



Photograph taken 28  
November 2019 showing the  
grassed and landscaped area  
immediately to the south east  
of the Alex Grimson Building.



Photograph taken 27  
November 2019 showing the  
north section of the site and  
the sampling location MW1.



Photograph taken 28  
November 2019 showing the  
central/east section of the  
site and the sampling location  
MW2. Asbestos related  
controls were implemented  
due to the previous detection  
of friable asbestos at the  
nearby sampling location  
JKE137.



Photograph taken 27  
November 2019 showing the  
south west section of the site  
and the sampling location  
MW3.



## Groundwater Field Sheets

# JK Environments



Client:	Johnstaff Projects Pty Ltd	Job No.:	E32837BD
Project:	Proposed Main Works Building	Well No.:	241
Location:	Gourburn Street, Main Campus, Liverpool Hospital, LIVERPOOL, NSW	Depth (m):	11.7

## WELL FINISH

<input checked="" type="checkbox"/> Gatic Cover	<input type="checkbox"/> Standpipe	<input type="checkbox"/> Other (describe)
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## WELL PURGE DETAILS:

Method:	Peristaltic	SWL - Before:	5.25
Date:	11/12/19	Time - Before:	10:25
Undertaken By:	AM	Total Vol Removed:	29
Pump Program No:	106204	PID (ppm):	60

## PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
10:29	5.45	1		22.1	2.1	9441	6.96	839
10:33	5.59	2		21.8	1.2	10920	7.07	570
10:37	5.84	3		21.9	0.5	10804	6.71	459
10:41	6.04	4		21.8	0.4	10908	6.68	427
10:45	6.35	5		21.8	0.4	10744	6.75	446
10:49	6.66	6		21.7	0.3	11397	6.62	419
10:52	6.86	7		21.8	0.3	12284	6.58	365
10:55	7.05	8		21.7	0.3	12545	6.55	380
10:58	7.21	9		21.7	0.1	13032	6.54	394
11:01	7.38	10		21.8	0.4	13544	6.53	398
11:04	7.52	11		21.8	0.4	13973	6.52	401
11:07	7.60	12		21.8	0.4	14335	6.50	404
11:10	7.71	13		21.8	0.4	14797	6.51	406
11:13	7.81	14		21.9	0.4	15196	6.50	406
11:16	7.89	15		21.9	0.2	17662	6.46	376
11:27	7.74	16		22.0	0.3	18529	6.46	388
11:30	7.87	17		21.9	0.2	18939	6.46	346
11:33	8.02	18		21.9	0.2	17855	6.47	336
11:37	8.14	19		21.9	0.3	15442	6.52	358
11:40	8.20	20		22.1	0.4	15283	6.51	400
11:43	8.27	21		22.1	0.8	14752	6.84	442
11:46	8.31	22		22.2	0.5	15307	6.56	446
11:50	8.36	23		22.1	0.5	15400	7.07	290
11:56	8.44	24		22.1	0.7	15730	6.70	454
12:03	8.50	25		22.2	0.6	12288	6.59	626

Comments: Odours (YES / NO) NAPL/PSH (YES / NO) Sheen (YES / NO) Steady State Achieved (YES / NO)

Sampling Containers Used: 4 x glass amber, 8 x BTEX vials, 2x HNO3 plastic, x H2SO4 plastic, 1x unpreserved plastic

YSI used: 3

Tested By: Alistair Mitchell

Date Tested: 11/12/19

Checked By: MA

Date: 14/12/19

## Remarks:

- Steady state conditions
- difference in the pH less than 0.2 units, difference in conductivity less than 10% and SWL stable/not in drawdown





<b>Client:</b>	Johnstaff Projects Pty Ltd	<b>Job No.:</b>	E32837BD
<b>Project:</b>	Proposed Main Works Building	<b>Well No.:</b>	135
<b>Location:</b>	Gouldburn Street, Main Campus, Liverpool Hospital, LIVERPOOL, NSW	<b>Depth (m):</b>	9.5

## WELL FINISH

<input checked="" type="checkbox"/>	Gatic Cover		Standpipe		Other (describe)
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**WELL PURGE DETAILS:**

Method:	Perkalite	SWL - Before:	8.06
Date:	11.12.17	Time - Before:	12.55
Undertaken By:	AM	Total Vol Removed:	9
Pump Program No:	106204	PID (ppm):	0

### PURGING / SAMPLING MEASUREMENTS

[illegible]

Comments: Odours (YES / NO) NAPL/PSH (YES / NO) Sheen (YES / NO) Steady State Achieved (YES / NO)

**Sampling Containers Used:** 4 x glass amber, 8 x BTEX vials, 2 x HNO<sub>3</sub> plastic, 0 x H<sub>2</sub>SO<sub>4</sub> plastic, 1 x unpreserved plastic

YSI used: 3

D4PLW2

Tested By: **Alistair Mitchell**

Remarks:

Date Tested: 11-12-19

- Steady state conditions

Checked By: *MD*

- difference in the pH less than 0.2 units, difference in conductivity less than 10%  
10% and SWL stable/not in drawdown

Date: 14/12/19



<b>Client:</b>	Johnstaff Projects Pty Ltd	<b>Job No.:</b>	E32937BD
<b>Project:</b>	Proposed Main Works Building	<b>Well No.:</b>	hw1
<b>Location:</b>	Goulburn Street, Main Campus, Liverpool Hospital, LIVERPOOL, NSW	<b>Depth (m):</b>	11.7

## WELL FINISH DETAILS

<b>Gatic Cover</b> <input checked="" type="checkbox"/>	<b>Standpipe</b> <input type="checkbox"/>	<b>Other (describe)</b> <input type="checkbox"/>
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## WELL DEVELOPMENT DETAILS

<b>Method:</b>	Dev Pump	<b>SWL - Before (m):</b>	0.4
<b>Date:</b>	26/11/19	<b>Time - Before:</b>	14:16
<b>Undertaken By:</b>	MD	<b>SWL - After (m):</b>	0.4
<b>Total Vol. Removed:</b>	23	<b>Time - After:</b>	
<b>PID Reading (ppm):</b>	11.6		

## Comments:

## DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/m)	pH	Eh (mV)
1	29.1	4.0	991	8.48	179.1
2	29.0	3.1	888	8.16	113.6
3	28.4	3.7	712	8.02	12.6
4	26.1	0.6	111	7.90	59.2
5	26.2	0.5	715	7.80	39.2
6	26.4	0.4	730	7.70	29.2
7	26.5	0.4	755	7.61	17.0
8	26.6	0.4	742	7.57	9.5
9	26.8	0.4	757	7.46	1.9
10	26.9	0.4	763	7.42	-3.8
11	21.0	0.3	779	7.38	-8.9
12	27.2	0.3	765	7.32	-12.0
13	27.3	0.2	772	7.29	-16.4
14	27.3	0.6	727	7.26	-15.3
15	27.4	1.4	652	7.28	-11.0
16	27.2	2.6	683	7.26	-11.3
17	27.7	2.6	659	7.22	25.1
18	27.6	2.0	712	7.14	23.0
19	27.3	1.3	739	7.06	18.4
20	27.0	0.9	781	7.04	15.8
21	26.5	0.8	801	7.01	11.8
22	26.6	1.8	742	6.99	10.1
23	26.7	1.9	869	6.97	10.4

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 3

<b>Tested By:</b>	MD	<b>Remarks:</b>
<b>Date Tested:</b>	26/11/19	- Steady state conditions - Difference in the pH less than 0.2 units, difference in the conductivity less than 10% and SWL stable/not in drawdown
<b>Checked By:</b>	MD	- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
<b>Date:</b>	10/12/19	

24	26.9	1.9	813	6.96	10.8
25	26.8	2.3	890	6.96	11.6
26	26.7	2.4	890	6.95	12.0
27	26.6	2.4	886	6.95	12.1
28	26.4	2.2	890	6.93	12.1
29	26.2	1.9	914	6.93	11.1
30	26.6	1.8	909	6.92	10.5



## WELL FINISH DETAILS

## WELL DEVELOPMENT DETAILS

Comments:

## DEVELOPMENT MEASUREMENTS

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

High Salt Canal

Tested By:	AM/MMP	<u>Remarks:</u> - Steady state conditions - Difference in the pH less than 0.2 units, difference in the conductivity less than 10% and SWL stable/not in drawdown - Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Date Tested:	28/11/19	
Checked By:	MO	
Date:	10/12/19	

# JK Environments



Client: Johnstaff Projects Pty Ltd

Project: Proposed Main Works Building

Location: Goulburn Street, Main Campus, Liverpool Hospital, LIVERPOOL, NSW

Job No.:

E32837BD

Well No.:

MU3

Depth (m):

6.2

## WELL FINISH DETAILS

Gatic Cover ☒

Standpipe ☐

Other (describe) ☐

## WELL DEVELOPMENT DETAILS

Method:

Development

Date:

27/11/14

Undertaken By:

MMP

Total Vol. Removed:

18

PID Reading (ppm):

3.8

Comments:

SWL - Before (m):

0.65m

Time - Before:

2:00

SWL - After (m):

- (dry)

Time - After:

2:35

## DEVELOPMENT MEASUREMENTS

Volume Removed

(L)

Temp (°C)

DO  
(mg/L)

EC  
(µS/m)

pH

Eh (mV)

2.4

27.4

0.2

1579

8.02

99.8

8

27.5

0.2

1613

8.00

97.3

12

27.4

0.1

1639

7.99

93.8

16

26.9

0.1

1702

7.97

85.5

18

26.9

0.2

1735

7.96

77.2

Pumped

Pry

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 3

High SA Load

Tested By:

MMP

Date Tested:

27/11/14

Checked By:

10/12/14

Date:

20

Remarks:

- Steady state conditions
- Difference in the pH less than 0.2 units, difference in the conductivity less than 10% and SWL stable/not in drawdown
- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry



## Calibration Documentation



## PID FIELD CALIBRATION FORM

Client: Johnstaff Projects Pty Ltd			
Project: Proposed Main Works Building			
Location: Croubarn Street, Main Campus, Liverpool Hospital, Liverpool, NSW			
Job Number: E328378D			
<b>PID</b>			
Make: MiniDae	Model: 2000	Unit: Green	Date of last factory calibration: 17/7/19
Date of calibration: 25/11/19		Name of Calibrator: AUB	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: 100 ppm		Error in measured reading: $\pm$ ppm	
Measured reading Acceptable (Yes/No):			
<b>PID</b>			
Make: MiniDae	Model: 2000	Unit: Green	Date of last factory calibration: 17/7/19
Date of calibration: 2/12/19		Name of Calibrator: MMP	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: 100 ppm		Error in measured reading: $\pm$ ppm	
Measured reading Acceptable (Yes/No):			
<b>PID</b>			
Make: MiniDae	Model: 2000	Unit: Green	Date of last factory calibration: 17/7/19
Date of calibration: 10/12/19		Name of Calibrator: KT	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: 100 ppm		Error in measured reading: $\pm$ ppm	
Measured reading Acceptable (Yes/No):			
<b>PID</b>			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: ppm		Error in measured reading: $\pm$ ppm	
Measured reading Acceptable (Yes/No):			
<b>PID</b>			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: ppm		Error in measured reading: $\pm$ ppm	
Measured reading Acceptable (Yes/No):			



## WATER QUALITY METER CALIBRATION FORM

Client: John Staff Projects Pty Ltd		
Project: Proposed Main Water Retention		
Location: Goulburn Street, Main Campus, Liverpool Hospital, Liverpool NSW		
Job Number: E32837BD		
<b>DISSOLVED OXYGEN</b>		
Make:	Model: Aqua DY	
Date of calibration: 28/11/19	Name of Calibrator: AM/MMP	
Span value: 70% to 130%		
Measured value: 122		
Measured reading Acceptable (Yes/No):		
<b>pH</b>		
Make: Orion	Model: Four Star	
Date of calibration: 28/11/19	Name of Calibrator: AM/MMP	
Buffer 1: Theoretical pH = 7.01 ± 0.01	Expiry date: 8/20	Lot No: 332234
Buffer 2: Theoretical pH = 4.01 ± 0.01	Expiry date: 2/20	Lot No: 325418
Measured reading of Buffer 1: 6.92		
Measured reading of Buffer 2: 3.93		
Slope:	Measured reading Acceptable (Yes/No):	
<b>EC</b>		
Make: Orion	Model: Four Star	
Date: 28/11/19	Name of Calibrator: AM/MMP	Temperature: 32 °C
Calibration solution: Conductivity Standard	Expiry date: 5/20	Lot No: 329753
Theoretical conductivity at temperature (see solution container): 1602 µS/cm		
Measured conductivity: 1651 µS/cm	Measured reading Acceptable (Yes/No):	
<b>REDOX</b>		
Make: Orion	Model: Four Star	
Date of calibration: 28/11/19	Name of Calibrator: AM/MMP	
Calibration solution: ORP Test Solution	Expiry date: 1/24	Lot No: 3822
Theoretical redox value: 240mV		
Measured redox reading: 322 mV	Measured reading Acceptable (Yes/No):	



## WATER QUALITY METER CALIBRATION FORM

Client: Johnstaff Projects Pty Ltd			
Project: Proposed Main Works Building			
Location: Goulburn Street, Main Campus, Liverpool Hospital, Liverpool, NSW			
Job Number: E328378D			
<b>DISSOLVED OXYGEN</b>			
Make:		Model: Aqua DV	
Date of calibration: 11.12.19		Name of Calibrator: AM	
Span value: 70% to 130%			
Measured value: 96%			
Measured reading Acceptable (Yes/No):			
<b>pH</b>			
Make: Orion		Model: Four Star	
Date of calibration: 11.12.19		Name of Calibrator: AM	
Buffer 1: Theoretical pH = 7.01 ± 0.01		Expiry date: 8/16	Lot No: 332234
Buffer 2: Theoretical pH = 4.01 ± 0.01		Expiry date: 6/26	Lot No: 325418
Measured reading of Buffer 1: 7.14			
Measured reading of Buffer 2: 4.33			
Slope:		Measured reading Acceptable (Yes/No):	
<b>EC</b>			
Make: Orion		Model: Four Star	
Date: 11.12.19	Name of Calibrator: AM		Temperature: 20 °C
Calibration solution: Conductivity Standard	Expiry date: 5/10	Lot No: 329753	
Theoretical conductivity at temperature (see solution container): 1278 µS/cm			
Measured conductivity: 1133 µS/cm		Measured reading Acceptable (Yes/No):	
<b>REDOX</b>			
Make: Orion		Model: Four Star	
Date of calibration: 11.12.19		Name of Calibrator: AM	
Calibration solution: ORP Test Solution		Expiry date: 1/24	Lot No: 3822
Theoretical redox value: 240mV			
Measured redox reading: 212 mV		Measured reading Acceptable (Yes/No):	



## Asbestos Air Fibre Monitoring Results (28/11/2019)

# Air Monitoring Certificate



Clearsafe Environmental Solutions Pty Ltd

9 Industrial Road, Unanderra NSW 2526

info@clearsafe.com.au

1300 042 962

**Report Number:** 40-11120-01-AM

**Monitoring Date:** 28/11/2019

**Received Date:** 28/11/2019

**Analysis Date:** 29/11/2019

**Report Date:** 29/11/2019

**Site Address:** Liverpool Hospital, Goulburn Street  
Liverpool NSW 2170

**Client Contact:** James Dang

**Client Name:** Beasy Pty Ltd

**Sampled By:** Ben Stork

**Client Address:** 16 Orchardleigh St  
Yennora NSW 2161

**Approved Counter:** Nathan Crouch

**Approved Signatory:** Luke Heckenberg

**Test Method:** Airborne fibre monitoring in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003(2005)] and Clearsafe method SOP.AM.01.

**Notes:** The results contained within this report relate only to the samples tested. This report should not be copied, presented or reviewed except in full.

Sample Number	Location	Code*	Time		Airflow		Fibres	Fields	Conc.**
			On	Off	On	Off			
40-11120/1	South eastern exclusion zone, eastern boundary on light post	5	07:14	15:02	1.02	1.02	0	100	<0.01
40-11120/2	South eastern exclusion zone, northern boundary on parking post	5	07:16	15:04	1.02	1.02	1	100	<0.01
40-11120/3	North eastern exclusion zone, southern boundary on light post	5	17:17	15:05	1.02	1.02	1	100	<0.01
40-11120/4	North western exclusion zone, southern boundary on light post	5	17:19	15:07	1.02	1.02	0	100	<0.01
40-11120/5	Field Blank	6					0	100	N/A

\*\* Concentration in Fibres/mL of air

\* Sample Codes:

- |                           |                         |
|---------------------------|-------------------------|
| 1 - Asbestos removal      | 5 - Background          |
| 2 - Bag-out               | 6 - Blank Sample        |
| 3 - Enclosure dismantling | 7 - Fibre Count Only    |
| 4 - Clearance             | 8 - Personal monitoring |

40-11120-01-AM



**NATA Accredited Laboratory No. 18542**

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



## **Appendix I: Interim Asbestos Control Information**



## Asbestos Air Fibre Monitoring Results Provided by SWSLHD

## TEST REPORT

September 3, 2019

### South Western Sydney Local Health District

Locked Bag 7279

LIVERPOOL BC, NSW 1871

Your Reference: Liverpool Hospital - 1-5 Campbell Street, Liverpool  
Job Number: 47292

**Attention:** David Ryan

Dear David

In accordance with your instructions, Airsafe conducted air monitoring for airborne asbestos fibres at the above site.

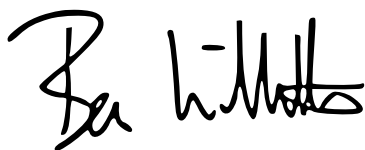
The following samples were processed on the dates indicated.

Samples:	2 Filters
Date of Sampling:	02/09/19
Date of Analysis:	03/09/19
Date of Preliminary Report Sent:	Not Issued

The results are contained in the following pages of this report.

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

Yours faithfully  
AIRSAFE OHC PTY LTD



Benjamin Willetts  
Approved Counter and Signatory

**PROJECT:** Liverpool Hospital – 1-5 Campbell Street, Liverpool**JOB NO:** 47292

Sample No	Location/Reference	Time		Total Time [min]	Air Flow Average [L/min]	Fields	Fibres	Concentration (Fibres/mL)
		On	Off					
47292-1	Temporary barrier fence – south side	0944	1514	330	2.0	100	0	<0.01
47292-2	Temporary barrier fence – north side	0945	1515	330	2.0	100	0	<0.01

**Method:** Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC: 3003 (2005)] and in-house method AS101 – Membrane Filter Method for Estimating Airborne Asbestos Fibres.

**Sampling:** All samples have been taken by Airsafe personnel in accordance with the sampling plan detailed in method AS101.

**Quality Control:** A field blank is taken and analysed for each batch of samples.

**Note:** Times are provided for customer reference only and do not form part of the facility's accreditation for volume measurement.

The results relate only to the samples tested. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

**Environmental Conditions:** Background air monitoring around sidewalk on south side of parking lot P2.

**Comment:** These calculated concentrations are less than the reporting limit of 0.01 fibres/mL for control and exposure monitoring as stated in the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC: 3003 (2005)].

**Disclaimer:** N/A



Site Photograph Showing Temporary Capping at JKE136  
Provided by SWSLHD



Note: Photograph provided by SWSLHD, showing the barricading and temporary capping of the formerly exposed soils in the area surrounding sampling location JKE136.

## **Appendix J: Guidelines and Reference Documents**



Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). Acid Sulfate Soils Manual

Australian and New Zealand Environment Conservation Council (ANZECC), (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality

Canadian Council of Ministers of the Environment, (1999). Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

Contaminated Land Management Act 1997 (NSW)

Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map Series

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

National Health and Medical Research Council (NHMRC), (2018). National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011

NSW Department of Environment and Conservation, (2007). Guidelines for the Assessment and Management of Groundwater Contamination

NSW EPA, (1995). Contaminated Sites Sampling Design Guidelines

NSW EPA, (2014). Waste Classification Guidelines - Part 1: Classifying Waste

NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

NSW EPA, (2017). Guidelines for the NSW Site Auditor Scheme, 3rd Edition

NSW Office of Environment and Heritage (OEH), (2011). Guidelines for Consultants Reporting on Contaminated Sites

National Environment Protection Council (NEPC), (2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

Olszowy, H., Torr, P., and Imray, P., (1995). Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

Protection of the Environment Operations Act 1997 (NSW)

State Environmental Planning Policy No.55 – Remediation of Land 1998 (NSW)

World Health Organisation (WHO), (2008). Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality

Western Australia Department of Health, (2009). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia