



environmental management consultants

Our Ref: 336 - AB

16 October 2007

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

Dear Ms Faskel

Southern Seawater Desalination Plant

Proposal for Variation 1 on Contract AG-05-12139

1. Introduction and Objectives

360 Environmental Pty Ltd is pleased to provide this proposal for a variation to the work being performed under the Contract AG-05-12139. The proposed variation would include a baseline contamination assessment of the northern portion of Lot 8, Taranto Road, Binningup, prior to its development as part of the Southern Seawater Desalination Plant.

We understand that the eastern half of the site is currently an active limestone quarry. Quarrying is not 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; however, fuel storage and refuelling infrastructure, which are frequently associated with quarries, have been listed as potentially contaminating.

2. Scope of Work

The following scope of work is nominated:

- Stage 1: Preliminary Site Investigation (PSI) – a desktop site-wide site history study.

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- 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 northern section of Lot 8 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

In line with the methodology undertaken for the contamination assessment on the adjoining land at Lots 32 and 33 Taranto Road, the primary objective of this assessment is to provide information on the eastern portion of the site associated with former and current quarrying activities. 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 eight soil boreholes, installation of five groundwater wells and one round of monitoring at the five wells. The soil and groundwater locations will be advanced in strategic locations based on the findings of the PSI (assumed to be around the quarry 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 (eight) 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 eight metres below ground level (mbgl). Therefore in accordance with industry best practice, we have allowed for the advancement of the four groundwater wells to a depth of 11 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.¹

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 fuel storage and refuelling infrastructure as detailed below:

- Metals (aluminium, arsenic, cadmium, copper, cobalt, chromium, lead, mercury, zinc, nickel);
- Total petroleum hydrocarbons (TPH);
- Benzene, toluene, ethylbenzene, xylenes (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAHs); and
- Phenols;

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 included in a report to be compiled for the contamination assessment undertaken at Lots 32 and 33. 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



Table 1 – Summary of Cost Breakdown

Commercial
in Confidence

Work would be undertaken in accordance with the Water Corporation's *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 61m. 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 Phoebe Moore or the undersigned on (08) 9321 0420. We look forward to hearing from you soon.

For and on behalf of

360 Environmental Pty Ltd

Marija Jukic

Enc: Water Corporation Fee Schedule – Contamination Survey – Lot 8 Taranto Road