Project Approval

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

The Planning Assessment Commission of New South Wales (the Commission) having considered all relevant matters prescribed under Section 75I(2) of the *Environmental Planning and Assessment Act 1979* (the Act), grant project approval pursuant to Section 75J of the Act to the Proposal referred to in Schedule 1, subject to the conditions in Schedule 2.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

Member of the Commission **Member of the Commission**

Sydney 22 February 2011 File No: 10/02017

SCHEDULE 1

Application No:	08_0154
Proponent:	AGL Upstream Infrastructure Investments Pty Ltd and its successors and assigns.
Approval Authority:	Planning Assessment Commission.
Land:	Land required for the development of the proposal, otherwise referred to as the Site.
Proposal:	Stage 1 project comprising the pre-construction, construction, commissioning, operation, decommissioning and rehabilitation of the: • *Stage 1 Gas Field Development Area* - 110 gas wells and associated infrastructure including gas and water gathering lines, within an approximately 50 km^2 section of the overall 210 km^2 gas field development area, between the townships of Gloucester and just south of Stratford in the Gloucester local Government area; • *Central Processing Facility* - a facility for the compression and processing of the extracted gas, and associated

infrastructure (including extracted and treated water storage ponds, salt evaporation ponds, water treatment plant, options for treated water disposal (excluding groundwater re-injection) and an up to 15 megawatt gas-fired electricity generating facility) at one of two locations in the Gloucester Shire local Government area: site 1 (within the property owned by the Proponent known as the "Tiedeman" property) or site 7 (land currently owned by Gloucester Coal, adjacent to a rail loop which currently services the Stratford Colliery);

- *Gas Transmission Pipeline* - an approximately 95-100 kilometre length pipeline between the central processing facility and receiving station located at Tomago (located within an overall assessment corridor of 100 metres width), traversing the Gloucester Shire, Great Lakes Shire, Dungog Shire, Port Stephens, Maitland City and Newcastle City local Government areas;
- *Tomago Receiving Station* - a gas receiving station at Tomago to deliver the transported gas to the existing Newcastle-Sydney gas supply pipeline; and
- associated ancillary infrastructure such as access roads, temporary construction facilities and construction personnel camps.

Major Project: The proposal was declared a Major Project under section 75B(1)(a) of the *Environmental Planning and Assessment Act 1979*, because it is development of a kind described in clauses 6 and 26A of Schedule 1 of *State Environmental Planning Policy (Major Development) 2005.*

KEY TO CONDITIONS

SCHEDULE 2

Act, the	*Environmental Planning and Assessment Act, 1979*
Conditions of Approval	The Minister's conditions of approval for the project.
Construction	All pre-operation activities associated with the project other than pre-construction and commissioning.
Councils	Gloucester Shire, Great Lakes Shire, Dungog Shire, Port Stephens, Maitland City and Newcastle City
Department	Department of Planning and Environment
DoE	Commonwealth Department of the Environment
Secretary's approval/ agreement or satisfaction	A written approval from the Secretary (or delegate).
DPI	Department of Primary Industries
DRE	Division of Resources and Energy (within NSW Trade & Investment)
Dust	Any solid material that may become suspended in air or deposited.
EA (Mod 1)	The Environmental Assessment *Minor Pipeline Corridor Realignments - Modification to the Gloucester Gas Project*, prepared by EMGA Mitchell McLennan Pty Limited, and dated 15 November 2013, and associated response to submissions dated 18 February 2014 and supplementary information dated 5 June 2014 and 22 August 2014.
Environmental Assessment	Gloucester Gas Project Environmental *Assessment,* dated November 2009 and prepared by AECOM
EPA	Environment Protection Authority
Hunter LLS	Hunter Local Land Services
NOW	NSW Office of Water
OCSG	Office of Coal Seam Gas
OEH	Office of Environment and Heritage
Operation	Operation comprises the following, however does not include commissioning activities: • for the Stage 1 Gas Field Development Area – when wells commence gas extraction; • for the Central Processing Facility - when gas commences to be processed at the facility; and • for the Pipeline and Tomago Receiving Station – when gas commences to be transported via the pipeline.
Publicly Available	Available for inspection by a member of the general public (for example available on an internet site or at a display centre).
Pre-construction	Activities including survey, acquisitions, fencing, investigative drilling or excavation, building/road dilapidation surveys or other activities determined by the Environmental Representative to have minimal environmental impact such as minor access roads, minor adjustments to services / utilities, or minor clearing (except where threatened species, populations or ecological communities would be affected).
Reasonable and Feasible	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. **Feasible** relates to engineering considerations and what is practical to build. **Reasonable** relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
RMS	NSW Roads and Maritime Services
Secretary	Secretary of the Department, or nominee

Site	Land required for the development of the project.
Statement of Commitments	Statement of Commitments contained in the Environmental Assessment
Statement of Commitments (Mod 1)	Statement of Commitments contained in *Minor Pipeline Corridor Realignments - Modification to the Gloucester Gas Project*, dated 15 November 2013, prepared by EMGA Mitchell McLennan Pty Limited
Submissions Report	*Gloucester Gas Project Submissions Report*, dated May 2010, and prepared by AECOM

1. ADMINISTRATIVE CONDITIONS

Terms of Approval

1.1 The Proponent shall carry out the project generally in accordance with the:

a) Major Project Application 08_0154;
b) *Gloucester Gas Project Environmental Assessment,* dated November 2009 and prepared by AECOM;
c) *Gloucester Gas Project Submissions Report*, dated May 2010, and prepared by AECOM;
d) *Gloucester Basin Stage 1 Gas Field Development Project Preliminary Groundwater Assessment and Initial Conceptual Hydrogeological Model,* dated July 2010, and prepared by SRK Consulting;
e) additional information on offset site(s) and pre-construction surveys submitted to the Department by email on 10 August 2010 and 31 August 2010, respectively;
f) draft management plans on acid sulphate soil and the threatened species *Grevillea Parviflora sub. Species parviflora*, submitted to the Department by email on 12 October 2010;
g) the concept plan approval granted with respect to the Gloucester Gas Project (08_0154);
h) Statement of Commitments;
i) EA (Mod 1);
j) Statement of Commitments (Mod 1); and
k) the conditions of this approval.

1.2 In the event of an inconsistency between:

a) the conditions of this approval and any document listed from condition 1.1a) to 1.1j) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and
b) any document listed from condition 1.1a) to 1.1j) inclusive, the most recent document shall prevail to the extent of the inconsistency.

1.3 The Proponent shall comply with any reasonable requirement(s) of the Secretary arising from the Department's assessment of:

a) any reports, plans or correspondence that are submitted in accordance with this approval; and
b) the implementation of any actions or measures contained in these reports, plans or correspondence.

1.3A The Applicant must ensure that all wells:

a) must be designed, constructed, maintained and abandoned in accordance with the *Code of Practice for Coal Seam Gas – Well Integrity* (DRE 2012) or its latest version; and
b) where hydraulic fracturing is proposed, are operated in accordance with the Code of *Practice for Coal Seam Gas – Fracture Stimulation* (DRE 2012) or its latest version.

Limits of Approval

1.4 This project approval shall lapse five years after the date on which it is granted, unless the Proponent has demonstrated to the satisfaction of the Secretary prior to this time that orders have been placed for key plant/ elements essential and fundamental for the development of at least two project components (gas extraction, central processing facility, pipeline and/or Tomago Receiving Station).

1.5 To avoid any doubt, this approval only allows for the development of a single central processing facility at either site 1 or site 7.

1.6 To avoid any doubt, this approval does not authorise the following activities or works unless the subject of additional assessment and approval as part of a modification application under section 75W of the Act:

a) construction or operation of a transmission line connection between the central processing facility (15 megawatt gas-fired electricity generating facility) and existing electricity grid; and
b) direct re-injection of groundwater produced during gas well development, back into groundwater aquifers as a water disposal option.

Statutory Requirements

1.7 The Proponent shall ensure that all necessary licences, permits and approvals required for the development of the project are obtained and maintained as required throughout the life of the project. No condition of this approval removes the obligation for the Proponent to obtain, renew or comply with such necessary licences, permits or approvals.

1.8 The Proponent may elect to construct the project in discrete work packages or stages. Where that occurs, these conditions of approval need only be complied with to the extent that they are relevant to that discrete work package or stage.

2. PROJECT DESIGN REQUIREMENTS

2.1 The Proponent shall in consultation with OCSG and NOW ensure that gas wells within the Stage 1 Gas Field Development Area are located consistent with the locational principles identified in Statement of Commitment 3 (concept area) of the Environmental Assessment, with consideration to flood prone land and with consideration to minimising the risk of groundwater impacts consistent with the requirements of condition 3.10. Prior to the commencement of construction of the Stage 1 Gas Field Development Area, the Proponent shall submit to OCSG location sheets identifying the final location of wells including associated infrastructure such as gas/water gathering lines and access roads. Where gas development is phased, the Proponent shall submit the above information (with appropriate updates) to OCSG prior to the commencement of each phase.

Nothing in this condition precludes the Proponent from submitting the above required information as part of the Field Development Plan referred to in condition 3.10.

2.2 The Proponent shall finalise the route alignment of the gas transmission pipeline within the 100 metre assessment corridor identified in the Environmental Assessment, in consultation with affected landowners, with the aim of maximising the length of route within existing disturbed areas (including existing infrastructure easements) and minimising conflict with private properties and landuse. Where the route is proposed to traverse existing infrastructure easements, the Proponent shall ensure that the pipeline route is located in consultation with the owners of existing infrastructure within the easement with the aim of minimising conflict with the ongoing operation and future upgrade/ maintenance requirements of that infrastructure. Prior to the commencement of construction of the gas transmission pipeline, the Proponent shall submit to the Department route alignment sheets identifying the final location of the pipeline.

2.3 The Proponent shall ensure that the final design of the gas transmission pipeline makes provisions for all reasonable requirements of the Mine Subsidence Board, where the gas pipeline route traverses a Mine Subsidence District.

2.4 The Proponent shall ensure that engineering measures are incorporated into the design of the central processing facility so that the associated flare plant is shielded (visually and in relation to noise emissions) from nearest sensitive receptors, as far as reasonable and feasible. The Proponent shall also ensure that gas wells are designed so as to ensure that associated flaring is visually shielded from nearest sensitive receptors as far as reasonable and feasible. The Proponent shall submit details of engineering measures incorporated into the design of the flare plant and gas wells for the approval of the Director-General, prior to the commencement of construction.

3. SPECIFIC ENVIRONMENTAL CONDITIONS

Surface Water Quality

3.1 Except as may be expressly provided by an Environment Protection Licence for the project, the Proponent shall comply with section 120 of the *Protection of the Environment Operations Act 1997* which prohibits the pollution of waters.

3.2 Soil and water management measures consistent with Landcom's *Managing Urban Stormwater: Soils and Conservation* shall be employed during the construction of the project for erosion and sediment control.

Watercourse Crossings

3.3 All pipeline crossings of the Karuah River, Williams River, Hunter River, Deadmans Creek and any wetlands listed under *State Environmental Planning Policy No 14 – Coastal Wetlands* shall be undertaken using horizontal directional drilling techniques.

3.4 Unless otherwise agreed to by the Secretary, the Proponent shall ensure that any disturbance to watercourses and/or associated riparian vegetation is rehabilitated to a standard equal to or better than the existing condition in consultation with the NOW, Hunter LLS and DPI (Fisheries). Measures to facilitate the long-term rehabilitation of the site (including land stabilisation and re-vegetation) shall be implemented within six months of the cessation of construction activities at the relevant area.

Unless otherwise agreed to by the Secretary, the Proponent shall monitor and maintain the condition of the rehabilitated area until such time that the area (including re-vegetated areas) has been verified by an independent and suitably qualified expert (whose appointment has been agreed to by the Secretary) as being well established, in good health and self sustaining and rehabilitated to the standard required by this condition.

Groundwater Management

3.5 The Proponent shall implement all reasonable and feasible measures to ensure that gas wells are constructed, operated and decommissioned to avoid and minimise gas migration risks and adverse impacts to beneficial aquifers including associated groundwater users, surface waters and groundwater dependent ecosystems.

3.6 Unless otherwise agreed to by the Secretary, prior to the commencement of construction of the Stage 1 Gas Field Development Area, the Proponent shall identify and plug with cement any abandoned or old gas exploration wells that have not already been plugged and are located within a 500 metre radius of finalised gas well locations to minimise the risk of gas migration via these wells, to the satisfaction of the OCSG. Where casing has been installed in any of the abandoned or old exploration wells, and the extent of cementing to support the casing is unclear or unknown, the bore annulus must be sealed to prevent waters intermixing.

3.7 The Proponent shall ensure that no fraccing fluids containing Benzene, Toluene, Ethylbenzene and Xylene (BTEX) chemicals are used in gas field development.

Baseline Monitoring and Updated Hydrogeological Model

3.8 Prior to the commencement of construction the project, the Proponent shall in consultation with NOW update the conceptual hydrogeological model developed during the assessment stage of the project (referred to in the document listed in condition 1.1d) based on baseline data gathered from (but not necessarily limited to), the pre-construction investigations identified below:

a) seismic surveys of the site to identify geological features of risk;
b) preliminary field sampling of hydraulic conductivity, groundwater levels, groundwater quality and surface water quality based on a packer, pump and slug testing program and surface water sampling; and

c) long-term baseline monitoring (i.e. at least six months) at groundwater and surface water locations determined in consultation with NOW, to ensure representative baseline data on pre-construction conditions (including seasonal variability) in relation to the shallow rock and alluvial beneficial aquifers, deeper coal seam water bearing zones, groundwater users and surface waters.

3.9 The updated conceptual hydrogeological model referred to in condition 3.88 shall be submitted for the Secretary's approval, prior to the commencement of construction and shall include:

a) updated assessment of the potential for drawdown and displacement of shallow rock and alluvial beneficial aquifers, considering impacts to nearby registered bore users, based on detailed baseline data gathered from condition 3.8 a) to c);
b) optimal areas for gas well location within the Stage 1 Gas Field Development Area based on minimising the risk of gas migration and of interaction with beneficial aquifers and the outcomes of the updated assessment;
c) recommendations for phased gas well development including identifying the maximum number of gas wells that would be developed during the first phase of development and associated operational groundwater monitoring strategy consistent with the requirements of condition 4.1; and
d) include an independent peer review by an appropriately experienced and qualified hydrogeologist (who is approved by the Secretary for the purposes of this condition) on the robustness and technical veracity of the model.

In submitting the updated conceptual hydrogeological model for the Secretary's approval, the Proponent shall provide written evidence of consultation with NOW on the robustness and technical veracity of the model (including well location areas and phasing program) identifying the issues raised by NOW and how these have been addressed by the Proponent.

Field Development Plan Implementation during Operation

3.10 Unless otherwise agreed to by the Secretary, the Proponent shall ensure that gas wells within the Stage 1 Gas Field Development Area are developed in a phased manner to avoid and minimise adverse impacts to beneficial aquifers consistent with the requirements of condition 3.5. Prior to the commencement of construction of the Stage 1 Gas Field Development Area, the Proponent shall in consultation with NOW develop and submit to the Secretary for approval a **Field Development Plan**, which includes a phasing program for the development of gas wells and details of the final location of gas wells and associated infrastructure such as gas/water gathering lines and access roads for at least the first phase of gas well development identified in the Field Development Plan. As gas field development progresses, the Proponent shall in consultation with NOW update the Field Development Plan with phasing and location details of gas wells and associated infrastructure for subsequent phases, and submit the plan to the Secretary for approval prior to the commencement of each phase.

The Proponent shall ensure that the Field Development Plan includes a program that:

a) for the first phase of gas well development, is consistent with the recommendations of condition 3.9c); and
b) for all subsequent phases of gas well development, is prepared in consultation with NOW, and:
    i. is consistent with the outcomes of the groundwater monitoring program and associated numerical hydro-geological model implemented in accordance with condition 4.1 and 4.2;
    ii. demonstrates satisfactory management of groundwater risks in accordance with condition 3.5; and
    iii. is in accordance with any requirements of the Secretary following review of groundwater monitoring results in accordance with conditions 4.1 and 4.2,

to the satisfaction of the Secretary.

Rate of Groundwater Extraction

3.11 Prior to the commencement of any groundwater extraction associated with the project, the Proponent shall ensure that all relevant Water Licence(s) have been obtained from NOW for groundwater extraction at the volumetric rate of two mega litres per day (averaged over a 12 month period). Except as may be expressly provided by a Water Licence for the project, the Proponent shall ensure that the volumetric rate of groundwater extraction for the project is no greater than two mega litres per day (averaged over a 12 month period).

Extracted Water Management

3.12 Unless otherwise agreed to by the Secretary, prior to the commencement of construction of the project, the Proponent shall develop an **Extracted Water Management Strategy** in consultation with OCSG, NOW, Hunter LLS, EPA and relevant Councils and to the satisfaction of the Secretary, which:

a) identifies the final suite of water disposal and re-use option(s) that would be implemented to manage groundwater extracted from the gas production wells;
b) identifies the water quality required to achieve the disposal/ re-use option(s) identified in a) above including the procedure for monitoring of treated water to ensure that required water quality criteria are achieved;
c) if discharge to surface waters is proposed – identifies details of all practical measures investigated to prevent, control, abate or mitigate that discharge; details of the receiving environment including water quality and flow conditions; proposed discharge rate and frequency; and details of all practical measures investigated to protect the environment from harm as a result of that discharge including demonstration that any discharge would satisfy the requirements of condition 3.1;
d) if re-use for irrigation is proposed – demonstrates that there is demand for the volumes of water to be generated, details of all practical measures investigated to protect the environment from harm including details of optimal application rates to prevent over-irrigation and associated salinity issues or groundwater contamination, and demonstration that any discharge would satisfy the requirements of condition 3.1;
e) if extracted water is proposed to be made available to the market – demonstrates that suitable buyers of the water have been secured and where the water is proposed to supplement drinking water supplies, demonstration that the water quality is suitable for drinking water supplies;
f) identifies the final option for the management of the salt volumes produced from the extracted water treatment process;
g) includes a contingency strategy for the management of extracted water should the volumetric rate of groundwater extraction be greater than two mega litres per day (consistent with the requirements of condition 3.11), including analysis of associated risks to groundwater users and/ or surface waters and groundwater dependent ecosystems;
h) provides an assessment of the need for control measures to be implemented at the extracted water and brine evaporation ponds to minimise wildlife (including bird) access to these ponds, with consideration to the water quality and associated risks to wildlife likely to be posed by these storage ponds; and
i) provide for the development of site specific water quality criteria in accordance with the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000* (ANZECC 2000 Guidelines), as necessary, in consultation with DECCW, for the purposes of conditions b), c), d) and e) above.

3.13 The Proponent shall ensure that any water storage ponds developed at the central processing facility or on the Tiedeman property as part of the project (including extracted water, treated water and brine evaporation ponds) are appropriately lined to ensure no leaching of stored waters and designed consistent with a 1 in 100 year flood design standard.

Noise Impacts

Construction Hours

3.14 With the exception of construction of the pipeline, the Proponent shall only undertake construction activities associated with the project that would generate an audible noise at any sensitive receptor during the following hours:

a) 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
b) 8:00 am to 1:00 pm on Saturdays; and
c) at no time on Sundays or public holidays.

This condition does not apply in the event of a direction from police or other relevant authority for safety reasons or emergency work to avoid the loss of lives, property and/or to prevent environmental harm.

Construction works associated with the gas pipeline that would generate audible noise at any sensitive receptor shall only be undertaken during the following hours: 7.00 am to 6.00 pm Monday to Saturday and 8.00 am to 6.00 pm Sundays or public holidays for a maximum period of 28 days at a time, separated by a minimum respite period of nine days.

3.15 Blasting associated with the construction of the project shall only be undertaken during the following hours:

a) 9:00 am to 5:00 pm, Mondays to Fridays, inclusive;
b) 9:00 am to 1:00 pm on Saturdays; and
c) at no time on Sundays or public holidays.

3.16 The hours of construction activities specified under conditions 3.14 and 3.15 of this approval may be varied with the prior written approval of the Secretary. Any request to alter the hours of construction specified under condition 3.14 and 3.15 shall be:

a) considered on a case-by-case basis;
b) accompanied by details of the nature and need for activities to be conducted during the varied construction hours including alternatives considered;
c) accompanied by details of the likely noise levels at nearest sensitive receptors with and without mitigation;
d) accompanied by details of all reasonable and feasible measures identified to minimise noise impact at nearest sensitive receptors;
e) accompanied by details of consultation and notification undertaken with surrounding receptors (including, in respect to proposed gas drilling works on a 24 hour basis – written agreement from affected landowners, where relevant construction noise goals are not expected to be achieved); and
f) accompanied by written evidence demonstrating consultation with the EPA in relation to the proposed variation in construction times (including consideration of any comments made by the EPA).

Construction Noise

3.17 The Proponent shall implement all reasonable and feasible measures to minimise noise generation from the construction of the project consistent with the requirements of the *Interim Construction Noise Guideline* (DECC, July 2009) including noise generated by heavy vehicle haulage and other construction traffic associated with the project.

Construction Blasting

3.18 The Proponent shall ensure that air blast overpressure generated by blasting associated with the project does not exceed the criteria specified in Table 1 when measured at the most-affected residential or sensitive receiver.

Table 1 – Airblast Overpressure Criteria

Air blast Overpressure (dB(Lin Peak))	Allowable Exceedance
115	5% of total number of blasts over a 12 month period
120	Never

3.19 The Proponent shall ensure that the ground vibration generated by blasting associated with the project does not exceed the criteria specified in Table 2 when measured at the most-affected residential or sensitive receiver.

Table 2 – Peak Particle Velocity Criteria

Peak Particle Velocity Criteria (mms^{-1})	Allowable Exceedance
5	5% of total number of blasts over a 12 month period
10	Never

3.20 Prior to each blasting event, the Proponent shall notify the relevant local council and potentially-affected landowners, including details of time and location of the blasting event and providing a contact point for inquiries and complaints.

Vibration Impacts

3.21 The Proponent shall ensure that the vibration resulting from construction and operation of the project does not exceed the preferred values vibration (for low probability of adverse comment) presented in *Assessing Vibration: A Technical Guideline* (DECC, February 2006), at any surrounding sensitive receptor.

Operational Noise

3.22 The Proponent shall design, construct, operate and maintain the project to ensure that the noise contributions from the project do not lead to an exceedence of the noise limits specified in Table 3 (at the locations and during the periods indicated) for the operation of the project unless subject to a negotiated noise agreement established consistent with Section 8.3 of the *New South Wales Industrial Noise Policy* (EPA, 2000). The noise limits apply under wind speeds up to 3 ms^{-1} (measured at 10 metres above ground level), or under temperature inversion conditions of up to 3 ºC/ 100 metres and wind speeds of up to 2m/s at 10 metres above the ground.

This condition only applies to the project operating under normal operating conditions and does not apply to:

a) start-up, shut-down or emergency situations (emergency situations being defined as situations where there is the potential for the loss of lives, property and/ or environmental harm); or

b) the re-drilling and/ or re-fraccing activities of previously operational wells or gas well maintenance activities, which are specifically agreed to by the Secretary in writing, on a case by case basis, and which are undertaken in accordance with an approved noise management protocol prepared in accordance with the requirements of condition 7.4e)(iii).

Table 3 - Operational Noise Limits

Project Component	Location	Project Specific Noise Limit (all time periods)	
		dB(A) $L_{Aeq(15\ minute)}$	dB(A) $L_{A1\ (1\ minute)}$
Gas Wells	Nearest Sensitive Receptor	35	45
Central Processing Facility (Site 1)	P7	36	46
	P8	36	46
	P9	35	45
	P10	36	46
	P11	36	46
	P12	36	46
	P13	36	46
Central Processing Facility (Site 7)	P1	36	46
	P2	42	52
	P3	37	47
	P4	35	45
	P5	35	45
	P6	35	45

Tomago Receiving Station	P18/R37	49	59
	P19/R38	49	59
	P20/R39	42	52
	P21/R41	51	61

3.23 For the purpose of assessment of noise contributions specified under condition 3.22 of this approval, noise from the project shall be:

a) measured at the most affected point within the residential boundary or at the most affected point within 30 metres of the dwelling where the dwelling is more than 30 metres from the boundary to determine compliance with the $L_{Aeq(15\ minute)}$ noise limits;

b) measured at 1 metre from the dwelling façade to determine compliance with the $L_{A1\ (1\ minute)}$ noise limits; and

c) subject to the modification factors provided in Section 4 of the *New South Wales Industrial Noise Policy* (EPA, 2000).

Notwithstanding the above, should direct measurement of noise from the project be impractical, the Proponent may employ an alternative noise assessment method deemed acceptable by the EPA (refer to Section 11 of the *New South Wales Industrial Noise Policy* (EPA, 2000)). Details of such an alternative noise assessment method accepted by the EPA shall be submitted to the Secretary prior to the implementation of the assessment method.

Detailed Design Noise Report

3.24 Unless otherwise agreed to by the Secretary, at least 3 months prior to the commissioning of the central processing facility and Tomago Receiving Station, the Proponent shall in consultation with EPA prepare and submit a **Detailed Design Noise Report** for the Secretary's approval to confirm the predicted noise levels associated with the central processing facility and Tomago Receiving Station considering all reasonable and feasible at-source control measures (based on detailed design) at the sensitive receptors identified in Table 3.

Acquisition Rights

3.25 Unless otherwise agreed to by the Secretary, where the **Detailed Design Noise Report** required to be prepared under condition 3.24 predicts exceedences of greater than 5 dB(A) of project specific noise limits at any sensitive receptor identified in Table 3 for either the operation of the central processing facility or the operation of the Tomago Receiving Station, the relevant receptors shall be subject to acquisition rights in accordance with condition 3.26 unless a negotiated agreement is in place with respect to that receptor in accordance with condition 3.22. The Proponent shall ensure that any receptor subject to acquisition rights is notified of his/her rights as outlined in condition 3.26 within one month of the Department's approval of the Detailed Design Noise Report.

3.26 Within three months of receiving a written request from a landowner with acquisition rights under condition 3.25 of this approval, the Proponent shall make a binding written offer to the landowner based on:

a) the market value of the landowner's interest in the property at the date of this written request, as if the property was unaffected by the project:

b) the reasonable costs associated with;

   i) property relocation;

   ii) obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is acquired; and

c) reasonable compensation for any disturbance caused by the land acquisition process.

However, if at the end of this period, the Proponent and landowner cannot agree on the acquisition price of the land, and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Secretary for resolution.

Upon receiving such a request, the Secretary shall request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer or Fellow of the Institute, to:

a) consider submissions from both parties;
b) determine a fair and reasonable acquisition price for the land, and/or terms upon which the land is to be acquired having regard to the matters in a), b) and c) above; and
c) prepare a detailed report setting out the reasons for any determination and provide a copy of the report to both parties.

Within 14 days of receiving the independent valuer's determination, the Proponent shall make a written offer to purchase the land at a price not less than the independent valuer's determination.

If the landowner refuses to accept the Proponent's binding written offer within six months of the date of the Proponent's offer, the Proponent's obligations to acquire the land shall cease, unless the Secretary determines otherwise.

The Proponent shall bear the reasonable costs of any valuation or survey assessment requested by the independent valuer or the Secretary and the reasonable costs of determination referred to above.

Any receptor, for which acquisition rights have ceased in accordance with the requirement of this condition, would nevertheless be eligible to receive at-receptor acoustic treatments in accordance with condition 3.27.

At-Receptor Acoustic Treatment

3.27 Unless otherwise agreed to by the Secretary, where the **Detailed Design Noise Report** required to be prepared under condition 3.24, predicts exceedences of project specific noise criteria of no greater than 5 dB(A) at any sensitive receptor identified in Table 3 for either the operational of the central processing facility or the operational of the Tomago Receiving Station, the relevant receptors shall be eligible to receive at-receptor acoustic treatments, at the Proponent's expense, to minimise noise impacts at the receptors as far as reasonable and feasible, unless operational noise monitoring undertaken in accordance with condition 4.3 confirms that project specific noise limits would be achieved at these receptors. All receptors eligible for at-receptor mitigation measures in accordance with the requirements of this condition shall be informed of their rights following the confirmation of noise levels at these receptors as part of the Noise Verification Report required to be prepared under condition 4.3, within one month of the Secretary's approval of that Noise Verification Report.

Air Quality Impacts

Dust Generation

3.28 The Proponent shall employ all reasonable and feasible measures (including temporary cessation of relevant works, as appropriate) to ensure that the project is constructed in a manner that minimises dust emissions from the site, including wind-blown and traffic-generated dust. All activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site, as far as practicable.

Odour

3.29 The Proponent shall not permit any offensive odour, as defined under section 129 of the *Protection of the Environment Operations Act 1997*, to be emitted from the site which impacts on any sensitive surrounding receptor.

Monitoring and Discharge Points

3.30 For the purposes of this approval, air monitoring/ air discharge points shall be identified as provided in Table 4 below.

Table 4 - Identification of Air Monitoring and Discharge Points

Monitoring / Discharge Point Identifier	Monitoring/ Discharge Point Location
1	Water Bath Heater, Tomago Receiving Station
2	Internal Combustion Engine, Power Generation Facility, Central Processing Facility
3	Reciprocating Multistage Compressor, Gas Compression Plant, Central Processing Facility
4	Alternator, Central Processing Facility
5	Triethylene Glycol Regeneration Skid, Central Processing Facility
6	Triethylene Glycol Boiler, Central Processing Facility

Discharge Limits

3.31 The Proponent shall design, construct, operate and maintain the project to ensure that for each discharge point, identified in condition 3.30, the concentration of each pollutant listed in Table 5 is not exceeded during the operation of the project. This condition only applies to the project operating under normal operating conditions and does not apply during start-up, shut-down or emergency situations.

Table 5 - Maximum Allowable Discharge Concentration Limits (Air)

Discharge Point	Pollutant	Units of Measure	100 Percentile limit (mgm^{-3})	Averaging Period	Reference conditions
1 (TRS)	Oxides of Nitrogen	mg/m^3	350	1 hour	dry, 273 K, 101.3 kPa, and 3% O_2
	Volatile Organic compounds or carbon monoxide	mg/m^3	40 (VOCs or 125 (CO)	Rolling 1-hour	dry, 273 K, 101.3 kPa, and 3% O_2
2	Oxides of Nitrogen	mg/m^3	450	1 hour	dry, 273 K, 101.3 kPa, and 3% O_2
	Formaldehyde	mg/m^3	6	1 hour	dry, 273 K, 101.3 kPa, and 3% O_2
	Volatile Organic compounds or carbon monoxide	mg/m^3	40 (VOCs or 125 (CO)	Rolling 1-hour	dry, 273 K, 101.3 kPa, and 3% O_2
3	Oxides of Nitrogen	mg/m^3	250	1 hour	dry, 273 K, 101.3 kPa, and 13% O_2
	Formaldehyde	mg/m^3	10	1 hour	dry, 273 K, 101.3 kPa, and 13% O_2
	Volatile Organic compounds or carbon monoxide	mg/m^3	40 (VOCs or 125 (CO)	Rolling 1-hour	dry, 273 K, 101.3 kPa, and 13% O_2
4	Oxides of Nitrogen	mg/m^3	60	1 hour	dry, 273 K, 101.3 kPa, and 13% O_2
	Formaldehyde	mg/m^3	10	1 hour	dry, 273 K, 101.3 kPa, and 13% O_2
	Volatile Organic compounds or carbon monoxide	mg/m^3	40 (VOCs or 125 (CO)	Rolling 1-hour	dry, 273 K, 101.3 kPa, and 13% O_2
5	Oxides of Nitrogen	mg/m^3	35	1 hour	dry, 273 K, 101.3 kPa, and 3% O_2
	Formaldehyde	mg/m^3	5	Rolling 1-hour	dry, 273 K, 101.3 kPa, and 3% O_2
6	Oxides of Nitrogen	mg/m^3	60	1 hour	dry, 273 K, 101.3 kPa, and 3% O_2
	Formaldehyde	mg/m^3	5	Rolling 1-hour	dry, 273 K, 101.3 kPa, and 3% O_2

Gas Flare Management

3.32 In relation to gas wells under flare during the commissioning of the Stage 1 Gas Field Development Area, the Proponent shall ensure that a separation distance of at least 500 metres is maintained for flaring wells positioned in a straight line (maximum of five wells simultaneously flaring) and 800 metres for flaring wells positioned in a triangular grid (maximum of four wells simultaneously flaring). If additional wells are to be flared

simultaneously a four kilometre separation distance shall be maintained between flaring well clusters.

3.33 The Proponent shall ensure that records of gas venting from the central processing facility, either through flare or directly to the atmosphere shall be recorded and reported to the Secretary and EPA on an annual basis

Biodiversity Offset

3.34 Unless otherwise agreed to by the Secretary, prior to the commencement of construction of the project, the Proponent shall in consultation with OEH and DoE finalise and secure in perpetuity (through appropriate legal mechanisms), a compensatory habitat package, which offsets the biodiversity impacts of the project as specified below to the satisfaction of the Secretary. Unless otherwise agreed to by the Secretary, the package shall be finalised following:

a) targeted surveys of the gas transmission pipeline corridor to confirm the project's impacts on the following listed flora species, based on survey methodology determined in consultation with OEH: *Asperula conferta* (Trailing Woodruff), *Galium australe* (Tangled Bedstraw), *Callistemon linearifolius* (Nettled Bottle Brush), *Cryptostylis hunteriana* (Leafless Tongue Orchid), *Cynanchum elegans* (White-flaxed Wax Plant), *Grevillea Parviflora sub. Species parviflora* (Small-flower Grevillea), *Persicaria elatior* (Tall Knotweed), *Pomaderris queenslandica* (Scant Pomaderris), *Rhizanthella slateri* (Eastern Australian Underground Orchid) and *Tetratheca juncea* (Black-eyed Susan);

b) survey of the offset site identified in the documents listed under condition 1.1e) in consultation with OEH and consistent with OEH's Biobanking Methodology to confirm the ecological values of the site(s);

c) based on b) above, demonstration that the offset site referred to in b) above, provides suitable offset (consistent with the principles of "maintain or improve") for the biodiversity impacts of the project on:

   i) *Grevillea Parviflora sub. Species parviflora*, any additional listed flora species identified to be impacted by the gas transmission pipeline corridor based on a) above, and the habitat of any listed flora species identified to have a medium to high potential of occurring within the remaining disturbance footprint of the project;

   ii) habitat of the Grey-crowned Babbler species and any other fauna species identified to have a medium to high potential of occurring within the disturbance footprint of the project;

   iii) the Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions endangered ecological community; and

   iv) important native vegetation and habitat values within the disturbance footprint of the project;

d) where the offset site referred to in b) above does not provide all required offset values as identified in c) above, the identification of additional offset measures and / or sites in consultation with OEH and DoE, to address residual offset requirements including survey of additional offset sites in accordance with b) above, where required; and

e) finalisation of the management measures required to maintain the biodiversity values of each offset option identified, in perpetuity in consultation with OEH and DoE.

In submitting the compensatory habitat package for the Secretary's approval, the Proponent shall clearly detail the consultation undertaken with OEH and DoE, including opportunity provided to review draft versions of the package (should this be required by the agencies) and identification of the issues raised by the agencies and how these have been addressed in the package.

Heritage Impacts

3.35 If during the course of construction the Proponent becomes aware of any previously unidentified Aboriginal object(s), all work likely to affect the object(s) shall cease immediately and the objects managed in accordance with the requirements of condition 7.2g)iv), in consultation with registered Aboriginal stakeholders.

3.36 The Proponent shall ensure that the Stage 1 Gas Field Development Area is developed such as to avoid impacts to AHIMS 38-1-0008 and AHIMS 38-1-0031 to the satisfaction of the Secretary.

3.37 The Proponent shall ensure that pipeline construction in the vicinity of AHIMS 28-1-0006 and AHIMS 38-4-0010 is restricted to the existing disturbed road alignment to ensure no disturbance or interference with these sites. The Proponent shall ensure that a qualified archaeologist and relevant Aboriginal stakeholders are on site at all times during construction works in the vicinity of these sites to monitor the construction works and ensure that appropriate buffer distances are maintained to these sites to avoid disturbance.

3.38 Should the Central Processing Facility or any temporary construction facilities be located within Site 1, the Proponent shall prior to the commencement of construction provide opportunity for representatives from the Forster Local Aboriginal Land Council to survey the site, re-locate and salvage the three isolated finds that have been previously identified on site (but which were unable to be relocated during studies undertaken as part of the Environmental Assessment).

3.39 If during the course of construction the Proponent becomes aware of any unexpected historical relic(s), all work likely to affect the relic(s) shall cease immediately in the vicinity of the relics and the Heritage Office notified in accordance with the *Heritage Act 1977*. Works shall not recommence until the Proponent receives written authorisation from the Heritage Office.

Visual Amenity Impacts

3.40 The Proponent shall minimise the use of reflective building elements and maximise the use of building materials and treatments which visually complement the surrounding landuse.

3.41 The Proponent shall ensure that all external lighting associated with the project is mounted, screened, and directed in such a manner so as not to create a nuisance to the surrounding environment, properties and roadway. The lighting shall be the minimum level of illumination necessary and shall comply with *AS 4282(INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting.*

3.42 Unless otherwise agreed to by the Secretary, within six months of the completion of the construction of the central processing facility, the Proponent shall implement all reasonable and feasible landscaping measures within the central processing facility site to screen views of this facility from nearest sensitive receptors. The Proponent shall monitor and maintain the health of these landscape plantings for the life of the central processing facility, including replacing of any plantings which fail.

Traffic, Transport and Access Impacts

3.43 The Proponent shall ensure that any disturbance to public roads associated with the pipeline crossing or any road upgrades to accommodate the construction or operational traffic associated with the project is designed and constructed in consultation with and to meet the reasonable requirements of the relevant road authority (relevant Council or the RMS), to the satisfaction of the Secretary.

3.44 Prior to the commencement of construction of the project, the Proponent shall commission a suitably qualified expert to assess the condition of all public roads proposed to be traversed by construction traffic associated with the project (including over-mass or over-dimensional vehicles) in consultation with relevant Councils and the RMS, and identify any upgrade requirements to accommodate project traffic for the duration of construction (including culvert, bridge and drainage design; intersection treatments; vehicle turning requirements; and site access) considering final traffic volumes. The road dilapidation report shall be submitted to the Secretary prior to the commencement of construction clearly identifying recommendations made by the Council and the RMS and how these have been addressed.

The Proponent shall ensure that all upgrade measures identified in the report are implemented to meet the reasonable requirements of the relevant Council and the RMS, prior to the commencement of construction, to the satisfaction of the Secretary.

3.45 Prior to the commencement of operation of the project, the Proponent shall commission a suitably qualified expert to assess the condition of all public roads traversed by construction traffic associated with the project (including over-mass or over-dimensional vehicles) in consultation with Council and the RMS. Should the pre-operational dilapidation survey report identify any damage to roads attributable to construction traffic associated with the project, the Proponent shall repair the roads consistent with the recommendations of the pre-operational dilapidation survey report, within such time as agreed to with the relevant Council and the RMS and to meet the reasonable requirements of the relevant Council and the RMS. The pre-operation road dilapidation report shall be submitted to the Secretary prior to the commencement of operation, clearly identifying recommendations made by relevant Councils and the RMS and how these have been addressed, to the satisfaction of the Secretary.

Hazards and Risk

Technical Controls

3.46 The design, operation and technical controls for the well heads shall be consistent with the requirements of the Department's Guideline – *'Development in the Vicinity of Operating Coal Seam Methane Wells'* to the satisfaction of the Secretary.

Pre-Construction

3.47 The Proponent shall prepare and implement the following hazards and safety studies to the satisfaction of the Secretary:

a) a **Fire Safety Study** covering the relevant aspects of the Department's *'Hazardous Industry Planning Advisory Paper No. 2, 'Fire Safety Study Guidelines'*. The study shall meet the requirements of the NSW Fire Brigades. For the Central Processing Facility, the study shall also consider the New South Wales Government's *'Best Practice Guidelines for Contaminated Water Retention and Treatment Systems'*;
b) a **Hazard and Operability Study** for the Central Processing Facilities, including any abnormal operating modes such as flare and blowdown operations, chaired by a qualified person, independent of the project. The study shall be consistent with the Department of Planning's '*Hazardous Industry Planning Advisory Paper No. 8, 'HAZOP Guidelines*';
c) a **Final Hazard Analysis** consistent with the Department's Hazardous Industry Planning Advisory Paper No. 6, *'Guidelines for Hazard Analysis'*. The final design shall apply appropriate risk mitigation measures for the Export Sales Pipeline (ESP) in locations where the pipeline risk transects exceed the Department's risk criteria. Further, the final design shall consider all recommendations in Table A1.1 to A1.5 of the Preliminary Hazard Analysis presented in the Environmental Assessment and *Appendix 5 Addendum to the GGP Preliminary Hazard Analysis* prepared by Planager Pty Ltd dated 4 November 2013; and
d) a **Construction Safety Study**, consistent with the Department's Hazardous Industry Planning Advisory Paper No. 7, *'Construction Safety Study Guidelines'*. The study should consider the bush fire risk during construction of the project.

The hazards and safety studies shall be submitted to the Secretary for approval no later than 2 months prior to the proposed commencement of construction of the project (or a relevant stage of the project), or within such further period as the Secretary may agree. Except for construction of preliminary works that are outside the scope of the hazard and safety studies, construction of the project (or a relevant stage of the project), shall not commence until these documents are approved by the Secretary.

Pre-commissioning

3.48 The Proponent shall prepare and implement the following plan and system to the satisfaction of the Secretary:

a) a comprehensive **Emergency Response Plan** detailing emergency procedures for the Central Processing Facility. The plan shall include detailed procedures for the safety of all people outside of the project who may be at risk from the project. The plan shall be consistent with the Department's Hazardous Industry Planning Advisory Paper No. 1, *'Industry Emergency Planning Guidelines'*; and
b) a document setting out a comprehensive **Safety Management System** for the Central Processing Facility, covering all on-site operations. The document shall clearly specify all safety related procedures, responsibilities and policies, along with details of mechanisms for ensuring adherence to the procedures. The Safety Management System shall be consistent with the Department's Hazardous Industry Planning Advisory Paper No. 9, *'Safety Management'*.

Documents describing the plan and system shall be submitted to the Secretary for approval no later than 2 months prior to the proposed commencement of commissioning of the project, or within such further period as the Secretary may agree. Commissioning of the project shall not commence until these documents are approved by the Secretary.

Pre-Operation

3.49 At least one month prior to the commencement of operation of the project, the Proponent shall submit to the Secretary, a report detailing compliance with conditions 3.47 and 3.48, including:
a) dates of study/plan/system completion;
b) actions taken or proposed, to implement recommendations made in the studies/plans/systems; and
c) responses to each requirement imposed by the Secretary following its review of the studies/ reports.

Post Operation

3.50 Three months after the commencement of operation of the project, the Proponent shall submit to the Director General, a report verifying that:
a) the Emergency Response Plan required under condition 3.48a) is effectively in place and that at least one emergency exercise has been conducted; and
b) the Safety Management System required under condition 3.48b) has been fully implemented and that records required by the system are being kept.

3.50A Prior to the construction of the Tomago Receiving Station, the Proponent shall ensure that the following hazard studies, prepared under the approval for the Newcastle Gas Storage Project (MP 10_0133), are updated to account for the presence of the Station:
a) Fire Safety Study;
b) Hazard and Operability Study;
c) Final Hazard Analysis;
d) Emergency Plan; and
e) Safety Management System,
to the satisfaction of the Secretary.

Waste Generation and Management

3.51 The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.

3.52 Except in the case of water or salt waste managed in accordance with condition 3.12, the Proponent shall maximise the reuse and/or recycling of waste materials generated on site as far as practicable, to minimise the need for treatment or disposal of those materials off site to the satisfaction of the Secretary.

3.53 The Proponent shall ensure that all liquid and/or non-liquid waste generated on the site is assessed and classified in accordance with *Waste Classification Guidelines* (DECC, 2008), or any future guideline that may supersede that document and where removed from the site is only directed to a waste management facility lawfully permitted to accept the materials to the satisfaction of the Secretary.

Temporary Construction Facilities

3.54 Prior to the commencement of construction of the Project, the Proponent shall prepare a **Temporary Construction Facilities Management Strategy** in consultation with EPA and relevant Councils to the satisfaction for the Secretary detailing:

a) the final location of all temporary construction facilities including construction camps, demonstrating that the facilities have been located consistent with the location principles identified in Statement of Commitment 4 (project area) of the Environmental Assessment; within the assessed footprint of the project; and to ensure that the facilities would not result in any increased impacts (including biodiversity, heritage items and noise) as assessed in the Environmental Assessment and Submissions Report;
b) the scale and dimension of facilities including duration of establishment;
c) utility and service requirements (such as sewage, water supply and electricity) required to operate the facilities for the duration of construction including demonstration that all relevant approvals for these services and connections have been obtained;
d) management measures that would be implemented on site including behavioural protocols to ensure that the facilities do not pose a disturbance to surrounding receptors including noise, air quality, visual (and lighting), and traffic impacts;
e) protocols that would be put in place to control or avoid any unintended social impacts (such as anti-social behaviour), particularly from the construction camps; and
f) detailed decommissioning and rehabilitation requirements at the cessation of the construction period.

Rehabilitation

3.55 The Proponent shall ensure that all surface areas of the project footprint which are disturbed during the construction but which are not required for the ongoing operation of the project (including temporary construction facility sites, construction access roads, relevant areas of the pipeline construction corridor and buried gas and water gathering lines) are rehabilitated consistent with existing landuse in consultation with affected landowners, to a standard better than or equal to existing. In relation to areas which were vegetated prior to disturbance, this shall comprise a program of revegetation to a standard equal to or better than the existing condition (where this does not conflict with the ongoing operation of the gas transmission pipeline) to the satisfaction of the Secretary.

Measures to facilitate the long-term rehabilitation of applicable surface areas (including land stabilisation and re-vegetation measures) shall be implemented within six months of the cessation of construction activities to the satisfaction of the Secretary, at the relevant area unless an alternative timeframe is agreed to with the landowners. Unless otherwise agreed to by the Secretary, the Proponent shall monitor and maintain the condition of the rehabilitated areas to the satisfaction of the Secretary until such time that the areas (including re-vegetated areas) have been verified by an independent and suitably qualified expert (whose appointment has been agreed to by the Secretary) as being well established, in good health and self sustaining and rehabilitated to the standard required by this condition.

3.56 The Proponent shall ensure that all gas wells are decommissioned and rehabilitated at the cessation of operation in accordance with the requirements of and to the satisfaction of OCSG. Unless otherwise agreed to by OCSG, the Proponent shall ensure that the decommissioning and rehabilitation of gas wells are independently verified within three-months of the decommissioning of the well, to the satisfaction of OCSG.

4. ENVIRONMENTAL MONITORING AND AUDITING

Ground Water Monitoring

4.1 Prior to the commencement of construction of the Project, the Proponent shall develop a **Groundwater Monitoring Program** in consultation with NOW and to the satisfaction of the Secretary, covering the operation of the Stage 1 Gas Field Development Area. The program shall detail the monitoring strategy that would be implemented to measure dewatering and water quality impacts of gas well development on beneficial aquifers (including associated groundwater users, surface waters and groundwater dependent ecosystems) during the implementation of the Field Development Plan for the Stage 1 Gas Field Development Area and measure any residual impacts following the decommissioning of wells. The program shall:

a) identify surface and groundwater monitoring locations demonstrating their appropriateness for obtaining representative water quality and water level data on operational impacts in relation to beneficial aquifers, groundwater users and surface waters. In the first instance the monitoring locations shall focus on the first phase of gas well development in the Field Development Plan, as identified under condition 3.10 and shall be updated as well development progresses;
b) provide details of the monitoring points (including location, depth of monitoring, duration and frequency of monitoring and parameters to be monitored);
c) identify performance criteria for gas well development, including monitoring criteria to detect early indicators of drawdown impacts to beneficial aquifers or of cumulative drawdown effects and hold points (based on risk assessment) for further development where adverse impacts are identified;
d) identify the frequency of reporting on monitoring results including at a minimum prior to the commencement of each phase of the Field Development Plan (subsequent to the first phase) in accordance with the requirements of condition 3.10;
e) include provisions for the monitoring of coal seam dewatering rates and hold points (based on risk assessment) in the case that water volumes are greater than the predicted two mega litres per day (unless managed in accordance with condition 3.12g);
f) include provisions for monitoring the potential for gas migration to the surface;
g) provide detailed specifications (including information on toxicity and/ or carcinogenicity) of fraccing fluids to be used in gas well development, with annual updates;
h) include provisions for ongoing monitoring, post decommissioning of wells to determine any residual impacts;
i) identify a procedure for contingency or remedial action where adverse impacts are identified including compensation to groundwater users and/or rehabilitation measures where affects to groundwater dependent ecosystems/ communities are attributed to the project; and
j) identify mechanisms for the regular review and update of the program in consultation with NOW as required.

In submitting the program for the Secretary's approval, the Proponent shall provide written evidence of consultation with NOW on the robustness and acceptability of the monitoring program, including issues raised by NOW and how these have been addressed.

The monitoring program shall be updated in consultation with NOW to the satisfaction of the Secretary, prior to the commencement of each phase of the Field Development Plan, taking into account the recommendations of the Numerical Hydrogeological Model developed in accordance with condition 4.2.

4.2 Prior to the commencement of construction of the Stage 1 Gas Field Development Area, the Proponent shall in consultation with NOW develop a **Numerical Hydrogeological Model** of the Stage 1 Gas Field Development Area building on the detailed conceptual hydrogeological model developed in accordance with conditions 3.8 and 3.9 to the satisfaction of the Secretary. The Model shall be used as a predictive, adaptive management and verification tool to guide the ongoing operation and implementation of gas wells as part of the Field Development Plan including feeding into recommendations on the phasing of gas wells in accordance with condition 3.10 (this includes identifying any impacts of the project from the previous phase of gas well development and the mitigation and contingency measure employed to control any impacts including their effectiveness and the recommended number and location of gas well to be developed in the next phase). The Model shall also feed into

recommendations on updates to the Groundwater Monitoring program in accordance condition 4.1.

Noise Monitoring

4.3 Within 90 days of the commencement of operation of the project or as otherwise agreed by the Secretary, and during a period in which the project is operating under normal operating conditions, the Proponent shall undertake a program to confirm the noise emission performance of the project. The program shall meet the requirements of the EPA, and shall include, but not necessarily be limited to:

a) noise monitoring, consistent with the guidelines provided in the *New South Wales Industrial Noise Policy* (EPA, 2000), to assess compliance with condition 3.22 of this approval;
b) methodologies, locations and frequencies for noise monitoring;
c) identification of monitoring sites at which pre- and post-project noise levels can be ascertained; and
d) details of any entries in the Complaints Register (condition 6.3 of this approval) relating to noise impacts.

Unless otherwise agreed to by the Secretary, a report providing the results of the program shall be submitted to the Secretary and the EPA within 28 days of completion of the testing required under a).

4.4 In the event that the program undertaken to satisfy condition 4.3 of the approval indicates that the operation of the project, under normal operating conditions, will lead to greater noise impacts than permitted under condition 3.22 of this approval, then the Proponent shall provide details of remedial measures to be implemented to reduce noise impacts to levels required by that condition, including (but not necessarily limited to) at-receptor acoustic screening as required under condition 3.27. At-receptor acoustic screening shall only be considered where other at-source methods of acoustic amelioration are found to not be reasonable or feasible. A report providing details of the remedial measures and a timetable for implementation shall be submitted to the Secretary for approval within such period as the Secretary may require, and be accompanied by evidence that the EPA is satisfied that the remedial measures are acceptable.

Following review of the report, the Secretary may require additional noise monitoring to confirm the performance of the implemented remediation measures. Where such additional noise monitoring indicates exceedences of project specific noise criteria specified in condition 3.22 of this approval at any sensitive receptor identified in Table 3 after the implementation of all reasonable and feasible remedial measures, these receptors (unless otherwise agreed to by the Secretary) shall be subject to noise agreements within such time period as agreed to by the Secretary or in the case that exceedences greater than 5dB(A) are indicated, subject to acquisition criteria in accordance with condition 3.26 (except in the case where a noise agreement is in place).

Air Quality Monitoring

4.5 The Proponent shall determine the pollutant concentrations and emission parameters specified in Table 6 below, at each of the discharge points (established in strict accordance with the requirements of test method TM-1 as specified in *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* (EPA, 2001)). Monitoring shall be undertaken during operation of the project, at the frequency indicated in the Table, unless otherwise agreed by the EPA.

Table 6 – Periodic Pollutant and Parameter Monitoring (Air)

Discharge Point	Pollutant/ Parameter	Units of Measure	Method	Frequency
1 (TRS)	Oxides of Nitrogen	mgm^{-3}	TM-11	Post commissioning

	Carbon Monoxide or Volatile Organic Compounds	mgm^{-3}	TM 34 or TM 32	and annually thereafter
	Velocity	m/s	TM-2	
	Volumetric flow rate	m^3/s	TM-2	
	Temperature	^oC	TM-2	
	Moisture	%	TM-22	
	Dry gas density	kgm^3	TM-23	
	Molecular weight of stack gases	g/gmol	TM-23	
	Oxygen	%	TM-25	
	Carbon dioxide	%	TM-24	
	Selection of Sampling Positions	-	TM-1	-
2	Oxides of Nitrogen	mgm^{-3}	TM-11	Post commissioning and annually thereafter
	Formaldehyde	mgm^{-3}	US EPA Method 323, upon confirmation by EPA in accordance with condition 0.	
	Carbon Monoxide or Volatile Organic Compounds	mgm^{-3}	TM 34 or TM 32	
	Velocity	m/s	TM-2	
	Volumetric flow rate	m^3/s	TM-2	
	Temperature	^oC	TM-2	
	Moisture	%	TM-22	
	Molecular weight of stack gases	g/gmol	TM-23	
	Oxygen	%	TM-25	
	Carbon dioxide	%	TM-24	
	Oxides of Nitrogen	mgm^{-3}	CEM-2	Continuous
	Temperature	^oC	TM-2	
	Moisture	%	TM-22	
	Volumetric flow rate	m^3/s	CEM-6	
	Oxygen	%	CEM-3	
	Selection of Sampling Positions	-	TM-1	-
3, 4, 5 and 6	Oxides of Nitrogen	mgm^{-3}	TM-11	Post commissioning and annually thereafter
	Formaldehyde	mgm^{-3}	US EPA Method 323, upon confirmation by EPA in accordance with condition 0.	
	Carbon Monoxide or Volatile Organic Compounds	mgm^{-3}	TM 34 or TM 32	
	Velocity	m/s	TM-2	
	Volumetric flow rate	m^3/s	TM-2	
	Temperature	^oC	TM-2	
	Selection of Sampling Positions	-	TM-1	-

4.6 Unless otherwise agreed to by the Secretary, prior to the commencement of construction, the Proponent shall confirm the methodology for the monitoring of formaldehyde from discharge points 2, 3, 4 and 5 in Table 6 to the satisfaction of EPA. The monitoring methodology agreed to by EPA shall apply to discharge points 2, 3, 4 and 5 for the purposes of condition 4.5.

Air Quality Performance Verification

4.7 Unless otherwise agreed to by EPA, the Proponent shall in consultation with EPA, prior to the commencement of construction, establish a meteorological station(s) at a representative location(s) to collect meteorological information representative of the Gloucester Valley, to enable air quality performance verification for the central processing facility in accordance with condition 4.8. At least one year's data must be collected for the purpose of undertaking the air quality performance verification required under condition 4.8 for the central processing facility.

4.8 Within 90 days of the commencement of operation of the project or as otherwise agreed by the Secretary, and during a period in which the project is operating under normal operating conditions, the Proponent shall undertake a program to confirm the air emission performance of the project to the satisfaction of the Secretary. The program shall include, but not necessarily be limited to:

a) point source emission sampling and analysis subject to the requirements listed under condition 4.5 to determine compliance with the discharge concentration limits identified in condition 3.31;
b) a comprehensive air quality impact assessment in accordance with the methods outlined in *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DECC, 2005), using actual air emission data collected under condition 4.5 to determine performance against the ground-level concentrations for air pollutants predicted for the project; and
c) details of any entries in the Complaints Register (condition 6.3 of this approval) relating to air quality impacts.

A report providing the results of the program shall be submitted to the Secretary and EPA within 28 days of completion of the testing required under a).

4.9 In the event that the program undertaken to satisfy condition 4.8 of this approval indicates that the operation of the project, under normal operating conditions, will lead to:

a) greater point source emissions than the discharge concentration limits identified in condition 3.31; or
b) greater ground-level concentrations of air pollutants than that predicted for the project in the documents listed under condition 1.1 of this approval;

then the Proponent shall provide details of remedial measures to be implemented to reduce point source emissions to no greater than the discharge concentration limits identified in condition 3.31 and to reduce ground-level concentrations of air pollutants to no greater than that predicted for the project in the documents listed under condition 1.1 of this approval and under no circumstance greater than the limits detailed in the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DECC, 2005). Details of the remedial measures and a timetable for implementation shall be submitted to the Secretary for approval within such period as the Secretary may require, and be accompanied by evidence that the EPA is satisfied that the remedial measures are acceptable.

Hazard Audit

4.10 Twelve months after the commencement of operations of the project and every three years thereafter, or at such intervals as the Secretary may agree, the Proponent shall carry out a comprehensive Hazard Audit of the project and submit the audit report to the Secretary within one month of the audit report being completed. The audits shall be carried out by a qualified person or team, independent of the project and shall be consistent with the Department's Hazardous Industry Planning Advisory Paper No. 5, *'Hazard Audit Guidelines'*.

5. COMPLIANCE MONITORING AND TRACKING

5.1 The Proponent shall develop and implement a **Compliance Tracking Program** to track compliance with the requirements of this approval. The Program shall be submitted to the Secretary prior to the commencement of construction. The Program shall relate to both construction and operational stages of the project and shall include, but not necessarily be limited to:

a) provisions for periodic review of the compliance status of the project against the requirements of this approval, Statement of Commitments and relevant environmental approvals, licences or permits required and obtained in relation to the project;
b) provisions for periodic reporting of compliance status against the requirements of this approval and Statement of Commitments to the Secretary including at least one month prior to the commencement of construction and operation of the project;

c) a program for independent environmental auditing in accordance with *AS/NZ ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing*; and
d) mechanisms for rectifying any non-compliance identified during environmental auditing or review of compliance.

6. COMMUNITY INFORMATION, CONSULTATION AND INVOLVEMENT

6.1 Subject to confidentiality, the Proponent shall make all relevant documents required under this approval available for public inspection on request.

Complaints Procedure

6.2 Prior to the commencement of construction of the project, the Proponent shall ensure that the following are available for community complaints for the life of the project (including construction and operation):
a) a telephone number on which complaints about construction and operational activities at the site may be registered;
b) a postal address to which written complaints may be sent; and
c) an email address to which electronic complaints may be transmitted.

The telephone number, postal address and email address shall be published in a newspaper circulating in the local area prior to the commencement of construction of the project. The above details shall also be provided on the website required by condition 6.4 of this approval.

6.3 The Proponent shall record details of all complaints received through the means listed under condition 6.2 of this approval in an up-to-date Complaints Register. The Register shall record, but not necessarily be limited to:
a) the date and time, where relevant, of the complaint;
b) the means by which the complaint was made (telephone, mail or email);
c) any personal details of the complainant that were provided, or if no details were provided, a note to that effect;
d) the nature of the complaint;
e) any action(s) taken by the Proponent in relation to the complaint, including any follow-up contact with the complainant and the timing for implementing action; and
f) if no action was taken by the Proponent in relation to the complaint, the reason(s) why no action was taken.

The Complaints Register shall be made available for inspection by the Secretary upon request.

The Complaints Register for the project may be incorporated into an existing complaints handling system managed by the Proponent if it is demonstrated to meet the requirements of condition 5.3.

Provision of Electronic Information

6.4 Prior to the commencement of construction of the project, the Proponent shall establish a dedicated website or maintain dedicated pages within its existing website for the provision of electronic information associated with the project subject to confidentiality. The Proponent shall publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to:
a) information on the statutory context and current implementation status of the project;
b) the documents referred to under condition 1.1 of this approval;
c) a copy of this approval and any future modification to this approval;
d) a copy of each relevant environmental approval, licence or permit required and obtained in relation to the project;
e) all plans, monitoring programs and strategies required under this project approval; and
f) details of the outcomes of compliance reviews and audits of the project.

Community and Stakeholder Engagement Plan

6.5 The Proponent shall prepare a **Community and Stakeholder Engagement Plan** which outlines measures for disseminating information on the development status of the project and methods for actively engaging with surrounding landowners, members of the community and affected stakeholders regarding issues that would be of interest/ concern to them during the detailed design, construction and operation of the project. This may include distribution of community newsletters, stakeholder meetings, community consultative committees and opportunities for site visits. The Plan shall include but not be limited to:

a) procedures to finalise the detailed design of the project including gas well locations and gas transmission pipeline route in consultation with landowners;
b) measure and procedures to work consultatively with landowners during construction and operational activities so as to minimise intrusion and disruption to existing landuse including agricultural activities;
c) measure and procedures to consult with affected stakeholders (including the owners of existing infrastructure within the proposed pipeline easement, mineral titleholders and quarry and mining operators) to minimise design, construction or operational impacts on existing infrastructure and future development potential and to manage cumulative impacts from neighbouring development;
d) procedures to inform the local community of planned construction activities including construction traffic routes, potential traffic disruptions, high noise generating activities and works outside of normal construction hours; and
e) dispute resolution processes in case of disagreement between parties including provision for an independent arbitrator.

The Community and Stakeholder Engagement Plan shall be submitted for the approval of the Secretary prior to the commencement of the detailed design stage of the project covering at least the community engagement and consultation measures to be implemented during the detailed design phase. An updated plan shall be subsequently submitted for the approval of the Secretary, prior to the commencement of the construction stage and prior to the commencement of the operational stage of the project covering the community engagement and consultation measures to be undertaken in these respective stages of the project.

7. ENVIRONMENTAL MONITORING AND MANAGEMENT

Environmental Representative

7.1 Prior to the commencement of any construction activities, or as otherwise agreed by the Secretary, the Proponent shall nominate for the approval of the Secretary a suitably qualified and experienced Environmental Representative(s) independent of the design, construction and operation personnel. The Proponent shall engage the Environmental Representative(s) during any construction activities. The Environmental Representative(s) shall:

a) oversee the implementation of all environmental management plans and monitoring programs required under this approval, and advise the Proponent upon the achievement of these plans/programs;
b) consider and advise the Proponent on its compliance obligations against all matters specified in the conditions of this approval and the Statement of Commitments as referred to under condition 1.1c) of this approval, and any other relevant environmental approval, licence or permit required and obtained in relation to the project; and
c) have the authority and independence to recommend to the Proponent reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts, and, failing the effectiveness of such steps, to recommend to the Proponent that relevant activities are to be ceased as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment will be likely to occur.

Construction Environmental Management Plan

7.2 The Proponent shall prepare and implement a **Construction Environmental Management Plan** (CEMP) prior to the commencement of construction of the project to outline environmental management practices and procedures to be followed during construction of

the project. The CEMP shall be consistent with *Guideline for the Preparation of Environmental Management Plans* (DIPNR, 2004) and shall include, but not necessarily be limited to:

a) a description of all activities to be undertaken on the site during construction including an indication of stages of construction, where relevant;
b) identification of the potential for cumulative impacts with other construction activities or existing development (including mining) in the vicinity and how such impacts would be managed;
c) identification of the location of temporary construction sites, details of construction material sourcing (including gravel and water requirements);
d) a description of the statutory obligations that the Proponent is required to fulfil prior to and during construction including all relevant approvals, licences and permits required and applicable key legislation and policies;
e) evidence of consultation with relevant public authorities including all applicable Councils, identifying how issues raised by these public authorities have been addressed in the plan;
f) a description of the roles and responsibilities for all relevant employees and contractors involved in the construction of the project including relevant training and induction provisions for ensuring that all employees, contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of approval;
g) an environmental risk analysis to identify the key environmental performance issues associated with the construction phase and details of how environmental performance would be monitored and managed to meet acceptable outcomes including what actions will be taken to address identified potential adverse environmental impacts. In particular, the following environmental performance issues shall be addressed in the Plan:
    i) measures to monitor and manage **dust emissions** including dust generated by traffic on unsealed public roads and unsealed internal access tracks;
    ii) measures to monitor and manage **noise, vibration and blasting** impacts with consideration to cumulative impacts from surrounding development including: identification of nearest sensitive receptors and relevant construction noise and vibration goals applicable, identification of all reasonable and feasible measures proposed to be implemented to minimise construction noise and vibration impacts (including construction traffic noise impacts), measures for notifying surrounding receptors of noisy activities or works outside of standard hours, measures for monitoring compliance and responding to complaints and contingency strategy in the case that project related vibration or blasting results in damage to buildings or structures;
    iii) measures to monitor and manage **traffic impacts** in consultation with relevant road authorities (Council and RMS, as relevant) including: identification of construction traffic routes and traffic volumes along each route with considering to minimising traffic on local/ residential streets, potential traffic disruptions considering road safety and level of service, specific measures for minimising traffic impacts and mechanisms to monitor road condition during construction and remediate any damage attributable to the project (should such remediation be required prior to the requirements of condition 3.455 taking effect);
    iv) measures to monitor and manage **Aboriginal heritage impacts** in consultation with registered stakeholders and OEH including:
        i. details of management measures to be carried out in relation to already recorded sites and potential Aboriginal deposits (including further archaeological investigations and/ or salvage measures);
        ii. procedures for dealing with previously unidentified Aboriginal objects excluding human remains (including halting of works in the vicinity, assessment of the significance of the item(s) and determination of appropriate mitigation measures including when works can re-commence by a qualified archaeologist in consultation with registered Aboriginal stakeholders, assessment of the consistency of any new Aboriginal heritage

impacts against the approved impacts of the project, and registering of the new site in the OEH AHIMS register);

iii. procedures for dealing with human remains (including halting of works in the vicinity and notification of the NSW Police, OEH and registered Aboriginal stakeholders and not-recommending any works in the area unless authorised by OEH and/ or the NSW Police); and

iv. Aboriginal cultural heritage induction processes for construction personnel and procedures for ongoing Aboriginal consultation and involvement; and

ii) emergency management measures including measures to control bushfires; and

h) procedures for the periodic review and update of the Construction Environmental Management Plan as necessary.

The Plan shall be submitted for the approval of the Secretary no later than one month prior to the commencement of Construction of the project or within such period as otherwise agreed by the Secretary. Construction shall not commence until written approval has been received from the Secretary.

7.3 As part of the Construction Environmental Management Plan for the project, required under condition 7.2 of this approval, the Proponent shall prepare and implement the following:

a) a **Flora and Fauna Management Plan** to manage the construction impacts of the project on flora and fauna. The Flora and Fauna Management Plan shall be prepared in consultation with the OEH and the Hunter LLS and shall include, but not necessarily be limited to:

(i) detailed constraint mapping of the final project area clearly identifying sensitive vegetation/habitat areas to be avoided and/or areas where site-specific management measures are required;

(ii) measures for minimising and managing impacts to native vegetation and important habitat features including but not necessarily limited to: pre-clearance surveys by a qualified ecologist to identify sensitive vegetation areas or habitat features (such as hollow bearing trees and surface rock) and weed and pest management (including phytophthora management);

(iii) measures to minimise disturbance of riparian and instream habitat including pre-construction surveys of each water crossing to identify habitat sensitivity (in particular habitat suitability for sensitive frog species) and measures to be undertaken to avoid and minimise impacts to riparian and instream habitat, including for sensitive frog species;

(iv) small-flower Grevillea Management strategy in consultation with the OEH and DoE to manage impacts to the population identified within the pipeline corridor including pre-construction baseline surveys to identify the distribution and extent of the species and construction methodology to minimise construction widths and disturbance as far as practicable;

(v) construction practices to avoid direct interaction/ injury to fauna including but not necessarily limited to:

i. timing of construction so as to take into account sensitive life cycle stages for sensitive species;

ii. pre-construction surveys for the presence of sensitive fauna by a qualified ecologist and protocols for the safe capture and release of fauna to adjacent habitat where fauna are identified to be in danger of injury or harm from construction; and

iii. measures to minimise the potential for fauna to get trapped in trenches during construction and measures for monitoring and rescuing any species should they become trapped including ensuring that monitoring and rescue measures are undertaken by a qualified ecologist; and

(vi) measures for progressive rehabilitation during construction including identification of performance indicators and completion criteria for revegetation works and measures for the monitoring and maintenance of revegetation works consistent with the requirements of condition 3.555;

b) a **Watercourse Crossing Management Strategy** prepared in consultation with NOW and DPI (Fisheries) to manage the construction impacts of pipeline waterway crossings including:
   (i) baseline surveys of each water crossing to identify habitat sensitivity and water course integrity;
   (ii) design details of each water course crossing;
   (iii) site specific mitigation measures to be implemented to minimise disturbance during construction; and
   (iv) rehabilitation requirements to stabilise bank structure and rehabilitate affected riparian vegetation including performance and completion criteria (based on base line surveys) and monitoring requirements; and

c) a **Soil and Water Management Plan** prepared in consultation with NOW and DPI (Fisheries) to manage the water quality impacts during construction. The plan shall detail:
   (i) pre-construction investigations including: soil testing to determine the likely potential for uncovering acid sulphate soils, 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);
   (ii) base-line water quality monitoring (both up stream and down stream of the construction sites) and where required pre-construction monitoring of groundwater quality (particularly where there is a high risk of groundwater interception coupled with potential acid sulphate soils);
   (iii) a management strategy to control acid sulphate soil impacts at any identified acid sulphate soil areas and should they be uncovered during construction (including measures for testing, treatment, and disposal; protection and treatment of groundwater; and contingency measures in the case of an incident);
   (iv) 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);
   (v) 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
   (vi) 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 for compliance actions should adverse water quality be detected.

Operation Environmental Management Plan

7.4 The Proponent shall prepare and implement an **Operation Environmental Management Plan** to detail an environmental management framework, practices and procedures to be followed during operation of the project. The Plan shall be consistent with *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004) and shall include, but not necessarily be limited to:

a) a description of key operational and maintenance activities associated with the project;
b) identification of all statutory and other obligations that the Proponent is required to fulfil in relation to operation of the project, including any approvals, licences, approvals and consultations;
c) a description of the roles and responsibilities for all relevant employees and contractors involved in the operation of the project including relevant training and induction provisions for ensuring that all employees, contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of approval;
d) overall environmental policies and principles to be applied to the operation of the project;

e) an environmental risk analysis to identify the key environmental performance issues associated with the operation phase and details of how environmental performance would be monitored and managed to meet acceptable outcomes including what actions will be taken to address identified potential adverse environmental impacts. In particular, the following environmental performance issues shall be addressed in the Plan:
   (i) measures to monitor and manage groundwater impacts including residual impacts following decommissioning of gas wells in accordance with conditions 4.1and 4.2;
   (ii) measures to monitor and manage flood risks including risks of equipment damage or disconnection during flood events and measures for clean up and restoration;
   (iii) measures to monitor and manage noise emissions including measures for regular performance monitoring of noise generated by the project (in addition to measures identified in conditions 4.3) and 4.4), measures to proactively respond to and deal with noise complaints and procedure for the development of a case-specific noise management protocol in consultation with EPA to manage short-term noise amenity impacts at surrounding receptors in the case of works identified in condition 3.222b);
   (iv) measures to monitor and manage air quality impacts in accordance with the requirements of this approval;
   (v) measures to monitor and manage landscape plantings and revegetation measures;
   (vi) measures to monitor and manage operational traffic impacts particularly during maintenance events where operational traffic volumes associated with the project may increase and procedures for restoring any damage attributable to the project during the operation phase;
   (vii) hazard and safety and emergency management measures including measures to control bushfires; and
   (viii) rehabilitation and completion criteria for the decommissioning and rehabilitation of the project; and
f) procedures for the periodic review and update of the Operation Environmental Management Plan as necessary.

The Operation Environmental Management Plan shall be submitted for the approval of the Secretary no later than one month prior to the commencement of Operation of the project or within such period as otherwise agreed by the Secretary. Operation shall not commence until written approval has been received from the Secretary.

APPENDIX 1
STATEMENT OF COMMITMENTS

Issue	Commitments
General (applicable to all four project components)	
General	1. The Proponent shall undertake the activities subject of the Project application in accordance with the general descriptions and details provided in this EA, including the mitigation and management measures recommended by this EA. 2. The Proponent will gain all necessary approvals and permits supporting both construction and operation. 3. The Proponent will prepare and implement the following management plans for the Project: • A Construction Environmental Management Plan (CEMP); and • An Operations Environmental Management Plan (OEMP). 4. The Proponent will ensure that the location of compound sites and other ancillary facilities are selected generally in line with the following : • In existing disturbed areas wherever possible; • Avoiding vegetation and riparian areas where possible; • Minimum of 40 m from a major watercourse and 20 m from a minor watercourse; • Avoiding Indigenous and European heritage places or items • Utilising existing access tracks where practicable; • Avoiding impacts on existing infrastructure • On relatively flat ground where possible; • Considering visual effects and opportunistic use of natural screening such as vegetation; • In consultation with landowners.
Further Studies	5. The Proponent shall prepare and implement the following studies, to the satisfaction of the Director General prior to the commencement of construction: • A Hazard and Operability Study; • A Final Hazard Analysis (update of the PHA); • A Fire Safety Study; • An Emergency Response Plan; • A Construction Safety Study. 6. The Proponent shall prepare/undertake the following to the satisfaction of the Director General prior to the commencement of operation of the Project: • A Safety Management System; • An Independent Hazard Audit.

Issue	Commitments
	7. The Proponent shall prepare a Petroleum Production Operations Plan in accordance with DPI requirements.
Air Quality	8. An Air Quality Management Plan (AQMP) will be prepared for inclusion in the CEMP. The Proponent will ensure that the AQMP outlines all activities required to minimise dust and vehicle emissions during the construction of the Stage 1 GFDA, CPF, pipeline and HDS. 9. The Proponent will ensure that the OEMP includes measures regarding monitoring, assessing and if required rectifying any air quality issues associated with the operation of the Stage 1 GFDA, CPF, pipeline and HDS.
Ecology	10. The Proponent shall ensure that all practicable measures are implemented to minimise the potential impacts on flora and fauna. 11. The Proponent shall manage the potential ecological impacts of the construction of the proposed project in accordance with the Flora and Fauna Management Plan which is to form part of the CEMP for the Project, as detailed in **Chapter 25** of this EA. 12. The Proponent shall manage the potential ecological impacts of the operation of the proposed project in accordance with the OEMP for the Project as detailed in **Chapter 25** of this EA. 13. Rehabilitation shall be undertaken in areas disturbed by the Project in accordance with a Landscape and Rehabilitation Management Plan (LRMP) as detailed in **Chapter 5, 10, 12** and **22** of this EA to ensure that the site is restored to existing or better conditions.
Land Use	14. The Proponent will ensure that ongoing consultation is undertaken with affected landowners throughout the detailed design phase of the Project and prior to and during the construction and operation phases of the Project. 15. The Proponent will adopt locational principles for siting of the construction workforce camps within the Stage 1 GFDA and proximate to the pipeline. 16. The Proponent will prepare and implement a Construction Workforce Management Plan as part of the CEMP to manage potential impacts associated with the construction workforce camps. 17. The Proponent will implement acoustic attenuation and mitigation where necessary as recommended by the Project noise assessment to ensure impacts upon surrounding land uses (particularly residential land) are minimised. 18. The Proponent will provide landscape screening as recommended in the visual assessment to ensure visual impacts are minimised. 19. The Proponent will negotiate access arrangements during construction and operation with relevant landholders and stakeholders in advance of commencement of works. 20. The Proponent will undertake rehabilitation as soon as practical upon completion of construction works to allow normal farming practices to resume. 21. The Proponent will ensure that access to properties and farming land is maintained during works. Should the works require closure of access, a detailed consultation program would be undertaken with affected

Issue	Commitments
	stakeholders and landholders. 22. The Proponent will ensure that upon completion of construction activities, disturbed areas (excluding the Stage 1 GFDA) would be rehabilitated to restore the areas to their original land use. 23. The Proponent will ensure that upon completion of the Project, the entire site would be rehabilitated, including restoration of the area to its original land use.
Water	24. The Proponent shall implement all practicable measures to minimise soil erosion and discharge of sediments from the various project sites. 25. The Proponent shall prepare and implement the following management plans as part of the CEMP for the Project prior to commencement of construction, as detailed in **Chapter 25**: • Construction Soil and Water Management Plan; • Erosion and Sediment Control Plan; • Acid Sulfate Soils Management Plan; • Emergency Response Plan. 26. The Proponent shall prepare and implement the following management plans as part of the OEMP for the Project, as detailed in **Chapter 25**: • Soil and Water Management Plan; • Emergency Response Plan.
Groundwater	27. The Proponent shall prepare and implement a Groundwater Management Plan (GWMP), as detailed in **Chapter 25**.
Noise	28. A Noise Management Plan (NMP) would be prepared as part of the CEMP to address construction noise and vibration, and methods to minimise impacts. 29. A NMP would also be prepared as part of the OEMP to address operation noise and vibration, particularly related to operation of the CPF and HDS and post-commissioning noise monitoring.
Hazard and Risk	30. The Proponent shall prepare and implement the following for the Project prior to commencement of construction, as detailed in **Chapter 15**: • Hazard and Operability Study; • Final Hazard Analysis (comprising an update of the PHA); • Fire Safety Study; • Emergency Response Plan. • A Construction Safety Study. 31. The Proponent shall undertake the following for the Project prior to commencement of operations, as detailed in **Chapter 15**: • Development of a Safety Management System • An Independent Hazard Audit. 32. The Proponent shall undertake the following specific mitigation measures in respect of the Stage 1 GFDA, CPF and HDS:

Issue	Commitments
	• Designed and operated in accordance with the relevant Australian Standards; • Security fencing would be installed around infrastructure as appropriate, including installation of a security fence around the HDS outside the hazardous area classified by AS 2430 to minimise risk of ignition sources; • Vehicle barriers would be installed around infrastructure where appropriate; • A regular program of maintenance/inspection of infrastructure would be adopted in accordance with the Proponent's standard procedure; • Gravel or hardstand area to be constructed inside the fenced site around gas filled equipment to minimise risk of grass fires; • Lightning protection to be fitted as appropriate; • Adoption of the Proponent's standard operating procedures in respect of the proposed facilities; • Monitoring of pressure via SCADA system. • Use of remotely operated ESD valves; • Ignition control as per AS2430 Hazardous Area requirements; • Appropriate separation distances to be maintained between release points and site boundary in accordance with the consequence impact distances reported in the PHA report; • Disused wells and coal holes encountered throughout the Stage 1 GFDA would be cemented to minimise the likelihood of gas migration.
Traffic and Transportation	33. The Proponent shall ensure that construction and operational traffic is managed in accordance with a Traffic Management Plan prepared and implemented as part of the CEMP and OEMP for the Project.
Geology and Soils	34. The Proponent shall prepare and implement the following management plans as part of the CEMP for the Project prior to commencement of construction, as detailed in **Chapter 25**: • Construction Soil and Water Management Plan; • Acid Sulfate Soils Management Plan.
Visual	35. The Proponent shall ensure that directional lighting is employed during construction, to minimise light spill from construction footprints, particularly for night time drilling. 36. The Proponent shall prepare and implement a Landscape and Rehabilitation Management Plan as part of the OEMP for the Project, to minimise potential visual impacts during operations.
Heritage	37. The Proponent shall prepare and implement a Heritage Management Plan as part of the CEMP for the Project, to minimise potential impacts on Aboriginal and/or historic heritage during operations.

Issue	Commitments
Socio Economic	38. The Proponent shall prepare and implant a site specific Construction Workforce Management Plan (CWMP) as part of the CEMP for the Project.
Rehabilitation	39. The Proponent shall prepare a Landscape and Rehabilitation Management Plan as part of the CEMP for the Project, as detailed in **Chapter 25.**
Waste	40. The Proponent shall prepare and implement a Waste Management Plan as part of the CEMP for the Project.
Stage 1 GFDA	
Air Quality	41. The Proponent will ensure that the Construction AQMP outlines activities required to minimise potential impacts to air quality from: • Flaring of wells during commissioning. • Dust and vehicle emissions during the construction of the Stage 1 GFDA. 42. The Proponent will ensure that the OEMP includes measures aimed at monitoring, assessing and if required rectifying any air quality issues associated with the operation of the Stage 1 GFDA.
Ecology	43. The Proponent shall implement the following measures to minimise clearing of native vegetation required for construction of the Stage 1 GFDA: • Place disturbance footprints of gas wells outside remnant vegetation patches (about 6% of GFDA) and at least 40 m from major watercourses. • Design gas gathering system to avoid large remnant vegetation patches and to cross watercourses at sites with no or limited native vegetation, wherever possible, based on further survey work.
Land Use	44. The Proponent shall adopt an environmental envelope approach to allow for the movement of proposed well locations within designated limits, in order to be able to address and accommodate constraints as they arise. 45. The Proponent will decommission each well upon expiration of the life of the well. Land comprising the Stage 1 GFDA will be rehabilitated and returned to its previous use.
Noise & Vibration	46. The proponent shall conduct construction activities that are generally between the following hours of 7.00 am to 6.00 pm Monday to Saturday. Where it is demonstrated that construction noise goals can be achieved construction would be undertaken outside these hours. 47. Fraccing to be undertaken only during daytime hours, subject to geological conditions. Secondary noise controls such as portable acoustic screens would be utilised for fraccing activities. 48. Activities associated with the construction of access tracks and the clearing of vegetation would be undertaken during daytime hours only.
Heritage	49. The Proponent shall prepare and implement a Heritage Management Plan as part of the CEMP for the Project, to minimise potential impacts on Aboriginal and/or historic heritage during operations.
CPF	
Air Quality	50. The Proponent will ensure that the AQMP outlines activities required to minimise potential impacts to air quality from dust and vehicle emissions

Issue	Commitments
	during the construction of the CPF. 51. The Proponent will ensure that the OEMP includes measures aimed at monitoring, assessing and if required rectifying any air quality issues associated with the operation of the CPF. .
Ecology	52. Place disturbance footprints of the CPF outside remnant vegetation patches and at least 40 m from major watercourses.
Land Use	53. The Proponent will decommission the CPF plant upon completion of the Project. CPF Site 1 will be redeveloped with a land use compatible with the land use zoning at the time of decommissioning.
Noise and Vibration	54. The proponent shall conduct construction activities that are generally between the following hours of 7.00 am to 6.00 pm Monday to Saturday. Where it is demonstrated that construction noise goals can be achieved construction would be undertaken outside these hours. 55. The Proponent shall undertake a program of noise monitoring once the CPF is operational in order to validate the design and mitigation measures applied to the facility. If required, further mitigation may be recommended following the monitoring program to ensure that operational noise is maintained in accordance with the relevant project noise goals. 56. The Proponent shall undertake the following design measures for the CPF plant to ensure that operational noise levels are maintained within the relevant project noise goals: 57. Following final plant selection and detailed design, the Proponent shall commission a further detailed operational noise assessment of the CPF plant to establish and confirm expected operational noise levels and inform detailed design of noise mitigation for the plant.
Hazard and Risk	58. The PHA should be updated when final design details are known, particularly for the operation of the flare. 59. Once final design details are known, a HAZOP of the design will be undertaken, particularly to assess abnormal operating modes such as flare and blowdown operations.
Pipeline	
General	60. The Proponent shall ensure that the pipeline is provided with marker tape at all sections of pipeline located within 35 m of residential development (as measured from the pipeline centreline). 61. Pipeline works, including construction, operation and decommissioning, would be undertaken in accordance with the recommendations in The Australian Pipeline Industry Association Limited – *Code of Environmental Practice – Onshore Pipeline (2005)* and AS 2885.
Air Quality	62. The Proponent will ensure that the Construction AQMP outlines activities required to minimise potential impacts to air quality from dust and vehicle emissions during the construction of the pipeline. 63. The Proponent will ensure that the OEMP includes measures aimed at monitoring, assessing and if required rectifying any air quality issues associated with the operation of the pipeline. .
Ecology	64. The Proponent shall implement all practicable measures to minimise potential impacts to flora and fauna from the construction of the pipeline in accordance with the Flora and Fauna Management Plan which is to form

Issue	Commitments
	part of the CEMP for the Project, as detailed in **Chapter 25** of this EA.
Land Use	65. The Proponent will ensure that where possible, the pipeline route remains within existing infrastructure easements. 66. The Proponent will ensure that the proposed pipeline is buried underground in accordance with AS2885 and protected by easements. The Proponent will ensure that future landowners and other stakeholders are aware of the location of the pipeline and any restrictions on the use of land within the easement. 67. Upon expiration of the life of the Project, the Proponent will abandon the pipeline in accordance with the regulator's guidelines. The easement will be extinguished from the title and the above ground infrastructure removed.
Noise and Vibration	68. Construction works would typically occur between 7.00am to 6.00pm, seven days per week with the exception of HDD which may need to be continued beyond typical construction hours in order to ensure the integrity and safety of the process. Blasting would typically occur between 9.00am to 5.00pm Monday to Friday, 9.00am to 1.00pm Saturday and no blasting on Sundays, if blasting is required. 69. The Proponent shall ensure that advanced notification of commencement of construction works is provided to potentially affected landowners indicating the length of time during which impacts may be experienced, the nature of potential impacts and a contact number for complaints to be recorded and responded to. 70. The Proponent shall ensure that works requiring the use of rock hammers do not occur within 20 m of a residence. 71. The Proponent shall ensure that works requiring blasting do not occur within 200 m of a residence.
Hazard and Risk	The Proponent shall undertake the following specific mitigation measures in respect of the pipeline: 72. The pipeline is to be provided with marker tape at all sections that would be located within a 35 m distance of residential development (as measured from the pipeline centreline) and or additional depth of cover in these areas. 73. Appropriate safety measures to be designed and adopted for sections of the pipeline which are in close proximity to 132 and 330 kV power lines to ensure the safety of personnel and equipment. These measures may include: • Selective earthing at certain positions along the pipeline; • Installation of zinc ribbon in the pipeline trench; • Installation of inline isolation in the pipeline; • Restriction of access to the pipeline and its facilities; • Use of equi-potential grids or other similar safety equipment during maintenance of the pipeline; and • Use of lockable test points for the cathodic protection system. 74. Preparation of a Construction Safety Study in respect of the pipeline. This

Issue	Commitments
	study should address general construction safety requirements as well as specific locational hazards such as AC induction. 75. Pipeline to be designed and operated in accordance with AS 2885-2007. Pipeline design to meet the requirements for T1 locations, being rural areas developed for residential, commercial or industrial use, where allotments are less than 1 hectare in area and buildings do not exceed four floors. 76. Regular maintenance/inspection of pipeline in accordance with the Proponent's standard procedures. 77. Relieving of stress where ground movement stresses pipework. 78. Installation of marker signs and marker tape along the length of the pipeline to alert people to the presence and location of the pipeline. Signage to include details of 'One-Call'/'Dial before-you-dig' services. 79. External surfaces of pipeline to be coated to protect against corrosion. Testing of the integrity of the coating ('Holiday' detection) to be carried out prior to burial of the pipeline. 80. Use of sacrificial anode cathodic protection system to provide further protection against corrosion. 81. Gas quality to be such that corrosion enhancing components are minimised. 82. Intelligent pigging of the pipeline to be carried out to assess pipeline condition every 5-10 years. 83. Regular patrolling of pipeline by the Proponent to assess for damage or activities which have the potential to cause damage to the pipeline. Patrols would also facilitate detection of ground movement or land subsidence. Where significant ground movement is detected and stresses are determined to be high, the ground around the pipeline/gathering line would be dug up to relieve stresses. 84. Pipeline design to make provision for current subsidence parameters for the location (as provided by the Mine Subsidence Board), where required. 85. Liaison with Mine Subsidence Board to determine the location and details of likely future mining activity in the vicinity of the pipeline.

APPENDIX 2
STATEMENT OF COMMITMENTS (MOD 1)

Environmental attribute	Recommendation/management	Relevant Project approval condition
Ecology		
Seaham	Surrounding remnant vegetation • Implement sedimentation and erosion controls • Undertake follow up weed control	3.2, 7.3(a), 7.3(c)
	Waterways • Implement sediment and erosion controls before trenching of watercourses (ID to 138 to 141)	3.2, 7.3(c)
Brandy Hill	Native vegetation in alignment • Limit clearing in areas of remnant and regrowth vegetation • Implement sedimentation and erosion controls • Undertake follow up weed control	3.2, 7.3(a), 7.3(c)
	Swamp Oak Floodplain Forest (EEC) – Mapped as 'Marginal" habitat for Koala under the Port Stephens Council CKPoM. • Minimise ROW to 15 m width • Implement and regularly check sediment and erosion controls	3.2
	Hunter Lowland Redgum Forest (EEC) • Minimise ROW to 15 m width • Implement and regularly check sediment and erosion controls	3.2, 7.3(a), 7.3(c)
	Adjacent Barties Creek (constructed irrigation channel) • Implement and regularly check sediment and erosion controls	3.2, 7.3(c)
Tomago	Swamp Oak Floodplain Forest (EEC) • Minimise ROW to 15 m width • Implement and regularly check sediment and erosion controls	3.2, 7.3(a), 7.3(c)
	Tributary of Francis Greenway Creek • Implement sediment and erosion controls before trenching	3.2, 7.3(c)

Environmental attribute	Recommendation/management	Relevant Project approval condition
	Hunter River • Underboring or HDD will be set back from the riparian areas to avoid the fringing Mangrove Forest and patch of Swamp Oak Forest (EEC) at KP 91 (Rev F)	7.3(c)
Aboriginal cultural heritage		
All sections	Disturbance of previously unidentified Aboriginal objects • AGL will cease work in the immediate vicinity if during the course of construction, they become aware of any previously unidentified Aboriginal objects Management of construction activities and consultation with RAPs • AGL will implement measures to manage potential impacts and consult with the RAPs during construction of the proposed pipeline corridor realignments	3.35 and 7.2(iv)
Noise		
All sections and the TRS	Construction noise management to minimise impacts to nearby receptors • Construction activities of the modified pipeline and the TRS will be managed and impacts to surrounding nearby receptors minimised. Blasting management to minimise impacts to nearby receptors • Blasting activities of the modified pipeline and the TRS will be managed and impacts to surrounding nearby receptors minimised. Management of complaints during construction and operation • Complaints from the community regarding construction and operational activities of the modified pipeline and the TRS will be managed and handled appropriately.	3.14, 3.15, 3.17, 7.2(g) 3.18, 3.20, 3.21 6.2, 6.3
TRS	Operational noise management to minimise impacts to nearby receptors • Operational noise of the TRS will be managed and impacts to surrounding nearby receptors minimised.	3.24, 7.4(e)iii
Hazard and risk		
Seaham	MLV final location • AGL will prepare a FHA which will provide a quantitative evaluation of the risk	3.47(c)
Tomago	The placement of the pipeline in proximity to an existing high pressure pipeline in the cleared easement to the TRS • AGL will prepare a FHA which provide a quantitative evaluation of the risk The potential for excess dosing at the odourant facility either within the TRS or within the NGSF • AGL will prepare a HAZOP study which will include analysis and mitigation for the final location of the odourant facility	3.47(c) 3.47(b)
Soils		
All sections	Encountering ASS during construction activities • The existing draft ASSMP will be finalised to incorporate the modified pipeline corridor alignment	1.1(f), 7.3(c)i and iii

Environmental attribute	Recommendation/management	Relevant Project approval condition
Surface water		
All sections	Watercourse crossings • The revised watercourse crossings due to the proposed modification will be included within the Watercourse Crossing Management Strategy Ground disturbance • Construction activities will manage soil and erosion to minimise effects to surface water quality, both in the immediate area and downstream	3.4, 7.3(b)
Groundwater		
All sections	Groundwater interception with ASS during trenching • The modified sections will require pre-construction investigations to be undertaken in relevant areas to determine ASS and implementation of appropriate management strategies	7.3(c)i
Air quality		
Tomago	TRS discharges to air due to dual water bath heaters • A discharge monitoring point will be established at the TRS and monitor relevant emissions similar to the requirements of the HDS stated in the Project approval	3.30, 3.31 and 4.5
Socio-economic		
All sections	Community stakeholder engagement • The Community and Stakeholder Engagement Plan will be updated to incorporate the modified pipeline corridor alignment	6.5
Visual		
Tomago	Building materials • AGL will consider the use of building materials and treatments for the TRS which visually complement the surrounding land uses	3.40