



21 November 2011

**Modification to the Apex Exploration Drilling Project
Additional borehole**

Background

The Apex Exploration Drilling Project (Apex) was approved by the former Minister for Planning in September 2009. The approval allows for the construction and operation of 15 exploration boreholes at various locations west of the Illawarra escarpment. The nature of the operation (including construction, drilling and monitoring) is said to be short term, up to 11 weeks for each borehole location. Drilling is yet to commence for any of the approved boreholes.

Modification application

The proposal seeks to construct and operate an extra borehole (the 16th known as AI 19)) with associated infrastructure and site access. The proposed borehole is located approximately 800 metres east of Darkes Forest Road, within the upper reaches of the Forest Gully catchment and the Metropolitan Special Area. An upland swamp is about 60m west of the proposed site. The nearest resident is about 800m from the site west of Darkes Forest Road.

The original proposal was classified a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act 1979) because it was a development for the purpose of drilling of petroleum wells in the Wollongong Local Government Area. The proposal is not permissible under the Wollongong Local Environmental Plan 2009 due to the Environmental Conservation E2 zoning of the site. However, the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 allows petroleum exploration without consent throughout NSW.

According to the *Environmental Assessment*, about 0.66 ha of native vegetation would be disturbed including the loss of about 100 individuals of *Pultenaea aristata*, a threatened plant species under both NSW and National legislation within the vicinity of the proposed borehole site. The borehole is proposed to be sealed (ie filled with cement) at the completion of testing.

Delegation to the Commission

On 14 September 2011, the Minister updated his delegation to the Department of Planning and Infrastructure (Department) and the Planning Assessment Commission (Commission). The Department referred the application to the Planning Assessment Commission for determination as it meets the new delegation requirement of more than 25 submissions objecting to the proposed development.

The Commission consisted of Mr John Court (chair) and Mr Joe Woodward. They undertook a site inspection on 10 October 2011 with the assistance of the Sydney Catchment Authority (SCA).

Parliamentary Inquiry into Coal Seam Gas

Following widespread landowner and community concerns about the landuse conflicts between coal seam gas mining and farming, landowner's property rights and potential impacts on the environment, particularly groundwater, a Parliamentary Committee was

established in August 2011 to investigate the environmental, economic and social impacts of coal seam gas mining in NSW. A copy of the Inquiry's terms of reference is in Appendix 1. In brief, the Inquiry is to report on:

1. the environmental and health impact of the coal seam gas activities;
2. the economic and social implications of the coal seam gas activities;
3. the role of coal seam gas in meeting the future energy needs of NSW;
4. the interaction of the NSW *Petroleum (Onshore) Act 1991* with other legislation and regulations, including the *Land Acquisition (Just Terms Compensation) Act 1991*; and
5. the impact similar industries have had in other jurisdictions.

Public Hearings have been scheduled between September and December 2011. The final report of the Inquiry is scheduled to be completed in April 2012. The NSW Government has made a submission to the Inquiry.

The Department's Assessment Report

In response to the notification of the modification application, the Department received a total of 1,052 submissions. Of these 7 were from public authorities, 1 from a special interest group and 1,045 submissions from the general public.

The key issues raised in the agencies', council and public submissions included:

- concerns about the impacts of 'fracking' (hydraulic fracturing);
- future extraction and related issues;
- sediment control and stormwater detention;
- short public notification period;
- impacts on native vegetation, threatened species (*Pultenaea aristata*), upland swamp and biodiversity and offset requirements;
- lack of details on management and monitoring plans;
- noise and traffic impacts,
- dust emissions;
- alternative site;
- groundwater monitoring requirement; and
- water security and aquifer integrity.

The Department's assessment report pointed out that fracking is not proposed to be used for this application or for the previous approval. The proponent has indicated that any future application for extraction would not require fracking.

The report focused its consideration on two key issues, namely potential impacts on biodiversity and ground and surface water. Other issues considered in the report included noise, rehabilitation, heritage issues, air quality, greenhouse gases, and waste management.

The report found the environmental impacts of an additional borehole would be minor and management mechanisms could address residual concerns. The Department recommended conditions of approval to address predicted environmental impacts. It also recommended that some of these conditions be applied to the previously approved boreholes some of which are intended to strengthen the regulatory framework for the wells. Apex has accepted the recommended conditions.

Meeting with the Department of Planning and Infrastructure

On 26 September 2011, the Commission met with Mr Howard Reed and Mr Clay Preshaw from the Department of Planning and Infrastructure for a briefing on the proposed modification.

The briefing focused on the following issues:

- the legality and implication of modifying the conditions of consent and statement of commitments for the 15 approved boreholes;
- the justification and location of the proposed borehole;
- potential impacts on groundwater and biodiversity issues, particularly, *Pultenaea aristata*;
- fracking process;
- timeframe to encase the hole following operation;
- access to the site having regard to SCA's submission; and
- exploration in a special area, ie water catchment area.

Following the meeting with the Department, the Commission forwarded the additional information provided by the OEH and SCA (see below) to the Department for advice. By letter dated 28 October 2011, the Department advised that 2 extra conditions are recommended to address the issues raised by the SCA concerning disposal of drilling fluids and groundwater collected. With regard to the cost of a biodiversity offset, the Department considered the OEH estimated cost to be "well in excess of the actual cost of drilling an exploration borehole". Also the modification application is not formally subject to OEH's biobanking or offset policies. The Department made a further submission to the Commission on this matter in its letter of 2 November strongly opposing the inclusion of a biodiversity offset provision in the conditions of approval. The Commission did not agree with the Department's submission on this matter for reasons outlined in this report.

Meeting with the proponent

On 6 October 2011, the Commission met with the proponent and its consultants including Mr Darren Rice (Chief Executive Officer), Mr Chris Rogers and Mr Chris Lawrence of Apex, Mr Tom Fontaine of Ormil and Mr Matthew Richardson of Niche.

The key issues discussed in the meeting included:

- the need and justification of the additional borehole;
- the location of the proposed borehole;
- the need for off-set; and
- possible methods of future extraction.

Meeting with the Office of Environment and Heritage (OEH)

On 10 October 2011, the Commission met with Mr Greg Sheehy, Mr Craig Patterson, Ms Jen Byrne and Ms Jessica Creed of the Office of Environment and Heritage. The officers briefly outlined the history of the OEH involvement in the proposal and its written advice to the Department on three occasions. The key issues discussed in the meeting included:

- insufficient information on alternative borehole site;
- clearing of native vegetation for the track;
- the number of individual *Pultenaea aristata* to be removed;
- off-set requirements; and
- the listing of *Pultenaea aristata* as a threatened species.

The Commission sought additional information in regard to the data collection for the listing of *Pultenaea aristata* and the cost of biodiversity offset advocated by OEH. The response was provided to the Commission on 12 October 2011.

Meeting with the NSW Office of Water (NOW)

On 14 October 2011, the Commission met with Mr Mark Simons of NSW Office of Water for a briefing on the Office's submission to the Department. The key concerns included:

- opportunity to gather baseline data for assessment of future application;
- need to develop a groundwater monitoring strategy;

- licensing requirement; and
- the draft Aquifer Interference Policy.

Public Meeting

On 17 October 2011, the Commission held a public meeting in Helensburgh to hear public views on the Department's assessment report and recommendation before a determination by the Commission is made on the application. A total of 17 parties spoke to the Commission (see Appendix 2).

In brief, most speakers considered this is not a stand-alone project, but the first step in the development of a gas/mining operation. They called for the Commission to refuse the application or at least defer it until the Inquiry into Coal Seam Gas is complete and recommendations are made known. Key concerns included:

- future development;
- fracking;
- impacts on surface and ground waters;
- impact on flora, fauna and biodiversity;
- unsatisfactory communication;
- need of coal seam gas;
- traffic and access; and
- bush fire.

Appendix 3 provides a brief summary of issues raised at the public meeting.

Meeting with the Sydney Catchment Authority (SCA)

The Commission received a letter from the SCA on 19 October 2011 outlining issues that were not included in its submission to the Department of Planning. On 25 October 2011, the Commission met with Mr Michael Bullen (Chief Executive Officer), Mr Peter Davies, Mr Malcolm Hughes, Mr Jerzy Jankowski and Ms Sarah Dinning of the Sydney Catchment Authority to discuss the matters outlined in its letter including:

- The need to consider the proposal in a strategic context and cumulative impacts if full production were to be approved that could involve up to 150 boreholes with connecting pipelines, access and associated infrastructures;
- risk level associated with exploration, development and production;
- need to be very clear that approval of this exploration is not to be seen as an approval for future extraction;
- the 6 mining principles recently adopted by SCA to protect drinking water catchment;
- monitoring requirements;
- aquifer interaction between surface and ground waters;
- issues concerning spillage and rainfall event for stormwater management and management of produced water;
- rehabilitation of fire trail;
- casing of borehole; and
- the use of the already approved AI 06 as an alternative.

A further letter was received from SCA on 20 October 2011 confirming some matters raised at the meeting.

Key Issues considered by the Commission

1. Nature of application – exploration only for one hole

The application under section 75W of the EP&A Act is for a variation of an approval to drill fifteen (15) exploratory boreholes in the Maddens Plains area above the Illawarra

escarpment. Fourteen (14) of the boreholes approved are into coal seams which have already been mined or into goafs above mined areas. One of the fifteen was into an unmined coal seam (titled AI 06). The purpose of the drilling is to assess the prospects of commercial gas production. The variation seeks approval to drill an additional, sixteenth exploratory borehole, titled AI 19, into un-mined coal seams to the north west of the holes previously approved. The drill site is on specially reserved land managed by the Sydney Catchment Authority in the Woronora Dam catchment to the north of Darkes Forest Road.

The sixteen proposed wells are within the boundaries of the Petroleum Exploration Licences PEL 442 and PEL 444 held by Apex.

1.1 New focus by proponent

The proponent has indicated that its interest in the part of the PEL 442 and PEL 444 area pertaining to AI 19 arises from a changed priority. Its new focus is on exploration of the potential for coal seam gas production to the area north west of the site for AI 19 under the SCA catchment. The coal measures there are anticipated to be richer in gas than the seams already mainly mined and which pertained to the original approval. So the variation sought, while only in fact an additional exploratory borehole, nevertheless foreshadows an interest in a commercial development of a rather different nature than that envisioned by the previous application.

The SCA has indicated to the Commission that if such a development were to be proposed, it anticipates from proponent statements that from 70 to 150 gas production wells could be involved with connecting pipework. It further advises that this would be likely to require the clearing of 76 to 96 ha of bushland in the catchment, a significant impact.

1.2 Likelihood of fracking in production

The proponent has stated to the Commission that it does not intend to undertake 'fracking' or hydraulic fracturing to stimulate coal seams for gas extraction in any future application to produce. It claims to have access to alternative drilling technology which would obviate the need for such stimulation for gas production. The Commission did not assess these claims as they are not directly relevant to the drilling of an exploratory well to establish the coal seam and rock properties needed to assess the viability of production.

1.3 Relevance of future development to this decision

The Commission does not consider that an approval for exploratory drilling carries any implied approval for future gas production. It has therefore assessed the merits of the application on the basis of the impacts and safeguards of the exploration operation.

The Commission is well aware that applications for production might come forward as a result of this proposed exploration and that such future applications would involve, *inter alia*, assessments of impact on the ecology and integrity of catchment lands. Nevertheless, within the legal and administrative framework applying in this case, this application for a modification should be determined on its merits alone, that is, as an exploratory borehole.

The Commission was conscious, however, that it should not set a precedent in determining this approval for less than the highest level of conservation, preservation and rehabilitation in the assessment of any works which might be proposed on protected catchment land in the future.

2. Catchment security

2.1 Groundwater

The proposed borehole will be drilled with steel casing from the surface for at least 10% of the well depth or through the Hawkesbury Sandstone strata, whichever is the greater. This will be grouted between the outside of the casing and the rock surface of the hole. The SCA has indicated that even though the well will only be open for a relatively short period during exploratory drilling, the requirement for steel casing and grouting is still necessary to ensure aquifer security. The SCA also supports the filling of this hole with cement as soon as possible after testing.

The Commission agrees with the SCA and requires borehole AI 19 to be filled with cement as soon as the testing is complete and within 8 weeks from the cessation of drilling as a maximum. Condition 7 as recommended by the Department has been modified accordingly. These measures should ensure there is no significant risk to aquifer integrity or quality as a result of this exploratory borehole.

2.2 Surface water and pollution

It is extremely important that drilling fluids and chemicals are totally contained and the maximum care is exercised to ensure no spillages or leakages result in contamination of surface and groundwaters. The proposal to use baffled tanks instead of in-ground sumps to contain drilling fluids and maximum recirculation of water in the process should ensure that risk of spillage to the catchment is adequately managed. The Commission is satisfied that the Department's recommended conditions of consent as modified have addressed these issues.

There has been some debate as to the adequacy of the design of the stormwater containment and management system. Public submissions and advice at the public meeting expressed scepticism in relation to the rainfall data used in calculations. However, the Department and relevant agencies consider the revised calculations and the proposed size of detention basins adequate for the purpose given the size and duration of the proposed exploratory operation. The Commission accepts the advice of these agencies.

3. Biodiversity and Rehabilitation

3.1 Threatened Species

The Department has assessed the potential impacts on *Pultenaea aristata* taking into account the reports prepared by Niche Environment and Heritage and submissions by OEH and the Sydney Catchment Authority as well as public submissions and has recommended conditions aimed at minimising the destruction of the individual plants and rehabilitating the area post disturbance. *Pultenaea aristata* is listed as Threatened under the NSW *Threatened Species Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The Department considers the disturbance would be minor, an area of 0.66 ha, the majority of which would be along an existing Fire Trail 9A with a smaller amount on the site of the proposed borehole. The Assessment Report states that approximately 100 individual plants would be damaged or destroyed out of a local population of approximately 20 000. The Department concluded that an offset strategy would not be warranted because of the minor impact on the species; the administrative costs of an offset would outweigh benefits; and management measures should focus on rehabilitation.

The Commission is aware from the assessment report and meetings with the proponent, the Department and OEH that estimates of the number of threatened plants that will be damaged or destroyed by the proposal vary. All parties agree that at least 100 individual plants will be damaged or destroyed. The Commission considers this is not an insignificant impact. The OEH has estimated that the cost of an offset in perpetuity would be approximately \$50,000 to \$60,000. The Commission also notes the Department's advice on 28 October 2011 that the modification application is not subject to the OEH biobanking or offset policies and that the cost may be higher than estimated by OEH.

The Commission has considered these issues carefully including submissions from public authorities as well as the public and has concluded that an offset should be provided. The reasons for this include:

- The high environmental and ecological value of the site;
- Destruction of approximately 100 or more individual threatened species plants is not negligible;
- An alternative site that would avoid destruction is not acceptable to the proponent;
- OEH recommendation to provide offset if destruction cannot be avoided;
- SCA recommendation to protect the ecological integrity of the catchment;
- The difficulty and long timeframes of rehabilitating native vegetation in cleared land in this area; and
- The old fire trail that would be used for the access to the borehole site has been closed for approximately twenty years and is no longer required by the SCA.

However, on the question of cost the Commission considers that the option should be available to the proponent to incorporate any offset into an equivalent type of offset, on a proportionate basis, which may be developed for gas production. The economy of scale in developing an offset for a larger area of disturbance (possibly up to 96 ha) would be expected to be considerably better than for the small area of disturbed land (0.66 ha) involved with the drilling of this exploratory borehole. Accordingly the Commission has drafted a condition which allows five (5) years for an offset to be incorporated into a larger offset provision should a gas production operation be developed arising out of this exploration. Should the proponent or some successor not subsequently proceed to develop a gas field or an offset for a gas field development not then be required, the condition could be enforced at that time.

As discussed further below, this requirement is consistent with the Commission's intention not to set a precedent for less than the highest level of conservation and protection consonant with the project proceeding. This position is maintained despite the Department's opposition which has been carefully noted.

3.2 Rehabilitation

The Commission noted the EA on page 33 stated that "rehabilitation of the access road and the borehole site will be undertaken immediately upon decommissioning". However, Statement of Commitment Number 73 indicates that "rehabilitation of the borehole sites is required by the PEL. Boreholes that are not required for future gas production would be rehabilitated". This commitment applies to all boreholes, but is inconsistent with the intention of the EA for this modification.

As the Commission is not pre-empting any future approval in its current considerations it is inappropriate to leave the access road and borehole site in an un-rehabilitated state pending future approval of extraction. The Commission considers a new condition should be included to ensure the AI 19 borehole site and access road must be rehabilitated within 8 weeks after completion of the borehole sealing.

4. Alternative site

The SCA referred to correspondence from the proponent that indicated the previously approved AI 06 would be a suitable alternative if AI 19 is not approved. The Department's assessment report supports the Apex proposal that AI 19 was the most appropriate site for a range of reasons, including its potential for exploration, the low level of hazard risk, and distance from residences, its location in the furthest northwest part of PEL 444 and that it provides the best opportunity to evaluate the broad extent of gas resources. It is also located in one of the few areas where there are no existing underground mine workings. The Commission met with the proponent to explore these issues and has accepted the need for AI 19 to adequately assess the gas potential.

5. Other issues

The Commission noted the zoning and permissibility issues raised in public submissions including Wollongong City Council. This modification application is a modification to a previously approved Part 3A application and the issues were considered and assessed in the original application before approval was granted.

As to the issue concerning the adequacy of Aboriginal heritage assessment, the Commission noted OEH, the authority on Aboriginal heritage matters, did not raise the issue as a concern in its submission to the Department.

The question of cumulative impact of the 16th borehole on the impact of the 15 already approved under the original application appears to be of slight significance at the exploratory stage. The borehole will be sealed with cement shortly after testing is complete. Spatially it is separated a considerable distance from the other holes approved such that a geological connection is not feasible. The vegetation protection issues with AI 19 do not apply in the same way at the other sites and those vegetation impacts are not contiguous with the impacts of AI 19. Transient noise, traffic, and fire risk impacts are not cumulative in an exploration program which is designed to proceed sequentially. The appropriate point to address these and other cumulative impacts is at the assessment stage of any subsequent application for production.

The need for earlier development of hydrogeological models for the assessment of coal-seam-gas production applications was raised by the NSW Office of Water. Indeed NOW has stated this should be a prerequisite for any future extraction modification. This is a known problem in assessment of applications of this kind. As the Commission is not considering any future potential extraction application at this stage, it is not appropriate to require an extensive monitoring program, the main purpose of which would be for development of hydrogeological models and the monitoring of future extraction. Therefore, the Commission does not consider it appropriate to attach additional monitoring or modelling conditions to this application for exploratory borehole AI 19, but the proponent would do well to address this need, if it elects to apply for production at some future time.

The Commission considered the call in submissions to re-assess the whole application for 16 wells. It does not consider the option is open to revocation of an approval already granted. The modification instrument as drafted by the Department does modify conditions relating to the 15 wells already approved, but only with the intention of increasing environmental and water security safeguards, to which the Proponent has agreed and rationalising some inconsistencies in the previous approval. The Commission does not consider this constitutes a significant change to the approval, which would warrant a re-assessment of the substance of the approvals already granted.

Commission's Comments

The application is for approval to drill one exploratory borehole (AI 19). Many similar exploratory boreholes have been drilled in the Sydney water supply catchment areas over a long period. The SCA at a meeting with the Commission on 25 October 2011 advised that it had no evidence that there had been any significant impacts on aquifer security or quality as a result of these exploratory boreholes in and of themselves. The SCA indicated that the risk to aquifer security posed by the drilling of the proposed AI 19 borehole, in and of itself, was not significant under strict conditions of approval.

The stated purpose of the exploration is to determine the physical properties of the coal seams in the area of the borehole as they relate to coal seam gas extraction. The proponent's stated purpose is to apply for approval to extract coal seam gas in the area of the borehole and beyond if the properties identified and other factors are conducive to commercial development. The Commission is not assessing any future potential application for coal seam gas extraction in this current application.

The Commission is satisfied that the impacts involved can be adequately managed to protect the environment and amenity of the area near the proposed exploratory borehole with the imposition of appropriate conditions as outlined in the Department's *Assessment Report* and as modified by the Commission. These are discussed elsewhere in this report.

The dominant set of issues raised in submissions from many government agencies, local government and the public relates to the commercial-scale production of coal seam gas which could follow from the acquisition of the information sought from the exploratory drilling. A suite of further concerns has been expressed at this prospect, including the dangers to catchment security, the risks to groundwater security and quality inherent in hydraulic fracturing, the uncertainties in any horizontal drilling techniques used to enhance extraction instead of hydraulic fracturing, the wider disturbance of the surface areas of the catchment area where extraction activities might be undertaken and the validity of the need for production of coal seam gas as a fuel.

In reaching its determination the Commission has been conscious of the need to stay within the present legal framework and has been attentive to relevant government policy positions and the developing understanding by agencies and the public of the coal seam gas industry. This is a process which is ongoing, as evidenced by the current Inquiry in the NSW Legislative Council, into the industry and its development in the State. The Commission carefully considered the *NSW Government Submission* to this Inquiry (dated 30 September 2011) as indicating the present and possible future position of the Government on the matter. The Commission is not aware at this stage of development of policy and regulation of any regulatory or policy constraints which would preclude exploration or extraction of coal seam gas in this area.

The application is for exploration not production. In a strict legal sense the issues arising from production, such as hydraulic fracturing and cross-contamination of aquifers below ground do not arise. The application does not seek any approval, and nor would it be hereby granted, to undertake any operations under this approval to open up and increase the porosity of the coal seams for production, whether by hydraulic fracturing, horizontal drilling or any other technique. The proponent has stated that it intends to close the exploratory bore hole with cement as soon as the testing is completed, within a matter of weeks, and the Commission would only be prepared to approve the application on condition that this is carried out. The risk of cross contamination or loss of water in aquifers by this borehole, if this precaution is taken, is so low as to be insignificant in the few weeks it would be open.

The policy and regulatory position of the Government on gas extraction beneath this catchment and other catchments is still being developed. The *NSW Government Submission* to the Inquiry outlines the merits of co-existence of coal-seam gas extraction and agriculture while adequately protecting catchments and water resources. The precise implications of the Aquifer Interference Policy for this area of the SCA catchment are not yet clear. Gas extraction beneath the catchment may be either precluded or allowed under a future policy. This is a risk the applicant would accept, if it decided to proceed on any approval of this application to explore. There is no guarantee or implication that any approval of this application under the *Environmental Planning and Assessment Act, 1979* would necessarily lead to any subsequent approval under the *Act* for production.

The Commission has concluded that the clearing of *Pultenaea aristata* cannot be avoided if approval is granted, but should be minimized and an offset should be provided for the damage that cannot be avoided. However, the condition drafted to require this offset provides a period of five (5) years to allow any such offset to be incorporated into a possible larger offset from any ensuing gas production development. This would provide the opportunity for greater efficiency in developing an offset should a gas production development follow this exploration. Any disturbed area would need to be rehabilitated as soon as practical. If development is subsequently approved for gas production then this approval for exploration will present no precedent for less than the highest level of conservation and protection consonant with development proceeding. If, on the other hand, development does not eventuate, then catchment restoration necessitated by the exploration will be undertaken and completed, with a possible delay of five years in the case of the offset.

Commission's Determination

The Commission has carefully considered the information and submissions before it, and is of the view that there is at this time no definitive legal, policy or environmental constraint to granting an approval for the additional exploratory borehole AI 19 under a set of demanding conditions to protect water security and the environment. It further considers the measures developed in the Assessment Report, complemented by those developed in this report, are adequate to control this phase of the project to minimise potential impacts.

The Commission makes it abundantly clear that this approval should not be read as giving any endorsement for extraction of coal seam gas on a production basis in this field or for any activity involving stimulation of the coal seam for production purposes. Any uncertainty arising out of future government policy is a risk properly left with the proponent. The Commission further recommends that any subsequent application to produce coal seam gas in this location should only be allowed to proceed, when all other factors have been considered, if the highest levels of protecting catchment security and protecting against environmental and ecological impacts can be satisfied.

The application is approved subject to the Department's recommended conditions as set out in the draft *Notice of Modification* attached to its *Assessment Report* and as modified by the Commission in the appended *Notice of Modification*.

Points at which the final *Notice* has been changed from the Department's draft attached to the *Assessment Report* are summarised:

- Disposal of drilling fluids and groundwater and a contingency plan for groundwater management (Condition 6: (c));
- Casing and sealing of exploration wells (Condition 7: 6A & 6B)
- Biodiversity offset (re-numbered Condition 10: 7C)

- Rehabilitation (re-numbered Condition 11: 8A)
- Recording of groundwater volumes (re-numbered Condition 16: 4C)

The Department has been involved in the redrafting of these conditions, with the exception to re-numbered Condition 10: 7C (biodiversity offset), with which it does not agree.

A copy of the *Notice of Modification* under section 75W of the *Environmental Planning and Assessment Act 1979* is in Appendix 3.



Mr John Court
PAC Member



Mr Joe Woodward
PAC Member



LEGISLATIVE COUNCIL

GENERAL PURPOSE STANDING COMMITTEE NO. 5

INQUIRY INTO COAL SEAM GAS

TERMS OF REFERENCE

That General Purpose Standing Committee No. 5 inquire into and report on the environmental, economic and social impacts of coal seam gas (CSG) activities, including exploration and commercial extraction activities, allowable under the NSW Petroleum (Onshore) Act 1991 (the Act), and in particular:

1. The environmental and health impact of CSG activities including the:
 - a. Effect on ground and surface water systems,
 - b. Effects related to the use of chemicals,
 - c. Effects related to hydraulic fracturing,
 - d. Effect on Crown Lands including travelling stock routes and State forests,
 - e. Nature and effectiveness of remediation required under the Act,
 - f. Effect on greenhouse gas and other emissions,
 - g. Relative air quality and environmental impacts compared to alternative fossil fuels.
2. The economic and social implications of CSG activities including those which affect:
 - a. Legal rights of property owners and property values,
 - b. Food security and agricultural activity,
 - c. Regional development, investment and employment, and State competitiveness,
 - d. Royalties payable to the State,
 - e. Local Government including provision of local/regional infrastructure and local planning control mechanisms.
3. The role of CSG in meeting the future energy needs of NSW including the:
 - a. Nature and extent of CSG demand and supply,
 - b. Relative whole-of-lifecycle emission intensity of CSG versus other energy sources,
 - c. Dependence of industry on CSG for non-energy needs (eg. chemical manufacture),
 - d. Installed and availability costs of CSG versus other stationary energy sources,
 - e. Proportion of NSW energy needs which should be base load or peaking supply and the extent to which CSG is needed for that purpose,
 - f. Contribution of CSG to energy security and as a transport fuel.
4. The interaction of the Act with other legislation and regulations, including the Land Acquisition (Just Terms Compensation) Act 1991.
5. The impact similar industries have had in other jurisdictions.

APPENDIX 2

List of Speakers

Proposed modification to Apex Exploration Drilling Project Final Schedule of PAC Meeting 9am, Monday, 17 October 2011

Time: 9.00am – 1.00pm
Date: Monday, 17 October 2011
Venue: Helensburgh Workers Sports and Social Club, 24 Boomerang Street,
Helensburgh

1.	Darkes Forest Resident Group Ms Karen Dinsdale
2.	Wollongong City Council Ms Renee Campbell
3.	St Georges River Environmental Alliance Save Dharawal Ms Sharyn Cullis
4.	Otford Protection Society Ms Natasha Watson
5.	Rivers SOS Ms Caroline Graham
6.	Stop CSG Ms Jess Moore
7.	Clr Greg Petty (Wollongong City Council)
8.	Dr Peter Turner
9.	Ms Brenda Cooney
10.	Mr Chris Williams
11.	Ms Ann Brown
12.	Mr Warrick Erwin
13.	Cr Jill Merrin
14.	Mr Michael Rynn
15.	Dr Ann Young
16.	Ms Toni Reddell
17.	Ms Carol Berry

APPENDIX 3

Summary of Issues Raised at Public Meeting

The Commission met in public on 17 October 2011 to hear public views on the Department of Planning and Infrastructure's assessment report and recommendation. All speakers at the meeting opposed approval of the modification. The following is a brief summary of issues raised at the meeting.

- Call to consider extraction of coal-seam gas at the exploration stage;
- Call to defer approval until Upper House Inquiry into coal-seam gas completed;
- Call to review the earlier approval of 15 exploratory wells;
- Impacts on surface waters;
- Impacts on ground waters;
- Impacts on ecology;
- Impacts on catchment;
- Indigenous heritage;
- Traffic;
- Fire risk;
- Technical and scientific aspects of the proposal;
- 'Fracking';
- Cumulative impacts;
- Renewable energy sources preferred over coal-seam gas in addressing climate change;
- Availability of information on the modification proposal and future production of gas;
- Agency involvement and opposition;
- Local government involvement and opposition;
- Community involvement in project assessment; and
- Extent of opposition to coal-seam gas development in region.

APPENDIX 4
Notice of Modification

Notice of Modification

Section 75W of the *Environmental Planning and Assessment Act 1979*

As delegate for the Minister for Planning and Infrastructure, the Planning Assessment Commission of New South Wales (the Commission) modifies the project approval referred to in schedule 1, subject to the conditions in schedule 2.



John Court
Member of the Commission



Joe Woodward
Member of the Commission

Sydney 21 November 2011

SCHEDULE 1

The project approval (MP 07_0103) granted by the Minister for Planning for the Apex Gas Project on 23 September 2009.

SCHEDULE 2

1. Under the heading "DEFINITIONS", delete the definitions for "DECCW" and "DII", and insert in alphabetical order the following:

DRE	Division of Resources and Energy, within the Department of Trade and Investment, Regional Infrastructure and Services
EA – Mod 1	Environmental Assessment, titled <i>Illawarra Coal Seam Gas Exploration Drilling and Gas Monitoring Program – Proposed Additional Borehole Site A/19</i> , dated January 2011
OEH	Office of Environment and Heritage
2. Under the heading "DEFINITIONS", insert "and Infrastructure" after "Department of Planning".
3. Delete all references to "DECCW" and replace with "OEH".
4. Delete all references to "DII" and replace with "DRE".
5. In condition 2 of Schedule 2, delete all words after "EA" (except the notes); and insert:
 - (b) EA – Mod 1;
 - (c) statement of commitments; and
 - (d) conditions of this approval.
6. In condition 5 of Schedule 3, delete paragraphs (c) and (d), and insert:
 - (c) include measures to minimise impacts on surface water quality, including but not limited to:
 - using baffle tanks to contain all drilling fluids during drilling operations;
 - disposing of all drilling fluids and groundwater collected in the baffle tanks at an authorised wastewater treatment facility;
 - ensuring that adequate spill control equipment and materials will be available at drill sites; and

- a contingency plan to address any groundwater brought to the surface that exceeds the capacity of onsite detention structures, that would avoid discharges from the site (otherwise than in accordance with an OEH environment protection licence);
 - (d) include measures to minimise impacts on groundwater quality, including the potential for cross-contamination of aquifers; and
7. After condition 6 of Schedule 3, insert the following:

Casing of Wells

- 6A. The Proponent must ensure that all exploration wells:
- (a) are cased with steel to at least 10% of the total depth of the hole and across the full width of the Hawkesbury Sandstone geological layer;
 - (b) have all casing fully cemented from casing shoe to surface, leaving no open annuluses;
 - (c) have a blow-out prevention device on the wellhead secured to the steel casing; and
 - (d) are sealed with cement from the total depth to the surface when exploration is completed and the well is no longer required,
- in order to protect the integrity of any underground aquifers, prevent gas escape and maintain groundwater quality.
- 6B. The Proponent must ensure that, in the case of exploration well AI19, full sealing with cement takes place as soon as practicable after testing is completed and not longer than 8 weeks after completion of drilling, in order to protect the integrity of any underground aquifers, prevent gas escape and maintain groundwater quality.

8. After the heading “**BIODIVERSITY AND REHABILITATION**” in Schedule 3, insert the following:

Performance Measures – Natural and Heritage Features

- 7A. The Proponent must ensure that the project does not cause any exceedances of the performance measures in Table 2A, to the satisfaction of the Director-General.

Table 2A: Performance Measures

Biodiversity	
Forest Gully Upland Swamp	Negligible environmental consequences
Threatened species, threatened populations, or endangered ecological communities	Negligible environmental consequences, except under an approved Vegetation Clearing and Rehabilitation Management Plan

9. Re-number condition 7 of Schedule 3 as 7B and, after paragraph (f), insert the following:
- (f1) describe measures to be implemented to protect the threatened species *Pultenaea aristata* during construction, operation and rehabilitation of drillhole AI19, including, but not limited to:
- avoiding and minimising impacts on individuals of the species;
 - providing for a suitably qualified expert to be present during the construction of the access track and preparation of the drillhole site; and
 - retaining a stubble and the rootstock of any individuals located on the access track or borehole site;

10. In Schedule 3 insert a new condition 7C as follows:

7C Biodiversity Offset Strategy

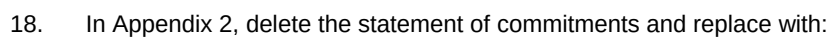
- (a) The Proponent shall prepare and implement a biodiversity offset strategy to compensate for the impact of the project on *Pultenaea aristata* and its habitat. The offset strategy must:
- be prepared in consultation with OEH and to the satisfaction of the Director-General within five (5) years from the date of the completion of drilling of AI 19 and must be implemented according to its terms;
 - have regard to the principles for the use of biodiversity offsets in NSW (*Principles for the use of biodiversity offsets in NSW*, OEH June 2011) or any document which has replaced it at the relevant time;
 - make suitable arrangements to protect and manage the offset area in perpetuity, and
 - include appropriate measures for the funding and management of offsets.

An independent ecologist must be present during work and record numbers of individuals damaged.

- (b) A biodiversity offset strategy prepared in accordance with subclause (a) in respect of this site may be part of a broader biodiversity offset strategy covering the site and land outside the site .
(For example, if a broader biodiversity offset strategy is required as a result of any approval granted for a gas production facility resulting from the drilling of the exploratory wells).

11. After condition 8 of Schedule 3, insert the following:
 - 8A. The Proponent must ensure that, in the case of exploration well AI19, rehabilitation of the drill site and associated access road is completed within 8 weeks after completion of borehole sealing, to the satisfaction of the Director-General.
12. In condition 9 of Schedule 3, delete "15th" and replace with "16th".
13. In condition 12 of Schedule 3, after "the EA", insert "and the Traffic section of the EA – Mod 1".
14. In condition 2 of Schedule 4, after "the EA", insert "and the EA – Mod 1".
15. In condition 4 of Schedule 4, delete "and AI18" and replace with "AI19".
16. After condition 4 of Schedule 4, insert the following:
 - "4A. The Proponent must notify SCA of incidents occurring within the Special Areas (as defined by the *Sydney Water Catchment Management Act 1998*, causing or threatening material harm to personnel, the environment or SCA operations as soon as practicable after the Proponent becomes aware of the incident.
 - 4B. The Proponent must meet with SCA prior to the completion of the work period at each site on SCA land to ensure that the site is decommissioned to the satisfaction of SCA and to determine site specific rehabilitation requirements and offset requirements.
 - 4C. The Proponent must provide a record of the total volume of groundwater collected from each well to the SCA."

18. In Appendix 2, delete the statement of commitments and replace with:



18. In Appendix 2, delete the statement of commitments and replace with:

Action	Timing
4. Each drill site will be designed in accordance with the specific site requirements. The design will incorporate risk management techniques and will involve input from relevant stakeholders in order to ensure their requirements are met. The pre-establishment liaison and planning will result in a site specific Management Plan that will ensure the site is managed appropriately.	Prior to drilling.
5. Gas flows will occur in accordance with a Well-testing and Flaring Management Plan that will be created using a standard risk management approach including consultation with Government and industry experts. The Well-testing and Flaring Management Plan will be authorised by DPI-Mineral Resources prior to any release of gas.	During gas monitoring.
6. Flaring will be undertaken in a purpose built mobile gas flaring chamber.	During gas monitoring.
7. Apex proposes to undertake additional exploration and gas data acquisition at some time in the near future. This future activity will be dependent on the initial results and involves two main technologies. The first involves zero radius drilling through coal seams from existing core boreholes. The second promotes methanogenic bacteriological activity. These will be subject to further approval in a separate application and assessment process.	Potential future activity.
8. The final location of each borehole will be confirmed after consideration of detailed environmental assessment of each site.	Prior to drilling
9. Apex would liaise with SCA to obtain agreement with a series of requirements to enable the activities to proceed.	Prior to drilling.
10. Boreholes have been sited to minimise vegetation clearing and soil disturbance and compaction.	Completed.
11. Any cleared vegetation and topsoil will be stockpiled and re-spread over the site on completion of operations.	During site clearing.
12. Vehicles will be restricted to defined parking and unloading areas.	During drilling.
13. Exploration hole drilling will require excavation of a sump to collect cuttings and expelled water. Following completion of drilling, the sump will be allowed to settle. The sump would be backfilled with material originally excavated from it and the disturbed area covered with topsoil and any remnant vegetation.	During and immediately following drilling.
14. Following completion of operations all excavations will be backfilled and the site rehabilitated.	Following completion of all operations at each site.
15. All bores will be cased to protect any higher yielding or higher quality aquifer than the gas producing strata. Apex believes the only aquifer of a critical nature is the Hawkesbury Sandstone which hosts upland swamps.	As required during drilling.
16. Silt fences will be erected where appropriate and maintained until a suitable level of rehabilitation has been achieved. All silt fencing will be removed when no longer required.	Prior to and during drilling.
17. On-site storage of fuel and lubricants will be kept to a minimum and safely stored on site in bunded pallets. Hydrocarbon spill kits will be available on site.	During drilling.
18. Drilling equipment will be required to be clean of soil and free of oil leaks prior to entering the site.	Prior to drilling.
19. Any oil leaks that develop will require immediate repair and drilling contractors will be required to have a supply of oil absorbent material on hand.	During drilling.

Action	Timing
20. Apex will comply with all legislative requirements in respect of licensing any encountered groundwater resources. In the event of encountering any significant groundwaters/aquifers an application for licensing of a water well would be made.	Prior to and during drilling.
21. Apex will ensure that the drilling fluids are removed from site at the completion of drilling and the water containing KCl disposed of in an appropriate manner.	At the completion of drilling.
22. All packaging, damaged or surplus equipment and drilling supplies will be removed from site prior to or at the completion of operations. Food wastes and similar will be deposited in secure capped bins and removed on a daily basis to maintain hygiene and minimise scavenging by wildlife.	During and immediately following drilling.
23. Fire precautions will include spark arrestors on the drilling rig, and no smoking or sources of ignition within 30m of the wellhead. There will be fire extinguishers on the drilling rig. Apex will provide cleared areas for hot work (grinding, cutting and welding) and a "butt bin" for smoking. All hot work will be done with an observer standing by and fire extinguishers on hand.	During all site activities.
24. A "portaloo" will be installed on site and maintained on a regular basis.	During drilling.
25. Where possible, the drilling activity will occur every day over 24 hours per day.	During drilling
26. Within SCA areas, the site boundary will be marked by coloured tape suspended between steel droppers with warning signs. In open areas Apex will provide temporary security fencing and warning signs around the boundary of each site.	During drilling and gas monitoring.
27. Exploration well testing may produce groundwater from the seams. It is proposed that such water be stored in the ground sumps or in above ground tanks and removed off-site by tanker or temporary above ground poly-pipe. Ultimate disposal will comply with DECC requirements.	During gas testing.
28. All safety and environmental requirements set out in the SCA Access Agreement will be adhered to.	During all site activity.
29. The exploration program will provide details of water quality and quantity to assist planning of any future activities.	Data collection to assist potential future activity.
30. A sedimentation fence will be constructed immediately down slope of the drill sites. The sedimentation fences will be installed in accordance with requirements as described in "Soils and Construction", hip pocket handbook, 1 st Edition, dated March 2004.	Prior to drilling commencing and first stage of site set up.
31. Should any surface drains and/or sedimentation basins be required during construction, they will be constructed in accordance with the Landcom publication, "Soils and Construction" Volume 1, Fourth Edition, March 2004 and the DECC (2008) publication, Managing Urban Stormwater; Soils and Construction - Volume 2A: Installation of Services, Volume 2C: Unsealed Roads and Volume 2E Mines and Quarries.	During site establishment and during drilling and gas monitoring.
32. The construction contractor will prepare a Site Environmental Management Plan that will address site water management details.	Prior to site access.
33. On-site storage of fuel, lubricants, potassium chloride and any other chemicals would be kept to a minimum and these items would be stored in bunded pallets.	During drilling.

Action	Timing
34. In the event of a spill of produced groundwater onsite which is not contained within site sumps or above ground tanks, a water quality sampling and testing service would be employed to ensure that any 'normal' stormwater runoff retained by the bund wall has not been contaminated and, if it has, that prompt removal by tanker would occur.	During drilling and gas monitoring.
35. For core drilling sites, where excavated sumps are used for the circulation of drilling fluid, if possible drilling fluid would be confined within the mud pits and temporarily covered with say a tarpaulin so that mixing with stormwater is prevented.	During core drilling.
36. Significant amounts of produced groundwaters which can be confined within on-site tanks or pits would have pH and EC monitored prior to tinkering away off site. All wastewater generated from the borehole drilling activities (apart from that recycled during drilling) must be removed from the drill site and transported for disposal outside of the Special Area.	During drilling and gas monitoring.
37. To assess requirements for management of excessive volumes of produced groundwaters i.e. volumes which have not been successfully confined within on site tanks or pits and are contained behind the site bund wall, water samples would be collected to determine water quality in the event of possible loss of containment. This would be done by measuring pH and EC onsite, and collection by an appropriately trained person of samples to be sent to a NATA-accredited laboratory for determination of key chemical analytes as identified in Table 4.2 of the March 2009 EA.	During drilling and gas monitoring.
38. On demand, water quality sampling and analysis would be conducted in the unlikely event that there is any uncontrolled release from the site water containment system.	During drilling and gas monitoring.
39. There will be no discharge of polluted waters to either surface waters or groundwaters from the site activities.	During site activities.
40. The plant species <i>Darwinia grandiflora</i> was recorded at borehole AI10 within Coastal Upland Swamp. The exact location of this species will be flagged, so it can be adequately protected and avoided by the proposal during and after construction of the borehole. A suitably qualified ecologist will be on site during the initial borehole site set up, to ensure this species is not impacted by the proposal.	Prior to drilling commencing.
41. Apex will adjust the location of boreholes and access tracks to avoid native trees and significant habitat features such as sandstone outcropping, where required.	Prior to drilling commencing.
42. Trees with hollows would be retained and protected, with no drilling within the critical root zone (extending to 2m beyond the drip line) of the trees.	Determined prior to drilling commencing.
43. Access to boreholes AI10, AI16, and AI18 may require trimming of branches along existing fire trails. Such branch trimming would be limited and restricted to smaller branches that do not support hollows. Should large branches with hollows be required to be removed, a suitably qualified ecologist would be on site during clearing to ensure no resident fauna are harmed. Cleared branches would be placed in adjoining vegetation, as they will provide fauna habitat.	Prior to drilling commencing.
44. Access to boreholes AI10, AI16 and AI18 will involve two creek crossings. These crossings will use established crossings along the established Fire Road 10Q and will not divert into other areas of the creeklines. Caution would be taken to prevent sedimentation run off and minimise disturbance along the creek.	Prior to drilling commencing and during all site activities.
45. Apex shall provide updates (by email or fax) to SCA on the progress of the drilling program on SCA land once per week.	During drilling on SCA land.
46. Where possible, proposed boreholes and access tracks would be located within existing cleared areas.	Prior to drilling commencing.

Action	Timing
47. Sediment and erosion control measures would be implemented on all sites to prevent erosion during and after construction.	Prior to and during site activities.
48. Disturbance to native vegetation would be minimised, or, where disturbance is unavoidable, borehole sites would be rehabilitated using locally sourced tubestock and brush-matting. Rehabilitation would be undertaken by suitably qualified bush regenerators.	Prior to, during and after site activities.
49. Where clearing of native vegetation is unavoidable, native shrubs, logs and bush-rock would be stockpiled on the side of the proposed boreholes and access routes and replaced following completion of the works.	Prior to any site clearing.
50. If required, bush regeneration and weed control would be undertaken to ensure the flora and fauna of the locality are protected throughout the construction and operation phases of the proposal. This is particularly important for boreholes where intact native vegetation will be disturbed. Any bush regeneration and weed control would be undertaken by suitably qualified bush regenerators.	Prior to, during and after site activities.
51. Apex will repair any damage NPWS access roads and tracks.	As and if required.
52. Any chemicals used on site would be taken off site after use and disposed of appropriately.	During drilling and gas monitoring.
53. Machinery and vehicles would be washed down prior to use on site to avoid the transmission of weed seed or disease into areas of intact native vegetation.	Prior to machinery and vehicles being used on site.
54. A suitably qualified ecologist would be on site during the initial site set up for each borehole, to ensure significant habitat features and species are not impacted by the proposal.	Prior to drilling commencing and during site confirmation.
55. During construction Apex will ensure that all diesel motors are noise attenuated to minimise noise impacts during construction. Testing operation will be largely inaudible and will not require mitigation.	During drilling and gas monitoring.
56. Within 3 months of the completion of each borehole on SCA land or within any other time agreed to by SCA, Apex will provide a report to SCA detailing compliance with the safeguards and mitigation measures detailed in the EA, EMP and as specified in any conditions of approval.	Within 3 months of the completion of a borehole on SCA land.
57. Apex will install screening of the site compounds to mask visual intrusion into the landscape. This may include measures such as fixing green shade cloth to the compound site fence to merge the bulk of the fence into surrounding vegetation or planting of local native plant species as a screen around the fence where sufficient depth of soil exists.	During site establishment.
58. No archaeological constraints have been identified within the project study area. Should unanticipated Aboriginal objects be identified during project works, all works should cease in the vicinity of the find and an archaeologist should be called to assess the find.	During all site activities.
59. No historic heritage constraints have been identified within the project study area. Should unanticipated historic relics be identified during project works, all works would cease in the vicinity of the find and an archaeologist would be commissioned to assess the find.	During all site activities.
60. Where necessary, a water cart will be used on site to reduce dust generation.	During site establishment and drilling.

Action	Timing
61. Apex will implement appropriate BMP and BATEA practices. They will provide noise barriers at AI05 and AI06 to reduce noise levels experienced at the nearest residences. In addition, they will attempt to negotiate agreements with the affected residents should the barriers not enable the noise criteria to be met.	During site establishment and drilling
62. Appropriate monitoring would be undertaken during drilling operations to confirm that the criteria are being achieved. Should this monitoring demonstrate non-compliance, Apex would undertake investigations and plan actions to ameliorate the non-compliance.	During drilling.
63. Should the approaches described in commitments 61 and 62 not resolve the noise issues, drilling would be limited to those times of day when criteria are met.	During drilling at AI05 and AI06.
64. All construction work (ie. prior to drilling) will be conducted between 7am and 6pm Monday to Friday and between 7am and 1pm Saturdays and at no time Sundays and public holidays, unless inaudible at any residential properties.”.	During site construction.
65. Packaging wastes will be separated into metal, wood and other recyclable streams. These separated waste materials will be recycled in an approved manner.	During all site activities.
66. Non-recyclable materials will be collected separately and will be disposed off-site in an approved waste facility.	During all site activities.
67. Wastewater from the temporary site buildings will be collected on-site prior to transport off-site for disposal at an appropriately authorised disposal facility.	During all site activities.
68. Vehicle-servicing wastes will consist of oils and greases together with assorted hydrocarbon containers. Mobile vehicles will not be serviced on site. This will be undertaken at appropriate off-site workshops. Any oils, greases and containers will be collected for recycling.	During all site activities.
69. Adequate spill control equipment/materials shall be available at drill sites.	During drilling and whenever liquids are stored on site.
70. Topsoil from the area surrounding the borehole will be stripped and stockpiled prior to the commencement of drilling. This topsoil will be used to resurface disturbed areas prior to revegetation.	During site establishment.
71. The site will be seeded with native flora species consistent with those currently surrounding the site.	During site rehabilitation at the completion of site activities.
72. Flaring of coal seam gas is proposed for implementation at each of the boreholes. While it is expected that between 90% and 100% of coal seam gas flow will be flared, the potential for some venting directly to the atmosphere exists.	During gas monitoring.
73. Rehabilitation of the borehole sites is required by the PEL. Boreholes that are not required for future gas production would be rehabilitated.	At the completion of site activities.
74. Apex will instruct all contractors and employees in the procedures for passing through the gates safely.	Prior to accessing each borehole site.
75. Apex shall detail and implement an evacuation and response plan for fire preparedness.	Before and during drilling.
76. Apex or its contractors will notify SCA of incidents causing or threatening material harm to personnel, the environment or SCA operations as soon as practicable after the person becomes aware of the incident.	During drilling operations.

Action	Timing
77. Apex will meet with SCA prior to the completion of the work period at each site on SCA land to ensure that the site is decommissioned to the satisfaction of SCA and to determine site specific rehabilitation requirements and offset requirements. General rehabilitation measures are listed in the SCA submission.	After drilling on SCA land.
78. Traffic safety rules and procedures would be developed to ensure public and employee safety during all operational stages of the program.	Prior to accessing each borehole site.