



environmental management consultants

Our Ref: 336 - AA

29 June 2007

Ms Fabienne Faskel  
Water Corporation  
Project Management Branch  
PO Box 100  
Perth WA 6902

Dear Ms Faskel

Southern Seawater Desalination Plant

Proposal for Contamination Assessment: Wastewater Ponds

## 1. Introduction and Objectives

360 Environmental Pty Ltd is pleased to provide this proposal to undertake a baseline contamination assessment for the site of the proposed Southern Seawater Desalination Plant, Taranto Road, Binningup. The site, described as Lots 32 and 33, Folio 305150, is currently used as a Wastewater Treatment Plant Facility for the town of Binningup. The site contains a lined settlement pond and an unlined overflow infiltration pond.

Sewage treatment plants are recognised as a potentially contaminating landuse as defined in the Department of Environment and Conservation (DEC) (2003) *Potentially Contaminating Activities, Industries and Land Uses* document. It is understood that a contamination assessment is required to provide baseline information on the contamination status of the site prior to its development as part of the Southern Seawater Desalination Plant.

360 Environmental has considerable experience in similarly scoped projects and regularly undertakes contamination assessments for a diversity of commercial, industrial and residential sites. 360 Environmental has built a good rapport with the DEC and accredited Site Auditors regarding contamination assessments undertaken for a range of our private and government clients.

t 9321 0420 f 9226 0739 e [admin@360environmental.com.au](mailto:admin@360environmental.com.au)

1 Altona Street, West Perth WA 6005 • PO Box 14, West Perth WA 6872 abn 50 109 499 041



## 2. Scope of Work

The following scope of work is nominated:

- Stage 1: Preliminary Site Investigation (PSI) – a desktop site-wide site history study.
- Stage 2: Initial Soil and Groundwater Sampling – a staged site investigation.
- Stage 3: Additional Site Investigation Works and Remediation, if required (dependent on outcomes of Stage 2).

## 3. Methodology

### 3.1 Stage 1 Preliminary Site Investigation

Consistent with the staged approach to contamination site assessments detailed in the DEC (2001-2006) *Contaminated Sites Management Series*, a desktop assessment (Preliminary Site Investigation (PSI)) is proposed as an appropriate first step prior to any soil or groundwater sampling and analysis being undertaken. The PSI will be undertaken for the entire site (Lots 32 & 33) and will include the following scope of work:

- A detailed site inspection of the project area by an Environmental Scientist or Engineer.
- A review of historical land uses using title information, historical aerial photography and interviews with persons knowledgeable of past land use activities.
- A review of available information relating to site characteristics including topography, geology, soil profiles, surface hydrology, groundwater, contamination and acid sulfate soils.
- Database searches and GIS mapping.
- A review of existing information such as scientific data, if available.
- Liaison with DEC to determine if there are any environmental requirements relevant to the site.
- Assessment and reporting, including formulation of a conceptual site model, and recommendations for additional assessment such as soil and groundwater sampling, if required.



The findings of the PSI will allow a Sampling and Analysis Plan (SAP) to be formulated for Stage 2 of the assessment.

## **3.2 Stage 2: Initial Soil and Groundwater Sampling**

### **3.2.1 Fieldwork**

Based on information provided to 360 Environmental by the Water Corporation, we understand the objective of the assessment is to provide information on the contamination status around the area at the site containing the settlement pond and overflow infiltration pond only. Targeted soil and groundwater sampling will be undertaken, concentrating on these areas of environmental concern.

Fieldwork for the contamination assessment will primarily be directed by the findings of the site history study (Stage 1). However, for project costing purposes we have allowed for advancement of six soil boreholes, installation of four groundwater wells and groundwater sampling at a total of six groundwater wells (assumes the suitability of two existing wells). The soil and groundwater locations will be advanced in strategic locations based on the findings of the PSI (assumed to be around the ponds and hydraulically up and down-stream of the identified area of environmental concern to provide background conditions).

It should be noted that the number of sampling locations (six) does not meet the sampling frequency recommended by the DEC (2001-2006) *Contaminated Sites Management Series* for the site size. Should contamination or data anomalies be encountered during the initial sampling (Stage 2) further investigations may be required to fully meet DEC requirements.

We have assumed that groundwater at the site is located at approximately five metres below ground level (mbgl). Accordingly in accordance with industry best practice, we have allowed for the advancement of the four groundwater wells to a depth of eight mbgl.

The constructed groundwater wells will be developed, purged and sampled approximately one week following installation. The wells will be constructed according to DEC guidelines and will feature PVC bores screened across the watertable, a bentonite plug (to avoid any potential cross-aquifer contamination) and a sturdy lockable standpipe.<sup>1</sup>

Environmental soil sampling and field testing will be performed in accordance with DEC and industry accepted protocols for environmental sampling. Surface soil samples will be collected from the borehole (indicatively 0 to 0.15m) and then at approximately 0.5 intervals until termination of the borehole. Selected environmental samples will be dispatched to the analytical laboratory for analysis. All other soil samples will be stored in accordance with accepted requirements in the event that additional analysis is required.



In accordance with quality control / quality assurance best practice guidance, field quality control samples will include 10% field duplicate samples, daily rinsate samples and daily trip blanks.

### **3.2.2 Laboratory Analysis**

All soil samples will be analysed by a NATA accredited laboratory. Analytical testing will be based on the site history and field investigations, however for costing purposes we have assumed contaminants of concern will be limited to those associated with wastewater treatment plants as detailed below:

- Metals (aluminium, arsenic, cadmium, copper, cobalt, chromium, lead, mercury, zinc, nickel);
- Nutrients (phosphorus, potassium, nitrogen);
- Phenols;
- Pathogens (e-coli, enterococci, faecal coliforms).

Groundwater sample will be analysed for the above parameters plus cations and anions.

### **3.2.3 Data Assessment and Reporting**

Details of the work undertaken, an assessment of the potential areas of environmental concern and a discussion of the contamination status of the site will be documented in a report, with reference to DEC guidelines. Should the investigation identify contamination at the site or inconclusive data, further investigations and/or remediation may be required.

## 4. Cost and Schedule

Commercial  
in Confidence

Work would be undertaken in accordance with the Water Corporations General Conditions of Contract for Simple Works Contracts. Any out of scope items would be undertaken in accordance with current 360 Environmental standard rates, attached. This proposal is valid for a period of three months.

The costing assumes that:

- The client will arrange site access for 360 Environmental personnel.
- Further assessment to delineate contamination (if found), remedial planning and the preparation of a Remediation Action Plan (if required) will be performed as additional work items in accordance with our standard rates, attached or otherwise agreed.
- Although we will undertake a dial-before-you-dig survey and take all possible care to avoid services, no liability will be accepted should buried services be intercepted at unknown locations.



- We have allowed for total drilling of 44m. Any drilling beyond this which may be required due to deeper than expected groundwater levels or any additional items not mentioned in this proposal will be undertaken according to our current standard rates, attached.

We trust this meets your requirements at this time. Should you have any questions or require further action please do not hesitate to contact Marija Jukic or the undersigned on (08) 9321 0420. We look forward to hearing from you soon.

For and on behalf of

360 Environmental Pty Ltd

Phoebe Moore

*Enc: Water Corporation Fee Schedule – Contamination Survey and Remediation Works*