Groundwater - Well Sampling Data Form

ERM

Well Development	Job Information	
Date: 21/11/13	Time: arrive 16:05	depart 17:00
Project Name: Project Symphony	Project Number: 0224198	
Site Location: Liddell	Sampler: N.H	
Well ID: LP-MW02	Weather: Fine, some cloud.	

Equipment

Water quality equipment description: NA — Interface probe number: SYD 3954

Purging equipment (please circle): Bailer type: Plastic / Teflon — Pump type: Peristaltic / Submersible / Micro-purge / Amazon / Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 7.855 m (-) Water level 3.385 m (=) Water Column 4.47 m

Water Column 4.47 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 8.806 L

Depth to product: — m — Product Thickness: — m — Verified with Bailer: Y / N

Water Quality Parameters

Beginning purge time: 16:25 — Ending purge time: 16:50 — Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
12	16:30							brown, turbid, Purged dry after 12L. Allowed to recharge.
16	16:35							brown, turbid. Purged dry after another 4L. Allowed to recharge
20	16:40							brown, turbid. Purged dry after another 4L
24	16:45							brown, turbid. Purged dry after 4L. Allowed to recharge
26	16:50							brown, turbid. Purged dry after 2L.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume — Actual amount of water prior to sampling

Flow rate — mL/minute —

Sample time — Containers used —

Did field parameters stabilise? Y / N / NA — Was the well dry purged? Y / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID ____
Rinsate blank collected?	Y	N	Rinsate blank ID ____

Groundwater - Well Sampling Data Form

ERM

Well Development	Job Information	
Date: 22/11/13	Time: arrive 08:55	depart 09:30
Project Name: Project Symphony	Project Number: 0224198	
Site Location: Liddell	Sampler: N.H	
Well ID: LP_MW03	Weather: overcast	

Equipment

Water quality equipment description: NA — Interface probe number: SYD 3954

Purging equipment (please circle): Bailer type: Plastic / Teflon; Pump type: Peristaltic / Submersible / Micro-purge / Amazon / Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 5.795 m (-) Water level 3.280 m (=) Water Column 2.515 m

Water Column 2.515 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 4.93 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y / N

Water Quality Parameters

Beginning purge time: 09:00 Ending purge time: 09:25 Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
20	09:05							brown, turbid
40	09:10							brown, turbid, well actively recharging
60	09:15							brown, turbid, becoming clearer after 45L
80	09:20							clear, actively recharging as pumping
100	09:25							clear, actively recharging as pumping

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

100 — **Total Well Volume** Actual amount of water prior to sampling

— — **Flow rate** mL/minute

Sample time — Containers used —

Did field parameters stabilise? Y / N / NA Was the well dry purged? Y / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N		
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N		
Was documentation of equipment conducted?	Y	N	NA	
Were air bubbles present in vials at time of collection?	Y	N	NA	
Was sample for metals field filtered prior to preservations?	Y	N	NA	
Duplicate sample collected?	Y	N		Duplicate sample ID
Rinsate blank collected?	Y	N		Rinsate blank ID

Groundwater - Well Sampling Data Form

ERM

Well Development	Job Information	
Date: 21/11/13	Time: arrive 15:10	depart 15:55
Project Name: Project Symphony	Project Number: 0224498	
Site Location: Liddell	Sampler: N.H	
Well ID: LP_MW04	Weather: Fine, becoming cloudy	

Equipment

Water quality equipment description: NA				Interface probe number: SYD 3954		
Purging equipment: (please circle)	Bailer type:	Plastic	Teflon			
	Pump type:	Peristaltic	(Submersible)	Micro-purge	Amazon	Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 5.165 m (-) Water level 2.200 m (=) Water Column 2.965 m

Water Column 2.965 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 5.811 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y | N

Water Quality Parameters

Beginning purge time: 15:20 Ending purge time: 15:45 Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
20	15:25							Brown, turbid, becoming clear after 20L
40	15:30							Clear, no odour. Rapidly recharging
60	15:35							Clear, recharging
80	15:40							Clear, recharging
100	15:45							Clear, recharging

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

100 **Total Well Volume** Actual amount of water prior to sampling

— **Flow rate** mL/minute

Sample time — Containers used —

Did field parameters stabilise? Y | N | (NA)

Was the well dry purged? Y | (N)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N		
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N		
Was documentation of equipment conducted?	Y	N	NA	
Were air bubbles present in vials at time of collection?	Y	N	NA	
Was sample for metals field filtered prior to preservations?	Y	N	NA	
Duplicate sample collected?	Y	N		Duplicate sample ID
Rinsate blank collected?	Y	N		Rinsate blank ID

Groundwater - Well Sampling Data Form

ERM

Well Development	Job Information	
Date: 20/11/13	Time: arrive 14:00	depart 15:10
Project Name: Project Symphony	Project Number: 0224198	
Site Location: Liddell	Sampler: N.H/T.H	
Well ID: ~~AM~~ LP-MW05	Weather: Fine	

Equipment

Water quality equipment description:			Interface probe number:			
Purging equipment: (please circle)	Bailer type:	Plastic	Teflon			
	Pump type:	Peristaltic	Submersible	Micro-purge	Amazon	Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 8.509 m (-) Water level 2.545 m (=) Water Column 5.964 m

Water Column 5.96 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 11.69 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y / N

Water Quality Parameters

Beginning purge time: 14:15 Ending purge time: 15:05 Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
25	14:30							brown, turbid, purged dry after 25L. Allowed to recharge for ~10 mins
35	14:50							brown, turbid. Purged dry after 10L. Allowed to recharge. Purged dry after another 10L.
45	15:05							

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

45 **Total Well Volume** Actual amount of water prior to sampling

— **Flow rate** mL/minute

Sample time — Containers used —

Did field parameters stabilise? Y / N / NA Was the well dry purged? Y / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID
Rinsate blank collected?	Y	N	Rinsate blank ID

Groundwater - Well Sampling Data Form

ERM

Well Development	Job Information	
Date: 6/12/13	Time: arrive 8:50AM depart	
Project Name: SYMPHONY	Project Number: 0224198	
Site Location: LIDDELL - LP	Sampler: TH	
Well ID: LP_MW06.	Weather: FINE & CLEAR.	

Equipment

Water quality equipment description: —

Interface probe number: Geotech IP#4261 30m

Purging equipment: (please cirlce)

Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth: 4.630 m (-) Water level: 1.220 m (=) Water Column: 3.41 m

Water Column: 3.41 m (x) Conversion Factor: ~~0.0001.96~~ (=) Litres per 1 Well Volume: 6.68 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
8L.	9AM							clear, slightly cloudy, no odour.
7L	9:05AM							As above.
1L	9:10AM							As above.
1L.	9:15AM							As above
0.5	9:20							As above

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling

Flow rate mL/minute

Sample time — Containers used —

Did field parameters stabilise? ~~Y~~ ~~N~~ ~~NA~~ Was the well dry purged? Y N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID —
Rinsate blank collected?	Y	N	Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information

WELL DEVELOPMENT.

Date: 5/12/13	Time: arrive 10:20 am depart 11:05AM
Project Name: SYMPHONY	Project Number: 0224198
Site Location: LIDDELL _ LQ	Sampler: TH
Well ID: LQ_MW01	Weather: Overcast.

Equipment

Water quality equipment description: — Interface probe number: #4261 Geotech IP 30m

Purging equipment: (please circle)

Bailer type: Plastic Teflon

Pump type: Peristaltic **Submersible** (circled) Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = P r x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 5.185 m (-) Water level 1.896 m (=) Water Column 3.289 m

Water Column m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 6.45 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y / N (N circled)

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
100L	10:40	—	—	—	—	—	—	Brown turbid, to clear upon continued pumping, well was flushed with high pressure water prior to developing as dipper would not go beyond 2m. No odour.

Rapidly recharging
considered developed after removing >15 well volumes.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling Sample time — Containers used —

Flow rate mL/minute Did field parameters stabilise? Y N NA (struck through) Was the well dry purged? Y N (N circled)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID ______
Rinsate blank collected?	Y	N	Rinsate blank ID ______

Groundwater - Well Sampling Data Form

Well development.

Job Information

Date: 3/12/13	Time: arrive 7:30am depart 8:30am
Project Name: Symphony	Project Number: 0224198.
Site Location: LIDDELL - LQ.	Sampler: TH.
Well ID: LQ_MW03.	Weather: Clear.

Equipment

Water quality equipment description: —

Interface probe number: Geotech IP #4261 30m

Purging equipment: (please cirlce)

Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 4.970 m (-) Water level 1.300 m (=) Water Column 3.670 m

Water Column 3.670 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 7.19. L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y ~~N~~

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
12L.	7:45							dark grey turbidity, allow to recharge for 10 mins.
9L	7:56							turbidity clearing, still grey in colour - allowed to recharge.
11L	8:04.							rapidly recharging (gas witnessed during purging of borehole on 2/12/13).
25L	8:10							clear water being pumped.
20L	8:17.							

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume
Actual amount of water prior to sampling

Sample time _____ Containers used _____

Flow rate
mL/minute

Did field parameters stabilise? Y N NA

Was the well dry purged? Y N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID _____
Rinsate blank collected?	Y	N	Rinsate blank ID _____

ERM

Groundwater - Well Sampling Data Form

WELL DEVELOPMENT

Job Information	
Date: 10/12/13	Time: arrive 1pm depart
Project Name: SYMPHONY.	Project Number: 0224198
Site Location: LIDDELL.	Sampler: TH
Well ID: LQ_MW05.	Weather: CLEAR.

Equipment

Water quality equipment description: —— Interface probe number: Geotech ID 426130

Purging equipment: (please cirlce)

Bailer type: Plastic Teflon

Pump type: Peristaltic **Submersible** (circled) Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm (circled)	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = P r x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 9.906 m (-) Water level 7.231 m (=) Water Column 2.675 m

Water Column 2.675 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 5.24 L

Depth to product: —— m Product Thickness: —— m Verified with Bailer: Y N (circled N)

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
8	1:12	——						grey turbid, no odour ~~was~~ has had 5h we are already thus no. ing as TH ... told SP that this well was ready for sampling
500mL	1:20	——						no odour, grey turbidity slow recharge
0.05	1:30							Dark grey turbidity, no odour.
0.0	1:40							

WELL CONSIDERED DRY

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling

Sample time ______ Containers used ______

Flow rate mL/minute

Did field parameters stabilise? Y N NA

Was the well dry purged? Y (circled) N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID ______
Rinsate blank collected?	Y	N	Rinsate blank ID ______

Groundwater - Well Sampling Data Form

ERM

WELL DEVELOPMENT	Job Information
Date: 5/12/13	Time: arrive 11:40 depart 12:35
Project Name: SYMPHONY	Project Number: 0224198
Site Location: LIDDELL - LQ	Sampler: TH
Well ID: LQ-MW06	Weather: CLOUDY & HOT.

Equipment

Water quality equipment description: Interface probe number: Geotech IP#4261 30m

Purging equipment (please cirlce): Bailer type: Plastic Teflon

Pump type: Peristaltic Submersible Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 9.921 m (-) Water level 8.256 m (=) Water Column 1.665 m

Water Column 1.665 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 3.26 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y / N

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
3.5	11:50							No odour dark grey turbidity
1L	12pm							As above.
0.5	12:15pm							As above / heavy sediment
0.0	12:30							
								UNABLE TO PUMP SUFFICIENT VOLUME TO EXIT TUBE.
								VERY SLOW TO RECHARGE.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling

Flow rate mL/minute

Sample time — Containers used —

Did field parameters stabilise? Y / N / NA

Was the well dry purged? Y / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID
Rinsate blank collected?	Y	N	Rinsate blank ID

Groundwater - Well Sampling Data Form

ERM

Job Information	
WELL DEVELOPMENT	
Date: 5/12/13	Time: arrive 12pm depart 1.40pm
Project Name: SYMPHONY	Project Number: 0224198
Site Location: LIDDELL - CQ	Sampler: TH
Well ID: RMW07	Weather: cloudy, hot, strong wind

Equipment

Water quality equipment description: —

Interface probe number: Geotech IP #4261 30m

Purging equipment (please cirlce):
Bailer type: **Plastic** **Teflon**
Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 9.913 m (-) Water level 1.212 m (=) Water Column 8.701 m

Water Column 8.701 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 17.05 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
18	11:55am							dark grey turbidity, no odour.
2	1:05pm							As above - appears to be very slow to recharge.
0.25	1:10pm							As above.
0.25	1:15pm							As above
		WELL RECHARGING AT VERY SLOW RATE.						

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling

Flow rate mL/minute

Sample time — Containers used —

Did field parameters stabilise? Y N ~~NA~~ Was the well dry purged? (Y) ~~N~~

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	~~NA~~
Were air bubbles present in vials at time of collection?	Y	N	~~NA~~
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID ____
Rinsate blank collected?	Y	N	Rinsate blank ID ____

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 17-12-13	Time: arrive 1345 depart ~~1435~~ 1435
Project Name: Symphony	Project Number:
Site Location: Liddell	Sampler: Sam Campbell
Well ID: LR_MW01	Weather: Fine + Sunny

Equipment

Water quality equipment description: —

Interface probe number: Solinst 55191

Purging equipment (please cirlce):
Bailer type: **Plastic** **Teflon**
Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 15.081 m (-) Water level 11.843 m (=) Water Column ~3.2 m

Water Column ~3.2 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume ~6.4 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: 1352 Ending purge time: 1425 Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
								turbid/cloudy, light grey, no odour
								well dry ~8L, wait 10 minutes
								Begin recharge (1408)
								well dry ~10L, wait 10 minutes
								Begin recharge (1420)
								Total volume purged = 11L
								Post-purging gauging:
								water level = 14.430
								well depth = 15.011

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

— **Total Well Volume** Actual amount of water prior to sampling

— **Flow rate** mL/minute

Sample time — Containers used —

Did field parameters stabilise? Y N ~~NA~~ Was the well dry purged? Y (N)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N		
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N		
Was documentation of equipment conducted?	Y	N	NA	
Were air bubbles present in vials at time of collection?	Y	N	NA	
Was sample for metals field filtered prior to preservations?	Y	N	NA	
Duplicate sample collected?	Y	N		Duplicate sample ID —
Rinsate blank collected?	Y	N		Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 27/11/13	Time: arrive 16:35 depart
Project Name: Project Symphony	Project Number: 0224198
Site Location: Liddell	Sampler: N.tl
Well ID: LR_MW03	Weather: Fine

Equipment

Water quality equipment description: NA Interface probe number: SYD 3954

Purging equipment: (please cirlce)
Bailer type: **Plastic** **Teflon**
Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 11.150 m (-) Water level 6.510 m (=) Water Column 4.64 m

Water Column 4.64 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 9.094 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y N

Water Quality Parameters

Beginning purge time: 16:40 Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
10	16:45							Brown, turbid, No odour. Purged dry after 10L. Allowed to recharge.
15	16:50							brown, turbid. No odour. Purged dry after another 5L. Allowed to recharge
18	16:55							brown, turbid. No odour. Purged dry after another 3L. Allowed to recharge
20	17:00							brown, turbid. No odour. Purged dry after another 2L. Slow recharge.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume
Actual amount of water prior to sampling

Flow rate
mL/minute —

Sample time — Containers used —

Did field parameters stabilise? Y N NA Was the well dry purged? Y N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N		
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N		
Was documentation of equipment conducted?	Y	N	NA	
Were air bubbles present in vials at time of collection?	Y	N	NA	
Was sample for metals field filtered prior to preservations?	Y	N	NA	
Duplicate sample collected?	Y	N		Duplicate sample ID
Rinsate blank collected?	Y	N		Rinsate blank ID

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 27/11/13	Time: arrive 15:55 depart
Project Name: Project Symphony	Project Number: 0224498
Site Location: Liddell	Sampler: N.H
Well ID: LRMW04	Weather: Fine.

Equipment

Water quality equipment description: Interface probe number:

Purging equipment: (please cirlce)
Bailer type: **Plastic** **Teflon**
Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 10.945 m (-) Water level 9.685 m (=) Water Column 1.26 m

Water Column 1.26 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 2.47 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y N

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
4	14:10							brown, turbid. No odour. Purged dry after 4L. Allowed to recharge.
6	14:15							brown, turbid. No odour. Purged dry aftr another 2L. Allowed to recharge
7	14:20							brown, turbid. No odour Purged dry after another 1L. slow recharge.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling — Sample time — Containers used —

Flow rate mL/minute — Did field parameters stabilise? Y N NA — Was the well dry purged? Y N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID —
Rinsate blank collected?	Y	N	Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Well Development.	Job Information	
Date: 6/12/13	Time: arrive 9:35AM	depart
Project Name: SYMPHONY	Project Number: 0224198	
Site Location: LIDDELL-~~BE~~ LS	Sampler: TM	
Well ID: ~~BH~~ LS_MW01	Weather: FINE & CLEAR.	

Equipment

Water quality equipment description: — Interface probe number: Geotech IP#4261 30m.

Purging equipment (please circle): Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 6.718 m (-) Water level 1.188 m (=) Water Column 5.53 m

Water Column 5.53 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 10.84 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y / N

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
23L	9:45							Brown turbidity no odour. Sediment on bottom of well
3	9:55							brown turbidity, no odour purge on bottom of well – sediment not clearing.
1L	10:00							As above.
0.50	10:05							As above.
0.5	10:15							As above.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling Sample time — Containers used —

Flow rate mL/minute Did field parameters stabilise? ~~Y~~ ~~N~~ ~~NA~~ Was the well dry purged? Y / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID ____
Rinsate blank collected?	Y	N	Rinsate blank ID ____

Groundwater - Well Sampling Data Form

ERM

Job Information	
Date: 12/12/13	Time: arrive 0929 depart 0936
Project Name: Symphony	Project Number: 0224198
Site Location: Liddell	Sampler: Sean Renzo
Well ID: LS_MW02	Weather: Fine

Equipment

Water quality equipment description: YSI EMV U5443 Interface probe number: Geotech Interface Meter 30m 3978

Purging equipment (please circle): Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 4.915 m (-) Water level 4.337 m (=) Water Column _____ m

Water Column _____ m (x) Conversion Factor (=) Litres per 1 Well Volume _____ L

Depth to product: _____ m Product Thickness: _____ m Verified with Bailer: Y / N

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
	Water colum too small for peristaltic pump							

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling Sample time _____ Containers used _____

Flow rate mL/minute Did field parameters stabilise? Y / N / NA Was the well dry purged? Y / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N		
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N		
Was documentation of equipment conducted?	Y	N	NA	Final water level
Were air bubbles present in vials at time of collection?	Y	N	NA	
Was sample for metals field filtered prior to preservations?	Y	N	NA	
Duplicate sample collected?	Y	N		Duplicate sample ID _____
Rinsate blank collected?	Y	N		Rinsate blank ID _____

Groundwater - Well Sampling Data Form

ERM

Well Development

Job Information

Date: 6/12/13	Time: arrive 11:30 AM depart
Project Name: 0274198	Project Number: SYMPHONY
Site Location: LIDELL-LS.	Sampler: TM
Well ID: LS-MW02	Weather: FINE & CLEAR.

Equipment

Water quality equipment description: —

Interface probe number: Geotech IP #7261 30m

Purging equipment (please circle): Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 4.935 m (-) Water level 4.523 m (=) Water Column 0.412 m

Water Column 0.412 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 0.8 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y / N

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
		TO RETURN NEXT WEEK WITH SS. BAILER.						
		RETURN 11/12/13						
5	3:30-4:05							large volume of clay removed from bottom of well, no odour brown turbidity. well baled dry.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling

Flow rate mL/minute

Sample time — Containers used —

Did field parameters stabilise? Y / N / NA Was the well dry purged? Y / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID —
Rinsate blank collected?	Y	N	Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 19/11/13	Time: arrive 10.05 depart 10:25
Project Name: Project Symphony	Project Number: 0224198
Site Location: Liddell	Sampler: N.H / J.G
Well ID: LTMW01	Weather: Overcast

Equipment

Water quality equipment description: NA

Interface probe number: S122605A

Purging equipment (please circle)

Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 5.680 m (-) Water level 3.940 m (=) Water Column 1.74 m

Water Column 1.74 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 3.41 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y / N

Water Quality Parameters

Beginning purge time: 10:05 Ending purge time: 10:20 Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
4	10.10							turbid brown. No odour. Purged dry after 5L. Allowed to recharge for 15 mins
~~7~~	10.15							~~turbid~~ Purged another 4L dry. Allowed to
20	10.20							recharge for 5 mins Purged another 1BL Dry.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

20 **Total Well Volume** Actual amount of water prior to sampling

— **Flow rate** mL/minute

Sample time — Containers used —

Did field parameters stabilise? Y / N / NA Was the well dry purged? Y / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID ____
Rinsate blank collected?	Y	N	Rinsate blank ID ____

Groundwater - Well Sampling Data Form

ERM

Job Information	
Date: 19/11/13	Time: arrive 10:30 depart 10:45
Project Name: Project Symphony	Project Number: 0224478
Site Location: Liddell	Sampler: N.H / J.G
Well ID: LT-MW02	Weather: overcast

Equipment

Water quality equipment description: NA Interface probe number: S122605A

Purging equipment: (please circle) Bailer type: Plastic Teflon

Pump type: Peristaltic **Submersible** Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Total Well Depth 6.785 m (-) Water level 3.955 m (=) Water Column 2.83 m

Water Column 2.83 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 5.55 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y / N

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Water Quality Parameters

Beginning purge time: 10.35 Ending purge time: 10:40 Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
20	10.40							brown, turbid. HC. odour.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

20 **Total Well Volume** Actual amount of water prior to sampling Sample time — Containers used —

— **Flow rate** mL/minute Did field parameters stabilise? Y / N / NA Was the well dry purged? Y / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N		
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N		
Was documentation of equipment conducted?	Y	N	NA	
Were air bubbles present in vials at time of collection?	Y	N	NA	
Was sample for metals field filtered prior to preservations?	Y	N	NA	
Duplicate sample collected?	Y	N		Duplicate sample ID _____
Rinsate blank collected?	Y	N		Rinsate blank ID _____

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 19/11/13	Time: arrive 11:05 depart 11:30
Project Name: Project Symplexon	Project Number: 0224198
Site Location: Liddell	Sampler: N.H/J.G
Well ID: LT-MW03	Weather: Overcast, becoming Fine

Equipment

Water quality equipment description: NA

Interface probe number: S122605A

Purging equipment: (please circle)

Bailer type: Plastic Teflon

Pump type: Peristaltic Submersible Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V
= Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 6.810 m (-) Water level 3.250 m (=) Water Column 3.56 m

Water Column 3.56 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 6.97 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y N

Water Quality Parameters

Beginning purge time: 11:05 Ending purge time: 11:20 Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
14	11:10							Drawn, turbid purged dry after 14L. Allowed to recharge for 5 mins
~~17~~	11:15							Purged another 3L. Dry. Allowed to recharge
~~20~~	11:20							Purged another 3L.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

20 **Total Well Volume** Actual amount of water prior to sampling

— **Flow rate** mL/minute

Sample time — Containers used —

Did field parameters stabilise? Y N NA

Was the well dry purged? Y N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID —
Rinsate blank collected?	Y	N	Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Well Development	Job Information	
Date: 19/11/13	Time: arrive 09:30	depart
Project Name: Project Symphony	Project Number: 0224198	
Site Location: Liddell	Sampler: N.H/J.G	
Well ID: LT_MW04	Weather: Overcast	

Equipment

Water quality equipment description: NA				Interface probe number: S/22605A		
Purging equipment: (please circle)	Bailer type:	Plastic	Teflon			
	Pump type:	Peristaltic	Submersible	Micro-purge	Amazon	Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 5.095 m (-) Water level 2.205 m (=) Water Column 2.89 m

Water Column 2.89 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 5.66 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y | N

Water Quality Parameters

Beginning purge time: 09:30 Ending purge time: 09:45 Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
7	09.35							brown, turbid. Purged dry after 7L. Allowed to recharge for 5 mins. Purged another 7L. Allowed to recharge. Purged dry after another 7L.
~~14~~	09.40							
~~20~~	09.45							

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

20 **Total Well Volume** Actual amount of water prior to sampling — Sample time — Containers used —

— **Flow rate** mL/minute Did field parameters stabilise? Y | N | ~~NA~~ Was the well dry purged? Y | N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N		
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N		
Was documentation of equipment conducted?	Y	N	NA	
Were air bubbles present in vials at time of collection?	Y	N	NA	
Was sample for metals field filtered prior to preservations?	Y	N	NA	
Duplicate sample collected?	Y	N		Duplicate sample ID
Rinsate blank collected?	Y	N		Rinsate blank ID

Groundwater - Well Sampling Data Form

ERM

WELL DEVELOPMENT.	Job Information
Date: 10/12/13.	Time: arrive 9.50 AM depart
Project Name: SYMPHONY.	Project Number: 0224198
Site Location: LIDDELL	Sampler: TH
Well ID: ~~BH~~ LM MW02.	Weather: CLEAR

Equipment

Water quality equipment description: Interface probe number:

Purging equipment: (please cirlce) Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 11.991 m (-) Water level 1.469 m (=) Water Column 10.522 m

Water Column 10.522 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 20.62 L

Depth to product: — m Product Thickness: — m Verified with Bailer: ~~Y~~ N

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
30L	10AM - 10:08							grey turbidity — no odour pump stopped as water return stopped.
8L	10:15AM							As above (bottom of well agitated with pump).
								As above.
6L	10:25							bottom of well agitated with pump — no odour grey turbidity
6L	10:35							As above.
								As above.
3	10:40							
9L	10:50							
	between 10:50 & 11:05 an additional 8L were purged.							pump on bottom of well — well agitated no odour, grey turbid
11	11:15							

pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

80 **Total Well Volume** Actual amount of water prior to sampling Sample time — Containers used —

Flow rate mL/minute Did field parameters stabilise? ~~Y~~ N NA Was the well dry purged? Y N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N		
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N		
Was documentation of equipment conducted?	Y	N	NA	
Were air bubbles present in vials at time of collection?	Y	N	NA	
Was sample for metals field filtered prior to preservations?	Y	N	NA	
Duplicate sample collected?	Y	N		Duplicate sample ID
Rinsate blank collected?	Y	N		Rinsate blank ID

Groundwater - Well Sampling Data Form

ERM

Job Information	
Date: 9/12/13 WELL DEVELOPMENT	Time: arrive 9 a.m. depart
Project Name: SUMPHOM	Project Number: 0224198
Site Location: LH-MW03	Sampler: TH
Well ID: LIDDELL-LH	Weather: Overcast

Equipment

Water quality equipment description: — Interface probe number: Central IP 4261 30m

Purging equipment (please cirlce): Bailer type: Plastic Teflon; Pump type: Peristaltic **Submersible** Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth ____ m (-) Water level ____ m (=) Water Column ____ m

Water Column ____ m (x) Conversion Factor ____ (=) Litres per 1 Well Volume ____ L

Depth to product: ____ m Product Thickness: ____ m Verified with Bailer: Y / N

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
61	8:05-8:22							Converged pumping from cessation on Friday last week, very minor grey turbidity organic odour (not hydrocarbon) odour present after checked at later intervals.
24	8:30-8:36							very minor grey turbidity.
15	8:45							odour sometimes present, recharging well (faint). stopped pump to empty containers
40.	9:15-9:26							water stopped flowing, no odour slight grey turbidity.

WELL DEVELOPED 7220L REMOVED (10 WELL VOLUMES)

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling — Sample time — Containers used —

Flow rate mL/minute — Did field parameters stabilise? Y / N / NA — Was the well dry purged? Y / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N		
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N		
Was documentation of equipment conducted?	Y	N	NA	
Were air bubbles present in vials at time of collection?	Y	N	NA	
Was sample for metals field filtered prior to preservations?	Y	N	NA	
Duplicate sample collected?	Y	N		Duplicate sample ID ____
Rinsate blank collected?	Y	N		Rinsate blank ID ____

NOTE: PUMP SCREEN FELL INTO THE WELL & COULD NOT BE RETRIEVED.

Groundwater - Well Sampling Data Form

ERM

WELL DEVELOPMENT — Job Information	
Date: 6/12/13	Time: arrive 1:20 depart
Project Name: SYMPHONY	Project Number: 224198
Site Location: MODEL	Sampler: TM
Well ID: LM-MW03.	Weather: Hot & clear.

Equipment

Water quality equipment description: — Interface probe number: Geotech 114261 30

Purging equipment (please cirlce): Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 12.975 m (-) Water level 1.648 m (=) Water Column 11.327 m

Water Column 11.327 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 22.2 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
40	1:30							Grey turbidity, no odour. Minor volume of sediment on well bottom.
10	1:34							water in pump did not stop but slowed (while recharging presumably).
7	1:40							As above
27	2AM							clear, even after agitating pump on bottom of well, no odour
4	2:05.							clear, no odour.

Pumping stopped due to reaching volume of site

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

88 **Total Well Volume** Actual amount of water prior to sampling

Flow rate mL/minute

Sample time — Containers used —

Did field parameters stabilise? Y N NA

Was the well dry purged? Y N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N		
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N		
Was documentation of equipment conducted?	Y	N	NA	
Were air bubbles present in vials at time of collection?	Y	N	NA	
Was sample for metals field filtered prior to preservations?	Y	N	NA	
Duplicate sample collected?	Y	N		Duplicate sample ID —
Rinsate blank collected?	Y	N		Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 16/12/2013	Time: arrive 0640 depart 1710
Project Name: Symphony Liddell	Project Number: 0224198
Site Location:	Sampler: Sam Campbell
Well ID: LV_MW04	Weather: Fine + Sunny

Equipment

Water quality equipment description: Interface probe number:

Purging equipment (please cirlce): Bailer type: Plastic Teflon

Pump type: Peristaltic Submersible Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 10.905 m (-) Water level 5.804 m (=) Water Column ~5.1 m

Water Column ~5.1 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume ~10.2 L

Depth to product: _____ m Product Thickness: _____ m Verified with Bailer: Y / N

Water Quality Parameters

Beginning purge time: 0647 Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
								no odour
								water: no odour, brown, turbid
								Dry after 20L removed. (16:55)
								wait 10 minutes, Begin recharge 17:05
								Total purged = ~25 L
								After purging gauging.
								well depth = 10.990, water level = welldry.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

—: **Total Well Volume** Actual amount of water prior to sampling

—: **Flow rate** mL/minute

Sample time _____ Containers used _____

Did field parameters stabilise? Y / N / NA

Was the well dry purged? Y / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID _____
Rinsate blank collected?	Y	N	Rinsate blank ID _____

10.9
5.8
5.1

Groundwater - Well Sampling Data Form

ERM

WELL DEVELOPMENT.	Job Information
Date: 17/12/15.	Time: arrive 4:45pm depart
Project Name: SYMPHONY	Project Number: 0224198
Site Location: LIDDELL	Sampler: TM
Well ID: LV_MW05	Weather: HOT + CLEAR

Equipment

Water quality equipment description: ——— Interface probe number: Geotech IP 30 m 4261

Purging equipment: (please cirlce) Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** (circled) **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = P r x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 6.510 m (-) Water level 3.955 m (=) Water Column 2.555 m

Water Column 2.555 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 5.01 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y / N (N circled)

Water Quality Parameters

Beginning purge time: | Ending purge time: | Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
12	4:45	←					→	dark grey turbidity no odour, well bogged
8	4:47	—	—	—	—	—	—	as above.
6	4:53	—	—	—	—	—	—	" "
5	4:57	—	—	—	—	—		" "
9	5:00	—	—	—	—	—		" "

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling — Sample time ______ Containers used ______

Flow rate mL/minute — Did field parameters stabilise? Y N NA — Was the well dry purged? Y N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID ______
Rinsate blank collected?	Y	N	Rinsate blank ID ______

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: ~~29~~ 29/11/13.	Time: arrive 7:30AM depart 9AM.
Project Name: SYMPHONY	Project Number: 224198.
Site Location: LIDDELL-LA.	Sampler: TH
Well ID: LA_MW01	Weather: OVERCAST - LIGHT INTERMITTENT SHOWERS

Equipment

Water quality equipment description: YSI - 11K101262. Interface probe number: Geotech IP #4201 3am

Purging equipment (please cirlce): Bailer type: **Plastic** **Teflon** PID = 0.6 peak.

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 10.197 m (-) Water level 4.624 m (=) Water Column 5.573 m

Water Column 5.573 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 10.92 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y / N

Water Quality Parameters

Beginning purge time: 8:02:10. Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond ~~mS/cm~~ uS/cm	DO ~~mg/L~~ PPM	Redox mV	Drawdown <10cm	Comments
1.0	8:08:30	6.32	21.4	12586	2.79	87.8	5.250	clear, no odour
2.0	8:14:00	6.28	21.3	12828	2.48	85.0	5.600	clear, odour.
3.0	8:18:40	6.28	21.2	12795	2.60	83.5	5.980	clear, odour.
4.0	8:24:35	6.26	21.2	12838	2.42	82.2	6.155	clear, odour.
4.5	8:27:30	6.24	21.2	12840	2.26	81.4	6.230	clear, odar.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

4.5 **Total Well Volume** Actual amount of water prior to sampling

Flow rate mL/minute

Sample time 8:30AM Containers used 7.

Did field parameters stabilise? Y / ~~N~~ / NA Was the well dry purged? ~~Y~~ / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	~~N~~	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	~~N~~	
Was documentation of equipment conducted?	Y	~~N~~	~~NA~~
Were air bubbles present in vials at time of collection?	Y	N	~~NA~~
Was sample for metals field filtered prior to preservations?	Y	~~N~~	~~NA~~
Duplicate sample collected?	Y	N	Duplicate sample ID ✓
Rinsate blank collected?	Y	N	Rinsate blank ID ✓

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 29/11/13	Time: arrive 11:15AM depart 12:20pm.
Project Name: SYMPHONY	Project Number: 204198
Site Location: HODELL_LA.	Sampler: TM
Well ID: LA_MW02.	Weather: RAINY/E OVERCAST -

Equipment

Water quality equipment description: YSI - 11K101262. Interface probe number: Geotech IP # 4261 30m

Purging equipment (please cirlce): Bailer type: **Plastic** **Teflon** PiDpeak = 0.2.

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 6.546 m (-) Water level 8.270 m (=) Water Column 1.724 m

Water Column 1.724 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 3.38 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y (N)

Water Quality Parameters

39.

Beginning purge time: 11:~~35~~:00 Ending purge time: 11:53:00 Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond ~~uS~~/cm	DO ~~mg/L~~ ppm	Redox mV	Drawdown <10cm	Comments
1.0	11:44:30	5.58	21.6.	8141	4.99	140.0	6.835.	clear & odourless.
2.0	11:49:30	5.66	21.5	8348	5.07	128.0	7.005.	clear & odourless.
2.5.	11:52:00	5.65	21.5	8476	~~5~~ 4.90	119.2	7.070	clear & odourless.
		SAMPLED AS YIELD MAY NOT HAVE BEEN SUFFICIENT						

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

2.5. **Total Well Volume** Actual amount of water prior to sampling

Flow rate mL/minute

Sample time 12:10. Containers used 7

Did field parameters stabilise? Y N ~~NA~~ Was the well dry purged? Y (N)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	(Y)	~~N~~	
Was pre-cleaning sampling equipment properly protected from contamination?	(Y)	~~N~~	
Was documentation of equipment conducted?	(Y)	~~N~~	~~NA~~
Were air bubbles present in vials at time of collection?	~~Y~~	(N)	~~NA~~
Was sample for metals field filtered prior to preservations?	(Y)	N	NA
Duplicate sample collected?	~~Y~~	(N)	Duplicate sample ID —
Rinsate blank collected?	~~Y~~	(N)	Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 29/11/13	Time: arrive 9AM depart
Project Name: SYMPHONY	Project Number: 224198.
Site Location: LIDDELL - LA	Sampler: TH
Well ID: LA_MW03	Weather: steady rain

Equipment

Water quality equipment description: YSI - 11K101262. Interface probe number: Geotech IP. #426130H

Purging equipment: (please cirlce) Bailer type: Plastic Teflon PID = 0.3.

Pump type: **Peristaltic** (circled) Submersible Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm (circled)	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96 (circled)	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 10.172 m (-) Water level 5.785 m (=) Water Column 4.387 m

Water Column 4.387 m (x) Conversion Factor 1.96. (=) Litres per 1 Well Volume 8.60 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y N (circled N)

Water Quality Parameters

Beginning purge time: 9:24:30 Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO ppm	Redox mV	Drawdown <10cm	Comments
1.0	9:29:30	6.73	21.7	6608	4.3	114.8	6.485	clear, odour
2.0	9:34:30	6.73	21.67	6779	4.03	104.0	6.825	clear, odour
3.0	9:40:00	6.77	21.7	6869	4.00	96.3	7.125	As above
4.0	9:46:17	6.78	21.7	6997	3.95	86.5	7.275	As above.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

4.0 **Total Well Volume** Actual amount of water prior to sampling. Sample time 10AM. Containers used 7

Flow rate mL/minute. Did field parameters stabilise? Y (circled) N NA. Was the well dry purged? Y N (circled N)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID ________
Rinsate blank collected?	Y	N	Rinsate blank ID ________

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 30/11/13	Time: arrive 8AM depart 9:10AM.
Project Name: SYMPHONY.	Project Number: 224198
Site Location: LIDDELL.	Sampler: TH.
Well ID: LB_EW_MW01. (D13)	Weather: Overcast

Equipment

Water quality equipment description: 451 - 11K101262. Cooktech IP. Interface probe number: #4261 30m

Purging equipment: (please cirlce) Bailer type: Plastic Teflon PID peak = 0.0

Pump type: Peristaltic Submersible Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 5.977 m (-) Water level 2.359 m (=) Water Column 3.616 m

Water Column 3.616 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 7.09 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: 822:30 Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond µS/cm	DO ~~mg/L~~ ppm	Redox mV	Drawdown <10cm	Comments
1.0	8:27:40	7.19	18.0	2227	0.89	97.7	2.365	Light brown turbidity, no odour.
2.0	8:31:01	7.20	18.1	2273	---	70.6	2.365	As above
3.0	8:36:04	7.19	18.3	2296	---	67.2	2.365	As above - turbidity clearing
4.0	8:41:15	7.19	18.2	2302	---	65.1	2.365	turbidity clearing, no odour

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

4.0 **Total Well Volume** Actual amount of water prior to sampling

Flow rate mL/minute

Sample time 9AM. Containers used 8

Did field parameters stabilise? Y N NA Was the well dry purged? ~~Y~~ N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	~~N~~	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	~~N~~	
Was documentation of equipment conducted?	Y	~~N~~	~~NA~~
Were air bubbles present in vials at time of collection?	~~Y~~	N	~~NA~~
Was sample for metals field filtered prior to preservations?	Y	~~N~~	~~NA~~
Duplicate sample collected?	~~Y~~	N	Duplicate sample ID —
Rinsate blank collected?	~~Y~~	N	Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information			
Date:	18-12-2013	Time: arrive	1140 depart 1245
Project Name:	Symphony	Project Number:	0224198
Site Location:	Liddell	Sampler:	Sam Campbell
Well ID:	LB_MW01	Weather:	Fine + Sunny

Equipment PID Peak = 0.072 ppm

Water quality equipment description: YSI-MWQ-942 Interface probe number: Solinst 55791

Purging equipment (please circle): Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 11.980 m (-) Water level 8.679 m (=) Water Column ~3.3 m

Water Column ~3.3 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume ~6.6 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: 1145 Ending purge time: 1230 Pump Intake Depth (mbtoc): ~11m

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
1	1150	7.51	24.8	155.5	4.81	38.9	8.715	grey, turbid, no odour
2	1155	7.44	24.8	132.5	5.21	28.1	8.725	" " "
2.5	1200	7.40	25.3	105.7	4.08	21.9	8.735	" " "
3	1205	7.42	25.1	121.2	4.34	20.6	8.738	" " "
								Sample taken.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

3 **Total Well Volume** Actual amount of water prior to sampling Sample time 1207 Containers used 6

~150 **Flow rate** mL/minute Did field parameters stabilise? (Y) N NA Was the well dry purged? Y (N)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	(Y)	N	
Was pre-cleaning sampling equipment properly protected from contamination?	(Y)	N	
Was documentation of equipment conducted?	(Y)	N	NA
Were air bubbles present in vials at time of collection?	Y	(N)	NA
Was sample for metals field filtered prior to preservations?	(Y)	N	NA
Duplicate sample collected?	Y	(N)	Duplicate sample ID ____
Rinsate blank collected?	Y	(N)	Rinsate blank ID ____

Groundwater - Well Sampling Data Form

ERM

Job Information	
Date: 17/12/13	Time: arrive 2:50pm depart 3:49pm
Project Name: SYMPHONY	Project Number: 0224198
Site Location: LIDDELL	Sampler: TM & HC
Well ID: LB-MW03	Weather: HOT + CLEAR

Equipment

Water quality equipment description: 90FLMV 45443 Interface probe number: Geotech TP 30m 4261

Purging equipment (please cirlce): Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 2.577 m (-) Water level 1.669 m (=) Water Column _____ m

Water Column _____ m (x) Conversion Factor _____ (=) Litres per 1 Well Volume _____ L

Depth to product: — m Product Thickness: — m Verified with Bailer: ~~Y~~ N

Water Quality Parameters

Beginning purge time: 15:08:30 Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO ~~mg/L~~ ppm	Redox mV	Drawdown <10cm	Comments
1.0	15:14:30	6.92	24.6	3.54	1.02	169	0	Zero redraw, grey turbid, no odour
2.0	15:18:30	6.90	24.3	3.54	0.66	157	0	As above, turbidity down
2.5	15:21:30	6.87	24.0	3.53	0.52	150	0	" " " "
3.0	15:23:00	6.88	24.0	3.53	0.50	147	0	" " " "

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

Total Well Volume Actual amount of water prior to sampling

Flow rate mL/minute

Sample time 15:25 Containers used 8

Did field parameters stabilise? Y N NA

Was the well dry purged? ~~Y~~ N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	~~N~~	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	~~N~~	
Was documentation of equipment conducted?	Y	N	~~NA~~
Were air bubbles present in vials at time of collection?	~~Y~~	N	~~NA~~
Was sample for metals field filtered prior to preservations?	Y	~~N~~	~~NA~~
Duplicate sample collected?	~~Y~~	N	Duplicate sample ID —
Rinsate blank collected?	Y	~~N~~	Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information			
Date:	18-12-13	Time: arrive	1530 depart
Project Name:	Symphony	Project Number:	0224198
Site Location:	Liddell	Sampler:	Sam Campbell
Well ID:	LB_MW05	Weather:	Fine + Sunny

Equipment PID peak 0.084 ppm

Water quality equipment description: YSI-MWQ-[redacted]842 Interface probe number: Solinst 55/91

Purging equipment (please cirlce): Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 5.290 m (-) Water level 1.14 m (=) Water Column ~4.1 m

Water Column ~4.1 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume ~8.2 L

Depth to product: - m Product Thickness: - m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: 1544 Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
								Silty bottom
1	1550	7.53	23.4	5349	2.95	-51.3	1.210	Cloudy, light brown, NO odour
2	1555	7.51	23.5	5360	2.33	-60.8	1.236	" " "
3	1600	7.49	22.9	5379	1.82	-69.2	1.261	" " "
4	1605	7.46	22.7	5391	1.32	-78.2	1.294	" " "
								Sample taken.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

4 **Total Well Volume** Actual amount of water prior to sampling Sample time 1620 Containers used 6

Flow rate mL/minute Did field parameters stabilise? (Y) N NA Was the well dry purged? Y (N)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	(Y)	N		
Was pre-cleaning sampling equipment properly protected from contamination?	(Y)	N		
Was documentation of equipment conducted?	(Y)	N	NA	
Were air bubbles present in vials at time of collection?	Y	(N)	NA	
Was sample for metals field filtered prior to preservations?	(Y)	N	NA	
Duplicate sample collected?	Y	(N)		Duplicate sample ID ____
Rinsate blank collected?	(Y)	N		Rinsate blank ID ____

Groundwater - Well Sampling Data Form

ERM

Job Information

Date:	18.12.13	Time: arrive	1645 depart 1745
Project Name:	Symphony	Project Number:	0224198
Site Location:	Liddell	Sampler:	Sam Campbell
Well ID:	LB_MW06	Weather:	Fine + Sunny

Equipment

PID Peak = 0.036 ppm

Water quality equipment description: —

Interface probe number: Solinst 55/91

Purging equipment (please circle):
Bailer type: **Plastic** **Teflon**
Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 4.396 m (-) Water level 3.764 m (=) Water Column ~0.6 m

Water Column ~0.6 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume ~1.2 L

Depth to product: — m Product Thickness: — m Verified with Bailer: (Y) N

Water Quality Parameters

Beginning purge time: Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
								- Insufficient water to sample
								- Grab sample taken.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

— **Total Well Volume** Actual amount of water prior to sampling

Sample time 1700 Containers used 5

— **Flow rate** mL/minute

Did field parameters stabilise? Y N (NA)

Was the well dry purged? Y (N)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	(Y)	N		
Was pre-cleaning sampling equipment properly protected from contamination?	(Y)	N		
Was documentation of equipment conducted?	(Y)	N	NA	
Were air bubbles present in vials at time of collection?	Y	(N)	NA	
Was sample for metals field filtered prior to preservations?	Y	(N)	NA	
Duplicate sample collected?	Y	(N)		Duplicate sample ID —
Rinsate blank collected?	(Y)	N		Rinsate blank ID R01_181213_SC

Groundwater - Well Sampling Data Form

ERM

Job Information			
Date:	18-12-13	Time: arrive	1315 depart
Project Name:	Symphony Liddell	Project Number:	0224198
Site Location:		Sampler:	Sam Campbell
Well ID:	LB_MW08	Weather:	Fine + Sunny

Equipment PID Peak = 0.122 ppm

Water quality equipment description: YSI - MWQ - 842 Interface probe number: Solinst 55191

Purging equipment (please cirlce): Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 10.738 m (-) Water level 5.016 m (=) Water Column ~5.7 m

Water Column ~5.7 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume ~11.4 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: 1325 Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
1	1334	7.74	24.4	4727	1.50	-78.8	5.080	Cloudy, no odour, light grey
2	1340	7.73	23.6	4745	1.15	-89.2	5.103	" "
3	1345	7.71	23.7	4720	0.77	-103.4	5.105	" "
4	1350	7.70	24.5	4688	0.64	-109.7	5.111	" "
5	1355	7.69	24.5	4659	0.44	-121.6	5.116	" "
6	1400	7.68	24.5	4631	0.42	-125.4	5.114	" "
								Sample taken

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

6 **Total Well Volume** Actual amount of water prior to sampling Sample time 1400 Containers used 6

~200 **Flow rate** mL/minute Did field parameters stabilise? (Y) N NA Was the well dry purged? Y (N)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	(Y)	N		
Was pre-cleaning sampling equipment properly protected from contamination?	(Y)	N		
Was documentation of equipment conducted?	(Y)	N	NA	
Were air bubbles present in vials at time of collection?	Y	N	NA	
Was sample for metals field filtered prior to preservations?	(Y)	N	NA	
Duplicate sample collected?	Y	(N)		Duplicate sample ID —
Rinsate blank collected?	Y	(N)		Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 18-12-17	Time: arrive 7:20 depart
Project Name: Symphony.	Project Number: 0224198
Site Location: Liddell.	Sampler: J.W.
Well ID: LB_MW11	Weather: sunny

Equipment

Water quality equipment description: Airmet 90 FLOW V9114 Interface probe number: Airmet NSW 4254 30m.

Purging equipment (please cirlce): Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 8.48 m (-) Water level 7.807 m (=) Water Column ~.70 m

Water Column .70 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 1.4 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: 7:38 Ending purge time: 7:58. Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
1.0	7:43	7.97	18.1	6.98	6.51	211	7.90	cloudy
2.0	7:48	8.14	17.1	6.93	6.15	203	7.92	as above.
3.0	7:54	8.18	17.7	6.90	5.62	196	7.94	as above.
~~4.0~~	7:59	Water stopped, well dry, wait for recharge						
		began sampling at						8:30

SW 18/12/17

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

3.0L. **Total Well Volume** Actual amount of water prior to sampling Sample time 8:30 Containers used 6

200ml. **Flow rate** mL/minute Did field parameters stabilise? (Y) N NA Was the well dry purged? (Y) N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	(Y)	N	3x vial. 2x amber. 1x metal.
Was pre-cleaning sampling equipment properly protected from contamination?	(Y)	N	
Was documentation of equipment conducted?	(Y)	N NA	
Were air bubbles present in vials at time of collection?	Y	(N) NA	
Was sample for metals field filtered prior to preservations?	(Y)	N NA	
Duplicate sample collected?	Y	(N)	Duplicate sample ID —
Rinsate blank collected?	Y	(N)	Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information

Date:	17-12-13	Time: arrive 16:45	depart 17:45
Project Name:	Symphony	Project Number:	0224198
Site Location:	Liddell	Sampler:	JN
Well ID:	LB-MW13.	Weather:	Sunny.

Equipment

Water quality equipment description: Airnet 90 FLMV Interface probe number: Airnet NSW 4254 30m.

Purging equipment: (please cirlce)
Bailer type: **Plastic** **Teflon**
Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 7.79 m (-) Water level 6.411 m (=) Water Column — m

Water Column — m (x) Conversion Factor — (=) Litres per 1 Well Volume — L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: 16:52. Ending purge time: 17:20 Pump Intake Depth (mbtoc): 7.4

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
1.0	16:57	8.95	20.1	4.56	6.13	131	6.45	cloudy. no odour.
2.0	17:02	— *	19.2	3.84	3.63	109	6.45	clear, no odour.
3.0	17:08	—	18.9	3.81	3.22	109	6.46	as above.
4.0	17:12	—	18.7	3.78	2.46	108	6.46	as above.
5.0	17:16	—	18.7	3.79	2.34	107	6.46	as above.
6.0	17:20	—	18.7	3.76	2.28	106	6.46	as above.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

6.0L **Total Well Volume** Actual amount of water prior to sampling Sample time 17:21 Containers used 6

200 **Flow rate** mL/minute Did field parameters stabilise? (Y) N NA Was the well dry purged? Y (N)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	(Y)	N		Ph - not giving a reading
Was pre-cleaning sampling equipment properly protected from contamination?	(Y)	N		
Was documentation of equipment conducted?	(Y)	N	NA	3x vial
Were air bubbles present in vials at time of collection?	Y	(N)	NA	2 x amber
Was sample for metals field filtered prior to preservations?	(Y)	N	NA	1 x metal.
Duplicate sample collected?	Y	(N)		Final DTW 6.46
Rinsate blank collected?	(Y)	N		Duplicate sample ID —
				Rinsate blank ID RQL_171213_JN

6

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 17-12-2013	Time: arrive 1640 depart
Project Name: Symphony	Project Number: 0224198
Site Location: Liddell	Sampler: Sam Campbell
Well ID: LB_MW14	Weather: Fine + Sunny

Equipment

PID peak = 0.012 ppm

Water quality equipment description: U5443 Interface probe number: Solinst 55191

Purging equipment (please circle): Bailer type: Plastic Teflon

Pump type: Peristaltic Submersible Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 6.219 m (-) Water level 3.465 m (=) Water Column ~2.8 m

Water Column ~2.8 m (x) Conversion Factor 196 (=) Litres per 1 Well Volume ~5.6 L

Depth to product: _____ m Product Thickness: _____ m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: 1736 Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
1	1743	6.37	21.4	3.48	0.52	77	3.499	brown turbidity no odour.
2	1749	6.43	20.5	3.47	0.29	88	3.513	" "
3	1755	6.53	18.9	3.48	0.37	92	3.519	Becoming clear/cloudy, no odour
4	1800	6.54	19.7	3.48	0.27	93	3.520	Sample taken

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

4 **Total Well Volume** Actual amount of water prior to sampling Sample time 1801 Containers used 6

Flow rate mL/minute Did field parameters stabilise? (Y) N NA Was the well dry purged? Y (N)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	(Y)	N	
Was pre-cleaning sampling equipment properly protected from contamination?	(Y)	N	
Was documentation of equipment conducted?	(Y)	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	(Y)	N	NA
Duplicate sample collected?	Y	(N)	Duplicate sample ID _____
Rinsate blank collected?	Y	(N)	Rinsate blank ID _____

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 25/11/13.	Time: arrive 8AM. depart 9.15.
Project Name: Symphony	Project Number: 0224198
Site Location: Liddell - LC.	Sampler: TH
Well ID: LC_EW-4	Weather: FINE

Equipment

Water quality equipment description: 451 - 11K101262 Interface probe number: Geotech IP #4261 30m.

PID PEAK = 616.0 AVE PID = <100.0

Purging equipment (please cirlce): Bailer type: Plastic Teflon

Pump type: Peristaltic Submersible Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 4.965 m (-) Water level 3.252 m (=) Water Column 1.713 m

Water Column 1.713 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume ≈ 3.4 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y (N)

Water Quality Parameters

Beginning purge time: 8:35 Ending purge time: Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
0.5	8:37	8.24	20.2	33.7	1.64	-35.	3.455	Clear, Hydrocarbon odour.
1.0	8:39:50	7.77	20.2	32.9	2.49	19.6	3.550	clear, Hydrocarbon odour
1.5	8:42:20	7.44	20.6	32.5	1.95	25.8	3.655	As above.
2.0	8:45:20	7.23	20.8	35.2	2.02	31.5	3.785	As above
2.5	8:48:40	7.05	20.9	32.1	2.20	34.3	3.900	As above.
3.0	8:51:00	6.98	20.9	32.0	2.24	36.9	3.980	As above.
3.5	8:54:09	6.89	21.0	31.8	2.25	36.0	4.110	As above.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

3.5 **Total Well Volume** Actual amount of water prior to sampling

Sample time 9AM. Containers used 6.

Flow rate mL/minute

Did field parameters stabilise? (Y) N NA Was the well dry purged? Y (N)

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	(Y)	N	
Was pre-cleaning sampling equipment properly protected from contamination?	(Y)	N	
Was documentation of equipment conducted?	(Y)	N	NA
Were air bubbles present in vials at time of collection?	Y	(N)	NA
Was sample for metals field filtered prior to preservations?	(Y)	N	NA
Duplicate sample collected?	Y	(N)	Duplicate sample ID ____
Rinsate blank collected?	Y	(N)	Rinsate blank ID ____

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 25/11/13	Time: arrive 10:55. depart 12:15.
Project Name: SYMPHONY.	Project Number: 0224198.
Site Location: Liddell - LC.	Sampler: TH.
Well ID: LC-EW-L2.	Weather: FINE

Equipment

Water quality equipment description: 451 - 111C101262 Interface probe number: Geotech IP 4261 30m

Purging equipment: (please cirlce) Bailer type: Plastic Teflon PID reads = 30.5 Ave PID = 15.0

Pump type: Peristaltic Submersible Micro-purge Amazon Other:

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 4.610 m (-) Water level 3.454. m (=) Water Column 1.156 m

Water Column 1.156. m (x) Conversion Factor 1.96. (=) Litres per 1 Well Volume 2.266 L

Depth to product: — m Product Thickness: — m Verified with Bailer: ~~Y~~ N

Water Quality Parameters

Beginning purge time: 11:19:14. Ending purge time: 11:45. Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond mS/cm	DO mg/L	Redox mV	Drawdown <10cm	Comments
0.5.	11:22:40	6.98	27.6	2.2	1.63	279.5	3.470	clear, Hydrocarbon odour
1.0.	11:25:00	6.94	26.0	2.4.	0.86	291.5	3.470	clear, Hydrocarbon odour
1.5	11:28:30	6.89	25.1	2.4	1.13	293.5	3.470	clear, odour
2.0.	11:30	6.93	25.0	2.3	1.31	302.4	3.475	clear, hydrocarbon odour
2.5	11:34:	6.92	24.9	2.3	0.98	303.7	3.475	clear, hydrocarbon odour
3.0	11:36:30	6.96	24.9	2.3	1.69	306.5	3.470	clear, hydrocarbon odour
4.0	11:40.	6.73	24.6	2.1	0.30	285.9	3.490	clear, hydrocarbon odour
4.5	11:44:00	6.89	24.5	2.2	0.46	262.3	3.48	clear, hydrocarbon odour

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

4.5 **Total Well Volume** Actual amount of water prior to sampling

Flow rate mL/minute

Sample time ~~11:50~~ 11:50 Containers used 6.

Did field parameters stabilise? Y ~~N~~ ~~NA~~ Was the well dry purged? Y N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	~~N~~		
Was pre-cleaning sampling equipment properly protected from contamination?	Y	~~N~~		
Was documentation of equipment conducted?	Y	~~N~~	~~NA~~	
Were air bubbles present in vials at time of collection?	~~Y~~	N	~~NA~~	
Was sample for metals field filtered prior to preservations?	Y	~~N~~	~~NA~~	
Duplicate sample collected?	~~Y~~	N		Duplicate sample ID —
Rinsate blank collected?	~~Y~~	N		Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 25/11/13	Time: arrive 12:15. depart 1:20.
Project Name: Symphony	Project Number: 0224198
Site Location: Liddell - LC.	Sampler: TH
Well ID: LC-EW-L3	Weather: ~~SS~~ CLOUDY.

Equipment

Water quality equipment description: YSI - 11K101262 Interface probe number: Geotech IP 4261 30m

PID = 0.0.

Purging equipment (please cirlce): Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 5.097 m (-) Water level 3.501 m (=) Water Column 1.596 m

Water Column 1.596 m (x) Conversion Factor 19.6 (=) Litres per 1 Well Volume 3.13 L

Depth to product: — m Product Thickness: — m Verified with Bailer: Y / ~~N~~

Water Quality Parameters

Beginning purge time: 12:22.00 Ending purge time: 12:46 Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond µS/cm	DO mg/L ppm	Redox mV	Drawdown <10cm	Comments
0.5	12:25:25	6.31	26.0	0.0	3.75	228	3.935	Clear, hydrocarbon odour
1.0	12:27	6.23	24.1	0.0	4.84	269.5	3.97	Clear, hydrocarbon odour.
1.5 ~~2.0~~	12:44	7.04	27.0	0.4	2.98	226.2	4.22	clear, hydrocarbon odour.
2.0	12:~~46~~	6.77	25.0	0.1	1.39	250.2	4.43	Clear, hydrocarbon odour
	SAMPLE TAKEN FROM MEASURING CONTAINER AS INSUFFICIENT YIELD FROM WELL							

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

2.0 **Total Well Volume** Actual amount of water prior to sampling

Flow rate mL/minute

Sample time 12:50 Containers used 6

Did field parameters stabilise? Y / ~~N~~ / ~~NA~~ Was the well dry purged? Y / N - close to -

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	(Y) / N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y / N	- sample had to be taken from measure container
Was documentation of equipment conducted?	(Y) / N / ~~NA~~	
Were air bubbles present in vials at time of collection?	Y / (N) / ~~NA~~	
Was sample for metals field filtered prior to preservations?	(Y) / ~~N~~ / ~~NA~~	- metal sample taken directly from well yield
Duplicate sample collected?	~~Y~~ / (N)	Duplicate sample ID —
Rinsate blank collected?	~~Y~~ / (N)	Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 25/11/13	Time: arrive 9:35 depart 10:48
Project Name: Symphony	Project Number: 224198
Site Location: Liddell - LC	Sampler: TH
Well ID: LC-EW-L4.	Weather: FINE

Equipment

Water quality equipment description: 451 - 11K101262 Interface probe number: Geotech IP 4261 30m

PID = 0.0.

Purging equipment (please cirlce): Bailer type: **Plastic** **Teflon**

Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 7.037 m (-) Water level 3.282 m (=) Water Column 3.755 m

Water Column 3.755 m (x) Conversion Factor 1.96 (=) Litres per 1 Well Volume 7.36 L

Depth to product: — m Product Thickness: — m Verified with Bailer: ~~Y~~ N

Water Quality Parameters

Beginning purge time: 9:53:00 Ending purge time: 10:14:30. Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond µS/cm	DO mg/L (ppm)	Redox mV	Drawdown <10cm	Comments
0.5.	9:55:00	6.79	30.0	0.3	1.06	90.6	3.315	PID checked - VEEDER ROOT removed ~~allowed to settle then gauged~~. Odour, turbid.
1.0.	9:57:10	6.66	28.1	0.5	1.14	115.7	3.315.	Odour, turbid
1.5	10:00:50	6.66	26.7	0.8	1.28	144.6	3.320	Odour, turbid
2.0.	10:03:00	6.59	26.0	0.8	1.21	156.0	3.335	Odour, turbid (clearing)
2.5.	10:05:40	6.69	25.8	1.0	0.89	166.7	3:340.	Odour, turbid (clearing)
3.0	10:07:00	6.74	25.7	1.0	0.99	176.2	3:340	Odour, slight turbid (clear)
3.5.	10:11:30	6.76	26.0	1.1	0.89	188.0	3:335.	Odour, clear.
4.0	10:13:30	6.76	26.1	1.1	0.88	191.2	3:320	Odour, clear.

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

4.0 **Total Well Volume** Actual amount of water prior to sampling

Flow rate mL/minute

Sample time 10:16 AM. Containers used ~~8~~ 12.

Did field parameters stabilise? Y N ~~NA~~ Was the well dry purged? Y N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	~~N~~	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	~~N~~	
Was documentation of equipment conducted?	Y	~~N~~	~~NA~~
Were air bubbles present in vials at time of collection?	~~Y~~	N	~~NA~~
Was sample for metals field filtered prior to preservations?	~~Y~~	~~N~~	~~NA~~
Duplicate sample collected?	Y	~~N~~	Duplicate sample ID DO1-25/11/13-TH
Rinsate blank collected?	~~Y~~	N	Rinsate blank ID —

Groundwater - Well Sampling Data Form

ERM

Job Information

Date: 21/11/13.	Time: arrive 8:30AM. depart 9:55AM.
Project Name: Symphony	Project Number: 0224198.
Site Location: Liddell.	Sampler: Tim Haydon.
Well ID: LD_EN_MW01.	Weather: overcast.

Equipment

Water quality equipment description: YSI - 11K101262. Interface probe number: SMD 3983. 30M.

Purging equipment: (please cirlce)
Bailer type: **Plastic** **Teflon**
Pump type: **Peristaltic** **Submersible** **Micro-purge** **Amazon** **Other:**

Well Gauging and Purge Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor (volume in factor L/m)	0.49	1.96	7.85	12.3	17.7	31.4	49.1	70.7

Volume of water in well / V = Pr x r x h
V = volume in litres
P = 3.14159
r = radius in cm
h = height of water column in cm

Total Well Depth 7.625. m (-) Water level 2.905. m (=) Water Column 4.720 m

Water Column 4.720 m (x) Conversion Factor 1.96. (=) Litres per 1 Well Volume 9.44. L

Depth to product: N/A m Product Thickness: N/A. m Verified with Bailer: Y / N - N/A.

Water Quality Parameters

Beginning purge time: 9AM. Ending purge time: 9:45. Pump Intake Depth (mbtoc):

Litres	Time	PH	Temp °C	Cond µS/cm	DO mg/L ppm	Redox mV	Drawdown <10cm	Comments
1.0	9.05AM	6.69	21.9	25.2	~~1.54~~	174.4	2.960m	~~2.960m~~ No odour, slightly cloudy
2.0	9.11	6.65	20.6	914	4.98	30.4	2.958m	No Odour, slightly cloudy.
3.0.	9.16.	6.74	20.6	525	4.77.	-19.8	2.965	No Odour, slightly cloudy
4.0	9.20	6.93	20.6	220.8	4.87	-97.7	2.960	~~No Odour~~, slightly cloudy H_2S Odour.
5.0	9.25.	6.75	20.6	511	3.88	-98.1	2.960	H_2S Odour, slightly cloudy.
6.0	9.31	6.68	20.6	1555.	5.18	-63.9.	2.974	H_2S Odour, slightly cloudy.
7.0	9.35.	6.73	20.6	18.5.	1.10	-72.1	2.908	H_2S Odour, slightly cloudy

*pH, temp, cond readings not necessary if well is purged dry

Example Comments: clear / slightly cloudy / turbid / very turbid / no odour / slight odour / odour / strong odour / drawdown depth

7.0 **Total Well Volume** Actual amount of water prior to sampling. Sample time 9:40AM. Containers used ~~5~~ 6

<200 **Flow rate** mL/minute. Did field parameters stabilise? Y / ~~N~~ / ~~NA~~. Was the well dry purged? ~~Y~~ / N

Field QC Checks

Was pre-cleaned sampling equipment used for these samples?	Y	N	
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	
Was documentation of equipment conducted?	Y	N	NA
Were air bubbles present in vials at time of collection?	Y	N	NA
Was sample for metals field filtered prior to preservations?	Y	N	NA
Duplicate sample collected?	Y	N	Duplicate sample ID _____
Rinsate blank collected?	Y	N	Rinsate blank ID _____