

**Review of daily discharge volume monitoring licence conditions for
the Adelaide Desalination Plant:
June 2014**

Prepared for

AdelaideAqua Pty Ltd

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SMU

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EXECUTIVE SUMMARY

Purpose

This document represents a report on the extent to which monitoring of daily discharge 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 licence issued to AAD&C by the Environment Protection Authority of South Australia (EPA Licence Number 26902) and subsequently under another licence issued to AAPL (EPA Licence Number 39143). These licences 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 licences had specific requirements in relation to “Discharges to Marine Waters” that are the subject of this report.

Section 14 (305-626) of the licence 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 licence 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 daily discharge volume monitoring encompassed a study of all documentation provided by AdelaideAqua Pty Ltd which comprised a series of 30 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 Licences 26902 and 39143. These being:

Licence 26902 and Licence 39143: 1-Dec-2010 through 12-Dec-2013: Daily volume of all discharge in ML.

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 Licence 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

Data on daily discharge volumes have been reported for the period from 1-Jul-2011 to 31-Dec-2013. "First discharge" from the plant occurred on 01-Jun-2011 with "First Water" on 14-Oct-2011. Full production on SP1 was achieved on 21-Mar-2012 and on SP2 on 31-May-2012 (Appendix A). In summary, the data provided cover the period of early phase testing through to commissioning.

LICENCE CONDITION: DAILY DISCHARGE VOLUME MONITORING

In the following the specific requirements pertaining to the licence condition (daily discharge volume) are summarised along with information about the documents that have been reviewed.

Documents reviewed for this licence condition:

Document Name	Reference
EPA_August_MM_Condition 11 verified.xlsx	AdelaideAqua, (2011). Daily volume of discharge for August 2011. AdelaideAqua Pty Ltd.
EPA_September_MM_Condition 11 verified.xlsx	AdelaideAqua, (2011). Daily volume of discharge for September 2011. AdelaideAqua Pty Ltd.
EPA_OCTOBER_MM_Condition 11 verified.xlsx	AdelaideAqua, (2011). Daily volume of discharge for October 2011. AdelaideAqua Pty Ltd.
EPA_November_MM_Condition 11 verified.xlsx	AdelaideAqua, (2011). Daily volume of discharge for November 2011. AdelaideAqua Pty Ltd.
EPA_December_MM_condition 11.xlsm	AdelaideAqua, (2011). Daily volume of discharge for December 2011. AdelaideAqua Pty Ltd.
EPA_July_MM_Condition 11 verified.xlsx	AdelaideAqua, (2011). Daily volume of discharge for July 2011. AdelaideAqua Pty Ltd.
2012_1 EPA_January_outfall_flow_11.xlsx	AdelaideAqua, (2012). Daily volume of discharge for January 2012. AdelaideAqua Pty Ltd.
2012_10_EPA_October_c_11.xlsx	AdelaideAqua, (2012). Daily volume of discharge for October 2012. AdelaideAqua Pty Ltd.
2012_11_EPA_November_c_11.xlsx	AdelaideAqua, (2012). Daily volume of discharge for November 2012. AdelaideAqua Pty Ltd.
2012_12_EPA_December_c_11.xlsx	AdelaideAqua, (2012). Daily volume of discharge for December 2012. AdelaideAqua Pty Ltd.
2012_2 EPA_February_outfall_flow_11.xlsx	AdelaideAqua, (2012). Daily volume of discharge for February 2012. AdelaideAqua Pty Ltd.
2012_3 EPA_March_outfall_flow_11.xlsx	AdelaideAqua, (2012). Daily volume of discharge for March 2012. AdelaideAqua Pty Ltd.
2012_4_APRIL_EPA_OUTFALL_FLOW_11.XLSX	AdelaideAqua, (2012). Daily volume of discharge for April 2012. AdelaideAqua Pty Ltd.
2012_5_MAY_EPA_OUTFALL_FLOW_11.XLSX	AdelaideAqua, (2012). Daily volume of discharge for May 2012. AdelaideAqua Pty Ltd.
2012_6_JUNE_EPA_OUTFALL_FLOW_11.XLSX	AdelaideAqua, (2012). Daily volume of discharge for June 2012. AdelaideAqua Pty Ltd.
2012_7 EPA_JULY_OUTFALL_FLOW_11.XLSX	AdelaideAqua, (2012). Daily volume of discharge for July 2012. AdelaideAqua Pty Ltd.

Document Name	Reference
2012_8 EPA_August_outfall_flow_11.xlsx	AdelaideAqua, (2012). Daily volume of discharge for August 2012. AdelaideAqua Pty Ltd.
2012_9 EPA_SEPT_OUTFALL_FLOW_11.XLSX	AdelaideAqua, (2012). Daily volume of discharge for September 2012. AdelaideAqua Pty Ltd.
2013_01_EPA_January_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for January 2013. AdelaideAqua Pty Ltd.
2013_02_EPA_February_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for February 2013. AdelaideAqua Pty Ltd.
2013_03_EPA_March_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for March 2013. AdelaideAqua Pty Ltd.
2013_04_EPA_April_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for April 2013. AdelaideAqua Pty Ltd.
2013_05_EPA_May_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for May 2013. AdelaideAqua Pty Ltd.
2013_06_EPA_June_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for June 2013. AdelaideAqua Pty Ltd.
2013_07_EPA_July_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for July 2013. AdelaideAqua Pty Ltd.
2013_08_EPA_August_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for August 2013. AdelaideAqua Pty Ltd.
2013_09_EPA_September_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for September 2013. AdelaideAqua Pty Ltd.
2013_10_EPA_October_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for October 2013. AdelaideAqua Pty Ltd.
2013_11_EPA_November_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for November 2013. AdelaideAqua Pty Ltd.
2013_12_EPA_December_c_11.xlsx	AdelaideAqua, (2013). Daily volume of discharge for December 2013. AdelaideAqua Pty Ltd.

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

Licence 26902 and Licence 39143: 1-Dec-2010 through 12-Dec-2013: Daily volume of all discharge in ML.

Overall summary in relation to daily discharge volume monitoring

The monitoring of daily discharge volumes is intended to document total volumes of water released from the plant. Daily volumes for all discharges are calculated using flowmeters

951-FIT-1001B, 951-FIT-2001B and 951-FIT-1001A. For the latter period discharge volumes are calculated at 10 minute intervals and summed to provide a daily total (Table 1).

Data has been recorded since July 2011 which includes the period of early phase testing (including first water runs; Appendix A) and through the major operational testing (SP1 and SP2 full production; Appendix A) leading to full production and commissioning.

No attempt has been made to interpret the data other than to report the coverage of the data records (noting that data were provided for review in a series of EXCEL files as detailed above).

Data provided comprise summaries of the daily discharge volumes for the period 1-Jul-2011 to 30-Sep-2012 and then ten minute discharge data (which have also be summed on a daily basis) for the period 1-Oct-2012 to 31-Dec-2013. The ten minute data are presented for each of SCBT1, SCBT2 and the Overflow separately.

Table 2 – Summary information on the data collected including period covered and data resolution for each of the files provided for review. A Data Integrity of less than 100% implies that some data records were missing or incomplete.

FileName	Start Date	End Date	Daily Records	Data records	Overall %	Comment
EPA_July_MM_Condition 11 verified.xlsx	01-Jul-11	31-Jul-11	31	Unknown	100.0%	Single daily value provided across all outfall sources
EPA_August_MM_Condition 11 verified.xlsx	01-Aug-11	31-Aug-11	31	Unknown	100.0%	Single daily value provided across all outfall sources
EPA_September_MM_Condition 11 verified.xlsx	01-Sep-11	30-Sep-11	30	Unknown	100.0%	Single daily value provided across all outfall sources
EPA_OCTOBER_MM_Condition 11 verified.xlsx	01-Oct-11	31-Oct-11	31	Unknown	100.0%	Single daily value provided across all outfall sources
EPA_November_MM_Condition 11 verified.xlsx	01-Nov-11	30-Nov-11	30	Unknown	100.0%	Single daily value provided across all outfall sources
EPA_December_MM_condition 11.xlsm	01-Dec-11	31-Dec-11	31	Unknown	100.0%	Plant was not running during December 2011
2012_1 EPA_January_outfall_flow_11.xlsx	01-Jan-12	31-Jan-12	31	Unknown	100.0%	Single daily value provided across all outfall sources
2012_2 EPA_February_outfall_flow_11.xlsx	01-Feb-12	29-Feb-12	29	Unknown	100.0%	Single daily value provided across all outfall sources
2012_3 EPA_March_outfall_flow_11.xlsx	01-Mar-12	31-Mar-12	31	Unknown	100.0%	Single daily value provided across all outfall sources
2012_4 APRIL_EPA_OUTFALL_FLOW_11.XLSX	01-Apr-12	30-Apr-12	30	Unknown	100.0%	Single daily value provided across all outfall sources
2012_5_MAY_EPA_OUTFALL_FLOW_11.XLSX	01-May-12	31-May-12	31	Unknown	100.0%	Single daily value provided across all outfall sources
2012_6_JUNE_EPA_OUTFALL_FLOW_11.XLSX	01-Jun-12	30-Jun-12	30	Unknown	100.0%	Single daily value provided across all outfall sources
2012_7 EPA_JULY_OUTFALL_FLOW_11.XLSX	01-Jul-12	31-Jul-12	31	Unknown	100.0%	Single daily value provided across all outfall sources
2012_8 EPA_August_outfall_flow_11.xlsx	01-Aug-12	31-Aug-12	31	Unknown	100.0%	Single daily value provided across all outfall sources
2012_9 EPA_SEPT_OUTFALL_FLOW_11.XLSX	01-Sep-12	30-Sep-12	30	Unknown	100.0%	Single daily value provided across all outfall sources
2012_10_EPA_October_c_11.xlsx	01-Oct-12	31-Oct-12	31	4458	99.9%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2012_11_EPA_November_c_11.xlsx	01-Nov-12	30-Nov-12	30	4320	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2012_12_EPA_December_c_11.xlsx	01-Dec-12	31-Dec-12	31	4464	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2013_01_EPA_January_c_11.xlsx	01-Jan-13	31-Jan-13	31	4464	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2013_02_EPA_February_c_11.xlsx	01-Feb-13	28-Feb-13	28	4032	100.0%	Daily values for SCBT1, SCBT2, Overflow; data

FileName	Start Date	End Date	Daily Records	Data records	Overall %	Comment
						resolution 10 mins
2013_03_EPA_March_c_11.xlsx	01-Mar-13	31-Mar-13	31	4464	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2013_04_EPA_April_c_11.xlsx	01-Apr-13	30-Apr-13	30	4326	100.1%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2013_05_EPA_May_c_11.xlsx	01-May-13	31-May-13	31	4464	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2013_06_EPA_June_c_11.xlsx	01-Jun-13	30-Jun-13	30	4320	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2013_07_EPA_July_c_11.xlsx	01-Jul-13	31-Jul-13	31	4464	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2013_08_EPA_August_c_11.xlsx	01-Aug-13	31-Aug-13	31	4464	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2013_09_EPA_September_c_11.xlsx	01-Sep-13	30-Sep-13	30	4320	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2013_10_EPA_October_c_11.xlsx	01-Oct-13	31-Oct-13	31	4464	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2013_11_EPA_November_c_11.xlsx	01-Nov-13	30-Nov-13	30	4320	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
2013_12_EPA_December_c_11.xlsx	01-Dec-13	31-Dec-13	31	4464	100.0%	Daily values for SCBT1, SCBT2, Overflow; data resolution 10 mins
Compliance performance (totals and other statistics)	01-Jul-11	31-Dec-13	915		100%	

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.

Date	Activity
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