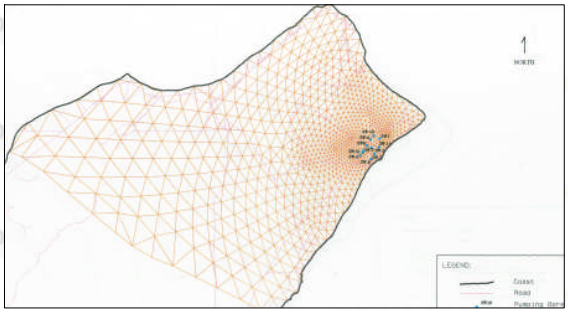
HydroSolutions Pty Ltd

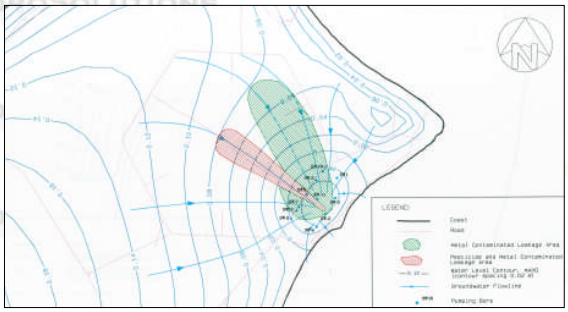
Hydrogeological & Environmental Consultants

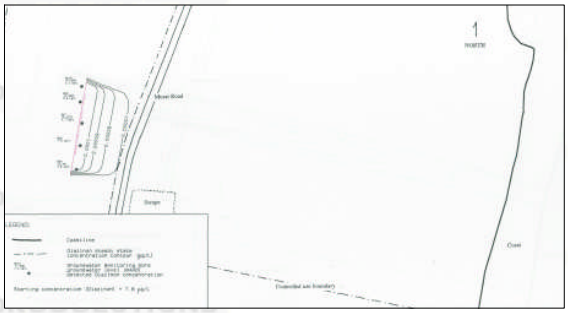
PROJECTS

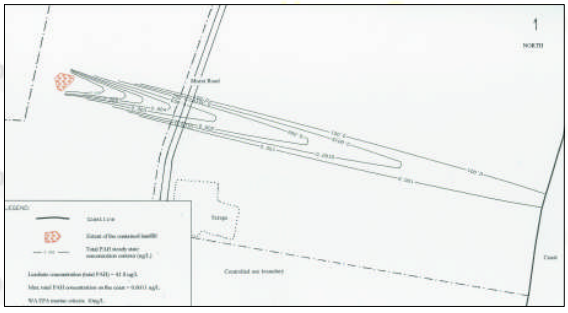
RISK ASSESSMENT

Risk Assessment 6









DEPARTMENT OF DEFENCE
Contaminated Groundwater Risk Assessment
Naval Communication Station Harold E. Holt,
Northwest Cape, Western Australia

A groundwater risk assessment was undertaken to assess the potential impact of soil & groundwater contamination from site operations & remedial works on groundwater ecology & marine water quality. Of particular concern is the potential consequences for the subterranean stygofauna within brackish & saline groundwater.

The nature, concentration & causes of groundwater contamination were identified, & a screening level assessment identified potential contaminants of concern, including hydrocarbons, PAHs Ocs, and heavy metals. Available ecotoxicological data for fauna similar to stygofauna was researched.

A finite element groundwater model was constructed for each base area, and an assessment of mobility, fate & transport of contaminants was undertaken. It was concluded that in all cases groundwater contamination was localised, & that natural attenuation over the migration pathway to the coast was estimated to reduce contaminant concentrations to acceptable levels within marine water guidelines.

The remedial strategy for intractable hydrocarbon & other contaminants included disposal to a newly constructed Class 4 landfill. The risks from a catastrophic failure of the landfill liner were assessed; available natural attenuation was likely to reduce groundwater contaminant concentrations to acceptable levels.

Available conceptual models for stygofauna distribution indicated their probable absence from groundwater interflow areas within the base vicinity. No instances of the fauna within the base area had been recorded, while their presence may suggest a degree of acclimatisation. Any potential loss of habitat was also considered; the base area comprised less than 2% of the area of the Northwest Cape, while identified groundwater contamination was localised, & hence any possible loss of habitat due to the contamination would be minimal.

Recommendations were made for on-going monitoring & re-evaluation of the risk assessment in light of future data.

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