

**Indigenous Cultural Heritage Impact Assessment
Arrow Surat Gas Project EIS –
Aboriginal Cultural Heritage Impact Assessment Study
Summary Report**

Prepared for

Arrow Energy Pty Ltd and Coffey Environments Pty Ltd

Prepared by

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Glossary

Aboriginal Party(ies) native title group or those individuals who, meeting the criteria specified in the ACH Act 2003, are accorded various procedural rights under the terms of the Act.

ACH Act the *Aboriginal Cultural Heritage Act 2003*.

BP Before Present – a term applied to radiocarbon dates with Present conventionally taken as 1950AD.

CHIMS is Cultural Heritage Information Management System managed by DEM being a list of those places that might be of historical heritage interest throughout Queensland.

CHMP Cultural Heritage Management Plan negotiated between a sponsor and endorsed parties pursuant to provision of Part 7 of the ACH Act.

Debitage consists of stone artefacts that have been discarded in the course of the production of stone artefacts by either percussion or pressure flaking.

DERM is the Department of Environment and Resource Management (Qld).

Endorsed Parties are those Aboriginal Parties who have responded in a timely manner to notices issued pursuant to provisions of Part 7 of the ACH Act and have been granted the status of endorsed parties for the purpose of developing a CHMP.

ICHR and D is the Indigenous Cultural Heritage Register and Database held by DERM.

ILUA Indigenous Land Use Agreement negotiated between native title claimants and development proponents to secure land access rights for a project under provisions of the Native Title Act 1998.

NHL is National Heritage List.

Project is as described in section 1 of this report.

RNE is the Register of the National Estate.

Registered Place a place that has been entered on to the Queensland Heritage Register created under provisions of the Queensland Heritage Act 1992.

Study is the study undertaken to comply with the conditions relating to Indigenous cultural heritage in the EIS ToR, as included in this report.

WHL is the World Heritage List.

EXECUTIVE SUMMARY

Arrow Energy Pty Ltd (**Arrow**) is seeking to expand its operations in the Surat Basin with a major coal seam gas exploration, development and production project which is expected to service the growing domestic and international gas markets (the Surat Gas Project). Extending from Wandoan to Dalby and south to Milmerran and towards Goondiwindi (Figure 1) the Surat Gas Project Development Area is approximately 8,600km² in size. Arrow's existing Surat Basin gas fields at Tipton West, Daandine, Stratheden and Kogan North near Dalby are also included within the project development area.

As a preface to these planned expansions, Arrow is preparing a voluntary Environmental Impact Statement (EIS) that examines the entire Surat Gas Project Development Area. This report constitutes a summary of the Aboriginal Cultural Heritage Impact Assessment Study completed for the Surat Gas Project.

There are two separate but interlinked objectives of the Aboriginal Cultural Heritage Impact Assessment Study. Firstly, it is to provide a baseline understanding of the known and potential Aboriginal cultural heritage landscape of the project development area. Secondly, it is to design and set in place a strategy and management regime for Aboriginal cultural heritage that is consistent with the provisions of the *Aboriginal Cultural Heritage Act 2003* (ACH Act) such that the Queensland Department of Environmental and Resource Management (DERM) can approve the EIS.

The review of a range of Aboriginal cultural heritage information was undertaken. This included State and Commonwealth heritage databases, lists and registers, as well as a range of other documentary information (including impact assessment reports and a range of ethno-historic and archaeological sources at both local and regional levels).

From this it is clear that the project development area contains a rich and varied cultural landscape that is of particular significance to the local Aboriginal communities. The cultural signature of this landscape has expression in two separate but intrinsically linked spheres: that relating to traditional and spiritual association; and that resulting from the everyday use and occupation of that landscape. The project development area has places from both of these spheres known to exist.

The review was able to identify in excess of 690 individual places containing Aboriginal cultural heritage within the study area. These places are part of a larger cultural landscape for which many more similar places are known to exist beyond those identified within the review. This wider knowledge has also informed an understanding of the nature, form and location of other cultural

heritage places that may be expected to be located within the project development area and may be identified and recorded as part of further cultural heritage studies undertaken as part of the Project.

At the time of preparing this report engagement with the Aboriginal Parties throughout the project development area had been limited. Despite this, Arrow fully appreciates that the Aboriginal Parties retain a strong interest in ensuring that the cultural heritage areas, objects and values identified throughout the project development area are managed in an appropriate fashion and with their direct input.

Wherever possible, Arrow anticipates that this will be done by conservation of the area or object/s *in situ* and avoidance of impact, consistent with the Avoidance Principle which the ACH Act mandates as a central tenet in the development of management plans. A range of other management strategies, including controlled removal and storage of cultural objects, will also likely be required on a case-by-case basis. In this, it has been anticipated that the Aboriginal Parties will require the implementation of a management process that embodies appropriate mechanisms for the management of their cultural heritage. Arrow is committed to providing the opportunity to achieve this outcome through an agreement-based process that is also compliant with the provisions of the ACH Act.

Arrow can comply with the ACH Act duty of care for the Surat Gas Project either through suitable Native Title agreement/s that do not expressly exclude cultural heritage or through an approved Cultural Heritage Management Plan (CHMP). Arrow recognises that cultural heritage is an element of Native Title and is not opposed to using an Indigenous Land Use Agreement (ILUA) as a vehicle for addressing cultural heritage issues. However, if an ILUA is not completed in accordance with the project timetable or cannot be registered, or if Arrow forms the view that such is unlikely to be achieved, Arrow will be required to comply with Part 7 of the ACH Act in another manner (i.e. development of approved CHMPs).

To address a series of Project-specific issues outlined in detail within this report, Arrow has decided to implement a two component strategy with regard to CHMPs:

1. A staged ‘process CHMP’ model that will be directly tied to the staggered approach being planned for field development;
2. A ‘site management CHMP’ model limited to application only where necessary for exploration and pilot wells – where ground disturbance work is required in areas in advance of a process CHMP.

The staged approach will see Arrow's cultural heritage processes linking directly to the clearly identified stages and timing in which it intends to develop its various tenements. Predicated on this schedule, Arrow will issue notices for CHMPs approximately three years in advance of its intention to develop any particular section of a tenement. For those sections now identified where this schedule is less than three years, Arrow will issue the requisite notices in a timely fashion such that the notification and development periods stipulated in the ACH Act for development of a CHMP are met.

In support of this, and its planned direct engagement with Aboriginal Parties regarding the Project, Arrow is developing a detailed Cultural Heritage Management Strategy. This includes: an outline of the structure of an agreement-based process; a set of engagement, management and contingency principles; and the identification of the current Aboriginal Parties for the project development area.

Recognising the constraints and limitations of the information reviewed and compiled regarding the Aboriginal cultural heritage of the project development area to which it has had access in the preparation of the EIS, Arrow will formally commission and provide resources to each of the Aboriginal / Endorsed Parties to identify major places that they consider might be affected by proposed development activities within the project development area. The terms of reference for these constraints statements will be intentionally broad so as to allow those people who elect to take the greatest opportunity to describe any areas, objects and values about which they have concerns. The resultant data will then be factored into more detailed Project design so as to give effect to the Avoidance Principle.

Arrow fully appreciates that the management of Aboriginal cultural heritage is an issue that will require ongoing management throughout the course of implementing the project. It is expected that most Aboriginal / Endorsed Parties will express a desire to exercise a primary role in the management of this heritage. Arrow is determined to give this desire the greatest expression in its management process, subject only to the willingness of Aboriginal / Endorsed Parties to engage with Arrow in a collaborative approach.

1. INTRODUCTION AND BACKGROUND

1.1 Surat Gas Project Description

Project Proponent

Arrow Energy Pty Ltd (Arrow) is an integrated energy company with interests in coal seam gas field developments, pipeline infrastructure, electricity generation and proposed liquefied natural gas (LNG) projects.

Arrow has interests in more than 65,000 km² of petroleum tenures, mostly within Queensland's Surat and Bowen basins. Elsewhere in Queensland, the company has interests in the Clarence-Moreton, Coastal Tertiary, Ipswich, Styx and Nagoorin Graben basins.

Arrow's petroleum tenures are located close to Queensland's three key energy markets; Townsville, Gladstone and Brisbane. The Moranbah Gas Project in the Bowen Basin and the Tipton West, Daandine, Kogan North and Stratheden projects in the Surat Basin near Dalby comprise Arrow's existing coal seam gas production operations. These existing operations currently account for approximately 20% of Queensland's overall domestic gas production.

Arrow supplies gas to the Daandine, Braemar 1 and 2, Townsville and Swanbank E power stations which participate in the National Electricity Market. With Arrow's ownership of Braemar 2, and the commercial arrangements in place for Daandine and Townsville power stations Arrow has access to up to 600 MW of power generation capacity.

Arrow and its equity partner AGL Energy have access rights to the North Queensland Pipeline which supplies gas to Townsville from the Moranbah Gas Project. They also hold the pipeline licence for the proposed Central Queensland Gas Pipeline between Moranbah and Gladstone.

Arrow is currently proposing to develop the Arrow LNG Project, which is made up of the following aspects:

- Arrow LNG Plant – The proposed development of an LNG Plant on Curtis Island near Gladstone, and associated infrastructure, including the gas pipeline crossing of Port Curtis.
- Surat Gas Project – The upstream gas field development in the Surat Basin, subject of this assessment.
- Arrow Surat Pipeline Project – (Formerly the Surat Gladstone Pipeline), the 450 km transmission pipeline connects Arrow's Surat Basin coal seam gas developments to Gladstone.
- Bowen Gas Project – The upstream gas field development in the Bowen Basin.

- Arrow Bowen Pipeline – The transmission pipeline which connects Arrow's Bowen Basin coal seam gas developments to Gladstone.

Project Overview

Arrow proposes expansion of its coal seam gas operations in the Surat Basin through the Surat Gas Project. The need for the project arises from the growing demand for gas in the domestic market and global demand and the associated expansion of LNG export markets.

The project development area covers approximately 8,600 km² and is located approximately 160 km west of Brisbane in Queensland's Surat Basin. The project development area extends from the township of Wandoan in the north towards Goondiwindi in the south, in an arc through Dalby. The towns of Brigalow, Cecil Plains, Chinchilla, Columboola, Dalby, Macalister, Millmerran and Warra are located within the project development area. Project infrastructure including coal seam gas production wells and compression and processing facilities (including both water treatment and power generation facilities where applicable) will be located throughout the project development area but not in towns. Facilities supporting the petroleum development activities such as depots, stores and offices may be located in or adjacent to towns.

The conceptual Surat Gas Project design presented in the environmental impact statement (EIS) is premised upon peak gas production from Arrow's Surat Basin gas fields of approximately 1,050 TJ/d. The peak gas production comprises 970 TJ/d for LNG production (including a 10% fuel gas requirement for facility operation) and a further 80 TJ/d for supply to the domestic gas market.

A project life of 35 years has been adopted for EIS purposes. Ramp-up to peak production is estimated to take between 4 and 5 years, and is planned to commence in 2014. Following ramp-up, gas production will be sustained at approximately 1,050 TJ/d for at least 20 years, after which production is expected to decline.

Infrastructure for the project is expected to comprise:

- Approximately 7,500 production wells drilled over the life of the project at a rate of approximately 400 wells drilled per year.
- Low pressure gas gathering lines to transport gas from the production wells to compression and processing facilities.
- Medium pressure gas pipelines to transport gas between field compression facilities and central gas processing and integrated processing facilities.

- High pressure gas pipelines to transport gas from central gas processing and integrated processing facilities to the sales gas pipeline.
- Water gathering lines (located in a common trench with the gas gathering lines) to transport coal seam water from production wells to transfer, treatment and storage facilities.
- Approximately 18 compression and processing facilities across the project development area expected to comprise of 6 of each of the following:
 - Field compression facilities.
 - Central gas processing facilities.
 - Integrated processing facilities.
- A combination of gas powered electricity generation equipment that will be co-located with project infrastructure and electricity transmission infrastructure that may draw electricity from the grid (via third party substations).

Further detail regarding the function of each type of compression and processing facility is detailed below.

Field compression facilities will receive gas from production wells and are expected to provide 30 to 60 TJ/d of first stage gas compression. Compressed gas will be transported from field compression facilities in medium pressure gas pipelines to multi-stage compressors at central gas processing facilities and integrated processing facilities where the gas will be further compressed to transmission gas pipeline operating pressure and dehydrated to transmission gas pipeline quality. Coal seam water will bypass field compression facilities.

Central gas processing facilities will receive gas both directly from production wells and field compression facilities. Central gas processing facilities are expected to provide between 30 and 150 TJ/d of gas compression and dehydration. Coal seam water will bypass central gas processing facilities and be pumped to an integrated processing facility for treatment.

Integrated processing facilities will receive gas from production wells and field compression facilities. Integrated processing facilities are expected to provide between 30 and 150 TJ/d of gas compression and dehydration. Coal seam water received at integrated processing facilities is expected to be predominantly treated using reverse osmosis and then balanced to ensure that it is suitable for the intended beneficial use. Coal seam water received from the field, treated water and brine concentrate will be stored in dams adjacent to integrated processing facilities.

It is envisaged that development of the Surat Gas Project will occur in five development regions: Wandoan, Chinchilla, Dalby, Kogan/Millmerran and Goondiwindi. Development of these regions will be staged to optimise production over the life of the project.

Arrow has established a framework to guide the selection of sites for production wells and compression and processing facilities and routes for gathering lines and pipelines. The framework will also be used to select sites for associated infrastructure such as access roads and construction camps. Environmental and social constraints to development that have been identified through the EIS process coupled with the application of appropriate environmental management controls will ensure that protection of environmental values (resources) is considered in project planning. This approach will maximise the opportunity to select appropriate site locations that minimise potential environmental and social impacts.

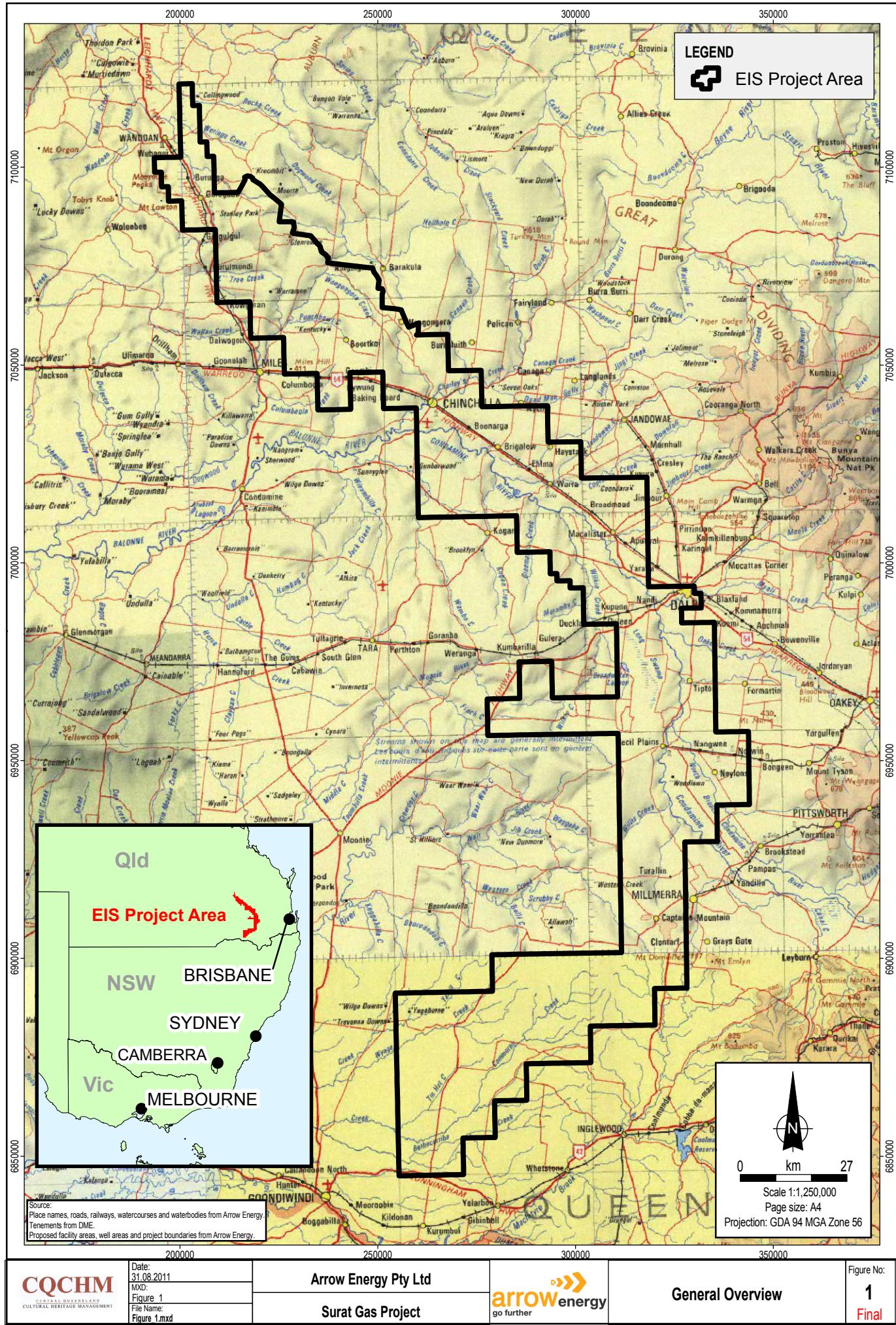
Arrow has identified 18 areas that are nominated for potential facility development to facilitate environmental impact assessment (and modelling). These are based on circles of approximately 12 km radius that signify areas where development of compression and processing facilities could potentially occur.

Arrow intends to pursue opportunities in the selection of equipment (including reserve osmosis units, gas powered engines, electrical generators and compressors) and the design of facilities that facilitates the cost effective and efficient scaling of facilities to meet field conditions. This flexibility will enable Arrow to better match infrastructure to coal seam gas production. It will also enable Arrow to investigate the merits of using template design principles for facility development, which may in turn generate further efficiencies as the gas reserves are better understood, design is finalised, or as field development progresses.

1.2 Aboriginal Cultural Heritage Impact Assessment Study

The primary objective of this Aboriginal Cultural Heritage Impact Assessment Study is to design and set in place a strategy and management regime for Aboriginal cultural heritage that is consistent with the provisions of the *Aboriginal Cultural Heritage Act 2003* (ACH Act) and facilitates the avoidance, mitigation and management of impacts to Aboriginal Cultural Heritage. This in turn facilitates the Queensland Department of Environmental and Resource Management (DERM) approval of the EIS.

The tasks outlined for completion as part of this Aboriginal Cultural Heritage Impact Assessment Study were as follows:



- Review relevant Australian legislation, policy and guidelines regarding Aboriginal cultural heritage and assess its implications for the Surat Gas Project.
- Review existing information (such as previous reports, literature and databases) to identify known areas of Aboriginal archaeological and/or cultural importance in the project development area;
- Assess the results of previous cultural heritage studies conducted within the project development area;
- Agree a process for consulting with Aboriginal Parties to further identify areas of cultural significance; and management measures that are appropriate in the project development area (ensuring consistency with CHMP and Native Title agreement processes);
- Identify, assess and map currently known areas of Aboriginal archaeological and/or cultural significance in the project development area;
- Highlight issues to be addressed in CHMP or Native Title agreements;
- Prepare an Aboriginal Cultural Heritage Impact Assessment Study report documenting the work, including background information, methodology, data sources, assessment results, assumptions, potential impacts and issues, proposed impact mitigations, permitting requirements, conclusions and recommendations.

Central Queensland Cultural Heritage Management Pty Ltd (CQCHM) has been engaged by Arrow to prepare the information required for the Aboriginal Cultural Heritage Impact Assessment Study for the Surat Gas Project.

2. CULTURAL HERITAGE LEGISLATION

A range of Commonwealth and State legislation exists to provide protection for Aboriginal cultural heritage. These include: *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Commonwealth) and *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act) (Commonwealth); and *Queensland Heritage Act 1992* (QH Act) (Queensland) and *Aboriginal Cultural Heritage Act 2003* (ACH Act) (Queensland).

The dominant piece of legislation relating to Aboriginal cultural heritage in Queensland is the ACH Act. This legislation has been in place since April, 2004. This is a significant matter when reviewing engagement in the context of cultural heritage.

The ACH Act operates on the basis of a duty of care owed by development proponents and others to Aboriginal cultural heritage. The duty of care can be met in a variety of ways. Where an EIS is a mandatory requirement for a license etc to operate a project (such is the case with this project) or is necessary to comply with a limited range of regulatory processes (see ss87-89 ACH Act) then it is essential to develop a CHMP. Alternatively, s86 of the ACH Act allows the duty of care to be met by

settlement of a native title agreement of a specified form, being an Indigenous Land Use Agreement (ILUA), s31 agreement or by use of the Native Title Protection Conditions.

Where there is no need to comply with ss87-89 then a range of options are available to the development proponent. These include a voluntary CHMP. The mechanisms by which one can meet the duty of care are specified in s23 of the ACH Act. These include use of the Duty of Care Guidelines.

Failure to comply with the duty of care can result in a charge of ‘Harm’ being made against a project sponsor. Substantial fines can arise where a party, individual or corporation, is found guilty of harming Aboriginal cultural heritage.

The ACH Act also defines those people with whom a proponent must engage. These people are referred to as Aboriginal Parties. There is a descending hierarchy of persons who constitute Aboriginal Parties: determined native title holders; currently registered native title claimants; native title claimants who were registered as of April 2004 (the introduction of the ACH Act) but whose claims have subsequently failed are also Aboriginal Parties until such time as another claim is registered over the area. If there are no persons meeting these categories then any person claiming to meet the criteria specified in s35(7) of the ACH Act is an Aboriginal Party in the absence of any of the above categories.

The ACH Act is currently under review and a paper outlining key issues and a series of draft recommendations has been published (State of Queensland (Department of Environment and Resource Management) 2009). Details of the proposed changes as they may likely affect the project are discussed further in Section 7.

3. DATA SOURCES AND METHODOLOGY

The majority of information on the Aboriginal cultural heritage areas, objects and values that reside within the project development area derives from cultural heritage investigations undertaken as part of the impact assessment process. Additional information is also available from research projects, although these studies have generally been both few in numbers and highly restricted either geographically or in the class/classes of Aboriginal cultural heritage investigated.

Impact assessment studies have been undertaken within legislative parameters that have largely required the cultural heritage information deriving from them to be maintained and controlled by government agencies. Under Part 5 of the ACH Act this situation has been maintained with such

information regarding Aboriginal cultural heritage being controlled by the Cultural Heritage Coordination Unit (CHCU) of the Department of Environmental Resource Management (DERM).

The principle source of information relating to Aboriginal cultural heritage places within Queensland is the Indigenous Cultural Heritage Database (ICHD) maintained by DERM. Under the provisions of the ACH Act, and other DERM policy, access can be made to the ICHD via a formal search request.

The Queensland Heritage Register (QHR) established under the Queensland Heritage Act (QHA) consists of those places that are considered to possess heritage values that meet one or more of the criteria specified in the QHA. Searches of the QHR are publicly available through the Cultural Heritage Branch within DERM.

Separate to the QHR, the Cultural Heritage Branch maintains a further source of information on reported heritage places. This is known as the Cultural Heritage Information Management System (CHIMS). Places within this system are primarily entered following identification from a great range of documentation, but primarily heritage assessment studies. There is usually little contextual information about places so included. It is however, generally considered as a place from which further QHR nominations can be initiated and as such is a useful resource.

There are a number of Commonwealth heritage lists and registers that protect important heritage places throughout Australia. These lists are administered by the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) and searches of these can also be undertaken.

In addition to the above, a number of searchable web-based systems exist. These can provide further details regarding the heritage values of individual places included on the various databases, lists and registers. These can prove useful in obtaining a more complete appreciation of a place's values. Finally a range of cultural heritage information is, via a number of processes, already in the public domain. This information is housed in numerous places including private and professional collections, libraries and archives.

As part of the review of Aboriginal cultural heritage information for this report the following was undertaken:

1. Formal application was made to the CHCU for a search of the ICHD.
2. Request was made of the Cultural Heritage Branch also within DERM, for a search of places on both the QHR and their CHIMS.

3. Searches were made of the lists and register administered by DSEWPaC for information relating to any listed or identified places within the Study Area. This included the World Heritage List, the Commonwealth Heritage List, The National Heritage List and the Register of the National Estate.
4. Investigations and consultation with local government authorities regarding cultural heritage areas, objects and values that have been noted within their current planning schemes and/or development control plans.
5. The results of searches noted above in points 2, 3 and 4 were investigated in further detail using the available web-based heritage databases for other detail relating to Aboriginal cultural heritage values.
6. Finally, a review was undertaken of material held in a range of publicly available archives, collections and publications for other Aboriginal cultural heritage information of relevance to the project development area.

Many of the above searches required the provision of a supporting Geographical Information System (GIS) layer. This layer included a 1km buffer of the project development area, with this buffered area being referred to within this report as the ‘Study Area’.

Where it has been possible to do so, the data that has been collated as part of these investigations has been compiled into a series of datasets and placed in a GIS. A substantial amount of the discussion included in this report derives from analyses of these datasets. Unless otherwise stated all of the mapping and grid references within this report is presented in MGA (Map Grid of Australia) Zone 56 GDA (Geocentric Datum of Australia) 94.

4. LIMITATIONS

It is important to note that this assessment of Aboriginal cultural heritage information relating to the project development area has been completed exclusively on the basis of a desktop analysis of available information. There are a number of limitations involved with many of the various sources of information used in this report. These directly influence the levels to which the information can be used, the questions that can be asked of it, and hence the conclusions that can be drawn.

The vast majority of the project development area has not been the subject of systematic cultural heritage investigations. Indeed, with limited exceptions to which certain caveats apply, there have been no special studies of the Aboriginal cultural heritage values of the broader regions that include the project development area. Put simply, there is no definitive body of data available on the Aboriginal cultural heritage areas, objects and values of the project development area.

In addition, limitations from government departmental policies also exist. For example, while a search of the ICHD, is freely available, the resulting information provided is limited and generic in nature. Further details regarding specific places identified from the results of this search are held within DERM. Access to such information is not available without clear written authorisation from an Aboriginal party for the area/s in question stating that they agree to the release of such information. Engagement and negotiations with the Aboriginal parties for the Surat Gas Project at the time of this report being compiled had just commenced. In any case it was neither practical nor possible in this situation to obtain authorisations that would satisfy either DERM or indeed be culturally appropriate within Aboriginal communities. Additionally, information gained from such review can only be disseminated among people specifically listed on the formal request documentation without the written permission of the Director of the CHCU.

In the light of all of the above discussion, it should be realised that this Aboriginal Cultural Heritage Impact Assessment Study cannot be, nor does it purport to be, a definitive statement of the Aboriginal cultural heritage areas, objects and values associated with the project development area. Rather it represents the collation of a body of data that are subject to various limitations and flaws. From this limited data we have drawn some pertinent observations, and predictions have been posited. They should not be considered as anything else. Accordingly, all project related development within the project development area must be conducted with the assumption that additional areas and objects of Aboriginal cultural heritage value may exist and is yet to be identified.

5. ABORIGINAL CULTURAL LANDSCAPE

One of the requirements for the Aboriginal Cultural Heritage Impact Assessment Study is a review of the nature and form of the known Aboriginal cultural heritage areas, objects and values of the project development area. This section is primarily aimed at providing a baseline indication of the Aboriginal cultural heritage areas, objects and values that may be either known or likely to be located throughout the project development area and which may be impacted by the proposed development activities. Secondly, it is also aimed at ascertaining the presence (or clearly documented absence) of any known Aboriginal cultural heritage areas, objects or values that are currently protected by virtue of their inclusion on any one of the Commonwealth, State and Local Government Authority heritage lists, registers and planning schemes.

This section summarises and synthesises the results of previous Aboriginal cultural heritage investigations relevant to the project development area. This section also addresses some consideration of the cultural landscape that may be impacted by the Surat Gas Project.

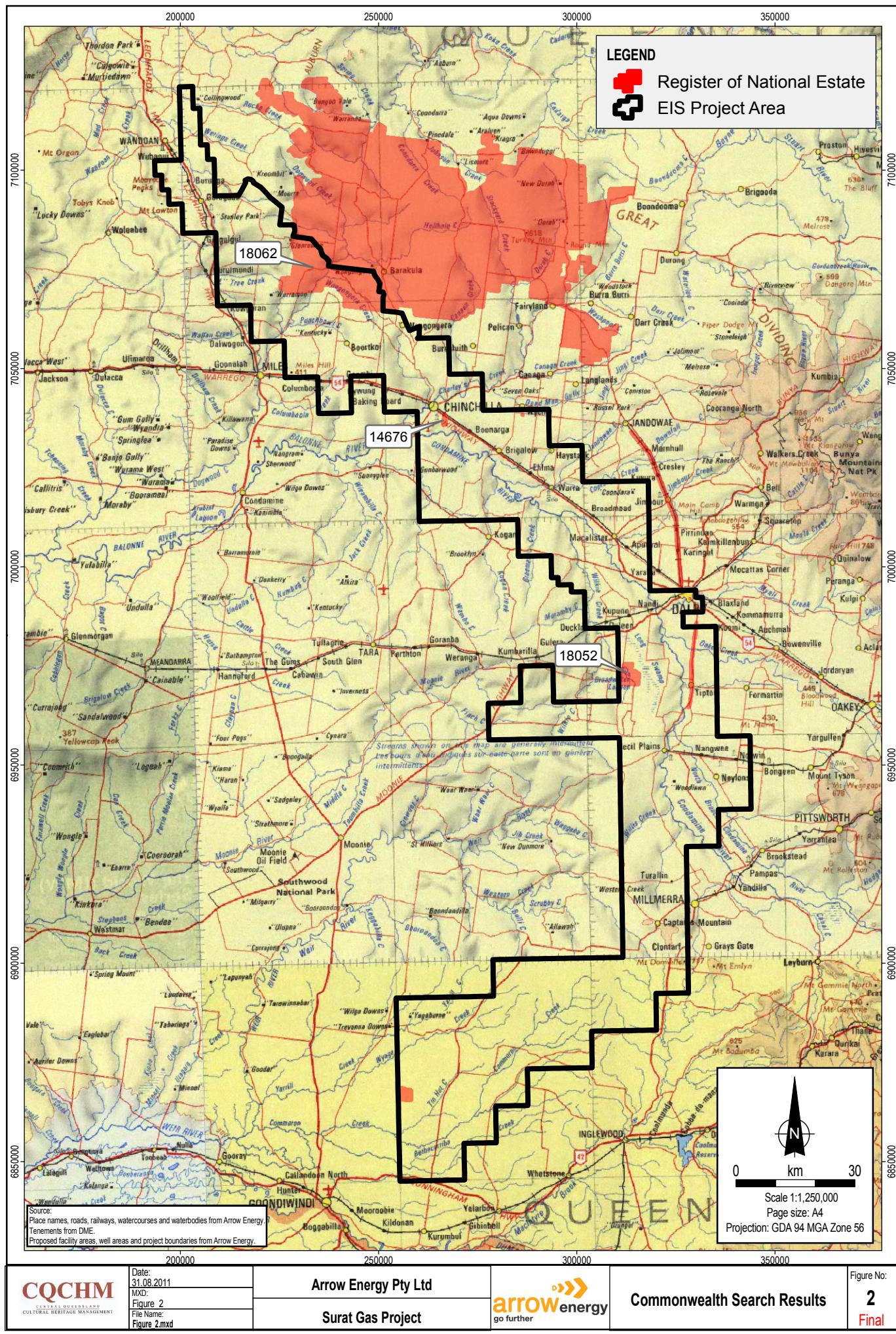
A review of various published and unpublished material relating to both the project development area and its broader region is then considered with a view to presenting a cultural heritage landscape model for locations of Aboriginal cultural heritage value within the project development area.

5.1 Cultural Heritage Database, List and Register Search Results

As previously discussed in Section 3, formal searches were conducted of a range of State and Commonwealth heritage databases, lists and registers. The results of these searches are depicted in Figures 2, 3 and 4 and summarised in Table 1 below. This shows the total number of places returned by each search, where locational information indicates the place to be either wholly or partially within the project development area. Of those, the number for which Aboriginal cultural heritage values have been able to be identified are also presented.

Database, List or Register Name	Administering Body	Places Identified Within Study Area	Places Identified Within Project Development Area	Identified Aboriginal Cultural Heritage Values
World Heritage List	DSEWPaC, Commonwealth	0	0	0
Commonwealth Heritage List	DSEWPaC, Commonwealth	0	0	0
National Heritage List	DSEWPaC, Commonwealth	0	0	0
Register of the National Estate	DSEWPaC, Commonwealth	9	7	3
Queensland Indigenous Cultural Heritage Database	DERM, State	398	372	372
Queensland Heritage Register	DERM, State	7	7	0
Cultural Heritage Information Management System	DERM, State	124	99	3
	Total	538	485	378

Table 1: Summary of heritage places identified from the various heritage database, list and register searches undertaken.



The three places identified on the Register of the National Estate (RNE) (see Figure 2) include the following:

- Barakula State Forest (RNE ID: 18062), the south western portion of which is within the project development area. This extensive area is known to contain a range of Aboriginal cultural heritage values and a number of places listed individually on both the ICHD and CHIMS are found within it;
- Lake Broadwater (RNE ID: 18052) is known to be a particularly important place for Aboriginal people having been used for both residential and ceremonial purposes. Associations with an important creator being (namely the Rainbow Serpent) have also been identified; and
- Chinchilla Fossil Site (RNE ID: 14676) may have Aboriginal heritage values, yet to be formally identified, but which may be of National Estate significance. Irrespective, a single place (a scarred tree) recorded on the ICHD falls within this area.

By far the bulk of the places identified from the formal database, list and register searches conducted comes from the ICHD (see Figure 3). Of note in this is the diverse range of cultural heritage place-types that have been identified throughout the project development area. The following are pertinent in this regard:

- Places containing solely stone artefacts dominate and comprise almost 60% of the total number;
- From the information available, these tend to be reasonably restricted in extent covering between 10m and 100m diameter (approximately 80m^2 - $2,000\text{m}^2$). Despite this, a series of stone artefact scatters have been identified in the Kogan Creek area near its convergence with the Condamine River that cover areas between 14 and 96 hectares ($140,000\text{ m}^2$ and $960,000\text{m}^2$ respectively);
- While scarred trees are usually the next most common place-type identified in such searches, these comprise in excess of 25% of the total number of places identified. This is considered to be high;
- Both stone artefacts and scarred trees have been found virtually everywhere that physical cultural heritage investigations have been undertaken in the project development area;
- A range of other subsistence-related (or ‘everyday’) place-types were identified in much fewer numbers. These included shell middens, quarries, axe grinding grooves, ochre and other resource places (such as useful and medicinal plants), and hearths. These places have tended to cluster in the central portions of the project development area very much in association with the intensive and extensive cultural heritage investigations that have been conducted;
- Although an integral part of the subsistence cultural landscape, shell middens and hearths in particular are uncommon in the contemporary landscape. Containing organic material, both are highly susceptible to the vagaries of post-depositional environmental factors. As a result, features

such as these are important in their ability to provide insights into both the timing and patterns of land and resource use.

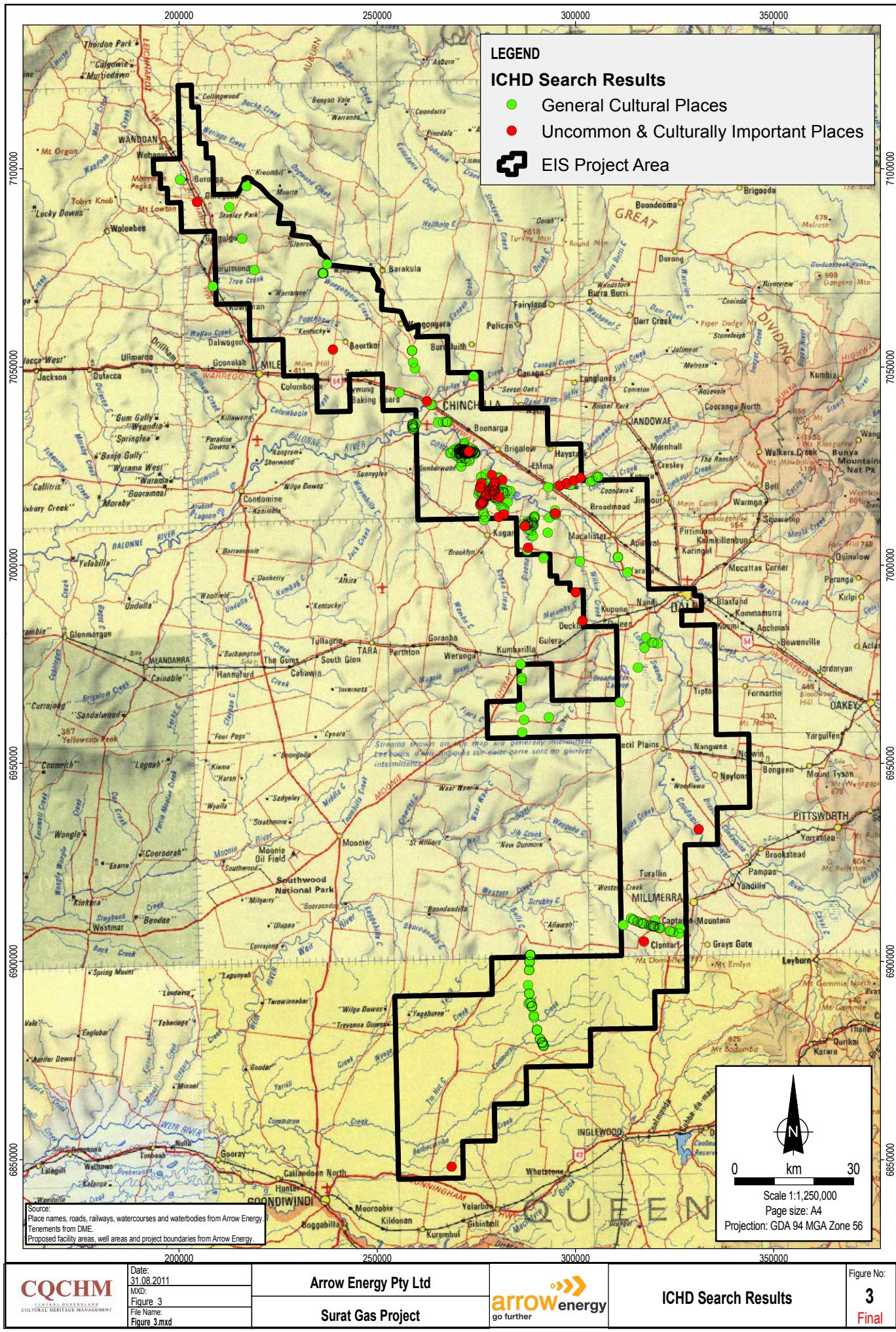
- A number of uncommon and / or culturally important or sensitive places were also identified (see Figure 3). The former has included recordings of wells, a weir and pathway, while the later has ranged from burials and ceremonial places (including stone arrangements and earthen (or ‘bora’) rings), through to other places simply referred to as being ‘Cultural Places’ or ‘Sensitive Areas’;
- An area containing what is described within the ICHD as ‘wood flakes’ was recorded in the general Kogan area alongside the Condamine River near its convergence with Cooranga Creek. While the details of this are unknown, it is a potentially highly significant area and raises issues for other future development looking to take place in the area or similar landscape settings;
- Some 40 places (10%) have been identified as having multiple values / places at the one location. A number of these contain three or more combinations of place-types and clearly speak to portions of the project development area containing rich and diverse cultural heritage ‘precincts’;
- Such precincts are located throughout the project development area but cluster in close proximity to the major waterways such as the Condamine River and Dogwood / Wongongera, Kogan, Braemar, Wilkie and Commonon creeks.

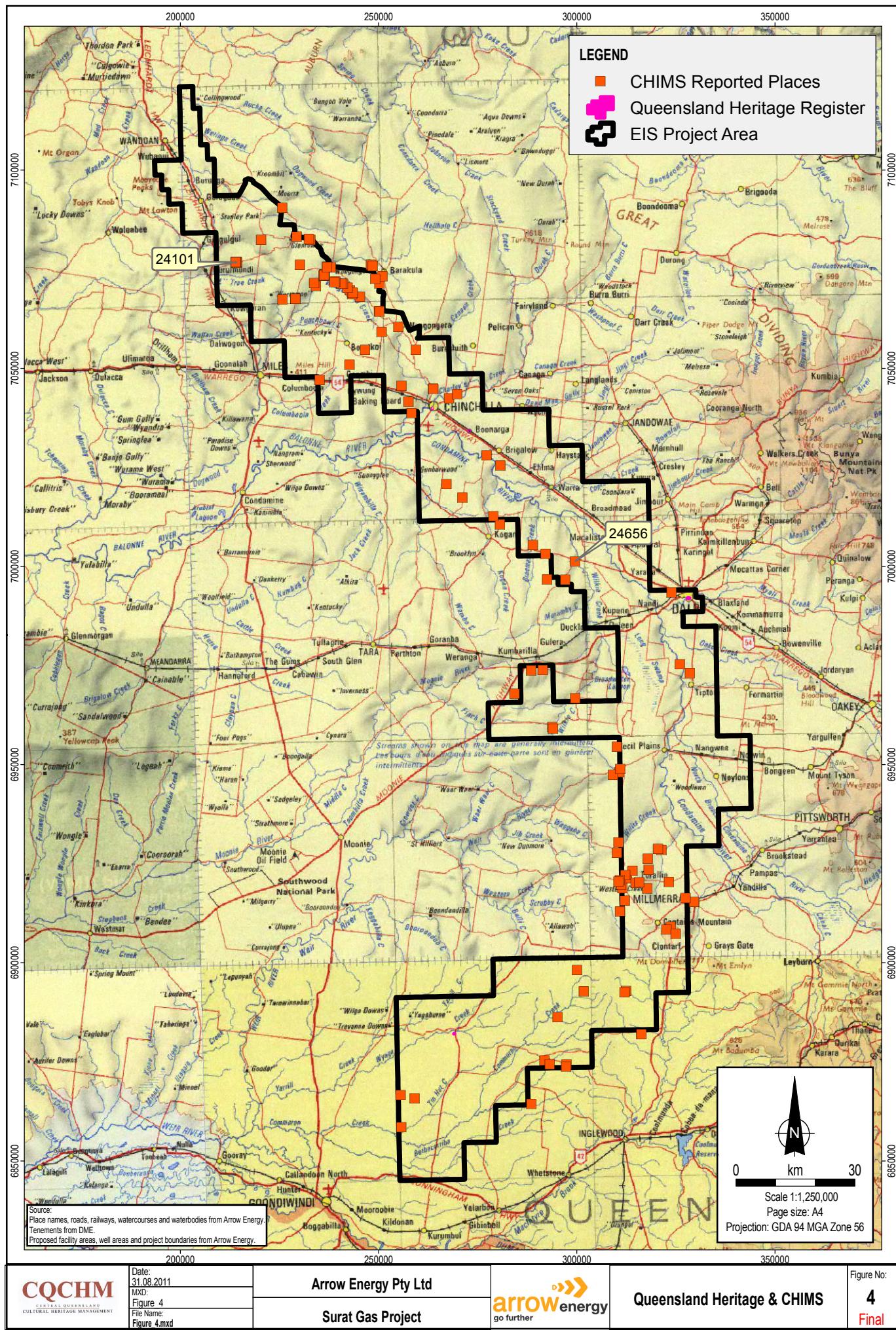
An additional three (3) places were identified from CHIMS (see Figure 4). These include:

- One of Leichhardt’s October 1844 camp locations (referred to as ‘Camp 5 & L Tree – Jingi Jingi Creek, Brigalow’)(CHIMS ID: 22981) at which he noted an encounter with Aboriginal people in his subsequent journal;
- A place designated as being ‘Unknown’ on CHIMS (ID: 24101) made reference to a cultural heritage assessment undertaken in 2001 (CQCHM 2001). This was subsequently reviewed and the grid references provided match a reference within this report (CQCHM 2001:38) to strong Aboriginal values dating to the historic period associated with ‘Daandine’ property;
- A place identified as being ‘Forestry Shield Tree’ (CHIMS ID: 24656) did not contain any specific information regarding the tree identified. With its description being a ‘shield tree’ as against usual forestry descriptions such as ‘blazed’ tree or even ‘scarred’ tree on occasion, however, the possibility remains that the scar is of Aboriginal origin. As outlined elsewhere, Aboriginal scarred trees have previously been identified within State Forest areas.

5.2 Local Government Authority Planning Schemes

The project development area includes portions of three Local Government Authority areas. While its vast majority is located within the Western Downs Regional Council, it also includes sizeable areas within the Toowoomba and Goondiwindi Regional Councils. These council areas are amalgams of previously smaller and independent shires and the current planning schemes remain separated across





these original shire areas. Discussions with planning personnel and review of the current planning schemes for each of the above 11 shire areas were undertaken with respect to the status of and processes for Aboriginal cultural heritage, and with particular reference to any specific Aboriginal cultural heritage registers that may have been compiled. None contained reference to any places that are located within the project development area.

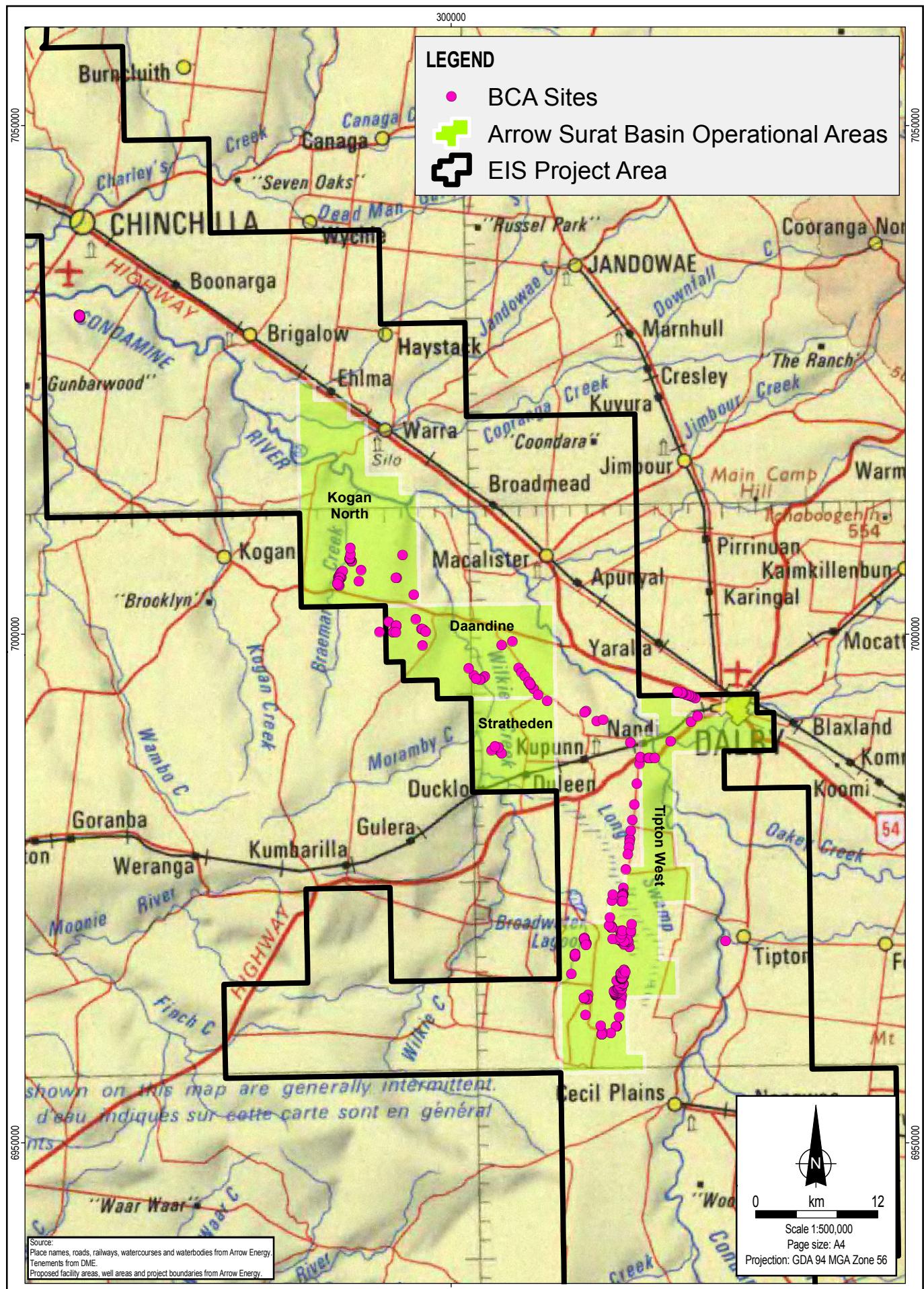
5.3 Review of Published and Unpublished Aboriginal Cultural Heritage Literature

A range of both published and unpublished literature was reviewed as part of this Aboriginal Cultural Heritage Impact Assessment Study. This included ethno-historical accounts, a range of historical texts and other sources (such as newspapers & letters), a review of regional archaeological research and models, and, to the extent that they were available for review, the results of specific Aboriginal cultural heritage studies undertaken both within and in the immediate vicinity of the project development area.

Although considerably more were identified, an additional 313 places containing Aboriginal cultural heritage values were identified from this review as being located within the project development area. These consist of: an additional 234 places containing stone artefacts; 61 scarred trees; 13 hearths; a spiritual place (Lake Broadwater with its association with the Rainbow Serpent), two areas known to have seen large gatherings of Aboriginal people in the historic period; and a further two areas containing historic Aboriginal camps.

While they are considered from their general geographic descriptions to be within the project development area, detailed locational information was unable to be ascertained for five places. This included the large historic gathering and Aboriginal camping areas and a stone artefact scatter along Braemar Creek.

The vast majority of places for which detailed locational information was available came from a synthesis of cultural heritage assessments that have been undertaken within Arrow's existing Surat Basin gas tenements by Bonhomme and Craib (BCA 2009). The location of these places is provided in Figure 5.



CQCHM CENTRAL QUEENSLAND CULTURAL HERITAGE MANAGEMENT	Date: 31.08.2011 MXD: Figure 5 File Name: Figure 5.mxd	Arrow Energy Pty Ltd Surat Gas Project	arrow energy go further	BCA Sites	Figure No: 5 Final
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5.4 Summary of the Aboriginal Cultural Heritage Landscape of the Project Development Area

5.4.1 Ethno-historical Perspectives

Ethno-historic information specific to the project development area is sparse and generally mixed within broader discussions of the Darling Downs. Despite this, it is possible to gain an appreciation of the Aboriginal people of the project development area at the time of initial European settlement. Impressions gained from the observations and recordings of early Europeans on the Darling Downs were that the area was only sparsely populated by Aboriginal people. However, a range of subsequent records from a variety of sources, but particularly those left by the early settlers as well as the first Commissioner of Lands for the Darling Downs District, indicate that this was a considerable misunderstanding.

A synthesis of a range of this documentary information undertaken by French (1989) and his resulting population estimate of between 1,500 and 2,500 Aboriginal people on the Darling Downs, would seem a not unreasonable inference. Indeed, gatherings of Aboriginal people within the project development area were reported as ranging in number from 400 to as high as 1,100 at times of ceremony.

The Aboriginal people of the Downs would have had a range of items made of wood and natural fibres similar to that described across other parts of Queensland. Unlike other parts of Queensland, however, few accounts describe the Aboriginal material culture of the Downs country specifically. What information there is comes from examination of the material culture collections in the Queensland Museum, from the cursory descriptions left by early explorers and settlers, limited ethnographic works and historic photographs.

Possibly the most commonly referred to items of material culture within the early accounts of the Downs are spears, nulla nullas, and hafted axes ('tomahawks') and, while usually described as being weapons, little detail is provided in respect of their form, manufacture or methods of use. Few reside within public collections.

A review of the Queensland museum material cultural collection undertaken by Bonhomme and Craib identified a number of items from the Downs. This includes ten items described as 'boomerangs', one 'tomahawk', one 'millstone' (or grindstone) and a breastplate described as belonging to 'King Tommy of Glengallon'.

Fishing was observed within the early accounts as being both a common and important subsistence activity among Aboriginal people across the Downs. While little is mentioned as to the methods used to exploit this resource, it is assumed that a range of fibre and wood nets similar to those documented in adjacent areas were used.

Possom skin rugs and cloaks were clearly in common usage across the region, with many references being made of them. Individual pelts were sewn together using bone awls.

Additionally, the early ethno-historical accounts note that head bands or headdress were commonplace items among the Aboriginal people of the Downs. Such adornment may have been more elaborate when made for specific purposes, such as for ceremony, where photos show individual designs.

At Mitchell, to the west of the project development area, the explorer Thomas Mitchell noted a number of Aboriginal people painted with red ochre. With such practices also being noted within the Brisbane area to the east, it can reasonably be inferred that body painting would also have been practiced within the project development area.

Many of the historic photographs in the John Oxley Library Aboriginal collection show men with cicatrices, or body scarring. While these generally consist of straight-line scars, there is a variety of patterning across individuals. At least some of this scarring was observed as occurring in association with Bora ceremonies practiced throughout the broader study area. Ethnohistoric accounts describes the flesh being cut by other members of the group using the sharp edges of shells which were later replaced by glass when it became more widely available. The fresh wounds were filled with ashes and on occasion an oil product. This application promoted festering and subsequently the prominent scars.

Body piercing, particularly of the nasal septum was also noted as being practiced in association with Bora ceremony. A sharp-pointed bone was utilised to affect this piercing.

5.4.2 Archaeological Perspectives

Based on the results of a range of cultural heritage fieldwork and historic sources from the broader western Darling Downs (including specific information relating to the project development area), a series of components of the Aboriginal cultural landscape have been able to be identified. Places more commonly referred to as ‘archaeological sites’, include stone artefacts, scarred trees, hearth / ovens, axe-grinding grooves, quarries, wells, shell scatters, burials, rock art and stone arrangements.

The most common of these are stone artefacts found either as isolated examples or as scatters. While sometimes extensive, these scatters are generally of low density. Both flaked and ground (such as grindstones and axes) artefacts can be expected to be readily identified. Places containing subsurface cultural heritage material have been identified within the project development area and tend to be associated with the alluvial terraces of the principal waterways.

Despite their durability in the face of a raft of post-depositional factors that tend to lead to the destruction of other classes of cultural materials, another major reason for the numbers of flaked stone artefacts across this portion of the project development area is that the region is rich in naturally-occurring stone suitable for artefact manufacture. Materials such as silcrete, petrified wood and quartzite (the dominant raw materials used), are abundant and found in a variety of forms – most notably as floaters within the clay soils that dominate the broader region. Indeed, the Chinchilla area has been recognised internationally for its abundance of petrified wood.

While it is hard to determine the meaning and place of isolated stone artefacts within a cultural landscape, stone artefact scatters have been identified as representing a range of activities; including living sites (both large and small), knapping floors (an identifiable, and usually spatially discrete, stone flaking event), short-term campsites, and places associated with other specific activities such as hunting and resource procurement and processing.

The vast majority of the reports that have been reviewed indicate that the presence, frequency and composition of stone artefact scatters is largely determined by proximity to hydrological features such as waterways, billabongs and gilgais and the associated permanent water. To this, authors such as Bonhomme and Craib (2009) have added that where stone artefact scatters occur predominantly near water, these tend to be located on level terrain and away from flooding, usually at the first break of slope (contour / terrace) above the bed. They can be found at distances up to 500m from the waterway or water source. Large campsites, and by extension larger or more dense stone artefact scatters, will also tend to be located close to a range of other resources including food, raw materials, firewood and material for shelter. Noticeably water plays an important role in many of these.

The distribution of scatters along the margins of these waterways is usually patchy, corresponding to locations with more permanent water, however low density scatters can occur at any point along these features.

Additionally, Bonhomme and Craib (2009) have also noted that gilgais throughout the project development area are places where specialized activities, most likely, plant processing occurred. This has been inferred from the restricted range of tools and that waste flakes, as well as cores, appear to be rare. In addition, these places exhibit expedient tools, reflecting both the short-term nature use of gilgais (they tend to hold water for short periods of time) as well as the easy access to flakeable stone (found within the associated black soils).

Scarred trees have also been a regular feature in the results of previous cultural heritage investigations. Trees were an important resource to Aboriginal people as they provide a range of materials and

performed a number of functions. The bark and wood were used for a wide range of purposes including everyday items, weapons, shelter and for wrapping the dead. Trees were also a source of firewood and of food. Hollow trees were also used as one method for the disposal of the dead.

Today, scarred trees are expected to be found along the margins of watercourses and on the edges of adjacent floodplains. Any 'pattern' to this distribution is, most likely, a result of past logging and clearance activities associated with agriculture and grazing. While scarred trees may be found in any areas containing remnant vegetation communities, concentrations have also been noted along road reserves.

As previously outlined, fires for cooking and warmth are assumed to have been a common feature throughout the landscape. Fire can be controlled by a range of techniques such as using different types of timber, twigs, leaves, stones or clay, with each of these creating a distinctive resulting pattern or hearth type. Within the project development area clay was used for its heat retentive properties with the resulting clay ball clusters recorded at a number of locations both within the project development area and throughout the broader region.

Hearths are significant in that they can provide material suitable for radiocarbon dating. Indeed, all six current radiocarbon dates available from the western Darling Downs have been obtained from charcoal samples excavated from hearths (BCA 2009:28). Although no specific information regarding the excavations undertaken or their results was available to this assessment, it is known that the investigation of a number of these clay ball clusters has occurred in the Kogan area, along Nine Mile Creek, on the properties of Bellevue and Nangram as well as along Wilkie Creek, south of Macalister, all within the project development area.

Places to grind the working edges of axes (an important tool in the undertaking of a range of subsistence activities), would have been a regular landscape feature. In addition to two examples associated with secondary waterways within the project development area, axe-grinding grooves have also been located in the Condamine River immediately adjacent to it.

Grinding grooves tend to be located on sandstone outcrops either in or immediately adjacent to watercourses where suitable rock is exposed. In areas where there is outcropping sandstone, which can provide a source material for grinding slabs, such grinding artefacts may also be found as portable objects.

Water management infrastructure such as weirs and wells (examples of which have also been recorded within the project development area) again would have been reasonably commonplace fixtures in the

landscape. Being created within the unpredictable bounds of waterways, makes the survivability of such features, particularly smaller or more insubstantial / temporary structures, low. This directly reflects upon the likelihood of additional such places being present within the project development area today, and as such would be considered unlikely.

Although it would appear unlikely, linked to this is the possibility of other currently unknown important places coming to light during the course of further cultural investigations. These could take a great variety of forms but would likely be landscape features.

The previous identification of a range of places associated with ceremony within and immediately adjacent to the project development area would indicate that the identification of these places during further cultural heritage investigations would not be out of place. Given the geographical extent of the project, these could take the form of earthen rings (bora grounds), arrangements of stone and natural landscape features.

Human skeletal remains identified as burials have been recorded in a number of contexts throughout the project development area. The majority of these have been identified as ground interments associated with major waterways. Although considered to be of low likelihood given the generally restricted nature of the proposed project activities, and the absence of discoveries of such during the gas development undertaken in the project development area to date, in ground interments are a possibility in a variety of contexts where a deposit is suitable for digging. Within the project development area, such opportunities tend to be concentrated in the sandy alluvial soils located alongside waterways or in other areas where wind-blown sands accumulate (such as dunes). Utilised areas are most commonly located above flood levels and so sand dunes and the high plain have also been a commonly identified location for such places.

With the information available from the western Darling Downs, including that specific to the project development area, a model has been posited by Bonhomme and Craib (BCA 2009) which looks to describe in greater detail the range and likely location of Aboriginal cultural heritage places in the landscape. Sometimes referred to as a ‘predictive model’, such models are simply a way of examining and presenting the associations between landscape (i.e. environmental) variables and the types and amounts of cultural materials likely to be present within those. The most common such modelling utilised attempts to comment on the levels of sensitivity (i.e. the likelihood that cultural materials will be present) of various locations / areas within a landscape. Owing to the generally sparse and incomplete data upon which such models are created, they should be considered as indicative only.

Within the general project development area, three general variables were noted as assisting in the creation of predictions about archaeological sensitivity, or the probability of specific cultural heritage areas and objects occurring in a specific area (BCA 2009:29). These have been identified as being in proximity to a water source, elevation and soil type. This model is captured in Table 2.

A range of cultural processes from the initial discard of cultural material, through loss and reuse by past Aboriginal people, as well as subsequent tree clearing, ploughing, grazing and a range of other development since the arrival of Europeans to the project development area, have served to condition what remains in the landscape today. The cultural record of the broader region creates another set of challenges. Although a variety of discrete cultural heritage place-types are present (e.g. Bora grounds,

Landscape	Sensitivity	Expected Cultural Heritage Places
Defined waterways (including lagoons) and their immediate tributary areas on sandy / sandy loam soils.	High to Very High	<ul style="list-style-type: none"> • Scarred trees • Stone and shell scatters • Axe-grinding grooves • Burials
Black soil gilgais	Moderate	<ul style="list-style-type: none"> • Stone artefacts (high frequencies of ‘tools’) • Hearths
Ridges and rocky uplands	Moderate to High	<ul style="list-style-type: none"> • Stone arrangements • Wells • Stone artefacts
High terraces below 300m asl on duplex / sandy loam soils	Moderate	<ul style="list-style-type: none"> • Scarred trees • Stone artefact scatters
Ridge / escarpments	Moderate to High	<ul style="list-style-type: none"> • Wells • Quarries • Bora grounds / stone arrangements
High plains above 300m asl away from hydrological features	Low	<ul style="list-style-type: none"> • Isolated stone artefact/s • Scarred trees
Black soil plains (including open floodplain)	Low	<ul style="list-style-type: none"> • Scarred trees • Isolated stone artefact/s • Stone sources and associated flaking

Table 2: Landscape sensitivity model for the Project Development Area (from BCA 2009).

stone arrangements, rockshelters, wells), the cultural landscape across the region is dominated by the presence of extensive, low-density surface scatters of stone artefacts. In this way the area has been described (BCA 2009:13-14) as a classic example of a non-site landscape consisting of an expedient technology.

5.4.3 Concluding Remarks

The above summaries make it plain that the project development area contains a rich and varied cultural landscape that is of particular significance to the local Aboriginal communities. The cultural signature of this landscape has expression in two separate but intrinsically linked spheres: that relating to traditional and spiritual association with a number of specific places within that overall landscape; and that resulting from the everyday use and occupation of that landscape. The project development area has places from both of these spheres known to exist.

The courses and waterholes of a number of the substantial waterways of the project development area, areas with the potential to contain springs, and a number of other specific landscape features (such as Lake Broadwater), form part of the living traditional knowledge-base of the Aboriginal communities of those areas linked both through legend (such as that of the Rainbow Serpent) and in stories passed across generations.

The project development area and its individual cultural heritage places are part of a larger cultural landscape for which many more similar places are both known to exist. This wider knowledge also informs an understanding of the nature, form and location of other cultural heritage places that may be expected to be located within the project development area and may be recorded as part of further cultural heritage studies undertaken as part of the project.

The project development area has been substantially impacted by a range of land use practices. This has been greatly exacerbated over time as the larger runs that originally encompassed the project development area have been subsequently sub-divided into smaller and smaller lots. Although utilised for the same general purposes (predominantly pasture, grazing and cultivation cropping) but as independent operations, this has required the continued duplication of infrastructure (such as water management, roads, fencing and structures). Although there has been widespread tree clearance, substantial stands of dry sclerophyll woodland and dense patches of forest and scrub remain.

The types and intensity of these activities will have had a profound effect upon the Aboriginal cultural heritage of the project development area. The density and distribution of Aboriginal cultural heritage areas and objects so far identified and recorded are largely attributable to the effects of these activities. This process is one that will have affected these places over extended time periods, continually

reworking the affected cultural material and thereby redefining the area's cultural landscape. Despite this, as outlined above, distinct cultural patterning is still evident.

6. CULTURAL SIGNIFICANCE AND CUMULATIVE IMPACTS

6.1 Observations regarding Aboriginal cultural heritage significance

At the time of preparing this report direct engagement with the Aboriginal Parties throughout the project development area was in its earliest stages. As a result we have not been able to explore with the Aboriginal Parties the specific significance of the cultural areas, object and values identified within the above searches, investigations and analyses. Despite this, some general observations derived from previous work with a number of the groups involved in this project, along with other groups from elsewhere in Queensland is pertinent.

Over the last fifteen years or so the majority, if not all, of the Aboriginal groups throughout the project development area have had opportunity to be intimately involved in a series of substantial cultural heritage investigations in their country, and have taken up that opportunity. This interest in cultural heritage matters is not, however, a recent interest and it can also be seen that the attitude towards these studies and the materials found during them displays a direct link with traditional processes of custodianship and management of areas and objects of cultural significance.

It is important to note that in Aboriginal society there was no static list of places that were deemed to be culturally important. In this it should also be noted that in a sense the entire landscape was a cultural entity in which some locations required a greater level of response but in which people had to be continually aware that the ‘old people’ or other entities could manifest themselves. People regularly had experiences in the course of their everyday movements, or dreamed about places and things, that were then submitted to older, knowledgeable people for their consideration. Dependent on the outcome of that adjudication, areas and events were then added to a corpus of localities that were seen as important, demanding special attention and response from people: that is, those places had to be managed.

This process of identification of an area of cultural significance is entirely consistent with processes seen across Aboriginal Australia and is consistent with the actions of Aboriginal people in other cases. Central to deliberations is consideration of the duty of care they owe to the material culture, as a manifestation of the ‘old people’, and to the area as a whole, recognising they are being watched by the ‘old people’. Indeed, as Aboriginal field researchers often note in the course of fieldwork, they constantly are being observed by the ‘old people’ all the time they are in the field.

Arrow is highly sensitive to the fact that contemporary Aboriginal people take extremely seriously the responsibilities they have to the ‘old people’ and to manage and protect the cultural heritage areas and objects they have inherited from them and such recognition is reflected within the cultural heritage management strategy that has been developed for the project.

6.2 A comment on the applicability of Cumulative Impacts

The traditional approach to cumulative impact assessment is not appropriate for Indigenous cultural heritage management for the project. The reasons for limited applicability are as follows:

1. There is no simple case to be made to define the existing environment. There is not the base data as to just how many cultural sites and of what types there are in any particular region or sub-region against which we can compare the results of a survey of the area to be affected by development so as to make a calculation of loss. Even when focusing solely on archaeological cultural heritage it is safe to say that no region has been subject of a comprehensive and systematic survey. Datasets and registers are subject to limitations (as discussed in Section 4) and cannot be viewed as comprehensive datasets of what is out there. In this regard, when considered in a regional sense, as is appropriate for cumulative impact assessment, it is impossible to know if impacts to cultural heritage that occur as a result of any one project represent impacts to the totality of the heritage or to a subset of it, and if the latter, just what percentage.
2. It is not easy to determine at what point the critical threshold of losses is crossed. There is no set of quantitative measurements that is available that says that a certain level of loss is acceptable but beyond which level it cannot be contemplated, and if such quantitative measurements were set, there is the question of competing measures and which of those should have primacy in a particular set of circumstances: the archaeological community, the Aboriginal community or statutory bodies? Nor is there a simple qualitative measure (e.g. number of shell middens) – thus, different sites offer different opportunities for scientific analysis and cannot be easily compared one to another in this regard. The issue of losses thus is a qualitative assessment requiring a decision as to where the balance of convenience lies in the matter taking account of the particular circumstances.
3. It is impractical to set an absolute cultural heritage datum against which to measure the impact of a proposed development. Certain elements of the archaeological landscape are no longer coming into being – e.g., people may no longer be using stone artefacts or no longer collecting shellfish in such quantities that massive middens eventuate. However, for

Aboriginal people, the cultural landscape is continually coming into being. New phenomena are experienced, new things encountered, and these are then incorporated in the cultural landscape as they see it. If the cultural landscape is continually coming into being, it is not as simple as setting a simplistic quantitative, absolute threshold against which we can measure whether a loss is or is not acceptable.

In addition to the above, and with direct reference to the Surat Gas Project, the nature of much of the project development facilitates the situation where avoidance of disturbance can serve as the most effective management measure. Arrow has committed to the Avoidance Principle: it will endeavour to avoid harm to Aboriginal cultural heritage, but recognises that this may not be possible in all cases and in those cases will act to minimise harm. Other projects may also exercise avoidance strategies to varying degrees, but their effectiveness in this regard may not truly be known until such time as development progresses.

It is only where parties have sought to implement the Avoidance Principle and we have the results of that exercise measured against the totality of what was found that we can measure the impact of those projects to add to any model of cumulative impacts. That is, they cannot be quantified in advance of the particular project proceeding. Such data are not available and may not be made available for various reasons (e.g. s30 of the ACH Act). It is in these circumstances that other protective processes such as CHMP, in which impacts will be managed on a case by case basis, through implementation of the Avoidance Principle, offer the best means of an effective management process, rather than attempting to quantify possible impacts in advance from uncertain data and making judgements on those inadequate data.

7. CULTURAL HERITAGE MANAGEMENT STRATEGY

Arrow fully appreciates that the Aboriginal Parties retain a strong interest in ensuring that the cultural heritage areas, objects and values identified throughout the project development area are managed in an appropriate fashion and with their direct input. Wherever possible, Arrow anticipates that this will be done by conservation of the area or object/s *in situ* and avoidance of impact, consistent with the Avoidance Principle which the ACH Act mandates as a central tenet in the implementation of all CHMPs. Nevertheless, it also is recognised that the controlled removal and storage of cultural objects in locations acceptable to the Aboriginal Parties will likely be necessary in some or many situations. A range of other management strategies will also likely be required on a case-by-case basis. It is anticipated that the Aboriginal Parties will require the implementation of a management process that embodies appropriate mechanisms for the management of their cultural heritage. Arrow is committed to providing the opportunity to achieve this outcome. To enshrine higher level controls in Arrow's day

to day business Aboriginal Cultural Heritage considerations have been built into Arrow's standard operating procedures for site selection, land access and ground disturbance.

It has been determined that Arrow can comply with the ACH Act duty of care for the Surat Gas Project either through a suitable Native Title agreement that does not expressly exclude cultural heritage or through an approved CHMP. Arrow recognises that cultural heritage is an element of Native Title and is not opposed, noting the caveats discussed below, to using an ILUA as a vehicle for addressing cultural heritage issues. However, if an ILUA is not completed in accordance with the project timetable, or cannot be registered, or if Arrow forms the view that such is unlikely to be achieved, Arrow will be required to comply with Part 7 of the ACH Act in another manner (i.e. development of approved CHMPs).

7.1 Compliance with Part 7 of the ACH Act and the Form of CHMPs

Arrow is required to meet the Aboriginal cultural heritage duty of care. In the current circumstances, this is to be done by compliance with Part 7 of the ACH Act. This part of the Act either requires a proponent to negotiate and settle a cultural heritage agreement of a specified form (including but not limited to an ILUA or s.31 agreement) as provided by s.86 and that does not expressly exclude management of cultural heritage, or to develop a CHMP.

A CHMP may either be voluntary or mandatory in nature: that is, the sponsor may elect to develop a CHMP or may be required to do so by provisions of s.87. The specific terms of this section are central to the strategy that Arrow wishes to implement in respect of developing a CHMP or CHMPs.

There are two types of CHMP. The first may be characterised as a 'process CHMP' in which the broad mechanisms for the management of Aboriginal cultural heritage are stipulated and, except in exceptional circumstances, constitutes an agreement between the sponsor and the Endorsed Parties, as these terms are defined in the ACH Act. Typically, a process CHMP settles the broad principles that will guide the management process, the boilerplate conditions of the CHMP, and sets the various stages that will apply to management (conduct of a survey, negotiation of specific management requirements, implementation of pre-construction and construction related management strategies, and in some cases outlines post construction management processes). This type of CHMP sets the framework within which Aboriginal cultural heritage will be managed in the context of the proposed development proceeding.

The second type of CHMP may be called a 'site management CHMP'. The fundamental difference between this and a process CHMP is that the site management type focuses almost exclusively on

specific management requirements for sites identified during a survey that has already been conducted prior to settlement of the CHMP.

7.2 Complicating Factors

In the normal course of events, Arrow's preferred approach to compliance with the provisions of Part 7 of the ACH Act, would be to settle an ILUA that expressly provides a set of arrangements for the management of Aboriginal cultural heritage, or to develop a process CHMP or CHMPs with the involvement of the relevant Endorsed Parties. Ideally, Arrow would hope to do this as a global exercise for the entirety of the project development area. There are, however, a range of factors that affect such an approach.

With respect to use of a Native Title agreement of the type contemplated in s86 of the ACH Act, agreements of the requisite form basically face three distinct hurdles:

1. The conditions of an agreement, including the benefits associated with the same, must be settled between the Parties to the agreement;
2. The Native Title parties must then be able to have the agreement authorised or certified;
3. The agreement must then be registered. Part of this process is an independent assessment of the circumstances in which the agreement has been negotiated and then authorised or certified.

If the process fails at any one of these hurdles, then it would be impossible to meet the duty of care by this means, due to the absence of a registered native title agreement.

It should also be noted that this settlement, authorisation/certification, and registration process can take anything up to 18 months. In these circumstances, and where a more timely response to the duty of care may be required for some Project elements, other measures to comply with the duty of care, and specifically Part 7, would be necessary in the interim.

Arrow further observes that for a significant portion of the project development area, the Native Title landscape is extremely unsettled. Over large portions it is currently the case that there are no registered Native Title claims.

The issuing of notices to develop a CHMP or CHMPs at the present time when there is considerable uncertainty, and when in all likelihood the Native Title landscape will alter significantly in next few years, is that it locks in those who currently have standing as Endorsed Parties for all time for those areas over which CHMP notices are issued. As Arrow is contemplating a project that has at least a

twenty year life span, it could be required to continue dealing with individuals or parties whose standing as an Aboriginal Party has long since evaporated but remain as an Endorsed Party.

Arrow cannot therefore simply proceed with a rigid approach in which it attempts to settle a process based CHMP or CHMPs across all its tenements for the entire life of the project. Rather, it is aiming to develop and implement a far more responsive approach that will allow it to meet changing circumstances legally and with regard to the dynamic Native Title landscape. Arrow has considered its options and has settled on an alternative model that is explained below.

7.3 Proposed CHMP Strategy

As outlined above, the use of Native Title agreements in isolation to other means of satisfying the duty of care in terms acceptable to the requirements of Part 7 of the ACH Act is not one that can be countenanced. Despite this, there is a distinct possibility of capturing the management of Aboriginal cultural heritage in such agreements where two conditions are met:

1. The relevant parties to the agreement wish to do so; and
2. That any alternative non-Native Title agreement process is framed in such a way that it can give way to the Native Title agreement as and when the same is registered by the National Native Title Tribunal (NNTT).

To address these issues while still ensuring compliance with the duty of care, Arrow has decided to implement a two component strategy:

1. A staged ‘process CHMP’ model that will be directly tied to the staggered approach being planned for field development;
2. A ‘site management CHMP’ model limited to application only where necessary for exploration and pilot wells – where work is required in areas in advance of a process CHMP.

The staged approach will see Arrow’s cultural heritage processes linking directly to the staggered approach to field development, where there are clearly identified stages in which it intends to develop its various tenements, and it has outlined the timing of this. Predicated on this schedule, Arrow will issue notices for CHMPs approximately three years in advance of its intention to develop any particular section of a tenement. For those sections now identified where this schedule is less than this period of time, Arrow will issue the requisite notices in a timely fashion such that the notification and development periods stipulated in the ACH Act for development of a CHMP are met.

Arrow will also regularly review the notice schedule against any changes in the order in which sections of tenements are proposed to be developed. Where changes in the proposed production schedule are such that it requires an amendment of the CHMP notice schedule, Arrow will respond in such time that the statutory timeframes for issue of notices and development of a CHMP can be met. At a minimum, this will, on present requirements, require issue of notices a minimum of 114 days (four months) in advance of any site works taking place.

It is Arrow's view that the above strategy affords the best means by which it can address the uncertainties, vagaries and inconsistencies that have been documented in the preceding section. It is also compliant with the provisions of the ACH Act in providing compliance with the cultural heritage duty of care and, specifically, Part 7. It is the case that a lease, licence, permit, approval or other authority to proceed with the Project will be sought based on this EIS. Attention is drawn to the specific conditions of s.87(2)(b):

(2) The entity authorised to give the authority must not give it unless—

(b) the authority is given subject to conditions to ensure that no excavation, construction or other activity that may cause harm to Aboriginal cultural heritage takes place for the project without the development and approval of a cultural heritage management plan for the project.

Clearly, the ACH Act countenances a situation in which an authority (the term that aggregates the subsidiary terms lease, licence, permit, approval or other authority) can be granted in advance of the development of a CHMP, provided that any such authority is conditioned such that no site works being very broadly defined (i.e. any excavation, construction or other activity that may cause harm to Aboriginal cultural heritage) can be initiated in the absence of there being an approved CHMP in place for such works. This is directly aligned with the staged approach that Arrow wishes to implement.

While Arrow intends to issue notices for its tenements in a staged fashion, and this could result in considerable delay before it initiates processes to develop and negotiate CHMPs in many areas, it has commenced engagement with the Aboriginal Parties identified for the project development area. The purpose of this engagement is to explain the staged approach that Arrow intends to implement, and discuss the schedule for development of areas and how this will influence the issue of notices and engagement for the purposes of developing CHMPs. It will also outline the principles that Arrow intends to adopt in this regard.

7.4 Principles of Cultural Heritage Management

In line with the above strategy, Arrow has not yet settled any CHMPs for the project development area and, therefore, can not provide a definitive statement of the contents of these plans. In any case, the confidentiality provisions in these would likely preclude the inclusion of any details in the EIS. Arrow can, however, describe the principles it intends to adopt when it commences engagement with Endorsed Parties.

Arrow has adopted the following principles for the management of Aboriginal cultural heritage in areas that are not the subject of the existing Environmental Authority:

7.4.1 Agreement-Based Process

Arrow wishes to meet the cultural heritage duty of care by settlement of agreements with the Aboriginal parties and Endorsed Parties as the case may be. Arrow will agree to situate such agreements within the framework of ILUA's to be negotiated with the Aboriginal Native Title parties where this is the formally expressed wish of the relevant Native Title party. However, where Arrow concludes that an ILUA will not be registered within the required Project timeframe, or other contingencies arise such that Arrow concludes this option is not a feasible means of meeting the duty of care, Arrow reserves the right to pursue any other option available to meet the duty of care. Typically, this will involve the development of a CHMP or CHMPs. Arrow's preference in this regard is that these will be agreement-based but, where circumstances militate against this, Arrow may adopt other means provided in the ACH Act to secure a CHMP or CHMPs.

The base CHMP agreement will be known as a Cultural Heritage Investigation and Management Agreement (CHIMA). This terminology will be used to reinforce the process nature of the document. The CHIMA will consist of five major sections, with four of them being substantive in nature and the fifth consisting of standard boilerplate conditions. The four substantive sections include:

1. The principles that are to be adopted in relation to cultural heritage (see below);
2. The process for undertaking the Initial Cultural Heritage Assessment (ICHA) and the outcomes expected from this. This will relate to the identification of significant Aboriginal areas and objects that exist in the area subject to the CHIMA. This will be covered in a Terms of Reference agreed for the fieldwork and which will also be included in the CHIMA;
3. The development of a Cultural Heritage Management Strategy (CHMS) and the implementation of this in the context of construction activities. This will relate to how the significant Aboriginal areas and objects identified in the ICHA are to be managed. The strategy will have two major elements: pre-construction measures; and construction-related activities. In developing the CHMS, the parties will, to the greatest extent that is technically feasible, give effect to the fundamental

principle that site avoidance is the preferred management strategy. Provision for cultural induction processes, subsequent management of cultural material, and other contingencies will also be covered. The CHMS will constitute a formally agreed component of the CHIMA;

4. Provision will also be made for development of a Post-Construction Heritage Agreement (PCHA) if this should prove necessary. This will cover those steps that need to be implemented for the management of cultural places on a regular basis or in the context of emergencies associated with general maintenance, other uses (e.g. recreation) of the infrastructure, or expansion of projects as required. The PCHA will also constitute a formally agreed subsidiary agreement to the CHIMA.

7.4.2 Arrow's Management Principles

Arrow is committed to adopting a range of principles with respect to Aboriginal cultural heritage management. These will be refined in the course of developing the CHIMA. The following outlines those principles that are to be adopted by Arrow for the Surat Basin Project.

1. Arrow may act to the strict timelines of the ACH Act with respect to the development of the CHIMA as a CHMP where Arrow decides to develop a CHMP. Where it decides to do so, Arrow will inform the Endorsed Parties of its intention to do so;
2. Arrow will develop and implement the CHIMA through negotiation with the Aboriginal parties, or (on provision of appropriate authorisation) the nominees of the Endorsed Parties as per s.102(2) of the ACH Act.
3. Arrow is conscious that this project may be the catalyst for tensions and stresses within Aboriginal communities. To minimise this, Arrow will not act in a partisan fashion (and avoid the perception of this to the extent it can), and will not enter into group or inter-group politics;
4. Arrow will use current best practice in the measures implemented as against base compliance and will work with the Endorsed Parties to develop key performance indicators to ensure that it is best practice;
5. Arrow will seek agreement of Endorsed Parties on the core and subsidiary principles that influence the design of the process and its implementation;
6. Arrow will initially draft agreements in accordance with the agreed principles, and these will then be negotiated between the parties;
7. Arrow accepts as a base principle underwriting the entire cultural heritage exercise is the recognition of the different imperatives and interests of the parties, and their roles in relation to cultural heritage. This can be encapsulated as follows:
 - The core business of Arrow is the supply of energy (gas and associated services) to their customers, with those tasks to be undertaken in a commercially feasible and environmentally responsible fashion.

- The core business of Endorsed Parties is to manage their cultural heritage in a culturally appropriate fashion in the context of the proposed developments proceeding.
8. Arrow accepts that the selection of technical advisers to assist in conducting field investigations and preparing reports on same lies with the Endorsed Parties. A process will be developed that will allow the Endorsed Parties to nominate technical advisers with their appointment to be subject to Arrow's agreement;
 9. Arrow will retain the right to commission expert review of reports, as well as for any proposed management strategy in advance of its implementation with their appointment to be subject to consultation with the Endorsed Parties;
 10. Arrow proposes to adopt, the greatest extent possible, an agreement-based process between the parties for authorization of all project activities where such material may harm cultural heritage. This will be given expression such that any ground disturbing activities may require the issue of a formal permit to undertake ground disturbing activities issued within Arrow and that may require independent assessment in advance by the relevant Endorsed Parties. The primary authority for the permit will be the CHMS negotiated after the ICHA has been completed. The permit process will be linked to the project's GIS to allow auditing of the process.
 11. Cultural heritage data will be integrated into aGIS. The GIS will be developed in a fashion that recognizes and gives expression, to the extent practical, to the other principles included herein;
 12. Arrow accepts that the Endorsed Parties are the owners of all cultural heritage areas and objects that may exist in the areas to be affected by these developments, and will use all reasonable endeavours to give effect to this, and the implications arising from it, to the extent possible under existing legislation;
 13. Arrow accepts that all cultural information generated or collated (other than that which is already in the public domain), and subsidiary documents relating to the cultural heritage program (other than agreements or management strategies) produced in the course of these projects will remain the property of the relevant Endorsed Parties;
 14. Arrow accepts that it may not be necessary for Arrow to hold any primary or 'raw' cultural heritage information. Rather, Arrow requires data that makes clear the constraints or management requirements with which Arrow must comply to implement the agreed management strategy;
 15. Arrow must be guaranteed access to such information and it must be available in a timely fashion. To that end, Arrow will only agree to data management processes that Arrow considers will guarantee this access in the format Arrow considers necessary and provide it in a timely fashion;
 16. Arrow may, where the parties consider it necessary, enter into access and use protocols with the Endorsed Parties relating to the cultural heritage data generated or collated as part of this project;
 17. A dispute resolution processes will constitute a component of the CHIMA and, other than in exceptional circumstances, the steps in this process will be exhausted before any party makes any

- use of any other legal mechanisms although neither party will be precluded from making use of all avenues available to them;
18. Arrow expects, once agreement is reached with the Endorsed Parties, that the Endorsed Parties will assist Arrow where third parties challenge the agreed process and will not support any claims made by the third parties;
 19. Arrow believes the CHIMA should provide a formal mechanism for investigation of alleged breaches of the CHIMA and subsidiary agreements, and should make provision for appropriately graded sanctions for those who breach the CHIMA;
 20. Arrow accepts that there is a requirement for a formal cultural heritage induction process that makes reasonable provision for all project personnel to be made aware of the cultural heritage values associated with the project, and of their responsibilities under terms of the CHIMA and subsidiary agreements and that Arrow ensures that, wherever possible, Endorsed Parties or their nominees should assist in the development of, and participate in, any cultural heritage induction process and that this will include a component on cultural awareness;
 21. Provision will be made in the CHIMA for review or variations if there is variation of any of the existing project components or if additional project elements emerge that were not anticipated in the original project concept;
 22. Provision will be made in the CHIMA to allow parties have a right to review and vary provisions of the CHIMA at regular intervals (probably on an annual basis) for the duration of the CHIMA or if particular issues arise at any time.

7.4.3 Contingency Principle

Arrow will reserve the right to terminate the negotiation of the CHIMA or the implementation of the CHIMA subject in the latter case to the provisions of the agreement in this regard, and to meet the duty of care through means other than a negotiated agreement. The circumstances where this would apply include:

- Where Endorsed Parties advise that they will not engage with Arrow in negotiation of a CHIMA or otherwise unreasonably attempt to delay the development of the CHIMA;
- Where the Endorsed Parties fail to comply with responsibilities and processes freely agreed in the CHIMA, or the parties fail to reach agreement on the implementation of the same after reasonable attempts;
- Where project timeframes require adoption of a more timely process to meet the cultural heritage duty of care, and an alternative option in this regard is available to Arrow.

In these circumstances Arrow may choose to pursue other means of compliance with statutory or regulatory requirements. In doing so, Arrow will not initiate any other actions provided for in the

ACH Act without first advising the Endorsed Parties of its intention to do so, Arrow will continue to seek negotiated agreement in the event that Arrow does initiate such actions, and Arrow will cease any action provided for under the ACH Act once negotiated agreement is reached.

7.5 Subsidiary Management Processes

While no CHIMAs have yet been developed, and it would therefore be premature to suggest exactly what these would include, Arrow considers that the following measures, subject to negotiation and refinement, would constitute standard elements of the management process.

Notable in its approach, Arrow intends to establish coordinating committees for each CHIMA that it develops. These will include representatives of both the Endorsed Parties and Arrow. The purpose of the committee, among other things, will be to oversee implementation of the CHIMA, settle and implement specific management programs, deal with disputes between the parties. Decision-making will be on the basis of consensus between the parties.

Otherwise, Arrow anticipates that the CHIMAs will cover the following issues and serves to indicate the comprehensive nature of the document, and to show that key issues (such as data management, management of human remains and dispute resolution) will be addressed.

1. Definitions and Interpretation
2. Area of the CHIMA
3. Commencement and Term
4. Purpose of the CHIMA
5. Coordinating Committee
6. Communications Protocol
7. Ownership of Aboriginal Cultural Heritage
8. Intellectual Property
9. Process for Obtaining Approval for Project Works and Subsidiary Agreements
10. Human Remains
11. Access to Agreement Area
12. Confidentiality
13. Commitment to Implementation of the CHIMA and Subsidiary Agreements: Agreement Facilitators
14. Dispute Resolution
15. Procedural Breaches
16. Resources for Implementation of this CHIMA
17. Roles and Responsibilities

- 18. Delays
 - 19. Assignment
 - 20. Variation
 - 21. Severance
 - 22. Entire Agreement
 - 23. Governing Law
 - 24. Counterparts
 - 25. No Waiver
 - 26. Relationship
 - 27. Further Co-Operation
 - 28. Agreement to Benefit and Bind Successors
 - 29. Notices
 - 30. GST
 - 31. Execution
- Schedule 1 Details of the Group or the Individuals who constitute the Endorsed Party
- Schedule 2 Map of the Agreement Area that is subject to this CHIMA
- Schedule 3 Procedures for Treatment of Human Remains
- Schedule 4 Provisions to Handle Procedural Breaches of CHIMA and Subsidiary Agreements
- Schedule 5 Communication Protocol
- Schedule 6 Agreement Facilitators, Mediators and Dispute Resolution Representatives
- Schedule 7 Notices
- Schedule 8 Principles Applying to Conduct of Expert Review
- Schedule 9 Criteria for Selection of Trusted Third Parties for the Management of Aboriginal Cultural Heritage Information
- Schedule 10 Initial Cultural Heritage Assessment Agreement
- Schedule 11 Definition of Geotechnical Investigations
- Schedule 12 Conduct of Cultural Heritage Investigations - Geotechnical Methodology

7.6 Constraints Statements

Arrow recognises that the data and information regarding Aboriginal cultural heritage to which it has had access in the preparation of the EIS is by no means comprehensive and that, even if complete access had been available to all documentary sources, not all cultural areas, objects and values of significance to Aboriginal people will have been mentioned, nor the full dimensions of their significance to Aboriginal people elicited. Accordingly, Arrow will take specific measures to address this issue by providing resources to each of the Aboriginal / Endorsed Parties to identify major places that they consider might be affected by proposed development activities within the project development area. Arrow will formally commission them to provide statements outlining what they

consider to be major constraints to the Project proceeding. The terms of these studies will intentionally be broad so as to allow those people who elect to take this opportunity the greatest opportunity to describe any areas, objects and values about which they have concerns. The terms will seek to identify:

1. Any area or object of cultural heritage significance to the Aboriginal / Endorsed Party of which they are now aware in the area to be affected by the proposed development or areas to be affected by associated infrastructure;
2. Any particular aesthetic issues associated with the project development area that the Aboriginal / Endorsed Party identify as having a related cultural heritage dimension; and
3. Awareness of the impact of the proposed project on any fauna or flora of cultural heritage significance to the Aboriginal / Endorsed Party in the area to be affected.

Special arrangements, in the form of confidentiality agreements, will also be settled where necessary to ensure that in providing such information, the Aboriginal / Endorsed Party is not breaching any cultural protocols in providing such information. The resultant cultural heritage data will be incorporated in a suitable fashion within the GIS Arrow is building to support site selection decisions, and then factored into more detailed Project design so as to give effect to the Avoidance Principle.

7.7 Engagement with Aboriginal Parties

As required under Part 7 of the ACH Act, formal written notices will be issued to all Aboriginal Parties providing for their response seeking status as Endorsed Parties for the development of the CHMP / CHIMAs. The Aboriginal Parties who are currently identified for the project development area are described in Table 3. Notices will be issued in a manner consistent with the staged approach outlined previously. As a consequence, and noting the instability of the current native title landscape and possibility of new Aboriginal Parties emerging or changes in relevant legislation, the parties ultimately contacted may vary from those listed in this table.

Native Title Party	Claim No	Federal Court No	Registered as at May 2004	Current Status
Iman #2	QC97/55	QU6162/98	Yes	Active, notification complete, in mediation
Western Wakka Wakka	QC99/04	QU6004/99	Yes	Finalised, struck-out 27 April 2007
Barunggam	QC99/05	QU6005/99	Yes	Finalised, dismissed 5 June 2008
Bigambul	QC09/02	QU6101/09	Yes	Active

Table 3: Details of the current Aboriginal Parties identified for the Project Development Area.

8. CONCLUSIONS

Arrow fully appreciates that the management of Aboriginal cultural heritage is an issue that will require ongoing management throughout the course of implementing the Project. Irrespective of the form and nature of this Aboriginal cultural heritage, all Aboriginal cultural heritage is presumed to be of significance to the relevant Aboriginal Parties. It is expected that most Aboriginal / Endorsed Parties will express a desire to exercise a primary role in the management of this heritage. Arrow is determined to give this desire the greatest expression in its management process, subject only to the willingness of Aboriginal / Endorsed Parties to engage with Arrow in a collaborative approach that will obviate any requirement to adopt other processes sanctioned by the ACH Act where such collaboration is unachievable.

The following can be concluded from the analyses undertaken to this point:

- The data and information that have been used in the preceding description of the Aboriginal cultural heritage landscape of the project development area can not be construed as definitive, and we have been explicit on this point. They certainly are not of an order whereby we could offer a firm opinion as to how proposed development activities within the project development area should be modified. This is simply a result of the inherent limitations of these data, something we have discussed in detail earlier;
- There clearly are a large number of significant Aboriginal areas and objects that are both scientifically and culturally significant in and around the project development area. It is therefore a reasonable prospect that additional Aboriginal cultural heritage will be found throughout the project development area.
- The specific locations for development activities proposed to occur within the project development area are not known at this time. Given that these specific locations are, to a degree, flexible, opportunities exist for their establishment in such a way as to avoid impacts upon Aboriginal cultural heritage.

Taking note of this, Arrow intends to take the following actions:

1. Initiate an ongoing process of engagement to settle formal cultural heritage agreements of the types specified in Part 7 of the ACH Act with the Aboriginal / Endorsed Parties, these being either an ILUA or an approved CHMP;
2. Move to conduct comprehensive cultural heritage studies (ICHA) for the entire project development area, noting that this will be staged in line with proposed development schedules (see above and also Chapter 6 of the EIS), with these to be undertaken with the direct input of the relevant Aboriginal / Endorsed Parties;

REFERENCES

- Bonhomme and Craib. 1999. A Cultural Heritage Assessment for Stage 1 of the Proposed Rail Link between Brigalow and Tarong Power Station. Report prepared by SUDAW Developments Ltd., Brisbane.
- Bonhomme Craib & Associates. 2009. Cultural Heritage on Arrow Energy Leases in the Surat Basin: An Overview. Report prepared for Arrow Energy Pty Ltd.
- French, M. 1989. *Conflict on the Condamine: Aborigines and the European Invasion.* Darling Downs Institute Press, Toowoomba.
- State of Queensland (Department of Environment and Resource Management). 2009. Indigenous *Cultural Heritage Acts Review. Key Issues and Draft Recommendations.* State of Queensland, Brisbane.

3. Based on the results of the ICHA, Arrow will, in collaboration with the Aboriginal / Endorsed Parties, develop a comprehensive program for the management of all significant Aboriginal areas and objects to be affected by the Project. This will cover any management actions required in advance of the commencement of construction, measures to be implemented during construction, and measures deemed appropriate once construction has been completed and for the life of the project;
4. Arrow will also commission high order constraints papers from Aboriginal / Endorsed Parties to identify places of outstanding Aboriginal cultural heritage significance of which Arrow should be immediately aware so that it can design its operations to give effect to the Avoidance Principle as enunciated in the ACH Act.