8	118	
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	69.4	65.8	114	
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	73.4	65.6	115	
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	80.5	67	113	
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	80.5	65.6	113	
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	80.8	60.7	113	
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	65.8	116	
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	81.4	57.3	120	
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	104	67.4	116	
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.0	67.5	114	
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	82.0	63	121	
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.3	66.1	117	
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.8	65.3	116	
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	73.5	57.3	115	
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	72.8	63.6	119	
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	73.7	58.4	127	
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	73.6	63.6	117	
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	75.4	50.4	132	



### 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	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					MS	Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 2151668)</b>							
ES1202040-016	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	91.0	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.0	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	80.4	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	110	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	97.3	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	88.4	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	86.7	70	130
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2149288)</b>							
ES1202047-003	MLA2-1-2-0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	93.9	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	75.0	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	92.1	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	108	70	130
		EP068: Endrin	72-20-8	2 mg/kg	84.5	70	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	74.6	70	130

## INTERPRETIVE QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1202047</b>	<b>Page</b>	<b>: 1 of 5</b>
<b>Client</b>	<b>: LLOYD CONSULTING</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: MS LEONA KOPITTKE</b>	<b>Contact</b>	<b>: Client Services</b>
<b>Address</b>	<b>: PO BOX 320 WILSTON QLD, AUSTRALIA 4057</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: leona@lloydconsulting.com.au</b>	<b>E-mail</b>	<b>: sydney@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 07 33527300</b>	<b>Telephone</b>	<b>: +61-2-8784 8555</b>
<b>Facsimile</b>	<b>: ----</b>	<b>Facsimile</b>	<b>: +61-2-8784 8500</b>
<b>Project</b>	<b>: 12-773</b>	<b>QC Level</b>	<b>: NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>	<b>Date Samples Received</b>	<b>: 01-FEB-2012</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 08-FEB-2012</b>
<b>Sampler</b>	<b>: ----</b>	<b>No. of samples received</b>	<b>: 10</b>
<b>Order number</b>	<b>: Rebatch of ES1201146</b>	<b>No. of samples analysed</b>	<b>: 10</b>
<b>Quote number</b>	<b>: BN/299/10</b>		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
MLA2-1-1-0.5, MLA2-1-2-0.5, MLA2-1-3-1.5, MLA2-1-4-1.0, MLA2-1-5-1.5,	MLA2-1-1-1.0, MLA2-1-3-0.5, MLA2-1-4-0.5, MLA2-1-4-2.0, MLA2-1-6-0.5	18-JAN-2012	----	----	----	01-FEB-2012	01-FEB-2012	✓
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b>								
MLA2-1-1-0.5, MLA2-1-2-0.5, MLA2-1-3-1.5, MLA2-1-4-1.0, MLA2-1-5-1.5,	MLA2-1-1-1.0, MLA2-1-3-0.5, MLA2-1-4-0.5, MLA2-1-4-2.0, MLA2-1-6-0.5	18-JAN-2012	02-FEB-2012	16-JUL-2012	✓	03-FEB-2012	16-JUL-2012	✓
<b>EP068A: Organochlorine Pesticides (OC)</b>								
<b>Soil Glass Jar - Unpreserved (EP068)</b>								
MLA2-1-2-0.5, MLA2-1-3-1.5, MLA2-1-4-1.0, MLA2-1-6-0.5	MLA2-1-3-0.5, MLA2-1-4-0.5, MLA2-1-4-2.0,	18-JAN-2012	01-FEB-2012	01-FEB-2012	✓	02-FEB-2012	12-MAR-2012	✓



## 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(where) 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	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	7	14.3	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Pesticides by GCMS	EP068	1	7	14.3	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Pesticides by GCMS	EP068	1	7	14.3	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Pesticides by GCMS	EP068	1	7	14.3	5.0	✔	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✔	ALS QCS3 requirement



## 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.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) 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 (1999) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) 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 (1999) Schedule B(3) (Method 504,505)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. 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 (1999) Schedule B(3) (Method 202)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.





## **Summary of Outliers**

### **Outliers : Quality Control Samples**

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### **Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes**

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### **Regular Sample Surrogates**

- For all regular sample matrices, no surrogate recovery outliers occur.

### **Outliers : Analysis Holding Time Compliance**

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.
-

5816-848

Fadi Soro

Fadi *[Signature]*  
1/2/12  
9:30am

**From:** Jennifer Cullen  
**Sent:** Tuesday, 31 January 2012 5:49 PM  
**To:** Samples Sydney; Fadi Soro; Wael Saleh  
**Cc:** Edwandy Fadjar; Pabi Subba; Phalak Inthakesone  
**Subject:** FW: ES1201146  
**Importance:** High

Hi Fadi,

Could you please rebatch these samples ASAP? Please note that holding times for OCPs will begin to expire tomorrow (Wednesday 1/02/11).

Please ensure these are committed ASAP so that extractions can be gin in time.

Thanks

How was your customer experience? Please send us your feedback

Kind Regards

**Jennifer Cullen**  
CLIENT SERVICES COORDINATOR

ALS | Environmental Division

**Address**  
277-289 Woodpark Road, Smithfield, NSW, 2164

PHONE +61 2 8784 8555  
DIRECT +61 2 8784 8509  
FAX +61 2 8784 8500

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Please consider the environment before printing this email.

**From:** Leona Kopittke [mailto:Leona@lloydconsulting.com.au]  
**Sent:** Tuesday, 31 January 2012 5:28 PM  
**To:** Jennifer Cullen  
**Cc:** Trevor Lloyd  
**Subject:** RE: ES1201146

Hi Jennifer,

Could I please have the following samples analysed as well:

- ① MLA2-1-1-0.5 27 Metals
- ② MLA2-1-1-1.0 28 Metals
- ③ MLA2-1-2-0.5 29 Metals & OCs
- ④ MLA2-1-3-0.5 11 Metals & OCs
- ⑤ MLA2-1-3-1.5 32 Metals & OCs

Environmental Division  
Sydney  
Work Order  
**ES1202047**



Telephone : +61-2-8784 8555

1/02/2012

## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>ES1203989</b></p> <p><b>Client</b> : <b>LLOYD CONSULTING</b></p> <p><b>Contact</b> : MS LEONA KOPITKE</p> <p><b>Address</b> : PO BOX 320 WILSTON QLD, AUSTRALIA 4057</p> <p><b>E-mail</b> : leona@lloydconsulting.com.au</p> <p><b>Telephone</b> : +61 07 33527300</p> <p><b>Facsimile</b> : ----</p> <p><b>Project</b> : 12-773</p> <p><b>Order number</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : LK</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : BN/299/10</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : Environmental Division Sydney</p> <p><b>Contact</b> : Client Services</p> <p><b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164</p> <p><b>E-mail</b> : sydney@alsglobal.com</p> <p><b>Telephone</b> : +61-2-8784 8555</p> <p><b>Facsimile</b> : +61-2-8784 8500</p> <p><b>QC Level</b> : NEPM 1999 Schedule B(3) and ALS QCS3 requirement</p> <p><b>Date Samples Received</b> : 22-FEB-2012</p> <p><b>Issue Date</b> : 29-FEB-2012</p> <p><b>No. of samples received</b> : 2</p> <p><b>No. of samples analysed</b> : 2</p>	
--	---	--

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



### **General Comments**

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

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

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

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

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

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

- **EG020: LCS recoveries for some elements fall outside ALS Dynamic Control Limit. However, they are within the acceptance criteria based on ALS DQO. No further action is required.**
-



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				MLA2-1-SW1	MLA2-1-SW1D	---	---	---
				20-FEB-2012 15:00	20-FEB-2012 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES1203989-001	ES1203989-002	---	---	---
<b>EG020T: Total Metals by ICP-MS</b>								
Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	---	---	---
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	---	---	---
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	---	---	---
Copper	7440-50-8	0.001	mg/L	0.003	0.002	---	---	---
Nickel	7440-02-0	0.001	mg/L	0.003	0.003	---	---	---
Lead	7439-92-1	0.001	mg/L	0.002	0.002	---	---	---
Zinc	7440-66-6	0.005	mg/L	0.064	0.050	---	---	---
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	---	---	---
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	---	---	---
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	---	---	---
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	---	---	---
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	---	---	---
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	---	---	---
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	---	---	---
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	---	---	---
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	---	---	---
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	---	---	---
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	---	---	---
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	---	---	---
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	---	---	---
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	---	---	---
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	---	---	---
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	---	---	---
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	---	---	---
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	---	---	---
4,4'-DDT	50-29-3	2	µg/L	<2	<2	---	---	---
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	---	---	---
Methoxychlor	72-43-5	2	µg/L	<2	<2	---	---	---
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	---	---	---
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	---	---	---
Monocrotophos	6923-22-4	2	µg/L	<2	<2	---	---	---
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	---	---	---
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	---	---	---
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	---	---	---



## Analytical Results

Sub-Matrix: WATER

Client sample ID  
 Client sampling date / time

				MLA2-1-SW1	MLA2-1-SW1D	----	----	----
				20-FEB-2012 15:00	20-FEB-2012 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1203989-001	ES1203989-002	----	----	----
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
Parathion-methyl	298-00-0	2	µg/L	<2	<2	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2	µg/L	<2	<2	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	61.6	73.8	----	----	----
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	64.6	81.8	----	----	----





### Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	33.6	142.5
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	28.1	147.7

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1203989</b>	<b>Page</b>	<b>: 1 of 6</b>
<b>Client</b>	<b>: LLOYD CONSULTING</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: MS LEONA KOPITKE</b>	<b>Contact</b>	<b>: Client Services</b>
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<b>Facsimile</b>	<b>: ----</b>	<b>Facsimile</b>	<b>: +61-2-8784 8500</b>
<b>Project</b>	<b>: 12-773</b>	<b>QC Level</b>	<b>: NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>	<b>Date Samples Received</b>	<b>: 22-FEB-2012</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 29-FEB-2012</b>
<b>Sampler</b>	<b>: LK</b>	<b>No. of samples received</b>	<b>: 2</b>
<b>Order number</b>	<b>: ----</b>	<b>No. of samples analysed</b>	<b>: 2</b>
<b>Quote number</b>	<b>: BN/299/10</b>		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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



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Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



### **General Comments**

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

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

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

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

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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG020T: Total Metals by ICP-MS (QC Lot: 2189718)</b>									
ES1203928-004	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0002	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.003	0.004	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.016	0.015	0.0	0% - 50%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.042	0.040	3.6	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.008	0.008	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.009	0.009	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.029	0.026	11.0	No Limit
ES1204418-007	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.005	0.005	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.022	0.020	13.4	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 Sample (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: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG020T: Total Metals by ICP-MS (QCLot: 2189718)</b>									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	# 113	85	111	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.7	88	108	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	# 114	92	114	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	113	89	115	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.6	91	113	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	# 115	91	113	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	110	78	116	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2188959)</b>									
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	93.4	61	117	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	78.6	56	116	
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	90.6	60	118	
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	89.7	62	118	
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	82.5	64	116	
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	76.8	63	117	
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	94.6	65	121	
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	85.8	63	117	
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	103	64	120	
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	98.2	67	119	
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	101	63	123	
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	110	64	122	
EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	92.0	64	118	
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	94.0	64	126	
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	106	68	122	
EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	102	66	122	
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	88.8	62	112	
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	73.2	60	124	
EP068: 4,4'-DDT	50-29-3	2.0	µg/L	<2	5 µg/L	80.3	54	126	
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	82.0	55	119	
EP068: Methoxychlor	72-43-5	2.0	µg/L	<2	5 µg/L	88.8	53	127	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2188959)</b>									
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	73.8	52	128	
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	76.2	28.4	150	
EP068: Monocrotophos	6923-22-4	0.5	µg/L	----	5 µg/L	22.7	10	89.1	
		2.0	µg/L	<2	----	----	----	----	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)		
						LCS	Low	High
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2188959) - continued</b>								
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	83.8	61	117
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	86.2	64	122
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	79.9	67	121
EP068: Parathion-methyl	298-00-0	2.0	µg/L	<2	5 µg/L	79.0	59	123
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	82.7	57	123
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	82.8	67	119
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	80.0	67	121
EP068: Parathion	56-38-2	2.0	µg/L	<2	5 µg/L	74.3	64	118
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	76.4	64	118
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	89.6	59	123
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	98.6	62	122
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	82.2	59	131
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	99.6	64	116
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	88.0	68	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	82.0	62	120
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	89.7	39	131



### 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: **WATER**

				<i>Matrix Spike (MS) Report</i>			
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Spike</i>	<i>Spike Recovery (%)</i>		
				<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EG020T: Total Metals by ICP-MS (QCLot: 2189718)</b>							
ES1203928-033	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	104	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	101	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	107	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	99.1	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	94.3	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	102	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	95.9	70	130



## INTERPRETIVE QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1203989</b>	<b>Page</b>	<b>: 1 of 5</b>
<b>Client</b>	<b>: LLOYD CONSULTING</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: MS LEONA KOPITTKE</b>	<b>Contact</b>	<b>: Client Services</b>
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<b>Facsimile</b>	<b>: ----</b>	<b>Facsimile</b>	<b>: +61-2-8784 8500</b>
<b>Project</b>	<b>: 12-773</b>	<b>QC Level</b>	<b>: NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>	<b>Date Samples Received</b>	<b>: 22-FEB-2012</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 29-FEB-2012</b>
<b>Sampler</b>	<b>: LK</b>	<b>No. of samples received</b>	<b>: 2</b>
<b>Order number</b>	<b>: ----</b>	<b>No. of samples analysed</b>	<b>: 2</b>
<b>Quote number</b>	<b>: BN/299/10</b>		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

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	
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)</b> MLA2-1-SW1,	MLA2-1-SW1D	20-FEB-2012	29-FEB-2012	18-AUG-2012	✓	29-FEB-2012	18-AUG-2012	✓
<b>EP068A: Organochlorine Pesticides (OC)</b>								
<b>Amber Glass Bottle - Unpreserved (EP068)</b> MLA2-1-SW1,	MLA2-1-SW1D	20-FEB-2012	27-FEB-2012	27-FEB-2012	✓	29-FEB-2012	08-APR-2012	✓
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
<b>Amber Glass Bottle - Unpreserved (EP068)</b> MLA2-1-SW1,	MLA2-1-SW1D	20-FEB-2012	27-FEB-2012	27-FEB-2012	✓	29-FEB-2012	08-APR-2012	✓



## 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(where) 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: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Analytical Methods	Method	Count		Rate (%)			Quality Control Specification
			QC	Regular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>								
Total Metals by ICP-MS - Suite A		EG020A-T	2	11	18.2	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>								
Pesticides by GCMS		EP068	1	2	50.0	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A		EG020A-T	1	11	9.1	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>								
Pesticides by GCMS		EP068	1	2	50.0	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A		EG020A-T	1	11	9.1	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>								
Total Metals by ICP-MS - Suite A		EG020A-T	1	11	9.1	5.0	✔	ALS QCS3 requirement



## 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.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Pesticides by GCMS	EP068	WATER	USEPA SW 846 - 8270D Sample 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 (1999) Schedule B(3) (Appdx. 2)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EG020T: Total Metals by ICP-MS	2592912-003	----	<b>Arsenic</b>	7440-38-2	113 %	85-111%	<b>Recovery greater than upper control limit</b>
EG020T: Total Metals by ICP-MS	2592912-003	----	<b>Chromium</b>	7440-47-3	114 %	92-114%	<b>Recovery greater than upper control limit</b>
EG020T: Total Metals by ICP-MS	2592912-003	----	<b>Nickel</b>	7440-02-0	115 %	91-113%	<b>Recovery greater than upper control limit</b>

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order : ES1203989</b>	
<b>Client : LLOYD CONSULTING</b> <b>Contact : MS LEONA KOPITKE</b> <b>Address : PO BOX 320</b> <b>                  WILSTON QLD, AUSTRALIA 4057</b>	<b>Laboratory : Environmental Division Sydney</b> <b>Contact : Client Services</b> <b>Address : 277-289 Woodpark Road Smithfield</b> <b>                  NSW Australia 2164</b>
<b>E-mail : leona@lloydconsulting.com.au</b> <b>Telephone : +61 07 33527300</b> <b>Facsimile : ----</b>	<b>E-mail : sydney@alsglobal.com</b> <b>Telephone : +61-2-8784 8555</b> <b>Facsimile : +61-2-8784 8500</b>
<b>Project : 12-773</b> <b>Order number : ----</b> <b>C-O-C number : ----</b> <b>Site : ----</b> <b>Sampler : LK</b>	<b>Page : 1 of 2</b> <b>Quote number : EB2011LLOCON0012 (BN/299/10)</b> <b>QC Level : NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>

#### Dates

<b>Date Samples Received : 22-FEB-2012</b> <b>Client Requested Due Date : 29-FEB-2012</b>	<b>Issue Date : 25-FEB-2012 03:04</b> <b>Scheduled Reporting Date : <b>29-FEB-2012</b></b>
--	---

#### Delivery Details

<b>Mode of Delivery : Carrier</b> <b>No. of coolers/boxes : 6 HARD</b> <b>Security Seal : Intact.</b>	<b>Temperature : 21°C</b> <b>No. of samples received : 2</b> <b>No. of samples analysed : 2</b>
---	---

#### 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 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exist.

## 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-01T 7 metals (Total)	WATER - W-12 OC/OP Pesticides
ES1203989-001	20-FEB-2012 15:00	MLA2-1-SW1	✓	✓
ES1203989-002	20-FEB-2012 15:00	MLA2-1-SW1D	✓	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### MS LEONA KOPITTKE

- *AU Certificate of Analysis - NATA ( COA )	Email	leona@lloydconsulting.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	leona@lloydconsulting.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	leona@lloydconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	leona@lloydconsulting.com.au
- A4 - AU Tax Invoice ( INV )	Email	leona@lloydconsulting.com.au
- Chain of Custody (CoC) ( COC )	Email	leona@lloydconsulting.com.au
- EDI Format - ENMRG ( ENMRG )	Email	leona@lloydconsulting.com.au

### TREVOR LLOYD

- *AU Certificate of Analysis - NATA ( COA )	Email	trevor@lloydconsulting.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	trevor@lloydconsulting.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	trevor@lloydconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	trevor@lloydconsulting.com.au
- Chain of Custody (CoC) ( COC )	Email	trevor@lloydconsulting.com.au
- EDI Format - ENMRG ( ENMRG )	Email	trevor@lloydconsulting.com.au
- EDI Format - XTab ( XTAB )	Email	trevor@lloydconsulting.com.au



**Chain of Custody**

<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road Smithfield, Sydney 2164
BN / 299 / 10	Email: ALS@enviro.syd@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b> <b>STD</b>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.			Custody Seal Intact?	Yes No N/A
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Free ice / frozen ice bricks present upon receipt?
<b>ORDER NUMBER:</b>		COC: 1 2 3 4 5 6 7	OF: 1 2 3 4 5 6 7	Yes No N/A
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300			Random Sample Temperature on Receipt: °C
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410088796	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>[Signature]</i>
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 21/2/12 5:50	<b>DATE/TIME:</b> 21-2-12	<b>DATE/TIME:</b> 22/2 12:4
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au		<b>Other comment:</b>		
<b>Email Invoice to (as above)</b>				

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)							Additional Information		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	OC/OPS	Filtered	Metals							
1	MLA2-1-SW1	20/2/12 3pm	W	2	X	X								
2	MLA2-1-SWID	"	"	2	X	X								pls filter metals
				<b>TOTAL</b>										

Environmental Division  
Sydney  
Work Order  
**ES1203989**

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>ES1204112</b>	Page	: 1 of 14
<b>Client</b>	: <b>LLOYD CONSULTING</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MS LEONA KOPITKE	<b>Contact</b>	: Client Services
<b>Address</b>	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: leona@lloydconsulting.com.au	<b>E-mail</b>	: sydney@alsglobal.com
<b>Telephone</b>	: +61 07 33527300	<b>Telephone</b>	: +61-2-8784 8555
<b>Facsimile</b>	: ----	<b>Facsimile</b>	: +61-2-8784 8500
<b>Project</b>	: 12-773	<b>QC Level</b>	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Order number</b>	: ----	<b>Date Samples Received</b>	: 23-FEB-2012
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 01-MAR-2012
<b>Sampler</b>	: LK	<b>No. of samples received</b>	: 72
<b>Site</b>	: ----	<b>No. of samples analysed</b>	: 35
<b>Quote number</b>	: BN/299/10		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



## General Comments

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

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

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

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

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

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

- **EG005T: LCS recovery for Lead falls outside ALS Dynamic Control Limit. However, it is within the acceptance criteria based on ALS DQO. No further action is required.**
- **EP068: Positive results on particular sample MLA2-1-SP2 confirmed by re-extraction and re-analysis.**



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-SP1	MLA2-1-SP2	MLA2-1-SP3	MLA2-1-14-0.2	MLA2-1-14-0.5
				20-FEB-2012 15:00	20-FEB-2012 15:00	20-FEB-2012 15:00	20-FEB-2012 15:00	20-FEB-2012 15:00
				ES1204112-001	ES1204112-002	ES1204112-003	ES1204112-004	ES1204112-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	12.6	14.5	17.6	16.2	15.9
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	17	78	126	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	18	15	23	23	26
Copper	7440-50-8	5	mg/kg	7	9	9	8	8
Lead	7439-92-1	5	mg/kg	6	12	11	7	8
Nickel	7440-02-0	2	mg/kg	9	9	11	16	12
Zinc	7440-66-6	5	mg/kg	21	52	86	12	13
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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	----	----	----
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	----	0.27	----	----	----
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	----	----	----
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	----	----	----
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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	----	----	----



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-SP1	MLA2-1-SP2	MLA2-1-SP3	MLA2-1-14-0.2	MLA2-1-14-0.5
				20-FEB-2012 15:00	20-FEB-2012 15:00	20-FEB-2012 15:00	20-FEB-2012 15:00	20-FEB-2012 15:00
				ES1204112-001	ES1204112-002	ES1204112-003	ES1204112-004	ES1204112-005
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	10	mg/kg	----	----	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	----	116	----	----	----
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	----	110	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	89.0	----	----
Toluene-D8	2037-26-5	0.1	%	----	----	93.0	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	88.2	----	----



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MLA2-1-14-2.0	MLA2-1-15-0.2	MLA2-1-15-0.2D	MLA2-1-15-0.5	MLA2-1-15-2.0
				20-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00
Compound	CAS Number	LOR	Unit	ES1204112-006	ES1204112-007	ES1204112-008	ES1204112-009	ES1204112-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	22.8	21.1	35.0	22.4	26.0
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	6	20	22	25	25
Copper	7440-50-8	5	mg/kg	<5	9	8	10	<5
Lead	7439-92-1	5	mg/kg	<5	7	8	8	7
Nickel	7440-02-0	2	mg/kg	5	9	8	17	7
Zinc	7440-66-6	5	mg/kg	8	11	10	15	14



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-16-2.0	MLA2-1-16-3.0	MLA2-1-17-0.2	MLA2-1-17-0.5	MLA2-1-17-1.5
				21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00
				ES1204112-011	ES1204112-012	ES1204112-013	ES1204112-014	ES1204112-015
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	17.6	19.7	17.5	14.4	14.0
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	5	<5	101	37	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	15	9	26	18	24
Copper	7440-50-8	5	mg/kg	5	<5	11	9	5
Lead	7439-92-1	5	mg/kg	7	7	8	9	7
Nickel	7440-02-0	2	mg/kg	7	4	19	13	8
Zinc	7440-66-6	5	mg/kg	11	9	18	14	12
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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	----	----
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	----	----
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	----	----
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	----	----
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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	----	----





## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-16-2.0	MLA2-1-16-3.0	MLA2-1-17-0.2	MLA2-1-17-0.5	MLA2-1-17-1.5
				21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00
				ES1204112-011	ES1204112-012	ES1204112-013	ES1204112-014	ES1204112-015
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
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	<100	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	<50	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	10	mg/kg	<10	----	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	<50	----	----
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	106	101	102	----	----
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	102	102	110	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	76.5	----	82.9	----	----
Toluene-D8	2037-26-5	0.1	%	84.0	----	81.9	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	73.8	----	74.7	----	----



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-18-0.2	MLA2-1-18-0.5D	MLA2-1-18-0.5	MLA2-1-18-1.5	MLA2-1-19-0.2
				21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00
				ES1204112-016	ES1204112-017	ES1204112-018	ES1204112-019	ES1204112-020
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	22.6	17.6	18.2	17.8	18.6
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	9	10	7	7	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	32	54	36	23	20
Copper	7440-50-8	5	mg/kg	13	11	10	8	8
Lead	7439-92-1	5	mg/kg	10	12	11	13	9
Nickel	7440-02-0	2	mg/kg	22	17	15	16	7
Zinc	7440-66-6	5	mg/kg	20	15	14	16	106
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	<0.05
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
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-18-0.2	MLA2-1-18-0.5D	MLA2-1-18-0.5	MLA2-1-18-1.5	MLA2-1-19-0.2
				21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00
				ES1204112-016	ES1204112-017	ES1204112-018	ES1204112-019	ES1204112-020
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	110	----	----	----	96.4
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	103	----	----	----	95.6
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	74.7	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	88.5	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	81.4	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MLA2-1-19-0.5	MLA2-1-19-1.5	MLA2-1-20-0.2	MLA2-1-20-0.2D	MLA2-1-20-0.5
				21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00
Compound	CAS Number	LOR	Unit	ES1204112-021	ES1204112-022	ES1204112-023	ES1204112-024	ES1204112-025
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	15.9	12.7	18.8	13.6	12.8
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	24	7	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	21	20	25	16
Copper	7440-50-8	5	mg/kg	11	6	12	10	8
Lead	7439-92-1	5	mg/kg	10	10	8	8	6
Nickel	7440-02-0	2	mg/kg	16	10	10	8	8
Zinc	7440-66-6	5	mg/kg	39	11	15	12	14



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-21-0.2	MLA2-1-21-0.5	MLA2-1-21-1.0	MLA2-1-21-1.5	MLA2-1-22-0.2
				21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	22-FEB-2012 15:00
				ES1204112-026	ES1204112-027	ES1204112-028	ES1204112-029	ES1204112-030
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	14.3	17.4	12.6	17.9	5.7
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	86	44	48	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	25	22	16	38
Copper	7440-50-8	5	mg/kg	9	8	7	6	6
Lead	7439-92-1	5	mg/kg	5	5	9	8	11
Nickel	7440-02-0	2	mg/kg	6	8	9	8	8
Zinc	7440-66-6	5	mg/kg	9	11	9	12	6
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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	----	----	----	----
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	----	----	----	----
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	----	----	----	----
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-21-0.2	MLA2-1-21-0.5	MLA2-1-21-1.0	MLA2-1-21-1.5	MLA2-1-22-0.2
				21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	21-FEB-2012 15:00	22-FEB-2012 15:00
				ES1204112-026	ES1204112-027	ES1204112-028	ES1204112-029	ES1204112-030
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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	----	----	----	----
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	103	----	----	----	----
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	106	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MLA2-1-22-0.5	MLA2-1-22-0.5D	MLA2-1-23-0.2	MLA2-1-23-0.5	MLA2-1-23-1.5
				22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00
Compound	CAS Number	LOR	Unit	ES1204112-031	ES1204112-032	ES1204112-033	ES1204112-034	ES1204112-035
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	14.7	13.3	6.9	14.6	14.3
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	16	35	20	19	18
Copper	7440-50-8	5	mg/kg	6	8	<5	10	6
Lead	7439-92-1	5	mg/kg	7	10	6	7	7
Nickel	7440-02-0	2	mg/kg	8	14	3	19	10
Zinc	7440-66-6	5	mg/kg	11	11	<5	11	12





### Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	19.5	167.0
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	22.7	163.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES1204112</b>	<b>Page</b>	: 1 of 10
<b>Client</b>	: <b>LLOYD CONSULTING</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MS LEONA KOPITTKÉ	<b>Contact</b>	: Client Services
<b>Address</b>	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: leona@lloydconsulting.com.au	<b>E-mail</b>	: sydney@alsglobal.com
<b>Telephone</b>	: +61 07 33527300	<b>Telephone</b>	: +61-2-8784 8555
<b>Facsimile</b>	: ----	<b>Facsimile</b>	: +61-2-8784 8500
<b>Project</b>	: 12-773	<b>QC Level</b>	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: ----	<b>Date Samples Received</b>	: 23-FEB-2012
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 01-MAR-2012
<b>Sampler</b>	: LK	<b>No. of samples received</b>	: 72
<b>Order number</b>	: ----	<b>No. of samples analysed</b>	: 35
<b>Quote number</b>	: BN/299/10		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



## **General Comments**

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

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

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

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

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	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 2187049)</b>									
ES1204112-003	MLA2-1-SP3	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.6	20.2	13.2	0% - 20%
ES1204112-014	MLA2-1-17-0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.4	14.9	3.4	0% - 50%
<b>EA055: Moisture Content (QC Lot: 2187050)</b>									
ES1204112-023	MLA2-1-20-0.2	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	18.8	17.2	9.2	0% - 50%
ES1204112-034	MLA2-1-23-0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.6	13.0	11.8	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2186569)</b>									
ES1204112-001	MLA2-1-SP1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	22	19.9	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	9	14	48.4	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	17	24	31.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	8	20.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	11	47.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	21	29	30.7	No Limit
ES1204112-011	MLA2-1-16-2.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	15	16	7.6	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	7	7	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	5	6	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	8	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	11	12	0.0	No Limit
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2186570)</b>									
ES1204112-021	MLA2-1-19-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	16	18.5	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	16	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	24	22	8.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	12	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	7	33.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	39	18	71.6	No Limit
ES1204112-031	MLA2-1-22-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	21	23.9	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	8	9	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	6	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	7	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	11	11	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2187738)</b>									
ES1204130-021	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	12	13	0.0	No Limit
ES1204184-002	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	536	579	7.7	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2188488)</b>									
ES1204229-009	Anonymous	EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	53	50	5.6	0% - 50%
ES1204237-007	Anonymous	EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	78	269	# 110	0% - 20%
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 2188092)</b>									
ES1204114-009	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
ES1204264-003	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 2188092) - continued</b>									
ES1204264-003	Anonymous	EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2188092)</b>									
ES1204114-009	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
ES1204264-003	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2188092) - continued</b>									
ES1204264-003	Anonymous	EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2187346)</b>									
ES1204265-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	143	130	9.3	0% - 50%
ES1204265-007	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2188365)</b>									
ES1204130-021	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1204324-003	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2187346)</b>									
ES1204265-001	Anonymous	EP080: C6 - C10 Fraction	----	10	mg/kg	223	207	7.5	0% - 20%
ES1204265-007	Anonymous	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2188365)</b>									
ES1204130-021	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1204324-003	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	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 Sample (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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 2186569)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	----	13.11 mg/kg	116	70	130	
				<5	----	----	----	----	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	109	83.3	111	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.93 mg/kg	111	89.2	117	
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.68 mg/kg	108	90.1	114	
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.76 mg/kg	# 112	85.2	111	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.23 mg/kg	113	88.3	116	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	103.88 mg/kg	110	88.9	112	
<b>EG005T: Total Metals by ICP-AES (QCLot: 2186570)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----	
				----	13.11 mg/kg	116	70	130	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	106	83.3	111	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.93 mg/kg	105	89.2	117	
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.68 mg/kg	105	90.1	114	
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.76 mg/kg	106	85.2	111	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.23 mg/kg	107	88.3	116	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	103.88 mg/kg	103	88.9	112	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2188092)</b>									
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	109	60.8	116	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.0	59.4	115	
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	107	59.8	117	
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	59.8	118	
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.7	65.8	114	
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.5	65.6	115	
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	106	67	113	
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	95.1	65.6	113	
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	112	60.7	113	
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	65.8	116	
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	109	57.3	120	
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	81.3	67.4	116	
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	98.8	67.5	114	
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	110	63	121	
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	110	66.1	117	
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	107	65.3	116	
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	103	57.3	115	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2188092) - continued</b>									
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	63.6	119	
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	106	58.4	127	
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	111	63.6	117	
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	111	50.4	132	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2188092)</b>									
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	107	25.5	124	
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.7	10.1	159	
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	84.5	2.88	149	
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	48.6	126	
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	102	64.9	111	
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	95.8	65.1	111	
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	88.4	61.4	113	
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.2	60.4	127	
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	64.7	110	
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	94.0	64.2	111	
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	84.9	60	116	
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.1	64.8	111	
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	99.7	61.4	123	
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	94.8	64.3	114	
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	82.3	45.5	128	
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	108	65.4	111	
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.9	62	116	
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	110	59.5	119	
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	77.5	29.8	137	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2187346)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	130 mg/kg	102	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2188365)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	107	59	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	123	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	98.0	63	131	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2187346)</b>									
EP080: C6 - C10 Fraction	----	10	mg/kg	<10	155 mg/kg	101	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2188365)</b>									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	250 mg/kg	103	59	131	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	118	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	80.0	63	131	



### 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			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					MS	Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 2186569)</b>							
ES1204112-001	MLA2-1-SP1	EG005T: Arsenic	7440-38-2	50 mg/kg	127	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	103	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	110	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	108	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	104	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	110	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	99.5	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 2186570)</b>							
ES1204112-021	MLA2-1-19-0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	102	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	95.3	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	103	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	100	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	92.1	70	130
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2188092)</b>							
ES1204114-009	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	101	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	98.5	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	95.3	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	110	70	130
		EP068: Endrin	72-20-8	2 mg/kg	101	70	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	98.9	70	130
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2188092)</b>							
ES1204114-009	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	98.2	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	87.4	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	96.6	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	93.8	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	82.9	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2187346)</b>							
ES1204265-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	# Not Determined	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2188365)</b>							
ES1204130-021	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	83.8	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	98.5	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	77.1	52	132
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2187346)</b>							

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 Work Order : ES1204112  
 Client : LLOYD CONSULTING  
 Project : 12-773



Sub-Matrix: **SOIL**

				<i>Matrix Spike (MS) Report</i>			
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Spike</i>	<i>Spike Recovery (%)</i>	<i>Recovery Limits (%)</i>	
				<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2187346) - continued</b>							
ES1204265-001	Anonymous	EP080: C6 - C10 Fraction	----	37.5 mg/kg	# Not Determined	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2188365)</b>							
ES1204130-021	Anonymous	EP071: >C10 - C16 Fraction	----	850 mg/kg	113	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	90.3	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	56.5	52	132

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1204112</b>	Page	: 1 of 7
Client	: LLOYD CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: MS LEONA KOPITTKE	Contact	: Client Services
Address	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: leona@lloydconsulting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 07 33527300	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 12-773	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 23-FEB-2012
Sampler	: LK	Issue Date	: 01-MAR-2012
Order number	: ----		
Quote number	: BN/299/10	No. of samples received	: 72
		No. of samples analysed	: 35

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> MLA2-1-SP1, MLA2-1-SP3, MLA2-1-14-0.5,	MLA2-1-SP2, MLA2-1-14-0.2, MLA2-1-14-2.0	20-FEB-2012	----	----	----	27-FEB-2012	05-MAR-2012	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> MLA2-1-15-0.2, MLA2-1-15-0.5, MLA2-1-16-2.0, MLA2-1-17-0.2, MLA2-1-17-1.5, MLA2-1-18-0.5D, MLA2-1-18-1.5, MLA2-1-19-0.5, MLA2-1-20-0.2, MLA2-1-20-0.5, MLA2-1-21-0.5, MLA2-1-21-1.5	MLA2-1-15-0.2D, MLA2-1-15-2.0, MLA2-1-16-3.0, MLA2-1-17-0.5, MLA2-1-18-0.2, MLA2-1-18-0.5, MLA2-1-19-0.2, MLA2-1-19-1.5, MLA2-1-20-0.2D, MLA2-1-21-0.2, MLA2-1-21-1.0,	21-FEB-2012	----	----	----	27-FEB-2012	06-MAR-2012	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> MLA2-1-22-0.2, MLA2-1-22-0.5D, MLA2-1-23-0.5,	MLA2-1-22-0.5, MLA2-1-23-0.2, MLA2-1-23-1.5	22-FEB-2012	----	----	----	27-FEB-2012	07-MAR-2012	✓



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	
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b> MLA2-1-SP1, MLA2-1-SP3, MLA2-1-14-0.5,	MLA2-1-SP2, MLA2-1-14-0.2, MLA2-1-14-2.0	20-FEB-2012	27-FEB-2012	18-AUG-2012	✓	27-FEB-2012	18-AUG-2012	✓
<b>Soil Glass Jar - Unpreserved (EG005T)</b> MLA2-1-15-0.2, MLA2-1-15-0.5, MLA2-1-16-2.0, MLA2-1-17-0.2, MLA2-1-17-1.5, MLA2-1-18-0.5D, MLA2-1-18-1.5, MLA2-1-19-0.5, MLA2-1-20-0.2, MLA2-1-20-0.5, MLA2-1-21-0.5, MLA2-1-21-1.5	MLA2-1-15-0.2D, MLA2-1-15-2.0, MLA2-1-16-3.0, MLA2-1-17-0.5, MLA2-1-18-0.2, MLA2-1-18-0.5, MLA2-1-19-0.2, MLA2-1-19-1.5, MLA2-1-20-0.2D, MLA2-1-21-0.2, MLA2-1-21-1.0,	21-FEB-2012	27-FEB-2012	19-AUG-2012	✓	27-FEB-2012	19-AUG-2012	✓
<b>Soil Glass Jar - Unpreserved (EG005T)</b> MLA2-1-22-0.2, MLA2-1-22-0.5D, MLA2-1-23-0.5,	MLA2-1-22-0.5, MLA2-1-23-0.2, MLA2-1-23-1.5	22-FEB-2012	27-FEB-2012	20-AUG-2012	✓	27-FEB-2012	20-AUG-2012	✓
<b>EP068A: Organochlorine Pesticides (OC)</b>								
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA2-1-SP2		20-FEB-2012	28-FEB-2012	05-MAR-2012	✓	29-FEB-2012	08-APR-2012	✓
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA2-1-16-2.0, MLA2-1-17-0.2, MLA2-1-19-0.2,	MLA2-1-16-3.0, MLA2-1-18-0.2, MLA2-1-21-0.2	21-FEB-2012	28-FEB-2012	06-MAR-2012	✓	29-FEB-2012	08-APR-2012	✓
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA2-1-SP2		20-FEB-2012	28-FEB-2012	05-MAR-2012	✓	29-FEB-2012	08-APR-2012	✓
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA2-1-16-2.0, MLA2-1-17-0.2, MLA2-1-19-0.2,	MLA2-1-16-3.0, MLA2-1-18-0.2, MLA2-1-21-0.2	21-FEB-2012	28-FEB-2012	06-MAR-2012	✓	29-FEB-2012	08-APR-2012	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP071)</b> MLA2-1-SP3		20-FEB-2012	29-FEB-2012	05-MAR-2012	✓	29-FEB-2012	09-APR-2012	✓
<b>Soil Glass Jar - Unpreserved (EP071)</b> MLA2-1-16-2.0, MLA2-1-18-0.2	MLA2-1-17-0.2,	21-FEB-2012	29-FEB-2012	06-MAR-2012	✓	29-FEB-2012	09-APR-2012	✓





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
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> MLA2-1-SP3	20-FEB-2012	27-FEB-2012	05-MAR-2012	✓	29-FEB-2012	05-MAR-2012	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> MLA2-1-16-2.0, MLA2-1-18-0.2	21-FEB-2012	27-FEB-2012	06-MAR-2012	✓	29-FEB-2012	06-MAR-2012	✓



## 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(where) 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	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	35	11.4	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	13	15.4	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Pesticides by GCMS	EP068	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	35	5.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	13	7.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Pesticides by GCMS	EP068	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	35	5.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	13	7.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Pesticides by GCMS	EP068	1	20	5.0	5.0	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	35	5.7	5.0	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	13	7.7	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	ALS QCS3 requirement



## 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	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) 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 (1999) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) 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 (1999) Schedule B(3) (Method 504,505)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. 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 (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### 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
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EG005T: Total Metals by ICP-AES	2588949-002	----	Lead	7439-92-1	112 %	85.2-111%	Recovery greater than upper control limit
<b>Matrix Spike (MS) Recoveries</b>							
EP080/071: Total Petroleum Hydrocarbons	ES1204265-001	Anonymous	C6 - C9 Fraction	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	ES1204265-001	Anonymous	C6 - C10 Fraction	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.

#### Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	: <b>ES1204112</b>		
<b>Client</b>	: LLOYD CONSULTING	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: TREVOR LLOYD	<b>Contact</b>	: Client Services
<b>Address</b>	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: trevor@lloydconsulting.com.au	<b>E-mail</b>	: sydney@alsglobal.com
<b>Telephone</b>	: +61 07 33527300	<b>Telephone</b>	: +61-2-8784 8555
<b>Facsimile</b>	: ----	<b>Facsimile</b>	: +61-2-8784 8500
<b>Project</b>	: 12-773	<b>Page</b>	: 1 of 4
<b>Order number</b>	: ----	<b>Quote number</b>	: EB2011LLOCON0012 (BN/299/10)
<b>C-O-C number</b>	: ----	<b>QC Level</b>	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: ----		
<b>Sampler</b>	: LK		

#### Dates

Date Samples Received	: 23-FEB-2012	Issue Date	: 29-FEB-2012 05:53
Client Requested Due Date	: 01-MAR-2012	Scheduled Reporting Date	: <b>01-MAR-2012</b>

#### Delivery Details

Mode of Delivery	: Carrier	Temperature	: 18.8'C
No. of coolers/boxes	: 10 HARD	No. of samples received	: 72
Security Seal	: Intact.	No. of samples analysed	: 35

#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **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).**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exist.

### 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - S-01 7 Metals (incl. Digestion)	SOIL - S-12 OC/OP Pesticides	SOIL - TPH only TPH (C6 - C36)
ES1204112-001	20-FEB-2012 15:00	MLA2-1-SP1		✓		
ES1204112-002	20-FEB-2012 15:00	MLA2-1-SP2		✓	✓	
ES1204112-003	20-FEB-2012 15:00	MLA2-1-SP3		✓		✓
ES1204112-004	20-FEB-2012 15:00	MLA2-1-14-0.2		✓		
ES1204112-005	20-FEB-2012 15:00	MLA2-1-14-0.5		✓		
ES1204112-006	20-FEB-2012 15:00	MLA2-1-14-2.0		✓		
ES1204112-007	21-FEB-2012 15:00	MLA2-1-15-0.2		✓		
ES1204112-008	21-FEB-2012 15:00	MLA2-1-15-0.2D		✓		
ES1204112-009	21-FEB-2012 15:00	MLA2-1-15-0.5		✓		
ES1204112-010	21-FEB-2012 15:00	MLA2-1-15-2.0		✓		
ES1204112-011	21-FEB-2012 15:00	MLA2-1-16-2.0		✓	✓	✓
ES1204112-012	21-FEB-2012 15:00	MLA2-1-16-3.0		✓	✓	
ES1204112-013	21-FEB-2012 15:00	MLA2-1-17-0.2		✓	✓	✓
ES1204112-014	21-FEB-2012 15:00	MLA2-1-17-0.5		✓		
ES1204112-015	21-FEB-2012 15:00	MLA2-1-17-1.5		✓		
ES1204112-016	21-FEB-2012 15:00	MLA2-1-18-0.2		✓	✓	✓
ES1204112-017	21-FEB-2012 15:00	MLA2-1-18-0.5D		✓		
ES1204112-018	21-FEB-2012 15:00	MLA2-1-18-0.5		✓		
ES1204112-019	21-FEB-2012 15:00	MLA2-1-18-1.5		✓		
ES1204112-020	21-FEB-2012 15:00	MLA2-1-19-0.2		✓	✓	
ES1204112-021	21-FEB-2012 15:00	MLA2-1-19-0.5		✓		
ES1204112-022	21-FEB-2012 15:00	MLA2-1-19-1.5		✓		
ES1204112-023	21-FEB-2012 15:00	MLA2-1-20-0.2		✓		
ES1204112-024	21-FEB-2012 15:00	MLA2-1-20-0.2D		✓		
ES1204112-025	21-FEB-2012 15:00	MLA2-1-20-0.5		✓		
ES1204112-026	21-FEB-2012 15:00	MLA2-1-21-0.2		✓	✓	
ES1204112-027	21-FEB-2012 15:00	MLA2-1-21-0.5		✓		
ES1204112-028	21-FEB-2012 15:00	MLA2-1-21-1.0		✓		
ES1204112-029	21-FEB-2012 15:00	MLA2-1-21-1.5		✓		
ES1204112-030	22-FEB-2012 15:00	MLA2-1-22-0.2		✓		
ES1204112-031	22-FEB-2012 15:00	MLA2-1-22-0.5		✓		
ES1204112-032	22-FEB-2012 15:00	MLA2-1-22-0.5D		✓		
ES1204112-033	22-FEB-2012 15:00	MLA2-1-23-0.2		✓		
ES1204112-034	22-FEB-2012 15:00	MLA2-1-23-0.5		✓		
ES1204112-035	22-FEB-2012 15:00	MLA2-1-23-1.5		✓		



			(On Hold) SOIL No analysis requested	SOIL - S-01 7 Metals (incl. Digestion)	SOIL - S-12 OC/OP Pesticides	SOIL - TPH only TPH (C6 - C36)
ES1204112-036	20-FEB-2012 15:00	MLA2-1-14-1.0	✓			
ES1204112-037	20-FEB-2012 15:00	MLA2-1-14-1.5	✓			
ES1204112-038	20-FEB-2012 15:00	MLA2-1-14-2.5	✓			
ES1204112-039	20-FEB-2012 15:00	MLA2-1-14-3.0	✓			
ES1204112-040	21-FEB-2012 15:00	MLA2-1-15-1.0	✓			
ES1204112-041	21-FEB-2012 15:00	MLA2-1-15-1.5	✓			
ES1204112-042	21-FEB-2012 15:00	MLA2-1-15-2.5	✓			
ES1204112-043	21-FEB-2012 15:00	MLA2-1-16-2.5	✓			
ES1204112-044	21-FEB-2012 15:00	MLA2-1-16-3.5	✓			
ES1204112-045	21-FEB-2012 15:00	MLA2-1-17-1.0	✓			
ES1204112-046	21-FEB-2012 15:00	MLA2-1-17-2.0	✓			
ES1204112-047	21-FEB-2012 15:00	MLA2-1-17-2.5	✓			
ES1204112-048	21-FEB-2012 15:00	MLA2-1-17-3.0	✓			
ES1204112-049	21-FEB-2012 15:00	MLA2-1-18-1.0	✓			
ES1204112-050	21-FEB-2012 15:00	MLA2-1-18-2.0	✓			
ES1204112-051	21-FEB-2012 15:00	MLA2-1-18-2.5	✓			
ES1204112-052	21-FEB-2012 15:00	MLA2-1-18-3.0	✓			
ES1204112-053	21-FEB-2012 15:00	MLA2-1-19-1.0	✓			
ES1204112-054	21-FEB-2012 15:00	MLA2-1-19-2.0	✓			
ES1204112-055	21-FEB-2012 15:00	MLA2-1-19-2.5	✓			
ES1204112-056	21-FEB-2012 15:00	MLA2-1-19-3.0	✓			
ES1204112-057	21-FEB-2012 15:00	MLA2-1-20-1.0	✓			
ES1204112-058	21-FEB-2012 15:00	MLA2-1-20-1.5	✓			
ES1204112-059	21-FEB-2012 15:00	MLA2-1-20-2.0	✓			
ES1204112-060	21-FEB-2012 15:00	MLA2-1-20-2.5	✓			
ES1204112-061	21-FEB-2012 15:00	MLA2-1-20-3.0	✓			
ES1204112-062	21-FEB-2012 15:00	MLA2-1-21-2.0	✓			
ES1204112-063	21-FEB-2012 15:00	MLA2-1-21-2.5	✓			
ES1204112-064	21-FEB-2012 15:00	MLA2-1-21-3.0	✓			
ES1204112-065	22-FEB-2012 15:00	MLA2-1-22-1.0	✓			
ES1204112-066	22-FEB-2012 15:00	MLA2-1-22-1.5	✓			
ES1204112-067	22-FEB-2012 15:00	MLA2-1-22-2.0	✓			
ES1204112-068	22-FEB-2012 15:00	MLA2-1-22-2.5	✓			
ES1204112-069	22-FEB-2012 15:00	MLA2-1-22-3.0	✓			
ES1204112-070	22-FEB-2012 15:00	MLA2-1-23-1.0	✓			
ES1204112-071	22-FEB-2012 15:00	MLA2-1-23-2.0	✓			
ES1204112-072	22-FEB-2012 15:00	MLA2-1-23-2.5	✓			

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.





## Requested Deliverables

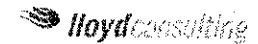
### MS LEONA KOPITTKE

- *AU Certificate of Analysis - NATA ( COA )	Email	leona@lloydconsulting.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	leona@lloydconsulting.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	leona@lloydconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	leona@lloydconsulting.com.au
- A4 - AU Tax Invoice ( INV )	Email	leona@lloydconsulting.com.au
- Chain of Custody (CoC) ( COC )	Email	leona@lloydconsulting.com.au
- EDI Format - ENMRG ( ENMRG )	Email	leona@lloydconsulting.com.au
- EDI Format - XTab ( XTAB )	Email	leona@lloydconsulting.com.au

### TREVOR LLOYD

- *AU Certificate of Analysis - NATA ( COA )	Email	trevor@lloydconsulting.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	trevor@lloydconsulting.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	trevor@lloydconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	trevor@lloydconsulting.com.au
- Chain of Custody (CoC) ( COC )	Email	trevor@lloydconsulting.com.au
- EDI Format - ENMRG ( ENMRG )	Email	trevor@lloydconsulting.com.au
- EDI Format - XTab ( XTAB )	Email	trevor@lloydconsulting.com.au

**Chain of Custody**



**Laboratory Details**  
 ALS Brisbane  
 Lab Quote Ref. 277-269 Woodpark Road  
 BN / 299 / 10 Smithfield, Sydney 2164  
 Email: ALS@enviro.sydny@alsglobal.com

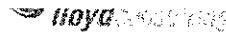
CLIENT: Lloyd Consulting	TURNAROUND REQUIREMENTS : <i>Std</i>	FOR LABORATORY USE ONLY (Circle)	
OFFICE: 30 Heather Street, Wilston, Q, 4051.	QUOTE NO.: BN / 299 / 10	COC SEQUENCE NUMBER (Circle)	Custody Seal Intact? Yes No N/A
PROJECT: 12-773	ORDER NUMBER:	COC: ① 2 3 4 5 6 7	Free ice / frozen ice bricks present upon receipt? Yes No N/A
PROJECT MANAGER: Trevor Lloyd	CONTACT PH: 07 3352 7300	OF: 1 2 3 4 5 6 ⑦	Random Sample Temperature on Receipt: °C
SAMPLER: Leona Kopittke	SAMPLER MOBILE: 0410068796	RELINQUISHED BY: <i>[Signature]</i>	RECEIVED BY: <i>[Signature]</i>
COC emailed to ALS? ( YES / NO )	EDD FORMAT (or default):	DATE/TIME: 22/2/12 3.30	DATE/TIME: 22/2/12
Email Reports to leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au			RECEIVED BY: <i>Davis</i>
Email Invoice to (as above)			DATE/TIME: 23/2 1230
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:			

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	OC/OPS	TPH	7 Metals						
1	MLA2-1-SP1	20-2-12	S	1			X						
2	MLA2-1-SP2	"	"	1	X		X						
3	MLA2-1-SP3	"	"	1		X	X						
4	MLA2-1-14-0.2	"	"	1			X						
5	MLA2-1-14-0.5	"	"	1			X						
③⑥	MLA2-1-14-1.0	"	"	1	ON HOLD								
⑤⑦	MLA2-1-14-1.5	"	"	1	ON HOLD								
6	MLA2-1-14-2.0	"	"	1	<del>ON HOLD</del> X (Metals 7)								
⑧⑧	MLA2-1-14-2.5	"	"	1	ON HOLD								
⑧⑨	MLA2-1-14-3.0	"	"	1	ON HOLD								
7	MLA2-1-15-0.2	21/2/12	"	1			X						
8	MLA2-1-15-0.2D	"	"	1			X						
				TOTAL	1	1	8						

Environmental Division  
 Sydney  
 Work Order  
**ES1204112**  
  
 Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

**Chain of Custody**



**Laboratory Details** ALS Brisbane  
**Lab Quote Ref.** 277-269 Woodpark Road  
 BN / 299 / 10 Smithfield, Sydney 2164  
 Email: ALS@enviro.sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b>	<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.		Custody Seal intact? Yes No N/A	
<b>PROJECT:</b> 12:773	<b>QUOTE NO.:</b> BN / 299 / 10	Free ice / frozen ice bricks present upon receipt? Yes No N/A	
<b>ORDER NUMBER:</b>		Random Sample Temperature on Receipt: °C	
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	<b>COC SEQUENCE NUMBER (Circle)</b>	
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068796	COC: 1 <u>2</u> 3 4 5 6 7	
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	OF: 1 2 3 4 5 6 <u>7</u>	
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b>	<b>RECEIVED BY:</b> <i>Davis</i>
<b>Email Invoice to (as above)</b>	<b>DATE/TIME:</b> 3:30 22/2/12	<b>DATE/TIME:</b>	<b>DATE/TIME:</b> 23/2 1230

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)			ANALYSIS REQUIRED including SUITES (NB, Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).			Additional Information		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles						
9	MLA2-1-15-0.5	21/2/12	S	1	OC/ORS	7 Metals				
(40)	MLA2-1-15-1.0	"	"	1			ON HOLD			
(41)	MLA2-1-15-1.5	"	"	1			ON HOLD			
10	MLA2-1-15-2.0	"	"	1			X			
(42)	MLA2-1-15-2.5	"	"	1			ON HOLD			
	<del>MLA2-1-15-3.0</del>									
11	MLA2-1-16-2.0	"	"	1	X	X	X			
(43)	MLA2-1-16-2.5	"	"	1			ON HOLD			
12	MLA2-1-16-3.0	"	"	1	X	X				
(44)	MLA2-1-16-3.5	"	"	1			ON HOLD			
13	MLA2-1-17-0.2	"	"	1	X	X	X			
14	MLA2-1-17-0.5	"	"	1			X			
				<b>TOTAL</b>	3	6	2			

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialion bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

# Chain of Custody

**Laboratory Details**  
 ALS Brisbane  
 Lab Quote Ref. 277-289 Woodpark Road  
 BN / 299 / 10 Smithfield, Sydney 2164  
 Email: ALSenviro.Sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS:</b> <i>30d</i>	<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.	<b>QUOTE NO.:</b> BN / 299 / 10	COC SEQUENCE NUMBER (Circle)	Custody Seal Intact? Yes No N/A
<b>PROJECT:</b> 12-773	<b>ORDER NUMBER:</b>	COC: 1 2 <b>3</b> 4 5 6 7	Free ice / frozen ice bricks present upon receipt? Yes No N/A
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	OF: 1 2 3 4 5 6 <b>7</b>	Random Sample Temperature on Receipt: °C
<b>SAMPLER:</b> Leona Kopitke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RECEIVED BY:</b>	<b>RELINQUISHED BY:</b>
<b>COC emailed to ALS? (YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b>	<b>RECEIVED BY:</b> David
<b>Email Reports to:</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au	<b>DATE/TIME:</b> 22/2/12 3:30	<b>DATE/TIME:</b>	<b>DATE/TIME:</b> 23/2 1230
<b>Email Invoice to (as above)</b>	<b>COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:</b>		

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)			Additional Information	
					OC/ORB	7 METALS	TPH		
(45)	MLA2-1-17-1.0	21/2/12	S	1	ON HOLD			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
15	MLA2-1-17-1.5	"	"	1	X				
(46)	MLA2-1-17-2.0	"	"	1	ON HOLD				
(47)	MLA2-1-17-2.5	"	"	1	ON HOLD				
(48)	MLA2-1-17-3.0	"	"	1	ON HOLD				
16	MLA2-1-18-0.2	"	"	1	X	X	X		
17	MLA2-1-18-0.5D	"	"	1	X				
18	MLA2-1-18-0.5	"	"	1	X				
(49)	MLA2-1-18-1.0	"	"	1	ON HOLD				
19	MLA2-1-18-1.5	"	"	1	X				
(50)	MLA2-1-18-2.0	"	"	1	ON HOLD				
(51)	MLA2-1-18-2.5	"	"	1	ON HOLD				
				<b>TOTAL</b>	1	5	1		

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

# Chain of Custody



**Laboratory Details** ALS Brisbane  
**Lab Quote Ref.** 277-289 Woodpark Road  
 BN / 299 / 10 Smithfield, Sydney 2164  
 Email: ALSEnviro.Sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS:</b> <i>SFO</i>	<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.		Custody Seal Intact? Yes No N/A	
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	Free ice / frozen ice bricks present upon receipt? Yes No N/A	
<b>ORDER NUMBER:</b>		Random Sample Temperature on Receipt: °C	
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	COC SEQUENCE NUMBER (Circle)	
<b>SAMPLER:</b> Leona Kopitke	<b>SAMPLER MOBILE:</b> 0410068796	COC: 1 2 3 <u>4</u> 5 6 7 OR: 1 2 3 4 5 6 <u>7</u>	Other comment:
<b>COC emailed to ALS?</b> (YES / NO)	<b>EDD FORMAT (or default):</b>	<b>RECEIVED BY:</b>	<b>RELINQUISHED BY:</b>
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au	<b>DATE/TIME:</b> 22.2.12 3.30	<b>DATE/TIME:</b>	<b>DATE/TIME:</b>
<b>Email Invoice to (as above)</b>			<b>RECEIVED BY:</b> <i>Dav. J.</i> <b>DATE/TIME:</b> 23/2 12.30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)							Additional Information		
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								
						<i>OC/DPS</i>	<i>7 METALS</i>	<i>TPH</i>						
	<u>52</u>	MLA2-1-18-3.0	21/2/12	S	1									
	20	MLA2-1-19-0.2	"	"	1	X	X							
	21	MLA2-1-19-0.5	"	"	1		X							
	<u>53</u>	MLA2-1-19-1.0	"	"	1									
	22	MLA2-1-19-1.5	"	"	1		X							
	<u>54</u>	MLA2-1-19-2.0	"	"	1									
	<u>55</u>	MLA2-1-19-2.5	"	"	1									
	<u>56</u>	MLA2-1-19-3.0	"	"	1									
	23	MLA2-1-20-0.2	"	"	1		X							
	24	MLA2-1-20-0.20	"	"	1		X							
	25	MLA2-1-20-0.5	"	"	1		X							
	<u>57</u>	MLA2-1-20-1.0	"	"	1									
					TOTAL	1	6	0						

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 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Special bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

**Chain of Custody**

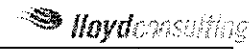
<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road
<b>BN / 299 / 10</b>	Smithfield, Sydney 2164
	Email: ALS@enviro.sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS:</b> <i>Std</i>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.			Custody Seal Intact?	Yes No N/A
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Free ice / frozen ice bricks present upon receipt?
<b>ORDER NUMBER:</b>		COC: 1 2 3 4 <b>5</b> 6		Yes No N/A
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	OF: 1 2 3 4 5 6 <b>7</b>		Random Sample Temperature on Receipt: °C
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b>	<b>RECEIVED BY:</b> <i>Dani</i>
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 22.2.12 3:30	<b>DATE/TIME:</b>	<b>DATE/TIME:</b> 23/2 1230
<b>Comments/Special Handling/Storage or Disposal:</b>				

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	OC/ORP	7 METALS	TPH						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
(58)	MLA2-1-20-1.5	21/2/12	S	1									
(59)	MLA2-1-20-2.0	"	"	1									
(60)	MLA2-1-20-2.5	"	"	1									
(61)	MLA2-1-20-3.0	"	"	1									
26	MLA2-1-21-0.2	"	"	1	X	X							
27	MLA2-1-21-0.5	"	"	1		X							
28	MLA2-1-21-1.0	"	"	1		X							
29	MLA2-1-21-1.5	"	"	1		X							
(62)	MLA2-1-21-2.0	"	"	1									
(63)	MLA2-1-21-2.5	"	"	1									
(64)	MLA2-1-21-3.0	"	"	1									
				<b>TOTAL</b>	1	4	0						

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulphuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulphuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

# Chain of Custody



**Laboratory Details** ALS Brisbane  
**Lab Quote Ref.** 277-289 Woodpark Road  
 BN / 299 / 10 Smithfield, Sydney 2164  
 Email: ALSEnviro.Sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b>	<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.		Custody Seal Intact? Yes No N/A	
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	Free ice / frozen ice bricks present upon receipt? Yes No N/A	
<b>ORDER NUMBER:</b>		Random Sample Temperature on Receipt: °C	
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	<b>COC SEQUENCE NUMBER (Circle)</b>	
<b>SAMPLER:</b> Leona Kopitke	<b>SAMPLER MOBILE:</b> 0410068796	COC: 1 2 3 4 5 6 7	
<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b> <i>[Signature]</i>	OF: 1 2 3 4 5 6 7	
<b>COG emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b> David
<b>Email Reports to leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au</b>	<b>DATE/TIME:</b>	<b>DATE/TIME:</b>	<b>DATE/TIME:</b> 23/2 1230
<b>Email Invoice to (as above)</b>	<b>DATE/TIME:</b> 22.2.12 3.30	<b>DATE/TIME:</b>	

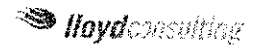
**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB, Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	As for	TPH	7 Metals						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
30	MLA2-1-22-0.2	22/2/12	S	1			X						
31	MLA2-1-22-0.5	"	"	1			X						
32	MLA2-1-22-0.5D	"	"	1			X						
65	MLA2-1-22-1.0	"	"	1			ON HOLD						
66	MLA2-1-22-1.5	"	"	1			ON HOLD						
67	MLA2-1-22-2.0	"	"	1			ON HOLD						
68	MLA2-1-22-2.5	"	"	1			ON HOLD						
69	MLA2-1-22-3.0	"	"	1			ON HOLD						
33	MLA2-1-23-0.2	"	"	1			X						
34	MLA2-1-23-0.5	"	"	1			X						
70	MLA2-1-23-1.0	"	"	1			ON HOLD						
35	MLA2-1-23-1.5	"	"	1			X						
				<b>TOTAL</b>	0	0	6						

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialion bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



**Chain of Custody**



**Laboratory Details** ALS Brisbane  
**Lab Quote Ref.** 277-289 Woodpark Road  
 BN / 299 / 10 Smithfield, Sydney 2184  
 Email: ALSEnviro.Sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b>		<b>FOR LABORATORY USE ONLY (Circle)</b>				
<b>OFFICE:</b> 30 Heather Street, Wiston, Q, 4051.			Custody Seal Intact?	Yes	No	N/A	
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10			Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
<b>ORDER NUMBER:</b>			<b>COC SEQUENCE NUMBER (Circle)</b>				
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300			COC: 1 2 3 4 5 6 <u>7</u>	Random Sample Temperature on Receipt: °C		
<b>SAMPLER:</b> Leona Kopitke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b> <i>[Signature]</i>	<b>RELINQUISHED BY:</b>		<b>RECEIVED BY:</b> David	
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 22/2/12 3:30		<b>DATE/TIME:</b>		<b>DATE/TIME:</b> 23/2 12:30	
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au							
<b>Email Invoice to (as above)</b>							
<b>COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:</b>							

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles									
					ORC/VS	TRPH	F.McK...						
<u>71</u>	MLA2-1-23-2.0	22/2/12	S	1				ON HOLD					
<u>72</u>	MLA2-1-23-2.5	"	"	1				ON HOLD					
				<b>TOTAL</b>	0	0	0						

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	: <b>ES1204230</b>		
<b>Client</b>	: <b>LLOYD CONSULTING</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MS LEONA KOPITKE	<b>Contact</b>	: Client Services
<b>Address</b>	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: leona@lloydconsulting.com.au	<b>E-mail</b>	: sydney@alsglobal.com
<b>Telephone</b>	: +61 07 33527300	<b>Telephone</b>	: +61-2-8784 8555
<b>Facsimile</b>	: ----	<b>Facsimile</b>	: +61-2-8784 8500
<b>Project</b>	: 12-773	<b>Page</b>	: 1 of 2
<b>Order number</b>	: ----	<b>Quote number</b>	: EB2011LLOCON0012 (BN/299/10)
<b>C-O-C number</b>	: ----	<b>QC Level</b>	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: ----		
<b>Sampler</b>	: LK		

#### *Dates*

<b>Date Samples Received</b>	: 22-FEB-2012	<b>Issue Date</b>	: 25-FEB-2012 06:10
<b>Client Requested Due Date</b>	: 01-MAR-2012	<b>Scheduled Reporting Date</b>	: <b>01-MAR-2012</b>

#### *Delivery Details*

<b>Mode of Delivery</b>	: Carrier	<b>Temperature</b>	: 18.8'C SYD
<b>No. of coolers/boxes</b>	: 10 HARD	<b>No. of samples received</b>	: 1
<b>Security Seal</b>	: Intact.	<b>No. of samples analysed</b>	: 1

#### *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
- **Samples received in appropriately pretreated and preserved containers.**
- **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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exist.

## 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-01T 7 metals (Total)	WATER - W-12 OC/OP Pesticides
ES1204230-001	21-FEB-2012 15:00	MLAZ-GWI	✓	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### MS LEONA KOPITTKE

- *AU Certificate of Analysis - NATA	Email	leona@lloydconsulting.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep)	Email	leona@lloydconsulting.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA	Email	leona@lloydconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT	Email	leona@lloydconsulting.com.au
- A4 - AU Tax Invoice ( INV )	Email	leona@lloydconsulting.com.au
- Chain of Custody (CoC)	Email	leona@lloydconsulting.com.au
- EDI Format - ENMRG	Email	leona@lloydconsulting.com.au
- EDI Format - XTab	Email	leona@lloydconsulting.com.au

### TREVOR LLOYD

- *AU Certificate of Analysis - NATA ( COA )	Email	trevor@lloydconsulting.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	trevor@lloydconsulting.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	trevor@lloydconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	trevor@lloydconsulting.com.au
- A4 - AU Tax Invoice ( INV )	Email	trevor@lloydconsulting.com.au
- Chain of Custody (CoC) ( COC )	Email	trevor@lloydconsulting.com.au
- EDI Format - ENMRG ( ENMRG )	Email	trevor@lloydconsulting.com.au
- EDI Format - XTab ( XTAB )	Email	trevor@lloydconsulting.com.au

## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>ES1204230</b>	<b>Page</b>	: 1 of 5
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>LLOYD CONSULTING</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MS LEONA KOPITKE	<b>Contact</b>	: Client Services
<b>Address</b>	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: leona@lloydconsulting.com.au	<b>E-mail</b>	: sydney@alsglobal.com
<b>Telephone</b>	: +61 07 33527300	<b>Telephone</b>	: +61-2-8784 8555
<b>Facsimile</b>	: ----	<b>Facsimile</b>	: +61-2-8784 8500
<b>Project</b>	: 12-773	<b>QC Level</b>	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Order number</b>	: ----		
<b>C-O-C number</b>	: ----	<b>Date Samples Received</b>	: 22-FEB-2012
<b>Sampler</b>	: LK	<b>Issue Date</b>	: 01-MAR-2012
<b>Site</b>	: ----		
<b>Quote number</b>	: BN/299/10	<b>No. of samples received</b>	: 1
		<b>No. of samples analysed</b>	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alex Rossi	Organic Chemist	Sydney Organics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics



### **General Comments**

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

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

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

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

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

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

- **EG020: LCS recoveries for particular element(s) fall outside ALS Dynamic control limit, however, they are within the acceptance criteria based on ALS DQO. No further action is required.**
-



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				MLA2-GW1	---	---	---	---
				21-FEB-2012 15:00	---	---	---	---
Compound	CAS Number	LOR	Unit	ES1204230-001	---	---	---	---
<b>EG020T: Total Metals by ICP-MS</b>								
Arsenic	7440-38-2	0.001	mg/L	9.90	---	---	---	---
Cadmium	7440-43-9	0.0001	mg/L	0.0108	---	---	---	---
Chromium	7440-47-3	0.001	mg/L	0.159	---	---	---	---
Copper	7440-50-8	0.001	mg/L	1.04	---	---	---	---
Nickel	7440-02-0	0.001	mg/L	0.200	---	---	---	---
Lead	7439-92-1	0.001	mg/L	0.763	---	---	---	---
Zinc	7440-66-6	0.005	mg/L	7.78	---	---	---	---
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	---	---	---	---
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	---	---	---	---
beta-BHC	319-85-7	0.5	µg/L	<0.5	---	---	---	---
gamma-BHC	58-89-9	0.5	µg/L	<0.5	---	---	---	---
delta-BHC	319-86-8	0.5	µg/L	<0.5	---	---	---	---
Heptachlor	76-44-8	0.5	µg/L	<0.5	---	---	---	---
Aldrin	309-00-2	0.5	µg/L	<0.5	---	---	---	---
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	---	---	---	---
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	---	---	---	---
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	---	---	---	---
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	---	---	---	---
Dieldrin	60-57-1	0.5	µg/L	<0.5	---	---	---	---
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	---	---	---	---
Endrin	72-20-8	0.5	µg/L	<0.5	---	---	---	---
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	---	---	---	---
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	---	---	---	---
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	---	---	---	---
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	---	---	---	---
4,4'-DDT	50-29-3	2	µg/L	<2	---	---	---	---
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	---	---	---	---
Methoxychlor	72-43-5	2	µg/L	<2	---	---	---	---
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	---	---	---	---
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	---	---	---	---
Monocrotophos	6923-22-4	2	µg/L	<2	---	---	---	---
Dimethoate	60-51-5	0.5	µg/L	<0.5	---	---	---	---
Diazinon	333-41-5	0.5	µg/L	<0.5	---	---	---	---
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	---	---	---	---



## Analytical Results

Sub-Matrix: **WATER**

Client sample ID

**MLA2-GW1**

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----

----

Client sampling date / time

21-FEB-2012 15:00

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----

----

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Compound	CAS Number	LOR	Unit	ES1204230-001	----	----	----	----
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
Parathion-methyl	298-00-0	2	µg/L	<2	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----
Parathion	56-38-2	2	µg/L	<2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	<b>72.5</b>	----	----	----	----
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	<b>77.5</b>	----	----	----	----





### Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	33.6	142.5
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	28.1	147.7

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1204230</b>	<b>Page</b>	<b>: 1 of 6</b>
<b>Amendment</b>	<b>: 1</b>		
<b>Client</b>	<b>: LLOYD CONSULTING</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: MS LEONA KOPITTKE</b>	<b>Contact</b>	<b>: Client Services</b>
<b>Address</b>	<b>: PO BOX 320 WILSTON QLD, AUSTRALIA 4057</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: leona@lloydconsulting.com.au</b>	<b>E-mail</b>	<b>: sydney@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 07 33527300</b>	<b>Telephone</b>	<b>: +61-2-8784 8555</b>
<b>Facsimile</b>	<b>: ----</b>	<b>Facsimile</b>	<b>: +61-2-8784 8500</b>
<b>Project</b>	<b>: 12-773</b>	<b>QC Level</b>	<b>: NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>		
<b>C-O-C number</b>	<b>: ----</b>	<b>Date Samples Received</b>	<b>: 22-FEB-2012</b>
<b>Sampler</b>	<b>: LK</b>	<b>Issue Date</b>	<b>: 01-MAR-2012</b>
<b>Order number</b>	<b>: ----</b>		
<b>Quote number</b>	<b>: BN/299/10</b>	<b>No. of samples received</b>	<b>: 1</b>
		<b>No. of samples analysed</b>	<b>: 1</b>

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alex Rossi	Organic Chemist	Sydney Organics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics



### **General Comments**

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

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

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

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

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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG020T: Total Metals by ICP-MS (QC Lot: 2189726)</b>									
ES1204154-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.003	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.003	0.002	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.030	0.028	4.9	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.038	0.034	10.2	No Limit
ES1204229-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.008	0.010	21.8	0% - 50%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.001	0.002	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.003	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.012	0.011	0.0	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 Sample (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: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG020T: Total Metals by ICP-MS (QCLot: 2189726)</b>									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	110	85	111	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	101	88	108	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	# 116	92	114	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	112	89	115	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	102	91	113	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	# 115	91	113	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	109	78	116	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2188510)</b>									
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	113	61	117	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	82.8	56	116	
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	106	60	118	
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	104	62	118	
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	99.7	64	116	
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	94.4	63	117	
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	107	65	121	
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	97.4	63	117	
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	100	64	120	
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	110	67	119	
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	102	63	123	
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	93.6	64	122	
EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	102	64	118	
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	102	64	126	
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	108	68	122	
EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	103	66	122	
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	81.2	62	112	
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	91.8	60	124	
EP068: 4,4'-DDT	50-29-3	2.0	µg/L	<2	5 µg/L	93.4	54	126	
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	112	55	119	
EP068: Methoxychlor	72-43-5	2.0	µg/L	<2	5 µg/L	107	53	127	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2188510)</b>									
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	110	52	128	
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	101	28.4	150	
EP068: Monocrotophos	6923-22-4	0.5	µg/L	----	5 µg/L	23.8	10	89.1	
		2.0	µg/L	<2	----	----	----	----	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2188510) - continued</b>									
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	90.8	61	117	
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	102	64	122	
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	97.6	67	121	
EP068: Parathion-methyl	298-00-0	2.0	µg/L	<2	5 µg/L	96.9	59	123	
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	97.5	57	123	
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	94.8	67	119	
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	89.4	67	121	
EP068: Parathion	56-38-2	2.0	µg/L	<2	5 µg/L	86.0	64	118	
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	91.2	64	118	
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	100	59	123	
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	111	62	122	
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	95.8	59	131	
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	80.7	64	116	
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	104	68	120	
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	109	62	120	
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	87.8	39	131	



### 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: **WATER**

				<i>Matrix Spike (MS) Report</i>			
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Spike</i>	<i>Spike Recovery (%)</i>		
				<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EG020T: Total Metals by ICP-MS (QCLot: 2189726)</b>							
ES1204154-004	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	119	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	105	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	124	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	122	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	103	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	120	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	116	70	130



## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1204230</b>	Page	: 1 of 5
Amendment	: <b>1</b>		
Client	: LLOYD CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: MS LEONA KOPITTKE	Contact	: Client Services
Address	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: leona@lloydconsulting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 07 33527300	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 12-773	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 22-FEB-2012
Sampler	: LK	Issue Date	: 01-MAR-2012
Order number	: ----		
Quote number	: BN/299/10	No. of samples received	: 1
		No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

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
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)</b> MLA2-GW1	21-FEB-2012	---	19-AUG-2012	----	29-FEB-2012	19-AUG-2012	✓
<b>EP068A: Organochlorine Pesticides (OC)</b>							
<b>Amber Glass Bottle - Unpreserved (EP068)</b> MLA2-GW1	21-FEB-2012	28-FEB-2012	28-FEB-2012	✓	29-FEB-2012	08-APR-2012	✓
<b>EP068B: Organophosphorus Pesticides (OP)</b>							
<b>Amber Glass Bottle - Unpreserved (EP068)</b> MLA2-GW1	21-FEB-2012	28-FEB-2012	28-FEB-2012	✓	29-FEB-2012	08-APR-2012	✓



## 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(where) 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: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Analytical Methods	Method	Count		Rate (%)			Quality Control Specification
			QC	Regular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>								
Total Metals by ICP-MS - Suite A		EG020A-T	2	19	10.5	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>								
Pesticides by GCMS		EP068	1	7	14.3	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A		EG020A-T	1	19	5.3	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>								
Pesticides by GCMS		EP068	1	7	14.3	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A		EG020A-T	1	19	5.3	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>								
Total Metals by ICP-MS - Suite A		EG020A-T	1	19	5.3	5.0	✔	ALS QCS3 requirement



## 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.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Pesticides by GCMS	EP068	WATER	USEPA SW 846 - 8270D Sample 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 (1999) Schedule B(3) (Appdx. 2)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EG020T: Total Metals by ICP-MS	2592915-034	----	<b>Chromium</b>	7440-47-3	116 %	92-114%	<b>Recovery greater than upper control limit</b>
EG020T: Total Metals by ICP-MS	2592915-034	----	<b>Nickel</b>	7440-02-0	115 %	91-113%	<b>Recovery greater than upper control limit</b>

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	: <b>ES1204230</b>		
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>LLOYD CONSULTING</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: <b>MS LEONA KOPITKE</b>	<b>Contact</b>	: Client Services
<b>Address</b>	: <b>PO BOX 320</b>	<b>Address</b>	: <b>277-289 Woodpark Road Smithfield</b>
	: <b>WILSTON QLD, AUSTRALIA 4057</b>		: <b>NSW Australia 2164</b>
<b>E-mail</b>	: <b>leona@lloydconsulting.com.au</b>	<b>E-mail</b>	: <b>sydney@alsglobal.com</b>
<b>Telephone</b>	: <b>+61 07 33527300</b>	<b>Telephone</b>	: <b>+61-2-8784 8555</b>
<b>Facsimile</b>	: <b>----</b>	<b>Facsimile</b>	: <b>+61-2-8784 8500</b>
<b>Project</b>	: <b>12-773</b>	<b>Page</b>	: <b>1 of 2</b>
<b>Order number</b>	: <b>----</b>		
<b>C-O-C number</b>	: <b>----</b>	<b>Quote number</b>	: <b>EB2011LLOCON0012 (BN/299/10)</b>
<b>Site</b>	: <b>----</b>		
<b>Sampler</b>	: <b>LK</b>	<b>QC Level</b>	: <b>NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>

#### Dates

<b>Date Samples Received</b>	: <b>22-FEB-2012</b>	<b>Issue Date</b>	: <b>01-MAR-2012</b>
<b>Client Requested Due Date</b>	: <b>01-MAR-2012</b>	<b>Scheduled Reporting Date</b>	: <b>01-MAR-2012</b>

#### Delivery Details

<b>Mode of Delivery</b>	: <b>Carrier</b>	<b>Temperature</b>	: <b>18.8°C SYD</b>
<b>No. of coolers/boxes</b>	: <b>10 HARD</b>	<b>No. of samples received</b>	: <b>1</b>
<b>Security Seal</b>	: <b>Intact.</b>	<b>No. of samples analysed</b>	: <b>1</b>

#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exist.

## 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-01T 7 metals (Total)	WATER - W-12 OC/OP Pesticides
ES1204230-001	21-FEB-2012 15:00	MLA2-GW1	✓	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### MS LEONA KOPITKE

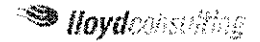
- *AU Certificate of Analysis - NATA	Email	leona@lloydconsulting.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep)	Email	leona@lloydconsulting.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA	Email	leona@lloydconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT	Email	leona@lloydconsulting.com.au
- A4 - AU Tax Invoice ( INV )	Email	leona@lloydconsulting.com.au
- Chain of Custody (CoC)	Email	leona@lloydconsulting.com.au
- EDI Format - ENMRG	Email	leona@lloydconsulting.com.au
- EDI Format - XTab	Email	leona@lloydconsulting.com.au

### TREVOR LLOYD

- *AU Certificate of Analysis - NATA ( COA )	Email	trevor@lloydconsulting.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	trevor@lloydconsulting.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	trevor@lloydconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	trevor@lloydconsulting.com.au
- A4 - AU Tax Invoice ( INV )	Email	trevor@lloydconsulting.com.au
- Chain of Custody (CoC) ( COC )	Email	trevor@lloydconsulting.com.au
- EDI Format - ENMRG ( ENMRG )	Email	trevor@lloydconsulting.com.au
- EDI Format - XTab ( XTAB )	Email	trevor@lloydconsulting.com.au



**Chain of Custody**




<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road Smithfield, Sydney 2104
	BN / 299 / 10
	Email: ALS@enviro.sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b> Std	<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.		Custody Seal Intact?	Yes No N/A
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	Free ice / frozen ice bricks present upon receipt?	Yes No N/A
<b>ORDER NUMBER:</b>		Random Sample Temperature on Receipt:	°C
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	COC: 1 2 3 4 5 6 7	OF: 1 2 3 4 5 6 7
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RECEIVED BY:</b> [Signature]	<b>RELINQUISHED BY:</b> B. Kelly
<b>COC emailed to ALS?</b> ( YES / NO)	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 22-2-12 3:30	<b>DATE/TIME:</b> 22-2-12 3:30
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au	<b>DATE/TIME:</b>	<b>RECEIVED BY:</b> David	<b>DATE/TIME:</b> 23/2 1230
<b>Email Invoice to</b> (as above)			

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB, Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	ORC	Metals						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	MLA2-GW1	21-2-12	W	2	X	X						

Environmental Division  
 Sydney  
 Work Order  
**ES1204230**  
  
 Telephone : +61-2-8764 8555

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>ES1204352</b></p> <p><b>Client</b> : <b>LLOYD CONSULTING</b></p> <p><b>Contact</b> : MS LEONA KOPITKE</p> <p><b>Address</b> : PO BOX 320 WILSTON QLD, AUSTRALIA 4057</p> <p><b>E-mail</b> : leona@lloydconsulting.com.au</p> <p><b>Telephone</b> : +61 07 33527300</p> <p><b>Facsimile</b> : ----</p> <p><b>Project</b> : 12-773</p> <p><b>Order number</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : LK</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : BN/299/10</p>	<p><b>Page</b> : 1 of 16</p> <p><b>Laboratory</b> : Environmental Division Sydney</p> <p><b>Contact</b> : Client Services</p> <p><b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164</p> <p><b>E-mail</b> : sydney@alsglobal.com</p> <p><b>Telephone</b> : +61-2-8784 8555</p> <p><b>Facsimile</b> : +61-2-8784 8500</p> <p><b>QC Level</b> : NEPM 1999 Schedule B(3) and ALS QCS3 requirement</p> <p><b>Date Samples Received</b> : 27-FEB-2012</p> <p><b>Issue Date</b> : 05-MAR-2012</p> <p><b>No. of samples received</b> : 116</p> <p><b>No. of samples analysed</b> : 46</p>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



## **General Comments**

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

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

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

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

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

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

- **EG005T: Poor precision was obtained for Chromium on sample ES1204352-11 due to sample heterogeneity. Results have been confirmed by re-extraction and reanalysis.**
- **EG020: LCS recovery for Chromium falls outside ALS Dynamic Control Limit. However, it is within the acceptance criteria based on ALS DQO. No further action is required.**



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MLA2-1-24-0.2	MLA2-1-24-0.5	MLA2-1-25-0.2	MLA2-1-25-0.5	MLA2-1-25-1.0
				22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00
Compound	CAS Number	LOR	Unit	ES1204352-001	ES1204352-002	ES1204352-003	ES1204352-004	ES1204352-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	18.3	18.0	9.4	20.4	28.3
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	34	20	28	24	19
Copper	7440-50-8	5	mg/kg	13	8	10	11	7
Lead	7439-92-1	5	mg/kg	10	8	8	8	7
Nickel	7440-02-0	2	mg/kg	13	14	8	18	12
Zinc	7440-66-6	5	mg/kg	20	19	12	24	23



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MLA2-1-25-1.0D	MLA2-1-26-0.2	MLA2-1-26-0.5	MLA2-1-27-0.2	MLA2-1-27-0.5
				22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00
Compound	CAS Number	LOR	Unit	ES1204352-006	ES1204352-007	ES1204352-008	ES1204352-009	ES1204352-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	16.8	14.8	19.3	21.3	20.2
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	6	11
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	21	30	26	38	49
Copper	7440-50-8	5	mg/kg	8	14	13	10	14
Lead	7439-92-1	5	mg/kg	8	9	12	10	10
Nickel	7440-02-0	2	mg/kg	13	24	17	21	19
Zinc	7440-66-6	5	mg/kg	24	20	24	22	18



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MLA2-1-28-0.2	MLA2-1-28-0.5	MLA2-1-28-0.5D	MLA2-1-30-0.2	MLA2-1-30-0.5
				22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00
Compound	CAS Number	LOR	Unit	ES1204352-011	ES1204352-012	ES1204352-013	ES1204352-014	ES1204352-015
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	13.0	16.5	12.6	10.0	20.9
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	7	<5	<5	8	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	16	20	18	38	33
Copper	7440-50-8	5	mg/kg	12	8	8	6	10
Lead	7439-92-1	5	mg/kg	12	7	6	10	10
Nickel	7440-02-0	2	mg/kg	23	14	12	5	15
Zinc	7440-66-6	5	mg/kg	20	18	18	<5	18



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-29-0.2	MLA2-1-29-0.5	MLA2-1-29-1.0	MLA2-1-31-0.2	MLA2-1-31-0.5
				22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00
				ES1204352-016	ES1204352-017	ES1204352-018	ES1204352-019	ES1204352-020
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	13.1	17.6	14.9	27.2	30.2
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	9	5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	26	25	21	40	45
Copper	7440-50-8	5	mg/kg	9	13	8	23	14
Lead	7439-92-1	5	mg/kg	8	10	7	12	12
Nickel	7440-02-0	2	mg/kg	14	35	13	26	22
Zinc	7440-66-6	5	mg/kg	14	22	17	24	23
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	<0.05
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
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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





## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-29-0.2	MLA2-1-29-0.5	MLA2-1-29-1.0	MLA2-1-31-0.2	MLA2-1-31-0.5
				22-FEB-2012 15:00	22-FEB-2012 15:00	22-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00
				ES1204352-016	ES1204352-017	ES1204352-018	ES1204352-019	ES1204352-020
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	89.0	93.3
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	----	----	----	105	108



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MLA2-1-32-0.2	MLA2-1-32-0.5	MLA2-1-32-05D	MLA2-1-33-0.2	MLA2-1-33-0.5
				23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00
Compound	CAS Number	LOR	Unit	ES1204352-021	ES1204352-022	ES1204352-023	ES1204352-024	ES1204352-025
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	19.1	21.1	28.4	14.8	21.8
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	10	<5	7	<5	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	28	27	41	10	49
Copper	7440-50-8	5	mg/kg	10	8	10	<5	10
Lead	7439-92-1	5	mg/kg	10	8	12	<5	9
Nickel	7440-02-0	2	mg/kg	15	13	16	4	9
Zinc	7440-66-6	5	mg/kg	18	14	15	7	13



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-34-0.2	MLA2-1-34-0.5	MLA2-1-35-0.2	MLA2-1-35-0.5	MLA2-1-35-0.5D
				23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00
				ES1204352-026	ES1204352-027	ES1204352-028	ES1204352-029	ES1204352-030
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	24.9	18.4	14.6	21.9	19.1
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	10	7	57	9	8
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	47	39	41	20	21
Copper	7440-50-8	5	mg/kg	9	15	12	8	8
Lead	7439-92-1	5	mg/kg	7	10	8	8	9
Nickel	7440-02-0	2	mg/kg	11	33	13	14	14
Zinc	7440-66-6	5	mg/kg	14	31	19	27	20
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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	----	----	----	----
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	----	----	----	----
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	----	----	----	----
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-34-0.2	MLA2-1-34-0.5	MLA2-1-35-0.2	MLA2-1-35-0.5	MLA2-1-35-0.5D
				23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00
				ES1204352-026	ES1204352-027	ES1204352-028	ES1204352-029	ES1204352-030
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	89.0	----	----	----	----
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	92.2	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	74.9	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	73.4	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	78.3	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MLA2-1-36-0.2	MLA2-1-36-0.5	MLA2-1-36-1.0	MLA2-1-37-0.2	MLA2-1-37-0.5
				23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00
Compound	CAS Number	LOR	Unit	ES1204352-031	ES1204352-032	ES1204352-033	ES1204352-034	ES1204352-035
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	20.9	16.2	17.9	22.6	16.6
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	8	<5	9	6	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	34	24	29	54	21
Copper	7440-50-8	5	mg/kg	10	8	10	9	10
Lead	7439-92-1	5	mg/kg	10	8	15	9	8
Nickel	7440-02-0	2	mg/kg	19	17	25	13	15
Zinc	7440-66-6	5	mg/kg	18	21	17	14	25



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-38-0.2	MLA2-1-38-0.5	MLA2-1-38-1.0	MLA2-1-38-1.0D	MLA2-1-39-0.2
				23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00
				ES1204352-036	ES1204352-037	ES1204352-038	ES1204352-039	ES1204352-040
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	5.8	18.4	13.7	12.6	13.8
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	7	<5	<5	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	38	45	32	20	39
Copper	7440-50-8	5	mg/kg	6	16	10	8	9
Lead	7439-92-1	5	mg/kg	7	11	6	5	14
Nickel	7440-02-0	2	mg/kg	5	25	15	14	12
Zinc	7440-66-6	5	mg/kg	7	27	19	16	18
<b>EP068A: Organochlorine Pesticides (OC)</b>								
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	----	----	----	----
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	----	----	----	----
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	----	----	----	----
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
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	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	MLA2-1-38-0.2	MLA2-1-38-0.5	MLA2-1-38-1.0	MLA2-1-38-1.0D	MLA2-1-39-0.2
				23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00
				ES1204352-036	ES1204352-037	ES1204352-038	ES1204352-039	ES1204352-040
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
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	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	107	----	----	----	----
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	116	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	73.5	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	76.9	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	74.9	----	----	----	----





## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MLA2-1-39-0.5	MLA2-1-39-1.0	MLA2-1-40-0.2	MLA2-1-40-0.2D	MLA2-1-40-0.5
				23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00	23-FEB-2012 15:00
Compound	CAS Number	LOR	Unit	ES1204352-041	ES1204352-042	ES1204352-043	ES1204352-044	ES1204352-045
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	18.8	14.3	22.0	15.7	28.9
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	10	<5	6	10	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	48	31	31	51	21
Copper	7440-50-8	5	mg/kg	15	11	12	12	10
Lead	7439-92-1	5	mg/kg	12	11	9	15	7
Nickel	7440-02-0	2	mg/kg	26	18	25	26	15
Zinc	7440-66-6	5	mg/kg	28	28	32	23	26



## Analytical Results

Sub-Matrix: **WATER**

Client sample ID

**MLA2-1-DR1**

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Client sampling date / time

23-FEB-2012 15:00

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Compound	CAS Number	LOR	Unit	ES1204352-046	----	----	----	----
<b>EG020T: Total Metals by ICP-MS</b>								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<b>0.0008</b>	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<b>0.040</b>	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<b>0.070</b>	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<b>0.015</b>	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<b>3.42</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	19.5	167.0
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	22.7	163.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1204352</b>	<b>Page</b>	<b>: 1 of 12</b>
<b>Client</b>	<b>: LLOYD CONSULTING</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: MS LEONA KOPITKE</b>	<b>Contact</b>	<b>: Client Services</b>
<b>Address</b>	<b>: PO BOX 320 WILSTON QLD, AUSTRALIA 4057</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: leona@lloydconsulting.com.au</b>	<b>E-mail</b>	<b>: sydney@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 07 33527300</b>	<b>Telephone</b>	<b>: +61-2-8784 8555</b>
<b>Facsimile</b>	<b>: ----</b>	<b>Facsimile</b>	<b>: +61-2-8784 8500</b>
<b>Project</b>	<b>: 12-773</b>	<b>QC Level</b>	<b>: NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>	<b>Date Samples Received</b>	<b>: 27-FEB-2012</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 05-MAR-2012</b>
<b>Sampler</b>	<b>: LK</b>	<b>No. of samples received</b>	<b>: 116</b>
<b>Order number</b>	<b>: ----</b>	<b>No. of samples analysed</b>	<b>: 46</b>
<b>Quote number</b>	<b>: BN/299/10</b>		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



### **General Comments**

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

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

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

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

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	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 2190377)</b>									
ES1204311-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.9	15.7	5.3	0% - 50%
ES1204352-009	MLA2-1-27-0.2	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	21.3	22.5	5.5	0% - 20%
<b>EA055: Moisture Content (QC Lot: 2190378)</b>									
ES1204352-018	MLA2-1-29-1.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.9	14.4	3.6	0% - 50%
ES1204352-029	MLA2-1-35-0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	21.9	22.1	0.8	0% - 20%
<b>EA055: Moisture Content (QC Lot: 2190379)</b>									
ES1204352-038	MLA2-1-38-1.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.7	13.0	5.3	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2190667)</b>									
ES1204352-001	MLA2-1-24-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	34	31	10.3	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	13	12	11.7	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	22	122	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	13	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	8	17.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	20	19	5.4	No Limit
ES1204352-011	MLA2-1-28-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	31	# 63.2	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	23	22	0.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	<5	37.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	11	10.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	7	53.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	20	21	0.0	No Limit
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2190668)</b>									
ES1204352-021	MLA2-1-32-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	28	36	25.7	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	15	14	7.9	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	8	19.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	9	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	11	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	18	18	0.0	No Limit
ES1204352-031	MLA2-1-36-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	34	31	11.2	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	19	16	16.4	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	7	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	10	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2190668) - continued</b>									
ES1204352-031	MLA2-1-36-0.2	EG005T: Lead	7439-92-1	5	mg/kg	10	15	41.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	18	19	6.7	No Limit
<b>EG005T: Total Metals by ICP-AES (QC Lot: 2192753)</b>									
ES1204416-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	20	31	45.4	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	13	21	45.1	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	14	49.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	22	26	16.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	18	24	25.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	74	71	3.1	0% - 50%
ES1204416-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	15	13.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	8	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	7	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	22	18	17.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	34	29	14.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	57	69	20.2	0% - 50%
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 2188106)</b>									
ES1204256-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES1204256-008	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit





Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 2188106) - continued</b>									
ES1204256-008	Anonymous	EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2188106)</b>									
ES1204256-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2188106) - continued</b>									
ES1204256-008	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2189953)</b>									
ES1204264-021	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1204366-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2191395)</b>									
ES1204256-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1204620-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2189953)</b>									
ES1204264-021	Anonymous	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1204366-001	Anonymous	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2191395)</b>									
ES1204256-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1204620-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit

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 Client : LLOYD CONSULTING  
 Project : 12-773



Sub-Matrix: **WATER**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Recovery Limits (%)</i>
<b>EG020T: Total Metals by ICP-MS (QC Lot: 2191998)</b>									
ES1204208-005	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
ES1204352-046	MLA2-1-DR1	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0008	0.0008	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.003	105	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.040	0.039	0.0	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.015	0.016	8.5	0% - 50%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.070	0.069	0.0	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	3.42	3.52	2.7	0% - 20%



### 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 Sample (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 Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit				LCS	Low
<b>EG005T: Total Metals by ICP-AES (QCLot: 2190667)</b>								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.11 mg/kg	111	70	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	106	83.3	111
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.93 mg/kg	110	89.2	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.68 mg/kg	108	90.1	114
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.76 mg/kg	106	85.2	111
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.23 mg/kg	110	88.3	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	103.88 mg/kg	101	88.9	112
<b>EG005T: Total Metals by ICP-AES (QCLot: 2190668)</b>								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.11 mg/kg	108	70	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	103	83.3	111
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.93 mg/kg	107	89.2	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.68 mg/kg	108	90.1	114
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.76 mg/kg	104	85.2	111
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.23 mg/kg	107	88.3	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	103.88 mg/kg	99.9	88.9	112
<b>EG005T: Total Metals by ICP-AES (QCLot: 2192753)</b>								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.11 mg/kg	126	70	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	104	83.3	111
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.93 mg/kg	108	89.2	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.68 mg/kg	105	90.1	114
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.76 mg/kg	104	85.2	111
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.23 mg/kg	109	88.3	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	103.88 mg/kg	105	88.9	112
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2188106)</b>								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	110	60.8	116
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	59.4	115
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	106	59.8	117
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	103	59.8	118
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	65.8	114
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	65.6	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	105	67	113
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	95.2	65.6	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	111	60.7	113
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	105	65.8	116



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2188106) - continued</b>									
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	108	57.3	120	
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	80.5	67.4	116	
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.8	67.5	114	
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	110	63	121	
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	106	66.1	117	
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	105	65.3	116	
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	101	57.3	115	
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	63.6	119	
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	108	58.4	127	
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	105	63.6	117	
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	99.7	50.4	132	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2188106)</b>									
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	112	25.5	124	
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	107	10.1	159	
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	88.7	2.88	149	
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	94.8	48.6	126	
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	102	64.9	111	
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	95.9	65.1	111	
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	86.6	61.4	113	
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	90.0	60.4	127	
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	64.7	110	
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.1	64.2	111	
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	81.0	60	116	
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.4	64.8	111	
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	101	61.4	123	
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	95.4	64.3	114	
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	85.8	45.5	128	
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	107	65.4	111	
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.0	62	116	
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	110	59.5	119	
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	75.8	29.8	137	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2189953)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	75.2	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2191395)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	90.2	59	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	116	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	95.4	63	131	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2189953)</b>									



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2189953) - continued</b>									
EP080: C6 - C10 Fraction	----	10	mg/kg	<10	31 mg/kg	70.7	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2191395)</b>									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	250 mg/kg	92.8	59	131	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	109	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	78.7	63	131	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG020T: Total Metals by ICP-MS (QCLot: 2191998)</b>									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.5	85	111	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	.01 mg/L	101	88	108	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	# 88.4	92	114	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.3	89	115	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	105	91	113	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	91.4	91	113	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.5	78	116	



## 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	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					MS	Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 2190667)</b>							
ES1204352-001	MLA2-1-24-0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	96.4	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	92.5	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	110	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	102	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	107	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	96.4	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 2190668)</b>							
ES1204352-021	MLA2-1-32-0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	77.6	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.8	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	84.0	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	110	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	94.5	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	93.1	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	89.8	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 2192753)</b>							
ES1204416-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	101	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	100	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	95.0	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	108	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	101	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	101	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	93.0	70	130
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2188106)</b>							
ES1204256-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	99.5	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	80.1	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	102	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	107	70	130
		EP068: Endrin	72-20-8	2 mg/kg	109	70	130
		EP068: 4.4'-DDT	50-29-3	2 mg/kg	76.1	70	130
		<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2188106)</b>					
ES1204256-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	108	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	89.6	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	87.6	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	79.6	70	130



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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Low	High		
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2188106) - continued</b>							
ES1204256-001	Anonymous	EP068: Prothiofos	34643-46-4	0.5 mg/kg	80.4	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2189953)</b>							
ES1204264-021	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	83.3	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2191395)</b>							
ES1204256-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	91.4	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	104	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	88.3	52	132
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2189953)</b>							
ES1204264-021	Anonymous	EP080: C6 - C10 Fraction	----	37.5 mg/kg	75.0	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2191395)</b>							
ES1204256-001	Anonymous	EP071: >C10 - C16 Fraction	----	850 mg/kg	106	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	102	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	64.8	52	132

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Low	High		
<b>EG020T: Total Metals by ICP-MS (QCLot: 2191998)</b>							
ES1204264-025	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	83.5	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	80.4	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	81.0	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	82.2	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	82.9	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	81.9	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	80.4	70	130

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1204352</b>	Page	: 1 of 7
Client	: LLOYD CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: MS LEONA KOPITTKE	Contact	: Client Services
Address	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
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Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 12-773	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 27-FEB-2012
Sampler	: LK	Issue Date	: 05-MAR-2012
Order number	: ----		
Quote number	: BN/299/10	No. of samples received	: 116
		No. of samples analysed	: 46

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
MLA2-1-24-0.2, MLA2-1-25-0.2, MLA2-1-25-1.0, MLA2-1-26-0.2, MLA2-1-27-0.2, MLA2-1-28-0.2, MLA2-1-28-0.5D, MLA2-1-30-0.5, MLA2-1-29-0.5,	MLA2-1-24-0.5, MLA2-1-25-0.5, MLA2-1-25-1.0D, MLA2-1-26-0.5, MLA2-1-27-0.5, MLA2-1-28-0.5, MLA2-1-30-0.2, MLA2-1-29-0.2, MLA2-1-29-1.0	22-FEB-2012	----	----	----	29-FEB-2012	07-MAR-2012	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
MLA2-1-31-0.2, MLA2-1-32-0.2, MLA2-1-32-05D, MLA2-1-33-0.5, MLA2-1-34-0.5, MLA2-1-35-0.5, MLA2-1-36-0.2, MLA2-1-36-1.0, MLA2-1-37-0.5, MLA2-1-38-0.5, MLA2-1-38-1.0D, MLA2-1-39-0.5, MLA2-1-40-0.2, MLA2-1-40-0.5	MLA2-1-31-0.5, MLA2-1-32-0.5, MLA2-1-33-0.2, MLA2-1-34-0.2, MLA2-1-35-0.2, MLA2-1-35-0.5D, MLA2-1-36-0.5, MLA2-1-37-0.2, MLA2-1-38-0.2, MLA2-1-38-1.0, MLA2-1-39-0.2, MLA2-1-39-1.0, MLA2-1-40-0.2D,	23-FEB-2012	----	----	----	29-FEB-2012	08-MAR-2012	✓



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
<b>EG005T: Total Metals by ICP-AES</b>							
<b>Soil Glass Jar - Unpreserved (EG005T)</b> MLA2-1-24-0.2, MLA2-1-25-0.2, MLA2-1-25-1.0, MLA2-1-26-0.2, MLA2-1-27-0.2, MLA2-1-28-0.2, MLA2-1-28-0.5D, MLA2-1-30-0.5, MLA2-1-29-0.5, MLA2-1-24-0.5, MLA2-1-25-0.5, MLA2-1-25-1.0D, MLA2-1-26-0.5, MLA2-1-27-0.5, MLA2-1-28-0.5, MLA2-1-30-0.2, MLA2-1-29-0.2, MLA2-1-29-1.0	22-FEB-2012	29-FEB-2012	20-AUG-2012	✓	01-MAR-2012	20-AUG-2012	✓
<b>Soil Glass Jar - Unpreserved (EG005T)</b> MLA2-1-39-0.5, MLA2-1-40-0.2, MLA2-1-40-0.5	23-FEB-2012	01-MAR-2012	21-AUG-2012	✓	02-MAR-2012	21-AUG-2012	✓
<b>Soil Glass Jar - Unpreserved (EG005T)</b> MLA2-1-31-0.2, MLA2-1-32-0.2, MLA2-1-32-05D, MLA2-1-33-0.5, MLA2-1-34-0.5, MLA2-1-35-0.5, MLA2-1-36-0.2, MLA2-1-36-1.0, MLA2-1-37-0.5, MLA2-1-38-0.5, MLA2-1-38-1.0D, MLA2-1-31-0.5, MLA2-1-32-0.5, MLA2-1-33-0.2, MLA2-1-34-0.2, MLA2-1-35-0.2, MLA2-1-35-0.5D, MLA2-1-36-0.5, MLA2-1-37-0.2, MLA2-1-38-0.2, MLA2-1-38-1.0, MLA2-1-39-0.2	23-FEB-2012	29-FEB-2012	21-AUG-2012	✓	01-MAR-2012	21-AUG-2012	✓
<b>EP068A: Organochlorine Pesticides (OC)</b>							
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA2-1-31-0.2, MLA2-1-34-0.2,	23-FEB-2012	28-FEB-2012	08-MAR-2012	✓	29-FEB-2012	08-APR-2012	✓
<b>EP068B: Organophosphorus Pesticides (OP)</b>							
<b>Soil Glass Jar - Unpreserved (EP068)</b> MLA2-1-31-0.2, MLA2-1-34-0.2,	23-FEB-2012	28-FEB-2012	08-MAR-2012	✓	29-FEB-2012	08-APR-2012	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b> MLA2-1-34-0.2,	23-FEB-2012	29-FEB-2012	08-MAR-2012	✓	01-MAR-2012	09-APR-2012	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> MLA2-1-34-0.2,	23-FEB-2012	29-FEB-2012	08-MAR-2012	✓	01-MAR-2012	08-MAR-2012	✓

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

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 Work Order : ES1204352  
 Client : LLOYD CONSULTING  
 Project : 12-773



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
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)</b> MLA2-1-DR1	23-FEB-2012	01-MAR-2012	21-AUG-2012	✓	01-MAR-2012	21-AUG-2012	✓



## 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(where) 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	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	5	50	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	15	13.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	6	60	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	17	11.8	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	16	12.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Pesticides by GCMS	EP068	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	3	60	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Pesticides by GCMS	EP068	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	3	60	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Pesticides by GCMS	EP068	1	15	6.7	5.0	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	3	60	5.0	5.0	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	ALS QCS3 requirement



## 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	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) 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 (1999) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) 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 (1999) Schedule B(3) (Method 504,505)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. 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 (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)





## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### 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
<b>Duplicate (DUP) RPDs</b>							
EG005T: Total Metals by ICP-AES	ES1204352-011	MLA2-1-28-0.2	Chromium	7440-47-3	63.2 %	0-50%	RPD exceeds LOR based limits

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EG020T: Total Metals by ICP-MS	2595627-003	----	Chromium	7440-47-3	88.4 %	92-114%	Recovery less than lower control limit

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted</b>							
EP080S: TPH(V)/BTEX Surrogates	ES1204352-026	MLA2-1-34-0.2	Toluene-D8	2037-26-5	73.4 %	73.9-132.1 %	Recovery less than lower data quality objective

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

## SAMPLE RECEIPT NOTIFICATION (SRN) Comprehensive Report

**Work Order : ES1204352**

Client	: LLOYD CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: TREVOR LLOYD	Contact	: Client Services
Address	: PO BOX 320 WILSTON QLD, AUSTRALIA 4057	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: trevor@lloydconsulting.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 07 33527300	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 12-773	Page	: 1 of 5
Order number	: ----		
C-O-C number	: ----	Quote number	: EB2011LLOCON0012 (BN/299/10)
Site	: ----		
Sampler	: LK	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

### Dates

Date Samples Received	: 27-FEB-2012	Issue Date	: 29-FEB-2012 08:53
Client Requested Due Date	: 05-MAR-2012	Scheduled Reporting Date	: <b>05-MAR-2012</b>

### Delivery Details

Mode of Delivery	: Carrier	Temperature	: 25°C - Ice present
No. of coolers/boxes	: 2 HARD	No. of samples received	: 116
Security Seal	: Intact.	No. of samples analysed	: 46

### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **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).**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exist.

### 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - S-01 7 Metals (incl. Digestion)	SOIL - S-12 OC/OP Pesticides	SOIL - TPH only TPH (C6 - C36)
ES1204352-001	22-FEB-2012 15:00	MLA2-1-24-0.2		✓		
ES1204352-002	22-FEB-2012 15:00	MLA2-1-24-0.5		✓		
ES1204352-003	22-FEB-2012 15:00	MLA2-1-25-0.2		✓		
ES1204352-004	22-FEB-2012 15:00	MLA2-1-25-0.5		✓		
ES1204352-005	22-FEB-2012 15:00	MLA2-1-25-1.0		✓		
ES1204352-006	22-FEB-2012 15:00	MLA2-1-25-1.0D		✓		
ES1204352-007	22-FEB-2012 15:00	MLA2-1-26-0.2		✓		
ES1204352-008	22-FEB-2012 15:00	MLA2-1-26-0.5		✓		
ES1204352-009	22-FEB-2012 15:00	MLA2-1-27-0.2		✓		
ES1204352-010	22-FEB-2012 15:00	MLA2-1-27-0.5		✓		
ES1204352-011	22-FEB-2012 15:00	MLA2-1-28-0.2		✓		
ES1204352-012	22-FEB-2012 15:00	MLA2-1-28-0.5		✓		
ES1204352-013	22-FEB-2012 15:00	MLA2-1-28-0.5D		✓		
ES1204352-014	22-FEB-2012 15:00	MLA2-1-30-0.2		✓		
ES1204352-015	22-FEB-2012 15:00	MLA2-1-30-0.5		✓		
ES1204352-016	22-FEB-2012 15:00	MLA2-1-29-0.2		✓		
ES1204352-017	22-FEB-2012 15:00	MLA2-1-29-0.5		✓		
ES1204352-018	22-FEB-2012 15:00	MLA2-1-29-1.0		✓		
ES1204352-019	23-FEB-2012 15:00	MLA2-1-31-0.2		✓	✓	
ES1204352-020	23-FEB-2012 15:00	MLA2-1-31-0.5		✓	✓	
ES1204352-021	23-FEB-2012 15:00	MLA2-1-32-0.2		✓		
ES1204352-022	23-FEB-2012 15:00	MLA2-1-32-0.5		✓		
ES1204352-023	23-FEB-2012 15:00	MLA2-1-32-0.5D		✓		
ES1204352-024	23-FEB-2012 15:00	MLA2-1-33-0.2		✓		
ES1204352-025	23-FEB-2012 15:00	MLA2-1-33-0.5		✓		
ES1204352-026	23-FEB-2012 15:00	MLA2-1-34-0.2		✓	✓	✓
ES1204352-027	23-FEB-2012 15:00	MLA2-1-34-0.5		✓		
ES1204352-028	23-FEB-2012 15:00	MLA2-1-35-0.2		✓		
ES1204352-029	23-FEB-2012 15:00	MLA2-1-35-0.5		✓		
ES1204352-030	23-FEB-2012 15:00	MLA2-1-35-0.5D		✓		
ES1204352-031	23-FEB-2012 15:00	MLA2-1-36-0.2		✓		
ES1204352-032	23-FEB-2012 15:00	MLA2-1-36-0.5		✓		
ES1204352-033	23-FEB-2012 15:00	MLA2-1-36-1.0		✓		
ES1204352-034	23-FEB-2012 15:00	MLA2-1-37-0.2		✓		
ES1204352-035	23-FEB-2012 15:00	MLA2-1-37-0.5		✓		



			(On Hold) SOIL No analysis requested	SOIL - S-01 7 Metals (incl. Digestion)	SOIL - S-12 OC/OP Pesticides	SOIL - TPH only TPH (C6 - C36)
ES1204352-036	23-FEB-2012 15:00	MLA2-1-38-0.2		✓	✓	✓
ES1204352-037	23-FEB-2012 15:00	MLA2-1-38-0.5		✓		
ES1204352-038	23-FEB-2012 15:00	MLA2-1-38-1.0		✓		
ES1204352-039	23-FEB-2012 15:00	MLA2-1-38-1.0D		✓		
ES1204352-040	23-FEB-2012 15:00	MLA2-1-39-0.2		✓		
ES1204352-041	23-FEB-2012 15:00	MLA2-1-39-0.5		✓		
ES1204352-042	23-FEB-2012 15:00	MLA2-1-39-1.0		✓		
ES1204352-043	23-FEB-2012 15:00	MLA2-1-40-0.2		✓		
ES1204352-044	23-FEB-2012 15:00	MLA2-1-40-0.2D		✓		
ES1204352-045	23-FEB-2012 15:00	MLA2-1-40-0.5		✓		
ES1204352-047	22-FEB-2012 15:00	MLA2-1-24-1.0	✓			
ES1204352-048	22-FEB-2012 15:00	MLA2-1-24-1.5	✓			
ES1204352-049	22-FEB-2012 15:00	MLA2-1-24-2.0	✓			
ES1204352-050	22-FEB-2012 15:00	MLA2-1-24-2.5	✓			
ES1204352-051	22-FEB-2012 15:00	MLA2-1-25-1.5	✓			
ES1204352-052	22-FEB-2012 15:00	MLA2-1-25-2.0	✓			
ES1204352-053	22-FEB-2012 15:00	MLA2-1-25-2.5	✓			
ES1204352-054	22-FEB-2012 15:00	MLA2-1-25-3.0	✓			
ES1204352-055	22-FEB-2012 15:00	MLA2-1-26-1.0	✓			
ES1204352-056	22-FEB-2012 15:00	MLA2-1-26-1.5	✓			
ES1204352-057	22-FEB-2012 15:00	MLA2-1-26-2.0	✓			
ES1204352-058	22-FEB-2012 15:00	MLA2-1-26-2.5	✓			
ES1204352-059	22-FEB-2012 15:00	MLA2-1-26-3.0	✓			
ES1204352-060	22-FEB-2012 15:00	MLA2-1-27-1.0	✓			
ES1204352-061	22-FEB-2012 15:00	MLA2-1-27-1.5	✓			
ES1204352-062	22-FEB-2012 15:00	MLA2-1-27-2.0	✓			
ES1204352-063	22-FEB-2012 15:00	MLA2-1-27-2.5	✓			
ES1204352-064	22-FEB-2012 15:00	MLA2-1-28-1.0	✓			
ES1204352-065	22-FEB-2012 15:00	MLA2-1-28-1.5	✓			
ES1204352-066	22-FEB-2012 15:00	MLA2-1-28-2.0	✓			
ES1204352-067	22-FEB-2012 15:00	MLA2-1-28-2.5	✓			
ES1204352-068	22-FEB-2012 15:00	MLA2-1-28-3.0	✓			
ES1204352-069	22-FEB-2012 15:00	MLA2-1-30-1.0	✓			
ES1204352-070	22-FEB-2012 15:00	MLA2-1-30-1.5	✓			
ES1204352-071	22-FEB-2012 15:00	MLA2-1-30-2.0	✓			
ES1204352-072	22-FEB-2012 15:00	MLA2-1-29-1.5	✓			
ES1204352-073	22-FEB-2012 15:00	MLA2-1-29-2.0	✓			
ES1204352-074	22-FEB-2012 15:00	MLA2-1-29-2.5	✓			
ES1204352-075	23-FEB-2012 15:00	MLA2-1-31-1.0	✓			
ES1204352-076	23-FEB-2012 15:00	MLA2-1-31-1.5	✓			
ES1204352-077	23-FEB-2012 15:00	MLA2-1-31-3.0	✓			



			(On Hold) SOIL No analysis requested	SOIL - S-01 7 Metals (incl. Digestion)	SOIL - S-12 OC/OP Pesticides	SOIL - TPH only TPH (C6 - C36)
ES1204352-078	23-FEB-2012 15:00	MLA2-1-32-1.0	✓			
ES1204352-079	23-FEB-2012 15:00	MLA2-1-32-1.5	✓			
ES1204352-080	23-FEB-2012 15:00	MLA2-1-32-2.0	✓			
ES1204352-081	23-FEB-2012 15:00	MLA2-1-32-2.5	✓			
ES1204352-082	23-FEB-2012 15:00	MLA2-1-32-3.0	✓			
ES1204352-083	23-FEB-2012 15:00	MLA2-1-33-1.0	✓			
ES1204352-084	23-FEB-2012 15:00	MLA2-1-33-1.5	✓			
ES1204352-085	23-FEB-2012 15:00	MLA2-1-33-2.0	✓			
ES1204352-086	23-FEB-2012 15:00	MLA2-1-33-2.5	✓			
ES1204352-087	23-FEB-2012 15:00	MLA2-1-33-3.0	✓			
ES1204352-088	23-FEB-2012 15:00	MLA2-1-34-1.0	✓			
ES1204352-089	23-FEB-2012 15:00	MLA2-1-34-1.5	✓			
ES1204352-090	23-FEB-2012 15:00	MLA2-1-34-2.0	✓			
ES1204352-091	23-FEB-2012 15:00	MLA2-1-34-2.5	✓			
ES1204352-092	23-FEB-2012 15:00	MLA2-1-34-3.0	✓			
ES1204352-093	23-FEB-2012 15:00	MLA2-1-35-1.0	✓			
ES1204352-094	23-FEB-2012 15:00	MLA2-1-35-1.5	✓			
ES1204352-095	23-FEB-2012 15:00	MLA2-1-35-2.0	✓			
ES1204352-096	23-FEB-2012 15:00	MLA2-1-35-2.5	✓			
ES1204352-097	23-FEB-2012 15:00	MLA2-1-35-3.0	✓			
ES1204352-098	23-FEB-2012 15:00	MLA2-1-36-1.5	✓			
ES1204352-099	23-FEB-2012 15:00	MLA2-1-36-2.0	✓			
ES1204352-100	23-FEB-2012 15:00	MLA2-1-36-2.5	✓			
ES1204352-101	23-FEB-2012 15:00	MLA2-1-36-3.0	✓			
ES1204352-102	23-FEB-2012 15:00	MLA2-1-37-1.0	✓			
ES1204352-103	23-FEB-2012 15:00	MLA2-1-37-1.5	✓			
ES1204352-104	23-FEB-2012 15:00	MLA2-1-37-2.0	✓			
ES1204352-105	23-FEB-2012 15:00	MLA2-1-37-2.5	✓			
ES1204352-106	23-FEB-2012 15:00	MLA2-1-37-3.0	✓			
ES1204352-107	23-FEB-2012 15:00	MLA2-1-38-1.5	✓			
ES1204352-108	23-FEB-2012 15:00	MLA2-1-38-2.0	✓			
ES1204352-109	23-FEB-2012 15:00	MLA2-1-38-2.5	✓			
ES1204352-110	23-FEB-2012 15:00	MLA2-1-39-1.5	✓			
ES1204352-111	23-FEB-2012 15:00	MLA2-1-39-2.0	✓			
ES1204352-112	23-FEB-2012 15:00	MLA2-1-39-2.5	✓			
ES1204352-113	23-FEB-2012 15:00	MLA2-1-40-1.0	✓			
ES1204352-114	23-FEB-2012 15:00	MLA2-1-40-1.5	✓			
ES1204352-115	23-FEB-2012 15:00	MLA2-1-40-2.0	✓			
ES1204352-116	23-FEB-2012 15:00	MLA2-1-40-2.5	✓			



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-01T 7 metals (Total)
ES1204352-046	23-FEB-2012 15:00	MLA2-1-DR1	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

### Requested Deliverables

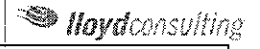
#### MS LEONA KOPITTKE

- \*AU Certificate of Analysis - NATA ( COA ) Email leona@lloydconsulting.com.au
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email leona@lloydconsulting.com.au
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email leona@lloydconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email leona@lloydconsulting.com.au
- A4 - AU Tax Invoice ( INV ) Email leona@lloydconsulting.com.au
- Chain of Custody (CoC) ( COC ) Email leona@lloydconsulting.com.au
- EDI Format - ENMRG ( ENMRG ) Email leona@lloydconsulting.com.au
- EDI Format - XTab ( XTAB ) Email leona@lloydconsulting.com.au

#### TREVOR LLOYD

- \*AU Certificate of Analysis - NATA ( COA ) Email trevor@lloydconsulting.com.au
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email trevor@lloydconsulting.com.au
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email trevor@lloydconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email trevor@lloydconsulting.com.au
- Chain of Custody (CoC) ( COC ) Email trevor@lloydconsulting.com.au
- EDI Format - ENMRG ( ENMRG ) Email trevor@lloydconsulting.com.au
- EDI Format - XTab ( XTAB ) Email trevor@lloydconsulting.com.au

**Chain of Custody**



**Laboratory Details**  
 ALS Brisbane  
**Lab Quote Ref.** 277-289 Woodpark Road  
 BN / 299 / 10 Smithfield, Sydney 2164  
 Email: ALS@enviro.sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS:</b> Std		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Custody Seal Intact? Yes No N/A
<b>PROJECT:</b> 12-773		COC: 1 2 3 4 5 6 7		Free ice / frozen ice bricks present upon receipt? Yes No N/A
<b>ORDER NUMBER:</b>		OF: 1 2 3 4 5 10 7		Random Sample Temperature on Receipt: °C
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b>	<b>RECEIVED BY:</b>
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068796	<i>[Signature]</i>	<i>[Signature]</i>	<i>Chris</i>
<b>COC emailed to ALS? ( YES / NO )</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 24/2/12 9am	<b>DATE/TIME:</b> 24/2/12	<b>DATE/TIME:</b> 27/2 1200
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au		<b>Other comment:</b>		
<b>Email Invoice to (as above)</b>				
<b>COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:</b>				

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)			ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OPS						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	MLA2-1-24-0.2	22/2/12	S	1		X							
2	MLA2-1-24-0.5	"	"	1		X							
(47)	MLA2-1-24-1.0	"	"	1		ON HOLD							
(48)	MLA2-1-24-1.5	"	"	1		ON HOLD							
(49)	MLA2-1-24-2.0	"	"	1		ON HOLD							
(50)	MLA2-1-24-2.5	"	"	1		ON HOLD							
3	MLA2-1-25-0.2	"	"	1		X							
4	MLA2-1-25-0.5	"	"	1		X							
5	MLA2-1-25-1.0	"	"	1		X							
6	MLA2-1-25-1.0D	"	"	1		X							
(51)	MLA2-1-25-1.5	"	"	1		ON HOLD							
(52)	MLA2-1-25-2.0	"	"	1		ON HOLD							
				<b>TOTAL</b>	0	6	0						

Environmental Division  
 Sydney  
 Work Order  
**ES1204352**

Telephone : +61-2-8784 8555

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



**Chain of Custody**

<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road Smithfield, Sydney 2164
BN / 299 / 10	Email: ALS@enviro.sydnev@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS:</b> Std		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Custody Seal Intact? Yes No N/A
<b>PROJECT:</b> 12-773	<b>ORDER NUMBER:</b>	COC: 1 <u>2</u> 3 4 5 6 7		Free ice / frozen ice bricks present upon receipt? Yes No N/A
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RELINQUISHED BY:</b> [Signature]	<b>RECEIVED BY:</b> [Signature]	<b>RECEIVED BY:</b> Chris
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 24/2/12 9:00	<b>DATE/TIME:</b> 24-2-12	<b>DATE/TIME:</b> 27/2 1200
<b>Email Reports to leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au</b>		<b>Other comment:</b>		
<b>Email Invoice to (as above)</b>				

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OPS							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
53	MLA2-1-25-2.5	22/2/12	S		ON HOLD									
54	MLA2-1-25-3.0	"	"		ON HOLD									
7	MLA2-1-26-0.2	"	"		X									
8	MLA2-1-26-0.5	"	"		X									
35	MLA2-1-26-1.0	"	"		ON HOLD									
56	MLA2-1-26-1.5	"	"		ON HOLD									
57	MLA2-1-26-2.0	"	"		ON HOLD									
58	MLA2-1-26-2.5	"	"		ON HOLD									
59	MLA2-1-26-3.0	"	"		ON HOLD									
9	MLA2-1-27-0.2	"	"		X									
10	MLA2-1-27-0.5	"	"		X									
60	MLA2-1-27-1.0	"	"		ON HOLD									
<b>TOTAL</b>					0	4	0							

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 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

**Chain of Custody**

<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-288 Woodpark Road Smithfield, Sydney 2164
BN / 299 / 10	Email: ALS@Enviro.Sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b> <i>STD</i>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.			Custody Seal Intact?	Yes No N/A
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Free ice / frozen ice bricks present upon receipt?
<b>ORDER NUMBER:</b>		COC: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	OF: 1 2 3 4 5 6 7		Other comment:
<b>SAMPLER:</b> Leona Kopitke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>Chris</i>
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 24/2/12 9:00	<b>DATE/TIME:</b> 24-2-12	<b>DATE/TIME:</b> 27/2 1200
Email Reports to leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au				
Email Invoice to (as above)				

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)			ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OPs							
61	MLA2-1-27-1.5	22-2-12	S	1										
62	MLA2-1-27-2.0	"	"											
63	MLA2-1-27-2.5	"	"											
	<del>MLA2-1-27-3.0</del>													
11	MLA2-1-28-0.2	"	"			X								
12	MLA2-1-28-0.5	"	"			X								
64	MLA2-1-28-1.0	"	"											
65	MLA2-1-28-1.5	"	"											
66	MLA2-1-28-2.0	"	"											
67	MLA2-1-28-2.5	"	"											
68	MLA2-1-28-3.0	"	"											
13	MLA2-1-28-0.5D	"	"			X								
<b>TOTAL</b>					0	3	0							

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

**Chain of Custody**



<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road
	BN / 299 / 10
	Smithfield, Sydney 2164
	Email: ALS@enviro.sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS:</b> <i>Std</i>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Custody Seal Intact? Yes No N/A
<b>PROJECT:</b> 12-773		COC: 1 2 3 <b>4</b> 5 6 7		Free ice / frozen ice bricks present upon receipt? Yes No N/A
<b>ORDER NUMBER:</b>		OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>[Signature]</i>
<b>SAMPLER:</b> Leona Kopitke	<b>SAMPLER MOBILE:</b> 0410068796	<b>DATE/TIME:</b> 24/2/12 9.00	<b>DATE/TIME:</b> 24-2-12	<b>DATE/TIME:</b> 24/2 1200
<b>COC emailed to ALS?</b> ( YES / NO)	<b>EDD FORMAT (or default):</b>			
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au				
<b>Email Invoice to (as above)</b>				

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OPS						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
14	MLA2-1-30-0.2	22/2/12	S	1		X							
15	MLA2-1-30-0.5	"	"	1		X							
69	MLA2-1-30-1.0	"	"	1		ON HOLD							
70	MLA2-1-30-1.5	"	"	1		ON HOLD							
71	MLA2-1-30-2.0	"	"	1		ON HOLD							
16	MLA2-1-29-0.2	"	"	1		X							
17	MLA2-1-29-0.5	"	"	1		X							
18	MLA2-1-29-1.0	"	"	1		X							
72	MLA2-1-29-1.5	"	"	1		ON HOLD							
73	MLA2-1-29-2.0	"	"	1		ON HOLD							
74	MLA2-1-29-2.5	"	"	1		ON HOLD							
	<del>MLA2-1-30-0.2</del>	<del>23/2/12</del>	<del>"</del>	<del>1</del>		<del>X</del>							
<b>TOTAL</b>						6							

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

**Chain of Custody**

**Laboratory Details** ALS Brisbane  
**Lab Quote Ref.** 277-289 Woodpark Road  
 BN / 299 / 10 Smithfield, Sydney 2164  
 Email: ALS@enviro.sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b> <i>Jcd</i>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Custody Seal Intact? Yes No N/A
<b>PROJECT:</b> 12-773		coc: 1 2 3 4 <b>5</b> 6 7		Free ice / frozen ice bricks present upon receipt? Yes No N/A
<b>ORDER NUMBER:</b>		OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>Chris</i>
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068796	<b>DATE/TIME:</b> 24/2/12 9:00	<b>DATE/TIME:</b> 24-2-12	<b>DATE/TIME:</b> 24/2 12:00
<b>COC emailed to ALS? ( YES / NO)</b>		<b>EDD FORMAT (or default):</b>		
Email Reports to leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au				
Email Invoice to (as above)				

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	00/OP						
19	MLA2-1-31-0.2	23/2/12	S	1	X	X							
20	MLA2-1-31-0.5	"	"	1	X	X							
75	MLA2-1-31-1.0	"	"	1		ON HOLD							
76	MLA2-1-31-1.5	"	"	1		ON HOLD							
77	MLA2-1-31-3.0	"	"	1		ON HOLD							
21	MLA2-1-32-0.2	"	"	1	X								
22	MLA2-1-32-0.5	"	"	1	X								
23	MLA2-1-32-0.5D	"	"	1	X								
78	MLA2-1-32-1.0	"	"	1		ON HOLD							
79	MLA2-1-32-1.5	"	"	1		ON HOLD							
80	MLA2-1-32-2.0	"	"	1		ON HOLD							
81	MLA2-1-32-2.5	"	"	1		ON HOLD							
<b>TOTAL</b>					0	5	2						

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialion bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Chain of Custody



<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road Smithfield, Sydney 2164
	BN / 299 / 10
	Email: ALS@enviro.sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b> <i>std</i>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.			Custody Seal Intact?	Yes No N/A
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Free ice / frozen ice bricks present upon receipt?
<b>ORDER NUMBER:</b>		COC: 1 2 3 4 5 <u>6</u> 7		Random Sample Temperature on Receipt: °C
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	OF: 1 2 3 4 5 6 7		Other comment:
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>Chris</i>
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> <i>24/2/12 9:00</i>	<b>DATE/TIME:</b> <i>24-2-12</i>	<b>DATE/TIME:</b> <i>27/2 1200</i>
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au				
<b>Email Invoice to (as above)</b>				

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB, Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPA	7 METALS	OC/OPs						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
<u>82</u>	MLA2-1-32-3.0	23-2-12	S	1		ON HOLD							
24	MLA2-1-33-0.2	"	"	1		X							
25	MLA2-1-33-0.5	"	"	1		X							
<u>83</u>	MLA2-1-33-1.0	"	"	1		ON HOLD							
<u>84</u>	MLA2-1-33-1.5	"	"	1		ON HOLD							
<u>85</u>	MLA2-1-33-2.0	"	"	1		ON HOLD							
<u>86</u>	MLA2-1-33-2.5	"	"	1		ON HOLD							
<u>87</u>	MLA2-1-33-3.0	"	"	1		ON HOLD							
26	MLA2-1-34-0.2	"	"	1	X	X	X						
27	MLA2-1-34-0.5	"	"	1		X							
<u>88</u>	MLA2-1-34-1.0	"	"	1		ON HOLD							
<u>89</u>	MLA2-1-34-1.5	"	"	1		ON HOLD							
<b>TOTAL</b>					1	4	1						

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialion bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

**Chain of Custody**

<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road
<b>BN / 299 / 10</b>	Smithfield, Sydney 2164
	Email: ALSEnviro.Sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b> <i>std</i>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Custody Seal Intact? Yes No N/A
<b>PROJECT:</b> 12-773		COC: 1 2 3 4 5 6 <u>7</u>		Free ice / frozen ice bricks present upon receipt? Yes No N/A
<b>ORDER NUMBER:</b>		OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>Chris</i>
<b>SAMPLER:</b> Leona Kopitke	<b>SAMPLER MOBILE:</b> 0410068796	<i>[Signature]</i>	<b>DATE/TIME:</b> 24-2-12	<b>DATE/TIME:</b> 27/2 1200
<b>COC emailed to ALS? ( YES / NO )</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 24/2/12 9.00		
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au				
<b>Email Invoice to (as above)</b>				

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)				ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).						Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPA	7 METALS	OC/OPS						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
90	MLA2-1-34-2.0	23/2/12	S	1		ON HOLD							
91	MLA2-1-34-2.5	"	"	1		ON HOLD							
92	MLA2-1-34-3.0	"	"	1		ON HOLD							
28	MLA2-1-35-0.2	"	"	1		X							
29	MLA2-1-35-0.5	"	"	1		X							
30	MLA2-1-35-0.5D	"	"	1		X							
93	MLA2-1-35-1.0	"	"	1		ON HOLD							
94	MLA2-1-35-1.5	"	"	1		ON HOLD							
95	MLA2-1-35-2.0	"	"	1		ON HOLD							
96	MLA2-1-35-2.5	"	"	1		ON HOLD							
97	MLA2-1-35-3.0	"	"	1		ON HOLD							
31	MLA2-1-36-0.2	"	"	1		X							
<b>TOTAL</b>					0	4	0						

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialion bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

**Chain of Custody**

<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-289 Woodpark Road
<b>BN / 299 / 10</b>	Smithfold, Sydney 2104
	Email: ALSEnviro.Sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b> <i>std</i>		<b>FOR LABORATORY USE ONLY (Circle)</b>				
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.			Custody Seal Intact?	Yes	No	N/A	
<b>PROJECT:</b> 12-773	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
<b>ORDER NUMBER:</b>		coc: 1 2 3 4 5 6 <b>8</b> of: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt:	°C		
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300			Other comment:			
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068796	<b>RELINQUISHED BY:</b> <i>[Signature]</i>	<b>RECEIVED BY:</b> <i>[Signature]</i>	<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b> <i>Chris</i>		
<b>COC emailed to ALS? ( YES / NO)</b>	<b>EDD FORMAT (or default):</b>	<b>DATE/TIME:</b> 24-2-12 9:00	<b>DATE/TIME:</b> 24-2-12	<b>DATE/TIME:</b>	<b>DATE/TIME:</b> <i>24/2 1200</i>		
<b>Email Reports to</b> leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au							
<b>Email Invoice to (as above)</b>							

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)			ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information							
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OPS												
32	MLAZ-1-36-0.5	23/2/12	S	1		X													
33	MLAZ-1-36-1.0	"	"	"		X													
99	MLAZ-1-36-1.5	"	"	"		ON HOLD													
99	MLAZ-1-36-2.0	"	"	"		ON HOLD													
100	MLAZ-1-36-2.5	"	"	"		ON HOLD													
101	MLAZ-1-36-3.0	"	"	"		ON HOLD													
34	MLAZ-1-37-0.2	"	"	"		X													
35	MLAZ-1-37-0.5	"	"	"		X													
102	MLAZ-1-37-1.0	"	"	"		ON HOLD													
103	MLAZ-1-37-1.5	"	"	"		ON HOLD													
104	MLAZ-1-37-2.0	"	"	"		ON HOLD													
105	MLAZ-1-37-2.5	"	"	"		ON HOLD													
<b>TOTAL</b>					0	4	0												

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



**Chain of Custody**

**Laboratory Details**  
 ALS Brisbane  
 Lab Quote Ref. 277-289 Woodpark Road  
 BN / 299 / 10 Smithfield, Sydney 2164  
 Email: ALSEnviro.Sydney@alsglobal.com

CLIENT: Lloyd Consulting		TURNAROUND REQUIREMENTS : <i>Std</i>			FOR LABORATORY USE ONLY (Circle)		
OFFICE: 30 Heather Street, Wilston, Q, 4051.					Custody Seal Intact? Yes No N/A		
PROJECT: 12-773		QUOTE NO.: BN / 299 / 10	COC SEQUENCE NUMBER (Circle) <b>9</b>			Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:					Random Sample Temperature on Receipt: °C		
PROJECT MANAGER: Trevor Lloyd		CONTACT PH: 07 3352 7300			Other comment:		
SAMPLER: Leona Kopittke		SAMPLER MOBILE: 0410068796		RELINQUISHED BY: <i>[Signature]</i>	RECEIVED BY: <i>[Signature]</i>	RELINQUISHED BY:	RECEIVED BY: <i>[Signature]</i>
COC emailed to ALS? ( YES / NO)		EDD FORMAT (or default):		DATE/TIME: <i>24/2/12 9:00</i>	DATE/TIME: <i>24-2-12</i>	DATE/TIME:	DATE/TIME: <i>27/2 1200</i>
Email Reports to leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au							
Email Invoice to (as above)							

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

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LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OPS.						Comments on likely contaminant levels, dilutions, or samples requiring specific GC analysis etc.
<b>106</b>	MLAZ-1-37-30	23/2/12	S	1		ON HOLD							
36	MLAZ-1-38-0.2	"	S	1	X	X	X						
37	MLAZ-1-38-0.5	"	S	1		X							
38	MLAZ-1-38-1.0	"	S	1		X							
39	MLAZ-1-38-1.0	"	S	1	<del>X</del>	X							
<b>107</b>	MLAZ-1-38-1.5	"	S	1		ON HOLD							
<b>108</b>	MLAZ-1-38-2.0	"	S	1		ON HOLD							
<b>109</b>	MLAZ-1-38-2.5	"	S	1		ON HOLD							
40	MLAZ-1-39-0.2	"	S	1		X							
41	MLAZ-1-39-0.5	"	S	1		X							
42	MLAZ-1-39-1.0	"	S	1		X							
<b>110</b>	MLAZ-1-39-1.5	"	S	1		ON HOLD							
				TOTAL	1	7	1						

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 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Special bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Pres  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

**Chain of Custody**

<b>Laboratory Details</b>	ALS Brisbane
<b>Lab Quote Ref.</b>	277-288 Woodpark Road Smithfield, Sydney 2164
BN / 299 / 10	
Email	ALSEnviro.Sydney@alsglobal.com

<b>CLIENT:</b> Lloyd Consulting	<b>TURNAROUND REQUIREMENTS :</b> <i>Std</i>		<b>FOR LABORATORY USE ONLY (Circle)</b>	
<b>OFFICE:</b> 30 Heather Street, Wilston, Q, 4051.	<b>QUOTE NO.:</b> BN / 299 / 10	<b>COC SEQUENCE NUMBER (Circle)</b>		Custody Seal Intact? Yes No N/A
<b>PROJECT:</b> 12-773		coc: 1 2 3 4 5 6 <i>10</i>		Free ice / frozen ice bricks present upon receipt? Yes No N/A
<b>ORDER NUMBER:</b>		of: 1 2 3 4 5 6 <i>10</i>		Random Sample Temperature on Receipt: °C
<b>PROJECT MANAGER:</b> Trevor Lloyd	<b>CONTACT PH:</b> 07 3352 7300	<b>RECEIVED BY:</b> <i>[Signature]</i>	<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b> <i>Chris</i>
<b>SAMPLER:</b> Leona Kopittke	<b>SAMPLER MOBILE:</b> 0410068796	<b>DATE/TIME:</b> <i>24-2-12 9:00</i>	<b>DATE/TIME:</b> <i>24-2-12</i>	<b>DATE/TIME:</b> <i>27/2 1200</i>
<b>COC emailed to ALS? ( YES / NO)</b>		<b>EDD FORMAT (or default):</b>		
Email Reports to leona@lloydconsulting.com.au; trevor@lloydconsulting.com.au				
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**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)			ANALYSIS REQUIRED including SUITES (NB, Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information									
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Total Bottles	TPH	7 METALS	OC/OP														
<i>(11)</i>	<i>MLAZ-1-39-2.0</i>	<i>23/2/12</i>	<i>S</i>	<i>1</i>		<i>ON HOLD</i>															
<i>(112)</i>	<i>MLAZ-1-39-2.5</i>	<i>"</i>	<i>"</i>	<i>1</i>		<i>ON HOLD</i>															
<i>43</i>	<i>MLAZ-1-40-0.2</i>	<i>"</i>	<i>"</i>	<i>1</i>		<i>X</i>															
<i>44</i>	<i>MLAZ-1-40-0.2D</i>	<i>"</i>	<i>"</i>	<i>1</i>		<i>X</i>															
<i>45</i>	<i>MLAZ-1-40-0.5</i>	<i>"</i>	<i>"</i>	<i>1</i>		<i>X</i>															
<i>(113)</i>	<i>MLAZ-1-40-1.0</i>	<i>"</i>	<i>"</i>	<i>1</i>		<i>ON HOLD</i>															
<i>(114)</i>	<i>MLAZ-1-40-1.5</i>	<i>"</i>	<i>"</i>	<i>1</i>		<i>ON HOLD</i>															
<i>(115)</i>	<i>MLAZ-1-40-2.0</i>	<i>"</i>	<i>"</i>	<i>1</i>		<i>ON HOLD</i>															
<i>(116)</i>	<i>MLAZ-1-40-2.5</i>	<i>"</i>	<i>"</i>	<i>1</i>		<i>ON HOLD</i>															
<i>46</i>	<i>MLAZ-1-DR1</i>	<i>"</i>	<i>W</i>	<i>1</i>		<i>X</i>														<i>TOTAL METALS</i>	
				<b>TOTAL</b>	<i>0</i>	<i>0</i>															

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; SF = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulphuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulphuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialisation bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Pres  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>ES1205111</b></p> <p><b>Client</b> : <b>LLOYD CONSULTING</b></p> <p><b>Contact</b> : <b>TREVOR LLOYD</b></p> <p><b>Address</b> : <b>PO BOX 320</b> <b>WILSTON QLD, AUSTRALIA 4057</b></p> <p><b>E-mail</b> : <b>trevor@lloydconsulting.com.au</b></p> <p><b>Telephone</b> : <b>+61 07 33527300</b></p> <p><b>Facsimile</b> : <b>----</b></p> <p><b>Project</b> : <b>12-773</b></p> <p><b>Order number</b> : <b>REBATCH OF ES1201146 ES1204112</b></p> <p><b>C-O-C number</b> : <b>----</b></p> <p><b>Sampler</b> : <b>----</b></p> <p><b>Site</b> : <b>----</b></p> <p><b>Quote number</b> : <b>BN/299/10</b></p>	<p><b>Page</b> : 1 of 6</p> <p><b>Laboratory</b> : Environmental Division Sydney</p> <p><b>Contact</b> : Client Services</p> <p><b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164</p> <p><b>E-mail</b> : sydney@alsglobal.com</p> <p><b>Telephone</b> : +61-2-8784 8555</p> <p><b>Facsimile</b> : +61-2-8784 8500</p> <p><b>QC Level</b> : NEPM 1999 Schedule B(3) and ALS QCS3 requirement</p> <p><b>Date Samples Received</b> : 06-MAR-2012</p> <p><b>Issue Date</b> : 19-MAR-2012</p> <p><b>No. of samples received</b> : 8</p> <p><b>No. of samples analysed</b> : 8</p>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

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### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Raymond Commodor	Instrument Chemist	Sydney Inorganics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



### **General Comments**

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

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

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

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

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

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

- **EG020: TCLP Leach results for samples #2 and #6 have been confirmed by retumbling and re-analysis.**
-



### Analytical Results

Sub-Matrix: DI WATER LEACHATE

Client sample ID

				MLA2-1-3-0.2 DI LEACH	MLA2-1-4-0.2 DI LEACH	MLA2-1-SP3 DI LEACH	MLA2-1-17-0.2 DI LEACH	----
				14-MAR-2012 12:00	14-MAR-2012 12:00	14-MAR-2012 12:00	14-MAR-2012 12:00	----
Compound	CAS Number	LOR	Unit	ES1205111-005	ES1205111-006	ES1205111-007	ES1205111-008	----
<b>EG020W: Water Leachable Metals by ICP-MS</b>								
Arsenic	7440-38-2	0.001	mg/L	6.63	3.46	1.01	1.12	----

Client sampling date / time



**Analytical Results**

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MLA2-1-3-0.2 TCLP	MLA2-1-4-0.2 TCLP	MLA2-1-SP3 TCLP	MLA2-1-17-0.2 TCLP	MLA2-1-3-0.2 DI LEACH
				17-JAN-2012 15:00	18-JAN-2012 15:00	20-FEB-2012 15:00	21-FEB-2012 15:00	17-JAN-2012 15:00
Compound	CAS Number	LOR	Unit	ES1205111-001	ES1205111-002	ES1205111-003	ES1205111-004	ES1205111-005
<b>EN33: TCLP Leach</b>								
Initial pH	----	0.1	pH Unit	4.7	5.4	7.3	7.7	----
After HCl pH	----	0.1	pH Unit	----	1.7	1.7	1.7	----
Extraction Fluid Number	----	1	-	1	1	1	1	----
Final pH	----	0.1	pH Unit	4.6	4.7	5.1	4.7	----
<b>EN60: Bottle Leaching Procedure</b>								
Final pH	----	0.1	pH Unit	----	----	----	----	4.6



**Analytical Results**

Sub-Matrix: **SOIL**

*Client sample ID*

*Client sampling date / time*

				<b>MLA2-1-4-0.2 DI LEACH</b>	<b>MLA2-1-SP3 DI LEACH</b>	<b>MLA2-1-17-0.2 DI LEACH</b>	----	----
				18-JAN-2012 15:00	20-FEB-2012 15:00	21-FEB-2012 15:00	----	----
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<b>ES1205111-006</b>	<b>ES1205111-007</b>	<b>ES1205111-008</b>	----	----
<b>EN60: Bottle Leaching Procedure</b>								
<b>Final pH</b>	----	0.1	pH Unit	<b>7.2</b>	<b>7.4</b>	<b>7.8</b>	----	----



### Analytical Results

Sub-Matrix: TCLP LEACHATE

Client sample ID

				MLA2-1-3-0.2 TCLP	MLA2-1-4-0.2 TCLP	MLA2-1-SP3 TCLP	MLA2-1-17-0.2 TCLP	----
				08-MAR-2012 12:00	08-MAR-2012 12:00	08-MAR-2012 12:00	08-MAR-2012 12:00	----
Compound	CAS Number	LOR	Unit	ES1205111-001	ES1205111-002	ES1205111-003	ES1205111-004	----
<b>EG005C: Leachable Metals by ICPAES</b>								
Arsenic	7440-38-2	0.1	mg/L	3.1	1.0	0.4	0.4	----

Client sampling date / time



## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1205111</b>	<b>Page</b>	<b>: 1 of 5</b>
<b>Client</b>	<b>: LLOYD CONSULTING</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: TREVOR LLOYD</b>	<b>Contact</b>	<b>: Client Services</b>
<b>Address</b>	<b>: PO BOX 320 WILSTON QLD, AUSTRALIA 4057</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: trevor@lloydconsulting.com.au</b>	<b>E-mail</b>	<b>: sydney@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 07 33527300</b>	<b>Telephone</b>	<b>: +61-2-8784 8555</b>
<b>Facsimile</b>	<b>: ----</b>	<b>Facsimile</b>	<b>: +61-2-8784 8500</b>
<b>Project</b>	<b>: 12-773</b>	<b>QC Level</b>	<b>: NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>	<b>Date Samples Received</b>	<b>: 06-MAR-2012</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 19-MAR-2012</b>
<b>Sampler</b>	<b>: ----</b>	<b>No. of samples received</b>	<b>: 8</b>
<b>Order number</b>	<b>: REBATCH OF ES1201146 ES1204112</b>	<b>No. of samples analysed</b>	<b>: 8</b>
<b>Quote number</b>	<b>: BN/299/10</b>		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Raymond Commodor	Instrument Chemist	Sydney Inorganics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



### **General Comments**

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

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

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

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

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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG005C: Leachable Metals by ICPAES (QC Lot: 2202246)</b>									
ES1204872-001	Anonymous	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.0	No Limit
ES1205221-002	Anonymous	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.0	No Limit
<b>EG020W: Water Leachable Metals by ICP-MS (QC Lot: 2202546)</b>									
ES1205111-005	MLA2-1-3-0.2 DI LEACH	EG020A-W: Arsenic	7440-38-2	0.001	mg/L	6.63	6.58	0.8	0% - 20%



**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 Sample (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: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
					Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit					LCS	Low
<b>EG005C: Leachable Metals by ICPAES (QCLot: 2202246)</b>									
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	0.1 mg/L	98.1	70	130	
<b>EG020W: Water Leachable Metals by ICP-MS (QCLot: 2202546)</b>									
EG020A-W: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.4	87	111	



### 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: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike Concentration</i>	<i>Spike Recovery (%)</i>	<i>Recovery Limits (%)</i>	
					<i>MS</i>	<i>Low</i>	<i>High</i>
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>				
<b>EG005C: Leachable Metals by ICPAES (QCLot: 2202246)</b>							
ES1204872-002	Anonymous	EG005C: Arsenic	7440-38-2	1 mg/L	106	70	130
<b>EG020W: Water Leachable Metals by ICP-MS (QCLot: 2202546)</b>							
ES1205111-005	MLA2-1-3-0.2 DI LEACH	EG020A-W: Arsenic	7440-38-2	1 mg/L	# Not Determined	70	130

## INTERPRETIVE QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1205111</b>	<b>Page</b>	<b>: 1 of 5</b>
<b>Client</b>	<b>: LLOYD CONSULTING</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: TREVOR LLOYD</b>	<b>Contact</b>	<b>: Client Services</b>
<b>Address</b>	<b>: PO BOX 320 WILSTON QLD, AUSTRALIA 4057</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: trevor@lloydconsulting.com.au</b>	<b>E-mail</b>	<b>: sydney@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 07 33527300</b>	<b>Telephone</b>	<b>: +61-2-8784 8555</b>
<b>Facsimile</b>	<b>: ----</b>	<b>Facsimile</b>	<b>: +61-2-8784 8500</b>
<b>Project</b>	<b>: 12-773</b>	<b>QC Level</b>	<b>: NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>	<b>Date Samples Received</b>	<b>: 06-MAR-2012</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 19-MAR-2012</b>
<b>Sampler</b>	<b>: ----</b>	<b>No. of samples received</b>	<b>: 8</b>
<b>Order number</b>	<b>: REBATCH OF ES1201146 ES1204112</b>	<b>No. of samples analysed</b>	<b>: 8</b>
<b>Quote number</b>	<b>: BN/299/10</b>		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

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	
<b>EG005C: Leachable Metals by ICPAES</b>								
<b>Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)</b> MLA2-1-3-0.2 - TCLP, MLA2-1-SP3 - TCLP,	MLA2-1-4-0.2 - TCLP, MLA2-1-17-0.2 - TCLP	08-MAR-2012	08-MAR-2012	04-SEP-2012	✓	08-MAR-2012	04-SEP-2012	✓
<b>EG020W: Water Leachable Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-W)</b> MLA2-1-3-0.2 - DI LEACH, MLA2-1-SP3 - DI LEACH,	MLA2-1-4-0.2 - DI LEACH, MLA2-1-17-0.2 - DI LEACH	14-MAR-2012	08-MAR-2012	10-SEP-2012	✓	11-MAR-2012	10-SEP-2012	✓
<b>EN33: TCLP Leach</b>								
<b>Lab Split: Leach for metals excl. Hg (EN33a)</b> MLA2-1-3-0.2 - TCLP		17-JAN-2012	---	15-JUL-2012	----	07-MAR-2012	15-JUL-2012	✓
<b>Lab Split: Leach for metals excl. Hg (EN33a)</b> MLA2-1-4-0.2 - TCLP		18-JAN-2012	---	16-JUL-2012	----	07-MAR-2012	16-JUL-2012	✓
<b>Lab Split: Leach for metals excl. Hg (EN33a)</b> MLA2-1-SP3 - TCLP		20-FEB-2012	---	18-AUG-2012	----	07-MAR-2012	18-AUG-2012	✓
<b>Lab Split: Leach for metals excl. Hg (EN33a)</b> MLA2-1-17-0.2 - TCLP		21-FEB-2012	---	19-AUG-2012	----	07-MAR-2012	19-AUG-2012	✓
<b>EN60: Bottle Leaching Procedure</b>								
<b>Lab Split: Leach for metals excl. Hg (EN60-D1a)</b> MLA2-1-3-0.2 - DI LEACH		17-JAN-2012	---	15-JUL-2012	----	08-MAR-2012	15-JUL-2012	✓
<b>Lab Split: Leach for metals excl. Hg (EN60-D1a)</b> MLA2-1-4-0.2 - DI LEACH		18-JAN-2012	---	16-JUL-2012	----	08-MAR-2012	16-JUL-2012	✓
<b>Lab Split: Leach for metals excl. Hg (EN60-D1a)</b> MLA2-1-SP3 - DI LEACH		20-FEB-2012	---	18-AUG-2012	----	08-MAR-2012	18-AUG-2012	✓
<b>Lab Split: Leach for metals excl. Hg (EN60-D1a)</b> MLA2-1-17-0.2 - DI LEACH		21-FEB-2012	---	19-AUG-2012	----	08-MAR-2012	19-AUG-2012	✓



## 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(where) 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: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Leachable Metals by ICPAES	EG005C	2	16	12.5	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Water Leachable Metals by ICP-MS - Suite A	EG020A-W	1	4	25.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Leachable Metals by ICPAES	EG005C	1	16	6.3	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Water Leachable Metals by ICP-MS - Suite A	EG020A-W	1	4	25.0	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Leachable Metals by ICPAES	EG005C	1	16	6.3	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Water Leachable Metals by ICP-MS - Suite A	EG020A-W	1	4	25.0	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Leachable Metals by ICPAES	EG005C	1	16	6.3	5.0	✔	ALS QCS3 requirement
Water Leachable Metals by ICP-MS - Suite A	EG020A-W	1	4	25.0	5.0	✔	ALS QCS3 requirement





## 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.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Leachable Metals by ICPAES	EG005C	SOIL	APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Water Leachable Metals by ICP-MS - Suite A	EG020A-W	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, AS 4439.3, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Digestion for Total Recoverable Metals in DI Water Leachate	EN25W	SOIL	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TCLP for Non & Semivolatile Analytes	EN33a	SOIL	(USEPA SW846-1311, ALS QWI-EN/33) The TCLP procedure is designed to determine the mobility of both organic and inorganic analytes present in wastes. The standard TCLP leach is for non-volatile and Semivolatile test parameters.
Deionised Water Leach	EN60-D1a	SOIL	AS4439.3 Preparation of Leachates



## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EG020W: Water Leachable Metals by ICP-MS	ES1205111-005	MLA2-1-3-0.2 DI LEACH	Arsenic	7440-38-2	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.

### Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

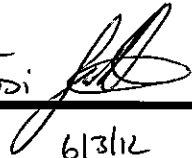
- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

**Fadi Soro**

FADI   
6/3/12  
9:15am

**From:** Barbara Hanna  
**Sent:** Monday, 5 March 2012 6:05 PM  
**To:** Samples Sydney  
**Subject:** FW: Leach test

Hi Fadi,

Could you please arrange this rebatch for TCLP and DI leach? (Scroll down)

**How was your customer experience? Please send us your feedback**

Kind regards,

**Barbara Hanna**  
CLIENT SERVICES MANAGER

**ALS | Environmental Division**


**Address**  
277-289 Woodpark Road, Smithfield, NSW, 2164

PHONE +61 2 8784 8555  
DIRECT +61 2 8784 8531  
FAX +61 2 8784 8500

**Winner of the inaugural CARE Award 2011 – Sustainable Technology & Innovation:**  
Reduction in Sample Volumes - Improving quality, safety, efficiency and sustainability in environmental practices



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**From:** Leona Kopittke [mailto:Leona@lloydconsulting.com.au]  
**Sent:** Monday, 5 March 2012 5:53 PM  
**To:** Barbara Hanna  
**Subject:** RE: Leach test

Hi Barbara,

Could you please do both? Thanks.

Kind regards,  
Leona

**Leona Kopittke** [BSc (Env)]  
Senior Environmental Consultant  
**lloyd consulting**

PO BOX 320 (30 Heather Street) Wilston QLD 4051  
T (07) 3352 7300 F (07) 3352 7333 M 0410 068 796  
E [leona@lloydconsulting.com.au](mailto:leona@lloydconsulting.com.au) W [www.lloydconsulting.com.au](http://www.lloydconsulting.com.au)

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**ES1205111**



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delete it from your system. Unless otherwise stated, this email represents only the views of the sender and not the views of Lloyd Consulting.

**From:** Barbara Hanna [mailto:Barbara.Hanna@alsglobal.com]  
**Sent:** Monday, 5 March 2012 4:40 PM  
**To:** Leona Kopittke  
**Cc:** Trevor Lloyd  
**Subject:** RE: Leach test

Hi Leona,

Could you please confirm the type of leach required ie TCLP or DI leach? I will then arrange this for you.

**How was your customer experience? Please send us your feedback**

Kind regards,  
**Barbara Hanna**  
**CLIENT SERVICES MANAGER**

**ALS | Environmental Division**

**Address**  
277-289 Woodpark Road, Smithfield, NSW, 2164

PHONE +61 2 8784 8555  
DIRECT +61 2 8784 8531  
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**From:** Leona Kopittke [mailto:Leona@lloydconsulting.com.au]  
**Sent:** Monday, 5 March 2012 3:44 PM  
**To:** Sydney  
**Cc:** Trevor Lloyd  
**Subject:** Leach test

Hi,

Could I please have leach testing for Arsenic conducted on the following samples:

5846-848 " ① ②  
Work order ES1201146 – MLA2-1-3-0.2 and MLA2-1-4-0.2<sup>13</sup>  
Work order ES1204112 – MLA2-1-SP3 and MLA2-1-17-0.2  
542-46 3 ③ ④<sup>13</sup>

Thank you.

Kind regards,

Leona

**Leona Kopittke** [BSc (Env)]

Senior Environmental Consultant

***lloyd consulting***

PO BOX 320 (30 Heather Street) Wilston QLD 4051

T (07) 3352 7300 F (07) 3352 7333 M 0410 068 796

E [leona@lloydconsulting.com.au](mailto:leona@lloydconsulting.com.au) W [www.lloydconsulting.com.au](http://www.lloydconsulting.com.au)

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\*\*\*\*\*

Fadi Soro

Fadi  
6/3/12  
9:15am

**From:** Barbara Hanna  
**Sent:** Monday, 5 March 2012 6:05 PM  
**To:** Samples Sydney  
**Subject:** FW: Leach test

Hi Fadi,

Could you please arrange this rebatch for TCLP and DI leach? (Scroll down)

**How was your customer experience? Please send us your feedback**

Kind regards,

**Barbara Hanna**  
CLIENT SERVICES MANAGER

**ALS | Environmental Division**

**Address**

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**From:** Leona Kopittke [mailto:Leona@lloydconsulting.com.au]  
**Sent:** Monday, 5 March 2012 5:53 PM  
**To:** Barbara Hanna  
**Subject:** RE: Leach test

Hi Barbara,

Could you please do both? Thanks.

Kind regards,

Leona

**Leona Kopittke** [BSc (Env)]

Senior Environmental Consultant

**lloyd consulting**

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T (07) 3352 7300 F (07) 3352 7333 M 0410 068 796

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Sydney  
Work Order

**ES1205111**



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**From:** Barbara Hanna [mailto:Barbara.Hanna@alsglobal.com]

**Sent:** Monday, 5 March 2012 4:40 PM

**To:** Leona Kopittke

**Cc:** Trevor Lloyd

**Subject:** RE: Leach test

Hi Leona,

Could you please confirm the type of leach required ie TCLP or DI leach? I will then arrange this for you.

**How was your customer experience? Please send us your feedback**

Kind regards,

**Barbara Hanna**

**CLIENT SERVICES MANAGER**

**ALS | Environmental Division**

**Address**

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**Sent:** Monday, 5 March 2012 3:44 PM

**To:** Sydney

**Cc:** Trevor Lloyd

**Subject:** Leach test

Hi,

Could I please have leach testing for Arsenic conducted on the following samples:

5846-848

" (1) (5)

(2) (6)

Work order ES1201146 – MLA2-1-3-0.2 and MLA2-1-4-0.2<sup>13</sup>

Work order ES1204112 – MLA2-1-SP3 and MLA2-1-17-0.2

542-46

3 (3) (7)

(4) (8)<sup>13</sup>

Thank you.

Kind regards,

Leona

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# APPENDIX G

## RELATIVE PERCENT DIFFERENCES

### Stage 1 Soil RPD Calculations

Analyte	Units	MLA2-1-1-1.5	MLA2-1-1-1.5D	RPD	MLA2-1-6-0.2	MLA2-1-6-0.2D	RPD
Arsenic	mg/kg	5	7	33	218	204	7
Cadmium	mg/kg	<1	<1	0	<1	<1	0
Chromium	mg/kg	34	34	0	39	38	3
Copper	mg/kg	10	13	26	11	9	20
Lead	mg/kg	8	10	22	10	16	46
Nickel	mg/kg	16	16	0	9	7	25
Zinc	mg/kg	47	53	12	17	13	27
alpha-BHC	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Hexachlorobenzene (HCB)	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
beta-BHC	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
gamma-BHC	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
delta-BHC	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Heptachlor	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Aldrin	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Heptachlor epoxide	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
trans-Chlordane	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
alpha-Endosulfan	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
cis-Chlordane	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Dieldrin	mg/kg	<0.05	<0.05	0	0.06	<0.05*	18
4.4'-DDE	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Endrin	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
beta-Endosulfan	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
4.4'-DDD	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Endrin aldehyde	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Endosulfan sulfate	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
4.4'-DDT	mg/kg	<0.2	<0.2	0	<0.2	<0.2	0
Endrin ketone	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Methoxychlor	mg/kg	<0.2	<0.2	0	<0.2	<0.2	0
Sum of DDT, DDD & DDE	mg/kg	<0.3	<0.3	0	<0.3	<0.3	0
Dichlorvos	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Demeton-S-methyl	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Monocrotophos	mg/kg	<0.2	<0.2	0	<0.2	<0.2	0
Dimethoate	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Diazinon	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Chlorpyrifos-methyl	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Parathion-methyl	mg/kg	<0.2	<0.2	0	<0.2	<0.2	0
Malathion	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Fenthion	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Chlorpyrifos	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Parathion	mg/kg	<0.2	<0.2	0	<0.2	<0.2	0
Pirimphos-ethyl	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Chlorfenvinphos	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Bromophos-ethyl	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0

Analyte	Units	MLA2-1-1-1.5	MLA2-1-1-1.5D	RPD	MLA2-1-6-0.2	MLA2-1-6-0.2D	RPD
Fenamiphos	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Prothiofos	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Ethion	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Carbophenothion	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0
Azinphos Methyl	mg/kg	<0.05	<0.05	0	<0.05	<0.05	0

## Stage 2 Soil RPD Calculations

Analyte	Units	MLA2-1-18-0.2	MLA2-1-18-0.5D	RPD	MLA2-1-20-0.2	MLA2-1-20-0.2D	RPD
Arsenic	mg/kg	9	10	11	<5	<5	0
Cadmium	mg/kg	<1	<1	0	<1	<1	0
Chromium	mg/kg	32	54	51	20	25	22
Copper	mg/kg	13	11	17	12	10	18
Lead	mg/kg	10	12	18	8	8	0
Nickel	mg/kg	22	17	26	10	8	22
Zinc	mg/kg	20	15	29	15	12	22

Analyte	Units	MLA2-1-22-0.5	MLA2-1-22-0.5D	RPD	MLA2-1-25-1.0	MLA2-1-25-1.0D	RPD
Arsenic	mg/kg	<5	5	1	<5	<5	0
Cadmium	mg/kg	<1	<1	0	<1	<1	0
Chromium	mg/kg	16	35	75	19	21	10
Copper	mg/kg	6	8	29	7	8	13
Lead	mg/kg	7	10	35	7	8	13
Nickel	mg/kg	8	14	55	12	13	8
Zinc	mg/kg	11	11	0	23	24	4

Analyte	Units	MLA2-1-28-0.5	MLA2-1-28-0.5D	RPD	MLA2-1-32-0.5	MLA2-1-32-0.5D	RPD
Arsenic	mg/kg	<5	<5	0	<5	7	0
Cadmium	mg/kg	<1	<1	0	<1	<1	0
Chromium	mg/kg	20	18	11	27	41	41
Copper	mg/kg	8	8	0	8	10	22
Lead	mg/kg	7	6	15	8	12	40
Nickel	mg/kg	14	12	15	13	16	21
Zinc	mg/kg	18	18	0	14	15	7

Analyte	Units	MLA2-1-35-0.5	MLA2-1-35-0.5D	RPD	MLA2-1-38-1.0	MLA2-1-38-1.0D	RPD
Arsenic	mg/kg	9	8	12	<5	<5	0
Cadmium	mg/kg	<1	<1	0	<1	<1	0
Chromium	mg/kg	20	21	5	32	20	46
Copper	mg/kg	8	8	0	10	8	22
Lead	mg/kg	8	9	12	6	5	18
Nickel	mg/kg	14	14	0	15	14	7
Zinc	mg/kg	27	20	30	19	16	17

Analyte	Units	MLA2-1-40-0.2	MLA2-1-40-0.2D	RPD
Arsenic	mg/kg	6	10	50
Cadmium	mg/kg	<1	<1	0
Chromium	mg/kg	31	51	49
Copper	mg/kg	12	12	0
Lead	mg/kg	9	15	50
Nickel	mg/kg	25	26	4
Zinc	mg/kg	32	23	33

## Stage 2 RPD Soil Triplicate calculations

Analyte	MLA2-1-32-0.5	MLA2-1-32-0.5T	RPD %	MLA2-1-35-0.5	MLA2-1-35-0.5T	RPD
Arsenic	<5 <sup>a</sup>	<b>8</b>	46	<b>9</b>	<b>5</b>	57
Cadmium	<1	<0.5	0	<1	<0.5	0
Chromium	<b>27</b>	<b>36</b>	29	<b>20</b>	<b>17</b>	16
Copper	<b>8</b>	<b>8</b>	0	<b>8</b>	<b>8</b>	0
Lead	<b>8</b>	<b>13</b>	48	<b>8</b>	<b>8</b>	0
Nickel	<b>13</b>	<b>13</b>	0	<b>14</b>	<b>13</b>	7
Zinc	<b>14</b>	<b>11</b>	24	<b>27</b>	<b>17</b>	45

<sup>a</sup> where once value is < then absolute value of that number is used for RPD calculation

Analyte	MLA2-1-38-1.0	MLA2-1-38-1.0T	RPD	MLA2-1-40-0.2	MLA2-1-40-0.2T	RPD
Arsenic	<5 <sup>a</sup>	<b>6</b>	18	<b>6</b>	<b>4</b>	40
Cadmium	<1	<0.5	0	<1	<0.5	0
Chromium	<b>32</b>	<b>39</b>	20	<b>31</b>	<b>27</b>	14
Copper	<b>10</b>	<b>8</b>	22	<b>12</b>	<b>12</b>	0
Lead	<b>6</b>	<b>13</b>	74	<b>9</b>	<b>9</b>	0
Nickel	<b>15</b>	<b>13</b>	14	<b>25</b>	<b>24</b>	4
Zinc	<b>19</b>	<b>12</b>	45	<b>32</b>	<b>21</b>	42

<sup>a</sup> where once value is < then absolute value of that number is used for RPD calculation

Analyte	MLA2-1-28-0.5	MLA2-1-28-0.5T	RPD	MLA2-1-25-1.0	MLA2-1-25-1.0T	RPD
Arsenic	<5 <sup>a</sup>	<b>5</b>	0	<5	<4	0
Cadmium	<1	<0.5	0	<1	<0.5	0
Chromium	<b>20</b>	<b>21</b>	5	<b>19</b>	<b>21</b>	10
Copper	<b>8</b>	<b>8</b>	0	<b>7</b>	<b>9</b>	25
Lead	<b>7</b>	<b>10</b>	35	<b>7</b>	<b>11</b>	44
Nickel	<b>14</b>	<b>15</b>	7	<b>12</b>	<b>16</b>	29
Zinc	<b>18</b>	<b>12</b>	40	<b>23</b>	<b>24</b>	4

<sup>a</sup> where a result's value is <, then absolute value of that number is used for RPD calculation