

15 December 2010

Mining and Industry Projects
Department of Planning
GPO Box 39
Sydney NSW 2001

Dear Sir/Madam,

Camden Gas Project – Northern Expansion (Stage 3)
Application number (09 0048)

I refer to the recent exhibition of the Environmental Assessment for the subject proposal.

You are advised that Council considered the matter at its meeting held on 14 December 2010 where it resolved to support of the project subject to the following matters being taken into consideration:

1. That further consideration be given to noise mitigation strategies during the construction phase; and
2. that Council be included in any discussions held with land owners in the determination of the final well locations.

Should you require any further information on this matter please do not hesitate to contact me on 4654 7802.

Yours faithfully

Chris Lalor
Team leader Land Use and Planning



20 December 2010

Mr C Preshaw
Major Project Assessment - Mining
New South Wales Department of Planning
GPO Box 39
SYDNEY NSW 2001

Dear Mr Preshaw

Environmental Assessment for Stage 3 of the Camden Gas Project

Thank you for providing Council with the opportunity to comment on the Environmental Assessment (EA) accompanying Stage 3 of the Camden Gas Project (Application No. MP 09_0150) prepared by AGL Limited.

The extension of the deadline until 21 December 2010 by the Department of Planning (DoP) has enabled Council to consider a submission prepared by officers on the EA at its meeting on 14 December 2010. In endorsing the submission at this meeting, Council also resolved that issues associated with the storage and disposal of wastewater at well sites and the storage of chemicals utilised for the hydrological fracturing process should be addressed. The formal submission from Council on the EA (incorporating these amendments) is attached for review and consideration by the DoP.

Council's previous submissions on the draft amended EA supported the removal of the Gas Plant from the project application. However, the attached submission (on the EA placed on public exhibition), concludes that the proponent has not adequately responded to a range of matters raised in previous submissions apart from clarification regarding issues associated with the Rosalind Park Gas Plant.

Council is seriously concerned and disappointed that the EA placed on public exhibition has failed to address the majority of issues outlined in previous submissions from Council and relevant State Government Agencies. Therefore, Council strongly objects to the EA and the project application based on the following considerations:

- The EA is not considered to have complied with the Director General's Requirements for the project regarding the 'assessment of the potential impacts of the project on surface and groundwater resources (including salinity), the assessment of cumulative impacts on air and water quality and impacts on biodiversity';

- Council has concerns over the capacity (resources) of the Department to adequately monitor the preparation and implementation of the wide variety of subsidiary plans required to be prepared by AGL according to the EA, following project approval;
- The EA is not considered to have adequately assessed potential impacts associated with the proposed development on surface and groundwaters, and biodiversity in particular; and
- The outcomes of specialist advice that Council commissioned to examine impacts on water resources confirmed the need for additional comprehensive assessment of impacts associated with the project (outlined in previous submissions on the draft EA from Council and the New South Wales Office of Water).

Accordingly, Council requests that the EA be amended to address all identified deficiencies in the attached and previous submissions as well as submissions from relevant State Government Agencies prior to any consideration of project approval by the DoP. In addition, Council also requests that a Planning Assessment Commission be established to investigate the project given the range and significance of outstanding issues.

Council appreciates the opportunity to provide input into the preparation and finalisation of the EA and looks forward to ongoing consultation with the DoP. If you require any further information please contact Council's Manager Environmental Planning, Phil Jemison, on (02) 4645 4214.

Yours sincerely



Jeff Lawrence
Director Planning and Environment

Submission on the Environmental Assessment for Stage 3 of the Camden Gas Project

Council's submissions on these documents identified a range of issues in regard to the assessment of impacts associated with Stage 3 of the Camden Gas Project (the project) for consideration by the New South Wales Department of Planning (the DoP) during its assessment on the EA and its suitability for public exhibition.

In light of these considerations and following a detailed review of the EA, Council would like to advise the DoP of its strong objection to the project application. The following submission outlines Council's views and concerns regarding the EA. The submission was endorsed by Council at its meeting on 14 December 2010.

A. BACKGROUND INFORMATION

1) Scope of submission

The submission is largely restricted to aspects of the Environmental Assessment (EA) that relate to the section of the project area located within the Campbelltown Local Government Area (LGA). However, it is noted that a proposed well site (W11) is located on the boundary of the Campbelltown and adjoining Camden LGA's and consequently its final site (following the completion of the intended site design process), may be situated in either or both of these LGA's.

Council previously provided a submission on the original draft EA (dated 1 April 2010) accompanying the project application and subsequently on an amended draft EA (dated 8 October 2010). The submission on the draft amended EA requested that the DoP note that a detailed review of the EA would be undertaken during the public exhibition period, which may identify additional issues.

Within this context, this submission provides comments in relation to the EA as well as requested further amendments to the document and action by the DoP. In addition, this submission also refers to specialist advice received by Council in relation to the adequacy of the groundwater assessment component of the EA.

This submission on the EA that has been placed on public exhibition and comprises the following structure:

- Summary of key aspects of Council's previous submission on the draft amended EA and the review process of the EA placed on public exhibition;
- Considered compliance of the EA (placed on public exhibition) with the Director General's Requirements for the project;
- Requested further amendments to the EA and action by the DoP concerning issues raised in the previous submissions;
- Requested further amendment to the EA and action by the DoP in relation to additional issues identified following the detailed review of the document; by Council officers; and
- Summary of the key outcomes of the review and requested action by the DoP in relation to these outcomes.

2) Council's previous submissions on the draft EA

Council's submission on the original draft EA (dated 31 March 2010) outlined issues not considered to have been adequately addressed and also requested amendments to the identified prioritisation of issues to be addressed by AGL. The submission objected to the application on a number of grounds including the proposed location of a Gas Processing Plant in the Scenic Hills district of the Campbelltown LGA and considered deficiencies in the assessment of biodiversity and water related impacts associated with the project.

Council's subsequent submission on the draft amended EA (dated 8 October 2010) was restricted to comments in regard to the adequacy of the response by AGL (the proponent) to its original submission, due to the tight timeframe imposed. The submission also referred to comments provided on the original draft EA by relevant Government Departments including the New South Wales Office of Water (NOW) and the Department of Environment, Climate Change and Water (DECCW) in their capacity as regulatory authorities for water and biodiversity related issues respectively. A summary of the requested amendments by Council in previous submissions and associated State Government Agency comments in regard to identified major issues associated with the project is presented in Table 1.

The submission on the draft amended EA acknowledged that the removal of the proposed Gas Processing Plant in the Scenic Hills of the Campbelltown LGA had adequately addressed a number of comments contained in Council's original submission. The submission also supported the alternative proposal to construct a supply pipeline to link Stage 3 of the CGP with the existing network (Stage 2) associated with the Rosalind Park Gas Processing Plant (RPGP) in principle. However, the submission requested a range of further amendments to the draft EA prior to its public exhibition. These included a request for:

- The inclusion of any intended expansion work at the RPGP;
- The incorporation of sub-plans that specifically relate to Stage 3 of the project; and
- A more definitive assessment of the potential impacts of all components of the project on the condition of surface and groundwaters as well as biodiversity.

3) The review of the EA placed on public exhibition

(i) The review process

The timeframe imposed by the DoP for the receipt of comments on the EA has impacted on the ability of Council to undertake a comprehensive review of the EA. Notwithstanding, the EA placed on public exhibition has been reviewed in terms of the adequacy of response to Council's previous submissions. In addition, specialist advice has been sought and provided from a suitably qualified consultant in regard to the adequacy of the level of detail and extent of assessment of groundwater related impacts associated with the project application. This is further discussed in a subsequent section of this submission

The DoP declined a request from officers for the supply of the submissions from relevant State Government agencies as well as details of its correspondence with these Agencies. However, despite this constraint, the review of the EA included previous comments provided by NOW and the DECCW as well as the comments provided by the DoP based on its review of the submissions received.

- (ii) *Identified amendments to the EA placed on exhibition in response to comments on the draft amended EA*

The provision of details of DoP's review of comments received on the draft amended EA would have facilitated a more efficient review of the complex document. However, the officer review has identified that the inclusion of a statement, *"that the Rosalind Park Plant has sufficient capacity for the treatment of the extracted gas to be received as part of Stage 3 of the Camden Gas project without any upgrading"*, is the only amendment that has occurred to the document (i.e. the project) in response to Council's previous submissions. The review did not identify any amendments to the document in response to submissions on the original draft EA provided by State Government Agencies.

4) Level of Council support for the EA

The involvement of Council in the preparation of the draft EA by both AGL and the DoP is appreciated. However, previous Council submissions on the draft EA have identified significant deficiencies in regard to the level of detail and adequacy of assessment and safeguards.

Consequently, Council is seriously concerned and disappointed that the EA placed on public exhibition has failed to address the majority of issues outlined in previous submissions from Council and relevant State Government agencies. Therefore Council strongly objects to the EA and the project application based on the following considerations, as expressed in previous submissions:

- The EA is not considered to have complied with the Director General's Requirements for the project regarding the 'assessment of the potential impacts of the project on surface and groundwater resources (including salinity), the assessment of cumulative impacts on air and water quality and impacts on biodiversity;
- Council has concerns over the ability of the Department to adequately monitor the preparation and implementation of the wide variety of subsidiary plans required to be prepared by the AGL according to the EA following project approval; and
- The EA is not considered to have adequately assessed potential impacts associated with the proposed development. The inclusion of statements within the document to the effect that detailed assessment of certain potential environmental impacts is dependent on factors such as the preparation of final layouts for well locations and further detailed assessment for the location of the gas gathering pipelines, creates unacceptable uncertainty.

In addition, Council objects to the project application based on the recently received specialist advice, whose key recommendations confirmed the need for an additional comprehensive assessment on water resources to be undertaken.

B. CONSIDERED ADEQUACY OF THE EA IN ADDRESSING THE DG REQUIREMENTS

The following discussions refers to the items of the DG Requirements in which previous Council submissions have expressed the view that the EA has not adequately addressed

- (i) *An assessment of the potential impacts of the project on the quantity and quality (including salinity) of surface and groundwater resources*

Council's previous submissions have expressed the view that the draft EA does not adequately comply with this DG Requirement. It is noted that the DoP, (in its submission on the draft amended EA), reiterated the above DG Requirements item by requesting that the draft EA be further amended '*to include an assessment of the potential impacts of the project on surface and groundwater sources (including salinity)*'. It is also noted (as discussed in subsequent sections of this submission) that the NOW (in its capacity as the regulatory authority in regard to both ground and surface waters) included the following statement in its submission to the original draft EA:

"As the EA fails the test of adequacy with regard to the NOW's statutory regulatory role, the proposal should not be placed on public exhibition until such time as this deficiency is addressed".

In relation to this matter, the specialist consultant advice received by Council in confirming the above advice from the NOW concluded there was insufficient detail in the EA to assess compliance with the above DG Requirement item. Accordingly, in response to the above comments from Government Agencies, Council requests the amendment of the EA to comply with this particular project DG Requirement item.

- (ii) *An assessment of the potential impacts of all stages of the project, including any cumulative impacts, taking into consideration any relevant guidelines, policies, plans and statutory provisions.*

Council's initial submission on the original draft EA (dated 31 March 2010) expressed the view that the above DG Requirement applied to the assessment of cumulative impacts associated with the project in regard to both air and water quality related impacts. Council's subsequent on the draft amended EA advised the removal of the Gas Plant and subsequent clarification provided by AGL regarding the alternative proposal to utilise the RPGP is considered to have adequately addressed previous comments in regard to the assessment of cumulative air quality impacts associated with the project

However, the EA is not considered however to have adequately assessed the cumulative water and biodiversity related impacts associated with the various components of the project as discussed in more detail in subsequent sections of this submission. The EA is also not considered to have adequately taken into consideration relevant statutory requirements (e.g. the *Water Management Act 2000*) and relevant guidelines (e.g. the Guidelines for Threatened Species Assessment Guidelines produced by the DECCW in July 2005).

- (iii) *An accurate estimate of any vegetation clearing*

It is noted that the DoP (in its submission on the original draft EA) reiterated the above DG Requirements item by requesting that '*the draft EA be revised to provide details on the total estimate of vegetation clearing, not just the quantity of Cumberland Plain Woodland*'. It is also recognised that the original draft EA has been amended to include more detail regarding this matter. However, the EA (as exhibited) is not considered to adequately comply with the above item by providing a sufficiently accurate estimate of vegetation clearing to be undertaken as part of the project within recognised operational constraints, (e.g. the possible need for the adjustment of nominated well sites to maximise the extraction yield of coal seam gas).

Requested action by the DoP in relation to the compliance of the EA with the DG Requirements

Section 75H (2) of the *Environmental Planning and Assessment Act 1979* is noted to state the following:

'If the Director General considers that the environmental assessment does not adequately address the environmental assessment requirements (the DG Requirements), the Director General may require the proponent to submit a revised environmental assessment to address the matters notified to the proponent'.

Therefore, in light of the above discussion regarding inconsistencies with certain DG Requirement items, Council considers the DoP has a statutory obligation to require AGL to submit a revised EA that adequately complies with all of its requirements for the project. Council requests that the Department require the amendment of the EA to comply with all the DG Requirements and considered legislative obligations prior to the consideration of project determination. In addition, Council also considers that the failure to amend the EA and the fact that there are significant outstanding issues warrants the establishment of a Planning Assessment Commission (PAC) to investigate the project.

C. REQUESTED FURTHER ACTION IN REGARD TO ISSUES RAISED IN PREVIOUS COUNCIL SUBMISSIONS

Council's submission on the draft amended EA listed that the following aspects of the project had been adequately or partially addressed by AGL:

- Issues associated with the proposed location of the Gas Processing Plant in the Scenic Hills district of the Campbelltown LGA;
- The assessment of air quality related impacts within a regional context;
- The inclusion of more prescriptive environmental safeguards; and
- The assessment of direct and indirect impacts on biodiversity associated with the installation and operation of the wells and gas gathering pipelines.

However, the following discussion outlines requested further action by the DoP in relation to issues raised in previous submissions, within the context of the considered inadequate response by AGL in terms of amendment of the draft EA, prior to its public exhibition.

1) General comments in regard to the EA and project layout

(i) The potential for modification of the layout in the EA following project approval

Council's previous submissions have requested that the location of the gas wells and pathways of the gas gathering pipelines be clearly defined in the EA rather than alternate approval mechanisms such as a requirement for AGL to obtain a 'modification to consent' approval from the DoP. Council's subsequent submission on the draft EA stated that the inclusion of A3 maps was not considered an adequate response due to the maps only indicating the location of the assessment 'envelope' rather than the sites.

Consequently, Council requests that the DoP require AGL to undertake site design studies that, at a minimum, would enable the intended location range within individual assessment envelopes associated with each gas well and pipeline associated with the project prior to consideration of project determination. Council also requests that the mapping and relevant sections of the EA be updated to incorporate these design plans.

(ii) Reliance of intended environmental safeguards on subsidiary subplans

Council's previous submissions on the preliminary Scoping Report and the original draft EA advised expressed its preferred view that all referenced sub plans be provided to the DoP prior to project determination in a format that can be readily implemented. Council's subsequent submission on the draft EA did not support the justification provided by AGL that this amendment was not necessary due to the existence of subplans in regard to Stages 1 and 2 of the Camden Gas Project that would be updated to incorporate Stage 3 of the project. This viewpoint was based on the considered generic nature of the environmental safeguards in these subplans as well as the continuing reliance of environmental safeguards in the EA on subplans to either be prepared or updated following project approval.

Subsequent sections of this submission highlighted significant deficiencies in the assessment of impacts on ground and surface waters verified by comments provided by Government Agencies and the specialist advice obtained by Council in regard to the groundwater component of the EA. In this regard, it is noted with strong concern that part of the justification provided by AGL that no amendment was necessary in relation to the assessment of impacts on water resources (in response to previous submissions) due to the existence of a Soil and Water Management Sub Plan. Consequently, Council requests that the DoP require the preparation of all sub-plans, and in particular, a detailed Soil and Water Management Plan that are specifically related to Stage 3 of the CGP prior to project approval.

(iii) Issues associated with the alternate proposal to utilise the existing Rosalind Park Processing Plant

As outlined above, the removal of the Gas Plant from the project has adequately addressed a number of comments contained in Council's previous submissions. However, an AGL representative advised at a meeting of the Camden Gas Community Consultation Committee (held on 15 July 2010) that the utilisation of the RPGP was identified as being viable on the basis that 'in-field' processing (within Stage 3) could be conducted. Officers understand (based on subsequent advice from AGL) that in-field processing would be required in the northern section of Stage 3 (e.g in the vicinity of Denham Court), for the purposes of enhancing the pressure of the gas within the pipeline to compensate for the increase in distance that the gas has to travel before it is processed.

The AGL officer has further advised that this matter is not included in the current project application as the precise need for 'in-field processing' is dependent on the pressure of the gas extracted from individual well sites that would be the subject of a separate Part 3A application to the DoP.

The operational constraints in providing precise details regarding 'in-field processing' at this stage of the application is recognised. However, Council officers consider 'in-field processing' to be a component of the amended project application based on the interpretation of the above advice that such processing is necessary to enable extracted gas from the northern wells to be refined at the RPGP into a form that is suitable for use by AGL customers. Consequently, Council requests that the DoP require the amendment of the EA prior to project determination to include the following:

- The nomination of the well sites within the project area where 'in-field processing' will be required;
- The description of construction and operational details associated with the 'in field' process; and

- The assessment of potential impacts associated with the 'in field' process on a site specific basis for each relevant well site and appropriate site specific environmental safeguards.

2) Comments in regard to specific aspects of the EA

- (i) *Assessment of impacts on surface waters associated with the extraction wells and gas gathering pipeline components of the project*

Council's previous submissions identified deficiencies in the assessment of impacts on surface waters associated with the construction and operation of well sites and the installation of the various supply pipelines.

In addition, the NOW, which has statutory responsibilities relating to both surface and groundwaters, is also noted to have identified deficiencies in regard to this section of the project in its submission (Item 5 in Table 1) that includes the following comment:

"As the EA fails the test of adequacy with regard to the NOW's statutory regulatory role, the proposal should not be placed on public exhibition until such time as this deficiency is addressed".

In addition, it is inferred that the DoP had similar views (to the NOW) regarding the deficiencies in the assessment of impacts associated with the project on water sources based on the following comment in its submission that is noted to be consistent with a DG Requirement item:

"The EA be amended to include an assessment of the potential impacts of the project on surface and groundwater sources (including salinity)".

Within this context, the following summarises the previous identified deficiencies in the EA in regard to the assessment of surface water related impacts associated with the two broad components of the project as well as requested further amendment to the EA and action by the DoP.

- *Impacts on waterways associated with the construction and operation of the well sites*

Potential impacts associated with activities conducted on the surface

Council's previous submissions have provided broad support of the intention by AGL to install safeguards to address potential impacts on surface waters such as the use of bunding and increasing the capacity of onsite settling ponds (for the storage of generated wastewater) to allow for direct rainfall. The submissions have also recognised that the generated wastewater (while saline) generally has a low level of contaminants and is disposed in accordance with DECCW regulations.

However, the submissions also requested that the EA be amended to include a site specific description and assessment of impacts associated with the construction and operation of well sites prior to its public exhibition. The DoP is therefore requested to note Council's strong concern and disappointment that these issues have not been addressed in the EA that has been placed on public exhibition. Accordingly, the following action by the DoP to address deficiencies (as outlined in previous submissions) in the assessment of impacts on

surface waters associated with the gas wells is requested prior to consideration of project approval:

- That the DoP require AGL to prepare a Site layout Plan outlining site specific potential environmental impact as a consequence of activities associated with both the construction of the wells (e.g. sediment runoff) and operational component (e.g. storage and disposal of wastewater) for each well site;
- Require the amendment of the EA to consider the potential for evaporation from the settling ponds and associated implications for surface water within a broader context; and
- That the DoP require AGL to update the Soil and Water Plan specifically applying to Stage 3 of the CGP that would provide an overarching document to the individual site plans.

Potential impacts on surface waters related to the coal extraction process

It is understood (based on a presentation on the fracking process provided by an AGL representative at a recent Camden Gas Community Consultation Committee) that chemicals are only stored on site during the construction component of each well to assist in the establishment of the hydrological fracture in the coal seam. However, it is also understood from this presentation that, depending on factors such as geological formations, that the drilling and fracking process can take in the vicinity of approximately four (4) to six (6) months.

It is noted that 5,000 litres of Hydrochloric Acid was reportedly spilled as part of coal seam gas extraction activities in Southern Queensland. Consequently, Council has concerns in regard to potential impacts associated with the storage and use of chemicals during this period. However, although the fact sheet on fracking (supplied by AGL) is noted to state that *'chemicals will be handled in accordance with all applicable federal and/or state environmental laws and regulations'*, there is considered to be an absence of any reference to this matter in the EA. Accordingly, Council would request the Department require the amendment of the EA to outline the intended volumes and types of chemicals, storage procedures and intended safeguards to prevent impacts on nearby surface waters. Council would further request that this matter be considered as part of the preparation of Site Layout Plans for each well site referred to above.

In addition, the recent specialist advice received by Council expressed the view that the EA should discuss the potential for gas migration via any wellbores as well as geological pathways. It is recognised that the geologic stratum in the project area is distinctly different to that of southern Queensland. However this specialist advice contends that the contamination of surface waters as a consequence of gas migration associated with extraction activity is a potential impact associated with the project. The DoP is therefore requested to require the EA to consider this potential impact in accordance with its project DG Requirements that the *'EA include a description of the project on the quantity and quality of surface and groundwaters'* and that the *'EA include a detailed assessment of any cumulative impacts'*.

- *Impacts on waterways associated with the installation of pipelines*

Council's previous submissions requested clarification in regard to the locationary principle in the draft EA that inferred gas gathering lines may be located within or adjacent to creeklines. The DoP is requested to note Council's disappointment that this clarification

has not occurred and accordingly require that the EA be amended in accordance with Council's previous submission prior to its finalisation.

The previous submission also requested that the DoP require AGL to consult with the NOW regarding appropriate crossing strategies and safeguards in response to statements in the draft EA that underboring techniques would not be used in creeks that are ephemeral in nature. The response by AGL (to this comment) indicates consultation has occurred. However, Council requests the DoP require the amendment of the EA to include details and outcomes of these discussions.

In addition, previous submissions have expressed Council's preferred view that underboring utilised wherever possible, regardless of the type of flow in watercourses crossed, in response to the intention of AGL to only under bore watercourses with permanent flow. The response by AGL (to this comment) that '*no significant impact on watercourses was expected as the majority of watercourses crossed are ephemeral in nature*' is not considered to have adequately addressed this previous comment. This viewpoint is based on previous expressed comments that the draft EA had not adequately assessed cumulative downstream impacts.

Accordingly, the DoP is requested to note Council's disappointment that its previous comment has not been addressed. The DoP is also requested to require that the EA be amended as follows, and in accordance with Council's previous submission:

- Require the amendment of the EA to specify the precise location of pipelines intended to be located within or adjacent to watercourses (both ephemeral and non-ephemeral) in accordance with comments from the DoP (in Item 1 of Table 1);
- Require the further amendment of the EA to provide a more definitive assessment of potential impacts on surface waters and environmental safeguards specifically related to Stage 3 of the Camden Gas project; and
- Require the updating of the Soil and Water Plan to provide an overarching management strategy to site environmental assessments intended to be prepared for each gas gathering pipeline following project approval. In accordance with previous comments, please note the preferred view of Council that the updating of the sub-plans and conducting of site specific environmental assessments occur prior to project approval.
- *Assessment of salinity related impacts*

A DG Requirement was that the EA assess the "*potential impacts of the project on the salinity levels of both ground and surface waters*". In relation to this item, Council's original submission expressed the view that the environmental safeguards for the extraction, storage and disposal of the saline water collected as part of the gas extraction process was adequate but noted that there was an absence of any discussion of this issue.

Council's subsequent submission (dated 8 October 2010) welcomed the inclusion of a subsection regarding this issue. However, it also expressed the view that the EA had not considered potential salinity related impacts on a regional level as well as potential impacts on salinity levels associated with aquifer interconnectivity that can potentially occur during the boring of the gas well.

Accordingly, the DoP is requested to note Council's disappointment that the previously raised comments regarding the assessment of salinity related impacts have not been addressed. The DoP is also requested to require the addressing of the following deficiencies in Section 12.3 ('Salinity Risk') in the amended draft EA in accordance with Council's previous submission prior to its finalisation.

- Inaccurate utilisation and interpretation of the Salinity Landscape Maps produced by the Department of Infrastructure, Planning and Natural Resources (now incorporated into the NOW) in 2002;
- Inaccurate description of the depth of saline soils at more than 1.2 metres as studies undertaken for Council as part of the development application process has identified saline soils at less than this depth; and
- Inadequate assessment of potential impacts on salinity levels of surface and groundwater as a consequence of any aquifer interconnectivity that occurs either part of the insertion of the bore or extraction of gas.

The conclusion by AGL in its response that *"increases in surface salinity are not expected as impact to shallow aquifers is not anticipated"* is not supported based on the above deficiencies in the EA and its generic nature. In relation to this matter, the Department should note that in similar circumstances, Council's Sustainable City Development Control Plan requires that a site specific salinity analysis be undertaken as part of the application process. Accordingly, it is requested that the DoP require a site specific salinity assessment for any activity involving potential disturbance to groundwater as a component of the Soil and Water Management Plan to be submitted prior to project approval

Summary of requested action by the DoP

Council is very concerned over the failure of the EA to address deficiencies raised in previous submissions regarding the assessment of potential impacts on surface waters and associated proposed environmental safeguards. Therefore, the DoP is requested to arrange for the amendment of the EA to address these identified deficiencies prior to the finalisation of the document. Council is also very disappointed that the EA has been placed on public exhibition given the comments from the NOW that the EA should not be publicly exhibited until deficiencies have been addressed.

Consequently, Council formally requests a meeting with an appropriate senior officer from the DoP and NOW to discuss issues raised in both submissions prior to consideration of project approval. Council also considers that the outstanding deficiencies in the water assessment component (verified by the received specialist advice) warrant the establishment of a Planning Assessment Commission.

(ii) Assessment of impacts on groundwaters

Council's submissions on the amended draft EA (dated 8 October 2010) identified the assessment of potential impacts on groundwater (and its connectivity with surface waters) as key issues associated with the project. In this regard, the submission requested that the EA be further amended in relation to these matters to include:

- The assessment of impacts on the condition of groundwaters as a consequence of the installation and operation of the gas production wells and hydro-fracturing (fracking); and

- The assessment of impacts associated with aquifer interference and associated impacts in terms of volumes of groundwater sources within the broader context of the draft Water Sharing Plans (WSP) for the Greater Metropolitan region recently exhibited by the NOW.

It is noted that both the NOW and Industry Investment New South Wales (II NSW) requested amendments to the original draft in regard to the above potential impacts associated with the project (Item 6.1 and 6.2 in Table 1). It is also further noted that the DoP in its submission required the following further amendments to the draft EA that are considered consistent with the requirements of the NOW and II NSW as well as Council's previous submissions.

- *'The EA be amended to include further assessment of the impact of drilling fluids on aquifers and the type of fluids/lubricants used as well as the proposed quantities and potential impacts'; and*
- *'The EA be amended to include details of the statutory regulation of surface and/or groundwater interception, interference or extraction under NSW water legislation, and key issues regarding water management and sharing arrangement'.*

Council would appreciate a written response from the DoP outlining its reasons for approving the public exhibition of the EA without requiring the completion of the above requested amendments as well as the reasons for exhibiting the document contrary to the recommendation of the New South Wales Office of Water in its submission on the original draft EA.

In the absence of the amendment to the EA in response to Council's previous submissions, as well as the above requirements of State Government agencies, Council secured the services of a groundwater specialist to review the EA in terms of the adequacy of level of detail and adequacy of the assessment of groundwater related impacts associated with the project.

The following discussion summarises Council's concerns and position in regard to the two broad aspects of the groundwater assessment component of the EA referred to in previous submissions followed by the key findings and recommendations of the specialist advice

D. COUNCIL REVIEW IN TERMS OF ISSUES RAISED IN PREVIOUS COUNCIL SUBMISSIONS

- *Impacts on groundwater quality*

Council's original submission on the draft EA (dated 31 March 2010) requested that the EA be further amended to provide a greater level of detail in regard to the well installation and gas operation processes (including hydro fracturing or 'fracking') and associated impacts on groundwaters. Council's subsequent submission welcomed the amendment of the original draft EA to include a list of chemicals that may be used as part of these processes by the project. However, Council also advised that this response by AGL was not considered to have adequately addressed comments contained in Council's original submission as well as submissions from the NOW and DoP. This submission also expressed the view that the EA was not considered to have provided sufficient justification for the conclusion that the use of chemicals *'will not result in the degradation of water quality'*.

The DoP is requested to note that Council continues to have strong concerns over the potential impacts on groundwaters associated with the use of chemicals as part of the gas

extraction process. In this regard, it is noted that impacts on groundwaters have been documented in relation to the conducting of coal seam gas extraction activities in Southern Queensland as well as part of the United States. Accordingly, due to the limited detail in the EA and absence of any amendment in response to previous submissions, the DoP is requested to note Council's adopted position regarding this matter that *'it opposes the use of potentially harmful chemicals without adequate scientific advice regarding the validity of the conclusions of the EA regarding this matter'*.

Council also notes that the impacts on surface waters (and associated public health impacts) have also been reported in regard to coal seam gas extraction activities in Southern Queensland. It is recognised that the geological stratum in the project area may be distinctly different compared to other locations where coal seam gas extraction occurs. However, Council is of the view that impacts on surface and groundwaters (and associated health impacts) as a consequence of the project must be considered by the EA to ensure compliance with the applicable DG Requirements.

- *Issues associated with groundwater aquifer interference as a consequence of coal seam gas extraction activities*

Council's previous submissions have expressed concern over considered deficiencies in the EA in assessing potential impacts on the quality and total availability of groundwater as a consequence of aquifer interference at various depths associated with mining operations. This matter was raised in Council's submission on the *draft Water Sharing Plans for Surface and Groundwaters in the Greater Metropolitan Region* (MWSP), recently placed on public exhibition by the NOW. In relation to this matter, the submission from the NOW on the original draft EA is noted to state that the document fails to acknowledge the *'statutory requirements in relation to a broad range of water related items including 'surface and/or groundwater interception'*.

It is also noted that the DoP in its submission requested further amendment of the EA based on this requirement of the NOW. Consequently the DoP is requested to note that Council is also strongly of the view that impacts regarding this matter must be assessed by the EA to ensure compliance with the applicable DG Requirement items as well as requirements from the relevant Government agencies.

In addition, given the recognised interconnectivity between surface and groundwaters, Council also has concerns over associated impacts on the overall health of potentially affected watercourses as a consequence of gas extraction operations. This matter is described in more detail in the subsequent section of this submission in regard to a detailed analysis of issues and constraints associated with the individual well sites proposed in the Campbelltown LGA.

E. DETAILS OF SPECIALIST ADVICE RECEIVED IN REGARD TO THE ADEQUACY OF THE GROUNDWATER COMPONENT OF THE EA

Council's Brief for the peer review required specialist advice in regard to the following aspects of the groundwater component of the EA:

- The adequacy of detail in the description of the existing groundwater environment including baseline data;
- The considered compliance of the groundwater assessment with applicable Director General's Requirements;

- The considered adequacy of level of detail in the assessment of groundwater related impacts associated with the project; and
- The considered adequacy of the assessment of impacts associated with the gas extraction process on groundwater quality and quantity.

The Brief also required the specialist consultant to prepare a report outlining any identified weaknesses of the groundwater assessment (based on the items above) and recommendations for Council's and the Department's consideration to address any identified deficiency in the EA. A copy of the specialist report is attached however it is requested that the document only be utilised for internal review by DoP technical officers due to it being the intellectual property of Council.

In summary, the specialist report concluded that the limited information provided in the EA containing certain aspects of the description of the existing environment, the impact assessment and proposed environmental safeguards prevented the conducting of a comprehensive peer review. It subsequently concludes that the amendment of the EA to provide additional information and/or clarification regarding these items (as recommended in the report) would enable a more comprehensive consideration of potential groundwater resource risks associated with the project raised by stakeholders and assist in enabling the EA to comply with applicable DG Requirement items.

The following discussion outlines the key findings and recommendations of the specialist report and the associated requested DoP action by Council in regard to each of the components of the groundwater assessment listed above. The DoP is requested to note that Council has accepted all items presented in the specialist report requiring additional information or clarification.

1) Adequacy of detail in the description of the existing groundwater environment including baseline data

(i) Key findings of the peer review

The specialist report advised that the components of the local groundwater conceptual hydrogeological model in the project area had been broadly addressed by the EA. However, the specialist report noted that while the EA refers to existing groundwater impact assessments (which presumably contain baseline data); such data is not described or analysed. In addition, the specialist report identified a range of aspects associated with the local groundwater environment that were absent from the EA (listed on pages 7 and 8, Section 4.1) that would allow for a comprehensive peer review and assessment of cumulative impacts associated with the project on groundwater quality and quantity.

(ii) Council response

The DoP is requested to note that Council has adopted all the recommended additional detail listed on pages 7 and 8 of the specialist report for inclusion in the EA to address the identified deficiencies in the description of the groundwater environment. Accordingly, Council resolved at its meeting on 14 December 2010 to adopt the following recommendation of the specialist report:

"The EA be amended to include a description of the key aspects of the existing groundwater environment and clarification of the baseline data used to inform the hydrogeological conceptual model in the existing description".

(iii) *Requested action by the Department of Planning*

The DoP is requested to require the amendment of the EA in accordance with the above recommendation of the specialist report and to include all the additional detail listed on pages 7 and 8 of the report prior to any consideration of project approval.

2) The considered compliance of the assessment with applicable Director General's Requirements

(i) *Key findings of the specialist report*

It is considered that the DoP has a statutory responsibility to require that the EA comply with the entire project DG Requirements in accordance with the provisions of Sections 75F and 75H of Part 3A of the *Environmental Planning and Assessment Act 1979*. In relation to this matter, the specialist report advised that the significant limitations in the level of detail had prevented an assessment of the level of compliance of the EA in regard to the DG Requirement items applying to the assessment of groundwater related impacts associated with the project and related mitigation measures. Within this context, a summary of the specialist advice regarding the considered compliance of the EA with applicable DG Requirement items is presented in Table 1.

Table 1: Considered compliance of the EA with applicable DG Requirement items

Director General's Requirement	Level of compliance	Comments in specialised peer review report
The EA include a detailed description of the existing environment, using sufficient baseline data.	Low level of compliance	It is unclear whether existing baseline has been analysed.
The EA include a detailed assessment of the potential impacts of all stages of the project, including any cumulative impacts, taking into consideration any relevant guidelines, policies, plans and statutory provisions.	Insufficient information to assess compliance.	There is a limited description of relevant guidelines and statutory provisions. There is very limited cumulative impact assessment.
The EA include a detailed description of the potential impacts of the project (including salinity) on the quality and quantity of surface and groundwaters.	Insufficient information to assess compliance.	The assessment relies largely on industry standards and past operative experiences. A review of the adequacy of the assessment is not possible due to the limited detail in the EA.
A detailed description of the measures that would be implemented to avoid, minimise, and if necessary, offset the potential impacts of the project.	Insufficient information to assess compliance.	There is a limited description of mitigation measures. A review of the adequacy of the proposed measures is not possible due to the limited detail in the EA

(ii) *Council response*

In response to the above specialist advice, Council is extremely concerned and disappointed that the EA has been placed on public exhibition with insufficient detail that would allow for

an accurate assessment of its compliance with groundwater related DG Requirement items to be conducted. In this regard, officers consider the DoP has a statutory obligation (Under Section 75H(2) of the EPA Act to require the submission of a revised EA that complies with the entire project DG Requirement items prior to any consideration of project determination.

(iii) Requested action by the Department

The DoP is requested to require the amendment of the EA to address the deficiencies identified in the specialist report regarding the compliance with the DG Requirement items prior to the finalisation of the document.

3) The considered adequacy of detail and level of assessment of groundwater related impacts in the EA

Council required the consultant to provide specialist advice in regard to the adequacy of detail of in the assessment by the EA of impacts associated with the proposed drilling/fracking program and the assessment of the likely duration and extent of impacts on groundwaters as a consequence of this program. This requirement related to requested amendments outlined in previous Council submissions for the draft EA to be amended to provide more detail regarding these issues prior to its public exhibition and consider the potential implications of the Metropolitan Water Sharing Plans to the project. The key findings associated with these matters are summarised separately below.

(i) Adequacy of detail in the assessment of impacts associated with the proposed drilling/fracking program

Key findings

The specialist report advised that the description in the EA regarding this matter was reasonably generic and limited in detail. It consequently advised that the inclusion of additional detail to accompany the assessment of groundwater related impacts was warranted given the potential environmental and public health risks associated with the use of chemicals as part of the drilling/fracking program. It further advised that the inclusion of a more comprehensive assessment of the chemicals intended for use was appropriate to allow for a comprehensive peer review and assessment of impacts associated with the project as well as potentially alleviating the concerns of stakeholders.

Council response

The above identified deficiencies in regard to the drilling/fracking program are considered to support the comment from the NOW in its submission on the original draft EA that the document fails to address key water issues. As stated previously in this submission, Council has adopted the position that *'it opposes the use of potentially harmful chemicals without adequate scientific advice regarding the validity of the conclusions of the EA regarding this matter'*. Consequently, in support of the specialist advice and in the absence of any amendment in response to submissions from Council and Government Agencies, Council resolved at its meeting on 14 December 2010 to adopt the following recommendation of the specialist report:

"The EA be further amended to provide a more comprehensive description of the proposed fracking process, and in particular, the chemical additives intended for injection".

(ii) *Adequacy of detail regarding the assessment of the likely duration and extent of impacts*

Key findings

The specialist report noted that the EA had provided a broad description on the role of the geological formations in the project area in restricting the extent and duration of groundwater related impacts. However, the report also advised there was insufficient detail in the EA that would enable a comprehensive peer review in regard to the adequacy of the assessment of the duration and extent of impacts in terms of groundwater aquifers at various depths to be conducted.

Council response

The deficiencies identified by the specialist report are considered to verify the concerns of Council. The identified deficiencies are also considered to confirm comments contained in previous Council submissions requesting the draft EA be amended to comply with the requirements of the NOW as well as the DG Requirement item concerning the assessment of 'cumulative impacts' and the EA consider relevant plans (e.g Water Sharing Plans) and statutory provisions prior to its public exhibition.

(ii) *Requested action by the DoP*

The DoP is requested to require the amendment of the EA to address all identified deficiencies in the specialist report regarding the level of detail in the groundwater assessment. Council also requests that the issue of impacts on groundwaters associated with drilling and fracking operations (and interaction with surface waters) be discussed at the proposed meeting with the DoP and NoW.

As outlined previously, Council is objecting to any project determination of the EA (in its current form) by the Minister for Planning. However, it is requested that the DoP require the independent and regular auditing of the use of chemicals, by an authority with sufficient regulatory powers to obtain such information and that the outcomes be made publicly available as a condition of any approval that may be potentially granted.

4) The considered adequacy of the assessment of impacts associated with the gas extraction process on groundwater quality and quantity

Previous Council submissions have identified considered deficiencies in regard to the adequacy of the EA in assessing impacts associated with both the construction component of the gas wells (e.g. the drilling stage) and the operational phase (e.g. the gas extraction stage). In the absence of any amendment to these submissions, Council requested that the consultant review the adequacy of the EA in assessing impacts on groundwaters, as well as surface waters, associated with both the construction and operation of well sites.

The following summarises the key findings of the specialist report (discussed in Sections 4.2.1 and 4.2.2 respectively) and requested DoP action.

(i) *Adequacy of the assessment of impacts associated with the construction of wells*

Key findings

The specialist consultant was required to review the adequacy of safeguards to avoid aquifer interconnection (and associated environmental and public health impacts) during the drilling

operations associated with the establishment of well sites. The specialist report advised that the methods outlined in a limited description of intended safeguards within the EA may represent a satisfactory approach to protect the separation between aquifers. However, the report also advised that the inclusion of additional detail in the EA was considered to be warranted to allow for a detailed review of the intended safeguards as well as enabling the EA to comply with the DG Requirement concerning the inclusion of a *'detailed description of measures to offset the potential impacts of the project'*.

Council response

The specialist advice is considered to verify concerns expressed (in this submission and previous submissions on the draft EA) regarding the deficiencies of the assessment of 'cumulative impacts' on groundwater (and connectivity with surface waters) as required by a specific DG Requirement. Accordingly, at its meeting on 14 December 2010, Council resolved to adopt the following recommendation of the specialist report:

"The EA be further amended to provide a comprehensive description of the specific measures intended to minimise potential wellbore pathways during the drilling and construction program".

- (ii) *Adequacy of the assessment of impacts associated with the use of chemicals as part of the fraccing program*

The specialist consult, (in particular), was required to review the adequacy of the EA in the assessment of impacts associated with the use of chemicals at well sites (indicated in the document that maybe used) in relation to the interconnectivity between ground and surface waters.

Key findings

The specialist report concluded that there was insufficient detail in the EA document to enable a comprehensive review of the EA regarding this matter. Key findings of the specialist report (as detailed in Section 4.2.1 of the report) in terms of identified deficiencies and identified items requiring amendment or clarification include:

- The absence of project specific details associated with the fraccing program (e.g. names and volumes of chemicals to be used, nature and concentration of the chemical as well as application process) has prevented a comprehensive review of the adequacy of the EA in assessing the associated risk to the groundwater system; and
- The amendment of the EA to include a detailed assessment of impacts associated with the use of chemicals on groundwater systems is also considered warranted for the EA to comply with the DG Requirement item concerning *'a detailed cumulative assessment of impacts associated with the project on the quality of surface and groundwaters'*.

Council response

The identified deficiencies are considered to validate Council's adopted position that it *'opposes the use of potential harmful chemicals without adequate scientific advice that validates the conclusion of the EA that the project will 'not degrade groundwaters'*. Accordingly, Council has adopted the identified deficiencies regarding this matter outlined in

the specialist report and its recommendation that the provision of the outlined additional information would allow for a more comprehensive assessment of associated impacts.

(iii) *Adequacy of the assessment of impacts on the condition and volume of groundwater aquifers.*

The consultant was required to review the adequacy of the EA in the assessment of impacts associated with the project on the condition and volumes and aquifers, the adequacy of the detail in specifying volumetric limits that would prevent long-term depletion of groundwater sources and the adequacy of proposed environmental safeguards. These requirements are consistent with previously referred to requested amendments to the EA made by Council, the DoP and the NoW.

Key findings

The specialist report concluded there was insufficient detail to enable a comprehensive review of the EA or to satisfy the DG Requirement concerning the 'assessment of cumulative impacts on the quantity and quality of surface and groundwaters. Key findings of the specialist report (as detailed in Section 4.2.1 of the report) in terms of identified deficiencies and identified items requiring amendment or clarification include:

- The inclusion of additional detail (itemised in Section 4.1 of the report) such as information regarding the current drawdown levels of groundwater aquifers and a detailed description of the geological formations and aquifers in the vicinity of the project area is considered to be warranted. The inclusion of such detail is considered necessary to allow for the conducting of the peer review for the EA, a comprehensive assessment of impacts associated with the project as well as to comply with the DG Requirement item concerning the assessment of 'impacts on surface and groundwaters; and
- The inclusion of further detail regarding the current and proposed monitoring program and response process is considered warranted to allow for the review of the adequacy of the proposed environmental safeguards.

Council response

The deficiencies identified by the specialist report are considered to verify concerns (expressed in this and previous Council submissions) over the considered inadequacy of the EA in assessing potential impacts on the quality and total availability of groundwater as a consequence of aquifer interference at various depths associated with mining operations. Accordingly, Council at its meeting on 14 December 2010, resolved to adopt the following recommendation of the specialist report:

"The EA be amended to provide a (cumulative) impact assessment to neighbouring aquifers, groundwater users and environmental receptors from the dewatering of the coal measures, and any proposed environmental safeguards (including any current and proposed groundwater monitoring program, trigger levels and investigation and response process)".

(iv) *Adequacy of the assessment of impacts associated with the potential for gas migration from extracted areas*

Key findings

In relation to this matter, the specialist report acknowledged that the potential contamination risk to groundwater aquifers as a consequence of gas migration associated with the project is low due to the depth of the coal seams and nature of the geological formations. However, the report also advised that the EA should be amended to assess the potential for gas migration through either wellbores or geological formations in order to comply with the applicable DG Requirement item.

Council response

The findings of the specialist report are considered to verify the view of officers that impacts associated with the migration of gas not extracted at the well site should be assessed by the EA in order to comply with the applicable DG Requirement item. In this regard, officers consider this assessment should also consider potential public safety and air quality related issues associated with potential migration of the methane gas to the surface.

Requested action by the Department in regard to the adequacy of the EA in assessing groundwater related impacts associated with the project

The DoP is requested to require the amendment of the EA to address all identified deficiencies in the specialist report regarding the assessment of impacts associated with the gas extraction process on groundwater quality and quantity. As above, it is requested that the issue of impacts on groundwaters associated with drilling and fracing operations (and interaction with surface waters) be discussed at the requested meeting with the DoP and NoW.

Summary of requested action by the Department in regard to the groundwater component of the EA

The DoP is requested to note Council's strong concerns that the EA has not been amended in response to previous submissions on the project. The DoP is also requested to note Council's concerns over the findings of the received specialist advice that the provision of extensive additional information is required to allow for a comprehensive review of potential groundwater impacts associated with the project and to enable the EA to comply with applicable DG Requirements.

Accordingly, the following action by the DoP is requested by Council:

- That the DoP note Council's strongly held concerns that the EA has not been amended in response to previous submissions, and require the amendment of the EA in accordance with Council's submission (in regard to the EA placed on exhibition) prior to the project determination;
- That the DoP require the amendment of the EA to address all items in Council's commissioned specialist peer review report requiring additional information or clarification and to provide Council with a written explanation of the reasons for exhibiting the document contrary to the recommendation of the New South Wales Office of Water.
- The issue of impacts on groundwaters associated with the use of drilling additives and for fracing operations (and interaction with surface waters) be discussed in the requested meeting with the NoW and DoP; and

- The DoP require the independent and regular auditing of the use of chemicals, by an authority with sufficient regulatory powers to obtain such information and that the outcomes be made publicly available as a condition of any approval that may be potentially granted.

Biodiversity related impacts

Council's original submission (dated 31 March 2010) requested clarification in regard to the adopted 'envelope assessment' approach by the Flora and Fauna assessment. It also expressed the view that impacts on biodiversity associated with the installation of pipelines and gas wells had not been considered by the draft EA. Council's subsequent submission supported the amended amendment of the EA in response to previous comments. However, it also identified outstanding deficiencies in regard to the level of detail of the flora and fauna surveys, assessment of impacts associated with the project and the accurate assessment of vegetation clearance as discussed below.

- *Guidelines adopted by the flora and fauna assessment*

Council's submission on the draft amended EA noted that the DECCW had requested a number of amendments to the document to achieve consistency with the *draft Threatened Biodiversity Survey and Assessment Guidelines* it produced in 2004. This submission stated that Council supported the requested amendment from the DECCW due to consistency with Council's Sustainable City Development Control Plan.

Council is extremely disappointed that the EA has not been amended in relation to this matter in response to its previous submissions as well as the submission from the DECCW. However, the provision of further comment to address deficiencies is considered difficult as a consequence of the refusal of the DoP to provide details of any submission by the DECCW on the revised EA. Consequently, in order to ensure that requested amendments are consistent with those provided by the DECCW, the DoP is requested to note that Council resolved at its meeting on 14 December 2010 to lodge a Freedom of Information application with the DoP to obtain such information.

- *Adequacy of the flora and fauna surveys and assessment of impacts*

Considered adequacy of the adopted approach and level of assessment undertaken

Council's original submission requested clarification in regard to aspects of the adopted 'envelope assessment' approach and also requested an amendment of the document to include a discussion on the limitations of this approach. The subsequent submission advised that the inclusion of this discussion had verified previous expressed considered deficiencies in this approach that included the largely desktop basis of the assessment and the conducting of detailed site specific surveys following project approval.

The provision of detailed comment in regard to addressing deficiencies in the adopted approach is recognised as being a responsibility for the DECCW (in its capacity as regulatory for biodiversity matters) and the DoP. In this regard, it is noted that the DECCW also identified similar deficiencies in its submission on the original draft EA (listed in Item 7.1 in Table 1). Consequently, Council requests that the DoP require AGL to consult with the DECCW to address deficiencies in the adopted approach prior to consideration of project approval in accordance with previous comments.

Considered adequacy of the level of surveys and assessment of impacts associated with the project

Council's original submission (dated 31 March 2010) requested clarification in regard to the extent of survey and impact assessment. Council's subsequent submission acknowledged the amendment of the original EA to list potential impacts on biodiversity associated with the gas wells and pipelines but reiterated previously expressed concerns regarding constraints associated with the adopted 'envelope assessment approach' in assessing impacts on a site specific basis. Further comments regarding the assessment of impacts associated with individual well sites on biodiversity are outlined in a subsequent section of this submission detailing the outcomes of a detailed analysis conducted by officers.

In relation to this matter, the previous section of this submission has advised that Council supports the request from the DECCW that the EA be amended to comply with the guidelines it produced in 2004 (rather than the guidelines drafted in 2005) that specifically apply to Part 3A applications. However, the DoP is requested to note an apparent inconsistency with these guidelines in the response from AGL which states that 'major environments' were sampled however the Part 3A Guidelines are noted to require that 'all environments' be sampled.

It is also noted that the DECCW (in its submission) identified deficiencies in the level of survey and impact assessment in the EA (Item 7.2 in Table 1) that would appear not to have been adequately addressed. It is also further noted that the DoP in its submission required the following further amendments to the draft EA that are considered consistent with the requirements of the NOW, as well as Council's previous submissions:

- *'Targeted flora and fauna surveys be undertaken for threatened flora and fauna species and populations potentially occurring within the Surface Project Area (apart from the Cumberland Land Snail)';*
- *'There should be a further review of impacts on threatened species, populations or their habitats (in the EA).*

Council would appreciate a written response from the DoP outlining its reasons for approving the public exhibition of the EA without requiring the completion of the above requested amendments.

While Council is disappointed at the absence of amendment of the EA, the provision of further comment in relation to this matter is difficult due to the uncertainty of the Guidelines to be adopted by the project referred to above. Consequently, in accordance with its previous submission on the draft amended EA, Council requests that the DoP require further amendment of the EA to fully comply with the agreed guidelines in consultation with the DECCW prior to consideration of project approval.

- *Accurate assessment of vegetation clearance*

Council's submission on the draft amended EA requested further amendment to provide an accurate assessment of all intended clearance associated with all forms of the project in accordance with the applicable project DG Requirement items. The submission acknowledged and welcomed the significant reduction in clearance of vegetation as a consequence of the deletion of the Gas Plant from the project.

However, the response by AGL is not considered to be adequate in regard to the accurate description of vegetation to be removed associated with the installation of well sites and gas

gathering pipelines. In addition, previous Council submissions have referred to the inclusion of native grasses in the definition of Cumberland Plain Woodland (CPW) contained in the Scientific Committee's Final Determination listing of this community as a Critically Endangered Ecological Community. In this regard, the EA is not considered to have included the intended removal of 12.43ha of grassland in the total area of Cumberland Plain Woodland to be cleared as a consequence of the project.

Within the context of the above and in reviewing the AGL response, it is recognised that the precise quantity of vegetation to be removed may be potentially difficult to provided due to operational constraints such as the need for the well bore to be situated at a precise locality that maximises the volume of recovered gas. Consequently, Council requests that the DoP undertake the following action:

- The DoP require the further amendment of the EA to specify the range of intended minimum and maximum vegetation clearance for each relevant well site and pipeline; and
- The DoP require that site specific surveys and assessment of impacts be required as a condition of consent prior to any drilling activity commencing.

Summary of requested DoP action

The DoP is requested to note Council's extreme disappointment that the EA has been placed on public exhibition without addressing the majority of issues outlined in previous submissions from Council and relevant State Government Agencies. The DoP is also requested to note Councils disappoint in regard to its refusal to provide details of its correspondence with the DECCW given the significant deficiencies and requested amendments contained in the submission from this Agency on the original draft EA.

Accordingly, Council requests the following action by the DoP in response to the absence of amendment of the EA and considered significant outstanding issues in regard to the assessment of biodiversity related impacts associated with the project:

- The DoP require the amendment of the EA in accordance with this submission prior to the consideration of project approval.
- The DoP convene a meeting between Council and the DECCW to discuss the outstanding biodiversity related issues in the event that details of correspondence between the DoP and the DECCW can not be obtained via a FOI application; and
- The DoP not issue a project approval until such time as the DECCW has expressed satisfaction in regard to the intended vegetation removal.

The DoP is also requested to note that the outstanding deficiencies in regard to the assessment of biodiversity related impacts also warrants the establishment of a Planning Assessment Commission to investigate the project.

Impacts on the landscape values of the Scenic Hills within the project area

Previous Council submissions have referred to the significant landscape, natural and cultural values of the Scenic Hills located in the eastern portion of the surface project area. In this regard, the inclusion of a Visual Assessment in the EA regarding the existing environment, potential visual impacts on this environment and environmental safeguards is recognised.

The long-term visual impacts associated with the amended project in terms of the operation of the well sites and various gas gathering pipelines are also recognised as being relative

minor following the deletion of the proposed Gas Plant from the project. However, the DoP should note that Council considers the short-term impacts associated with the establishment of well sites to be relatively significant based on observations of previously approved well sites given that soil disturbance and vegetation removal can occur over an area of 1 ha.

In addition, a draft Visual Study being prepared for Council as part of the preparation of a consolidated Local Environmental Plan applying to the whole of the Campbelltown LGA concluded that *'the landscapes of the Scenic Hills provide the setting for the City of Campbelltown and are what make it a truly unique example of a satellite city'*. In addition, the DoP should note that this district forms part of the watershed between the major catchments of the Hawkesbury Nepean and Georges River systems as well as containing important remnants of the Critically Endangered Cumberland Plain Woodland.

Officers therefore consider that impacts associated with the gas extraction process such as fracturing of coal seams and injection of chemicals has the potential to impact on the natural and cultural values of this district. Officers also consider that impacts associated with the project also have the potential to adversely impact on the implementation of strategic planning documents that apply to the district.

In this regard, Council has been provided with a copy of the correspondence sent to the DoP from the Scenic Hills Association (dated 15 November 2010) requesting an extension of the submission deadline which is noted to express similar views. Accordingly, it is requested that impacts on the distinct values of the Scenic Hills be considered as part of the site specific assessments associated with individual well sites as well as the gas pipelines. As advised previously, it is Council's preferred view that these assessments occur prior to project approval.

Impacts of the amended project application on air quality

The deletion of the proposed Gas Plant in the Scenic Hills district from the project application is considered to have adequately addressed the range of air quality related issues outlined in Council's original submission on the draft EA. However, Council's subsequent submission requested the EA DoP specify and assess any air quality impacts as a consequence of the alternate proposal by AGL to utilise the RPGP for the processing of extracted gas from within Stage 3 of the Camden Gas Project.

The further amendment of the EA in response to Council's request to include a statement that the RPGP has sufficient capacity to receive the increase volume of gas for processing without requiring further expansion is welcome. However, Council requests further clarification in regard to any increase in emitted pollutant levels from this facility as a consequence of the amended application.

Impacts on Aboriginal and European heritage

- *Assessment of impacts on Aboriginal heritage*

The protection and management of Aboriginal Heritage is recognised as being the responsibility of the DECCW. However, as expressed in previous submissions, the DoP is requested to note that Council has established a collaborative relationship with local Aboriginal groups and would oppose any activity that harms Aboriginal objects as part of the project.

Council's submission on the original draft EA requested further amendment of the document to include definitive prescriptive measures for the protection of potential subsurface Aboriginal items during soil disturbance associated with the establishment and operation of the wells sites and installation of the gas supply pipelines. In relation to this matter, the DoP is requested to note that an Aboriginal Heritage Assessment applying to part of the surface project area has recently been prepared for Council that can be provided upon request.

It was noted that the response from AGL to this requested amendment stated that this matter would be addressed through the updating of the existing Aboriginal Cultural Heritage Management Plan to apply to Stage 3 of the CGP. However, while the document contains a list of prescriptive measures for the protection of Potential Archaeological Deposits (PAD's), there is considered to be an absence of reference to issues specifically related to Stage 3 of the Camden Gas Project.

In this regard, previous sections of this submission have expressed Council's preferred view that all sub-plans referred to in the EA accompany the project application in a format that can be readily implemented following project approval. Consequently, and in accordance with this viewpoint, the DoP is requested to require that the existing ACHMP (applying to Stages 1 and 2 of the CGP) be updated to specifically relate to Stage 3 of the project prior to consideration of project approval.

- *Assessment of impacts on European heritage*

It is recognised that the heritage related impacts associated with the various components of the project is restricted to items listed on the State Heritage Register. It is also recognised the protection of these items is the responsibility of the Heritage Office within the Department of Planning, who are noted to have provided a range of recommended amendments to the EA as well as suggested conditions of consent for a future approval.

However, Council has responsibilities in regard to the local heritage register and also is responsible for reviewing and providing comment on applications that potentially impact on items listed on the State Heritage Register. Consequently, Council would appreciate being provided with notification in regard to the details and timing of any work that potentially impacts on State listed items. In addition, the provision of a copy of the independent review of the assessment of impacts on items of European heritage (as requested in previous Council submissions) would also be appreciated.

F. ADDITIONAL IDENTIFIED ISSUES FOLLOWING A COMPREHENSIVE REVIEW OF THE EA

The timeframe imposed on Council by the DoP for the receipt of comments on the draft EA restricted the detail of previous reviews. However, the following outlines requested further amendments and action by the DoP in regard to a range of issues identified by officers following a comprehensive review of the EA placed on public exhibition.

1) Detailed review of constraints and implications for Council associated with the proposed location of well sites situated within the Campbelltown LGA

Previous Council submissions have not provided comment in regard to site specific issues associated with the proposed location of individual well sites due to the considered potential for these sites to be amended during the preparation of the EA. However, a description of the identified environmental constraints and implications associated with each proposed well site is presented in Table 3 (presented in Attachment 3) that should be read in conjunction

with the map (also presented in Attachment 3). It is understood that Camden Council is submitting a submission on the EA which will refer to any issues it has identified in regard to the proposed location of wells situated in this LGA.

The officer review was undertaken using a desktop analysis approach in regard to the following aspects:

- The nature of the terrain of each site and potential for impacts associated with the construction and operation of the well sites on nearby watercourses as well as ephemeral drainage lines;
- The potential for impacts associated with the construction and operation of the well sites on the condition of any CPW remnants (based on 2002 DECCW mapping) within close proximity;
- The potential for impacts on any threatened species (and its associated habitat) recorded in close proximity on the New South Wales Atlas of Wildlife); and
- The proximity of each site to land either owned by Council or under its care and management and potential adverse implications in regard to the management and/or use of this land.

Potential impacts on biodiversity

Previous Council submissions have outlined a number of concerns regarding the adopted 'envelope assessment' including the intention of AGL to conduct a detailed assessment of impacts associated with individual well sites within the 'assessment envelope' subsequent to project approval. In this regard, the analysis identified that activities associated with four (4) of the proposed six (6) may potentially impact on the Cumberland Plain Woodland and/or the habitat of threatened species.

Consequently, it is considered that a more detailed site specific assessment of impacts associated with both the establishment of these well sites (up to 1ha in area) as well as the reduced area during operation (approximately 400 square metres) is required. In this regard, Council requests the DoP require the amendment of the EA to state that comprehensive surveys and assessment of impacts in accordance with the agreed guidelines for the project for these sites must occur prior to any site disturbance.

Potential impacts on watercourses

The impacts on watercourses associated with individual sites were considered in accordance with the relevant DG Requirements. The following outlines the considered potential impacts associated on surface and groundwaters associated with underground coal seam extraction activities and the operation of well sites.

- *Potential impacts on watercourses associated with gas extraction activities*

Four (4) of the proposed six (6) sites (Sites 2,5 and 6) are noted to be upslope and in relative close proximity to watercourses. In this regard, the specialist report received in regard to the groundwater component of the EA has identified significant limitations in regard to the baseline data and associated extent of assessment of impacts.

Impacts on surface waters has been reported and documented in regard to the conducting of coal seam gas extraction activities in Southern Queensland. It is recognised that these impacts cannot be directly extrapolated to apply to the CGP without further detailed geological analysis and the fact that low dilution levels of chemicals are intended to be used. However, it is considered the EA requires amendment to include an assessment of the potential for impacts on surface waters related to this matter to ensure compliance with the requirement of the DoP that *'all potential impacts on surface and groundwaters be assessed'*. As stated above, it is Council's preferred view that this assessment be undertaken prior to consideration of project approval. in accordance with the applicable DG Requirement items.

- *Impacts on surface waters associated with the operation of well sites*

Activities at each of these sites are also considered to have the potential to impact on a range of ephemeral drainage lines based on the definition of 'rivers' in the *Water Management Act 2000*. It is considered that the assessment of impacts in regard to three (3) of these sites can occur as part of the proposed Soil and Water Management Plan. However, the DoP is requested to note that Council considers it imperative that this Plan consider direct and indirect impacts associated with these well sites on all potentially affected drainage lines within a subcatchment context and that it be prepared prior to any consideration of project approval.

The remaining proposed site (Site 1) is noted to be located on an eroded section of land approximately 50 metres from Thompson Creek, which eventually flows into the Georges River. This site is therefore considered unsuitable for the location of a gas extraction well due to unacceptable potential impacts and Council therefore requests that the DoP require the relocation to a suitable location with less potential to impact on this Creek.

Implications of the proposed site on public land

None of the proposed well sites within the Campbelltown LGA were identified as being located on Council owned land or land where it has care and control responsibilities. In noting this, it is assumed that consultation and approval for the location of the wells has been obtained from all applicable landowners.

However, well site 1 was identified as being approximately 300 metres upstream of the Council owned and maintained Eagle Vale Reserve. Consequently, there is considered potential for water pollution as a consequence of activities relating to this well to impact on the condition of the section of watercourse (and associated recreational value) within this Reserve. It is considered the requested relocation of this proposed site due to its close proximity to Thompson Creek will adequately address this matter.

2) *Issues associated with potential sterilisation of land for future use as a consequence of the project*

Council has previously requested that the DoP require further amendment of the draft EA to consider potential implications associated with land sterilisation (for a period of 15 to 20 years over the lifespan of the wells) in terms of impacts on future development and any restrictions on such use as a consequence of the drilling operations. The potential implications include restrictions on the layout and construction of new urban release areas and possible reduction in land values and associated reduction in revenue to Council in the form of rates. Consequently, Council requests the DoP require the amendment of the EA prior to its finalisation to discuss this matter in accordance with previous submissions.

The Surface Project Area in regard to Stages 1 and 2 of the Camden Gas project that have received Part 3A approvals are noted to be contained predominantly in rural areas. However, potential adverse implications associated with the future use of two (2) urban areas in the surface project area indicated on Map 3 (presented as Attachment 8) have been identified that are classified in the recently approved Campbelltown-Macarthur Structure Plan as future residential areas. Council therefore considers that property values may be adversely impacted as a consequence of their inclusion in the project area.

It is recognised that additional wells beyond the currently proposed twelve (12) will not be permitted under the current application. However, it is also recognised that the potential exists for the subsequent lodgement of a 'modification of consent' application by AGL to obtain approval for the installation of additional wells from the DoP. Consequently, given the potential for future wells to be located within two areas (indicated on Map 3), it is Council's preferred view that these areas be deleted from the project area to avoid these adverse implications and to protect land values and ensure that the presence of gas wells is restricted to rural areas. In addition, the DoP is requested to note that Council would not support the installation of future wells in any residential area within the Campbelltown LGA.

3) *Impacts associated with lateral drilling activities in the subsurface project area*

Activities within the subsurface portion of the subproject area are understood to be limited to lateral exploratory drilling and lateral underground extraction drilling through coal seams. It is also understood that the hydrological fracturing process is not required for the extraction of coal seam methane gas when lateral drilling is being used (based on advice provided by AGL officers). However, Council has significant concerns with the advice from AGL officers that lateral drilling within the coal seam can extend up to 2.5 Kilometres from well head locations. Based on this information, it has been identified that lateral drilling (at its maximum potential extent) could occur under large sections of the urbanised portion of the Campbelltown LGA.

In relation to this matter (as outlined previously), the specialist report provided to Council has identified significant deficiencies in regard to the level of detail in the groundwater assessment and that the EA should discuss the potential for gas migration from the extraction area. Therefore, there is considered to be a level of potential for impacts associated with fracturing of geological strata as part of this process to extend to also impact on surface waters. There is also considered potential for the fracturing to result in subsidence related impacts to extend to the surface as has been documented in regard to longwall mining operations.

For these reasons alone, it is considered imperative that the EA accurately quantify the short and long -term extent of surface subsidence that could occur within urban areas of the Campbelltown LGA as a consequence of lateral drilling in the subsurface areas. Accordingly, Council requests that the DoP require the amendment of the EA to consider the potential for subsidence-related impacts on urban areas within the subsurface project area as well as impacts associated with escaped methane gas as a consequence of any lateral drilling activities.

G. SUMMARY OF REQUESTED ACTION BY THE DOP IN REGARD TO THE EA

The preceding sections of this submission have identified that the EA has not adequately addressed the majority of issues outlined in previous submissions except to confirm that the

Rosalind Park plant has sufficient capacity to process the additional gas from the project without requiring modification. The preceding sections have also identified the EA has also failed to address the majority of issues raised in submissions from relevant State Government agencies. The submission has also identified additional deficiencies following a more detailed review of the EA by officers.

Accordingly, as detailed in this submission, Council requests the following action

- Require that all of the requested amendments outlined in previous submissions occur prior to the finalisation of the EA and that it be provided with details of the amendment and response;
- Require the completion of all identified amendments to the EA following a detailed review of the EA by officers during its public exhibition;
- A meeting be convened with the Department of Planning and the New South Wales Office of Water to discuss issues identified in previous submissions and the specialist advice received by Council regarding the groundwater assessment.
- The Minister for Planning establish a Planning Assessment Commission to investigate the project application and that Council be involved in the Terms of Reference preparation process given that significant issues are considered to have not been adequately addressed.

H. CONCLUSION

The provision of the original draft EA to Council for the purposes of identifying any issues not adequately addressed and the subsequent amended draft EA is appreciated. In addition, the partial amendment of the document in response to Council's submissions regarding these submissions, such as the deletion of the proposed Gas Plant from the project application, is welcome.

However, a detailed review of the exhibited EA by Council's officers has identified that the only amendment to the EA placed on public exhibition in response to previous submissions, is the inclusion of a statement indicating that the Rosalind Park facility has sufficient capacity to receive the additional supply of the gas without requiring expansion. In addition, while constrained by the refusal of the DoP to provide recent submissions from relevant Government agencies, the review also identified that the EA has not responded to previous submissions from relevant Government Departments that also identified significant deficiencies with the project.

With regard to the groundwater assessment, this submission details the outcomes of specialist consultant advice obtained, whose key recommendations confirm the need for additional comprehensive assessment on water resources. The report also advises that additional detail is required to allow for a comprehensive review as well as for the EA to comply with applicable Director General's Requirements concerning the assessment of *'cumulative impacts'* and the assessment of *'impacts on the quality and quantity of surface and groundwaters'*. Accordingly, Council has adopted all of the key recommendations of the report that the EA be amended to provide further information and clarification concerning a number of items to allow for a more comprehensive review by stakeholders concerning the risks to groundwaters.

Therefore, Council strongly objects to the EA and the project application and is extremely concerned and disappointed that the EA placed on public exhibition has failed to address the majority of issues outlined in previous submissions from Council and relevant State Government agencies. Key requested actions by the DoP contained in this submission

include that the EA be amended to address all identified deficiencies in previous submissions prior to its finalisation and that the DoP require AGL to obtain independent scientific studies regarding impacts on ground and surface waters.

As a consequence of the EA being placed on public exhibition without the addressing of previously identified deficiencies, this submission also refers to resolutions of Council to pursue meetings with the NOW and DoP to discuss issues identified in previous submissions and the specialist advice received by Council regarding the groundwater assessment. The submission also requests that a Planning Assessment Commission investigate the project given the significant outstanding issues and that Council be involved in the development of the Terms of Reference for such a Commission.



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CAMPBELLTOWN CITY COUNCIL

Camden Gas Project (Stage 3)

Peer Review of Groundwater Component of EA

301015-02417 – 00

19 November 2010

FINAL

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PROJECT 301015-02417 - CAMDEN GAS PROJECT (STAGE 3)

REV	DESCRIPTION	ORIG	REVIEW	WORLEY- PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
A	Issued for external review	<u> </u> D Green	<u> </u>	<u> </u> C Thomas	19/11/10	<u> N/A </u>	
B	Issued to client	<u> </u> D Green	<u> </u> P Smith	<u> </u> C Thomas	30-11-10	<u> </u>	N/a
		<u> </u>	<u> </u>	<u> </u>		<u> </u>	
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**CAMPBELLTOWN CITY COUNCIL
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1 INTRODUCTION

A development application has been submitted to the New South Wales Department of Planning (DoP) by AGL Power Generation (NSW) Pty Ltd (AGL) for Stage 3 of the Camden Gas Project (CGP) (Project No 09_048). The application is in regard to major coal seam methane (CSM) development targeting the Illawarra Coal Measures, within the Southern Coal Fields of the Sydney-Gunnedah-Bowen Basin.

CSM extraction is currently occurring as part of Stages 1 and 2 of the CGP that was approved by the DoP in 2002 and 2004, respectively. Stage 3 of the project relates to the northern extension, situated on the western portion of the Campbelltown Local Government Area (LGA) and eastern portion of the adjoining Camden LGA.

Under the provisions of Part 3A of the *Environmental Planning and Assessment Act 1979* (the Act), the Minister for Planning is the consent authority for the proposed development. In accordance with the requirements of the Act, and in response to the Director General's Requirements (DG Requirements), an Environmental Assessment (EA) (AGL, 2010) has been prepared by AECOM, on behalf of AGL.

The protection of groundwater sources and connected surface waters from impacts associated with all mining operations is of high importance to Campbelltown City Council (the Council). In response to the amended draft EA (October 2010), it is understood that the Council has a number of outstanding concerns in relation to potential groundwater resource related impacts associated with Stage 3 of the project.

WorleyParsons was engaged by the Council in November 2010 for the purposes of obtaining specialist advice in regard to the adequacy of the EA in the assessment of groundwater impacts and any impacts to connected surface waters, in particular. Specifically, the review encompasses the following:

- The level of compliance with items of the Director General Requirements concerning groundwater; and
- A review of the groundwater component of the EA, including –
 - The adequacy of detail provided in relation to the groundwater assessment and any restrictions this level of detail places on the review process; and
 - The adequacy of the assessment of impacts both during the construction component of the gas wells and the operational phase, and the proposed mitigation measures.

The outcomes of the review are summarised herein. It is understood that this documentation will be incorporated into the Council's submission to the DoP regarding the overall project application.



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2 BACKGROUND INFORMATION

AGL is seeking project approval for works comprising the northern expansion of the Camden Gas Project (CGP) for the purposes of continuing gas production from the Illawarra Coal Measures to supply the NSW energy market.

As described in Section 4 of the EA (October 2010), the Stage 3 project application involves the following key activities:

- Construction of up to 12 well surface locations containing up to 6 well heads each;
- Construction and operation of gas gathering pipelines, including interconnection with the existing CGP network, along with central water storage points where required;
- Construction of access roads and ancillary infrastructure; and
- Subsurface drilling and lateral in-seam well paths within the boundaries of the Subsurface Project Area.

The Director General's Requirements issued for the project (revised 2/3/2010) contained the following items relevant to groundwater:

- *A detailed description of the existing environment, using sufficient baseline data;*
- *A detailed assessment of the potential impacts of all stages of the project, including any cumulative impacts, taking into consideration any relevant guidelines, policies, plans and statutory provisions. Specifically, the assessment is to include a description of the potential impacts of the project on the quantity and quality and (including salinity) of surface and groundwater; and*
- *A detailed description of the measures that would be implemented to avoid, minimise, and if necessary, offset the potential impacts of the project.*

The EA document (October 2010) prepared by AECOM, on behalf of AGL, in response to the DG Requirements, outlines the existing groundwater environment, potential impacts and proposed environmental safeguards in Section 12. Other sections of the EA of relevance to the peer review process include Section 9 - Surface Water, Section 23 - Cumulative Impacts and Section 24 - Environmental Management and Commitments. A specialist or standalone report addressing the description and potential impacts of the project on surface and groundwater resources has not been prepared as part of the EA process.

It is understood that the DoP provided the Council with a copy of the draft EA for comment in April 2010 for the purposes of obtaining comments in regard to issues not considered to have been adequately addressed. The Council submission expressed the view that the EA had not adequately assessed the impacts associated with the proposed drilling activities on groundwater within a regional context. The Council submission further requested the potential impacts of the development on water availability within the waterways covered by the Metropolitan Water Sharing Plan (MWSP), and the



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environment, be considered in the EA through consultation with the New South Wales Office of Water (NOW).

An amended version of the draft EA was provided to the Council in September 2010, along with comments made by relevant State Government Agencies. Outstanding hydrogeological concerns identified by the Council in response to the amended EA document included the following:

- The potential impacts of the project on the quality and total availability of groundwater and the implications of the interconnectivity between surface and groundwater resources on a local and regional scale, and the intended measures to mitigate these impacts; and
- Potential impacts on groundwater quality as a consequence of the installation and operation of the gas production wells and hydro-fracturing (fracking). Specifically, further information was requested concerning the nature and volumes of the chemicals proposed for these purposes, along with a justification for the conclusion in the EA that the use of such chemicals “will not result in the degradation of water quality”.

The relevant Government Agency (the New South Wales Office of Water) was noted to have also identified deficiencies in the overall assessment of water related impacts associated with the project by the draft EA. In this regard, the NOW submission was noted to include the following comment:

“The EA fails the test of adequacy with regard to NOW's statutory authority role and as such, the proposal should not be placed on public exhibition until such time as this deficiency is addressed”.

The WorleyParsons peer review of the current EA document, summarised herein, is intended to provide Council with independent advice regarding the validity and accuracy of these concerns and the adequacy of the groundwater component in terms of compliance with relevant DG Requirements and level of baseline data and assessment.

It is understood the outcomes of the peer review will be incorporated into the Council's submission to the DoP regarding the overall project application.



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3 LEVEL OF COMPLIANCE WITH DG REQUIREMENTS

In reference to Section 75F of the *Environmental Planning and Assessment Act 1979*, and in response to the project application (09_0048), the Director General (DG) issued environmental assessment requirements (revised 2/3/2010), in relation to groundwater resources, are summarised in the first column of Table 1.

In assessing the level of compliance of the EA in relation to the DG Requirements concerning groundwater resources, the following ranking system has been adopted:

- “Satisfactory compliance” - all elements of the DG requirements have been satisfactorily addressed in the EA document;
- “Low level of compliance” - minimal compliance with the DG requirements such that further information may be justified in being requested;
- “Does not comply” – all or some elements of the DG requirements have not been satisfactorily addressed in the EA document; and
- “Insufficient information to assess compliance” – the EA does not contain sufficient information to assess the level of compliance with the DG requirements.

The level of compliance with the DG requirements, as assessed by WorleyParsons, and accompanying comments, are provided in Table 1.



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Table 1 Level of Compliance with DG Requirements

Relevant DG Requirements	Level of Compliance	Comments
A detailed description of the existing environment, using sufficient baseline data.	Low level of compliance	<ul style="list-style-type: none">• There is a limited description of the existing environment (Section 4.1).• It is unclear whether baseline monitoring data has been interrogated or analysed at the local scale, as part of the EA study, to support the conceptual model (Section 4.1).• Particular aspects of the conceptual hydrogeological model (which would prove valuable in the impact assessment) are currently absent in the EA document (Section 4.1).
A detailed assessment of the potential impacts of all stages of the project, including any cumulative impacts, taking into consideration any relevant guidelines, policies, plans and statutory provisions. Specifically, the assessment is to include a description of the potential impacts of the project on the quantity and quality and (including salinity) of surface and groundwater.	Insufficient information to assess compliance	<ul style="list-style-type: none">• Limited description of the relevant groundwater guidelines, policies, plans and statutory provisions in the context of the project.• The description of the assessment of the potential impact of the project on the quantity and quality of groundwater is limited (Sections 4.2.1 and 4.2.2).• There is a very limited cumulative impact assessment (Section 4.2.2).• The assessment largely relies on industry standards and past operative experience (Sections 4.2.1 and 4.2.2).• Additional detail required, as described in Sections 4.1, 4.2.1 and 4.2.2.
A detailed description of the measures that would be implemented to avoid, minimise, and if necessary, offset the potential impacts of the project.	Insufficient information to assess compliance	<ul style="list-style-type: none">• Limited description of mitigation measures.• Additional detail required concerning current (Stage 1 and 2) and intended (Stage 3) mitigation measures, as described in Sections 4.2.1 and 4.2.2.



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4 OUTCOMES OF PEER REVIEW AND ASSESSMENT

4.1 Adequacy of detail in groundwater assessment

The following comments are made in regard to the adequacy of the level of detail provided in the hydrogeological component of the EA document.

The existing environment description and availability of baseline data

Key components of the conceptual hydrogeological model are considered to be broadly addressed in Section 12.1 (including: geological setting, major hydrogeological units, selected aquifer hydraulic properties, groundwater salinity and pH and nature of groundwater flow). However, the description of the existing groundwater system in the project area is considered to be limited and appears to rely largely on historic regional scale information. It is unclear whether baseline monitoring data has been interrogated or analysed at the local scale, as part of the EA study to support the conceptual model.

Whilst the EA document refers to previous groundwater impact assessments being reviewed, which presumably contain local scale baseline monitoring data, such data (e.g. groundwater levels and quality) is not referenced or analysed in the description of the existing groundwater environment. The description of the groundwater environment is also not accompanied by relevant figures (e.g. surface geology, locations of monitoring and private groundwater bores, groundwater flow paths, etc) or schematics (i.e. geological cross-sections).

The limited detail provided in relation to the existing groundwater environment is considered to restrict a comprehensive peer review of the groundwater impacts. Aspects of the conceptual hydrogeological model that are currently absent and which would provide value to the impact assessment include (in the context of the project area):

- Information concerning any existing or historic (Government or Industry funded) groundwater level and quality monitoring programs at or in proximity to the project area;
- A description of the geological formations underlying the Illawarra Coal Measures;
- A description of any structural controls on groundwater flow;
- Inferred lateral and vertical groundwater flow patterns of the major aquifer units;
- The range in measured permeabilities of coal seam units (if available, from exploration bores or current Stage 1 / 2 CGP operations) and hydraulic properties from any aquifer tests in neighbouring aquifers;
- The chemical constituents of the groundwater being extracted for the Stage 1 / 2 CGP operations or any other available local scale groundwater quality baseline data;
- Historic (baseline) groundwater level and quality trends (if available);



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- Information or data available concerning the current regional drawdown of groundwater levels in the Illawarra Coal Measures from the Stage 1 / 2 CGP (130 wells) and other CSM projects in the area;
- A description of the alluvial and bedrock rock recharge and discharge areas in relation to the project area; and
- The potential connectivity of the bedrock aquifers with the alluvial aquifers, surface waters systems in relation to the project area.

Description of chemical additives proposed for the drilling and fracking program

The intended use of chemical additives during the drilling and fracking program is described in Section 12.2.3 of the EA document. The description provided in regard to aspects of the program is reasonably generic and limited in detail.

It is recognised that the competent application of industry standard technologies, techniques, and monitoring/mitigation measures associated with such a drilling and fracking program are likely to minimise the impacts to the groundwater system. However, given the potential ecological, human health and sustainability risks of introducing chemical additives to a groundwater environment, the inclusion of the following additional detail in the EA would be beneficial to addressing the assessment of groundwater related impacts:

- A full list of chemicals additives intended for use in the drilling and fracking program. A material safety data sheet (MSDS) of each chemical additive would be a useful reference guide particularly in its description of the chemical and physical properties of the substance and health hazard information;
- The intended volumes, dilution factor, rate of injection and injection frequency of the chemical additives during the drilling and fracking program;
- The alteration of the chemical characteristics (i.e. toxicity) of the additives upon dilution with other drilling / fracking fluids, the in-situ groundwater and aquifer matrix;
- The approximate proportion of chemical additives remaining in-situ following well flushing procedures;
- The corrosive and biodegradable properties of each chemical additive; and
- Concentrations of chemical additives remaining in-situ over geological timeframes (including durations for chemical breakdown and by-products remaining).



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4.2 Adequacy of the assessment of impacts and mitigation measures

The following comments are made concerning the Project's construction (Section 4.2.1) and operation phases (Section 4.2.2) In regards to the adequacy of the impact assessment and mitigation measures provided in the hydrogeological component of the EA document.

4.2.1 Construction phase

Assessment of potential wellbore pathway risks and description of associated environmental safeguards

Improperly constructed CSM wells have the potential to transmit pressure reduction effects directly from the coal measures to overlying and/or underlying aquifers. Possible consequences include increased groundwater level drawdown in overlying and underlying aquifers that may potentially resulting in decreased water bore yields, reduction of flow to environmental receptors, and gas migration to overlying aquifers.

A limited description of the drilling and construction methods, including those measures taken to minimise CSM wells providing pathways for transmitting pressure effects or gas to overlying units. is provided in the EA document. Whilst the methods described (in the EA) may represent a satisfactory approach to minimising potential wellbore pathways, further detail (as listed below) is considered warranted and would assist in evaluating the adequacy of the assessment and the proposed safeguards:

- The requirements of the Department of Industry and Investment (DII) concerning the drilling and construction of CSM wells should be appropriately referenced;
- A description of the staging of the drilling and construction of a typical CSM well and specific measures to:
 - control flow from or between aquifers intersected during and after drilling and construction; and
 - measures to test and maintain the integrity of the seals between the coal measures and the overlying and underlying aquifers (including during fracing activities);
- A description of any geophysical logging intended during drilling (or already conducted in Stage 1 / 2 CGP) to assess the relative permeability of neighbouring formations and potential for connectivity with the target coal seams; and
- A description of any measures intended to minimise the spread of bio-fouling bacteria through the coal seams.



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4.2.2 Operational phase

Assessment of potential impacts and environmental safeguards associated with the use of chemical additives proposed for the drilling and fracing program

Assessment of Potential Impacts

The introduction of chemical additives to a groundwater system can involve potential ecological, human health and sustainability risks. In general, the geological and hydrogeological setting, nature and concentration of the chemical additive and process by which the chemical is added will largely dictate the level of risks to the groundwater system and the associated quality impacts (if any) to neighbouring groundwater users and environmental receptors.

The chemical additives referenced in the EA document for potential use in the drilling and fracing program are commonly employed in the drilling industry (e.g. Sodium hypochlorite and Hydrochloric acid). The toxicity of the chemical additives listed is generally governed by the relative concentration, and as broadly indicated in the EA document, will only be used in a more dilute form. It is also noted that the EA document refers to the recovery of a “vast majority” of these additives for treatment and reuse. While the recovery and reuse of additives used is common practice in CSM operations, there is an absence of detail regarding this statement in the EA in terms of matters such as volumes and concentrations.

However, as indicated in Section 4.1, the description provided in regard to aspects of the drilling/fracing program is considered reasonably generic and limited in detail. Whilst current industry practices and measures applied during these programs are likely to minimise the risks to the groundwater system, the DG Requirement of a “*detailed assessment of the potential impacts*” in relation to groundwater, is considered to warrant additional and project specific information being supplied in the EA document in regards to this activity. The additional information sought to address the impact assessment of this activity is listed in Section 4.1. The absence of this project specific information currently limits a comprehensive review of the potential impacts and the level of risk to the groundwater system from this activity.

Commentary in regard to the Environmental Safeguards

The information supplied in the EA document concerning the proposed safeguards of this activity is considered to be limited in detail and further clarification is sought to enable a comprehensive review of the relative risks to the groundwater system. Furthermore, the DG Requirement of a “*detailed description of the measures that would be implemented to avoid, minimise, and if necessary, offset the potential impacts of the project*” is considered to justify additional information in the EA document.

In this regard, the following additional detail would be beneficial:

- detail concerning any routine testing or monitoring aimed at detecting any breaches of fracing to neighbouring formations and interconnected surface water systems; and
- Detail concerning any plans or practices in place in the event of casing failure during the fracing program.



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Clarification of these items will also assist in evaluating the conclusions stated in the EA document concerning the risks of the drilling and fracking program (i.e. that these activities are unlikely to have any measurable effect on the groundwater regime).

Assessment of impact to neighbouring aquifers, groundwater users and environmental receptors from the dewatering of the coal measures and associated environmental safeguards

The impact assessment concerning the dewatering of the coal measures and proposed environmental safeguards is described in Section 12.2 to Section 12.5 and of the EA document.

It is acknowledged that the geological setting of the CGP, and the nature of the proposed extension of the CSM development itself, is such that the associated risks of groundwater extraction are not comparable with other CSM projects such as those situated in southeast Queensland. However, the EA contains limited information in regard to the impact assessment neighbouring aquifers, groundwater users and environmental receptors from the dewatering of the coal measures, as well as the proposed environmental safeguards. The inclusion of such information is considered necessary is for the purposes of compliance with the DG Requirement's and to enable a comprehensive review of the adequacy of the assessment and intended mitigation measures. The key outstanding items requiring further detail and / or clarification are discussed below.

Extent and magnitude of groundwater level drawdown

The production of CSM requires the reduction of hydrostatic pressure in the target coal seams of the Illawarra Coal Measures, through groundwater extraction. Consequently, the potentiometric surface (or the level of the groundwater within the confined space of the coal seams) will be lowered within an area of influence of CSM production. Vertical hydraulic gradients will also be affected, creating a pressure differential between the coal seams and overlying and underlying units. The pressure differential has the potential to transmit groundwater vertically from overlying and underlying aquifers towards the coal seams through intervening units (aquifers) or along open pathways. The magnitude of the groundwater transfer is governed by the pressure differential between the units and the ability of the intervening layer to transmit the groundwater vertically; a function of the unit's vertical hydraulic conductivity and thickness.

Lowering of the potentiometric surface in the coal seams and/or overlying and underlying aquifers may present a potential risk to groundwater users and environmental receptors, if present within the area of influence.

The assessment of the potential impacts and risks of groundwater extraction during CSM production is not considered to be presented in sufficient detail in the EA document to enable a comprehensive peer review or to satisfy the DR Requirements of a detailed groundwater impact assessment. The following items would aid the current assessment:

- A description of the extent and magnitude of the current drawdown in the coal measures as a consequence of the dewatering activities occurring in Stage's 1 and 2 of the Camden CSP. It is



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noted that the EA document states that *"the existing 130 wells has already resulted in dewatering of the target coal seams on a regional scale"*.

- The anticipated propagation of the groundwater level drawdown in the coal measures over the duration of the Stage 1, 2 and 3 CGP operation, and neighbouring dewatering operations. The impact assessment of all dewatering operations is necessary to achieve compliance with the DG Requirements concerning the assessment of "cumulative impacts". The outcomes of this assessment can be used to evaluate the potential impact to beneficial users of the coal measures aquifers (i.e. groundwater users and environmental receptors, if present).
- The EA document indicates that the relatively impermeable overlying Narrabeen Group will aid in confining the impacts of dewatering to the coal measures. It would be prudent for the EA to justify this statement through a simple analytical assessment and accompanying sensitivity analysis to capture the variability in hydraulic properties. This analysis would assess the potential for water movement to the production zone from overlying and underlying units through intervening aquitards and the anticipated time lags.

The assessment should account for all dewatering operations in the area in accordance with the DG requirement item concerning the assessment of "cumulative impacts". Reference to any current groundwater level monitoring results supporting the conclusion that groundwater level impacts (from the existing Stage 1 and 2 CGP) are restricted to the coal measures would be beneficial. However, it is noted that significant time lags may exist between the commencement of production and any impacts to neighbouring formations. Accompanying this assessment should be an evaluation of the potential impact to beneficial users of any affected aquifers, connected surface water systems and environmental receptors.

Potential for gas migration

Depressurisation of coal seams by groundwater extraction allows the gas adsorbed to the coal cleats to desorb and migrate to the production well for extraction both in the dissolved phase and as free gas. However, at some distance from the edge of the gas field, where the effects of depressurisation are less, the force of buoyancy will overcome that of the pressure gradient. Consequently, these gases may migrate to shallower intervals and potentially discharge to the surface, either through wellbores or via natural geological pathways to surface seeps. Gas migration and seepage to the surface has the potential to affect vegetation die-back, human health and safety risks if gas builds up in concentration.

The EA document does not specifically identify or address any risks associated with gas migration. Although it is acknowledged that the potential risks associated with gas migration are likely to be low for this project, the DG Requirement item concerning a "detailed assessment of the potential impacts on groundwater quality and quantity" is considered to warrant its inclusion in the EA. In this regard, the EA document should discuss the potential for gas migration away from the project area, via wellbores (if any) and through geological pathways. If deemed a potential risk, the EA (through the Environmental Management System) should present proposed control / mitigation measures (i.e.



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appropriate CSM well construction, gas monitoring, abandonment of inappropriately constructed well bores, etc).

Commentary in regard to the Environmental Safeguards

Broadly, with reference to the environmental safeguards intended, it is unclear as to the level of groundwater level and quality monitoring currently established for the Stage 1 and 2 CGP, and whether the monitoring program will be enhanced as part of the Stage 3 expansion. Further definition of the current and proposed groundwater monitoring program, trigger levels and investigation and response process would assist in assessing the adequacy of the environmental safeguards and in complying with the DG Requirements concerning the provision of detailed mitigation measures.



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5 KEY FINDINGS AND RECOMMENDATIONS

WorleyParsons has conducted a peer review of the groundwater component of the Camden Gas Project (Stage 3) Environmental Assessment (EA) document. Broadly, it is considered that limited information is provided in the EA document concerning certain aspects of the description of the existing environment, the impact assessment and proposed environmental safeguards. Provision of additional information and / or clarification regarding these items would enable a more comprehensive consideration of groundwater resource risks associated with the project raised by stakeholders and possibly assist to address some or all of their outstanding concerns.

Accordingly, it is recommended that the Campbelltown City Council seek further information and clarification concerning the following items in the EA document:

- Definition of key aspects of the existing groundwater environment and clarification of the baseline data used to inform the hydrogeological conceptual model in the existing environment description.
- A more comprehensive description of the proposed fracking process, in particular, the chemical additives intended for injection. The environmental safeguards (including controls, monitoring and testing) proposed for the fracking process to mitigate potential impacts to neighbouring formations also requires clarification. The absence of this project specific information currently limits a comprehensive review of the potential impacts and the level of risk to the groundwater system from this activity.
- A more comprehensive description of the specific measures intended to minimise potential wellbore pathways during the drilling and construction program.
- Further clarification of the (cumulative) impact assessment to neighbouring aquifers, groundwater users and environmental receptors from the dewatering of the coal measures, and the proposed environmental safeguards (including any current and proposed groundwater monitoring program, trigger levels and investigation and response process).

It is noted that a review of the subsidence assessment has not been conducted as part of the current peer review process.



**CAMPBELLTOWN CITY COUNCIL
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6 CONCLUSION

A peer review of the groundwater component of the Camden Gas Project (Stage 3) Environmental Assessment (EA) document has been conducted by WorelyParsons. Certain aspects of the description of the existing environment, the impact assessment and proposed environmental safeguards are considered limited in detail.

It is recommended that Campbelltown City Council seek further information and clarification concerning those items of the EA identified in Section 5 of this report.

Pending the provision of this additional information and clarification of these items, a more comprehensive consideration of groundwater resource risks associated with the project can be conducted.



Environment, Climate Change & Water

Our reference: DOC10/48281; FIL09/3699
Contact: Peter Bloem 4224 4100

22 DEC 2010

Mr Clay Preshaw
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Dear Mr Preshaw

I refer to your letter dated 22 September 2010 advising of the exhibition of the Part 3A Camden Gas Project – Stage 3 Major Project Application and seeking any comments including any recommended conditions of approval regarding the project.

The Department of Environment, Climate Change and Water (DECCW) has undertaken a review of the Environmental Assessment (EA) and has attached comments, including some recommended amendments to Statement of Commitments (SOC) additional SOC's and/or Approval Conditions for Department of Planning's (DoP) consideration. The main issues of concern relate to potential conflict with future urban development in the Growth Centres, the need for environmental assessment of hydraulic fracturing, if it is to be undertaken, and inconsistencies in information provided on the impacts of Cumberland Plains Woodland.

Comments (Items 1-4) relate to the more significant issues identified during DECCW review of the EA.

We have provided other specific comment on:

- Noise Impact Assessment
- Biodiversity Issues; and
- Aboriginal Cultural Heritage.

Additional comment on other matters is also provided at **Attachment 1**.

1. Areas Identified for Future Development

The proposed well surface locations have been sited a significant distance (in all cases greater than 300 metres) from the nearest existing residential property in order to meet the NSW Industrial Noise Policy (EPA, 1999) (INP) at existing receivers.

As the project area contains lands that are within the South West Growth Centre and Camden Council development areas there is potential for future land use conflict.

For example the project area includes areas of land identified for urban development including residential and industrial areas such as Turner Road, Camden Lakeside and El Caballo Blanco. The Proponent has stated that additional noise mitigation may be required if these residential areas proceed in order to mitigate noise impacts from wells CU02, CU20 and CU22, this however would be

subject to further noise monitoring and assessment. A list of proposed future noise mitigation measures is presented in the EA.

To address potential land use conflict issues, the DECCW recommends that the additional mitigation measures documented in the EA should be implemented when new development proceeds in this area. In addition the *Locational Guidelines: Development in the Vicinity of Operating Coal Seam Methane Wells* (DoP, 2004) should also be applied to any new development undertaken in these or any other future development areas.

Further consideration should be given to the appropriateness of the location of the proposed wells given that land in the project area has been released for urban development. In this regard, DECCW recommends that consultation be undertaken with the relevant planning authorities and Proponent to ensure that land use conflict is addressed and minimised.

DECCW also recommends DoP consider potential impacts from this project on future development within the project area as part of the strategic land use planning process.

2. Hydraulic Fracturing (Fracking)

The EA outlines a variety of technologies which are available for the drilling of wells. In establishing the most appropriate drilling technique for each well surface location, geotechnical issues must firstly be considered, followed by a range of environmental issues and constraints. The Proponent's preference is for surface to In-seam well technology, which virtually eliminates the need to undertake fracking. Nevertheless the Proponent advises that fracking may be required as a last possible option to stimulate gas flow should a borehole not produce gas as required. It is also understood that at each gas well pad area a vertical well is likely to be established in conjunction with the in-seam wells to enable extraction of gas from the area directly below the pad. This vertical well is more likely to require fracking.

While fracking is proposed in the EA as a contingency well technology, there is no corresponding EA on this technique. In this regard we recommend that DoP seek further information from the Proponent including but not necessarily limited to the following matters:

- a) the number and location of wells to be stimulated by fracking
- b) a full description of the fracking process for new wells and also (if undertaken) remediation fracking of older wells
- c) a complete inventory and characterisation of the chemicals used within the fracking process including indicative volumes, chemical formulations, active constituents and concentrations in both concentrated and diluted forms including toxicity data. This must include all components of the fracking process for example including biocides, corrosion inhibitors, pre-fracc acid washing and fracking fluid breakdown chemicals. DECCW recommends DoP require the use of petroleum products be excluded from the fracking process, in particular those containing any Benzene/Toluene/Xylene (BTX).
- d) estimates or likely range of percentage recovery of fracking fluids from the coal seam aquifer
- e) assessment of the fate of residual fracking chemicals retained in the target coal seam aquifer
- f) proposed management (including storage, reuse and waste disposal options) of fracking fluid flowback at the surface pad area
- g) an overall environmental risk assessment which includes:
 - hazards associated with this process that could cause harm to the environment
 - the environmental consequence if these hazards were to occur
 - the magnitude of the consequences to the environment
 - the probability of the consequences to the environment
 - significance of the risk to the environment
 - proposed management and design measures to minimise and manage these risks to the environment.

3. Impacts on the Critically Endangered Ecological Community *Cumberland Plain Woodland*

The EA states that while the 'project area contains areas of Cumberland Plain Woodland (CPW) a critically endangered ecological community (CEEC), no removal of CPW is required as part of the project.' However, Appendix E of the EA states that approximately 0.1 hectares of CPW will be directly impacted at a section of VV07 gas gathering line (GGL) west of the VV07 well surface

location (WSL). In addition, Appendix 4 in Appendix E of the EA states that a further 3.74 hectares of CPW may be impacted during construction of the GGLs.

In light of the above, the EA should clarify the area and conservation significance of CPW to be modified and/or removed by the proposal.

In the event that CPW may be modified and/or removed by the proposal, all opportunities to avoid or minimise impacts on CPW must be canvassed in the EA, including but not limited to, under-boring, removing well surface locations, and relocating GGLs along existing formed access tracks, easements or exotic closed grassland. Accordingly DECCW seeks a more detailed assessment of all practical and feasible options to avoid or minimise impacts on CPW.

In the event that impacts on CPW cannot be avoided or mitigated, any residual impact must be compensated. Accordingly, should compensatory measures be required, DECCW seeks a Statement of Commitment for the development of a suitable biodiversity offset package as outlined at Attachment 1.

4. Rosalind Park Gas Treatment Plant

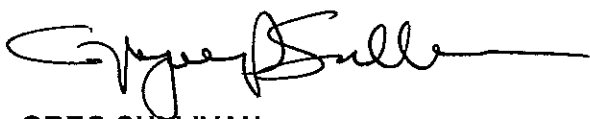
The AGL Rosalind Park Gas Plant (RPGP) is currently licenced under the *Protection of the Environment Operations Act 1997* through Environment Protection Licence (EPL) 12003. The proposal intends to process gas extracted from the Camden Gas Project Northern Expansion at the RPGP. DECCW notes that the RPGP has approval for the processing of gas to a capacity of 14.5 petajoules per annum (PJ/a) via three engines.

The Proponent should clarify whether the RPGP has sufficient operational capacity to accommodate the additional gas generated by the Northern Expansion. Further, AGL will need to make a separate application to vary the existing EPL should project approval be granted.

DECCW seeks an opportunity to review the draft Director-General's EA Report for this project. This is to ensure that the relevant environmental requirements stipulated in this letter and attachments have been adequately addressed. If this is not possible we would like the opportunity to discuss these environmental requirements with the Proponent and DoP.

If you have any questions in relation to this issue or wish to discuss this matter further please contact Peter Bloem on 4224 4100.

Yours sincerely



GREG SULLIVAN
Deputy Director General
Environment Protection and Regulation

Enclosure:

cc: Erin Saunders
AECOM Australia Pty Ltd
Level 8, 17 York Street
SYDNEY NSW 2000

ATTACHMENT 1

DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER COMMENTS ON THE PROPOSED CAMDEN GAS PROJECT – STAGE 3

Department of Environment, Climate Change and Water (DECCW) has undertaken a review of the Environmental Assessment (EA) and provide the following comments including suggested amendments to Statement of Commitments (SOC) additional SOC's and/or Approval Conditions for Department of Planning's (DoP) consideration.

1 Noise Impact Assessment

1.1 Areas Identified for Future Development

The proposed well surface locations have been sited a significant distance (in all cases greater than 300 metres) from the nearest existing residential property in order to meet the NSW Industrial Noise Policy (EPA, 1999) (INP) at existing receivers.

As the project area contains lands that are within the South West Growth Centre and Camden Council development areas there is potential for future land use conflict. In relation to some of these future residential areas the Proponent has stated that additional noise mitigation would be implemented in order to mitigate any noise impacts from wells CU02, CU20 and CU22 if the development proceeds. However its implementation would be subject to further noise monitoring and assessment.

To address potential land use conflict issues, DECCW recommends that the additional mitigation measures documented in the EA should be implemented when new development proceeds in this area. In this regard we recommend that the following condition be sought as either an additional SOC or be secured as a condition of Approval:

The noise mitigation measures presented in Appendix F of the EA must be implemented in order to mitigate any noise impacts from wells CU02, CU20 and CU22 if the Turner Road, Camden Lakeside and El Caballo Blanco residential developments proceed.

In addition the *Locational Guidelines: Development in the Vicinity of Operating Coal Seam Methane Wells* (DoP, 2004) should also be applied to any new development undertaken in these or any other future development areas.

DECCW also suggests that consideration be given to the appropriateness of the location of the proposed wells given that land in the project area has been released for urban development. In this regard, DECCW recommends that consultation be undertaken with the relevant planning authorities to ensure that land use conflict is addressed and minimised.

DECCW also recommends DoP consider potential impacts from this project on future development within the project area as part of the strategic land use planning process.

1.2 Recommended Noise Conditions

DECCW recommends the following requirements be sought as either additional SOC's or be secured as conditions of Approval:

- 1.2.1** Noise generated by the operation of the nominated wells and associated infrastructure must not exceed the noise limits presented in the tables below. (Note: DECCW has identified the following three wells due to them being in close proximity to the identified receiver locations)

Gas Well Operation (Noise limits dB(A))

Well Number	ID	Receiver Location	Day LA _{eq(15 minute)}	Evening LA _{eq(15 minute)}	Night LA _{eq(15 minute)}
CU06		St Gegory's College Blairmount	40	40	40
CU26 CU29		Frontignan St Eschol Park	38	38	38

Note: Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays.

- *Evening is defined as the period from 6pm to 10pm.*
- *Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays.*

1.2.2 The noise limits set out in Condition 1.2.1 apply under all meteorological conditions except for any one of the following:

- Any wind speed less or greater than three metres/second at 10 metres above ground level.

1.2.3 To determine compliance:

- with the L_{eq(15 minute)} noise limits in Condition 1.2.1 the noise monitoring equipment must be located:
 - within 30 metres of a dwelling façade where any dwelling on the property is situated more than 30 metres from the property boundary that is closest to the premises;
 - approximately on the boundary where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises;
 - within approximately 50 metres of the boundary of a National Park or a Nature Reserve.
- the noise monitoring equipment must be located in a position that is:
 - at the most affected point at a location where there is dwelling at the location; or
 - at the most affected point within an area at a location prescribed by conditions 1.2.3(a).

1.2.4 For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

1.3 Noise Monitoring

To determine compliance with Condition 1.2 attended noise monitoring must be undertaken in accordance with Conditions 1.2.2 and 1.2.3 and:

- at each one of the locations listed in Condition 1.2
- upon commissioning of the new wells and occurring annually beginning 1 January each year
- in accordance with the NSW Industrial Noise Policy (EPA, 1999) for a minimum of:
 - 1.5 hours during the day
 - 30 minutes during the evening; and
 - 1 hour during the night
- occur for three consecutive days.

1.4 Construction Noise

Well drilling will be a potentially significant source of noise during the construction phase and noise barriers are proposed as a mitigation measure. While some construction noise management measures are proposed in the EA, these do not capture all the activities that may potentially cause

construction and vibration impacts such as access road construction and gas gathering line installation. In addition contingency measures such as dewatering pumps and associated equipment to remove water from wells until steady state gas production is achieved have not been included in the noise assessment. To address these matters DECCW recommends the development and implementation of a Noise and Vibration Management Plan and propose the following requirement as either a SOC or condition of Approval.

Noise and Vibration Management Plan

Prior to commencement of works, the Proponent shall prepare a Noise and Vibration Management Plan covering all activities consistent with the guidelines contained in the Interim Construction Noise Guidelines (DECCW 2009) to detail how noise and vibration impacts would be minimised and effectively managed. The Plan shall include but not necessarily be limited to:

- the appropriate noise and vibration objectives for each identified noise sensitive receiver
- details of activities and a schedule of works
- identification of activities that have the potential to generate noise and/or vibration impacts on surrounding sensitive receivers, particularly residential receivers
- assessment of potential noise impacts from the proposed work methods including noise from vehicles, pumps and noise impacts from required traffic diversions
- include noise and vibration from ancillary activities such as site yards, plant compounds, batch plants and crushing plants
- works timetabling, in particular works outside standard hours, to minimise noise impacts
- justification for any activities outside standard construction hours
- examination of all feasible and reasonable noise mitigation measures including the use of alternative methods where potential noise impacts exceeds the relevant objectives
- reiteration of the commitments made in the Statement of Commitments in the EA, and where there is additional detail on these in the NVMP
- a detailed description of what actions and mitigation measures would be implemented to ensure that these works would comply with the relevant noise and vibration criteria/ guidelines
- a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often monitoring would be conducted, how the results of the monitoring would be recorded, and, if any non-compliance is detected
- procedures to notify residents of activities that are likely to affect their noise and vibration amenity, as well as procedures for dealing with and responding to noise complaints
- site contact person and appropriate telephone number; and
- description and commitment to work practices which minimise noise; and management and mitigation measures which minimise impact.

2. Biodiversity Issues

2.1 Critically Endangered Ecological Community *Cumberland Plain Woodland*

Appendix E of the EA states that approximately 0.1 hectares of Cumberland Plain Woodland (CPW) will be directly impacted at a section of VV07 gas gathering line (GGL) west of the VV07 well surface location (WSL). In addition, Appendix 4 in Appendix E of the EA states that a further 3.74 hectares of CPW may be impacted during construction of the GGLs. CPW has been substantially cleared and modified and is consequently listed as a critically endangered ecological community under the *Threatened Species Conservation Act 1995* (TSC Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

As mentioned above, DECCW seeks clarification on the area and conservation significance of CPW to be modified and/or removed by the proposal. In the event that CPW may be modified and/or removed by the proposal, all opportunities to avoid or minimise impacts on CPW must be canvassed, including but not limited to, under-boring, removing well surface locations, and relocating GGLs along existing formed access tracks, easements or exotic closed grassland.

In the event that impacts on CPW cannot be avoided or mitigated, any residual impact must be compensated by the development of a suitable biodiversity offset package.

To address the above issues DECCW seeks the following SOC:

1. Biodiversity Offset Package

- a. The Proponent shall develop and submit for the approval of the Director-General, a Biodiversity Offset Package (the Offset) to compensate for the loss of CPW. The Offset shall include, but not limited to the following:
 - i. The Offset shall be developed in accordance with the *Principles for the Use of Biodiversity Offsets in NSW* (DECCW, 2009).
 - ii. The Offset shall be developed in consultation with DECCW.
 - iii. The *BioBanking Assessment Methodology and Operations Manual* (DECCW, 2009) could be used to calculate the amount and attributes of the Offset.
 - iv. The Offset shall be directed towards 'priority conservation lands' as identified in the draft *Recovery Plan for Cumberland Plain Woodland* (DECCW, 2009), where feasible.
 - v. The Offset shall be secured for long-term conservation within 12 months of any consent or approval through a means agreed to by DECCW.

2.2 Management of Biodiversity Constraint Zones

CPW as identified in the *Native Vegetation of the Cumberland Plain, Western Sydney* (NPWS, 2002) is referred to as 'biodiversity constraint zones' in Figures 6a to 6c in Appendix E of the EA and are within the surface project area. These 'biodiversity constraint zones' contains both 'core habitat' and 'support to core' CPW as identified by the *Conservation Significance Assessment of the Native Vegetation of the Cumberland Plain* (DECCW, 2002). The significance of the CPW within these 'biodiversity constraint zones' is affirmed by the *Terrestrial Vertebrate Fauna of the Greater Southern Sydney Region* (DECCW, 2007), which highlights that these CPW remnants form part of the highest priority fauna habitat within the Greater Southern Sydney Region.

The EA notes that these 'biodiversity constraint zones' have medium to high habitat potential for twelve threatened fauna species, such as Cumberland Plain Land Snail *Meridolum corneovirens* (CPLS), Eastern Freetail-bat *Mormopterus norfolkensis* and Grey-headed Flying-fox *Pteropus poliocephalus*. The EA further notes that these 'biodiversity constraint zones' have medium to high habitat potential for six threatened flora species and populations, such as Spiked Rice-flower *Pimelea spicata*, Native Pear *Marsdenia viridiflora ssp. viridiflora* and White-flowered Wax Plant *Cynanchum elegans*.

To ensure that appropriate conservation and management of these 'biodiversity constraint zones', DECCW seeks the following SOC:

1. Biodiversity Constraint Zones

- a. General
 - i. The boundary of the biodiversity constraint zone, as identified in Figures 6a to 6c in Appendix E of the EA, shall be clearly defined in consultation with a fully qualified ecologist prior to the commencement of any construction works.
 - ii. Site supervisors should be provided with aerial images, including the boundary of the defined biodiversity constraint zone.
 - iii. All hollow bearing trees shall be retained and protected, with no excavation within the critical root zone (extending to 2 metres beyond the drip line) of hollow bearing trees.
- b. Well Surface Locations (WSL) and Access Roads
 - i. All WSLs, including access and maintenance areas and initial construction compound areas, as identified in Figure 12 of the EA, shall be located wholly outside the biodiversity constraint zone.
 - ii. Vehicles, heavy plant and machinery shall be restricted to designated areas located wholly outside the biodiversity constraint zone during construction and maintenance of any WSL.
 - iii. Access roads for the construction and maintenance of WSL shall be located to avoid the biodiversity constraint zone, native vegetation, derived native grasslands and Blackthorn (*Bursaria spinosa*) stands.
- c. Gas Gathering Lines (GGL)

- i. GGLs shall be located to avoid the biodiversity constraint zone, native vegetation, derived native grasslands and Blackthorn (*Bursaria spinosa*) stands.
- ii. GGLs shall be located in existing formed access tracks, easements or exotic closed grassland, where practicable.
- iii. Access roads for the construction and maintenance of GGL shall be located in existing formed access tracks, easements or exotic closed grassland, where practicable.
- iv. In locations where the biodiversity constraint zone, native vegetation, derived native grasslands or Blackthorn (*Bursaria spinosa*) stands may be disturbed during the construction of GGL, erosion and sediment control fencing shall be installed around vegetation that is to be retained with no access to occur in the fenced areas. Signs shall be placed on the fencing that identifies these areas as 'no access zones.'
- v. In locations where the biodiversity constraint zone, native vegetation, derived native grasslands or Blackthorn (*Bursaria spinosa*) stands may be disturbed during the construction of GGL, a fully qualified ecologist shall develop a response protocol should CPLS be found, as well as undertake pre-clearing CPLS surveys prior to the commencement of any construction works.
- vi. In locations where the biodiversity constraint zone, native vegetation, derived native grasslands or Blackthorn (*Bursaria spinosa*) stands may be disturbed during the construction of GGL, hygiene protocols shall be implemented for vehicles, heavy plant and machinery used for earthworks.

2.3 Landscape Rehabilitation Management Plan

While a Statement of Commitment (19) has been recommended for progressive rehabilitation in accordance with the existing Landscape Rehabilitation Management Plan (LRMP), DECCW considers that opportunities exist as part of rehabilitation to implement programs to increase biodiversity values for threatened species, populations and CPW within the Surface Project Area.

To address the above issues DECCW seeks the following SOC:

1. Landscape Rehabilitation Management Plan
 - a. The Proponent shall prepare and implement a Landscape Rehabilitation Management Plan (LRMP) for the Surface Project Area, to the satisfaction of the Director-General prior to the commencement of construction. The LRMP shall include, but not limited to the following:
 - i. The LRMP shall be prepared in consultation with a fully qualified ecologist prior to the commencement of any construction works.
 - ii. The LRMP shall be consistent with best practice standards for bushland management and restoration contained in the draft *Recovery Plan for Cumberland Plain Woodland* (DECCW, 2009) and *Recovering Bushland on the Cumberland Plain: Best Practice Guidelines for the Management and Restoration of Bushland* (DEC 2005).
 - iii. The LRMP shall define the rehabilitation objectives and goals for the area, clearly set out the proposed actions required, monitoring regimes, as well as performance indicators to report on the implementation of rehabilitation.
 - iv. The LRMP shall include an accompanying work or action plan which includes specific restoration actions, site preparation, rehabilitation techniques to be used, as well as care and maintenance following rehabilitation.
 - v. The LRMP shall use species and densities recommended in Appendix 7 in Appendix E of the EA during rehabilitation.
 - vi. The LRMP shall address the management weed and pest animal species, weed eradication methods, protocols for the use of herbicides, stock exclusion fencing, as well as methods to treat and re-use weed infested topsoil.
 - vii. The LRMP shall be implemented progressively, that is, rehabilitation shall occur as soon as reasonably practicable following the disturbance.

3. Aboriginal Cultural Heritage

DECCW broadly agrees with the recommendations in Appendix I of the EA and re-iterates that impacts should be avoided to all known Aboriginal objects, sites and potential Aboriginal deposits in the first instance. If impacts cannot be avoided, then the Proponent must minimise these impacts and

ensure that adequate mitigation takes place. Any mitigation strategies should be developed in consultation with the Aboriginal community.

To address the above issues DECCW seeks the following SOC:

1. Aboriginal Cultural Heritage

- a. The Proponent shall develop, in consultation with the Aboriginal community, a communication strategy to ensure the Aboriginal community is kept informed of developments with respect to the management of Aboriginal objects, sites and potential Aboriginal deposits.
- b. The Proponent shall develop management and mitigation strategies prior to the commencement of any construction works.
- c. The Proponent shall develop management and mitigation strategies in consultation with the Aboriginal community.
- d. The Proponent shall update the Aboriginal Cultural Heritage Management Sub-Plan (ACHMSP) based on the findings of the Aboriginal Archaeological Assessment, in consultation with the Aboriginal community and DoP. Note: DECCW does not wish to be consulted in relation to the ACHMSP and considers this to be a more appropriate role for the approval body, which in this case is DoP.
- e. In the unlikely event that human remains are recovered:
 - i. The Proponent shall cease work immediately in the vicinity of the remains and the area should be secured to avoid further harm to the remains.
 - ii. The Proponent shall notify the local police and DECCW's Environment Line on 131 555 as soon as practicable and provide any available details of the remains and their location.
 - iii. The Proponent shall not recommence work at the particular location until authorised in writing by DECCW.

Please note, under s20 (1) of the *Aboriginal and Torres Strait Island Heritage Protection Act 1984*, 'a person who discovers anything that he or she has reasonable grounds to suspect to be Aboriginal remains shall report his or her discovery to the Minister, giving particulars of the remains and of their location,' there is a requirement for all Aboriginal human remains that are discovered anywhere in Australia to be reported to the relevant Commonwealth Minister.

From: Stuart Read-Planning
To: Clay Preshaw
Date: 16/12/2010 4:11 pm
Subject: Re: Fwd: Camden Gas - Stage 3 - EA

thanks Clay - that's very helpful advice.

Looking at the revised Final Cultural Heritage Assessment, prepared by Biosys, dated 8/2010, Table 16.3's proposed mitigation measures are supported.,

Compliance with these measures should be required as a condition of consent (as should compliance with recommended measures to protect Aboriginal cultural heritage values and Flora & Fauna values)), with the following minor additions:

Table 1 - GGL between RA09 & RA03 - (Milestones on the western side of Campbelltown Road). Add the following words to the existing measures:

Ensure that all project personnel are aware of the 'stop work provision' should any milestones or relics of milestones be unearthed during any phase of the project work.

Table 1 - CU06 WSL Section 5 (Upper Canal - Badgelly Tunnel). Add the following words:

Consider under-boring the GGL under the tunnel, in consultation with SCA and the Heritage Branch.

p.24.17's commitment in the Statement of Commitments re discovery of a relic - needs a few words added, as follows:

13. In accordance with section 146 of the Heritage Act **1977**, the Proponent **will stop work** and notify the Heritage Council of NSW if any historical archaeological 'relics' (**within the definition in that Act**) **are disturbed or discovered** by the proposed works.

With this inclusion, this is good practice.

>>> Clay Preshaw 15/12/2010 3:12 pm >>>
Hi Stuart,

As mentioned in our earlier telephone conversation, I have reviewed your earlier correspondence relating to the draft EA and provided some brief comments.

Impacts

The key issues that were raised in your letter dated 31 March 2010 related to impacts on the following items:

the Upper Canal;
4 additional archaeological sites;
Gledswood and Varroville estates;
Molles Main; and
items adjacent to the project area, including Raby Estate and Denham Estate.

The revised EA provides additional information on the impacts and relevant mitigation measures for all of the above heritage items (refer to pages 16-4 and 16-5). I note, however, that although the revised EA refers to "several other heritage items outside the project area" including Denham Court estate, it does not specifically mention Raby Estate.

Commitments

Your previous letter also recommended that a provision should be included in the Statement of Commitments in the event that a relic is disturbed by works. The revised EA provides the following commitment on page 24.17:

13. In accordance with Section 146 of the Heritage Act, the Proponent would notify the Heritage Council of NSW if any historical archaeological 'relics' (within the meaning of the Heritage Act) are disturbed by the proposed works.

Conditions

Other than the above recommendations, the previous letter made several recommendations relating to conditions of approval. The Department has noted these recommendations and will take them into account when drafting conditions.

I hope that this summary will assist you in providing any further comments on the revised EA by Friday 17 December. If

you are comfortable that your previous concerns have been addressed, please simply respond with a short email confirming that.

If you have any questions please contact me on 9228 6305.

Cheers

Clay Preshaw |Senior Planner
Department of Planning
23-33 Bridge Street
Sydney NSW 2000
T: 9228 6305
F: 9228 6466

>>> Clay Preshaw 7/12/2010 4:51 pm >>>
Hi Stuart,

I left a telephone message with you earlier. I believe you are the officer dealing with the Camden Gas Stage 3 EA as your name is on the latest correspondence we have on file.

The public exhibition of the EA ends today. Could you please update me as to when we can expect comments from the Heritage Branch?

Regards

Clay Preshaw |Senior Planner
Department of Planning
23-33 Bridge Street
Sydney NSW 2000
T: 9228 6305
F: 9228 6466



Mr Howard Reed
Manager
Mining Projects
GPO Box 39
SYDNEY NSW 2001

Attention: Mr Clay Preshaw

Dear Mr Reed

Camden Gas Project – Stage 3 Northern Expansion (09_0048)

I refer to your letter of 25 October 2010 requesting comment on the Environmental Assessment (EA) for the proposed Camden Gas Project – Northern Expansion (Stage 3) and any advice on recommended conditions of approval.

Technical officers of Industry & Investment NSW (I&I NSW) have reviewed the EA and make the following comments:

MINERAL RESOURCES

Petroleum Title Issues:

A petroleum production lease (PPL) would be required for the proposed wells and gas gathering system. A PPL issued under the *Petroleum (Onshore) Act 1991* can only coexist over the same area as a Mining Lease issued under the *Mining Act 1992* where the holders of both titles have an agreement to the satisfaction of the Minister.

Environmental Issues:

Impact of drilling fluids, lubricants and fracking fluids on groundwater aquifers

It is recommended that a targeted groundwater assessment is developed by the proponent to verify that fracking does not impact aquifers overlying the Illawarra Coal Measures.

The groundwater assessment could potentially involve targeted groundwater piezometers to aquifers immediately above (but not intersecting) the subject coal seams in the locality of fracking pathways, verifying that overlying aquifers are not impacted. The closest minor aquifer in the Scarborough sandstone unit could be targeted in this assessment, considering there would be sufficient thickness of inter-burden acting as an aquitard between the fraced coal seam and this aquifer. The development of this assessment should be done in consultation with I&I NSW but would be more appropriately approved by Department of Planning and the NSW Office of Water.

Rehabilitation

Based on the issues and the minor inadequacies in the EA noted above, it is recommended that a 'Rehabilitation Management Plan' be requested in the project approval conditions by I&I NSW. This is broadly consistent with the proponents statement that a *Landscape and Rehabilitation Management Plan* will be prepared. The Rehabilitation Management Plan would need to be prepared in accordance with the relevant I&I NSW Guideline so that such a plan can satisfy the requirements under the

Petroleum Onshore Act (1991). This approach allows I&I NSW to be relatively flexible in the assessment of the Rehabilitation Management Plan, and will allow its acceptance as an addendum or revision to the Petroleum Operations Plan. Given the I&I NSW role of managing rehabilitation, any rehabilitation plan must be approved by the Director-General of I&I NSW in consultation with the Department of Planning and other relevant agencies.

Therefore, it is recommended that the following condition be included in the Camden Gas Project Northern Expansion consent:

Rehabilitation Management Plan

The Proponent shall prepare and implement a Rehabilitation Management Plan to the satisfaction of the Director-General I&I NSW. The Rehabilitation Management Plan must:

- a) Be prepared in consultation with I&I NSW, DECCW, DoP, NOW and Council;
- b) Be prepared in accordance with the relevant I&I NSW Guideline;
- c) Be submitted for approval by the Director-General I&I NSW within 3 months of the date of this approval.

AGRICULTURE

Impacts to groundwater for agriculture

The proponent should provide compensation / mitigation for landholders that experience draw down levels that negatively impact existing bores near the proposed gas extraction sites that are used for agriculture. Mitigation could include deepening the water bores.

P 24-16. Management of noxious weeds:

Council is informed of any notifiable noxious weeds encountered. A Noxious Weeds database is available at:

<http://www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/noxweed>

Reuse of saline water:

Any proposed disposal to land of extracted water should be tested for salinity and contaminants to ensure that soils / pasture are not damaged - the Department of Environment, Climate Change and Water's - Use of Effluent by Irrigation guideline is a useful reference for irrigation water quality parameters

<http://www.environment.nsw.gov.au/resources/water/effguide.pdf>

Landholder compensation for the use of agricultural land should be adequate for the level of disturbance to the agri-business or agricultural education establishment.

It should be noted that in Table 6.3 there should be one set of comments from I&I NSW (formerly Department of Primary Industries) including the comment that I&I NSW gives "in principle support for the project".

Should you have any enquiries regarding this submission please contact Steve Cozens, Senior Project Officer by telephone (02) 8289 3932.

Yours sincerely


WILLIAM HUGHES
DIRECTOR
INDUSTRY COORDINATION

8/12/10



Office of Water

Major Projects Assessments,
Mining and Industry Projects
NSW Department of Planning
GPO Box 39
SYDNEY NSW 2001

Contact: Mark Simons
Phone: 02 4904 2572
Fax: 02 4904 2501
Email: mark.simons@water.nsw.gov.au

6 January 2011

Our ref: ER20530
Your ref: 10/10894

Attention: Clay Preshaw

Dear Mr Preshaw

**Major Project Application
Camden Gas Project – Stage 3 (09_0048)**

I refer to your letter of the 25 October, 2010, inviting comment on the Environmental Assessment (EA) for the above project. NOW has reviewed the EA and provides detailed comments in Attachment A, with recommended conditions of approval in Attachment B.

It is noted that the proponent believes that they hold a current 30ML/year entitlement for their existing operations, which they believe will be sufficient to provide for the expected water make of the stage 3 project. The NSW Office of Water (NOW) advises that at present, AGL have made licence applications for their existing well field, which are still undergoing assessment. These applications include application for the 30ML/year of entitlement referred to in the EA. As such, the proponent does not currently hold the entitlement as claimed in the EA.

Consequently, NOW requests that the consent conditions require the gaining of appropriate licences and approvals, including the 30ML entitlement. This is a statutory requirement under relevant water legislation.

If you require any further information, please contact Mark Simons on telephone 4904 2572.

Yours sincerely

Mark Mignanelli
Manager Major Projects and Assessment

**NOW COMMENTS ON ENVIRONMENTAL ASSESSMENT
CAMDEN GAS PROJECT – STAGE 3 (09_0048)**

Water Licences under the Water Management Act and Water Act.

The *Water Management Act 2000* (WMA) governs sustainable and integrated management of water sources across the State. Licensing of water is regulated under the WMA for areas which are subject to a Water Sharing Plan, and the *Water Act 1912* for water sources not covered by a Water Sharing Plan. At present, the Water Sources targeted for dewatering by the proponent are regulated under the *Water Act 1912*.

Section 12.1 states that AGL hold licences for its existing well field development under the *Water Act 1912* (WA), including a current allocation of 30ML. NOW advises that at present, AGL have made licence applications for their existing well field, which are still undergoing assessment. These applications provide the 30ML/year of entitlement referred to in the EA. As such, the proponent does not currently hold the entitlement as claimed in the EA. Consequently, NOW recommends consent conditions requiring the proponent to hold the appropriate licences and approvals, including the 30ML entitlement.

The *Water Sharing Plan for the Greater Metropolitan Region Surface Water Sources* (WSPGMSWS), and the *Water Sharing Plan for the Greater Metropolitan Region Ground Water Sources* (WSPGMGWS) are currently in draft form, following a public consultation phase. The outcomes of the consultation phase will be considered by the Minister for Water, prior to the plans being finalised. When this occurs, any existing entitlements held by the proponent will be converted to Water Management Act licences and approvals. Further applications for licences and approvals will need to be made under the WMA, in accordance with the rules established by the relevant Water Sharing Plan.

Watercourse Crossings and protection of Riparian Zones

The level of detail provided in the EA does not allow an adequate assessment of the likelihood of impact of proposed stream crossings (either access roads or gas/water collection pipelines) on either the natural movement of water or the integrity of the riparian system.

Although the project is exempt from requiring controlled activity approvals, the proponent should design watercourse crossings in a way which takes into account the NOW Guidelines for Controlled Activities (August 2010), as applicable:

- Riparian corridors (and associated Vegetation Management Plans)
- Watercourse crossings
- Laying pipes and cables in watercourses
- Outlet structures
- In-stream works

In order to achieve this, NOW recommends conditions requiring the development of a plan covering watercourse crossings, and a soil and water management plan to manage potential construction impacts.

Bore Construction

Construction of all wells must be undertaken by a driller holding a water driller's licence, valid in New South Wales. It is recommended that a condition requiring this, and stating the requirements for construction and reporting requirements are included in the consent conditions.

Groundwater Monitoring and Aquifer Connectivity

The lack of information presented in the EA with regards to groundwater is disappointing, given that the proponent has been operating in this area for over 10 years. While the proponent states that they believe the additional wells will be able to be serviced by the 30ML/year entitlement they have currently applied for, the groundwater information presented is not adequate to ensure that this will be the case. NOW recommends that a groundwater monitoring plan be developed to assess possible impacts of the operation on both the target and upper aquifers, particularly those which are currently used by other licence holders, or those which support environmental features, including surface water. This monitoring plan should be able to support any application for an increase in entitlement, should such an increase be required. NOW recommends conditions regarding the development of monitoring programs

Aquifer Water Quality

NOW is concerned regarding the references to Hydro-Fracturing within the document. Depending on the materials injected into the aquifer, this process represents a risk to aquifer water quality. A full list of the chemicals used in the fracturing process must be identified, and risks to the target aquifer, surrounding aquifers, and surface storage and treatment of these chemicals both prior to use and when subsequently pumped out after use, must be considered.

End Attachment A
6 January 2011

**NOW RECOMMENDED CONDITIONS OF APPROVAL
AGL CAMDEN GAS STAGE 3 (09_0048)**

Water Licensing Requirements

An authorisation under the *Water Act 1912* or the *Water Management Act 2000* is to be obtained from the NSW Office of Water with the appropriate purpose identified for any activity relating to the taking of or interception of groundwater prior to that activity commencing.

Prior to commencement of construction, the proponent must obtain licences under the *Water Act 1912*, or access licences under the *Water Management Act 2000*, to demonstrate an entitlement of 30ML/year.

In the event that water generated by both the existing and proposed operations is likely to exceed the rate of 30ML/year, the proponent must identify the source of the additional groundwater make, and undertake an assessment of the likely impacts on groundwater, including the risk to overlying aquifers, using monitoring as described in the Groundwater monitoring section below, and appropriate modelling, to the satisfaction of NOW, prior to making any application for an increase in entitlement.

Watercourse crossings and Riparian Zone Management

A Watercourse Crossing Management Strategy is to be prepared in consultation with NOW to manage the construction impacts of pipeline and access road waterway crossings including:

- baseline surveys of each water crossing to identify habitat sensitivity and water course integrity;
- design details of each water course crossing;
- site specific mitigation measures to be implemented to minimise disturbance during construction; and
- rehabilitation requirements to stabilise bank structure and rehabilitate affected riparian vegetation including performance and completion criteria (based on base line surveys) and monitoring requirements;

A Soil and Water Management Plan is to be prepared in consultation with NOW to manage the water quality impacts during construction. The plan shall detail:

- pre-construction investigations including: soil testing to determine the likelihood for uncovering potential acid sulphate soils (PASS), investigation of the risk of groundwater interception (particularly, shallow perched groundwater tables) during pipeline trenching or horizontal directional drilling, and identification of any sites of potentially contaminated soils which require remediation prior to the commencement of construction (such as previous industrial land use or intensive agricultural activity);
- base-line water quality monitoring (both up stream and down stream of the construction sites) and where required pre and post construction monitoring of groundwater quality (particularly where there is a high risk of groundwater interception coupled with the interception of PASS);
- if pre-construction investigations identify PASS, a management strategy to control impacts (including measures for testing, treatment, and disposal; protection and treatment of groundwater; and contingency measures in the case of an incident);
- site specific erosion and sediment control plans (detailing measures to control and protect waterways from runoff, control measures in the case of groundwater interception, measures to minimise the extent and duration of soil disturbance, measures for ground stabilisation including progressive rehabilitation, and contingency measures in the case of an incident);
- strategy for contaminated soil management should any such areas be uncovered during construction (including measures for pre-construction testing, treatment, and disposal);

measures for surface groundwater protection; and contingency measures in the case of an incident); and

- a water quality monitoring strategy to monitor down stream impacts to water quality during the construction phase, including a program for monitoring groundwater quality (where required) and trigger and hold points should adverse water quality be detected.

Bore Construction

Investigations of groundwater occurrence are to be conducted such that all water bearing horizons and zones of fracturing, fissuring or weakness within all of the strata intersected by drilling are to be identified and documented for all of the boreholes used in the project.

- Caliper and video logs (and any other geophysical logs considered necessary by the NSW Office of Water) shall be run for the full length of each hole following the completion of drilling by suitably qualified professionals experienced in the methods and techniques required.
- Geological logs are to be prepared for the full length of each hole by suitably qualified professionals experienced in the methods and techniques required.

All of the boreholes used in the project are to be constructed with annular seals so as to isolate the horizons from which coal seam gas is to be drawn from overlying and underlying strata that are used, or potentially may be used, for water supply purposes.

- The materials used in the sealing of the annular spaces of boreholes must not be of a composition that poses a risk of pollution to groundwater as defined by the dictionary meaning of 'water pollution' or 'pollution of waters' within the *Protection of the Environment Operations Act 1997* (NSW).
- Cement bond logs (and any other geophysical logs considered necessary by the NSW Office of Water) shall be run for the full length of each hole after annular sealing by suitably qualified professionals experienced in the methods and techniques required.
- Documentary evidence of the integrity of seals placed to isolate the horizons from which coal seam gas is to be drawn from other strata is to be provided to the NSW Office of Water prior to the commencement of operation.

On completion of bore construction, a pumping test assessment should be undertaken to the satisfaction of NOW.

Hydraulic Fracturing

Water (with or without additives) used for the purposes of hydraulic fracturing ("fracking") shall not be of a composition that poses a pollution risk to the water bearing zones identified within strata overlying or underlying the layers from which coal seam gas is to be drawn; as defined by the dictionary meaning of 'water pollution' or 'pollution of waters' within the *Protection of the Environment Operations Act 1997* (NSW).

- Documentary evidence of the potential environmental impacts of any additives proposed to be used for the purposes of "fracking" is to be provided to the NSW Office of Water.
- Documentary evidence (including the results of laboratory testing of water samples) of the potential environmental impacts of water without additives proposed to be used for the purposes of "fracking" is to be provided to the NSW Office of Water.
- Risk assessments of the potential use of "fracking" water (including the fate of additives in the subsurface environment) for all of the strata intersected during the drilling of boreholes to be used in the project are to be documented and provided to the NSW Office of Water.

- After any Hydraulic Fracturing is undertaken, the applicant must demonstrate to the satisfaction of NOW, that the Hydraulic Fracturing process has not resulted in an increase in the hydraulic connectivity with overlying aquifers.

Groundwater Monitoring

A water quantity and quality monitoring plan is to be established and maintained which incorporates a monitoring schedule and adopted parameters to be monitored as agreed to by the NSW Office of Water.

- The monitoring program should establish appropriate sites for monitoring bores.
- Monitoring bores should monitor discrete aquifers and not be open hole. All major aquifers should be monitored using data loggers, with emphasis on the aquifers where extraction occurs or the environment relies on groundwater (e.g. baseflow to rivers, Groundwater Dependent Ecosystems).
- The monitoring program should include notification triggers for changes in groundwater quality in the target and overlying aquifers.
- The monitoring program should include reporting of water quality in both the target and overlying aquifers
- The monitoring program should include notification triggers for changes in groundwater quality in the target and overlying aquifers.
- The monitoring program is to be designed to include measurements of the quality of any water injected (including "fracking" water) or extracted (including seepage water derived from the horizons from which coals seam gas is to be drawn) from the boreholes used for the project.
- The results of monitoring are to be reported to the NSW Office of Water regularly, at a frequency consistent with the reporting arrangements required by other authorities or agencies to avoid duplication of effort where practical.

End Attachment B
6 January 2011

The Director
Mining and Industry Projects
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Attention: Clay Preshaw

CAMDEN GAS PROJECT – STAGE 3

Dear Sir/Madam

I refer to the Department of Planning's correspondence dated 25 October 2010 (Ref: MP 09_0048) regarding the subject development application forwarded to the Roads and Traffic Authority (RTA) for comment.

The RTA has reviewed the information provided and provides the following requirements with regard to the application:

ACCESS

- I. The RTA will not grant its concurrence (under Section 138 of the Roads Act, 1993) to any driveway off Camden Valley Way or Campbelltown Road if alternative vehicular access points are available via the local road network (i.e. St Andrews Road and/or Badgally Road).

Further to the above, the proposed access points to St Andrews Road and/or Badgally Road must be set back on appropriate distance from the proposed/future intersection upgrades on Camden Valley Way. This is required to limit potential impacts on the construction and operation of the proposed upgraded intersections and approaches. In this regard, the applicant will be required to liaise with the RTA throughout the design process and refinement of the project details to ensure that all works are clear of the proposed upgrades on Camden Valley Way.

If the applicant wishes to pursue any driveway access off Camden Valley Way or Campbelltown Road, further information will be required to demonstrate that it is impractical to connect to the side roads.

Roads and Traffic Authority

WORKS AND MAINTENANCE

2. It should be noted that for any proposed works which involve the installation of pipes beneath the road reserve of a classified road, excavation within the road reserve of a classified road, or the removal of kerb and gutter, details of the works must be approved by the RTA Sydney Asset Management Section (Ph: 8849 2409). In this regard, specific locations and dimensions of works/structures are to be forwarded to the RTA for assessment of the impact of the proposed work on RTA assets, prior to the commencement of any works.

Details should be forwarded to:

The Sydney Asset Management
PO Box 973
Parramatta CBD NSW 2124

3. The proposal for trenching along the South Western Freeway corridor is not supported by the RTA. No part of the gas mining project will be permitted within the Freeway reserve.
4. No pits or other items shall be installed within five metres of the edge of the existing pavement on Narellan Road.
5. Open trenching across Narellan Road is not permitted.
6. All pipes shall be installed at least three (3) metres below the road surface, and this depth shall extend for the full width of the road corridors.
7. Prior to the commencement of construction, a Section 138 consent shall be obtained from the RTA for any proposed works within the road reserve of Narellan Road and Campbelltown Road.
8. In the event of works which require the use of cranes or other construction vehicles which occupy the road reserve, approval of Council and the NSW Police under Section 186 of the Law Enforcement Power and Responsibilities Act is required.
9. The developer shall be responsible for all public utility adjustments/relocation works, necessitated by the above work and as required by the various public utility authorities and/or their agents.
10. All works/regulatory signposting associated with the proposed development are to be at no cost to the RTA.

Following the Department of Planning's determination of the application, please forward a copy of the development consent to the RTA. Should you require any further clarification in relation to this matter, please call the contact officer named at the top of this letter.

Yours faithfully



James Hall
Senior Land Use Planner
Transport Planning, Sydney Region

11 January 2010



PO Box 323 Penrith NSW 2751
Level 2, 311 High Street
Penrith NSW 2750
Tel 1300 722 468 Fax 02 4732 3666
Email info@sca.nsw.gov.au
Website www.sca.nsw.gov.au

Our Ref: D2010/04458
Your Ref: 10/10894

Howard Reed
Manager Mining Projects
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Dear Mr. Reed

**MAJOR PROJECT APPLICATION
CAMDEN GAS PROJECT – STAGE 3 – APPLICATION NUMBER MP 09_0048**

I refer to your letter dated 25 October 2010 regarding the above application. Thank you for providing the Sydney Catchment Authority (SCA) with the opportunity to comment and recommend any conditions of approval.

The SCA has an interest in this proposal as the Upper Canal, which is owned and operated by the SCA, traverses a large part of the project area. The main gas gathering line is proposed to be located within the Upper Canal corridor from Denham Court Road to Narellan Road. One gas well is also proposed within this corridor. A number of the subsidiary gas gathering lines would need to go under the canal.

The Upper Canal is a critical public infrastructure item for the supply of raw drinking water to the Prospect Water Treatment Plant and includes a series of open canals, pipelines and tunnels. The Upper Canal transfers up to 30 per cent of the raw water supplied to this treatment plant. The land is classified as 'controlled land' under the provisions of the *Sydney Water Catchment Management Act 1998* and the *Sydney Water Catchment Management Regulation 2008*.

The Department should note that the SCA has yet to make a decision as to whether it is prepared to permit the construction of the main gas gathering line on its land. This decision will be made following the SCA's consideration of commercial land negotiations.

The EA describes and assesses a main spine gas gathering line located on the eastern side of the Upper Canal. The SCA is currently investigating options for the refurbishment or replacement of the Upper Canal and has advised AGL that the eastern side of the canal is now the preferred location for future water supply infrastructure. The commercial land negotiations will focus on locating the main spine line to the west of the canal but will provide for the SCA to nominate a route for future water supply infrastructure anywhere within the Upper Canal corridor.

The SCA therefore requests that the Department require AGL to prepare additional information assessing the impact of locating the main spine line to the west of the Upper Canal.

Detailed designs for the main spine line will need to be prepared in consultation with the SCA, to take account of current infrastructure, operations and future water supply planning. These matters will be addressed in the commercial land negotiations.

The SCA therefore requests that if the project is approved, the approval provide for flexibility to locate the main gas gathering line within the Upper Canal corridor with the location being dependent upon detailed designs and consultation with the SCA.

The SCA also wishes to advise that in its capacity as the landowner of the land on which gas well W11 is intended to be located, that it does not consent to the location of that well on the SCA's land.

The SCA has completed a review of the Environmental Assessment (EA). The project has a number of potentially significant impacts on the SCA's infrastructure and operations.

Irrespective of the final location of the main spine gathering line, the construction and operation of the proposed works has the potential to adversely affect the safety and operation of the Upper Canal. Although a number of appropriate mitigation measures and Proponent's commitments have been identified, the Upper Canal is a critical public infrastructure item that must be specifically protected from damage, as requested below.

The construction and operation of the proposed works has the potential to adversely affect the quality of water in the Upper Canal. The mitigation measures identified in the EA, including updating AGL's existing Soil & Water Management Sub Plan, are considered adequate provided SCA is consulted during that process. As this is currently not a stated commitment, an appropriate condition is requested below.

The construction of the proposed works has the potential to adversely affect the stability or structural integrity of the Upper Canal. The mitigation measures identified in the EA, including commitments by the Proponent, are considered adequate.

As noted in the EA, the Upper Canal is State Heritage listed. The construction of the proposed works has the potential to adversely impact on individual items of heritage significance within the curtilage of the Upper Canal, such as flumes, stone work or distance markers. The mitigation measures identified in the EA, including updating AGL's existing European Heritage Management Sub Plan, are considered adequate provided the SCA is consulted during that process. As this is currently not a stated commitment, an appropriate condition is requested below.

To ensure there is appropriate communication between the SCA and AGL and that incident and emergency procedures adequately address all risks to the Upper Canal, a condition is requested requiring AGL's Environmental Management System to be updated in consultation with the SCA.

Although the EA concludes that fracing and subsurface drilling activities are unlikely to have any measurable effect on the groundwater regime, the SCA is concerned that potential impacts from these activities on water quality in the Upper Canal via very shallow groundwater or surface waters have not been specifically addressed. The SCA

therefore requests that the Department require the Proponent to prepare additional information assessing the impact of the use of fracing and/or drilling fluids on water quality in the Upper Canal. Further the SCA requests the Department address this in the Director-Generals Environmental Assessment report.

The SCA requests the following conditions are included in the approval and subject to further assessment of the impact of the use of fracing and/or drilling fluids on water quality in the Upper Canal and flexibility being provided for the location of the main gas gathering line:

1. Protection of Sydney Catchment Authority Infrastructure

The Proponent shall:

- a) ensure that the Works do not damage the water supply infrastructure or reduce the safety of the operation of the infrastructure; and
- b) repair, or pay all reasonable costs associated with repairing Sydney Catchment Authority infrastructure that is damaged by the project; and
- c) relocate, or pay all reasonable costs associated with relocating any infrastructure that the Sydney Catchment Authority considers needs to be relocated as a result of the project.

2. Soil and Water Management

The Proponent shall update and implement the existing Soil and Water Management Sub Plan for the project to the satisfaction of the Director-General. The plan shall be updated in consultation with the Sydney Catchment Authority and submitted to the Director-General for approval before construction commences.

3. Heritage Management

The Proponent shall update and implement the existing European Heritage Management Sub Plan for the project to the satisfaction of the Director-General. The plan shall be updated in consultation with the Sydney Catchment Authority and submitted to the Director-General for approval before construction commences


4. Environmental Management System

The Proponent shall update and implement the existing Environmental Management System for the construction and operation of the project to the satisfaction of the Director-General. The plan shall be updated in consultation with the Sydney Catchment Authority and submitted to the Director-General for approval before construction commences.

The SCA would appreciate being involved in any further environmental assessment and consultation process associated with the application and the opportunity to comment on any draft conditions.

Should you wish to discuss any issue above please do not hesitate to contact Malcolm Hughes on 4724 2452 or at malcolm.hughes@sca.nsw.gov.au .

Yours sincerely

 14/12/10

GREG SHEEHY
Senior Manager, Sustainability