MEMORANDUM

Date:	12 November 2014
To:	[redacted] – Office of the Coordinator-General, Coordinated Project Delivery, Department of State Development, Infrastructure and Planning
From:	[redacted] – Senior Hydrogeologist
Subject:	Peer Review and Expert Opinion Report – Nathan Dam SEIS Review

RPS Aquaterra Pty Ltd (RPS) was engaged by the Department of State Development, Infrastructure and Planning (DSDIP) to review the methods used by SunWater Ltd to determine the potential impacts to the Great Artesian Basin (GAB), specifically the Springsure Group springs, resulting from the proposed Nathan Dam and Pipelines Project.

Project Background

Potential groundwater impacts were evaluated by SunWater Ltd in The Nathan Dam and Pipelines Environmental Impact Statement (EIS) (SunWater Ltd 2012), released in April 2012. Chapter 15 presented results of a numerical groundwater model that predicted impacts to groundwater and associated springs and proposed future management and monitoring strategies. The EIS assessed impacts based on collation of available data and establishment of a conceptual model.

Since release of the EIS a number of other relevant major documents and models have been released or are pending release. Comments pertaining to the EIS received from project stakeholders primarily addressed the paucity of existing data and the incorporation of recent studies of the GAB and the subsequent refined conceptualisation of the GAB. SunWater Ltd engaged Sinclair Knight Merz (SKM) to undertake a desktop study through review of these reports, a field inspection of springs in the potential impact area and a drilling program to collect data from key areas to address stakeholder comments as part of a Supplementary EIS (SEIS).

Scope of Work

RPS was engaged by DSDIP to review hydrogeological investigatory work completed by SunWater Ltd as part of the SEIS and provide expert opinion to the Coordinator-General and DSDIP regarding:

- Adequacy and appropriateness of SunWater Ltd's proposed desktop study, field inspection and conceptual modelling approach to determine the degree of hydrogeological impact to Great Artesian Basin Springsure Group springs as a result of the proposed Nathan Dam Project.
- Hydrogeological investigative methodologies, including an analysis of input data and results used in assessment of impacts on the Great Artesian Basin Springsure Group springs in advance of field investigations.

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- Current industry practice of assessing the impact to springs as it relates to projects of this nature.
- Adequacy and appropriateness of the data used to estimate the impact of the dam on the GAB springs, and the accuracy and reliability of the impact assessment results provided in the final report.

Field Methodology

Prior to the completion of the SEIS hydrogeological studies, SKM and Sunwater Ltd provided RPS several documents for review:

- Desktop Study Methods, July 2012.
- Field Work Plan, September 2012.

RPS reviewed the reports for technical content according to the tenets above and provided commentary and approval for the study methods in a memo submitted to DSDIP in November 2012.

The scope of the desktop study consisted of a literature review of post-EIS GAB studies pertinent to the project area and related springs. The new studies collectively presented a more complex, updated hydrogeological conceptualisation of the GAB. The literature review and updated understanding of the GAB validated the conceptualisation presented in the EIS and supported in the SEIS.

The proposed supplementary field investigation consisted of the installation of seven new monitoring bores. However, due to scheduling and budgetary issues, the field investigation was revised and was completed with the installation of 5 monitoring bores (3 artesian, 2 sub-artesian) and the refurbishment of the headworks on 2 existing landholder bores.

Prior to the completion of the revised field investigation program, RPS discussed the change in scope with SunWater Ltd and SKM and agreed that the change in scope did not compromise the goals of the field investigation. Thus the data collected would be sufficient to further inform the SEIS. RPS agreed that the investigation objectives would be met with the change in scope and provided written approval of the field investigation in an email to DSDIP on 7 August 2013.

SEIS Review

The SEIS incorporated the results of the desktop literature review and documented the results of the field investigation to address stakeholder comments on the EIS. The investigation and spring assessment undertaken in the EIS and SEIS generally followed the assessment approach outlined in the Queensland Water Commission Underground Water Impact Report (QWC UWIR 2012) Spring Impact Management Strategy (SIMS).

The results of the field investigation indicated that the springs located in the study area are primarily connected to the Precipice Sandstone, with the exception of the Dawson River bores (MB01 and MB02), which are connected to the Hutton Sandstone.

The results of the SEIS supported the hydrogeological conceptual model presented in the EIS in terms of spring source aquifer and geological structure control of spring discharge (i.e. faults and aquitard thinning). No new data collected as part of the SEIS contradicted previously completed investigatory work.

Based on our review of the hydrogeological investigation and assessment methodology, our understanding of the literature incorporated into the desktop study and our evaluation of the SEIS report, it is RPS' view that the SEIS documentation sufficiently addresses the Terms of Reference and EIS comments and presents sufficient data to adequately evaluate risks to groundwater in the Nathan Dam study area.

This assessment is contingent on further validation of the conceptual model through the collection and incorporation of additional groundwater data from newly installed bores as the project develops.

Exclusions

The Peer Review consisted of the review of the SEIS and supporting documentation with the following limitations and exclusions:

- The numerical groundwater model was not reviewed.
- The EIS and assorted government investigations were reviewed as a source for background information pertaining to the project. The SEIS was reviewed against how the SEIS supported the conclusions of the EIS on technical merit.
- Public and stakeholder comments pertaining to the EIS were not reviewed. The SEIS focused on determination that SunWater Ltd had sufficiently developed an understanding of the hydrogeological framework of the Nathan Dam study area sufficiently to adequately complete an impact assessment.