

**Review of baited underwater video monitoring licence conditions  
for the Adelaide Desalination Plant:  
June 2014**

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AdelaideAqua Pty Ltd  
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## EXECUTIVE SUMMARY

### Purpose

This document represents a report on the extent to which monitoring of fish assemblages from selected sites in the vicinity of Port Stanvac meets with the EPA Licence conditions for the construction and operation of the Adelaide Desalination Plant (ADP) over the period February 2009 to 12-Dec-2013. The monitoring reports were associated with the construction (including commissioning) of the desalination plant (by AdelaideAqua D&C Consortium – AAD&C) from February 2009 to 12-Dec-2012 and to the operation of the desalination plant (AdelaideAqua Pty Ltd) from 12-Dec-2012 to 12-Dec-2013.

### Background

AdelaideAqua Pty Ltd is the operator of the Adelaide Desalination Plant at Port Stanvac South Australia. Operation of the ADP requires the discharge of reject water to the marine environment; this activity was originally conducted under a license issued to AAD&C by the Environment Protection Authority of South Australia (EPA License Number 26902) and subsequently under another license issued to AAPL (EPA License Number 39143). These licenses authorised AAD&C and AAPL to undertake a series of activities of environmental significance under Schedule 1 Part A of the Environment Protection Act 1993 (the Act). The licenses had specific requirements in relation to “Discharges to Marine Waters” that are the subject of this report.

Section 14 (305-626) of the license requires that the licensee must ensure that:

1. An independent review of all marine monitoring is conducted by independent specialist(s) as approved in writing by the EPA prior to the review commencing;
2. All marine monitoring from the period commencing with the issue of the license and ending 12 months after project handover of the 100 GL desalination plant is included in the review; and
3. The full results of the review are provided to the EPA not more than 18 months after project handover of the 100 GL desalination plant.

The EPA has also advised that prior to appointment, the independent reviewer must be able to demonstrate to the EPA that:

1. They will use their own professional judgment;
2. They will take appropriate specialised advice when the issue is outside their expertise;
3. Their opinions will be reached independently;
4. In forming opinions, they will not be unduly influenced by the views or actions of others who may have an interest in the outcome of the review; and
5. They must declare any real or apparent conflict of interest.

With the approval of the EPA, Anthony Cheshire (the author of this report) was selected by AdelaideAqua Pty Ltd (AAPL) to undertake this review.

## **Approach**

This review of baited underwater video monitoring encompassed a study of all documentation provided by AdelaideAqua Pty Ltd which comprised a series of 6 monitoring reports each of which was produced by staff at AAD&C, AAPL or by experts contracted by the parties for that purpose.

Each report has been critically reviewed and key issues that pertain to compliance with the licence conditions have been aggregated into a summary that has been presented in this report.

### ***Specific requirements***

To consider the work done against the Scheduled Marine Monitoring Requirements detailed in Attachment A to licenses 26902 and 39143. These being:

Two seasonal video fish traps per year to monitor local fish populations associated with sub-tidal reef and soft sediment systems.

### ***General requirements***

In addition the EPA require that the Independent Reviewer is to undertake a technical review of all marine monitoring results from the commencement date of the License 26902 (D&C) until 12 December 2013 (12 months after plant handover) in order to assess the environmental impact of the desalination plant. This matter will be addressed in a subsequent report.

## **Conclusion**

Fish community monitoring has been conducted consistent with the specific licence conditions: monitoring has been conducted at least twice a year (from 2009 through 2012) at two sites comprising soft-bottom and sub-tidal reef habitats at two locations including one in the near vicinity of the ADP diffuser (within the 50:1 modelled dilution zone) and the second at a more distant location situated offshore from Hallett Cove (outside of the 100:1 modelled dilution zone).

## LICENCE CONDITION: BAITED UNDERWATER VIDEO MONITORING

In the following the specific requirements pertaining to the licence condition (baited underwater video) are summarised along with information about the documents that have been reviewed.

Documents reviewed for this licence condition:

Document Name	Reference
fish_final_sep10.pdf	Colella, D., Miller, D., Holland, S. and Rutherford, H. (2010). An assessment of fish assemblages adjacent to Port Stanvac. A report to AdelaideAqua for the Adelaide desalination plant project 2009-2010. Coast and Marine Conservation Branch, Department of Environment and Natural Resources.
fish_interim_sum11.pdf	Rutherford, H., Colella, D., Miller, D. and Bloomfield, A. (2011). An assessment of Fish Assemblages adjacent Port Stanvac: Interim Field Summary to Adelaide Aqua for the Adelaide desalination plant project Summer 2011. Coast and Marine Conservation Branch, Department of Environment and Natural Resources.
fish_interim_may11.pdf	Rutherford, H., Colella, D. and Miller, D. (2011). An assessment of Fish Assemblages adjacent Port Stanvac: Interim Field Summary to Adelaide Aqua for the Adelaide desalination plant project Autumn 2011. Coast and Marine Conservation Branch, Department of Environment and Natural Resources.
Adelaide Desal Proj_Fish_FINAL REPORT_2009-2011.pdf	Colella, D., Miller, D. and Rutherford, H. (2011). An assessment of fish assemblages adjacent to Port Stanvac. A report to Adelaide Aqua for the Adelaide desalination plant project 2009 - 2011. Prepared by the Marine Parks Branch, Department of Environment and Natural Resources.
fish_mar12.pdf	Rutherford, H., Colella, D. and Miller, D. (2012). An assessment of Fish Assemblages adjacent Port Stanvac. Interim Field Summary to Adelaide Aqua for the Adelaide desalination plant project Summer 2012. Coast and Marine Conservation Branch, Department of Environment and Natural Resources.
fish_sep_oct_12.pdf	Colella, D. and Miller, D. (2012). An assessment of Fish Assemblages adjacent Port Stanvac. Interim Field Summary to Adelaide Aqua for the Adelaide desalination plant project Winter / Spring 2012 (Sep-Oct). Prepared by the Marine Parks Branch, Department of Environment and Natural Resources.

### Specific requirement (see Attachment A – Marine Monitoring Schedule):

Two seasonal video fish traps per year to monitor local fish populations associated with sub-tidal reef and soft sediment systems.

### Overall summary in relation to baited underwater video monitoring

The objective of this monitoring program was to characterise fish communities in the region of the ADP. Monitoring was undertaken using stereo video survey techniques with the aim of quantifying the species richness and abundance of fish in two different habitats (reef and soft-bottom communities) close to the diffuser (within the 50:1 dilution zone) and to

compare these with fish communities in similar habitats at a site more distant from the diffuser (outside the 100:1 dilution zone).

The survey design is consistent with the specific licence condition in that it comprises a matrix of four sampling locations grouped into Reef vs Soft Bottom (HABITAT) and Near vs Distant (SITE) where Near vs Distant refers to proximity to the desalination discharge. The Near site has been located in an area which could be called the Port Stanvac zone while the Distant site is located off shore from Hallet Cove (in other studies this location has been referred to as the Hallet Cove South Site). In effect these two sites were characterised as being in the zone where the modelled dilution of the discharge plume is less than 1:50 (near = Port Stanvac) versus in an area where the dilution is considered to be greater than 1:100 (distant = Hallet Cove South).

In total the survey design comprises four sites NearReef, NearSoft, DistantReef, DistantSoft. Each survey comprises 3 measurements made on each of two consecutive days (6 replicate observations) at each of these sites. Samples have been collected at least twice per year over the period starting during Winter and Spring (2009), Summer and Autumn (2010), Summer and Autumn (2011) concluding with Summer, Winter and Spring (2012). The assessment quantifies both mobile and site attached species.

## Appendix A KEY DATES IN PLANT CONSTRUCTION AND OPERATION

The following provides a list of key dates in the construction and operation of the plant. This material provides background to the review and in particular places the analysis and interpretation of each of the monitoring reports into context with the activities that were occurring on-site in the period leading up to the monitoring event.

<b>Date</b>	<b>Activity</b>
01-Feb-2009	Construction activities commenced
16-Nov-2009	Maritime platform arrived on site
08-Jul-2010	Maritime platform completed operations
01-Jun-2011	First discharge and first intake of seawater
14-Oct-2011	First Water – plant production was (30 MLD)
21-Mar-2012	SP1 – Full production from first half the plant (150 MLD)
31-May-2012	SP2 – Full production from second half of the plant (150 MLD)
24-Oct-2012	Performance test – plant running at full production for 7 days (150 MLD)
07-Nov-2012	Performance test – plant running at full production for 7 days (150 MLD)
21-Nov-2012	Reliability test – continuous running at various production rates
12-Dec-2012	Plant handover from commissioning