Document for Discussion

Possible Approach to Investigation of 'Deep Groundwater' Resource on the Island of Jersey

1. Investigate Geological Credibility

a) Using a recognised geologist with local knowledge commission a synthesis of the 'Geology of Jersey and St Malo Penninsula' to present an assessment of the geological similarities and differences of the bedrock formations and the history of sea level changes since the 'Ice Age'. This should be a documented desk study with a bibliography.

b) In discussion with the 'Departmental Authorities of Brittany' establish a view of their understanding of the groundwater of the geological zones which may be similar in origin and character to Jersey.

2. Investigate Groundwater Chemistry from Existing Information

EPSC hold 12 years records of chemical analyses from Jersey groundwater. This is at least nitrates but may also include the 'major' ions (Ca, Na, Mg, Cl, SO_4, HCO_3).

The nature and extent of this data should be defined and tabulated against borehole location, depth and construction. If there appears to be samples from boreholes of a range of depth and location the data should be assessed statistically to establish whether it represents a single body of recent water or whether there are a number of groundwater types present.

3. Field Investigation of Groundwater Chemistry

Select (agreed between E&PSC and Well Drillers) 2 groups of 6 to 8 wells representing shallow boreholes (30-40 m) and deeper high yielding boreholes for which the shallow aquifer has been sealed by casing. Collect water samples for chemical analyses from each (initially Nitrates and Major Ions). Should differences emerge more sophisticated analyses of isotopes and trace components may be justified.

4. Compile (or Update) Borehole Inventory of Jersey

Form a database using WDEA E&PSC data of location, depth, construction, and as much geology as is possible.

This could then be analysed in the context of the geological and hydrochemical studies to define a programme of test pumping and further drilling (if justified).

5. Summary

Steps 1 to 4 should be completed before any more substantial effort is made in drilling and test pumping. Should the data and analyses suggest that there is little scientifically substantiated support for deep groundwater the process should probably stop there. On the other hand should the view of a significant water resource other than the near surface shallow aquifer still be tenable, focussed further drilling and test pumping investigation could be specified.

Stuart Sutton

08/10/04