Nuclear-1 EIA

Stakeholder Workshop

St. Francis Bay 25 May 2010

THYSPUNT

GEOHYDROLOGY

PETER ROSEWARNE: SRK CONSULTING

Credentials

- 35 years of experience-supply, nuclear, mining, waste, subsurface contamination
- Developed St. Francis wellfields
- Local work at Coega
- TMG Aquifer expert
- EIA specialist studies, eg PBMR

Project Team

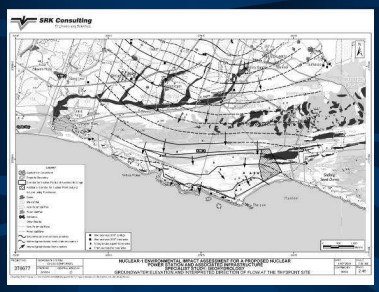
- SRK Consulting SA
- SRK Consulting UK
- Council for Geoscience
- Institute for Groundwater Studies: UOFS
- Freshwater Consultants
- CSIR

Investigation Approach

- Data review
- Site work – hydrocensus; borehole siting; drilling; testing (approx 6 months spent on site, 2.5 years in total, ongoing)
- Data analysis
- Numerical flow modelling
- Reporting
- Ongoing monitoring

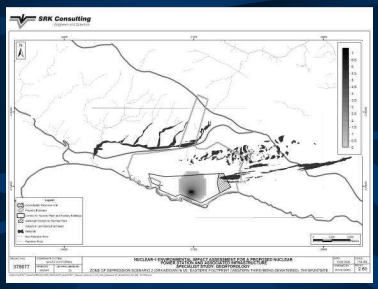
Site Investigation

- All bhs/springs within 5 km visited
- 38 exploration boreholes drilled (plus 78 geotech bhs)
- 19 Pumping tests carried out
- Packer tests
- Tracer test
- Water sample analyses
- Monitoring (13 data loggers)



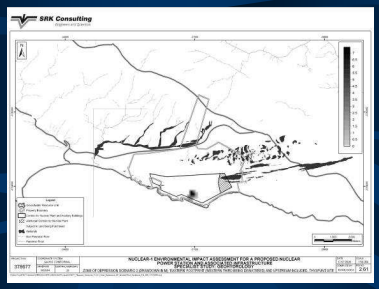
THYSPUNT

GROUNDWATER LEVEL CONTOURS



THYSPUNT

ZONE OF DRAWDOWN FROM DEWATERING: NO MITIGATION



THYSPUNT

ZONE OF DRAWDOWN FROM DEWATERING: WITH MITIGATION

Key specialist study findings

- There are 3 aquifers present
- There is extensive groundwater use in Oyster & St. Francis Bay
- Groundwater flow is to the south and southeast - site is at end of the flow path
- There are ecologically important wetlands on the site

Key specialist study findings

- Aquifers/wetlands are intimately linked
- Groundwater levels show minimal fluctuations with time/rainfall
- Downward trend since monitoring started
- Construction and operation of Nuclear-1 will require dewatering

Key specialist study findings

- Drawdown/contamination will be contained to the site and 1 km of Nuclear-1 with foundation dewatering
- Drawdown/contamination will be contained to the immediate Nuclear-1 surrounds with groundwater control measures

Mitigating measures

- Site system is naturally “buffered” by high porosity sediments; overflow into wetlands; drainage by cobble layer
- Ongoing monitoring being carried out to further confirm groundwater/wetlands interactions
- Further numerical flow modelling will be done (fine-tuning – basic findings unlikely to change)

Mitigating measures

- Freshwater supply will be from desalination of seawater
- Construction water could be sourced from dewatering
- Cut-off barriers to contain dewatering
- Artificial recharge to maintain coastal seeps/springs
- Further design work before construction

THANK YOU