

Wastewater Flow Assessment

Aquacell Pty Ltd

**Alspec Industrial Business Park
Onsite Sewage Management System
Luddenham Rd, Orchard Hills**

May 2025, Revision 5



Revision	Date	By	Checked	Document Status	Amendments
1	14 th June 2024	WTJ		Initial Issue	
2	30 th July 2024	JJ	WTJ	For Review	Minor Amendments throughout
3	22 nd August 2024	JJ	WTJ	For Review	Minor amendments to Alspec 2
4	27 th November 2024	JJ	WTJ	For Review	Amended in line with council RFI
4	19 th May 2025	JJ	WTJ	For Review	Assumptions amended around showers



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1. Purpose

This document summarises the approach taken to verifying the expected wastewater flows that will need to be handled by the Onsite Sewage Management (OSSM) plant located at the Alspec Industrial Business Park (AIBP) on Luddenham Road, Orchard Hills.

The approach is intended to provide an additional check on the average values submitted to HBB by the consultant group Arcadis.

2. Method

Information was provided through several sources to assist in generating potential wastewater flow information. The sources used include the following:

- **Survey of tenants.** A water and wastewater survey was developed by Aquacell and distributed to Alspec and Cope by HBB. The survey sought information on water usage, staffing, and any on-site processes that could generate wastewater.
- **Development warehouse and office areas.** The site masterplan was used to identify the number of lots and the area set aside for warehouses on each lot.
- **Specific information on key water users.** Alspec provided information on the layout of the warehouse, staffing levels, and a two water bills from other Alspec sites in Australia.

The information was combined to develop the expected wastewater generation in litres per square metre of combined office and warehouse areas. Specific contributions from processes in Alspec's facility were considered in developing the generation rate.

The calculated generation rate was then compared with the other Alspec sites, the wastewater estimate provided by Arcadis, and water estimates from Sydney Water guides.

3. Results

3.1 COPE

The tenant survey yielded information on staffing numbers for the COPE site, and the presence of a truck wash that will operate using recycled water.

The staffing numbers also included a breakdown of the ratio of male to female staff. The volume generated from toilets and showers was estimated by assuming the following:

- Males: Urinal used three times per day and toilet once per day
- Females: Toilet used three times per day (half flush) and once per day full flush.
- Shower: Used once per day by 25% of drivers and 5% of tall remaining staff.

Applying these rates to the staffing numbers and including the truck wash generated an average wastewater generation of 13,042 L/day (0.34 L/m²/day).

3.2 Alspec 1

The Alspec 1 site is the largest of the sites and also contains some material processing with associated water usage.



The same assumptions around staff ratios (male to female) that were provided for COPE were adopted for Alspec on the basis that the uses are similar and the ratios are likely to be comparable.

To estimate the contribution to wastewater flow from the processing, water usage information was obtained from a site in Eastern Creek, NSW, and one in Logan in Qld. The information from Eastern Creek includes powder coating, but no extrusion. The Queensland plant also includes extrusion. The Alspec 1 site will incorporate both extrusion and powder coating. The water usage from the Queensland site was used to estimate the contribution from the extrusion process on Alspec 1, and included in the total water usage for the site.

The resulting calculation indicates a wastewater generation of 26,185 L/day (0.66 L/m²/day).

3.3 Spec Warehouse

The spec warehouse is an office and warehouse only, with no special processes or wastewater contributions. Staffing numbers were provided by Alspec and incorporated within the calculations, using the same assumptions were used as with COPE.

The resulting calculation indicates a wastewater generation of 8,539 L/day (0.53 L/m²/day).

3.4 Remaining Sites

The remaining site contributions were estimated using the applicable wastewater generation rate applied to the total site developed area. A figure of 0.8 L/m²/day was adopted as a conservative figure based on the three sites above.

4. Conclusions

A summary of the expected flows is provided in the table below, and detailed in Appendix 1.

Please note that estimated flows for toilet flushing and showers/handbasins have been defined, allowing us to demonstrate an estimated figure for percentage recycled. These values have been included below.

	Wastewater Generated (kL/day)	Rate (kL/m ² /day)	Percentage Recycled
Alspec 1	26.2	0.66	55%
Alspec 2	8.6	0.53	68%
COPE	13.0	0.53	66%
Total – Stage 1	210.4	0.8	
Remaining Sites	52.2	0.8	
Combined Total	263		
Combined Total (@0.8 L/m²/day)	290		



Appendix 1 – Detailed summary of flow calculations



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Revision:

5

Applied WW loading rate: 0.80 L/d/m2

Site Areas (m2)			
Site	Office	Warehouse	Combined
1 - Alspec	2240	37578	39818
2 - Spec WH	1000	15107	16107
3 - Cope	1500	37000	38500
4			
5			
6			
7	1500	30383	31883
8	2000	40351	42351
9	2000	39949	41949
10	600	8384	8984
11	1100	14267	15367
12	800	18808	19608
13	800	17814	18614
14a	280	2553	2833
14b	280	1808	2088
15a	60	934	994
15b	60	1501	1561
16	60	471	531
17	60	477	537
18a	60	479	539
18b	60	549	609
19	280	4124	4404
20	280	3445	3725
21	60	452	512
22	60	471	531
23	60	557	617
24	60	319	379
25	60	283	343
26	60	321	381
27	60	422	482
28	60	509	569
29	60	468	528
30	60	466	526
31	60	862	922
32	60	862	922

Totals	15740	281974	297714	12.6	225.6	238.2	3.8	71.7	75.5
Eastern Land Parcel	2687	53745	56432	2.1	43.0	45.1			
Southern Land Parcel	420	8400	8820	0.3	6.7	7.1			
Totals	18847	344119	362966	15	275	290			

Wastewater Volume (kl/day)			Stage 1 (kl/day)		
Office	Warehouse	Combined	Office	Warehouse	Combined
1.8	30.1	31.9	1.8	30.1	31.9
0.8	12.1	12.9	0.8	12.1	12.9
1.2	29.6	30.8	1.2	29.6	30.8
0.0	0.0	0.0			
0.0	0.0	0.0			
0.0	0.0	0.0			
1.2	24.3	25.5			
1.6	32.3	33.9			
1.6	32.0	33.6			
0.5	6.7	7.2			
0.9	11.4	12.3			
0.6	15.0	15.7			
0.6	14.3	14.9			
0.2	2.0	2.3			
0.2	1.4	1.7			
0.0	0.7	0.8			
0.0	1.2	1.2			
0.0	0.4	0.4			
0.0	0.4	0.4			
0.0	0.4	0.4			
0.0	0.4	0.5			
0.2	3.3	3.5			
0.2	2.8	3.0			
0.0	0.4	0.4			
0.0	0.4	0.4			
0.0	0.4	0.5			
0.0	0.3	0.3			
0.0	0.2	0.3			
0.0	0.3	0.3			
0.0	0.3	0.4			
0.0	0.4	0.5			
0.0	0.4	0.4			
0.0	0.4	0.4			
0.0	0.7	0.7			
0.0	0.7	0.7			

Based on site data	
Combined (kl/day)	L/d/m2
26.2	0.66
8.6	0.53
13.0	0.34
25.5	0.80
33.9	0.80
33.6	0.80
7.2	0.80
12.3	0.80
15.7	0.80
14.9	0.80
2.3	0.80
1.7	0.80
0.8	0.80
1.2	0.80
0.4	0.80
0.4	0.80
0.4	0.80
0.4	0.80
0.5	0.80
3.5	0.80
3.0	0.80
0.4	0.80
0.4	0.80
0.5	0.80
0.3	0.80
0.3	0.80
0.3	0.80
0.4	0.80
0.5	0.80
0.4	0.80
0.4	0.80
0.7	0.80
0.7	0.80

210.4
45.1
7.1
263

ALSPEC-1

Male/female ratio assumed same as Cope

	People	Male/female	Toilets	Showers/Handbasins/ki	Volume (L/day)
Main office	70	60%	2303	350	2653
Warehouse office	8	75%	256	40	296
Drivers	10	95%	220	1060	1280
Warehouse	70	95%	2156	350	2506
Visitors	5	50%	34	15	49
Office amenities				780	780

163

496925957564 L/day

0.19 L/day/m2 of floor area (office + warehouse)

Other Site Activities

Estimated

18621 L/day

Based on Logan Water Qld bill

TOTAL

26185 L/day

0.66 L/day/m2 of floor area (office + warehouse)

Recycled Water14279 L/day Assumed 50% of factory process water is recycled water

Potable Water11906 L/day

% Recycled55%

Fixtures: From plans March 2024

Toilets	19
Urinals	6
Kitchenettes	2
Lunch room sink	2
Utilities	1
Showers	4

TSS	COD	BOD	TN
755	1190	645	293
775	1221	662	300
498	701	384	46
801	1263	684	311
1801	2626	1411	381
656	1019	553	228

TSS	COD	BOD	TN
100	100	50	0

Average	261	366	195	66
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Spec WH

	People	Male/female	Toilets	Showers/Har	Volume (L/day)
Main office	70	60%	2303	350	2653
Warehouse office	8	75%	256	40	296
Drivers	10	95%	220	1060	1280
Warehouse	100	95%	3080	500	3580
Visitors		50%	0	0	0
Office amenities				780	780

5859 2730 8589 L/day

0.53 L/day/m² of floor area (office + warehouse)

	TSS	COD	BOD	TN
	755	1190	645	293
	775	1221	662	300
	498	701	384	46
	801	1263	684	311
	1801	2626	1411	381
Average	668	1041	565	237

Other Site Activities

	TSS	COD	BOD	TN
Average (est.)				

Average (est.)

TOTAL

8589 L/day

Average	668	1041	565	237
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0.53 L/day/m² of floor area (office + warehouse)

Recycled Water	5859 L/day
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Potable Water	2730 L/day
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% Recycled	68%
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Fixtures: From plans March 2024

Toliets	19
Urinals	6
Kitchenettes	2
Lunch room sink	2
Utilities	1
Showers	4

Cope

	People	Male/female	Toilets	Showers/Handb	Volume (L/day)
Main office	71	60%	2336	355	2691
Warehouse office	5	75%	160	25	185
Drivers	98	95%	2156	3038	5194
Warehouse	47	95%	1448	235	1683
Visitors	5	50%	34	15	49
Office amenities				750	750

6133 4418 10551 L/day
0.27 L/day/m2 of floor area (office + warehouse)

	TSS	COD	BOD	TN
	755	1190	645	293
	775	1221	662	300
	498	701	384	46
	801	1263	684	311
	1801	2626	1411	381
Average	587	884	481	154

Other Site Activities

Truck wash (internal recycle)

2491 L/day

Revised (with Average (est.))

TSS	COD	BOD	TN
100	100	50	0

TOTAL

13042 L/day

Average	494	734	399	124
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0.34 L/day/m2 of floor area (office + warehouse)

Fixtures: From plans March 2024

OFFICE	
Toilets	13
Urinals	4
Kitchenettes	1
Lunch room sink	2
Utilities	2
Showers	4

Recycled Water
Potable Water
% Recycled

8624 L/day Assumes truck wash is recycled water
4418 L/day
66%

Assume 2x dishwasher loads per day @ 20L/load.
Assume 5 L/person/day

WAREHOUSE

Driver ammenities	55 m2
Amenities	50 m2