ATTACHMENT 8: EIS COMMITMENTS SUMMARY

The purpose of this attachment is to collate all the (avoidance, mitigation, management, inspection and monitoring) commitments that appear in the impact assessment chapters of the EIS (i.e., Chapters 9 to 26). Each commitment has been allocated a unique number (e.g., [C256]) which is common in every instance that the commitment is made in the EIS impact assessment chapters, the below Table 1 and Attachment 5, the environmental management plan.

These commitments were obtained from the individual specialist studies (as provided in the appendices), Arrow's knowledge of the project development area and experience in design, construction and operation of coal seam gas infrastructure within regulatory environments.

The terms of reference requires that we identify any commitments which have not been included in the environmental management plan (Attachment 5). Such commitments include those relating to the potential social, economic and climatic adaptation impacts, as these aspects of the EIS sit outside the framework provided by the Department of Environment and Resource Management for preparation of a coal seam gas environmental management plan (DERM, 2010j). Those commitments not included in Attachment 5, the environmental management plan, are indicated by ***bold, italicised*** text within Table 1 below, to meet the terms of reference requirement. Also note that any commitments relating to the potential impacts of greenhouse gas emissions have been captured in Section 4.1, Air Quality, of Attachment 5, the environmental management plan.

Table 1 EIS commitments summary

Chapter	Commitment Number	Commitment	Relevant Phase
Air Quality	C001	Conduct site-specific air quality modelling once site locations are known to ensure project-related air emissions meet EPP (Air) objectives at the nearest sensitive receptor.	Planning and Design
Air Quality	C002	Select equipment with consideration for low emissions to air (NOx, SOx), high energy efficiency and fuel efficiency.	Planning and Design
Air Quality	C003	Design facilities to meet relevant EPP (Air) objectives at sensitive receptors.	Planning and Design
Greenhouse Gas Emissions	C004	Minimise fuel consumption of vehicles by optimising transport logistics.	Planning and Design Operations
Greenhouse Gas Emissions	C005	Select gaskets, seals and vehicle exhaust systems that are suitable for the task.	Planning and Design
Greenhouse Gas Emissions	C006	Arrow will develop a greenhouse gas management plan that will take into account both biodiversity and economic values of carbon.	Planning and Design Operations
Greenhouse Gas Emissions	C007	Consider energy efficiency programs both locally and across the company that contribute to greenhouse gas emission reductions.	Planning and Design Operations
Greenhouse Gas Emissions	C008	Arrow will participate actively in any government-approved emissions trading scheme.	Planning and Design Operations

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Surface Water	C009	Routinely monitor water quality in dams.	Inspection and Monitoring
Greenhouse Gas Emissions	C010	Consider supporting through corporate community involvement programs the development of energy efficiency initiatives in the areas where Arrow operates.	Planning and Design Operations
Air Quality Greenhouse Gas Emissions Noise and Vibration	C011	Ensure all engines, machinery equipment and pollution control mechanisms are operated and maintained in accordance with manufacturers' recommendations.	Planning and Design Construction Operations Decommissioning
Air Quality Landscape and Visual Amenity	C012	Implement dust suppression measures for roads and construction sites to ensure that dust does not cause a nuisance.	Construction Operations Decommissioning
Air Quality	C013	Cover dust-generating materials prior to transportation.	Construction Operations Decommissioning
Air Quality	C014	Consult with potentially affected landowners prior to undertaking activities.	Construction Decommissioning
Air Quality Geology, Landform and Soils Agriculture Surface Water Terrestrial Ecology Landscape and Visual Amenity Economics	C015	Clear areas progressively and implement rehabilitation as soon as practicable following construction and decommissioning activities.	Construction Operations Decommissioning
Air Quality Greenhouse Gas Emissions	C016	Prevent venting and flaring of gas as far as practicable and where safe to do so.	Construction Operations
Air Quality	C017	Manage odours so that they do not cause a nuisance or harm to sensitive receptors.	Construction Operations
Air Quality Greenhouse Gas Emissions	C018	Optimise gas-engine operation to minimise duration of operation at low-efficiency levels that may result in increased emissions.	Operations
Geology, Landform and Soils Groundwater	C019	Inspect and observe site locations for the presence of contamination prior to commencement of intrusive activities.	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Air Quality Greenhouse Gas Emissions Geology, Landform and Soils Surface Water Aquatic Ecology Terrestrial Ecology Landscape and Visual	C020	Minimise the disturbance footprint and vegetation clearing.	Planning and Design Construction
Greenhouse Gas Emissions	C021	During the construction phase, minimise greenhouse gas emissions through selection of equipment and the commitment to clear areas progressively. Implement rehabilitation as soon as practicable following construction activities.	Construction
Greenhouse Gas Emissions	C022	Consider supporting gas industry initiatives that seek to improve technology or processes, such as contributions or sponsorship of research and development.	Planning and Design Operations
Greenhouse Gas Emissions	C023	During the decommissioning phase, minimise greenhouse gas emissions by optimising transport logistics and minimising the footprint of disturbance.	Decommissioning
Surface Water Aquatic Ecology	C024	Install and maintain diversion drains to divert clean surface runoff water around production facilities and away from construction areas.	Planning and Design Construction Operations Decommissioning
Climatic Adaptation	***C025***	***Ensure maximum design temperatures of infrastructure, equipment and materials are sufficient to account for future increases in ambient air temperature.***	***Planning and Design*** ***Construction***
Climatic Adaptation	***C026***	***Design and construct the production facilities in accordance with current Australian standards addressing climatic factors including wind, bushfires and floods.***	***Planning and Design*** ***Construction***
Climatic Adaptation	***C027***	***Deploy preventive and responsive measures for bushfire management and flooding, as set out in Chapter 25, Preliminary Hazard and Risk.***	***Planning and Design*** ***Construction*** ***Operations*** ***Decommissioning***

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Climatic Adaptation	***C028***	***Incorporate climate change-induced health risks into future workplace health, safety and environmental management plans, as set out in Chapter 25, Preliminary Hazard and Risk.***	***Planning and Design*** ***Construction*** ***Operations*** ***Decommissioning***
Climatic Adaptation	***C029***	***Estimate and include climate change costs in business cost projection and consider emerging business opportunities that climate change may generate.***	***Planning and Design*** ***Construction*** ***Operations*** ***Decommissioning***
Climatic Adaptation	***C030***	***Engage in government or industry climate change programs as set out in Chapter 10, Greenhouse Gas Emissions.***	***Planning and Design*** ***Construction*** ***Operations*** ***Decommissioning***
Geology, Landform and Soils Landscape and Visual Amenity Roads and Transport	C031	Maintain the integrity of private roads and tracks and minimise dust generation, where appropriate, in consultation with relevant landowners and council.	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils Landscape and Visual Amenity	C032	Use existing roads and tracks, where practicable.	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils Aquatic Ecology Terrestrial Ecology Roads and Transport	C033	Confine project traffic to designated roads and access tracks, where practicable.	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils Agriculture Surface Water Aquatic Ecology Landscape and Visual Amenity	C034	Develop an erosion and sediment control plan and install and maintain appropriate site-specific controls.	Planning and Design Construction Operations Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Geology, Landform and Soils Surface Water Aquatic Ecology Terrestrial Ecology Preliminary Hazard and Risk Groundwater	C035	Apply appropriate international, Australian and industry standards and codes of practice for the handling of hazardous materials (such as chemicals, fuels and lubricants).	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils Groundwater Aquatic Ecology Waste Management	C036	Develop and implement emergency response and spill response procedures to minimise any impacts that could occur as a result of releases of hazardous materials or any loss of containment of storage equipment.	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils Aquatic Ecology	C037	Ensure appropriate spill response equipment, including containment and recovery equipment, is available on site.	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils Aquatic Ecology Terrestrial Ecology Groundwater	C038	Carry out corrective actions immediately upon the identification of any contamination of soil or groundwater that has occurred as a result of project activities.	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils	C039	Assess contamination that may have occurred as a result of project activities in accordance with documented operating procedures. Appoint one or more suitably qualified and experienced contaminated land specialists.	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils	C040	Undertake an environmental site assessment in response to the identification of contamination that may have occurred as a result of project activities.	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils	C041	Avoid the Chinchilla Sands Local Fossil Fauna Site and educate project personnel on the importance of the site.	Planning and Design Construction Operations Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Geology, Landform and Soils	C042	Design infrastructure located in cracking clays to withstand the differential shrink-swell ground movement.	Planning and Design
Geology, Landform and Soils Aquatic Ecology	C043	Complete excavation, remediation, characterisation and validation activities in response to the identification of contamination that may have occurred as a result of project activities.	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils	C044	Incorporate construction methods and treatments to deal with reactive gilgai and cracking clays in infrastructure design.	Planning and Design
Geology, Landform and Soils	C045	Time construction works and access to sites to avoid wetter periods, where practicable.	Planning and Design
Geology, Landform and Soils	C046	Design and plan the project to avoid steep slopes and areas dissected by gully networks, where practicable. Where these are unavoidable, ensure the required infrastructure (e.g., roads) is appropriately designed for erosion control purposes.	Planning and Design
Geology, Landform and Soils	C047	Locate pipelines to avoid or minimise impact on irrigation flow or current farming practices. If the ROW must cross actively farmed arable land, ensure soil cover above the pipeline is deep enough to allow normal cultivation practices to resume.	Planning and Design
Geology, Landform and Soils Groundwater Surface Water Aquatic Ecology Terrestrial Ecology Preliminary Hazard and Risk Waste Management	C048	Apply appropriate international, Australian and industry standards and codes of practice for the design and installation of infrastructure associated with the storage of hazardous materials (such as chemicals, fuels and lubricants).	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils Groundwater	C049	Avoid development on contaminated land through the completion of appropriate register searches and desktop investigations (i.e., avoid land or the contaminated portion of a parcel of land that is listed on the Contaminated Land Register or the Environmental Management Register, where practicable).	Planning and Design
Geology, Landform and Soils Groundwater	C050	Conduct physical investigations on selected parcels of land to influence facility siting decisions on a localised scale (i.e., target the portion of land that is not contaminated by understanding the extent of contamination).	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Waste Management	C051	Allocate bins for different waste streams to achieve solid waste segregation. Provide appropriate domestic waste disposal facilities at designated work sites to assist in segregation of waste.	Construction Operations Decommissioning
Geology, Landform and Soils	C052	Reduce flow concentration and gully creation by minimising disruption to natural overland flow paths through the re-establishment of natural surface drainage lines.	Construction
Geology, Landform and Soils Surface Water	C053	Avoid disrupting overland natural flow paths and, where avoidance is not practicable, maintain connectivity of flow in watercourses.	Construction
Geology, Landform and Soils	C054	Do not disturb or remove flood banks and artificial levees except in consultation with parties benefitting from the structures and the relevant authorities.	Construction
Geology, Landform and Soils	C055	Avoid disturbance of contour banks and irrigation bays.	Construction
Geology, Landform and Soils	C056	Avoid mounding of soil along pipelines in irrigated paddocks, to the greatest extent practicable, allowing for settlement of backfill.	Construction
Geology, Landform and Soils	C057	Conduct pipeline construction to minimise the duration of exposure of soils.	Construction
Waste Management	C058	Arrow will apply the following hierarchy of management options to all waste generated during the project activities: • Source reduction: avoid, eliminate, change or reduce practices that result in the generation of wastes. • Reuse: reuse waste materials that are in their original form. • Recycling: where possible, send waste to appropriate facilities to convert waste into other usable materials. • Treatment and disposal: render wastes safe by neutralisation or other treatment methods and dispose of waste products that can no longer be reused or recycled either through landfilling or incineration.	Construction Operations Decommissioning
Geology, Landform and Soils	C059	Avoid excessive watering of saline soils to reduce leaching of salts and rising groundwater.	Construction
Geology, Landform and Soils	C060	Avoid excessive watering of surface-crusting soils to reduce crust formation.	Construction
Geology, Landform and Soils	C061	Provide regular access points to pipeline construction ROWs to limit rutting and compaction of soils from vehicles travelling along the ROW.	Construction

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Geology, Landform and Soils Agriculture	C062	Strip, salvage and stockpile topsoil near the work site separately to subsoils (in consultation with landowners). Ensure topsoil stockpiles have a maximum height of 2 m, where the future use is intended for rehabilitation, and are protected from erosion.	Construction Operations Decommissioning
Geology, Landform and Soils	C063	Carry out ground investigations in soils prone to salinity prior to major earthworks to establish the depth at which saline conditions occur.	Construction
Geology, Landform and Soils Groundwater	C064	Avoid disturbance of contaminated soil and groundwater when it is identified or observed during intrusive works.	Construction
Geology, Landform and Soils Waste Management Groundwater	C065	Manage contaminated soil or groundwater that cannot be avoided through physical investigation; manage quantification of the type, severity and extent of contamination; and remediate or manage in accordance with the Queensland Government's Draft Guidelines for the Assessment and Management of Contaminated Land (DE, 1998).	Construction Operations Decommissioning
Geology, Landform and Soils Surface Water Aquatic Ecology	C066	Discharge water from project activities at a rate and location that will not result in erosion. Install additional erosion protection measures, including energy dissipation structures, at discharge outlets.	Planning and Design Construction Operations Decommissioning
Geology, Landform and Soils	C067	Ensure coal seam gas water used on highly productive soils is of comparable water quality to that used for irrigation in the specific area.	Operations
Geology, Landform and Soils	C068	Ensure the use of coal seam gas water meets beneficial-use licence conditions where it is to be used on GQAL or strategic cropping land or within heritage-listed or indicative sites.	Operations
Geology, Landform and Soils Groundwater Surface Water Aquatic Ecology	C069	Incorporate into an emergency response plan or water management plan procedures for the controlled discharge of coal seam gas water under emergency conditions. Procedures will include water balance modelling, weather monitoring and forecasting, stream flow data, notification and reporting.	Operations
Geology, Landform and Soils	C070	Develop rehabilitation plans based on environmental sensitivities that address ground preparation requirements, natural and constructed drainage patterns, soil erodibility, contamination, slope steepness and length, rainfall frequency and intensity, potential flow magnitudes, vegetation cover, land use and landowner requirements.	Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Geology, Landform and Soils Agriculture Aquatic Ecology	C071	Backfill and rehabilitate excavations, particularly pipeline trenches and drilling sumps. Conduct backfilling in a manner that will promote successful rehabilitation, including capping of exposed subsoil with topsoil and replacement of the land surface to preconstruction levels to reduce trench subsidence and concentration of flow. Mounding of soils to allow for settling may be required in some areas. However, in laser-levelled paddocks, this may not be practicable, and backfilling should be carried out in consultation with the landowner.	Decommissioning
Geology, Landform and Soils	C072	Remedy areas of differential settlement associated with buried infrastructure that interrupt the pre-existing surface water flow within intensively cultivated areas.	Decommissioning
Geology, Landform and Soils Groundwater	C073	Excavate any saline material during rehabilitation of coal seam water dams or brine dams and select an appropriate option for management for the material (e.g., treat for reuse, or dispose of in a registered landfill).	Decommissioning
Preliminary Hazard and Risk Groundwater	C074	Implement a decommissioning and rehabilitation plan in accordance with the dam design plan.	Decommissioning
Agriculture	C075	Comply with the provisions of the *Petroleum and Gas (Production and Safety) Act 2004* and the Land Access Code (DEEDI, 2010b) prior to accessing private land. All appropriate agreements (with accompanying maps of the area of interest and detail on infrastructure development) will be in place prior to entry onto the land. Arrow will ensure all appropriate landowners are notified prior to access being required to allow stock to be moved and access routes to be cleared of machinery or materials.	Planning and Design Construction Operations Decommissioning
Agriculture	C076	Avoid infrastructure and associated farm management areas of intensive farming operations, including piggeries, feedlots, vineyards, orchards, horticultural enterprises, poultry farms and small-lot plantations.	Planning and Design Construction Operations Decommissioning
Agriculture Social	C077	Maintain the grievance process (complaint management system) for the community to register complaints, issues, comments and suggestions.	Planning and Design Construction Operations Decommissioning
Agriculture	C078	Retain and regularly inspect erosion and sediment control structures until reinstated soils have been stabilised and sown.	Planning and Design Construction Operations Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Preliminary Hazard and Risk Groundwater	C079	Arrow will enforce a no hydraulic fracturing (fraccing) policy in the project development area.	Planning and Design Construction Operations Decommissioning
Agriculture	C080	Plan and integrate construction and operations activities with harvesting, spraying and withholding periods.	Planning and Design Construction Operations Decommissioning
Agriculture Social Economics	C081	Develop and implement a compensation framework to 'add value' rather than just compensating for impacts.	Planning and Design
Agriculture	C082	Develop coal seam gas development property plans to address key issues raised by landowners relating to potential impacts on intensively farmed land.	Planning and Design
Agriculture	C083	Investigate the opportunity to increase well spacing from 160 acres (65 ha) to 320 acres (129 ha) or greater to reduce the footprint on strategic cropping land.	Planning and Design
Agriculture Economics	C084	Consult and agree with landowners on the appropriate location for infrastructure and access routes (to well sites and to and along pipelines). Clearly identify the outcome of the discussions on scaled plans of the property and clearly indicate agreed access routes using signs, temporary fencing, barricade tape or traffic control measures.	Planning and Design
Agriculture	C085	Study methods to reduce impacts and maintain the soil profile during gathering system pipeline construction by understanding the soil type, reducing pipe diameters, plowing (instead of trenching) and potentially burying deeper than the minimum standard.	Planning and Design
Agriculture	C086	Develop or facilitate the development of a method for assessing impacts on productivity (crop yields) that incorporates statistical analysis and appropriate control and sampling sites.	Planning and Design
Agriculture	C087	Investigate alternative drilling technologies, such as using directional drilling to access coal measures, reducing gathering system pipe diameters and drilling multiple wells from one drill pad to potentially reduce the footprint on strategic cropping land.	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Agriculture Economics	C088	Consult with landowners on the most appropriate method to minimise disruption to cultivation paddocks (including the introduction of additional headlands) and loss of productive land in controlled-traffic paddocks. The following measures will be considered in reaching agreement: • Locate infrastructure (in order of preference) outside of cultivation areas, in headlands or at the corners of cultivated areas, adjacent to boundary fences or in areas of a paddock with the lowest-quality soil. • Locate access tracks in headlands or adjacent to boundary fences. • Utilise existing access tracks and trafficked areas. • Align gathering lines and new access tracks parallel to the direction of cultivation, soil conservation structures and controlled traffic runs and avoid perpendicular or lateral connections. • Lay out drill pads in accordance with landowner requirements, subject to safety requirements, to reduce the overall impact on cultivation, where practicable.	Planning and Design
Agriculture	C089	Develop construction methods and design access tracks in cultivation paddocks to maintain the existing hydrologic and hydraulic regime of the site and in a way that does not cause erosion.	Planning and Design
Agriculture	C090	Backfill soils in the reverse order of removal, and undertake backfilling progressively and regularly during pipeline construction.	Construction Operations Decommissioning
Agriculture	C091	Ensure construction activities do not extend beyond the work site boundaries.	Construction Operations Decommissioning
Agriculture	C092	Ensure dams for coal seam gas water and brine are not constructed on intensively farmed land.	Construction Operations Decommissioning
Agriculture	C093	Install gates in fences of an appropriate standard to restrict access to authorised personnel, vehicles, plant and equipment.	Construction Operations Decommissioning
Agriculture	C094	Ensure an Arrow representative is in attendance at the time of first entry to check contractors have the appropriate environmental management procedures and property-specific information.	Construction Operations Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Agriculture	C095	Maintain the integrity and efficiency of surface irrigation systems by adopting the following measures: • Locate infrastructure at or adjacent to the end of head ditches or tail drains and in a manner that does not significantly interfere with swept paths of boom irrigators to avoid severance or fragmentation of water delivery systems. • Locate wells, gathering lines and access tracks adjacent to boundary fences, where practicable. • Align gathering lines and access tracks perpendicular to the direction of head ditches and tail drains (i.e., parallel to the direction of surface flows and cultivation).	Construction Operations Decommissioning
Agriculture	C096	Use surface tanks (not pits) to manage drilling muds on black soils when drilling production wells.	Construction Operations Decommissioning
Agriculture	C097	Fence the exclusion zone of production well sites (i.e., 10 m by 10 m) to exclude unauthorised personnel, stock and wildlife from that area.	Construction Operations Decommissioning
Agriculture	C098	Inspect work sites and access routes for notifiable weeds and pest plants and animals prior to accessing the site; and if detected, manage in accordance with the Petroleum Industry – Minimising Pest Spread Advisory Guidelines, Queensland Department of Primary Industries and Fisheries, June 2008 (Biosecurity Queensland, 2008).	Construction Operations Decommissioning
Agriculture Aquatic Ecology Terrestrial Ecology	C099	Wash down vehicles and equipment that have potentially been in contact with weeds before entering new work sites.	Planning and Design Construction Operations Decommissioning
Agriculture	C100	When operating on black soils, collect, contain and store drilling fluids and waste (solid and liquid) on site in appropriate storage tanks until recycled, treated (if necessary) or disposed of off site.	Construction Operations Decommissioning
Agriculture	C101	Stockpile drilling cuttings adjacent to the well or in containers and dispose of appropriately in consultation with the landowner.	Construction Operations Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Agriculture Groundwater	C102	Store onsite materials in suitable containment systems constructed to industry standards and Australian standards (AS 1940-2004, The Storage and Handling of Flammable and Combustible Liquids (Standards Australia, 2004a), and AS 3780, The Storage and Handling of Corrosive Substances (Standards Australia, 2008b) at a minimum). Maintain quality control and quality assurance procedures to monitor volumes and quantities. Bund aboveground storage areas to contain spills.	Construction Operations Decommissioning
Agriculture	C103	Manage soil contaminated by oil, fuel and grease in accordance with the hydrocarbon management plan (prepared as part of the Arrow HSEMS), which includes procedures for the excavation and removal to a licensed landfill or remediation at site. Where contamination has occurred, investigate and remediate in accordance with Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland, Department of Environment, 1998 (DE, 1998).	Construction Operations Decommissioning
Agriculture	C104	Maintain a minimum separation, as agreed with the landowner, between animal enclosures and production wells and facilities.	Construction Operations Decommissioning
Agriculture	C105	Suspend works when rainfall or storm events produce onsite conditions that, if trafficked or worked, would compromise the effectiveness of erosion and sediment control structures, or would lead to rutting and compaction of soils or mixing or inversion of soil horizons.	Construction Operations Decommissioning
Geology, Landform and Soils Agriculture	C106	Stockpile cleared or mulched vegetation along the inside edge of the work sites (separate from soil stockpiles), to aid the control of runoff and ensure stockpiled vegetation does not pose a bushfire hazard.	Construction Operations Decommissioning
Surface Water	C107	Control sediment runoff from stockpiles.	Construction
Agriculture	C108	Construct batters and embankments of drill pads and production facility benches at appropriate slopes and protect from erosion.	Construction Operations Decommissioning
Agriculture	C109	Stockpile imported fill for bedding of pipes adjacent to the trench and away from vegetation, topsoil and subsoil stockpiles.	Construction Operations Decommissioning
Agriculture	C110	Remove excess imported fill and residual subsoil from the work site, and reuse or dispose of in accordance with landowner requirements.	Construction Operations Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Agriculture	C111	Maintain the operation and effectiveness of soil conservation structures by adopting the following measures: • Avoid breaching, diversion or disturbance of contour banks, waterways and dams. • Avoid earthworks that affect waterway function. • Locate wells, access tracks and gathering lines downhill and parallel to soil conservation structures and avoid perpendicular or lateral connections. • Utilise existing access tracks and trafficked areas.	Construction Operations Decommissioning
Agriculture	C112	Remove sediment fencing prior to cultivation and dispose of in accordance with landowner requirements or in accordance with the waste management plan of the Arrow HSEMS.	Construction Operations Decommissioning
Agriculture	C113	Cap or fit wellhead equipment to wells at the completion of drilling to ensure no uncontrolled release of gas or water.	Construction Operations Decommissioning
Agriculture	C114	Remove salt from the landscape as part of decommissioning works and dispose of in an approved and regulated landfill.	Construction Operations Decommissioning
Agriculture	C115	Replace or rehabilitate all disturbed infrastructure to predisturbance condition.	Decommissioning
Agriculture	C116	Regrade work sites to original surface contours following reinstatement of soil.	Decommissioning
Agriculture	C117	Mulch vegetation and reuse in site rehabilitation.	Decommissioning
Agriculture	C118	Deep rip and cross rip all construction areas and temporary access tracks to a depth of at least 0.4 m. Repeat following topsoil reinstatement to promote infiltration and assist the re-establishment of connections between soil horizons.	Decommissioning
Agriculture	C119	Compact padding material and subsoils used to backfill pipeline trenches to reduce settling. Limit compaction to no deeper than 0.5 m below natural surface level.	Decommissioning
Groundwater	C120	Prepare a baseline assessment plan to establish benchmark data in registered third-party bores (where possible) prior to the commencement of Arrow extraction activities in accordance with the Water Act, including the preparation and implementation of a groundwater monitoring and investigation strategy.	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Agriculture	C121	Rehabilitate clean water diversions, down-gradient soil erosion control works and temporary sediment dams to preconstruction site levels, and rip prior to sowing with crops or pasture grasses.	Decommissioning
Agriculture	C122	Clean and reinstate (if necessary) erosion and sediment control structures prior to and following storm events and periodically during long periods of rain.	Decommissioning
Agriculture	C123	Visually inspect rehabilitated work sites for flow diversions and evidence of erosion associated with trench settling or incomplete reinstatement of surface contours.	Decommissioning
Groundwater	C124	Consider local biological, groundwater and surface water conditions when identifying sites for coal seam gas water dams and brine dams.	Planning and Design
Groundwater	C125	Consider local groundwater conditions when identifying sites for the installation of buried infrastructure (e.g., gathering lines).	Planning and Design
Groundwater	C126	Avoid unnecessary impervious surface coverings and minimise land footprint and vegetation clearing when designing facilities.	Planning and Design
Groundwater	C127	Undertake bore assessments of third-party bores (where possible) in accordance with the Water Act, including: • Having the Queensland Water Commission for the Surat Cumulative Management Area identify bores requiring assessment. • Developing make-good agreements that include the outcome of bore assessments and implementation of make-good measures in the event that impaired capacity occurs.	Planning and Design
Groundwater	C128	Continue an investigative program that will help quantify the connectivity between the Condamine Alluvium and the Walloon Coal Measures. The program will involve: • Monitoring the effects of groundwater extraction in the Walloon Coal Measures on the Condamine Alluvium to estimate horizontal and vertical hydraulic conductivity between the alluvium and the Walloon Coal Measures. • An investigative drilling program that will provide greater definition of the interface between the two units and will evaluate the geological and hydrogeological properties of the material at the interface of the units. • Groundwater chemistry studies to characterise mixing and migration between the units. • Groundwater modelling, utilising the connectivity data obtained through investigative components of the program, to understand important processes in the system and predict potential impacts.	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Groundwater	C129	Continue a program of aquifer testing in dedicated groundwater monitoring bores to increase the predictability of aquifer properties and groundwater movement.	Planning and Design
Groundwater	C130	Collect relevant geological and hydrogeological data from existing and future production wells, monitoring bores and registered third-party bores (where possible) together with information collated collaboratively with other proponents and regulatory authorities.	Planning and Design
Groundwater	C131	Update and calibrate the geological model and the numerical groundwater model with relevant data on an ongoing basis, including: • Aquifer thicknesses and interfaces between formations. • Aquifer properties, e.g., porosity, permeability. • The location of sensitive areas, e.g., groundwater discharge springs. • Observed responses in monitoring bores that reflect aquifer behaviour during coal seam gas extraction.	Planning and Design
Groundwater	C132	Utilise the updated geological and numerical groundwater models to: • Make ongoing predictions regarding changes to groundwater levels and groundwater quality as the project develops. • Improve confidence in the understanding of the sensitivity and resilience of the aquifers within the identified groundwater systems.	Planning and Design
Groundwater	C133	Perform groundwater modelling simulations to predict impacts on groundwater resources in overlying and underlying aquifers. This information will subsequently be used to evaluate the suitability of these resources for use in make-good measures.	Planning and Design
Groundwater	C134	Verify the preferred water management strategy by modelling the effectiveness of substitution and injection (where conducted) in offsetting depressurisation impacts in aquifers.	Planning and Design
Groundwater	C135	Consider injection of coal seam gas water or brine of a suitable quality (if proven technically feasible) into shallow or deep aquifers to offset depressurisation impacts in aquifers.	Operations

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Groundwater	C136	Address the potential for surface deformation through participation by Arrow in a collaborative study with other proponents using historical and baseline data from the Advanced Land Observation Satellite covering a time-lapse period from January 2007 until January 2011. This will allow a detailed analysis of the region and will enable the analysis of the evolution of measured surface deformation in space and time. The assessment will correlate and calibrate data deliverables (calibrated global map and vector files for measurement points) from the Advanced Land Observation Satellite to show the mean deformation rate, identify areas of large-scale deformation and compare patterns with other information (e.g., geology, basin structure, extraction wells and injection data).	Planning and Design
Groundwater	C137	Construct all coal seam gas production infrastructure in accordance with the standards described in the P&G Act and regulations to that act.	Construction
Groundwater	C138	Construct all monitoring bores in accordance with the minimum construction requirements for water bores in Australia (LWBC & NMBSC, 2003) and the minimum standards for the construction and reconditioning of water bores that intersect the sediments of artesian basins in Queensland (DERM, 2004a).	Construction
Groundwater	C139	Select drilling fluids to minimise potential groundwater impacts. Do not use oil-based drilling fluids.	Construction
Groundwater	C140	Ensure well drilling is monitored by a suitably qualified geologist to ensure aquifers are accurately identified for correct well construction.	Construction
Groundwater Preliminary Hazard and Risk	C141	Develop the construction, design and monitoring requirements for new dams (either raw water, treated water or brine dams) and determine the hazard category of the dam in accordance with the requirements of the most recent version of Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (DERM, 2011a). Construct the dams under the supervision of a suitably qualified and experienced person in accordance with the relevant DERM schedule of conditions relating to dam design, construction, inspection and mandatory reporting requirements.	Construction
Groundwater	C142	Manage potential impacts on identified spring complexes by: • Supporting the identification of specific aquifers that serve as a groundwater source for discharge springs. • Assessing springs that are predicted to be subject to unacceptable impacts through the source aquifer. • Developing monitoring and mitigation strategies to avoid or minimise unacceptable impacts.	Operations

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Groundwater	C143	Implement a well integrity management system during commissioning and operation of production wells.	Operations
Groundwater	C144	Minimise impacts of groundwater depressurisation on sensitive areas (e.g., groundwater-dependent ecosystems).	Operations
Groundwater	C145	Develop a procedure for investigating the impaired capacity of third-party bores. The investigation will comprise (but not be limited to) the following phased investigation response: • Verify groundwater levels in the nominated bores and investigate groundwater levels and groundwater quality in compliance monitoring bores against established trigger thresholds. • Request bore information and groundwater data from affected parties. • Review and assess data. • Advise bore owners in writing of findings.	Operations
Groundwater	C146	If impaired capacity is confirmed (bore can no longer produce quality or quantity of groundwater for the authorised purpose, and the impact is due to coal seam gas activities), implement make-good measures in accordance with the Water Act.	Operations
Groundwater	C147	Include where possible make-good measures such as substitution of groundwater allocations of equal or better quality to maintain user supply, deepening of bores, modification of pumps, or supply of groundwater from an alternative source.	Operations
Groundwater	C148	Connect wastewater and sewerage systems to sewers where locally present. Alternatively, install wastewater treatment or reuse systems in accordance with AS/NZS 1547:2000, On-site Domestic Wastewater Management (Standards Australia, 2000); DERM guideline for managing sewerage infrastructure to reduce overflows and environmental impacts (DERM, 2010b); and Queensland water recycling guidelines (DERM, 2005).	Operations
Groundwater	C149	Store and manage all waste materials (domestic and industrial) in accordance with industry regulations and DERM conditions. Use licensed waste management contractors. Conduct audits of disposal facilities, disposal permits and onsite operations to ensure adherence to regulations.	Operations
Groundwater	C150	Decommission or repair all production wells and monitoring bores, either at the end of their operating life span or in the event of a failed integrity test in accordance with the minimum construction requirements for water bores in Australia (LWBC & NMBSC, 2003) and the P&G Act and regulations to that act. Should production wells be converted into monitoring bores, do so in accordance with relevant regulations.	Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Surface Water	C151	When siting facilities, avoid wetlands and consider the following: • Stream processes that may result in channel migration (either over time or as a result of project activities) and areas that are highly susceptible to erosion (i.e., dispersive soils). • Downstream values of nearby watercourses or wetlands. • Minimising changes to natural drainage lines and flow paths. • Flooding regimes and areas subject to inundation.	Planning and Design
Surface Water Aquatic Ecology	C152	Minimise watercourse crossings, where practicable, during route selection. Where required, select crossing locations to avoid or minimise disturbance to aquatic flora, waterholes, watercourse junctions and watercourses with steep banks.	Planning and Design
Surface Water	C153	Avoid permanent pools, chains of ponds, and alluvial islands, where practicable, when selecting watercourse crossing points.	Planning and Design
Surface Water Waste Management	C154	Design water dams in accordance with relevant legislation and Queensland standards and DERM guidelines.	Planning and Design
Surface Water	C155	Where practicable, site facilities above the 1 in 100 year average flood recurrence interval.	Planning and Design
Surface Water Aquatic Ecology	C156	Manage potential impacts on Lake Broadwater Conservation Park (Category A ESA) through implementation of the relevant buffer proposed in Table 2.	Planning and Design
Surface Water Aquatic Ecology Terrestrial Ecology	C157	Implement a 100-m buffer zone from the high bank of all watercourses to ensure that no development or clearance occurs within these buffers (other than construction of watercourse crossings for roads, pipelines and discharge infrastructure and associated stream monitoring equipment).	Planning and Design Construction
Surface Water	C158	Develop site-specific management plans for permanent and semi-permanent watercourse crossings detailing construction and environmental management requirements, including consideration of the scour potential of the watercourse.	Planning and Design
Surface Water	C159	Design culverts and drains to maintain flow and prevent headward erosion.	Planning and Design
Surface Water	C160	Consider the bank and stream bed stability when siting watercourse crossings and, where practicable, utilise existing stable crossings or locations where bedrock control exists to minimise the risk of erosion and generation of sediment.	Planning and Design
Surface Water Aquatic Ecology	C161	Plan construction of watercourse crossings to occur during periods of low rainfall and low flow, when practicable.	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Surface Water	C162	Minimise potential impacts on surface waters through implementation of the following measures during construction of watercourse crossings: • Delay clearance of stream banks until the watercourse crossing is due to be constructed, to the greatest extent practicable. • Implement appropriate erosion and sediment control measures (e.g., silt fences, sediment basins and erosion berms) on watercourse approaches and banks and ensure prompt completion of construction.	Construction
Surface Water	C163	Check for flood warnings or subscribe to flood warning services where relevant during construction of watercourse crossings.	Construction
Surface Water	C164	Construct watercourse crossings in a manner that minimises sediment release to watercourses, stream bed scouring (e.g., the crossing location will be at low-velocity, straight sections, with the pipeline or road orientated as near to perpendicular to water flow as practicable), obstruction of water flows and disturbance of stream banks and riparian vegetation (i.e., the crossing location will be at a point of low velocity, and straight sections will be targeted, with the pipeline or road orientated as near to perpendicular to water flow as practicable). Avoid, where practicable, the use of rock gabions, as they are unsuited to watercourses of the region.	Construction
Surface Water	C165	Stockpile watercourse bed material in the watercourse channel adjacent to the construction ROW only when the watercourse is dry, and site the stockpile to avoid impacts on riparian vegetation and in-stream features.	Construction
Surface Water	C166	Retain coarse alluvial material from watercourse crossings for backfill armouring over the finer unconsolidated material.	Construction
Surface Water	C167	Stabilise and maintain stream banks following watercourse crossings.	Construction
Surface Water	C168	Develop and implement a hydrostatic testing procedure prior to commencement of hydrotest activities that includes but is not limited to the following measures: • Conduct consultation with landowners and relevant regulatory authorities prior to sourcing and disposing of hydrotest water. • Avoid or minimise harmful chemical additives and reuse hydrotest water on adjacent pipeline sections where practicable. • Ensure hydrotest water that is discharged or recycled for secondary uses meets relevant statutory water quality guidelines.	Construction
Surface Water	C169	Grade soil away from watercourses.	Construction

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Surface Water	C170	Locate soil stockpiles away from watercourses and wetlands to minimise potential for sediment runoff to enter the watercourse or wetland.	Construction
Surface Water Preliminary Hazard and Risk	C171	Develop and implement incident reporting, emergency response and corrective action systems or procedures. Include systems for reporting, investigation and communications of lessons learned.	Construction Operations
Surface Water	C172	Segregate stormwater discharge from potential contaminant process areas.	Operations
Surface Water	C173	Inspect rehabilitated watercourse channels and banks following significant flow events and undertake remedial works as required.	Operations
Surface Water	C174	Maximise beneficial use of coal seam gas water.	Operations
Surface Water	C175	Establish water quality monitoring stations upstream and downstream of discharge points to watercourses as part of a monitoring program to ensure compliance with environmental authority conditions and relevant standards.	Operations
Surface Water Terrestrial Ecology	C176	Use coal seam gas water for dust suppression on roads or for construction and operations activities authorised in the environmental authority in accordance with the water quality parameters described in the environmental authority.	Construction Operations
Surface Water	C177	Minimise the inventory of hazardous materials stored on site.	Operations
Surface Water	C178	Decommission infrastructure in such a manner that it will not adversely affect overland or flood flows and in accordance with relevant legislation and regulations.	Decommissioning
Aquatic Ecology Terrestrial Ecology	C179	Ensure all relevant personnel are made aware of the location and extent of weed infestations in the vicinity of the work area and the risks involved in moving from one site or property to another.	Planning and Design Construction Operations Decommissioning
Aquatic Ecology Terrestrial Ecology	C180	Do not wash down vehicles in watercourses.	Planning and Design Construction Operations Decommissioning
Aquatic Ecology	C181	Avoid the use of vehicles and machinery in the vicinity of or within watercourses and riparian zones, wherever practicable.	Planning and Design Construction Operations Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Aquatic Ecology	C182	Locate self-contained portable toilet facilities at designated work sites at appropriate distances from watercourses, ensuring that they are accessible to all operations personnel and are regularly maintained. Dispose of sewage and greywater from toilet facilities via a chemical treatment system or transport to a municipal sewage plant using a licensed contractor.	Planning and Design Construction Operations Decommissioning
Aquatic Ecology	C183	Where appropriate, design ground disturbance works to minimise the need for cut-and-fill earthworks.	Planning and Design
Aquatic Ecology	C184	Design watercourse crossings to enable passage of flows resulting from a 1 in 100 year average recurrence interval flood event, as a minimum.	Planning and Design
Aquatic Ecology	C185	Design the width of the pipeline ROWs to be narrower at watercourse crossings, where practicable.	Planning and Design
Aquatic Ecology	C186	Co-locate pipelines into one watercourse crossing corridor, where practicable.	Planning and Design
Aquatic Ecology Terrestrial Ecology	C187	Design washdown facilities to ensure that runoff is contained on site and does not transfer weed seeds, spores or infected soils to adjacent areas. Treat or dispose of washdown solids in a registered landfill.	Planning and Design
Aquatic Ecology Terrestrial Ecology	C188	Develop a declared weed and pest management plan in accordance with the Petroleum Industry - Pest Spread Minimisation Advisory Guide (Biosecurity Queensland, 2008). Undertake species-specific management for identified key weed species at risk of spread through project activities (mesquite, parthenium, African lovegrass and lippia). Increase weed control efforts in areas particularly sensitive to invasion. The pest management plan should include, as a minimum, training, management of pest spread, management of pest infestations and monitoring effectiveness of control measures.	Planning and Design
Aquatic Ecology	C189	Plan construction and maintenance activities to minimise movement of plant and equipment between properties or areas with weed infestations.	Planning and Design
Aquatic Ecology Terrestrial Ecology	C190	When sourcing maintenance materials, ensure that such materials as bedding sand, topsoil, straw bales and sand bags are brought to site only after it is ascertained that the materials are not contaminated with weeds and plant or animal pathogens. Request a weed hygiene declaration form from the supplier where there is possible risk of contamination in products.	Planning and Design Construction Operations Decommissioning
Aquatic Ecology Terrestrial Ecology	C191	Design gathering lines and tracks to avoid watercourses, drainage lines and riparian areas (particularly permanent watercourses or perennial aquatic habitat), where practicable.	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Aquatic Ecology	C192	Obtain all relevant permits required under the *Fisheries Act 1994* (Qld), including permits for construction of waterway barriers or disturbance of fish habitat.	Planning and Design
Aquatic Ecology Terrestrial Ecology	C193	Identify declared weeds during the preconstruction clearance survey.	Construction
Aquatic Ecology	C194	Avoid transport of equipment across watercourses unless an appropriate crossing that minimises disturbance to the watercourse bed and banks and to riparian vegetation is available.	Construction
Aquatic Ecology	C195	Construct watercourse crossings in a manner that minimises sediment release to watercourses, stream bed scouring, obstruction of water flows and disturbance of stream banks and riparian vegetation (i.e., the crossing location will be at a point of low velocity, and straight sections will be targeted, with the pipeline or road orientated as near to perpendicular to water flow as practicable).	Construction
Aquatic Ecology	C196	Ensure flumes used to construct watercourse crossings are suitably sized to maintain flows and enable fish passage. Protect the bed of the watercourse from scouring at the site of the downstream discharge of any flumes or pipes.	Construction
Aquatic Ecology	C197	Store stockpiled, cleared vegetation away from watercourses or drainage lines.	Construction
Aquatic Ecology	C198	If diversion of watercourse flows using pumps is required, screen the pump intakes with mesh to protect aquatic life.	Construction
Aquatic Ecology	C199	Limit the use of herbicides in the vicinity of watercourses or within riparian zones. Use non-toxic, non-persistent (i.e., biodegradable) herbicides to treat weeds, except on properties where organic or biodynamic farming is practised, for which the method of weed treatment is to be agreed with the landowner.	Operations
Landscape and Visual Amenity	C200	Adhere to the following mitigations specific to Landscape Type I: forested steep hills, Captains Mountain (comprising Captains Mountain, Commodore Peak and Mt Domville): • Avoid locating production facilities adjacent to and on Captains Mountain. • Avoid locating production wells and gathering systems on the forested steep slopes and ridges of Captains Mountain. • Avoid ROWs perpendicular to the slope when locating production wells and gathering systems adjacent to the forested steep hills of Captains Mountain.	Planning and Design Construction

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Groundwater	C201	Develop and continually maintain the coal seam gas water management strategy throughout the project life to optimise the investigation and implementation of the potential coal seam gas water management options in alignment with the overall project development.	Planning and Design
Waste Management	C202	Contain coal seam gas water in dams for treatment through reverse osmosis.	Construction Operations Decommissioning
Waste Management	C203	Demonstrate the requirement for disposal when beneficial uses are unavailable, including details of the control measures that will be implemented.	Operations
Groundwater	C204	Maintain water balance models for long-term planning and management of coal seam gas water. Review and update modelling in alignment with the production-forecasting schedule.	Planning and Design Construction Operations Decommissioning
Surface Water	C205	Identify strategies to minimise coal seam gas water surface storage and to promote increased efficiency.	Planning and Design
Preliminary Hazard and Risk	C206	Subject each dam to separate approvals by the regulating authority. Each approval will require the incorporation of general and specific controls to avoid, mitigate or manage threats associated with flooding.	Planning and Design
Preliminary Hazard and Risk	C207	Implement the dam operating plan.	Inspection and Monitoring
Preliminary Hazard and Risk	C208	To reduce mosquito breeding in dams, dams and dam inner banks will be maintained so that they are as free of vegetation as practicable.	Construction Operations
Preliminary Hazard and Risk	C209	Use an independent, suitably qualified, third party to certify that dams meet the dam design plan.	Planning and Design
Waste Management	C210	Have in place a system for the collection and proper disposal of any contaminants that move beyond the bounds of the containment system of brine dams.	Planning and Design
Preliminary Hazard and Risk	C211	Design and size dams to account for predicted flood conditions.	Planning and Design
Terrestrial Ecology	C212	Inspect food scrap bins and exclusion fences to ensure they are properly operated and maintained.	Inspection and Monitoring
Preliminary Hazard and Risk	C213	Line banks of dam with an impervious lining.	Construction
Terrestrial Ecology	C214	Design dams to have an egress (escape point) for wildlife.	Construction
Preliminary Hazard and Risk	C215	Establish overflow and operational controls in accordance with the dam operating plan.	Operations

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Preliminary Hazard and Risk	C216	Inspect and maintain dam integrity.	Operations
Terrestrial Ecology	C217	Avoid the following areas: • Wondul Range National Park, Bendidee National Park and Lake Broadwater Conservation Park (Category A ESAs). • Chinchilla Sands Local Fossil Fauna Site. • 'Critically endangered' EPBC Act communities within the project development area (REs 11.3.21, 11.3.24, 11.8.2a) including three natural grassland road reserves (Dalby Kogan, Dalby St George and Dalby Cecil Plains).	Planning and Design
Terrestrial Ecology	C218	Aim to avoid: • Additional national- and state-listed communities: Brigalow (REs 11.3.1, 11.4.3, 11.4.10, 11.9.5, 11.9.6), Semi-evergreen vine thickets (REs 11.9.4a, 11.8.3), Weeping Myall Woodlands, and Coolibah-Blackbox Woodlands (RE 11.3.3). • Category B ESAs. • Category C ESAs, including Gurulmundi State Forest, Bendidee State Forest, Binkey State Forest and Barakula State Forest. • Wyaga-Kindon Ooline populations. • Stock routes and state or bioregional wildlife corridors. • Essential and core habitat (supporting listed wildlife species). • State forests and resources reserves. • State-listed 'of concern' regional ecosystems.	Planning and Design
Terrestrial Ecology	C219	Where avoidance is not possible, implement an offset strategy approved by a relevant government agency and comply with reporting conditions of an offset plan.	Planning and Design
Terrestrial Ecology	C220	Conduct preconstruction clearance surveys to identify any additional areas that may need to be avoided.	Planning and Design
Terrestrial Ecology	C221	Design facilities to ensure natural surface water flows are not impounded, e.g., by installing culverts on roads and stormwater diversion ditches around production facilities.	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Waste Management	C222	Arrow will carry out waste audits and reporting for waste generating activities to: • Provide waste data to enable continuous improvement of waste avoidance, reduction and management measures throughout the project life. • Assess whether action is required to fulfil set waste objectives and management. • Assess the adequacy of proposed mitigation measures and identify where mitigation measures need revision or additional measures. • Monitor potential environmental impacts that will enable positive action to be implemented in case of incidents or accidents related to waste activities. • Provide actual waste management results by comparing predicted impacts and mitigation measures.	Construction Operations Decommissioning
Terrestrial Ecology Preliminary Hazard and Risk	C223	Develop fire plans for production facilities.	Planning and Design Operations
Terrestrial Ecology	C224	Develop threatened species management procedures as and when project activities are identified as likely to impact upon individuals.	Planning and Design
Terrestrial Ecology	C225	Avoid construction activities in waterbodies frequented by migratory species.	Planning and Design
Waste Management	C226	Store liquid waste generated (other than coal seam gas water and sewage) and periodically remove it for disposal or recycling.	Construction Operations Decommissioning
Terrestrial Ecology	C227	Manage potential impacts on Category A, B and C ESAs through implementation of the buffers proposed in Table 2.	Construction
Terrestrial Ecology	C228	Ensure boundaries are clearly marked for site-specific sensitive areas that require avoidance.	Construction
Terrestrial Ecology	C229	Ensure relevant workers, including contract plant and machinery operators, are made aware of the location of significant remnant vegetation and buffers and are guided by qualified personnel when clearing is undertaken.	Construction
Terrestrial Ecology	C230	Demarcate buffers and inform workers and machinery operators of buffer locations when working within the vicinity of national- and state-listed communities and areas identified for potential avoidance.	Construction
Terrestrial Ecology	C231	Minimise the width of construction ROW within areas of sensitivity to the greatest extent practicable without compromising the safety of workers.	Construction

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Terrestrial Ecology	C232	Conduct preconstruction clearance surveys and include as a minimum: • Vegetation mapping at a scale suitable for site-specific planning. • Identification of core habitats and listed species. • Identification of site-specific sensitive areas that require avoidance or buffer areas.	Construction
Terrestrial Ecology	C233	Minimise the time a trench is left open. Construct exit points when construction is within 1 km of native vegetation, using appropriate material. Provide fauna refuges, such as sawdust-filled bags, regularly through areas of high fauna activity.	Construction
Terrestrial Ecology	C234	Retain habitat trees, where practicable.	Construction
Terrestrial Ecology	C235	Assess trees prior to felling for potential nesting hollows. If identified, fell trees in the presence of a qualified fauna spotter and roll them so that the hollows are facing upwards, allowing fauna to escape.	Construction
Terrestrial Ecology	C236	Identify key koala trees (*Eucalyptus tereticornis* and *Eucalyptus populnea*), and visually inspect prior to clearing to ensure that they are free of koalas. If koalas are located, the tree should be retained until the animals have moved on, typically overnight.	Construction
Terrestrial Ecology	C237	Use appropriately trained personnel or a wildlife handler to capture injured wildlife, where possible. If further action is required, consult with a qualified vet to determine appropriate action.	Construction
Terrestrial Ecology	C238	Retain woody debris, logs and rocks for use in rehabilitation. These should be spread over part or all of the corridor or, as a minimum, piled along the edge of the cleared corridor to provide refuge for crossing fauna.	Construction
Terrestrial Ecology	C239	Translocate or propagate significant species where it is deemed necessary for use during rehabilitation or in offsets in accordance with relevant legislation.	Construction
Terrestrial Ecology	C240	Construct production wells, gathering lines and access tracks within cleared areas, where practicable, with the aim of avoiding remnant vegetation and high-value regrowth.	Construction
Terrestrial Ecology	C241	Fell trees away from existing stands where practicable. Where trees unavoidably fall into a stand, leave trees in situ to emulate natural tree fall and provide habitat for ground-dwelling species, where practicable.	Construction
Terrestrial Ecology	C242	Avoid damaging standing trees not identified for removal. Limit the scraping of standing tree trunks and breaking of limbs by equipment as far as practicable.	Construction

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Terrestrial Ecology	C243	Erect fauna-exclusion fences around project dams.	Construction
Terrestrial Ecology	C244	Consider the preconstruction clearance survey baseline characterisation when rehabilitating project sites.	Decommissioning
Terrestrial Ecology	C245	Implement site planning, preparation and management requirements in accordance with a developed and approved decommissioning and rehabilitation plan.	Decommissioning
Terrestrial Ecology	C246	Decommission the pipeline corridors in a manner that minimises potential impacts on the environment.	Decommissioning
Terrestrial Ecology	C247	Identify areas for rehabilitation.	Decommissioning
Terrestrial Ecology	C248	Prioritise areas for rehabilitation based on the preconstruction clearance survey baseline characteristics.	Decommissioning
Terrestrial Ecology	C249	Where not possible to avoid Bendidee State Forest (which provides habitat for the 'endangered' bull oak jewel butterfly), conduct activities in predisturbed areas following the development and implementation of a bull oak jewel butterfly management plan with regard to the existing recovery plan (Lundie-Jenkins & Payne, 2000).	Planning and Design
Terrestrial Ecology	C250	Advise, through procedures and plans, on requirements for rehabilitation in identified areas that are no longer in use.	Decommissioning
Terrestrial Ecology	C251	Reinstate self-supporting drainage lines.	Decommissioning
Terrestrial Ecology	C252	Inspect rehabilitation areas after decommissioning for regrowth similar to the surrounding environment.	Decommissioning
Terrestrial Ecology	C253	Select plant species for the purposes of rehabilitation that are specific to the original ecosystem and of local provenance, wherever practicable.	Decommissioning
Terrestrial Ecology	C254	Implement noise control techniques in accordance with the noise and vibration commitments and standard industry noise suppression techniques.	Construction Operations Decommissioning
Terrestrial Ecology	C255	Minimise light spill from project activities to reduce disturbance to nocturnal fauna.	Construction Operations Decommissioning
Terrestrial Ecology	C256	Prohibit disturbance or harassment of wildlife and the unauthorised collection of flora and forest products.	Construction Operations Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Waste Management	C257	Dispose of waste that cannot be reused or recycled at appropriately licensed facilities.	Construction Operations Decommissioning
Terrestrial Ecology	C258	Dispose of food scraps in large skips or bins that prevent animal access. Empty these storage devices regularly in a manner that does not involve disposal to onsite trenches or waste dumps.	Construction Operations Decommissioning
Terrestrial Ecology	C259	Train field personnel to identify key pest species and to maintain constant vigilance for weeds and pest fauna species throughout the project life to ensure early detection and intervention.	Construction Operations Decommissioning
Terrestrial Ecology	C260	Implement speed limits on project-controlled roads to reduce the potential for vehicle collisions with wildlife.	Construction Operations Decommissioning
Terrestrial Ecology	C261	Install and maintain appropriate sediment and erosion control structures at work sites.	Construction Operations Decommissioning
Landscape and Visual Amenity	C262	Use shrouded, downcast lighting to minimise spill and restrict it to the minimum required for safety and security. Design lighting in accordance with AS 4282-1997, Control of the Obtrusive Effects of Outdoor Lighting (Standards Australia, 1997).	Planning and Design
Landscape and Visual Amenity	C263	Co-locate facilities where practicable and design infrastructure layouts to minimise the footprint (taking into consideration the elements that contribute to landscape character) to reduce visibility of the facilities.	Planning and Design
Landscape and Visual Amenity	C264	Site each production facility in the landscape of lowest sensitivity, where practicable, such as next to existing industrial developments or existing coal seam gas facilities.	Planning and Design
Landscape and Visual Amenity	C265	Avoid visually sensitive locations and landscapes when siting facilities, where practicable. Seek backdrops when siting facilities to protect the skyline in distant views. Avoid siting facilities within view of sensitive viewpoints, particularly the bird hide and camping area at Lake Broadwater, Captains Mountain, Jimbour House, the Cunningham Highway, towns, schools and private residences.	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Landscape and Visual Amenity	C266	When siting production facilities, maintain the maximum distance practicable from, and minimise visual disturbance to, the most sensitive visual receptors. Seek to maintain at least 500 m separation from sensitive viewpoints, particularly tourist trails, roads, residences and built-up areas.	Planning and Design
Landscape and Visual Amenity	C267	Hide or screen production facilities using natural landscape features or planted native vegetation barriers, where appropriate. Avoid removal of mature trees and other woodland features that screen views to facilities. Establish screening barriers using endemic species in advance of construction of the facilities.	Planning and Design
Landscape and Visual Amenity	C268	Integrate facilities into the landscape setting where screening is not practicable, considering building and structure colour, texture and lines. Use matt and low-glare finishes two shades darker than the prevalent shading of the site, having regard to sun angles throughout the day and year and to the harvesting of crops, where practicable. Consider camouflage paints or finishes in highly sensitive landscapes.	Planning and Design
Landscape and Visual Amenity	C269	Consult with potentially impacted visual receptors (landowners and neighbours) in locating facilities. Seek to reduce the form and shape of facilities visible by landowners and residents.	Planning and Design
Landscape and Visual Amenity	C270	Conduct planned maintenance flaring during daylight hours to minimise light spill, where practicable.	Planning and Design
Landscape and Visual Amenity	C271	Where it is not practicable to screen or integrate a facility into the landscape, consider designing the facility to be a feature in the landscape, taking into consideration the form, texture and arrangement of buildings and structures.	Planning and Design
Landscape and Visual Amenity	C272	When clearing vegetation, seek to avoid creating gaps in stands or patches and to avoid isolating parcels of remnant vegetation from more continuous tracts.	Planning and Design
Landscape and Visual Amenity	C273	Plan the movement of equipment and materials during times of least visual impact (i.e., work day start and end), where practicable.	Construction
Landscape and Visual Amenity	C274	Target dry weather periods when undertaking construction in sensitive landscape areas (e.g., waterway crossings), where feasible, to minimise visual impacts due to sedimentation and erosion.	Construction
Landscape and Visual Amenity	C275	Locate topsoil and spoil mounds in visually unobtrusive locations, where practicable.	Construction

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Landscape and Visual Amenity	C276	Incorporate excess spoil from site excavations into bunding at the base of a planted vegetation screening barrier to increase the overall height of the barrier.	Construction
Landscape and Visual Amenity	C277	Utilise landscape features and contours, where practicable, to integrate linear infrastructure (access tracks, gathering lines) into the landscape.	Construction
Landscape and Visual Amenity	C278	Minimise the length and width of roads and tracks.	Construction
Landscape and Visual Amenity	C279	Avoid roads traversing highly visible hills.	Construction
Landscape and Visual Amenity	C280	Minimise construction time near sensitive visual receptors.	Construction
Landscape and Visual Amenity	C281	Develop and implement waste management procedures in accordance with the Queensland Environmental Protection (Waste Management) Policy 2000.	Construction
Landscape and Visual Amenity	C282	Maintain visual amenity controls used to reduce landscape and visual impacts. Replace lost trees or shrubs in screening barriers to ensure they establish and maintain an effective barrier.	Operations
Landscape and Visual Amenity	C283	Remove surface infrastructure and reinstate disturbed areas as soon as practicable to predisturbance landscape characteristics or consult with landowners regarding reinstatement objectives.	Decommissioning
Roads and Transport Economics	C284	Assess and identify works required to manage the increased traffic volumes and road safety issues associated with the project in road use management plans prepared and regularly reviewed in consultation with the relevant council or the Department of Transport and Main Roads.	Planning and Design
Roads and Transport	C285	Assess and identify the need to upgrade unsealed roads or widen sealed roads where project activities and traffic will create road safety issues. Such works will be done in consultation with the relevant council (if a local government road) or DTMR (if a state road).	Planning and Design
Roads and Transport	C286	Undertake threshold assessments to determine whether upgrading of rail crossings is warranted.	Planning and Design
Roads and Transport	C287	Implement driver training and fatigue awareness for employees and contractors.	Planning and Design
Roads and Transport Preliminary Hazard and Risk	C288	Implement an in-vehicle monitoring system for project vehicles.	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Roads and Transport	C289	Schedule roster changes to avoid peak traffic times.	Planning and Design
Roads and Transport	C290	Develop project logistics plans to provide safe movement of people and materials, as well as to minimise traffic volumes.	Planning and Design
Roads and Transport	C291	Develop journey management plans in consideration of high-risk roads.	Planning and Design
Roads and Transport	C292	Use heavy-vehicle routes that avoid unsuitable bridges.	Planning and Design
Roads and Transport	C293	Where assessed necessary, provide protected turning lanes for entry to permanent facilities to address road safety issues.	Construction
Roads and Transport	C294	Ensure access driveways to project facilities and infrastructure have appropriate sight distances.	Construction
Roads and Transport	C295	Implement traffic controls, including signage (e.g., reduced speed limits, warning signs) and restrictions of movements (e.g., no travel during school bus pick-up and drop-off times).	Construction Operations Decommissioning
Roads and Transport	C296	Limit project traffic on school bus routes during pick-up and drop-off times on school days or install appropriate school bus infrastructure, e.g., signage or pull-over areas where necessary.	Construction Operations Decommissioning
Roads and Transport	C297	Make workers aware of school bus routes, as well as typical pick-up and drop-off times in the vicinity of the work sites.	Construction Operations Decommissioning
Roads and Transport	C298	Coordinate with local law enforcement for movement of heavy or oversized loads.	Construction Operations Decommissioning
Roads and Transport	C299	Implement journey management plans.	Construction Operations Decommissioning
Roads and Transport	C300	Manage project-related activities in the vicinity of existing stock routes in accordance with the Land Protection (Pest and Stock Route Management) Act.	Construction Operations Decommissioning
Noise and Vibration	C301	Where noise reduction devices are deemed necessary, ensure devices (such as mufflers, low-noise fans and possibly enclosures) are fitted and work correctly.	Planning and Design Construction Operations Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Noise and Vibration	C302	Operate equipment and handle materials in a manner that does not cause unnecessary noise. (e.g., excessive revving or dropping materials).	Planning and Design Construction Operations Decommissioning
Terrestrial Ecology	C303	Develop monitoring programs that are site specific and based on the identified risk to the conservation or maintenance of a viable population.	Inspection and Monitoring
Noise and Vibration	C304	Manage noise in accordance with the relevant environmental authority conditions. Where night-time activities are planned (10 p.m. to 6 a.m.) and are likely to exceed the prescribed noise criteria, conduct prior consultation with affected parties.	Planning and Design Construction Operations Decommissioning
Noise and Vibration	C305	Consult with those who may be affected by increased noise levels due to construction activities with particular reference to the type and timing of works.	Planning and Design Construction Operations Decommissioning
Noise and Vibration	C306	Conduct risk-based assessment or potential vibration monitoring during any construction activity that occurs within 100 m of a sensitive receptor that might be subject to vibration.	Planning and Design Construction Operations Decommissioning
Noise and Vibration	C307	Implement a grievance management system that responds to noise complaints. If necessary, undertake noise monitoring of construction activities to facilitate a response to the grievance.	Planning and Design Construction Operations Decommissioning
Roads and Transport	C308	Routinely monitor integrity and amenity on project-related roads.	Inspection and Monitoring
Noise and Vibration	C309	Preferential selection of sites in sparsely populated areas.	Planning and Design
Noise and Vibration	C310	Site-specific, detailed noise modelling of production facilities and the application of acoustic treatments where the modelled noise from facilities exceeds the established noise criteria at one or more sensitive receptors. Consideration of intrinsically quieter equipment or design of acoustic treatments such as hospital-grade exhaust systems and mufflers, or barriers and equipment housing will be given.	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Noise and Vibration	C311	Locate equipment associated with production wells and associated wellhead infrastructure at a distance of 200 m or more from a sensitive receptor.	Planning and Design
Noise and Vibration	C312	Consider the following factors prior to any blasting operations being conducted: • The type of rock and stratigraphy being blasted and any associated faulting. • The distance of the blast site from sensitive receptors. • The type, size and number of charges used. • The depth and manner in which the charge is installed. • The meteorological conditions. • Methods of controlling blast noise and vibration, such as mats or smaller blasts.	Construction
Noise and Vibration	C313	Where practicable, schedule planned flaring events (e.g., those preceding shut-down maintenance) for the period between 6 a.m. and 10 p.m.	Operations
Roads and Transport	C314	Monitor compliance with the project's road safety requirements through regular review of reports generated by the in-vehicle monitoring system.	Inspection and Monitoring
Roads and Transport	C315	Conduct regular safety inspections of project vehicles.	Inspection and Monitoring
Economics	***C316***	***Encourage contractors engaged by the project to utilise Australian and Queensland Government skills and training programs where possible, including the Australian Apprenticeship Program. This should include providing information about and developing awareness of government incentives and programs among all contractors engaged and directing contractors to relevant agencies.***	***Construction*** ***Operations*** ***Decommissioning***
Noise and Vibration	C317	Implement monitoring and inspection of avoidance, mitigation and management measures to ensure the residual impacts continue to be negligible throughout the lifetime of the project.	Inspection and Monitoring
Noise and Vibration	C318	If directed by the administering authority in response to a valid noise complaint, undertake noise monitoring in accordance with the DERM (2000) Noise Measurement Manual.	Inspection and Monitoring
Economics	***C319***	***Continue to support programs such as the CSG/LNG Industry Training Program to develop coal seam gas industry skills in the local workforce.***	***Construction*** ***Operations*** ***Decommissioning***

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Economics	***C320***	***Collaborate with state government, local council, local industry, industry organisations, and coal seam gas proponents to develop programs and strategies aimed at addressing issues of skill retention and back-filling vacancies as a result of labour being drawn to the Surat Gas Project from other sectors.***	***Construction Operations Decommissioning***
Economics	***C321***	***Consider building construction worker camps prior to construction of production facilities to minimise any impacts on property markets during early phase construction works.***	***Planning and Design***
Economics	***C322***	***Accommodate workers required to construct camps in temporary accommodation wherever practicable.***	***Planning and Design***
Social	***C323***	***The social impact management plan details the mitigation measures that will be implemented by Arrow through the life of the project.***	***Planning and Design***
Indigenous Cultural Heritage	C324	Inspect known Indigenous sites identified as having the potential for being impacted by the project and subsequently acknowledged for avoidance, in accordance with the relevant approval and permit conditions including the cultural heritage management plan.	Inspection and Monitoring
Non-Indigenous Cultural Heritage	C325	Inspect known non-Indigenous sites identified as having the potential for being impacted by the project and subsequently acknowledged for avoidance, in accordance with the relevant approval and permit conditions including the cultural heritage management plan.	Inspection and Monitoring
Preliminary Hazard and Risk	C326	Schedule inspections and develop a monitoring program to ensure that the safety management systems are functioning properly and that it is appropriate to the hazards identified.	Inspection and Monitoring
Economics	***C327***	***Examine options for establishing a local cooperative service or a network or alliances to connect local businesses and enable collaboration in meeting service supply requirements of the coal seam gas industry.***	***Construction Operations Decommissioning***
Economics	***C328***	***Inform local council, economic development organisations, the Industry Capability Network and state government of goods and services required by the Surat Gas Project that are not currently available or underserviced from within the Darling Downs.***	***Construction Operations Decommissioning***
Economics	***C329***	***Where proponent-owned land is available and it is suitable and safe to do so, consider leasing to farmers to support agricultural production on that land.***	***Construction Operations Decommissioning***
Waste Management	C330	Store putrescible solid waste in covered containers to prevent odours, public health hazards and access by fauna.	Construction Operations Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Economics	*C331*	*Collaborate with state government and local councils to assess the suitability of current planning arrangements to handle a likely increase in demand for industrial and commercial developments and to help them position themselves to reduce response times to planning applications, particularly as the number of planning applications is likely to increase.*	*Construction Operations Decommissioning*
Economics	*C332*	*Collaborate with the Queensland Government and other proponents of major projects being developed in the region to identify peak periods when one or more proponents will require common resources simultaneously, to allow adequate and appropriate planning.*	*Construction Operations Decommissioning*
Social	*C333*	*Continue to provide state and local government departments responsible for educational, health and other social infrastructure with forecasts of workforce numbers and projected families to assist in their future service planning. Provide this information in an agreed format that will allow these departments to plan for cumulative population change.*	*Construction Operations Decommissioning*
Economics Social	*C334*	*Encourage local population growth where it is desired and planned for, enforcing the expectation that non-local operations employees will relocate to the project development area as there are no plans to establish fly-in, fly-out or drive-in, drive-out operations.*	*Construction Operations*
Social	*C335*	*Provide information and Australian cultural awareness briefing for overseas workers and their families on how to undertake day-to-day activities; for example, provide advice on banking and shopping.*	*Construction Operations*
Social	*C336*	*Provide opportunities for qualified females and people from other underrepresented groups.*	*Construction Operations Decommissioning*
Social	*C337*	*Implement an Operations Workforce Policy preferring local residence for operations staff.*	*Operations*
Social	*C338*	*Continue with training and employment programs for local school leavers.*	*Construction Operations*
Social	*C339*	*Provide vocational and trade training to offer the opportunity to gain nationally recognised qualifications.*	*Construction Operations Decommissioning*
Social	*C340*	*Provide specialist training for each employee in their area of expertise, to ensure employees' skills are up to date.*	*Construction Operations Decommissioning*
Social	*C341*	*Provide a graduate development program offering a planned development path for newly degree-qualified employees that allows them to become professionals in their chosen disciplines.*	*Construction Operations*

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Social	*C342*	*Offer scholarships to first-year university students who want to pursue a career in the coal seam gas industry.*	*Construction* *Operations*
Social	*C343*	*Design vacation employment for undergraduates in their penultimate year of study, that provides 12 weeks' paid employment within the company.*	*Construction* *Operations*
Social	*C344*	*Provide school-based training for year 11 and 12 students in Dalby and Moranbah who want to gain vocational qualifications at the Certificate II level.*	*Construction* *Operations*
Social	*C345*	*Provide medium- and long-term contract position opportunities.*	*Construction* *Operations* *Decommissioning*
Social	*C346*	*Facilitate opportunities for workers to transition to other project phases (e.g., facility construction to facility operation).*	*Construction* *Operations* *Decommissioning*
Social	*C347*	*Consider flexible shift hours and rosters to encourage participation of underemployed sectors (e.g., family-friendly shift arrangements for locally-based operations workforce).*	*Construction* *Operations* *Decommissioning*
Social	*C348*	*Continue to ensure that equal opportunity policies are in place addressing ethnicity, gender or disability.*	*Construction* *Operations* *Decommissioning*
Social	*C349*	*Implement a hierarchy of preferred employment for employees and contractors based on home or source location, with the highest preference for those living within the study area.*	*Construction* *Operations* *Decommissioning*
Social	*C350*	*Liaise with local employment and education or training institutions (e.g., Southern Queensland Institute of TAFE) on training and skills development programs, to identify workers within the region who have the ability to obtain qualifications based on recognition of prior learning.*	*Construction* *Operations*
Economics *Social*	*C351*	*Identify the range of skills required for the labour force and undertake a gap analysis against skills availability. Where gaps exist, in consultation with Energy Skills Queensland, Manufacturing Skills Queensland and Construction Skills Queensland, identify the method or strategy through which these skills gaps will be filled (e.g., drive-in, drive-out options; training).*	*Construction* *Operations*
Social	*C352*	*Undertake regular review of labour requirements and current skills sets to ensure that training strategies meet these needs.*	*Construction* *Operations* *Decommissioning*
Social	*C353*	*Continue to build on existing training and skills development programs, including apprenticeships, scholarships, vocational training, support for work readiness programs and pretrade training.*	*Construction* *Operations* *Decommissioning*

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Social	*C354*	*Participate in existing state and federal government employment and training programs (e.g., Critical Skills Investment Fund, Productivity Places Program, Indigenous Cadetship Support, Indigenous Employment Program, Skilling Queenslanders for Work Initiative).*	*Construction Operations Decommissioning*
Social	*C355*	*Work with Skills Queensland to deliver work readiness and skills development training programs for vulnerable local people, such as the long-term unemployed or underskilled, to assist them to gain employment.*	*Construction Operations Decommissioning*
Social	*C356*	*Notify local people of employment opportunities through recruitment websites, local advertising, local recruitment agencies and information sessions.*	*Construction Operations Decommissioning*
Social	*C357*	*To increase employment and enterprise opportunities for Indigenous people, develop an Indigenous participation policy and implementation plan that identifies strategies relating to Indigenous employment and enterprise opportunities.*	*Construction Operations Decommissioning*
Economics Social	*C358*	*Develop a local industry participation plan, in consultation with the Department of Employment, Economic Development and Innovation, which will be consistent with the Australian Industry Participation Plan.*	*Construction Operations Decommissioning*
Economics Social	*C359*	*Continue to use the Industry Capability Network database for potential suppliers in the area.*	*Construction Operations Decommissioning*
Social	*C360*	*Develop and maintain a business vendor register.*	*Construction Operations Decommissioning*
Economics Social	*C361*	*Organise local supplier information sessions to inform business of Arrow's development plans, tender opportunities for local business and how to complete tender requirements.*	*Construction Operations Decommissioning*
Economics Social	*C362*	*Provide industry support organisations with the information that they require to assist local businesses to improve their skills base and respond to project needs.*	*Construction Operations Decommissioning*
Economics Social	*C363*	*Collaborate with the existing job referral services set up by other proponents to make available information on positions vacant in local businesses with similar trade or skills requirements. This will allow applicants to choose between industry and non-industry jobs.*	*Construction Operations Decommissioning*

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Social	*C364*	*Continue regular consultation with landowners through such mechanisms as the Intensively Farmed Land Committee, which provides a forum for Arrow and landowners to identify and discuss issues and potential solutions relating to the construction and operation of coal seam gas infrastructure.*	*Construction Operations Decommissioning*
Social	*C365*	*Access land only in accordance with DEEDI's (2010b) Land Access Code and in accordance with Section 24A of the Petroleum and Gas (Production and Safety) Act 2004.*	*Construction Operations Decommissioning*
Social	*C366*	*Consult with councils and the regional community consultative committee for their views on which social, community or recreational infrastructure in Western Downs region is being directly impacted by the project and the extent of this. Liaise with the relevant body to coordinate efforts across all proponents and identify opportunities that may potentially ease or mitigate impacts.*	*Construction Operations Decommissioning*
Social	*C367*	*Expand the opportunities available for the region under the Brighter Futures program and the Social Investment Plan.*	*Construction Operations Decommissioning*
Social	*C368*	*Encourage resident employees and contractors to integrate and become involved in their local communities (e.g., volunteer work, participation in clubs and organisations).*	*Construction Operations Decommissioning*
Economics Social	*C369*	*Engage closely with landowners to minimise impacts on land and existing agricultural activities.*	*Construction Operations Decommissioning*
Social	*C370*	*Communicate with landowners at least three months before any activities take place on private property.*	*Construction Operations Decommissioning*
Social	*C371*	*Continue to provide Community Officers, Land Liaison Officers and the 1800 free-call number for people to ask questions or raise concerns about Arrow's activities.*	*Construction Operations Decommissioning*
Social	*C372*	*Provide medical assistance with opportunities to extend to wider communities, where possible.*	*Construction Operations Decommissioning*
Social	*C373*	*Continue to provide a medivac service to respond to various community or project-related emergency situations.*	*Construction Operations Decommissioning*

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Social	***C374***	***Develop traffic management plans that include:*** • ***Preferred routes for travel and measures to reduce risk of accidents.*** • ***Road safety awareness initiatives for project personnel and local residents.*** • ***Procedure for notifying council and road authorities prior to any traffic disruptions or road closures.*** • ***Road management strategy to manage any increased road maintenance requirements imposed by the project.***	***Construction*** ***Operations*** ***Decommissioning***
Waste Management	C375	Maintain a waste stream inventory identifying the type, classification, storage, transport and disposal requirements for the waste.	Inspection and Monitoring
Social	***C376***	***Continue to develop and implement Arrow's site-selection process for project facilities (such as integrated processing facilities and TWAFs) that considers the availability and capacity of existing utilities. Consult with councils and other utility providers during the project facility design process to understand existing capacity, and consider installing stand-alone utilities as required, to reduce demand on community utilities.***	***Planning and Design*** ***Construction***
Social	***C377***	***Provide developer contribution and head works charges for infrastructure.***	***Construction*** ***Operations*** ***Decommissioning***
Economics ***Social***	***C378***	***Provide TWAFs for non-resident construction workforce.***	***Construction***
Economics ***Social***	***C379***	***Prior to decommissioning the TWAFs, consider their use during the operations phase to ease housing demand in towns.***	***Construction*** ***Operations***
Economics ***Social***	***C380***	***Continue to collaborate with other proponents in the region and identify opportunities to share temporary accommodation where possible for the construction and operations workforces.***	***Construction*** ***Operations***

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Economics *Social*	*C381*	*Develop an integrated housing strategy that considers:* • *Continued participation in initiatives set out in the Major Resource Projects Housing Policy, Draft Resource Town Housing Affordability Strategy, and the proposed Western Downs Regional Council housing affordability strategy, as well as implementation of the Surat Basin Future Directions Statement (DEEDI, 2010a).* • *Support the intent of the Surat Basin Regional Planning Framework and work with key stakeholders (i.e., state government, councils, Urban Land Development Authority, building industry, realtors and other project proponents) to identify cumulative housing impacts and to ensure that developable land is brought to market to meet demand.* • *Providing incentives to private investors and developers of accommodation, such as through head leasing agreements or rental guarantees.* • *Contributing to a government-sponsored community and affordable housing initiative.* • *Housing 'rent to buy scheme' option for workers.*	*Construction* *Operations* *Decommissioning*
Economics *Social*	*C382*	*Encourage workers relocating to the area to move to towns better suited to growth by:* • *Providing accommodation advice services for workers and their families.* • *Providing work shuttle buses between work site and towns with an employment pool (e.g., Toowoomba, Dalby, Cherbourg).*	*Construction* *Operations* *Decommissioning*
Economics *Social*	*C383*	*Support government reviews on housing availability and affordability and on impacts on low-income groups.*	*Construction* *Operations* *Decommissioning*
Social	*C384*	*Have visiting workers stay in TWAFs rather than in hotel or motel accommodation, where possible.*	*Construction* *Operations* *Decommissioning*
Social	*C385*	*Avoid reserving hotel and motel accommodation for long blocks of time without a demonstrable need.*	*Construction* *Operations* *Decommissioning*
Social	*C386*	*Inform the tourist body and other peak business bodies of anticipated time frames for peak temporary accommodation demand.*	*Construction* *Operations* *Decommissioning*
Social	*C387*	*Liaise with all levels of the Queensland Police Service regarding vehicle movement.*	*Construction* *Operations* *Decommissioning*

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Waste Management	C388	Inspect waste storage locations to ensure waste management measures are being adhered to.	Inspection and Monitoring
Social	***C389***	***Maintain an emergency management plan that will cover joint emergency response planning in collaboration with emergency service providers.***	***Construction Operations Decommissioning***
Social	***C390***	***Proceed with implementation of the community engagement program and other measures to notify the community of project activities and to identify and address community issues.***	***Construction Operations Decommissioning***
Social	***C391***	***Publicly release information on how environmental impacts are being offset by the project.***	***Construction Operations Decommissioning***
Social	***C392***	***Ensure progress of workplace health and safety is communicated to the public and the regional community consultative committee as part of Arrow's annual sustainability reporting.***	***Construction Operations Decommissioning***
Social	***C393***	***Have Land Liaison Officers and Community Officers available to discuss landowner and residents' concerns.***	***Construction Operations Decommissioning***
Social	***C394***	***Develop and implement mitigation measures that address the potential impacts relating to air and noise emissions through environmental management plans.***	***Construction Operations Decommissioning***
Social	***C395***	***Enforce a workforce Code of Conduct including disciplinary procedures, and a policy on appropriate worker behaviour and interaction with the public.***	***Construction Operations Decommissioning***
Indigenous Cultural Heritage	C396	Prepare CHMPs or equivalent agreements in accordance with the provisions of the Aboriginal Cultural Heritage Act.	Planning and Design Construction Operations
Indigenous Cultural Heritage	C397	Complete comprehensive initial cultural heritage assessments where disturbance is proposed (noting that this will be staged in line with proposed development schedules), with direct input from relevant Aboriginal parties.	Planning and Design Construction Operations
Indigenous Cultural Heritage	C398	Assess the results of the initial cultural heritage assessments in collaboration with the Aboriginal parties and develop a program for the management of all significant Aboriginal areas and objects to be affected by the project. Include management measures required prior to construction and those required throughout the life of the project.	Planning and Design Construction Operations

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Indigenous Cultural Heritage	C399	Commission high-order constraints papers from Aboriginal parties to identify places of Aboriginal cultural heritage significance. Ensure avoidance of these places is considered during detailed design. Ensure that operations gives effect to the avoidance principle as enunciated in the Aboriginal Cultural Heritage Act.	Planning and Design Construction Operations
Indigenous Cultural Heritage	C400	Maintain a GIS database of sites of Indigenous cultural heritage that are known or found during the course of investigations and works (where Aboriginal parties allow the listing of the sites).	Planning and Design Construction Operations
Indigenous Cultural Heritage	C401	Obtain all necessary permits and approvals prior to the commencement of works.	Planning and Design Construction Operations
Indigenous Cultural Heritage	C402	Ensure site inductions provide cultural heritage awareness for places and objects (to avoid) and the appropriate procedures to follow should there be any new discoveries.	Planning and Design Construction Operations
Non-Indigenous Cultural Heritage	C403	Avoid known cultural heritage sites, where practicable, through site selection.	Planning and Design Construction Operations
Non-Indigenous Cultural Heritage	C404	Develop a 'chance finds' procedure for the discovery of unknown sites during construction as part of the cultural heritage management plan. This should include a stop work requirement on initial discovery, appropriate reporting and recording, and such management measures as avoidance, salvage or destruction.	Planning and Design Construction Operations
Non-Indigenous Cultural Heritage	C405	Develop a cultural heritage management plan in consultation with the Queensland Heritage Office prior to commencement of ground disturbance works that will mitigate and manage potential impacts on non-Indigenous cultural heritage sites.	Planning and Design Construction Operations
Non-Indigenous Cultural Heritage	C406	Conduct preconstruction clearance surveys of sites to identify the presence of heritage sites.	Planning and Design Construction Operations
Non-Indigenous Cultural Heritage	C407	Develop site-specific cultural heritage management plans in consultation with the Queensland Heritage Office should construction be planned within 100 m of listed heritage sites.	Planning and Design Construction Operations

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Non-Indigenous Cultural Heritage	C408	Consult with the local community regarding the management of threatened historic sites and places.	Planning and Design Construction Operations
Non-Indigenous Cultural Heritage	C409	Incorporate cultural heritage awareness into site induction procedures, including information on heritage values of the region, legal obligations and implementation of the 'chance finds' procedure.	Planning and Design Construction Operations
Non-Indigenous Cultural Heritage	C410	Record and report unknown sites identified during construction as chance finds. The cultural heritage management plan will include all measures for managing the discovery of chance finds.	Planning and Design Construction Operations
Waste Management	C411	Contain all waste fluids and muds resulting from drilling activities in properly lined dams or storage tanks for in situ treatment or disposal.	Construction Operations Decommissioning
Non-Indigenous Cultural Heritage	C412	Notify the Queensland Heritage Office if any cultural heritage sites or items of significance are uncovered during construction.	Planning and Design Construction Operations
Non-Indigenous Cultural Heritage	C413	Undertake archaeological assessment by a qualified heritage practitioner if cultural heritage sites or artefacts are uncovered during construction.	Planning and Design Construction Operations
Non-Indigenous Cultural Heritage	C414	Maintain a database of all sites where non-Indigenous cultural heritage is known or found during the course of investigations and works.	Planning and Design Construction Operations
Non-Indigenous Cultural Heritage	C415	Take particular care when working in areas where significant heritage places are located within 500 m of proposed wells, pipelines or other infrastructure.	Planning and Design Construction Operations
Preliminary Hazard and Risk	C416	Prepare project safety management plans for the construction, operations and decommissioning of the infrastructure that form part of the present development.	Planning and Design
Preliminary Hazard and Risk	C417	Implement Arrow's health, safety and environmental management system for all activities and phases of development.	Planning and Design Construction

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Preliminary Hazard and Risk	C418	Conduct appropriate safety reviews during design of new and modified facilities, including the use of hazard and risk assessment processes. Base safety reviews on well-recognised methodologies, e.g., hazard and operability studies and AS 2885 (Standards Australia, 2007) risk assessment (safety management studies).	Planning and Design
Preliminary Hazard and Risk	C419	Select locations for project infrastructure with full consideration of and allowance for the minimum buffer zones indicated by the quantitative risk assessment.	Planning and Design
Preliminary Hazard and Risk	C420	Design and construct project infrastructure and facilities in accordance with applicable codes and standards.	Planning and Design
Preliminary Hazard and Risk	C421	Facilities will be designed with the ability to shut down and be isolated in preparation for impending bushfires.	Planning and Design
Preliminary Hazard and Risk	C422	Design and install combustion sources (such as generators and gas-fired compressors) on Arrow facilities in accordance with engineering codes and standards, thus ensuring they will have safety mechanisms built-in.	Planning and Design
Preliminary Hazard and Risk	C423	Develop protocols for the control of construction activities during extreme fire danger periods.	Planning and Design
Preliminary Hazard and Risk	C424	Arrow will develop emergency response plans in consultation with emergency services organisations that includes a list of required equipment, training and other resources, and foreseeable emergency and crisis situations (including escapes, blowouts, gas fire, bushfire, critical equipment failure, trapped or missing people, flooding, cyclones, power failure, security incidents and threats, and transport incidents). The plans should include safe evacuation procedures, communication protocols (internal and to emergency services, including the Petroleum and Gas Inspectorate), accounting for personnel and visitors, roles and responsibilities, and requirements for training.	Planning and Design Operations
Preliminary Hazard and Risk	C425	Design all pipes and vessels to cope with maximum expected pressure.	Planning and Design
Preliminary Hazard and Risk	C426	Install pressure transmitters that remotely monitor high- and low-pressure alarms.	Planning and Design
Preliminary Hazard and Risk	C427	Consider remote-control isolation on gas and water lines.	Planning and Design
Preliminary Hazard and Risk	C428	Design equipment to withstand considerable heat load, e.g., through use of heat-resistant (fire-safe) isolation valves on production facilities.	Planning and Design

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Preliminary Hazard and Risk	C429	Design radiation exclusion zones around flares according to API standard.	Planning and Design
Preliminary Hazard and Risk	C430	Register pipelines and below-ground electrical services with Dial Before You Dig.	Planning and Design
Preliminary Hazard and Risk	C431	Minimise enclosed spaces where flammable gas may accumulate.	Planning and Design
Preliminary Hazard and Risk	C432	Consider installing flow and pressure instrumentation to transmit upset conditions and plant shutdown valves status, where necessary.	Planning and Design
Preliminary Hazard and Risk	C433	Arrow will manage flooding risk through site location, drainage, etc., particularly for production facilities.	Planning and Design
Preliminary Hazard and Risk	C434	Design appropriate drainages for waste spills within buildings.	Planning and Design
Preliminary Hazard and Risk	C435	Apply dam safety guidelines, which will apply for all facilities forming part of the project development.	Planning and Design
Preliminary Hazard and Risk	C436	Consider the Australian Pipeline Industry Association Construction Health and Safety Guidelines (APIA, 2008) for pipeline construction and development of Construction Health and Safety Plan.	Construction
Preliminary Hazard and Risk	C437	Conduct pre-job safety meetings prior to the start of and during construction activities.	Construction
Preliminary Hazard and Risk	C438	Perform blowout of pipes and equipment, to remove construction debris, using well-established procedures and under strict controls, including those detailed in risk assessments.	Construction
Preliminary Hazard and Risk	C439	Develop an integrated risk management plan (in alignment with the relevant NSW Department of Primary Industries hazardous industry planning advisory paper).	Planning and Design Construction Operations Decommissioning
Preliminary Hazard and Risk	C440	Install, inspect and service fire-fighting equipment in accordance with risk assessments and relevant legislation and standards.	Construction
Preliminary Hazard and Risk	C441	Implement transport-related safety programs, including driver training, journey management plans and preventive maintenance programs of vehicles.	Construction
Preliminary Hazard and Risk	C442	Develop and implement safety training programs for personnel and contractors, including induction training of new starters. Include supervision requirements for drilling and construction activities.	Construction Operations

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Preliminary Hazard and Risk	C443	Conduct pressure testing and inspection of equipment and pipelines in accordance with relevant legislative requirements and standards.	Construction Operations
Preliminary Hazard and Risk	C444	Bury gathering lines at a minimum depth of 600 mm. Where gathering lines are present above the ground (at wellheads and at vents or drains), maintain a clear area. The size of the cleared area will be determined on a site-by-site basis with consideration of the site-specific risk of bushfire.	Construction
Preliminary Hazard and Risk	C445	Install isolation valves on pipelines in accordance with relevant standards and industry practices.	Construction
Preliminary Hazard and Risk	C446	Commission fire-safety equipment in the early phase of the construction period.	Construction
Preliminary Hazard and Risk	C447	Fit all buildings and production facilities with smoke or fire alarms.	Construction
Preliminary Hazard and Risk	C448	Fit pumps with automatic pump shutdown or other safety devices to prevent leak in case of pumping against a blockage.	Construction
Preliminary Hazard and Risk	C449	Install fire and gas detection systems to shutdown compressors.	Construction
Preliminary Hazard and Risk	C450	Implement security controls, e.g., fencing and locked gates.	Construction Operations
Preliminary Hazard and Risk	C451	Install lightning mast and earthing grid to minimise risk of lightning strike at production facilities.	Construction
Preliminary Hazard and Risk	C452	Machine guard all rotating equipment in accordance with Australian standards.	Construction
Preliminary Hazard and Risk	C453	Where necessary, automate emergency shutdown systems at production facilities and, if necessary, include remote monitoring and control.	Construction Operations

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Waste Management	C454	Determine the reuse of waste largely by the salvage value of the material. Reuse requires onsite segregation and storage and will include the following measures: • Reuse of cleared vegetation for mulch and soil erosion control. • Reuse of brine for production of potentially saleable salt products and implementing salt crystallisation (see Chapter 5, Project Description, of the EIS for options relating to beneficial use of brine and coal seam gas water). • Segregation of wastewater streams, i.e., contaminated stormwater, waste waters and coal seam gas water. • Reuse of treated waste water for dust suppression, construction activities or irrigation. • Reuse of treated coal seam gas water for town water supply, where of appropriate quality. • Reuse of hydrotest water. • Reuse of treated water for agricultural use, industrial use, potable water supply or injection into aquifers. • Treatment and reuse of solid wastes, such as drilling muds and cuttings, where practicable.	Construction Operations Decommissioning
Preliminary Hazard and Risk	C455	Conduct systematic risk assessments (which include hazard identification, assessment, treatment and monitoring) in accordance with relevant legislation and standards during design, construction and operations.	Operations
Preliminary Hazard and Risk	C456	Implement a permit to work system that includes a job safety analysis process.	Operations
Preliminary Hazard and Risk	C457	Implement management of change processes, including protocols for communication of changes to appropriate levels of management.	Operations
Preliminary Hazard and Risk	C458	Implement internal and external (independent) hazard audit programs. Communicate results from audit to management.	Operations
Preliminary Hazard and Risk	C459	Barricade fall points and use personal fall-arrest equipment and wrist straps and lanyards to secure tools when working at heights.	Operations
Preliminary Hazard and Risk	C460	Use whip check or safety chain and tie downs (or equivalent) on all high-pressure lines and pressurised air hoses.	Operations
Preliminary Hazard and Risk	C461	Wear appropriate personal protective equipment on a site- and duty-specific basis.	Operations
Preliminary Hazard and Risk	C462	Where applicable, establish blowout preventer and other well control measures.	Operations

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Preliminary Hazard and Risk	C463	Certify all equipment for drilling, where applicable.	Operations
Preliminary Hazard and Risk	C464	Ensure equipment and vehicle operators are licensed.	Operations
Preliminary Hazard and Risk	C465	Prepare a risk control action plan as part of the safety assessment process.	Operations
Preliminary Hazard and Risk	C466	Purge equipment of oxygen prior to introducing flammable gas.	Operations
Preliminary Hazard and Risk	C467	Purge equipment after shutdowns.	Operations
Preliminary Hazard and Risk	C468	Develop protocols for the control of operational activities during extreme fire danger periods, e.g., flaring or shutdowns.	Operations
Waste Management	C469	Use onsite waste treatment for such purposes as sewage, coal seam gas water and other specified wastes. Sewage will be treated in packaged sewage treatment plants. Sewage treatment plants will be located at production facilities and include settlement, digestion, aeration, clarification and disinfection equipment.	Construction Operations Decommissioning
Preliminary Hazard and Risk	C470	Consider non-static protective clothing for operations personnel.	Operations
Preliminary Hazard and Risk	C471	Establish lone-worker protocols and communication.	Operations
Preliminary Hazard and Risk	C472	Conduct regular patrols and inspections of pipeline easements, including status of signposting subsidence and of fire breaks.	Operations
Terrestrial Ecology	C473	During rehabilitation works, care will be taken when moving stockpiled logs and vegetation to avoid fauna mortality.	Decommissioning
Preliminary Hazard and Risk	C474	Automate the chemical dosage system for water treatment at integrated processing facilities.	Operations
Preliminary Hazard and Risk	C475	Consider the use of non-toxic gases for water treatment if gases are used.	Operations
Preliminary Hazard and Risk	C476	Ensure operator supervision for unloading of hazardous materials at production facilities.	Operations
Preliminary Hazard and Risk	C477	Provide escape ropes and ladders at strategic locations within a dam.	Operations

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Terrestrial Ecology	C478	Carry out routine monitoring of rehabilitation success.	Inspection and Monitoring
Preliminary Hazard and Risk	C479	Use suitably trained and supervised staff or contractors to carry out depressurising and purging activities.	Operations
Preliminary Hazard and Risk	C480	Ensure all personnel are familiar with Arrow's 12 Life Saving Rules, which embed safe practices in the day-to-day activities of the workforce. The rules encompass the following controls: • All staff to work with a valid permit where required. • Gas tests to be conducted where required. • Verification of isolation prior to work commencing and use of specified life-protecting equipment. • Authorisation to be obtained prior to entering a confined space. • Authorisation to be obtained prior to overriding or disabling any critical safety equipment. • All persons to protect themselves against a fall when working at a height. • No walking under a suspended load. • No smoking outside designated areas. • No alcohol or drugs while working or driving. • No phones to be used while driving and speed limits not to be exceeded. • Seat belts to be worn at all times. • Prescribed journey management plan to be followed.	Operations
Preliminary Hazard and Risk	C481	Train relevant personnel in the identification and avoidance of potentially hazardous wildlife. Use qualified handlers to move wildlife from project areas when encountered.	Operations
Terrestrial Ecology	C482	Inspect and monitor the success of newly propagated or translocated listed species, in accordance with the approved translocation or management plan.	Inspection and Monitoring
Preliminary Hazard and Risk	C483	Vegetation surrounding production facilities and wellheads will be maintained in a manner that limits the amount of combustible material in the area. The size of the cleared area will be determined on a site-by-site basis with consideration of the site-specific risk of bushfire.	Operations
Preliminary Hazard and Risk	C484	Install manual isolation valves at the production well and skid edge.	Construction Operations
Preliminary Hazard and Risk	C485	Maintain facilities so that flammable and combustible material does not accumulate on site.	Operations

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Preliminary Hazard and Risk	C486	Keep access tracks to well sites clear of dry grass and combustible material wherever practicable and where there is a higher risk of bushfire (to minimise the risk of dry grass being ignited by hot components of vehicles accessing the sites).	Operations
Preliminary Hazard and Risk	C487	Daily operations will be managed with consideration of the fire danger current at that time.	Operations
Preliminary Hazard and Risk	C488	Develop rig move plans.	Decommissioning
Preliminary Hazard and Risk	C489	Depressurise and degas all plant and equipment in flammable-gas use prior to decommissioning.	Decommissioning
Waste Management	C490	Develop onsite waste storage areas in accordance with industry practice and relevant waste management regulations.	Planning and Design
Waste Management	C491	Procure materials in bulk, where practicable, to minimise containers and movement of material.	Planning and Design
Waste Management	C492	Design the storage capacity of coal seam gas water and brine dams to be sufficient to manage waste liquids until such time that permanent disposal options are operational.	Planning and Design
Waste Management	C493	Maintain a waste tracking system.	Inspection and Monitoring
Waste Management	C494	Handle, store and dispose of regulated wastes in accordance with relevant standards and the Environmental Protection (Waste Management) Regulation 2000.	Construction Operations Decommissioning
Waste Management	C495	Comply with Queensland Government waste tracking requirements.	Construction Operations Decommissioning
Waste Management	C496	Segregate general waste, treat it if necessary and store it onsite prior to disposal. Segregation will include the separation of liquid from solid waste, separation of regulated from non-regulated waste, and separation of reusable and recyclable from non-reusable and non-recyclable waste.	Construction Operations Decommissioning
Agriculture	C497	Ensure coal seam gas water used for dust suppression on roads or for construction and operation activities is treated if required.	Planning and Design Construction Operations Decommissioning

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Surface Water	C498	Develop a protocol for the discharge of coal seam gas water to watercourses in a controlled manner under emergency situations, taking the sensitivity of the receiving watercourse into consideration. Conduct discharge events in accordance with specific parameters, including discharge volumes, flows and duration, and water quality.	Planning and Design
Social	***C499***	***Ensure all project personnel adhere to land access rules.***	***Construction*** ***Operations*** ***Decommissioning***
Terrestrial Ecology	C500	Inspect and manage open trenches in accordance with the following: • Inspect trenches for the presence of fauna daily (preferably in the morning), as well as immediately prior to closing a trench. • Have appropriately trained personnel remove any fauna from a trench to minimise stress to the animal and to avoid personal injury. • Record details of trapped fauna for inclusion in the DERM Wildnet database.	Inspection and Monitoring
Social	***C501***	***Adhere to Arrow Energy's land access rules and protocols as published on the Arrow website.***	***Construction*** ***Operations*** ***Decommissioning***
Waste Management	C502	Provide training in the principles of the waste hierarchy to personnel handling wastes on a regular basis.	Inspection and Monitoring
Geology, Landform and Soils Agriculture	C503	Prevent subsurface water flows and erosion along the backfilled trench by appropriate means, such as trench blocks and compaction of backfilled soils.	Construction Operations Decommissioning
Groundwater	C504	Install groundwater monitoring bores near dams as a leak detection measure: • The number of monitoring bores and their location will take into account site-specific hydrogeology, preferential pathways and potential receptors of impacts. • Monitoring bores installed near dams will have groundwater levels and relevant water quality parameters monitored on a routine basis. • The number of monitoring bores or associated monitoring frequencies will be increased and further investigation will be triggered where impacts are identified.	Construction Inspection and Monitoring

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Geology, Landform and Soils Agriculture Surface Water Aquatic Ecology Terrestrial Ecology Landscape and Visual Amenity	C505	Inspect erosion and sediment control measures following significant rainfall events to ensure effectiveness of measures is maintained.	Inspection and Monitoring
Geology, Landform and Soils Agriculture	C506	Inspect pipeline ROWs routinely until ground stabilisation and natural revegetation or pasture grasses or crops are established.	Inspection and Monitoring
Surface Water Aquatic Ecology	C507	Visually inspect physical form and monitor hydrology, turbidity and pH upstream and downstream of crossings immediately prior to, during and after construction of watercourse crossings.	Inspection and Monitoring
Aquatic Ecology Terrestrial Ecology	C508	Routinely inspect for pest flora and evidence of pest fauna species within project disturbed areas.	Inspection and Monitoring
Geology, Landform and Soils Surface Water Aquatic Ecology	C509	Routinely monitor buffer zones and project footprint using satellite imagery.	Inspection and Monitoring
Groundwater	C510	Prepare groundwater monitoring reports in accordance with the P&G Act, EP Act and Water Act.	Inspection and Monitoring
Air Quality	C511	Monitoring and inspection of mitigation and management measures will be implemented to ensure that the calculated ground-level concentrations of relevant pollutants do not exceed EPP (Air) objectives throughout the lifetime of the project.	Inspection and Monitoring
Greenhouse Gas Emissions	C512	Assess the energy-efficiency opportunities and estimate greenhouse emissions associated with the project in accordance with regulatory requirements. Calculate annual greenhouse gas emissions from the project as required under the NGER Act and Energy Efficiency Opportunities program, as well as future carbon price mechanisms.	Inspection and Monitoring
Climatic Adaptation	***C513***	***Monitor emerging opportunities to manage potential changes in climate that may have an impact on the project.***	***Inspection and Monitoring***

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Geology, Landform and Soils	C514	Monitor soil salinity in salinity prone areas prior to major earthworks.	Inspection and Monitoring
Geology, Landform and Soils Groundwater	C515	Provide chemical monitoring of contaminated soils and groundwater in relevant monitoring bores.	Inspection and Monitoring
Geology, Landform and Soils	C516	Routinely inspect spill containment controls and spill response kits.	Inspection and Monitoring
Geology, Landform and Soils	C517	Visually inspect physical form downstream of watercourse discharge locations.	Inspection and Monitoring
Geology, Landform and Soils	C518	Conduct inspection and monitoring in accordance with environmental authority conditions and regulatory requirements.	Inspection and Monitoring
Agriculture	C519	Monitor crop productivity or pasture health periodically to measure productivity on disturbed areas.	Inspection and Monitoring
Agriculture	C520	Review landowner grievances regularly, including status of project actions and close-outs.	Inspection and Monitoring
Groundwater	C521	Ensure methods used to monitor groundwater levels and quality, together with monitoring frequencies and parameters are in accordance with approved regulatory standards.	Inspection and Monitoring
Groundwater	C522	Develop a structured database to host groundwater data from the project (i.e., groundwater levels and groundwater quality).	Inspection and Monitoring
Terrestrial Ecology	C523	Should Arrow seek to work within disturbed areas within the Bendidee State Forest, a preconstruction clearance survey of the forest will also be conducted with input from a butterfly specialist to inform the critical habitat and food resource of the bull oak jewel butterfly (*Hypochrysops piceata*).	Construction

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Groundwater	C524	Install an appropriate regional groundwater monitoring network (that satisfies Arrow's obligations as described in the underground water impact reports) to: • Establish baseline groundwater level and groundwater quality conditions. • Assess natural variation (i.e., seasonal variations) in groundwater levels. • Monitor groundwater levels during the operations phase. • Monitor groundwater quality during the operations phase. • Establish suitable datum levels for each aquifer system. • Target sensitive areas where more frequent monitoring and investigation is required (e.g., groundwater-dependent ecosystems). • Monitor groundwater drawdown as a result of coal seam gas extraction. • Monitor impacts in accordance with the Water Act and regulations. • Provide an 'early warning system' that identifies areas potentially impacted by project activities to allow early intervention.	Inspection and Monitoring
Groundwater	C525	Comply with inspection and monitoring requirements developed by the Queensland Water Commission in relation to groundwater drawdown and springs.	Inspection and Monitoring
Surface Water	C526	Visually inspect physical form and monitor hydrology, turbidity and pH upstream and downstream of central gas processing and integrated processing facility stormwater and coal seam gas water discharge points.	Inspection and Monitoring
Surface Water	C527	Routinely visually inspect physical form integrity and monitor hydrology, turbidity, total suspended solids, pH, dissolved metals and total petroleum hydrocarbons upstream and downstream of authorised locations where water is to be discharged directly to a watercourse.	Inspection and Monitoring
Preliminary Hazard and Risk	C528	Monitor dam levels.	Inspection and Monitoring
Surface Water	C529	Measure the volume and quality of treated coal seam gas water released to surface waters on a routine basis in accordance with regulatory requirements and approved release limits.	Inspection and Monitoring
Surface Water	C530	Routinely measure the volume and quality of treated sewage effluent in accordance with regulatory requirements and approved release limits.	Inspection and Monitoring

Table 1 EIS commitments summary (cont'd)

Chapter	Commitment Number	Commitment	Relevant Phase
Aquatic Ecology	C531	Routinely visually inspect physical form integrity, macroinvertebrates, flow, turbidity, total suspended solids, pH, dissolved metals and total petroleum hydrocarbons upstream and downstream of authorised locations where water is discharged directly to a watercourse.	Inspection and Monitoring
Preliminary Hazard and Risk	C532	Have a suitably qualified person routinely monitor the integrity and available storage of dams.	Inspection and Monitoring
Terrestrial Ecology	C533	Inspect areas of avoidance to ensure that boundaries are clearly marked prior to clearing activities.	Inspection and Monitoring
Terrestrial Ecology	C534	Monitor clearing activities to ensure marked boundaries are adhered to.	Inspection and Monitoring
Terrestrial Ecology	C535	Inspect marked areas after clearing activities to ensure areas of avoidance remain and that no unauthorised encroachment has occurred.	Inspection and Monitoring
Terrestrial Ecology	C536	Supervise construction activities in sensitive areas to ensure appropriate methods (e.g., narrowing of ROW) are being implemented, where required.	Inspection and Monitoring
Preliminary Hazard and Risk	C537	Production wells will be designed and constructed so that the well is cased or concreted through aquifers other than the coal seam to prevent transmission of water and gas between strata.	Planning and Design Construction
Preliminary Hazard and Risk	C538	The State Planning Policy 1/03 for mitigating the adverse impact of flood, bushfire and landslide will be taken into regard.	Planning and Design Construction Operations Decommissioning
Waste Management	C539	Maintain and update a water balance model that includes but is not limited to: • Monitoring of volume and quality of coal seam gas water produced and treated. • Monitoring of disposition volumes of treated and untreated coal seam gas water. • Monitoring of the volume of brine and its by-products used beneficially or disposed to landfill.	Inspection and Monitoring
Agriculture	C540	Ensure that the quality of coal seam gas water used for dust suppression meets the prescribed limits.	Inspection and Monitoring

Table 2 Proposed buffer distances from the ESA boundary

ESA Category	Proposed Activities within the ESA	Proposed Activities within 200 m of the ESA Boundary	Proposed Activities within a Secondary Protection Zone*
Category A	None	Low-impact activities	Limited petroleum activities within 800 m of the primary protection zone.†
Category B: excluding regional ecosystems with 'endangered' status	Low-impact activities	Low-impact activities	Limited petroleum activities within 300 m of the primary protection zone.†
Category B: regional ecosystems with an 'endangered' status	Limited petroleum activities	Limited petroleum activities	Only limited petroleum activities within 300 m of the primary protection zone.†
Category C: excluding regional ecosystems with an 'of concern' status, state forests and timber reserves	Low-impact activities	Low-impact activities	Limited petroleum activities within 300 m of the primary protection zone.†
Category C: regional ecosystems with an 'of concern' status, state forests and timber reserves	Limited petroleum activities	Limited petroleum activities	Limited petroleum activities within 300 m of the primary protection zone.†

* ESA buffers (derived from the guidelines under the EP Act, Model Conditions for Level 1 Environmental Authorities for Coal Seam Gas Activities) will be applied unless the activity occurs in pre-existing cleared areas or significantly disturbed land within the buffer and no reasonable or practicable alternatives exist.

† The primary protection zone is considered to be within 200 m of the ESA boundary.