STORMWATER AUSTRALIA

Stormwater Quality Improvement Device Evaluation Protocol (SQIDEP)

VERIFICATION CERTIFICATE

Applicant Information

Applicant Name	**Ocean Protect Pty Ltd**
Applicant Address	PO Box 75, Casula Mall NSW 2170
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Verified Technology

Product Title	**Jellyfish**
SQIDEP Pathway	**Body of Evidence Pathway**
Reviewed Documents	The following documents form the basis of this independent evaluation: • Ashantha Goonetilleke, Prasanna Egodawatta, Evaluation of treatment performance of the Jellyfish® filter installation at Ipswich – Final report on the field monitoring program, 17 February 2017, Science and Engineering Faculty, Queensland University of Technology. • Charles Kelly, Anton Bardak, Evaluation of Treatment performance of a stormwater treatment membrane filter under Australian conditions, Australian Journal of Water Research. • Tony Weber, Review of performance of Jellyfish performance for installation at 292 Brisbane St, West Ipswich, Alluvium Consulting (Letter) • Michael Wicks, Brad Dalrymple, Jellyfish SQIDEP Compliance (undated) (spreadsheet data with more details regarding monitoring by Goonetilleke and Egodawatta [2017] – includes spreadsheets of water quality results, event flows and sample aliquots). • University of Florida, TARP Field Test Performance Monitoring of a Jellyfish® Filter JF4-2-1, November 2011. It is understood this document was authored by Dr. John Sansalone.

Technology Information

Applicant's Verified Performance Claims (ER)	**Total Suspended Solids (TSS) 92.6 %** **Total Phosphorus (TP) 57 %** **Total Nitrogen (TN) 46.8 %** **Gross Pollutants 100 %**
Test Stormwater Runoff	The presented runoff pollutant test results complied with the SQIDEP typical stormwater pollutant concentrations for urban environments. The device has therefore been tested within the pollutant loading ranges specified by SQIDEP v1.3 for typical urban environments (Urban Roads, Residential, Industrial, Commercial).
Test Catchment	Commercial

Maintenance Performed during monitoring	• There is no information in either Kelly et al (2018) or Goonetellike *et al* (2017) regarding maintenance of the Jellyfish Filter being undertaken during monitoring. Thus, it is anticipated that no significant maintenance activities were undertaken during the 15-month monitoring period.

Verified method to model in MUSIC

Modelling a Jellyfish Filter in MUSIC is as follows:

Bypass (TFR) parameters should be set as appropriate, according to the following:

Driving head (mm)	Peak flux* (L/s/m²) per cartridge		Cartridge length	TFR (L/s) per cartridge		Pollutant removal
	Hi-flow	Drain down		Hi-flow	Drain down	
457	0.141	0.071	54-in (1.37m)	5	2.5	TSS 92.6% TP 57.0% TN 46.8% GP 100%
			27-in (0.686m)	2.5	1.30	
305	0.094	0.055	54-in (1.37m)	3.34	1.96	
			27-in (0.686m)	1.68	0.98	
229	0.071	0.045	54-in (1.37m)	2.52	1.58	
			27-in (0.686m)	1.27	0.79	

*: Peak flux rate is defined as the maximum filtration flux rate or maximum flow per unit of membrane surface area. The above peak flux rates are derived from the University of Florida (2011) report *TARP Field Test Performance Monitoring of a Jellyfish Filter JF4-2-1*. This report confirmed a peak flux rate of 0.141 L/s/m² for the hi-flow cartridge and 0.071 L/s/m² for the drain-down cartridge for a 457mm driving head (35.4m² membrane surface area per cartridge).

Input properties should reflect those given below:

Pollutant	Influent	Effluent	Reduction
Total Suspended Solids (TSS)	1000	74	92.6 %
Total Phosphorus (TP)	10	4.3	57.0 %
Total Nitrogen (TN)	100	53.2	46.8 %
Gross Pollutants (GP)	1000	0	100 %

Conditions/Notes

The limitations of the acceptance of these claims include:

- As with the majority of treatment devices, designers should consider the need for pre-treatment on a case-by-case basis with regard to optimising the maintenance regime for the site.
- The results lie within acceptable inflow limits for this type of catchment and based on the analysis are found to be representative. The device has been tested within the pollutant loading ranges specified by SQIDEP v1.3. As with the majority of treatment devices, where the influent water is more polluted there would likely be a greater percentage of pollutants removed and a higher residual load in effluent water – and, where the influent water is cleaner (i.e. below limits of detection), there would likely be a lower percentage of pollutants removed and a lower residual pollutant load in effluent water.
- Design and installation should be performed in accordance with the Manufacturer's guidelines. Results are reliant on the maintenance of the device being consistent with the manufacturer's guidelines.
- Regular inspection and maintenance should be performed in accordance with the Manufacturer's Operation and Maintenance Manuals.

Notes

There is no pathway for a gross pollutant to move through one of the tentacles. The only other potential pathway for a gross pollutant to leave the system would be by flowing over the weir. To ensure this does not occur, the following is required:

	1) The weir (maintenance access wall) shall be set a minimum of 100 mm above the system design hydraulic grade line. 2) If this is not achievable, then the weir level shall be set so that it is a maximum of 50 mm below the soffit of the chamber. 3) At all times, the weir (The maintenance access wall) will be above the system design HGL regardless of requirements 1 and 2.

Independent Reviewers

Evaluator Signature	Evaluator Signature
Mark Liebman Director Sustainability Workshop	**Dr Baden Myers** Director Baden Myer's Consulting
Sustainability Workshop	

Issue of Verification Certificate

Acceptance by SQIDEP Governance Panel	**9 October 2023**
Acceptance by Stormwater Australia Board of Directors	3 November 2023
Verification Issued	**8 November 2023**
Stormwater Australia Verification Certificate Number Reference	SA-2023/07-VC

Verified under SQIDEP Version 1.3

Body of Evidence Pathway

STORMWATER QUALITY IMPROVEMENT DEVICE EVALUATION PROTOCOL

SQIDEP VERIFIED