



NSW GOVERNMENT  
Department of Planning

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Mr Graeme Head  
Chief Executive  
Sydney Catchment Authority  
PO Box 323  
PENRITH NSW 2751

Our ref: 06\_0331  
Your ref: D2006/09694

Dear Mr Head

**Kangaloon (Upper Nepean) Groundwater Borefields Project (Application: 06\_0331) – Director-General's Requirements**

I refer to your request for Director-General's requirements for the abovementioned proposal.

The Director-General's Environmental Assessment Requirements are attached, pursuant to section 75F(2) of the *Environmental Planning and Assessment Act 1979*. It should be noted that the Director-General's requirements have been prepared based on the information provided to date. Under section 75F(3) of the Act, the Director-General may alter or supplement these requirements if necessary and in light of any additional information that may be provided prior to the Proponent seeking approval for the project.

The Environmental Assessment should be prepared using valid and accepted technical and scientific tools and methodologies, focussing on key environmental impacts and robust mitigation measures to address potential impacts from the project. You should also ensure that you consult with the Department prior to submission of an Environmental Assessment to determine:

- fees applicable to the application;
- consultation and public exhibition arrangements that will apply; and
- number and format (hard-copy and/or CD-ROM) of the Environmental Assessments that will be required.

Once you have lodged the Environmental Assessment, the Department will consult with relevant authorities to determine the adequacy of the Environmental Assessment. Following this review period the Environmental Assessment will be made publicly available for a minimum period of 30 days.

You should keep the contact officer for this project, Scott Jeffries ((02) 9228 6426 or [scott.jeffries@planning.nsw.gov.au](mailto:scott.jeffries@planning.nsw.gov.au)), up to date with the progress of preparation of the Environmental Assessment, and seek clarification of any issues that may be unclear or may arise during this process.

Yours sincerely

Sam Haddad  
Director-General 21.1.2007

## KANGALOON (UPPER NEPEAN) GROUNDWATER BOREFIELDS PROJECT

### DIRECTOR-GENERAL'S REQUIREMENTS UNDER PART 3A OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

<b>Project</b>	<p>Kangaloon (Upper Nepean) Groundwater Borefields project, comprising the development of a groundwater borefield in the Southern Highlands to provide water supply during periods of drought. The project includes all associated or ancillary works, activities, uses, structures or facilities for the purposes of each borefields project, including (but not limited to) works, activities, uses, structures or facilities for the following:</p> <ol style="list-style-type: none"> <li>a) installation of groundwater bores and groundwater extraction systems;</li> <li>b) underground and surface pipes, pumps and associated infrastructure for the transfer of extracted groundwater;</li> <li>c) discharge of extracted groundwater into watercourses in the Upper Nepean River System;</li> <li>d) construction of electricity and utility service infrastructure;</li> <li>e) installation of monitoring bores and gauging stations.</li> </ol>
<b>Site</b>	Land near Kangaloon, in the Southern Highlands, and within the Upper Nepean catchment area.
<b>Proponent</b>	Sydney Catchment Authority
<b>Date of Issue</b>	21 January 2007
<b>Date of Expiration</b>	21 January 2009
<b>General Requirements</b>	<p>The Environmental Assessment must be prepared to a high technical and scientific standard and must include:</p> <ul style="list-style-type: none"> <li>• an executive summary;</li> <li>• a description of the proposal, including construction, operation, and staging;</li> <li>• an assessment of the environmental impacts of the project, with particular focus on the key assessment requirements specified below;</li> <li>• justification for undertaking the project with consideration of the benefits and impacts of the proposal;</li> <li>• a draft Statement of Commitments detailing measures for environmental mitigation, management and monitoring for the project; and</li> <li>• certification by the author of the Environment Assessment that the information contained in the Assessment is neither false nor misleading.</li> </ul>
<b>Key Assessment Requirements</b>	<p>The Environmental Assessment must include assessment of the following key issues:</p> <ul style="list-style-type: none"> <li>• <b>Strategic Planning and Project Justification</b> – the Environmental Assessment must clearly outline the strategic context of the project, having regard to the 2006 Metropolitan Water Plan. The Environmental Assessment must also outline the context of the project within the suite of other borefields projects under consideration by the Proponent.</li> <li>• <b>Surface and Groundwater Hydrology</b> – the Environmental Assessment must include a comprehensive assessment of the impacts of the project on surface and groundwater hydrology, including consideration of the effects of drought intensity, depletion and recovery cycles on these impacts. The Environmental Assessment must include an assessment that address the following specific issues with respect to surface and groundwater quality, quantity and flow regimes: <ul style="list-style-type: none"> <li>◦ details of the groundwater and surface systems to be impacted by the project, whether directly or indirectly, and how these systems are connected, interact and behave, including comment on the assumptions and uncertainties inherent in characterising these systems. The Environmental Assessment must provide details of relevant geological characteristics, including any inherent assumptions and uncertainties, and how these characteristics may affect the project and influence the project's environmental impacts;</li> <li>◦ assessment of the impacts of groundwater extraction on groundwater and surface water systems, including their connections, interactions and behaviours, as a result of the project, including consideration of water quality, quantity and flow characteristics;</li> <li>◦ derivation of sustainable yield information for the affected groundwater systems,</li> </ul> </li> </ul>

including comment on the assumptions and uncertainties inherent in these calculations, and making reference to predicted depletion and recovery cycles, rainfall, and drought intensity. The Environmental Assessment must also include a general water balance for the project, noting any expected losses through evaporation or infiltration, particularly as a result of run-of-river transfers;

- details of water quantity and quality management after extraction, including general details of pumping and pipeline requirements, details of any treatment that is proposed to be applied to groundwater before discharge to the environment, and consideration of the impacts of run-of-river transfers in terms of flow rates and water quality. The Environmental Assessment must include a detailed consideration of potential alternatives to run-of-river transfers, and justify the selection of this transfer method having regard to the relative environmental impacts of potential transfer options. The Environmental Assessment must include consideration of impacts during wet and dry weather conditions, and under flow regimes characteristic of drought and non-drought situations;
- details of how run-of-river transfers will be conducted, monitored and managed to mimic natural flow variations where reasonable and feasible, and to minimise impacts, particularly on aquatic ecology and potential erosion;
- details of how the project will be designed and operated to meet water quality criteria detailed in *Australian and New Zealand Water Quality Guidelines 2000* (ANZECC, 2000) for run-of-river transfers;
- consideration of the project against the relevant findings and recommendations of *Independent Inquiry into the Hawkesbury-Nepean River System: Final Report* (HRC, 1998) and *Independent Inquiry into the Hawkesbury-Nepean River System: Supplementary Report* (HRC, 1999);
- assessment of potential impacts on other groundwater and surface water users, including details of how existing water access rights will be protected, including with respect to both quantity and quality of water;
- details of how bores will be managed to prevent contamination of groundwater;
- presentation of framework monitoring program(s) and management plan(s) with respect to impacts on ecology associated with the project. The monitoring and management frameworks must reflect the interconnect of groundwater and surface water systems, and reflect an approach encompassing these systems;
- **Ecological Impacts** – the Environmental Assessment must include a comprehensive ecological impact assessment, including in relation to both terrestrial and aquatic ecosystems, in accordance with the DEC's *Guidelines for Threatened Species Assessment* and DPI's *Fish Habitat Protection Plan No. 1: General and Fish Habitat Protection Plan No. 3 – Hawkesbury-Nepean River System*. The Assessment must consider impacts on ecological values directly attributable to the project, as well as indirect impacts that may be associated with changes in water quality conditions and flow characteristics. The assessment of impacts on ecology must specifically address the following:
  - clear details of how the outcomes and recommendations outlined in *Baseline Groundwater Dependant Ecosystem Evaluation Study – Upper Nepean Groundwater Pilot Studies – Final Report* (SMEC, 2006) have been addressed as part of the project;
  - specific consideration of impacts on the Southern Highlands Shale Woodland Endangered Ecological Community and the Montane Peatlands and Swamps Endangered Ecological Community;
  - specific consideration of impacts on the Giant Dragonfly (*Petalura gigantea*), *Prasophyllum uroglossum*, *Gentiana wingecarribiensis*, *Lysimachia vulgaris*, the Powerful Owl (*Ninox strenua*), Sooty Owl (*Tyto tenebricosa*), Masked Owl (*Tyto novaehollandiae*), Koala (*Phascolartos cinereus*), Spotted-tail Quoll (*Dasyurus maculatus*), Long-nosed Potoroo (*Potorous tridactylus*), *Pultenaea aristata*, *Epacris purpurascens purpurascens*, *Leucopogon exolasius* and *Persoonia glauscens*. The assessment should also consider high priority fauna species identified in *Fauna of the Metropolitan, O'Hares Creek and Woronora Special Areas* (NPWS/SCA);
  - specific consideration of impacts on groundwater dependent ecosystems, including Stockyard Swamp, Butlers Swamp and terrestrial vegetation with deep roots. Assessment of impacts on groundwater dependent ecosystems should consider the approach detailed in *A Risk Based Approach to Groundwater Management for Terrestrial Groundwater Dependent Ecosystems* (Smith et al,

	<p>undated);</p> <ul style="list-style-type: none"> <li>◦ specific consideration of impacts on stygofauna and their habitats;</li> <li>◦ specific consideration of impacts on aquatic ecology, particularly through changes in groundwater-surface water interactions or changes in the quality and quantity of water associated with run-of-river transfers. In assessing impacts on aquatic ecology, consideration must be given to both aquatic and riparian species that may be directly or indirectly affected by the project. The Environmental Assessment must clearly detail measures to be applied to address impacts of sudden or unnatural changes in flow regimes on aquatic ecology and to avoid additional barriers to fish passage are not</li> <li>◦ presentation of framework monitoring program(s) and management plan(s) with respect to impacts on ecology associated with the project;</li> </ul> <ul style="list-style-type: none"> <li>• <b>Land Use Planning and Resource Conflicts</b> – the Environmental Assessment must include an assessment of the potential impacts of the project, whether direct or indirect, on surrounding land uses and natural resources, including mineral resources and forestry reserves. Where a potential conflict is identified, the Environmental Assessment must present measures to be applied to minimise and manage the conflict;</li> <li>• <b>Matter of National Environmental Significance</b> – the Environmental Assessment must consider and address the impacts of the project, if any, on matters of National Environmental Significance under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>;</li> <li>• <b>General Environmental Risk Analysis</b> – notwithstanding the above key assessment requirements, the Environmental Assessment must include an environmental risk analysis to identify potential environmental impacts associated with the project (construction and operation), proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of the additional key environmental impact(s) must be included in the Environmental Assessment.</li> </ul>
<b>Consultation Requirements</b>	<p>You must undertake an appropriate and justified level of consultation with the following parties during the preparation of the Environmental Assessment:</p> <ul style="list-style-type: none"> <li>• NSW Department of Environment and Conservation;</li> <li>• NSW Department of Primary Industries;</li> <li>• NSW Department of Natural Resources;</li> <li>• potentially-affected groundwater users; and</li> <li>• the local council and local community.</li> </ul> <p>In addition, appropriate consultation with the local community should be undertaken. The Environmental Assessment must clearly indicate issues raised by stakeholders during consultation, and how those matters have been addressed in the Environmental Assessment.</p>
<b>Deemed refusal period</b>	Not applicable.