APPENDIX 18

ARROW LNG PLANT

Indigenous Cultural Heritage Impact Assessment

arrow energy
go further

Indigenous Cultural Heritage Impact Assessment
Arrow LNG Plant Environmental Impact Statement,
Curtis Island,
Gladstone, Central Queensland

Prepared for

Arrow CSG (Australia) Pty Ltd and Coffey Environments Pty Ltd

Prepared by

Central Queensland Cultural Heritage Management Pty Ltd (CQCHM)

September 2011

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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.*

Agency Database Search Area (ADSA) is that area described in Figure 2 of this report within which requests were made to relevant State and Commonwealth agencies for searches of relevant cultural heritage databases and registers

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

CHIMS is Cultural Heritage Information Management System managed by DERM 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.

GSDA is Gladstone State Development Area.

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.

Report Study Area (RSA) is a subset of the ASDA that includes the area wherein all elements of project infrastructure will be constructed as part of this project, and is depicted in figure 2 and figure 4.

Shell midden an accumulation of shells resulting from the consumption of shellfish by humans and the subsequent discard of the shells.

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 CSG (Australia) Pty Ltd (**Arrow Energy**) is seeking to develop a Liquid Natural Gas facility on Curtis Island, Central Queensland. In doing so, Arrow Energy is required to prepare an EIS that is compliant with the Terms of Reference for the project issued by the Coordinator General (Queensland). Those ToR require that Arrow Energy address the impact of the project on Indigenous cultural heritage and how it will be managed. This is to be undertaken by preparing an Indigenous Cultural Heritage Impact Assessment Study.

There are two separate but interlinked objectives of the Indigenous Cultural Heritage Impact Assessment Study. Firstly, it is to provide a baseline understanding of the known and potential Indigenous 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 Coordinator General 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 Agency Database Search Area (ADSA - see glossary) 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 review was able to identify in excess of 259 individual places containing Aboriginal cultural heritage within the ADSA. 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 Report Study Area (RSA – see glossary). Only eight places on any state or Commonwealth registers are within the RSA. None of these will be directly affected by the project. A further 11 places identified during geotechnical investigations of the Curtis Island plant site and the mainland and would, on present indications, be affected by the project infrastructure. Noting the results of in the ADSA, it is expected that additional places may be identified and recorded as part of further cultural heritage studies undertaken as part of the project.

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 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).

In support of this, and its planned direct engagement with Aboriginal Parties regarding the project, Arrow has developed 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 has sought to formally commission and provide resources to 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 are 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.

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. The Aboriginal / Endorsed Parties have expressed a desire, consistent with legislation, 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

PROJECT DESCRIPTION

1.1 Proponent

Arrow CSG (Australia) Pty Ltd (Arrow Energy) proposes to develop a liquefied natural gas (LNG) facility on Curtis Island off the central Queensland coast near Gladstone. The project, known as the Arrow LNG Plant, is a component of the larger Arrow LNG Project.

The proponent is a subsidiary of Arrow Energy Holdings Pty Ltd which is wholly owned by a joint venture between subsidiaries of Royal Dutch Shell plc and PetroChina Company Limited.

1.2 Arrow LNG Plant

Arrow Energy proposes to construct the Arrow LNG Plant in the Curtis Island Industry Precinct at the southwestern end of Curtis Island, approximately 6 km north of Gladstone and 85 km southeast of Rockhampton, off Queensland's central coast. In 2008, approximately 10% of the southern part of the island was added to the Gladstone State Development Area to be administered by the Queensland Department of Local Government and Planning. Of that area, approximately 1,500 ha (25%) has been designated as the Curtis Island Industry Precinct and is set aside for LNG development. The balance of the Gladstone State Development Area on Curtis Island has been allocated to the Curtis Island Environmental Management Precinct, a flora and fauna conservation area.

The Arrow LNG Plant will be supplied with coal seam gas from gas fields in the Surat and Bowen basins via high-pressure gas pipelines to Gladstone, from which a feed gas pipeline will provide gas to the LNG plant on Curtis Island. A tunnel is proposed for the feed gas pipeline crossing of Port Curtis.

The project is described below in terms of key infrastructure components: LNG plant, feed gas pipeline and dredging.

1.2.1 LNG Plant

Overview: The LNG plant will have a base-case capacity of 16 Mtpa, with a total plant capacity of up to 18 Mtpa. The plant will consist of four LNG trains, each with a nominal capacity of 4 Mtpa. The project will be undertaken in two phases of two trains (nominally 8 Mtpa), with a financial investment decision taken for each phase.

Operations infrastructure associated with the LNG plant includes the LNG trains (where liquefaction occurs; see 'Liquefaction Process' below), LNG storage tanks, cryogenic pipelines, seawater inlet for

desalination and stormwater outlet pipelines, water and wastewater treatment, a 110 m high flare stack, power generators (see 'LNG Plant Power' below), administrative buildings and workshops.

Construction infrastructure associated with the LNG plant includes construction camps (see 'Workforce Accommodation' below), a concrete batching plant and laydown areas.

The plant will also require marine infrastructure for the transport of materials, personnel and product (LNG) during construction and operations (see 'Marine Infrastructure' below).

Construction Schedule: The plant will be constructed in two phases. Phase 1 will involve the construction of LNG trains 1 and 2, two LNG storage tanks (each with a capacity of between 120,000 m^3 and 180,000 m^3), Curtis Island construction camp and, if additional capacity is required, a mainland workforce accommodation camp. Associated marine infrastructure will also be required as part of Phase 1. Phase 2 will involve the construction of LNG trains 3 and 4 and potentially a third LNG storage tank. Construction of Phase 1 is scheduled to commence in 2014 with train 1 producing the first LNG cargo in 2017. Construction of Phase 2 is anticipated to commence approximately five years after the completion of Phase 1 but will be guided by market conditions and a financial investment decision at that time.

Construction Method: The LNG plant will generally be constructed using a modular construction method, with preassembled modules being transported to Curtis Island from an offshore fabrication facility. There will also be a substantial stick-built component of construction for associated infrastructure such as LNG storage tanks, buildings, underground cabling, piping and foundations. Where possible, aggregate for civil works will be sourced from suitable material excavated and crushed on site as part of the bulk earthworks. Aggregate will also be sourced from mainland quarries and transported from the mainland launch site to the plant site by roll-on, roll-off vessels. A concrete batching plant will be established on the plant site. Bulk cement requirements will be sourced outside of the batching plant and will be delivered to the site by roll-on roll-off ferries or barges from the mainland launch site.

LNG Plant Power

Power for the LNG plant and associated site utilities may be supplied from the electricity grid (mains power), gas turbine generators, or a combination of both, leading to four configuration options that will be assessed:

- Base case (mechanical drive): The mechanical drive configuration uses gas turbines to drive the LNG train refrigerant compressors, which is the traditional powering option for LNG facilities.

This configuration would use coal seam gas and end flash gas (produced in the liquefaction process) to fuel the gas turbines that drive the LNG refrigerant compressors and the gas turbine generators that supply electricity to power the site utilities. Construction power for this option would be provided by diesel generators.

- Option 1 (mechanical/electrical – construction and site utilities only): This configuration uses gas turbines to drive the refrigerant compressors in the LNG trains. During construction, mains power would provide power to the site via a cable (30-MW capacity) from the mainland. The proposed capacity of the cable is equivalent to the output of one gas turbine generator. The mains power cable would be retained to power the site utilities during operations, resulting in one less gas turbine generator being required than the proposed base case.

- Option 2 (mechanical/electrical): This configuration uses gas turbines to drive the refrigerant compressors in the LNG trains and mains power to power site utilities. Under this option, construction power would be supplied by mains power or diesel generators.

- Option 3 (all electrical): Under this configuration mains power would be used to supply electricity for operation of the LNG train refrigerant compressors and the site utilities. A switchyard would be required. High-speed electric motors would be used to drive the LNG train refrigerant compressors. Construction power would be supplied by mains power or diesel generators.

Liquefaction Process

The coal seam gas enters the LNG plant where it is metered and split into two pipe headers which feed the two LNG trains. With the expansion to four trains the gas will be split into four LNG trains.

For each LNG train, the coal seam gas is first treated in the acid gas removal unit where the carbon dioxide and any other acid gases are removed. The gas is then routed to the dehydration unit where any water is removed and then passed through a mercury guard bed to remove mercury. The coal seam gas is then ready for further cooling and liquefaction.

A propane, precooled, mixed refrigerant process will be used by each LNG train to liquefy the predominantly methane coal seam gas. The liquefaction process begins with the propane cycle. The propane cycle involves three pressure stages of chilling to pre-cool the coal seam gas to -33°C and to compress and condense the mixed refrigerant, which is a mixture of nitrogen, methane, ethylene and propane. The condensed mixed refrigerant and precooled coal seam gas are then separately routed to the main cryogenic heat exchanger, where the coal seam gas is further cooled and liquefied by the mixed refrigerant. Expansion of the mixed refrigerant gases within the heat exchanger removes heat from the coal seam gas. This process cools the coal seam gas from -33°C to approximately -157°C. At

this temperature the coal seam gas is liquefied (LNG) and becomes 1/600th of its original volume. The expanded mixed refrigerant is continually cycled to the propane precooler and reused.

LNG is then routed from the end flash gas system to a nitrogen stripper column which is used to separate nitrogen from the methane, reducing the nitrogen content of the LNG to less than 1 mole per cent (mol%). LNG separated in the nitrogen stripper column is pumped for storage on site in full containment storage tanks where it is maintained at a temperature of -163°C.

The off-gas is the coal seam gas generated when the LNG is expanded. This gas is routed to an end flash gas compressor where it is prepared for use as fuel gas.

Finally, the LNG is transferred from the storage tanks onto LNG carriers via cryogenic pipelines and loading arms for transportation to export markets. The LNG will be regasified back into sales specification gas on shore at its destination location.

Workforce Accommodation

The LNG plant (Phase 1), tunnel, feed gas pipeline, and dredging components of the project each have their own workforces with peaks occurring at different stages during construction. The following peak workforces are estimated for the project:

- LNG plant Phase 1 peak workforce of 3,500, comprising 3,000 construction workers: 350 engineering, procurement and construction (EPC) management workers and 150 Arrow Energy employees.
- Tunnel peak workforce of up to 100.
- Feed gas pipeline (from the mainland to Curtis Island) peak workforce of up to 75.
- A dredging peak workforce of between 20 and 40.

Two workforce construction camp locations are proposed: the main construction camp at Boatshed Point on Curtis Island, and a possible mainland overflow construction camp, referred to as a temporary workers accommodation facility (TWAF). Two potential locations are currently being considered for the mainland TWAF; in the vicinity of Gladstone city on the former Gladstone Power Station ash pond No.7 (TWAF7) or in the vicinity of Targinnie on a primarily cleared pastoral grazing lot (TWAF8). Both potential TWAF sites include sufficient space to accommodate camp infrastructure and construction laydown areas. The TWAF and its associated construction laydown areas will be decommissioned on completion of the Phase 1 works.

Of the 3,000 construction workers for the LNG plant, it is estimated that between 5% and 20% will be from the local community (and thus will not require accommodation) and that the remaining fly-in, fly-out workers will be accommodated in construction camps. The 350 EPC management workers and 150 Arrow Energy employees are expected to relocate to Gladstone with the majority housed in company facilitated accommodation.

The tunnel workforce of 100 people and gas pipeline workforce of 75 people are anticipated to be accommodated in the mainland in company facilitated accommodation. The dredging workforce of 20 to 40 workers will be housed onboard the dredge vessel.

Up to 2,500 people will be housed at Boatshed Point construction camp. Its establishment will be preceded by a pioneer camp at the same locality which will evolve into the completed construction camp.

Marine Infrastructure

Marine facilities include the LNG jetty, materials offloading facility (MOF), personnel jetty and mainland launch site.

LNG Jetty: LNG will be transferred from the storage tanks on the site to the LNG jetty via above ground cryogenic pipelines. Loading arms on the LNG jetty will deliver the product to an LNG carrier. The LNG jetty will be located in North China Bay, adjacent to the northwest corner of Hamilton Point.

MOF: Delivery of materials to the site on Curtis Island during the construction and operations phases will be facilitated by a MOF where roll-on, roll-off or lift-on, lift-off vessels will dock to unload preassembled modules, equipment, supplies and construction aggregate. The MOF will be connected to the LNG plant site via a heavy-haul road.

Boatshed Point (MOF 1) is the base-case MOF option and would be located at the southern tip of Boatshed Point. The haul road would be routed along the western coastline of Boatshed Point (abutting the construction camp to the east) and enters the LNG Plant site at the southern boundary. A quarantine area will be located south of the LNG plant and will be accessed via the northern end of the haul road.

Two alternative options are being assessed, should the Boatshed Point option be determined to be not technically feasible:

- South Hamilton Point (MOF 2): This MOF option would be located at the southern tip of Hamilton Point. The haul road from this site would traverse the saddle between the hills of

Hamilton Point to the southwest boundary of the LNG plant site. The quarantine area for this option will be located southwest of the LNG plant near the LNG storage tanks.

- North Hamilton Point (MOF 3): This option involves shared use of the MOF being constructed for the Santos Gladstone LNG Project (GLNG Project) on the northwest side of Hamilton Point (south of Arrow Energy's proposed LNG jetty). The GLNG Project is also constructing a passenger terminal at this site, but it will not be available to Arrow Energy contractors and staff. The quarantine area for this option would be located to the north of the MOF. The impacts of construction and operation of this MOF option and its associated haul road were assessed as part of the GLNG Project and will not be assessed in this EIS.

Personnel Jetty: During the peak of construction, base case of up to 1,100 people may require transport to Curtis Island from the mainland on a daily basis. A personnel jetty will be constructed at the southern tip of Boatshed Point to enable the transfer of workers from the mainland launch site to Curtis Island by high-speed vehicle catamarans (Fastcats) and vehicle or passenger ferries (ROPAX). This facility will be adjacent to the MOF constructed at Boatshed Point. The haul road will be used to transport workers to and from the personnel jetty to the construction camp and LNG plant site. A secondary access for pedestrians will be provided between the personnel jetty and the construction camp.

Mainland Launch Site: Materials and workers will be transported to Curtis Island via the mainland launch site. The mainland launch site will contain both a passenger terminal and a roll-on, roll-off facility. The passenger terminal will include a jetty and transit infrastructure, such as amenities, waiting areas and car parking. The barge or roll-on ,roll-off facility will have a jetty, associated laydown areas, workshops and storage sheds.

The two location options for the mainland launch site are:

- Launch site 1: This site is located north of Gladstone city near the mouth of the Calliope River, adjacent to the existing RG Tanna coal export terminal.
- Launch site 4N: This site is located at the northern end of the proposed reclamation area for the Fishermans Landing Northern Expansion Project, which is part of the Port of Gladstone Western Basin Master Plan. The availability of this site will depend on how far progressed the Western Basin Dredging and Disposal Project is at the time of construction.

1.2.2 Feed Gas Pipeline

An approximately 8-km long feed gas pipeline will supply gas to the LNG plant from its connection to the Arrow Energy Surat Pipeline (formerly the Surat Gladstone Pipeline) on the mainland adjacent to Rio Tinto's Yarwun alumina refinery. The feed gas pipeline will be constructed in three sections:

- A short length of feed gas pipeline will run from the proposed Arrow Energy Surat Pipeline to the tunnel launch shaft, which will be located on a mudflat south of Fishermans Landing, just south of Boat Creek. This section of pipeline will be constructed using conventional open-cut trenching methods within a 40-m wide construction right of way.
- The next section of the feed gas pipeline will traverse Port Curtis harbour in a tunnel to be bored under the harbour from the mainland tunnel launch shaft to a receival shaft on Hamilton Point. The tunnel under Port Curtis will have an excavated diameter of up to approximately 6 m and will be constructed by a tunnel boring machine that will begin work at the mainland launch shaft. Tunnel spoil material will be processed through a de-sanding plant to remove the bentonite and water and will comprise mainly a finely graded fill material, which will be deposited in a spoil placement area established within bund walls constructed adjacent to the launch shaft. Based on the excavated diameter, approximately 223,000 m^3 of spoil will be treated as required for acid sulfate soil and disposed of at this location.
- From the tunnel receival shaft on Hamilton Point, the remaining section of the feed gas pipeline will run underground to the LNG plant, parallel to the above ground cryogenic pipelines. This section will be constructed using conventional open-cut trenching methods within a 30-m wide construction right of way. A permanent easement up to 30-m wide will be negotiated with the relevant land manager or owner.

Should one of the electrical plant power options be chosen, it is intended that a power connection will be provided by a third party to the tunnel launch shaft, whereby Arrow Energy would construct a power cable within the tunnel to the LNG plant.

Other infrastructure, such as communication cables, water and wastewater pipelines, may also be accommodated within the tunnel.

1.2.3 Dredging

Dredging required for LNG shipping access and swing basins has been assessed under the Gladstone Ports Corporation's Port of Gladstone Western Basin Dredging and Disposal Project. Additional dredging within the marine environment of Port Curtis may be required to accommodate the construction and operation of the marine facilities. Up to five sites may require dredging:

- Dredge site 1 (dredge footprint for launch site 1): The dredging of this site would facilitate the construction and operation of launch site 1. This dredge site is located in the Calliope River and extends from the intertidal area abutting launch site 1, past Mud Island to the main shipping channel. The worst-case dredge volume estimated at this site is approximately 900,000 m^3.
- Dredge site 2 (dredge footprint for launch site 4N): The dredging of this site would facilitate the construction and operation of launch site 4N. This dredge site would abut launch site 4N and extend east from the launch site to the shipping channel. The worst-case dredge volume identified at this site is approximately 2,500 m^3.
- Dredge site 3 (dredge footprint for Boatshed Point MOF 1): The dredging of this site would facilitate the construction and operation of the personnel jetty and MOF at Boatshed Point. This dredge site would encompass the area around the marine facilities, providing adequate depth for docking and navigation. The worst-case dredge volume identified at this site is approximately 50,000 m^3.
- Dredge site 4 (dredge footprint for Hamilton Point South MOF 2): The dredging of this site would facilitate the construction and operation of the MOF at Hamilton Point South. This dredge site would encompass the area around the marine facilities, providing adequate depth for docking and navigation. The worst-case dredge volume identified at this site is approximately 50,000 m^3.
- Dredge site 5 (dredge footprint for LNG jetty): The dredging of this site will facilitate the construction of the LNG jetty at Hamilton Point. This dredge site extends from the berth pocket to be dredged as part of the Western Basin Strategic Dredging and Disposal Project to the shoreline and is required to enable a work barge to assist with construction of the jetty. The worst-case dredge volume identified is approximately 120,000 m^3.

The spoil generated by dredging activities will be placed and treated for acid sulfate soils (as required) in the Port of Gladstone Western Basin Dredging and Disposal Project reclamation area.

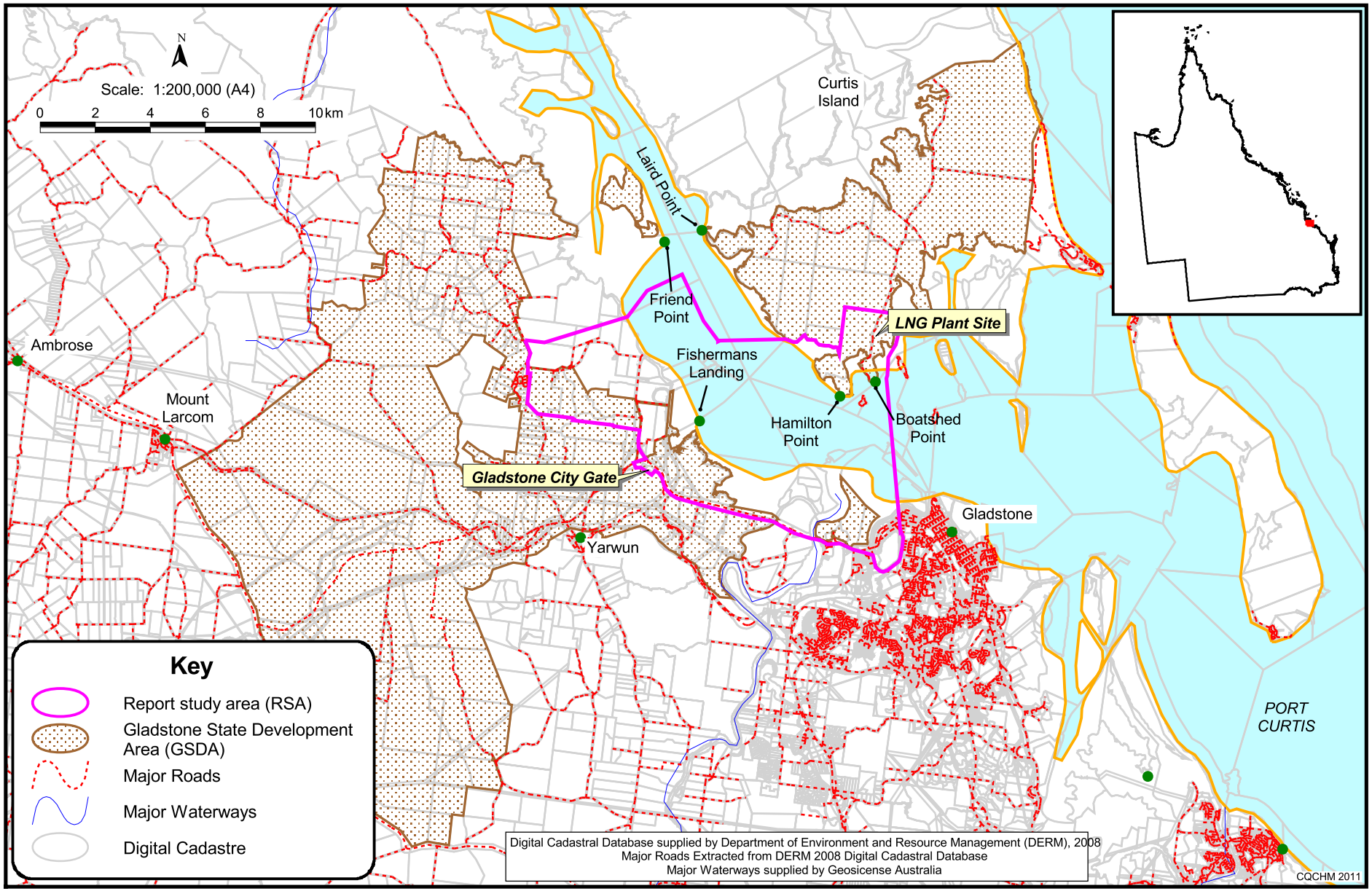

Figure 1: General location of the Arrow LNG Plant and the study area for the purposes of this impact assessment study.

1.3 Indigenous Cultural Heritage Impact Assessment Study

The final Terms of Reference (ToR) issued for the (then) Shell Australia LNG Project Environmental Impact Statement (EIS) (now Arrow LNG Plant EIS) by the Coordinator-General of the State of Queensland (hereafter Coordinator-General) outline the requirements for the Indigenous Cultural Heritage Impact Assessment Study. The ToR has two key requirements relating to Indigenous Cultural Heritage:

- Define and describe the practical measures for protecting Aboriginal cultural heritage values including describing the strategies to be applied for Aboriginal cultural heritage management, and how the achievement of the strategies will be undertaken.
- To the extent practicable, significant Aboriginal areas should be avoided by the project. The EIS should provide an assessment of likely effects on Aboriginal cultural heritage values of the project, including but not limited to the following:

  i. description of the Aboriginal cultural heritage values likely to be affected by the project including any of national significance;

  ii. recommended means of mitigating any negative impact on Aboriginal cultural heritage values by appropriate management strategies.

As a minimum, impact assessment, management and protection strategies should satisfy statutory responsibilities.

The first requirement under the ToR is to provide a description of the known Aboriginal cultural heritage values, including significant Aboriginal areas that may be affected by the Arrow LNG Plant. In doing this, it should describe how, in conjunction with the appropriate Aboriginal people, the Aboriginal cultural heritage values were ascertained. Examples of this include: the results of any Aboriginal cultural heritage survey undertaken; the Queensland Department of Environment and Resource Management (DERM) Aboriginal Cultural Heritage Register and Database; and any existing literature relating to Aboriginal cultural heritage in the study area.

The aim of second requirement under the ToR is defining and describing the practical measures for protecting Aboriginal cultural heritage values including describing the strategies to be applied for Aboriginal cultural heritage management, and how the strategies will be achieved.

Within Queensland, Aboriginal cultural heritage must be managed in such a way as to be consistent with the requirements of the *Aboriginal Cultural Heritage Act 2003* (ACH Act): notably the procedures must be such as to be compliant with the cultural heritage duty of care. Under this, where an EIS being prepared, it is necessary, in the absence of a Native Title agreement (NT agreement), to conclude an approved Cultural Heritage Management Plan (CHMP) for the Arrow LNG Plant as provided for under Part 7 of the ACH Act. The CHMP will need to be concluded with the relevant

Aboriginal Endorsed Parties throughout the project area prior to development activities covered by the EIS taking place.

The ToR outlines that a CHMP under the ACH Act, or a NT agreement (as that term is defined under the ACH Act) that includes management and protection strategies for Aboriginal cultural heritage, should be initiated during the EIS process.

Where either of these are not finalised (in the case of an NT agreement) or has not been approved (in the case of a CHMP) by the time of the submission of the EIS to the Coordinator General, then the ToR notes that the following should be provided within the Indigenous Cultural Heritage Impact Assessment Study:

- Subject to any confidentiality restrictions, an outline of the proposed management and protection strategies for Aboriginal cultural heritage within the proposed CHMP or NT agreement, including outlining the position of the relevant parties and the status of negotiations; and
- Details of the proposed steps and timeframes for finalising the CHMP or NT agreement.

Finally, and subject to contrary agreement between the parties, the ToR notes that a CHMP or NT agreement should address and include the following:

- A process for including Aboriginal people in the protection and management of Aboriginal cultural heritage associated with the Arrow LNG Plant;
- Processes for mitigation, management and protection of identified Aboriginal cultural heritage in the project areas, including associated infrastructure developments, during both the construction and operational phases of the project;
- Provisions for the management of the accidental discovery of Aboriginal cultural heritage, including human remains;
- A clear recording process to be developed to assist initial management and recording of accidental discoveries;
- A cultural heritage induction for project staff;
- The development of a cultural heritage awareness program; and
- A conflict resolution process.

Central Queensland Cultural Heritage Management Pty Ltd (CQCHM) has been engaged by Arrow Energy, through Coffey Environments to prepare this Indigenous Cultural Heritage Impact Assessment Study for the Arrow LNG Plant. This report constitutes that study.

With the objectives set by the ToR in mind, the key tasks falling to CQCHM in preparing this report were:

- Capture and analyse such information as is available regarding Aboriginal cultural heritage for an area that included the Arrow LNG Plant and such other areas as seemed relevant to develop a description of the Aboriginal cultural values in the general and immediate areas of the project;
- Determine whether and to what extent these values would likely be harmed, as that term is defined in the *Aboriginal Cultural Heritage Act 2003*, by the project and the likelihood of any other values also existing and the possibility of their being harmed by the proposed project;
- Determine whether the project was taking steps to comply with the ToR, notably by developing either a native title agreement or a CHMP;
- Determine whether either the native title agreement or the CHMP provides for the management of the Aboriginal cultural heritage in terms specified by the ToR, notably by seeking to avoid or minimise harm to Aboriginal cultural heritage, and other practical measures to manage Aboriginal cultural heritage values;
- Include in this report such information as is not subject to confidentiality provisions that demonstrates compliance with the ToR specified above and answers the preceding questions; and
- Recommend any measures of a reasonable and practicable nature that give effect to the specifications of the ToR with respect to the management of Aboriginal cultural heritage.

The methodology employed, constraints on the study, outcomes of the analysis, description of the cultural heritage landscape, review of processes and recommendations are covered in sections 3, 4, 5, 6, 7 and 8 of this report respectively. Attachment 1 of this report provides a summary of the requirements of the ToR and the relevant sections of the report where such requirements are specifically addressed.

2. LEGISLATIVE LANDSCAPE AND SIGNIFICANCE ASSESSMENT

Human use and occupation of Australia extends back in the order of 50,000 years ago. During this time, people created areas, objects and values that make up Australia's cultural heritage record. This record consists mainly of the activities of Aboriginal people, Torres Strait Islanders and Europeans, but includes also other cultural groups such as Macassan fishermen from Indonesia (Northern Australia), Kanaka or South Sea Islander plantation workers from the western Pacific (Queensland) and Chinese gold prospectors (Australian mainland).

The significance of areas, objects and values that comprise the cultural heritage record varies considerably, and can be measured depending primarily upon their historical, scientific, cultural, social, educational, economic and aesthetic values. However, the integrity and significance of cultural heritage areas, objects and values can be jeopardised by natural (e.g., erosion) and human (e.g., development) activities. In the case of human activities, a range of state and Commonwealth legislation exists to promote the preservation and appropriate management of elements of cultural heritage values. The following discussion is provided so that there is a clear understanding of legal issues and assessment processes as they pertain to the areas to be affected by the proposed Arrow LNG Plant.

2.1 Legislation and Legal Responsibilities

A range of Commonwealth and state legislation exists to provide protection for Indigenous cultural heritage. These acts have direct relevance to the proposed project. Within this section, Commonwealth legislation is reviewed first and then attention is turned to relevant State legislation.

2.1.1 Commonwealth Legislation

Environmental Protection and Biodiversity Conservation Act, 1999 (as amended 2003)(EPBC)

Amendments to the EPBC Act in 2003 saw the *Australian Heritage Commission Act* repealed and the Australian Heritage Commission (AHC) disbanded. The Register of the National Estate (RNE) was maintained and, initially continued to operate in substantially the same manner as it did previously. It is now overseen by a new body called the Australian Heritage Council and operates under the cultural and natural heritage management provisions of the EPBC Act.

The EPBC Act came into force in July 2000 and in doing so replaced several other Commonwealth Acts. The principle directive of the EPBC Act is to provide a holistic piece of legislation that facilitates environmental protection and biodiversity conservation generally, and specifically Matters of National Environmental Significance (MNES). These matters have been clearly defined and include:

- World Heritage properties;
- Wetlands of international importance (RAMSAR wetlands);
- Listed threatened species and ecological communities;
- Listed migratory species;
- Protection of the environment from nuclear actions;
- The Marine Environment (principally Commonwealth marine areas); and as from January 2004
- National Heritage places.

In addition to these specified areas, there is also scope to cover and consider any other additional matters deemed to be of National Environmental Significance. These can be prescribed by regulation.

The EPBC Act introduced new national environmental assessment and approvals processes and integrated the management of important natural and cultural places under the act. While this system is separate and distinct from state systems, it does not affect the validity or conduct of state-based environmental and development assessments and approvals. Rather, the EPBC Act establishes a parallel environmental assessment and approval system to state systems.

The EPBC Act does, however, regulate proponents directly for MNES that are located within the states, and civil and criminal penalties apply for breaches of the EPBC Act. A person must not take an action that has, will have, or is likely to have a significant impact on a MNES, except where certain processes have been followed and/or certain approvals obtained. The same also applies to actions undertaken within Commonwealth areas; or on lands outside Commonwealth areas where a significant impact would result on the Commonwealth area; or on land anywhere in the world where the action is taken by the Commonwealth.

The EPBC Act makes provision for the establishment of an Indigenous Advisory Committee to advise the Minister on Indigenous issues relevant under the EPBC Act. Established in July 2000 and consisting of 12 members, this committee is charged with:

- Reflecting the views of Indigenous peoples on the implementation and development of the EPBC Act through incorporating Indigenous knowledge of the management of land and the conservation and sustainable use of biodiversity;
- Advise the Minister on how bilateral agreements with the states and territories have affected Indigenous issues under the EPBC Act; and
- Provide the Minister with an annual report on Indigenous issues under the EPBC Act.

Three new pieces of Commonwealth heritage legislation were enacted in 2003. Together these substantially modified the processes and structures involved in the protection and management of National heritage places and bought them under the EPBC Act.

Environment and Heritage Legislation Amendment Act (No. 1) 2003

The first and broadest in scope was the *Environment and Heritage Legislation Amendment Act (No. 1) 2003*. This amended the EPBC Act to include 'National Heritage' as a new matter of National Environmental Significance and enables the protection of listed places to the fullest extent using the Commonwealth's Constitutional powers. Such listed places are co-operatively managed with state governments and private owners where appropriate.

Two heritage lists were established under this act: the National Heritage List and the Commonwealth Heritage List. The latter list consists solely of heritage places owned or managed by the Commonwealth, and the National Heritage List records natural, Indigenous and historic places deemed as having 'outstanding' heritage values.

The National Heritage List's nomination and assessment process is an open one with any information provided during the consultation phase having to be brought to the attention of the Minister. The Australian Heritage Council assesses whether or not a nominated place has heritage values against the relevant criteria and makes a recommendation to the Minister on that basis.

In the case of Indigenous heritage places entered on the National Heritage List, the Commonwealth has the power to protect them irrespective of land tenure.

Stemming initially from the review of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (an action that has flowed through to recent amendments and redrafting of cultural heritage legislation at the state level), the Indigenous heritage value of a place is defined under the EBPC Act as the 'heritage value of the place that is of significance to Indigenous persons in accordance with their practices, observances, customs, traditions, beliefs or history'.

With regard to Native Title, the EPBC Act amendments make clear that its provisions in no way affect s.211 of the *Native Title Act 1993* in that holders of Native Title rights covering certain activities do not need authorisation under the EPBC Act to continue to engage in those activities.

Australian Heritage Council Act 2003

The second of the three new heritage Acts was the *Australian Heritage Council Act 2003*. Under this, the Australian Heritage Council was established and mandated as the replacement body for the

Australian Heritage Commission as the principle expert advisory body to the Commonwealth Minister for the Environment, Heritage and the Arts on heritage issues.

Although the responsibility for the RNE shifted under these new legislative arrangements, it remained operational in much the same manner as it did under the AHC, with the Australian Heritage Council assessing nominations and continuing to list places that met the relevant criteria. These criteria changed with the introduction of the new heritage system.

The RNE has now been frozen with the Australian Heritage Council no longer able to add or remove places, or a part of a place, from the Register. The RNE continues, however as a statutory register until February 2012. During this period the Minister for the Environment, Heritage and the Arts is required to continue considering the Register when making some decisions under the EPBC Act. This transition period also allows states, territories, local and the Australian Government to complete the task of transferring places to appropriate heritage registers, where necessary, and to amend legislation that refers to the RNE as a statutory list. From February 2012 all references to the RNE will be removed from the EPBC Act and it will be maintained after this time on a non-statutory basis as a publicly available archive.

As it currently stands, the Register consists of more than 21,000 Indigenous, natural and historic heritage places around Australia that have been compiled since 1976. In excess of 13,000 of these have been formally registered, some 900 of which are for their Indigenous values.

Australian Heritage Council (Consequential and Transitional Provisions) Act 2003

The last of the three 2003 heritage Acts was the *Australian Heritage Council (Consequential and Transitional Provisions) Act 2003*. This is the act that repealed the Australian Heritage Commission Act and allowed for the transition to the new heritage system under the EPBC Act – see above.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act) was originally introduced as interim legislation in 1984 and made permanent in 1986. This legislation has for some time been under review and this is still the case. Significant modifications have been included in the proposed legislation known as the *Aboriginal and Torres Strait Islander Heritage Protection Act 1998* (see below).

As currently enacted, the ATSIHP Act provides Aboriginal people in any state (with certain caveats pertaining to Victoria) with the right to request the Commonwealth Minister for the Environment, Heritage and the Arts to intervene in matters where the traditional cultural heritage interests of these

people are considered to be at risk. Only Aboriginal people or their agents can make use of the provisions of this Act. The Minister has discretionary powers as to whether to intervene in any particular case. In any event, processes of negotiation and mediation must be exhausted before the Minister would consider initiating a Long-term Protection Order.

The ATSIHP Act does not seek to define how significance will be determined, except that it is to be in accordance with Indigenous tradition, custom, observances or beliefs. It addition to this, the ATSIHP Act does not limit the type or nature of the place for which a declaration can be sought. It is similarly broad in its definition of what constitutes a significant Aboriginal area describing this as:

> *". . . an area of land in Australia or in or beneath Australian waters . . . being an area of particular significance to Aboriginals in accordance with Aboriginal tradition. . ."*

It also specifies what constitutes injury or desecration of an area or object and is similarly broad in its definition: any use or treatment that is inconsistent with Indigenous tradition constitutes desecration or injury.

The ATSIHP Act seeks to provide Indigenous people with a primacy in making assessments of significance. The Crown is bound by all provisions of the ATSIHP Act.

It is generally acknowledged that the legislation has not been successful and that it is not in accord with contemporary practice. It is at odds with the relationships and protocols that have become the standard between Government agencies, developers and representative Aboriginal organisations for the protection of Aboriginal cultural heritage.

In August 2009 the Commonwealth released a Discussion Paper (Commonwealth Department of Environment, Water, Heritage and the Arts [DEWHA], 2009) on the ATSIHP Act setting out its perceived shortcomings and the need for reform and calling for submissions from the public. The Discussion Paper (DEWHA 2009:7) sets out a series of proposals:

> *. . . designed to clarify responsibilities for protecting Indigenous heritage, to set standards of best practice nation-wide, to remove duplication of state and territory decisions that meet the standards, and to improve processes for Australian Government decisions about protection when the standards are not met.*

2.1.2 State Legislation

There are two pieces of state cultural heritage legislation: the *Queensland Heritage Act 1992* (QH Act) and the *Aboriginal Cultural Heritage Act 2003* (ACH Act). The QH Act generally covers items from the historic environment. Although containing provisions for the protection of Indigenous cultural

heritage, items that derive their significance solely from their association with Aboriginal custom or tradition are excluded from protection under the QH Act. The ACH Act implemented in April 2004, deals with all areas and objects of Aboriginal cultural heritage significance.

Queensland Heritage Act 1992 (QH Act)

The provisions of the QH Act primarily protect places that have been entered onto the Queensland Heritage Register (QHR) from unauthorised development, although this protection can also be extended to 'archaeological sites' that are not on the QHR. There are provisions for the authorisation and regulation of development activities on such places. In this the QH Act specifies the measures that must be taken by the state to develop a registered place, as well as the provisions under which an owner, occupier, lessee or trustee may seek an exemption certificate where the work planned is of a complying nature.

It should be noted that the QH Act expressly excludes the application of its provisions to a place that is of cultural heritage significance solely through its association with Aboriginal tradition. This is usually taken to mean that places, such as Aboriginal reserves or missions, could be registered because they potentially meet one or other of the various criteria required for inclusion of the QHR, but that a 'sacred site' could not be registered unless it also met one or more of those criteria.

It should be noted that, in terms of this report, CQCHM was not commissioned to consider historic heritage, beyond that which would fall under provisions of the ACH Act or that which may be listed on the QHR at least in part for Aboriginal values (Section 5.1.3).

Aboriginal Cultural Heritage Act 2003

Under the ACH Act the definition of Aboriginal cultural heritage items and places has been significantly broadened from the previous Queensland Aboriginal cultural heritage legislation to include areas and objects where there is no physical manifestation of human use, but that are culturally significant to Aboriginal people. It also covers places of archaeological or historical significance as well. Moreover, rather than focusing on a 'site', the general area of cultural sensitivity that might include a 'site' constitutes the Aboriginal cultural place that can be protected under the ACH Act.

Specifically, the ACH Act states that areas and objects covered by its provisions must comply with the following criteria (ss8-12 ACH Act):

> *8 Meaning of "Aboriginal cultural heritage"*
> ***"Aboriginal cultural heritage"*** *is anything that is—*
> *(a) a significant Aboriginal area in Queensland; or*
> *(b) a significant Aboriginal object; or*

(c) evidence, of archaeological or historic significance, of Aboriginal occupation of an area of Queensland.

9 Meaning of "significant Aboriginal area"
*A **"significant Aboriginal area"** is an area of particular significance to Aboriginal people because of either or both of the following—*
(a) Aboriginal tradition;
(b) the history, including contemporary history, of any Aboriginal party for the area.

10 Meaning of "significant Aboriginal object"
*A **"significant Aboriginal object"** is an object of particular significance to Aboriginal people because of either or both of the following—*
(a) Aboriginal tradition;
(b) the history, including contemporary history, of an Aboriginal party for an area.

11 Extension of evidence of occupation to surroundings
If a particular object or structure is evidence of Aboriginal occupation, the area immediately surrounding the object or structure is also evidence of Aboriginal occupation to the extent the area can not be separated from the object or structure without destroying or diminishing the object or structure's significance as evidence of Aboriginal occupation.

12 Identifying significant Aboriginal areas
(1) This section gives more information about identifying significant Aboriginal areas.
(2) For an area to be a significant Aboriginal area, it is not necessary for the area to contain markings or other physical evidence indicating Aboriginal occupation or otherwise denoting the area's significance.
(3) For example, the area might be a ceremonial place, a birthing place, a burial place or the site of a massacre.
(4) Also, if significant Aboriginal objects exist in an area and the significance of the objects is intrinsically linked with their location in the area—
(a) the existence of the objects in the area is enough on its own to make the area a significant Aboriginal area; and
(b) if it is reasonably appropriate under this Act, the immediate area and the objects in it may be taken to be, collectively, a significant Aboriginal area.
(5) For identifying a significant Aboriginal area, regard may be had to authoritative anthropological, biogeographical, historical and archaeological information.

As the primary knowledge holders regarding cultural heritage (Section 5(b)), and as Sections 7 and 8 of the ACH Act make clear, the primary determinant of significance of an area or object resides with the Aboriginal Parties, consistent with their tradition. The ACH Act (see Section 12(5)) notes that regard may also be had to various sources of information such as authoritative anthropological, biogeographical, historical and archaeological information in identifying significant areas. This provision must be read in a fashion which is consistent with other clauses of the act in which there is a recognition that Aboriginal people are the primary guardians, keepers and knowledge holders of Aboriginal cultural heritage. It is for this reason that the ACH Act notes that consideration *may* be given to such information.

The ACH Act (Sections 34 and 35) creates a clear hierarchy of who constitute the Aboriginal Party for any particular area wherein an activity is to take place. There are two categories of Aboriginal Party: Native Title Aboriginal Parties and non-Native Title Aboriginal Parties. There are varying methods of notifying these parties dependent on the category of party and the nature of the proposed activity.

Within the category of Native Title Aboriginal Parties, there are three sub-categories. These operate as a descending and exclusive hierarchy:

1. Determined Native Title holders - where such exists they constitute the exclusive Aboriginal Party for an area;
2. Registered Native Title claimants - in the absence of determined Native Title holders, registered claimants [sic] constitute the exclusive Aboriginal Party for an area;
3. Non-registered Native Title claimants - in the absence of the former two categories existing but there having previously been a claim at the time the ACH Act came into operation that is no longer registered and:
    - the claim failed but there are no other registered Native Title claimants; or
    - Native Title was surrendered under the terms of an Indigenous Land Use Agreement (ILUA); or
    - Native Title was compulsorily acquired,

The non-registered claimants represent the exclusive Aboriginal Party for an area until such time as a claim is registered over the area, whereon the non-registered claimants lose their status as Aboriginal Parties to the extent of the registered claim.

Where there are no Native Title Aboriginal Parties, the ACH Act provides for non-claimant Aboriginal Parties under s.35(7). Section 35(7) states:

> ***(7)*** *If there is no Native Title party for an area, a person is an* ***"Aboriginal party"*** *for the area if—*
> *(a) the person is an Aboriginal person with particular knowledge about traditions, observances, customs or beliefs associated with the area; and*
> *(b) the person—*
> *(i) has responsibility under Aboriginal tradition for some or all of the area, or for significant Aboriginal objects located or originating in the area; or*
> *(ii) is a member of a family or clan group that is recognised as having responsibility under Aboriginal tradition for some or all of the area, or for significant Aboriginal objects located or originating in the area.*

As the ACH Act is silent on how such matters will be established, or who can decide them, this category is effectively an invitation to any person to self-identify. Parts of Port Curtis between the

mainland and Curtis Island constitutes such an area where there are now no, nor have there ever been, any registered native title claims. Arrow Energy issued notices in line with the conditions of Part 7 of the ACH Act relating to such areas.

The ACH Act specifies how Aboriginal Parties are to be contacted where a project falls under provisions of Part 7: that is, where a project falls within the terms of Sections 87-89 (i.e., where an EIS or other environmental authority is required for a project or where a Cultural Heritage Management Plan (CHMP) is otherwise required under planning legislation). Where a project does not fall within these parameters the ACH Act is silent on means of identifying those individuals who would meet the definition of non-Native Title Aboriginal Parties, and for contacting any category of Aboriginal Party.

Under the ACH Act, harm arises to a cultural area or object not simply from the actual nature of the action or decision, but whether the duty of care has been met in the terms prescribed in Section 23. That is, the degree of impact is relevant in determining harm, but no illegal action has been done, irrespective the nature or scale of an activity and its impact on a cultural heritage area or object, if an individual or company has met the duty of care. This is made explicit by the following sections of the ACH Act.

Section 23(1) states:

> *A person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage (the **"cultural heritage duty of care")**.*

Section 23 (3) further notes that:

> *A person who carries out an activity is taken to have complied with the cultural heritage duty of care in relation to Aboriginal cultural heritage if—*
> *(a) the person is acting—*
> *(i) under the authority of another provision of this Act that applies to the Aboriginal cultural heritage; or*
> *(ii) under an approved cultural heritage management plan that applies to the Aboriginal cultural heritage; or*
> *(iii) under a Native Title agreement or another agreement with an Aboriginal party, unless the Aboriginal cultural heritage is expressly excluded from being subject to the agreement; or*
> *(iv) in compliance with cultural heritage duty of care guidelines; or*
> *(v) in compliance with Native Title protection conditions, but only if the cultural heritage is expressly or impliedly the subject of the conditions; or*
> *(b) the person owns the Aboriginal cultural heritage, or is acting with the owner's agreement; or*
> *(c) the activity is necessary because of an emergency, including for example, a bushfire or other natural disaster.*

Section 24(1) then states:

> *A person must not harm Aboriginal cultural heritage if the person knows or ought reasonably to know that it is Aboriginal cultural heritage.*

Under Section 24(2), the ACH Act then goes on to add that:

> *A person who harms Aboriginal cultural heritage does not commit an offence under subsection (1) if—*
> *(a) the person is acting—*
> *(i) under the authority of another provision of this Act that applies to the Aboriginal cultural heritage; or*
> *(ii) under an approved cultural heritage management plan that applies to the Aboriginal cultural heritage; or*
> *(iii) under a Native Title agreement or another agreement with an Aboriginal party, unless the Aboriginal cultural heritage is expressly excluded from being subject to the agreement; or*
> *(iv) in compliance with cultural heritage duty of care guidelines; or*
> *(v) in compliance with the cultural heritage duty of care; or*
> *(vi) in compliance with Native Title protection conditions, but only if the Aboriginal cultural heritage is expressly or impliedly the subject of the conditions; or*
> *(b) the person owns the Aboriginal cultural heritage, or is acting with the owner's agreement; or*
> *(c) the harm is the result of doing an act that is necessary because of an emergency, including for example, a bushfire or other natural disaster.*

The ACH Act provides transitional arrangements whereby existing agreements or other cultural heritage arrangements continue to have standing and will constitute compliance with the cultural heritage duty of care (see Sections 164 and 167, in relation to existing arrangements).

Existing agreements must meet the following criteria:

a. The agreement is to have been entered into prior to the implementation of the ACH Act (16 April 2004);
b. The existing agreement must be with a Party who, at the time the ACH Act was implemented meets the definition of an Aboriginal Party as specified in Section 34 of the ACH Act.
c. The agreement must make express provision for the management of Aboriginal cultural heritage.

No such agreements exist for the Arrow LNG Plant.

Arrow Energy is required to prepare an EIS for the project and is therefore required to meet provisions of Part 7 of the ACH Act. In this case, and subject to qualifications under Section 86 of the ACH Act, the only means by which the duty of care can be satisfied is the preparation of an approved CHMP. Part 7 specifies in some detail the means by which Aboriginal Parties and others must be notified. It

also sets timeframes for the completion of various tasks by various parties. Importantly, it explicitly places the responsibility for the development of an approved CHMP on the Sponsor (for our purposes, the development proponent, in this case Arrow Energy). It also requires Aboriginal Parties to seek endorsement within a specified period of time (the notification period), if they wish to assist in the development of the CHMP. There are also provisions for seeking approval of the CHMP where the Sponsor and Endorsed Parties fail to reach agreement on the provisions of the CHMP.

The ACH Act countenances a CHMP being one of two types. It can be developed as an investigation and management process document or alternatively as a cultural place management document (usually developed following the conclusion of cultural heritage investigations). In the case of the former, the major fieldwork component would only be undertaken once the project received sanction and would be initiated in line with the conditions agreed in the CHMP.

Any cultural heritage investigations that may be required in advance of project sanction and settlement of the CHMP could be undertaken on the basis of separate agreements undertaken with the Aboriginal Parties and as such would constitute s.23(3)(a)(iii) 'another agreement' as provided for in the ACH Act.

The requirement to implement the provisions of Part 7 are, however, conditional on provisions of Section 86 of the ACH Act not applying. Section 86 of the ACH Act states that the provisions of Part 7 do not apply if there is either a NT agreement of a type specified in the ACH Act or there is an agreement or arrangement in place that meets the transitional provisions of the ACH Act – notably Section 164 or Section 167 (which, as has been noted, do not pertain). If Section 86 of the ACH Act were to apply, through settlement of an ILUA, it is only necessary that this agreement does not expressly exclude cultural heritage issues for the duty of care to be met through the agreement.

The ACH Act provides for the Minister to issue stop orders (Section 32) where there is a risk of, or actual, harm being done to, Aboriginal cultural heritage. It also provides for Aboriginal people to assert ownership of certain classes of cultural heritage in some limited circumstances.

Access to land for the purposes of conducting any necessary investigations can be effected by reference to Section 153 of the ACH Act. Under this section, where the Sponsor has secured access to the relevant area under provisions of other legislation, those wishing to undertake cultural heritage investigations required for a CHMP may avail themselves of the authority to enter granted by the other legislation.

The ACH Act also makes numerous other provisions. These include, among other things: ownership of certain classes of cultural heritage or of cultural heritage in certain circumstances; requirements to tender information required to implement an approved CHMP; and requirements to advise the Chief Executive of the discovery of human remains.

2.2 Native Title and Cultural Heritage

Cultural heritage is an integral component of an individual's and a group's Native Title rights. Indeed, it is often a central component of a Native Title claim, with ownership and the right to manage it asserted as part of such claims. Moreover, knowledge of cultural heritage and active management of that heritage often constitute important means of demonstrating the continuity and practice of Native Title. Activities that diminish the cultural values of a cultural heritage area or object could, therefore, directly and deeply impact on a person's Native Title. Those who carried out such activities might be liable to provide compensation for any action that caused such a diminution of Native Title rights (including cultural heritage) unless appropriate provisions have been made, consistent with requirements of the *Native Title Act*.

A fundamental point to note, however, is that cultural heritage concerns are not merely a simple subset of Native Title: they can stand apart from, and separate to, Native Title. Cultural heritage management, and the protection of cultural heritage areas, objects and values, is not predicated on the tenure of the land in question. Thus, while there may have been a series of lawful actions taken which might have diminished, suppressed or extinguished the Native Title rights of a person or group, this will not have necessarily diminished, suppressed or extinguished the cultural values that an area or object possesses and in which people may have a direct interest. The basis for this position lies in various definitions and criteria associated with Commonwealth legislation, notably the ATSIHP Act (Section 2.1), as well as clear statements made in relevant Territory and state legislation. The provisions of these Acts to protect Aboriginal cultural heritage values are in no way predicated on Native Title, and continue despite recent legislative developments in relation to Native Title at both state and Commonwealth levels.

2.3 Significance Assessment

The assessment of the significance of cultural heritage areas, objects and values, both potential and realised, are fundamental to cultural heritage management planning. They can be assigned to particular areas, objects and values, or to a grouping of areas, objects and values within an area. In the case of the latter, the importance of a cultural heritage area or precinct may be greater than the sum of its individual areas, objects and values. Cultural heritage significance is the value of cultural heritage areas, objects and values to our society and us. The determination of significance, however, varies significantly from one piece of legislation to another.

The Burra Charter describes another set of criteria for defining significance. The Burra Charter was developed by Australia ICOMOS and is endorsed by UNESCO for this purpose. The criteria by which the significance of cultural heritage areas, objects and values is assessed under the Burra Charter include

- Cultural and Social;
- Scientific;
- Historical;
- Educational and Economic; and
- Aesthetic.

Some of these significance criteria can be assigned a relative value from low to very high at the regional, state or national level. This process of significance assessment is employed nationally by heritage consultants and by government agencies at both state and Commonwealth level. These criteria are outlined further below.

In the case of Aboriginal cultural heritage areas or objects as defined under the ACH Act, it has previously been noted (Section 2.1.2) that the primary determinant of significance resides with the Aboriginal Parties, consistent with their tradition.

2.3.1 Cultural and Social Significance

If an area, object or value has importance for a particular cultural or ethnic group, either a majority or minority group (Lennon 1992:4), for religious, spiritual, or other symbolic reasons, it has social significance (Johnson 1992; Moratto and Kelly 1978:10). Areas, objects or values of social significance are usually important in maintaining a community's integrity and 'sense of place' (Hall and McArthur 1993a:8; Hodges 1993; King *et. al.* 1977:96). Thus, *all* places of traditional, historical or contemporary significance, as well as clearly defined 'archaeological sites' can be of great social significance to Aboriginal people, irrespective of any values, or lack thereof, that others may ascribe to them.

2.3.2 Scientific Significance

The scientific significance of areas and objects represents their ability to furnish data on, and insights into, either past cultural activities (social, technological and ecological) and/or past natural/environmental conditions (see Bickford and Sullivan 1984; Moratto and Kelly 1978; Pearson 1984). For example, 'archaeological sites' provide information on human activities, particularly everyday lifeways, which are often not always available in documentary sources. Such insights apply

equally to literate and non-literate societies. Similarly, such insights may concern questions of local culture history, span tens or even thousands of years, and reflect more general and theoretical questions relating to the evolution of cultural systems. Archaeological sites can also supply information on past climates and vegetation patterns (e.g., pollen grains) and past fauna (e.g., shell and bone remains). In general, the scientific significance of sites increases as their potential information content increases.

The scientific (in this case archaeological) significance of areas and objects can be determined 'according to *timely and specific research questions* on the one hand, and *representativeness* on the other' (Bowdler 1984:1, original emphasis). In terms of the former, detailed knowledge is required on the current state of play in academic archaeology - both in terms of local culture history and more general substantive, methodological and theoretical issues at the national and even international scale. Representativeness relates to the ability of a sample of areas or objects from a particular area to represent as accurately as possible the range (and often frequency) of cultural heritage classes/types from a particular area (McMillan *et. al.* 1977:32). As Lipe (1984:30) notes:

> *A representative sample is designed to represent a large population of items in terms of a small selection of such items with a minimum bias in the selection.*

As a general rule, the rarer the area or object is, the greater its significance. It is in this sense that 'older' areas and objects have tended to be assigned greater significance given that they tend to be rarer due to the vagaries of time and decay (Coutts and Fullagar 1982:61). However, an area exhibiting numerous similar (read common) places can have considerable significance as it may provide a rare opportunity to investigate past land and resource use patterns. In this instance, the significance of the area is also greater than the sum of its constituent places (see Bowdler 1983:40).

From a different perspective, representativeness also relates to maintaining the diversity of areas and objects for future generations. This notion helps offset the effects of pursuing particular types of cultural heritage areas and objects, and certain research questions, at a particular point in time, preserving things for the future when there may be different emphases and questions to pursue (King *et. al.* 1977:99).

2.3.3 Historical Significance

An area or object has historical significance if it is associated with a significant person(s), event(s) or theme(s). As Kerr (1990:10) notes, the first two

> *. . . may include incidents relating to exploration, settlement foundation, Aboriginal-European contact, disaster, religious experience, literary fame, technological innovation and notable discovery.*

Historical significance may also include the ability of an area or object to be representative of major historical themes or cultural patterns from a particular historical period (Moratto and Kelly 1978:4). As a general rule, it can be taken that the more intact an area or object, including its setting, the greater its significance (Lennon 1992:4).

2.3.4 Educational and Economic Significance

Cultural heritage areas and objects may have important educational significance by providing opportunities for people to visit, examine and better appreciate the nature of these for themselves. Such opportunities not only have important or indeed profound social consequences in terms of maintaining a community's identity, authenticity and sense of place (Lipe 1984:6), but also can have significant economic consequences in terms of cultural tourism (Hall and McArthur 1993b). From another perspective, the economic significance of areas and objects is increasingly becoming an issue competing with alternative land-use activities (e.g., development). Although traditionally seen as mutually exclusive pursuits, cultural heritage preservation and economic development may work together. Best results occur where heritage issues are considered and accommodated for in the early stages of development planning (Rickard and Spearritt 1991).

2.3.5 Aesthetic Significance

The aesthetic qualities of areas and objects relate to the visual appeal, however subjective, of the area or object and its setting (Kerr 1990:10). Despite the poorly defined nature of aesthetic significance, it remains one of the most important criteria for official registration of heritage places in Australia (Schapper 1993).

3. DATA SOURCES AND METHODOLOGY

The following sections of this report have been based upon the review, analysis and synthesis of a variety of information relating to the Aboriginal cultural landscape which includes the Arrow LNG Plant. This landscape has been considered as it relates to Aboriginal cultural heritage areas, objects and values that are known or are likely to be encountered throughout. For the purposes of this study, noting the limited data available for the immediate area of project impacts (see below) as well as wishing to ensure sufficient data were considered to suitably contextualise the project area (those locations where there will be some direct impact through development of the project), searches and analyses were undertaken on a far larger area than the project area. This larger area is termed the Agency Database Search Area (ADSA) (see Figure 2).

This section reviews the data sources available for the consideration of the Aboriginal cultural landscape of the ADSA and the methodology for that review. It then makes note of the Geographic Information Systems (GIS) established in support of the study and which has been fundamental to the handling, manipulation, interpretation and display of the various strands of cultural heritage information considered in this Aboriginal Cultural Heritage Impact Assessment Study.

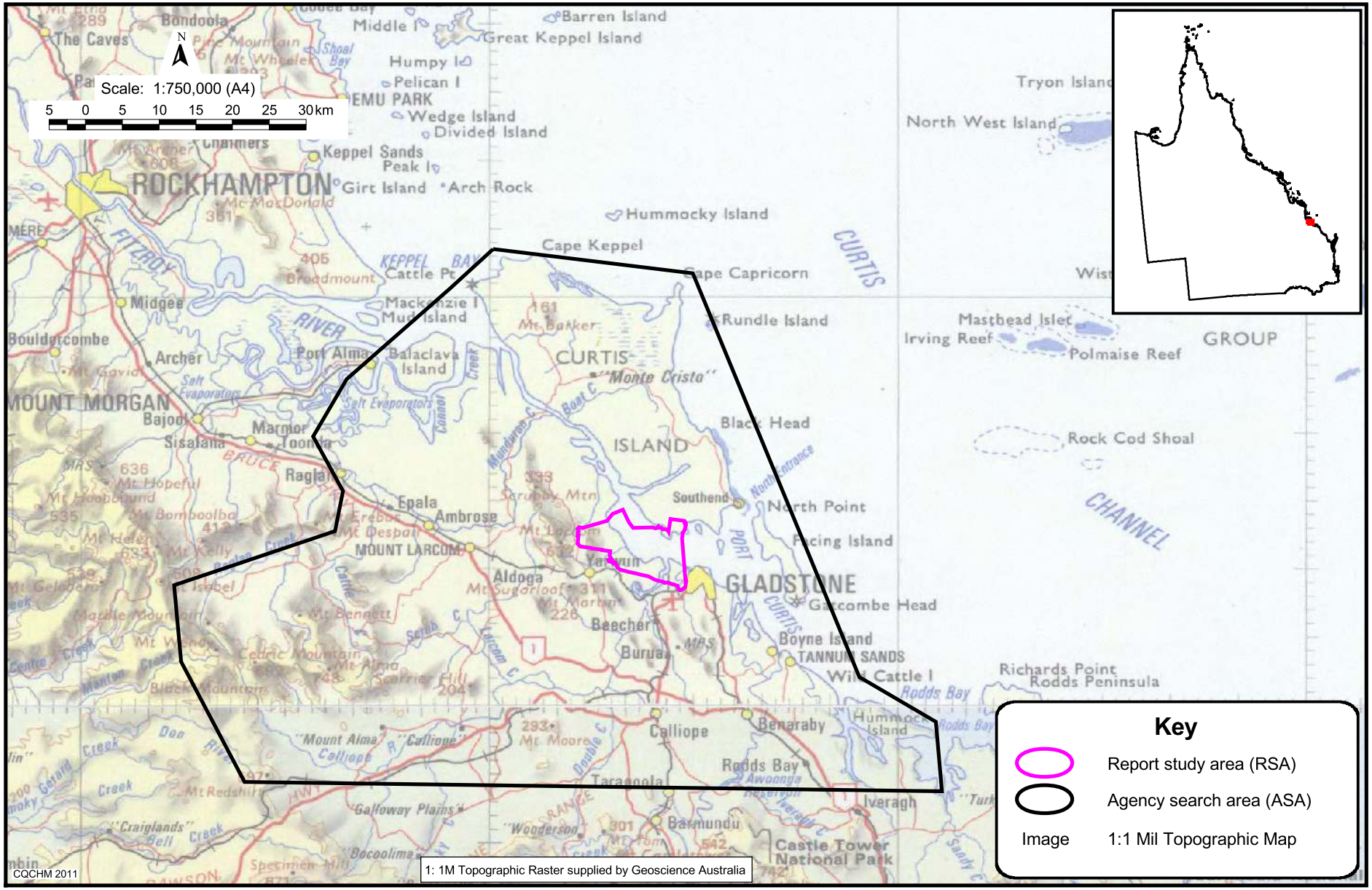

Figure 2: RSA and ASA database search areas.

3.1 Cultural Heritage Areas, Objects and Values

The majority of information on the Aboriginal cultural heritage areas, objects and values that reside within the ADSA derives from cultural heritage investigations undertaken as part of the impact assessment process associated with similar development projects. Additional information was also sourced 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 being controlled by the Cultural Heritage Coordination Unit (CHCU) of the Department of Environmental Resource Management (DERM).

The three principle sources of Aboriginal cultural heritage information maintained by DERM includes the report catalogue which contains all cultural heritage studies undertaken under the various pieces of state cultural heritage legislation that have been in operation since the late 1960s (with the vast majority dating from the mid-1970s with the introduction of environmental impact legislation). Associated but separate from this catalogue is the 'site card index' which contains the greatest amount of detail regarding individual cultural heritage places recorded (whether as part of the EIS process, resulting from research projects or otherwise) throughout Queensland (Section 4 provides further discussion regarding the access status of these data sources).

The Indigenous Cultural Heritage Register and Database (ICHR and D), searched as part of this Aboriginal Cultural Heritage Impact Assessment Study, have been compiled as a synthesis of both of these sources (specifically in the case of the Database) as well as the provisions of the ACH Act (under which both are a requirement). In recent years the ICHR and D has been incorporated as a layer in a GIS to provide greater flexibility in both its use and also control of the outputs provided. The resulting layer can be modified to output a variety of levels of information as determined appropriate by departmental staff and policy.

Under the provisions of the ACH Act, and other DERM policy, public access can be made to several of these data sources. Owing to the nature of Aboriginal cultural heritage information and the sensitivities inherent in the complex issues surrounding its existence, form, and cultural protocols, access is subject to various caveats (Section 4).

The Queensland Heritage Register (QHR) established under the QH Act consists of those places that are considered to possess heritage values that meet one or more of the criteria specified in the QH Act. Although these are primarily European historic heritage places, these places may also have or be associated with Aboriginal heritage values. Searches of the QHR are publicly available through the Cultural Heritage Branch within DERM, although if it is considered appropriate, specific information regarding the place or the values for which it has been listed (or is being considered for listing) does not necessarily need to be made publicly available. In addition to this internal search process, searchable web-based systems exist to enable the public to obtain further details regarding the heritage values of individual listed places. These place summaries contain background contextual information regarding the places that can prove useful in obtaining a more complete appreciation of a place's heritage values.

Separate to the QHR, the Cultural Heritage Branch within DERM maintains a further source of information on heritage places that have been reported as being significant. Known as their Cultural Heritage Information Management System (CHIMS), places within this 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 and to date there has been no comprehensive process aimed at internal consistency and cross-checking current entries. It is however, generally considered as a place from which further heritage nominations can be initiated from 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 include the National Heritage List, the Commonwealth Heritage List, the Register of the National Estate and the World Heritage List outlined earlier in the context of the EPBC Act (Section 2.1). These lists are administered by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) and searches of these can also be undertaken. Unlike the QHR for example, places inscribed on these lists and registers can be included for a variety of values. These are most commonly broken in to three broad categories, natural, historic or Indigenous, with places usually listed for their outstanding values in one of these categories (although recent listings are tending to note multiple values) even though the place/area may also contain significant other values. The presence of these other values can rarely be ascertained from the search result summaries provided as a result of a standard search of the DSEWPaC lists.

Like the QHR, there are also a series of searchable web-based databases that enable the user to locate and cross reference further details regarding a place and the values that are looking to be preserved by their inclusion in these various lists. While the summaries that can be obtained may make reference to

a place having significant Aboriginal cultural heritage values, these may not necessarily be expounded in any depth owing to cultural restrictions or sensitivities.

Finally a range of cultural heritage information is, via a number of processes, already in the public domain (notably a great number of cultural heritage assessment reports and research syntheses). This information is housed in numerous places including private and professional collections, libraries and archives, and (more recently) by the Aboriginal Traditional Owner groups who either undertook or oversaw such work on their cultural heritage.

3.2 Information Sources Reviewed

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

1. Formal application was made to the Cultural Heritage Coordination Unit within the Queensland Department of Environment and Resource Management for a search of the ICHR and D. As required, a GIS layer containing the ADSA was provided to DERM as part of this request (see also Section 4 below).
2. Request also was made to the Cultural Heritage Branch within the Queensland Department of Environment and Resource Management for a search of places on both the QHR and CHIMS. The same ADSA GIS layer was also provided, as required, in support of this request.
3. Searches were made of the lists and register administered by DSEWPC for information relating to any listed or identified places within the ADSA 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 information relating to the presence of 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 ADSA.

3.3 Project Geographic Information System

Where it has been possible to do so, the data that has been collated as part of these investigations has been placed in a project specific Geographic Information System (GIS). This GIS is based on ArcGIS

/ ArcView. A substantial amount of the discussions included in this report derives from the analyses of these datasets within the GIS. One of the primary advantages of GIS is that it allows for the multivariate analysis of a number of data sources and to provide the results of these in a variety of formats (principally tabular and graphical in the case of this report). Additionally, it is relatively easy and timely to expand, undertake new analyses and revise observations and interpretations as new data becomes available.

Similarly as new cultural heritage information becomes available it can be incorporated into the GIS and factored into recommendations relating to the impacts of the Arrow LNG Plant upon those cultural heritage areas, objects and values. This also relates to any changes in the project, the effects of which can be rapidly assessed and planning modified as required.

The GIS can operate in a number of projections and datum depending upon the nature of the tasks or analyses being performed, but unless otherwise stated all of the mapping within this report is presented in MGA Zone 56 GDA94.

4. CONSTRAINTS AND LIMITATIONS

There are number of constraints and limitations involved in the acquisition and access to many of the various sources of information used in this study and its levels of completeness and accuracy. These directly influence the levels to which it can be used, the questions that can be asked of it and hence the conclusions that can be drawn.

The analysis, assessment and synthesis of cultural heritage information relating to the ADSA have been done exclusively on the basis of a desktop review of available information. A major issue resulting from this then becomes one of the sources that are available for a study of this kind (described in Section 3 above), and the limitations that should be borne in mind when attempting to use what can be obtained. Put simply, there is no definitive body of data available on the Aboriginal cultural heritage areas, objects and values of the ADSA. The vast majority of the ADSA 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 region within which the ADSA resides.

The review undertaken herein has drawn on sources of cultural heritage information that are disparate in nature. As outlined above, these sources include searches of various legislatively mandated state and Commonwealth cultural heritage place databases, registers and lists. Secondly, a range of published, unpublished and multimedia information sources has been reviewed, where data pertinent to the issues under review was included. Thirdly, a range of other privately held reports and databases were reviewed, and assistance sought from others who have undertaken work of relevance to the study area.

All of this data is limited in various ways. For instance, it might be considered that the ICHR and D maintained under the ACH Act would constitute the primary source of information relating to Aboriginal cultural heritage places in Queensland. Unfortunately, this would be a very poor appreciation of the origin of those sources. At the current time, this predominantly derives in the main, from the Aboriginal and Torres Strait Islander Heritage Places database developed by the various state agencies charged with carriage of cultural heritage legislation over the years since 1967. This database had its inception and further development in two pieces of legislation: the *Aboriginal Relics Preservation Act 1967* and the *Cultural Record (Landscapes Queensland and Queensland Estate Act) 1987* (CR Act). These pieces of legislation were flawed in numerous ways, but of particular relevance to the current investigations is the definition of what constituted the Aboriginal cultural heritage that was protected under these acts. In both cases, their primary, if not exclusive, focus was on material culture alone. For example, the CR Act framed cultural heritage in the following terms:

> ***"Queensland Estate"*** *means evidence of human occupation of the areas comprising Queensland at any time that is at least 30 years in the past but does not include anything –*
> *(a) made or constructed as a facsimile; or*
> *(b) made or constructed at or after the commencement of this Act for the purpose of sale; or*
> *(c) that is not of prehistoric or historic significance.*
>
> ***"Item of the Queensland Estate"*** *includes, in relation to any structure or object in, on or under land, the surrounds of the structure or object from which it cannot be separate without destroying or diminishing its value or significance.*

The emphasis on material culture (objects or things) is of vital importance here as it heavily influenced the nature of the places that were covered by the act, becoming almost exclusively 'archaeological sites' such as stone artefacts, scarred trees, shell middens and the like. This directly affected the methodology, location and recording of Aboriginal cultural heritage areas, objects and values undertaken as part of assessments undertaken under the provisions of the legislation (not to mention more generally within Queensland), and thereby included on the resulting database that was created from this information.

It has been suggested that it was not the sole intention of the CR Act to focus on material culture alone. This argument has its foundation in the following definition:

> ***"Landscapes Queensland"*** *means areas or features within Queensland that –*
> *(a) have been or are being used, altered or affected in some way by humans; and*
> *(b) are of significance to humans for any anthropological, cultural, historic, prehistoric or reason;*
>
> *and includes any item of the Queensland Estate found therein.*

This definition does seem to countenance the entry of places that might not have an exclusively material dimension. The mechanism under the CR Act for the recognition of such places was by having them gazetted as a Designated Landscape Area (DLA). It is worthy of note that there were only ever nine of these places gazetted in the almost 20 years that this act was in operation. In all cases, these DLAs were gazetted exclusively because of their material dimensions, either being, or containing, rock art sites, stone arrangements or Bora (ceremonial) grounds.

It is true that the ACH Act has replaced that clearly narrow and limited definition of Aboriginal cultural heritage with something that is broader and more inclusive of the totality of areas, objects and values that really constitute Aboriginal cultural heritage. The simple fact is, however, that the ACH Act has not been in operation for long enough to even begin to redress the imbalance in the classes of cultural areas, objects and values within its data sources.

There are, then, significant issues attending to the use of existing databases for planning purposes, and the limitations of these, whether maintained by a state agency or not. In particular, historical factors that have heavily influenced the nature of what has been recorded, as against what actually constitutes the totality of Aboriginal cultural heritage, need to be recognised as having an influence that can have implications for the use of such data even when the legislation under which they were primarily developed has been repealed and replaced with legislation that is apparently more comprehensive in scope. The following example serves to illustrate this point in some detail. It is drawn from another region of Queensland but the point made equally applies elsewhere.

Nor is there necessarily a willingness on the part of Aboriginal people to disclose any information or knowledge regarding their cultural heritage, particularly sensitive cultural information, to the State given the measures in place to protect such information and the virtually unrestricted access of a range of individuals to it (cf. below). The point remains, however, that at this stage the ICHR and D is heavily weighted towards areas and objects that are material cultural heritage.

Following on from the ability to access the cultural heritage information housed in the ICHR and D under the provisions of the ACH Act, there is a second tier of access regulation and data provision that also exists, under various departmental policies. While a search of the ICHR and D is freely available, the resulting information provided is highly generic, including only limited fields. These include the database identifier for each place (which can be used to cross-reference against the site cards), the type of place under consideration, its locational information, date recorded and a note regarding the relevant Aboriginal Party for each record.

Access can also be sought to the report catalogue and site cards for recorded cultural heritage areas and objects returned within the search request results. Such access is not available without clear written authorisation from an Aboriginal party for the area/s in question that they agree to the release of such information. Engagement and negotiations with the Aboriginal Parties for the Arrow LNG Plant at the time of this study being undertaken had not substantively 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.

Once access to cultural heritage information has been secured and results obtained, a series of other issues must then be considered. In the first instance, this relates to the origin of, and manner in which, the data so included has been collected. These data derive in large measure from either *ad hoc* recordings of varying quality or from EIS or development-related projects that had a geographical

focus determined by the location of a piece of development rather than being approached from any cultural parameters. Only a small portion of the available cultural heritage information has been collated as part of any systematic research program of even relatively restricted geographical extent. That is, the imperative for collation of most of the information that exists is not necessarily conducive to that information having been collected in a comprehensive or systematic fashion across much of Queensland, and hence is of limited utility.

Questions of accuracy also then intrude. The introduction and widespread availability of Global Positioning Systems (GPS), now a standard fieldwork tool for cultural heritage assessment, is a relatively recent phenomenon. Prior to this the precision of a recording depended on the accuracy of map reading, and then the subsequent long hand generation of co-ordinates. In such cases an error of only 1 mm (the size of a pencil dot) on a 1:250,000 scale map equates to an on-the-ground error of 250 m. Errors reading maps to calculate a place's coordinates, and inconsistent and incomplete provision of grid references has meant that there are systemic errors throughout the databases, then used to create computer-based datasets. Use of correction factors that converted imperial grid references to metric have only served to compound the problem.

Despite GPS having powerful and highly accurate applications within cultural heritage management (especially since the removal of selective availability), there has been a basic lack of understanding of issues surrounding the datum used in collecting mappable information and projections, and the importance of providing this information as a component of cultural heritage locational data. With differences between the various commonly used projections being in the order of several hundred metres, this further diminishes certainty as to the accuracy of the locational information within cultural heritage databases. To our knowledge, there has not been any concentrated program of review to establish the internal consistency and levels of confidence that exist for information housed within these data sets, or to subsequently ground truth even a sample of cultural heritage areas and objects to validate or correct this locational information.

This is not a situation restricted to the ICHR and D alone, but rather is one that applies generally (although in varying degrees) across all of the current governmental cultural heritage databases that have their antecedents in previous decades and/or have not been subjected to some measure of ground-truthing. By way of example, a recent investigation of a place listed on the QHR within central Queensland found that the place that was the subject of the heritage listing was not located on the lot on plan provided in its listing (it is only very recently that the QHR commenced listing places by areas other than whole cadastral parcels).

Separate to the QHR, the Cultural Heritage Branch within DERM has compiled a substantial range of information regarding a range of other heritage places (albeit in relation to this report they are predominantly but not exclusively historic or 'European') and incorporated this into its CHIMS. At the moment this database is largely for information purposes as a summary of reported places and is intended to be used as a source of heritage information to support both possible future listings and to feed into Local Government Authority (LGA) development control planning schemes. Entries in CHIMS derive from a great variety of sources, but come principally from heritage reports. It has not been the subject of a systematic audit (although this is proposed) and as a result is an incomplete record both of known places and the specific information about the places that have been entered.

It was in some way to counter this particular raft of issues, the area used as the basis of this Aboriginal Cultural Heritage Impact Assessment Study has been based on an expanded, buffered area surrounding the Arrow LNG Plant. Thus, as can be seen on Figure 2, an area much larger than the project area was subject to searches in the first instance.

The various Commonwealth heritage lists and registers and the QHR also are subject to other limitations. The most notable is the fact that all of these generally only house cultural heritage areas or objects that have been nominated to, and inscribed in, those lists and registers (although recent modifications have tended to note the destruction or removal of previously listed places). Thus, if no nomination has been made or such nomination has not been successful, then no information will be recorded. Nomination to these lists and registers comes often, but not necessarily, with a variety of criteria for listing. These nominations are assessed by committees, and their reasoning in relation to the criteria is not always transparent. At various times on the majority of these lists and registers there have also been 'trends' or themes pursued, which have seen large numbers of certain classes of cultural heritage entered on them. With a general lack of strategic direction and planning in the identification and conservation across the gamut of cultural heritage areas, objects and values, these lists are generally overrepresented in a few cultural heritage place-types. In light of these considerations, absence of evidence can not necessarily be interpreted to mean evidence of absence.

In the light 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, object and values associated with the Report Study Area (RSA) (see Figure 2). Rather it represents the collation of a body of data that are subject to various limitations and flaws. From this limited data, some pertinent observations have been drawn, and predictions have been posited. They should not be considered as anything else. Accordingly, all project related development within the RSA must be conducted with the assumption that additional areas and objects of Aboriginal cultural heritage value, may exist and is yet to be identified, and that further pre-clearance surveys will be

required. It was in part to address this situation that Arrow Energy invited the Aboriginal Parties to prepare constraint statements that address any cultural heritage issues they considered noteworthy. The purpose was to provide a mechanism for the primary knowledge holders in relation to cultural heritage to bring to the fore knowledge of areas and issues of cultural importance on which registers and other data sources might have been silent. Arrow Energy committed itself to this and formally invited the parties to prepare a brief outlining the general nature of the issues they wished to address in constraints statement, what resources (including money) would be required for the preparation of the constraints statement, and suitably qualified persons who could prepare such a statement. Resources were also offered to prepare this brief. To this point, this offer has not been progressed by the Aboriginal Parties.

5. ABORIGINAL CULTURAL HERITAGE LANDSCAPE

One of the requirements for this Indigenous Cultural Heritage Impact Assessment Study is a review of the nature and form of known Aboriginal cultural heritage areas, objects and values. 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 RSA and which may be impacted by the proposed Arrow LNG Plant. 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 also will turn its attention to a summary and synthesis of results of previous Aboriginal cultural heritage investigations relevant to the RSA and finally, consideration of the cultural landscape that may be impacted by the Arrow LNG Plant.

The first part of this section deals with the results of searches conducted on a range of Commonwealth, state and local Government Authority state heritage databases, lists, registers and planning schemes. The results of these searches are considered against both the RSA and the various areas of project infrastructure as currently understood.

A review of various published and unpublished material relating to both the RSA and its broader region is then considered with a view to presenting a cultural heritage landscape model for Aboriginal cultural heritage place location within the RSA. There is no single, comprehensive statement or source on the Aboriginal cultural heritage values of the RSA. There are only a series of isolated site recordings and/or related reports prepared usually for EIS-related projects that are in the general vicinity of this project. These have been used as a basis for extrapolating (where appropriate) the likelihood of sites being found, and the form of those sites, in the RSA.

5.1 Cultural Heritage Database, List and Register Search Results

5.1.1 Commonwealth Heritage List and Register Search Results

Searches were conducted of the various Commonwealth heritage lists and registers regarding places that were located within the ADSA. These searches included the World Heritage List, the Commonwealth Heritage List, the National Heritage List and the Register of the National Estate (RNE). Datasets made available through the Heritage Division of DSEWPC were used in this analysis.

Five heritage places were found to be located within the ADSA. These are presented in Table 1 and Figure 3. All five of these were noted on the RNE while one was included both on the World Heritage and National Heritage lists. Only one of these places, however, is located within the RSA.

This one place, being the Great Barrier Reef region, has three separate listings. This is a highly significant area being a declared property on the World Heritage List (WHL ID: 105060), a listed place on the National Heritage list (NHL ID: 105709), and a registered place on the RNE (RNE ID: 8320).

Place Name	Source	Place ID	Listed Values	Listing Status	Identified Aboriginal Values	Within RSA	Within Project Disturbance Area
Great Barrier Reef	WHL	105060	Natural	Declared	Yes	Yes	Yes
	NHL	105709	Natural	Listed	Yes	Yes	Yes
	RNE	8320	Natural	Registered	Yes	Yes	Yes
Garden Island Environmental Park	RNE	8820	Natural	Registered	No	No	No
Mount Larcom Range	RNE	14674	Natural	Indicative Place	n/a	No	No
Curtis Island (part)	RNE	14675	Natural	Registered	Yes	No	No
Balaclava Island and The Narrows	RNE	18811	Natural	Registered	No	No	No

Table 1: Summary of heritage places identified from the searches of Commonwealth heritage lists and register within the ADSA and the RSA.

Although all of these listings note that the area has been inscribed for their natural values, in some cases Indigenous values have also been recognised. In the case of the Great Barrier Reef, the RNE listing significance statement includes the following:

> *The Commission has determined that the place has Indigenous values of National Estate significance. The Commission is currently consulting with relevant Indigenous communities about the amount of information to be placed on the public record. . . . Significant Indigenous values are known to exist in this area.*

Additionally, both its World and National heritage listing inscriptions state that:

> *The World Heritage property is also of cultural importance, containing many middens and other archaeological sites of Aboriginal . . . origin.*

It should be noted that the individual listings for the Great Barrier Reef region in the area of the project do not describe the same area in each case. As a result of this, the areas the subject of these listings will variously be encroached by elements of the project (see Table 1 and Figure 3). In summary:

The World Heritage and National Heritage listings cover all aspects of the Arrow LNG Plant on Curtis Island, within Calliope River and Port Curtis itself and the potential launch site on reclaimed land north of Fisherman's Landing;

The RNE listing covers project activities within Calliope River and Port Curtis, including the potential launch site on reclaimed land to the north of Fisherman's Landing.

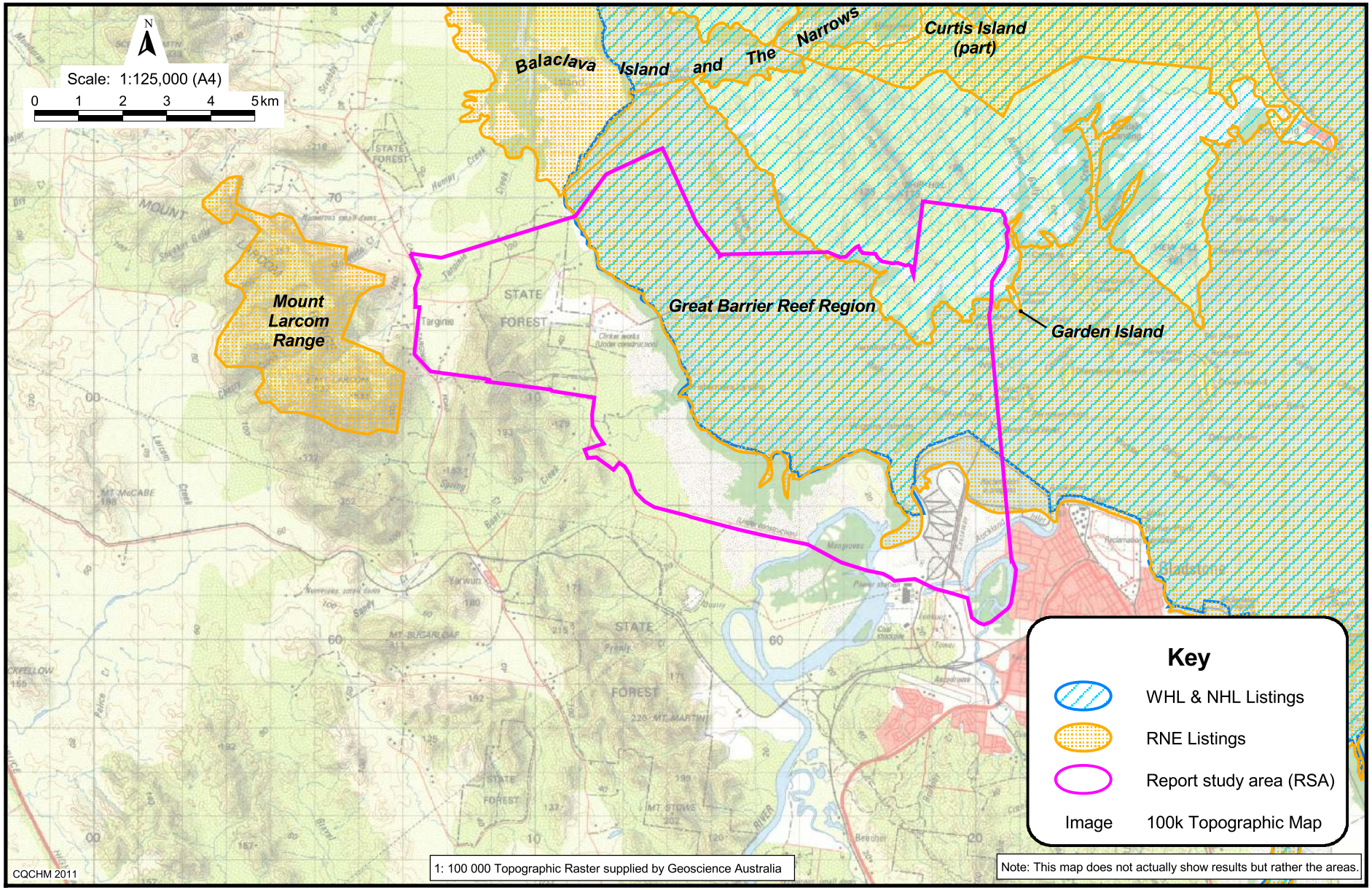

Figure 3: WHL, NHL and RNE agency database search results.

5.1.2 Queensland Indigenous Cultural Heritage Register and Database Search Results

A search of the ICHR and D administered by DERM for the ADSA identified 259 separate registered sites (see attachment 2). Of these, however, only eight places containing Aboriginal cultural heritage (both significant areas and objects) that have previously been identified and recorded within the RSA (Table 2, Figure 4).

As noted above (Section 4), the results of this search, as provided by DERM, contains only minimal information regarding each of the places: listing only the State Identification number (ID), the place-type in a broad classificatory sense, date recorded, locational information, and details regarding the Aboriginal Party for each place. Where any other additional information has been available from other sources regarding these places, this has been included within the tables and/or discussed within the text of this section. Further details regarding some of the studies from which these places were identified, to the extent that it has been available to this study, are provided in Section 5.2.3 b.

Place ID	Place Type	Place Survey Name / ID	Recorder	Date Recorded	Project Disturbance
JF:A93	Scarred Tree	Stuart Oil Shale Project 3	G. Alfredson	Jul 1989	None (RSA only)
JF:C65	Stone Artefact/s	Boat Creek 1	M. Strong	Feb 1999	None (RSA only)
JF:C66	Stone Artefact/s	Boat Creek 2	M. Strong	Feb 1999	None (RSA only)
JF:C67	Stone Artefact/s	Bashfords Sand Ridge	I. Lilley	Nov 1995	None (RSA only)
JF:C68	Scarred Tree	Coolamon Scarred Tree	M. Strong	Feb 1999	None (RSA only)
JF:D17	Shell Midden	QCL Clinker Plant Midden	A. Wallin	Sep 1995	None (RSA only)
JF:D72	Stone Artefact/s	n/a	Unknown	May 2009	None (RSA only)
JF:D73	Stone Artefact/s	n/a	Unknown	May 2009	None (RSA only)

Table 2: Recorded Aboriginal cultural heritage areas and objects located within the RSA from the Queensland Indigenous Cultural Heritage Register and Database (ICHR and D).

Of note from the results of this search are both the low numbers of places that have previously been recorded, given the intensity of industrial development in the Gladstone area and the contingent EIS-related cultural heritage investigations, and also the relatively restricted range of place-types that have been identified from the cultural heritage assessment that have been undertaken. These places are concentrated in the coastal development strip located to the north of Gladstone. As currently identified and included on the ICHR and D, no cultural heritage places have been identified throughout the largely undeveloped northern or Curtis Island portions of the Area (see Section 5.2.2 however for places identified but not included on the ICHR and D).

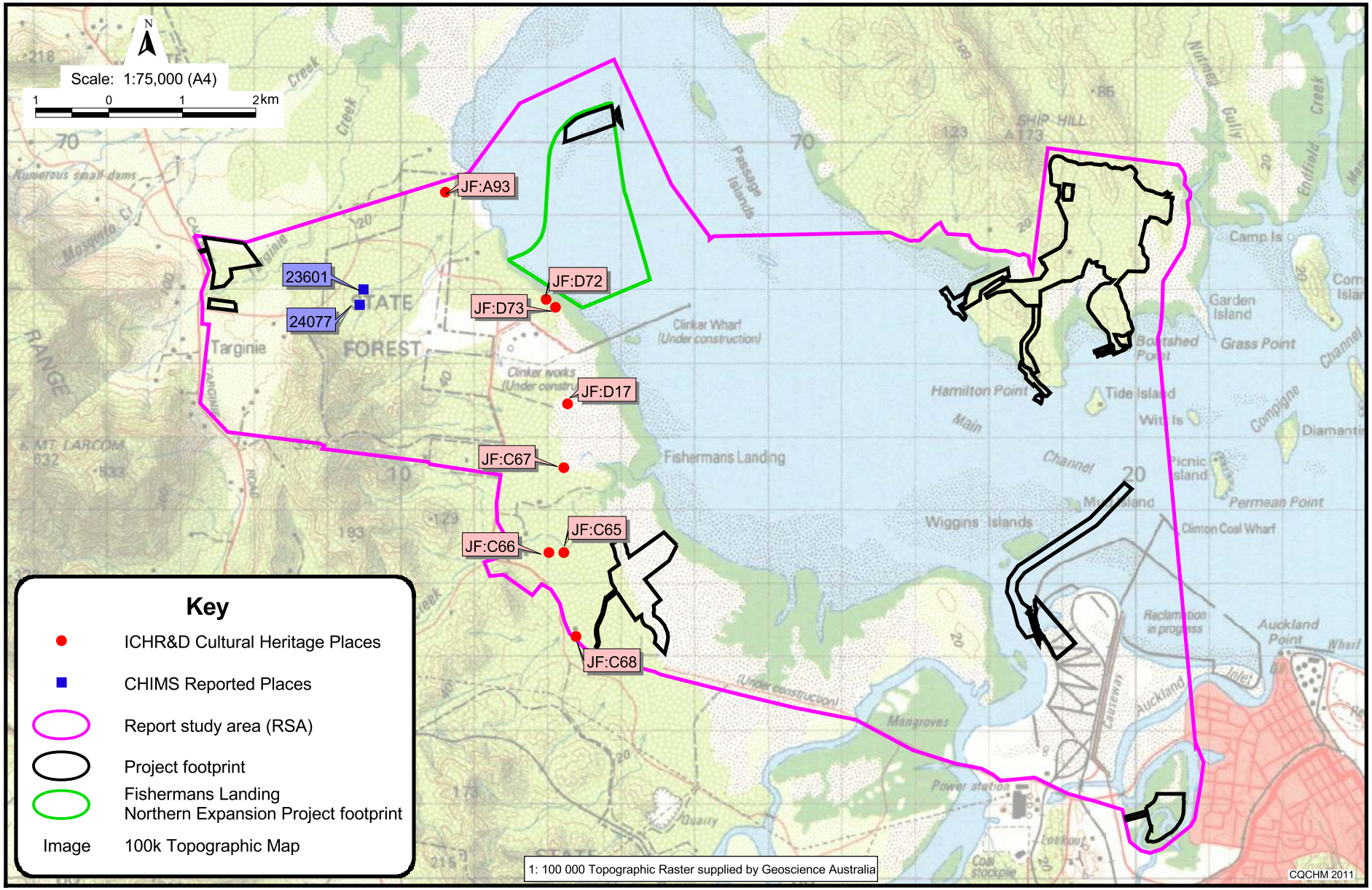

Figure 4: DERM Indigenous Cultural Heritage Register & Database and Cultural Heritage Information Management System search results.

Of the eight places that have been identified throughout the RSA the majority (five) contain stone artefacts either as their sole material. Being highly durable, stone artefacts are the most visible identified and included on the ICHR and D, no cultural heritage places have been identified throughout the largely undeveloped northern or Curtis Island portions of the Area (Section 5.2.2 however for places identified but not included on the ICHR and D).

There is little information regarding these stone artefact assemblages either in terms of their contents (e.g., artefact types or raw material from which they were manufactured) or their extent. However with regard to the latter such details are known for two of these places. JF:C66 is one of the larger stone artefact scatters identified in the Gladstone area. This was identified as covering an area some 500 m in length and 30 m wide along Boat Creek. None of these registered sites are in areas that will be subject of development related activities (i.e., within the project footprint).

Two scarred trees (JF:A93 and JF:C68) have also been recorded within the RSA. As with places containing stone artefact/s, little is known about these trees (e.g., species, size and numbers of scars). One (JF:C68) has been referred to as a 'Coolamon Scarred Tree' presumably because the size of the scar is such as to bear comparison with ethnologically known items of this kind . It should be noted that the cause of scarring on trees is a matter of considerable contention, with many non-cultural causes possible. However, it is accepted at face value, those that have been included on the database. Neither of these scarred trees, while falling within the RSA, will be directly affected by the project.

The remaining place consists of a shell midden (JF:D17). Although within the RSA, it is not situated in an area that will be directly affected by the project.

5.1.3 Queensland Heritage Register Search Results

As it is possible for Aboriginal cultural heritage values to be included as a component of the heritage values looking to be protected by inscription on the QHR established under the QH Act, a search of this register was also conducted.

No registered places, with or without Aboriginal cultural heritage values, were found to be present within the RSA.

5.1.4 DERM Cultural Heritage Information Management System Search Results

Separate to the QHR, the Cultural Heritage Branch within DERM has compiled a substantial range of information regarding a range of other heritage places (predominantly historic or 'European') and incorporated this into CHIMS. There are two current listings within the RSA: ID23601 – old cattle yards and ID24077 – cattle dip. Neither of these will be directly affected by the project. Nor do they

have an Aboriginal cultural heritage element. Irrespective of this, CHIMS listings have no current statutory management requirements.

5.1.5 Local Government Authority Planning Schemes

The study area is located within the boundaries of the Gladstone Regional Council. This is an amalgamation of three previous local government areas (the former Gladstone City, Miriam Vale Shire and Calliope Shire Councils). The study area lies predominantly within the former Calliope Shire Council area with a small area in the east being within the previous boundaries of Gladstone City Council. Gladstone Regional Council is in the process of preparing a new planning scheme but currently the former planning schemes apply to the study area.

Discussions with planning personnel and review of the current planning schemes for Gladstone City Council and Calliope Shire Council 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.

Although generally deferring to the processes and registers established under both the ACH Act and QH Act, the planning schemes for these two areas contain both an overlay code and specific registers for both Indigenous and European cultural heritage places. A copy of these was obtained and reviewed as part of this study.

The Calliope planning scheme contains a list of places of identified Aboriginal cultural heritage significance (n=12). It is noted that these had been identified on the basis of a Gladstone Port Authority and Queensland Department of Environment and Heritage resource report for the Curtis Coast (Queensland Department of Environment and Heritage 1994) which in turn drew heavily from surveys undertaken by Burke (1993) (Section 5.2.2). This list includes Aboriginal areas and objects on Wild Cattle and Curtis Islands, on Telegraph and Connor Creeks and at Ramsay's Crossing. Although no locational information is provided within the planning scheme for these places, all of these appear to have been included within the ICHR and D. None of these places as recorded within the ICHR and D, the Curtis Coast report, or on the basis of their identifying description within the planning scheme fall within the RSA and will, therefore not be impacted by the Arrow LNG Plant.

Likewise for the list of European historic heritage places, all but two of the listed places (n=10) are already included within the QHR and such would have been identified within the search undertaken (Section5.1.3). The lot on plan details provided for the Glassford Creek Copper Smelters and Norton Goldfield, the only two not included on the QHR, place these well to the south of the RSA.

A further 11 localities comprise the Local Heritage List for the purposes of the Gladstone City cultural heritage overlay code. While no information as to their values are provided, a review of their addresses and real property descriptions make it clear that none are within the RSA.

5.2 Review of Published and Unpublished Aboriginal Cultural Heritage Literature

5.2.1 Archaeological Research in the Vicinity of the ADSA

As outlined above, although sparse, archaeological research undertaken in the vicinity of the ADSA has been important in investigating Aboriginal land and resource occupational patterns. On the basis of the available information, this has come two principal studies. Details of these projects are outlined below.

Curtis Coast Baseline Study, 1993

Burke (1993) was engaged by the Queensland Department of Environment and Heritage to undertake a baseline study of the Curtis Coast in 1993. As part of this she conducted selective systematic archaeological surveys in the region as part of a broad cultural heritage assessment between Agnes Water in the south and Raglan Creek in the north, and up to 1 km inland from the mainland coast.

She located and documented 93 Aboriginal sites as part of this work. These were dominated by shell middens (n=77) and stone artefact scatters (n=12), with two quarries, and single examples of a stone-walled fish trap and scarred tree. These sites were noted as being most commonly located on level or gently inclined sand dune surfaces in low-energy estuarine environments.

Extensive middens and artefact scatters were recorded on off-shore islands, including Curtis, Facing, South Trees and Hummock Hill Islands together with a quarry at Monte Christo Creek on Curtis Island. To the north of Gladstone further middens are located in The Narrows between Curtis Island and the mainland coast. None of these are within the RSA. These large middens in particular demonstrate the importance marine resources played in the subsistence lives of Aboriginal people in the Gladstone area.

Gooreng Gooreng Cultural Heritage Project, 1993-1997

Throughout the mid-1990s the Gooreng Gooreng Cultural Heritage Project was undertaken, extending along the entirety of what is commonly called the Broken Coast, running from northern Curtis Island to the Town of 1770 in the south. This was an interdisciplinary Aboriginal cultural heritage study of the Curtis-Burnett region between Gladstone and Bundaberg and as far west as the range country near Monto (Lilley and Ulm 1999). Although coastal work was undertaken as part of this project (including the excavation of two shell middens between 50 and 90 km south along the coast from Gladstone), the major focus of this work was a series of ten excavations undertaken within

rockshelters and the examination of open sites within Cania Gorge (around 100 km to the south of the RSA).

The excavations within Cania Gorge have also provided evidence for Pleistocene occupation and use of this highland region (Westcott *et. al.* 1999). While this is not unexpected, these are the first such dates to have been obtained within this area located between the much larger (and better-known) central and southeastern Queensland highland regions. In addition to rock art on its walls, Roof Fall cave contained occupation deposits dating back 18,000 years. The Big Foot art site yielded evidence of occupation dating back to about 8,000 years ago, while numerous others (as observed within the Central Queensland Highlands) contained cultural material dating to the mid-Holocene (around 4,000 years ago) (Westcott *et. al.* 1999a:18).

Excavations at Roof Fall Cave were undertaken over two field seasons in 1996 and 1997. During the 1996 season this included a single 50x50 cm test pit located roughly in the centre of the shelter. This was followed by two additional adjacent excavation squares (an additional 50x50 cm and 50x20 cm) against the rear wall of the cave in 1997 (Eales *et. al.* 1999:30).

Seven radiocarbon dates were obtained from charcoal samples in the original 1996 test pit. An intact sequence of dates from modern times to around 18,500 BP from a depth of just over 70 cm was obtained from this square. Between these earliest times and around 8,500 BP deposition rates were very slow and occupation of the cave sparse, suggesting that the earliest periods of use were characterised by ephemeral, low intensity visits with likely long hiatuses between (Eales *et. al.* 1999:35-36 and 39). Based on these results along with those obtained from the nearby Big Foot Art Site (Westcott *et. al.* 1999b), indicate that it was around 7,500 to 8,500 BP that Cania Gorge was first occupied with any regularity or intensity.

The major period of use of the area (based on high and sustained rates of stone artefact discard) appears to relate to the period from about 4,000 BP through to the last several hundred years approaching the contact period. The nature of use of available space at Roof Fall Cave seems to undergone a significant restructure about 550 BP following the roof fall episode that gave rise to its name. At this time the archaeological assemblage moved away from one dominated by bone and stone artefacts to one dominated by large amounts of charcoal (Eales *et. al.* 1999:39).

Closer to the RSA, the Gooreng Gooreng Cultural Heritage Project also undertook test excavations of two open stratified coastal shell middens; Eurimbula 1 on the western bank of Round Hill Creek, and Mort Creek at the northern end of Rodd's Peninsula. These were noted (Lilley and Ulm 1999:7) as

being the largest complexes of shell midden deposits found within the area of the Gooreng Gooreng Cultural Heritage Project.

In addition to a series of auger holes, three 50x50 cm test pits were excavated at the Mort Creek midden complex (Carter *et. al.* 1999). The excavations were placed such as to sample a range of the expressions of shell deposits observed across the area. Seven radiocarbon determinations were returned from this work.

Excavations at Eurimbula were designed to complement that undertaken earlier at Mort Creek. An additional nine 50x50 cm test pits were excavated (Ulm *et. al.* 1999). These were placed at 25 m intervals along three generally parallel transects (i.e., three test pits along each transect) spaced some 1 km apart from one another. Five dates were obtained.

The results of the radiocarbon determinations obtained from these 1995 excavations indicate that the Eurimbula area was occupied about 3,000 years ago, while Mort Creek was occupied from about 2,500 years ago. These results were noted (Lilley and Ulm 1999:7) as being highly consistent with the results of other similar excavations undertaken on the Keppel Islands and the Great Sandy Straits located to the north and south of this area respectively. Ulm (2006) reports in greater detail on the results of these excavations, and demonstrates that these sites are of considerable scientific value in answering questions related to the regional archaeological sequence, as well as casting light on issues of significance to Australian archaeology as a whole. It should be noted that these sites were chosen for excavation after a close review of archaeological sites across the region undertaken with the intention of identifying the best prospects for detailed investigation and research. It is perhaps noteworthy in this regard that despite the knowledge of some sites in the greater Gladstone area from EIS related work and other research, none were seen by senior researchers as offering significant prospects for high order scientific research undertaken with a view to confidently establishing a regional sequence and to exploring issues related to major on-going questions in Australian archaeology.

5.2.3 Cultural Heritage Investigations in Proximity to the RSA

Aboriginal cultural heritage studies conducted as part of the development assessment process are often not publicly available as these studies are undertaken under conditions of considerable commercial confidentiality, or where statutory provisions may also impose limits on access. Consequently, the information within them may be closely controlled by Government agencies and, principally, the CHCU within DERM. Moreover, as previously outlined in Section 4 above, DERM has, since 2004 and the inception of the ACH Act, applied a policy that prevents any access to primary records held in the ICHR and D and associated archive (including the site cards and report catalogue) without the

express permission of relevant Aboriginal Parties. These include the cultural heritage reports prepared for many EIS. Such permission can be withheld or only provided at a later stage of engagement. In the present case, the Arrow LNG Plant has not been able to engage for this purpose, and so has been limited in its use of this archive.

Cultural heritage studies conducted post-1998 were often done on the basis of agreements with Aboriginal groups and such agreements generally contained confidentiality provisions severely controlling access to reports. Therefore, the cultural information therein can be particularly difficult to access. However, in some pre-1998 EIS reports, and sometimes also as part of an Initial Advice Statement (IAS), copies of cultural heritage reports were appended Post-1998 EIS or IAS studies, while not necessarily allowing access to reports with the primary data of any cultural heritage investigations, may include some form of summary of the cultural heritage investigations. While these data sources have been used in this report, where available, there is considerable variability in the detail available.

Additionally, a range of other archives and collections were made available for review of material relating to specific cultural heritage investigations. Sources which contained information relevant to the Study Area are reviewed in this section.

Alcan Smelter, 1980

As part of investigations of the proposed Alcan smelter site, Hall (1980) collected five artefacts from ephemeral watercourses 5 km south of the ML 80003 and a core scraper from a ploughed hillside between the creeks.

Lend Lease Coke Plant, 1981

In the undertaking of an assessment of the proposed Aldoga Services Corridor at Boat Creek, Hall (1981) did not locate any areas containing Aboriginal cultural heritage during his surveys. This study was not undertaken in any area that intersects with the RSA.

Stuart Oil Shale Project (original work), 1989

In the late 1980s and early 1990s Alfredson undertook a considerable volume of survey work throughout central Queensland including the Gladstone area. As part of work undertaken for the Stuart Oil Shale Project, Alfredson (1989) located a number of Aboriginal cultural heritage places.

A basalt flake was located about 700 m from the Parana end of the realignment of the railway line. She also located five stone artefacts (described as four flakes and a core of siltstone and meta-sedimentary material) near a natural drainage channel in land owned at that time by Queensland

Cement Limited. Fragmented oyster shells, which were defined as possibly being a disturbed midden material, were also located in a pile of sandy soil near an erosion bank. Further north, within land owned by Gladstone Port Authority, two flakes and three cores were located near a second drainage channel where a natural rocky seam provides a crossing. A small fragment of weathered oyster was recorded in marine couch nearby. A third site was found nearby to the north on the intertidal zone about 10 m from the tree line. These included two small flakes, described as 'greenstone'. Thick fragments of old black glass gin bottles were located near to this site.

About 300 m to the south of the place located by Alfredson on lands owned by Queensland Cement Limited, a possible scarred tree (ICHR and D ID: JF:A93) was identified. This was described as being a fallen swamp mahogany (*Lophostemon suaveolens)* but is elsewhere in the report referred to as being crow's ash. The scar is described as being 1.8 m x 40 cm. As outlined below, this tree was unable to be located during a follow up assessment some ten years after Alfredson's initial recording and was considered as likely to have been destroyed during a bushfire.

Other than JF:A93, none of these sites lie within the RSA.

Gladstone Industrial Land Project, 1992

Alfredson (1992), in a preliminary study of lands earmarked for possible industrial development in the Gladstone area, further identified several small artefact scatters in the Aldoga area near Sugarloaf Mountain, and at the southwestern base of Mount Larcom. While situated close to the RSA, none of the sites recorded actually fall within the RSA and will not be affected by the project.

Awoonga Pipeline Duplication, 1997

Ann Wallin and Associates (1997) identified a shell midden site with associated stone artefacts on Bashford's sand ridge, located between the Queensland Cement Limited plant, the railway line and Fishermans Road. While it is not so stated, it would appear that this is the same place recorded by Lilley in 1995 and identified on the ICHR and D (ID:JF:C67), and is within the RSA, however based on the description it is unlikely to be impacted by Project activities.

Gladstone State Development Area (Aldoga) Study

Prior to the development of the GSDA at Aldoga, comprehensive investigations of the area's cultural heritage values were undertaken. These studies are subject to confidentiality clauses in various agreements and hence detailed data is unavailable. It can be noted that various cultural places were identified but no information is available as to the proximity of these to the RSA. However, comprehensive program of mitigation involving the collection of these sites was undertaken. It can

also be noted that the development of the site proceeded as planned subject to implementation of agreed management measures. Consequently, many of these sites no longer exist.

Stuart Oil Shale Project (EIS work), 1997-2006

Ann Wallin and Associates (1999) reported on the conduct of three seasons of archaeological surveys in the Targinie area as part of the preparation of an EIS for the Stuart Oil Shale Project. In total, the study identified and recorded 89 places containing Aboriginal cultural heritage values. This included some that had possibly previously been identified by Alfredson in 1989 (see above).

The majority of the places noted during this subsequent work consisted of small scatters of stone artefacts and scarred trees. Three other specific place-types were also identified during this work. The first of these consists of an extensive silcrete quarry which was located at Phillipies Landing. The second was described as being a 'native well'. This area was noted as having been carefully hollowed out and covered with a stone slab.

The final place was noted as being both highly significant to Aboriginal people, as well as the only such place known from the Gladstone region. This is an intertidal stone arrangement measuring some 10 m in length. The arrangement, thought to perhaps represent a crocodile, would be submerged during high tides. McNiven (2004) has described similar arrangements from Darumbal country to the north around Shoalwater Bay.

Since the above do not appear in the search results for the ADSA study, it is assumed that the results of this work have never been provided to DERM for inclusion on the ICHR and D. Whether these places probably will be affected by this project will be clarified with the Aboriginal Parties during consultation surrounding the project, and management measures will be developed as necessary.

Additionally, it has been noted (Bailai People 2006) that this study brought together a range of ethno-historical and archaeological information to create a tentative seasonal movement map for Port Curtis Aboriginal people north of the Calliope River towards the Darumbal boundaries in the Raglan Creek area. This was described (Bailai People 2006:34) as follows:

> *The movement saw the presence of Aboriginal people on Curtis Island during the winter and early spring mullet runs along the ocean beaches when mosquitoes might not have been so prevalent. People would move across The Narrows from Curtis [Island] to the mainland, and either follow the coastline down towards Auckland Creek and Barney Point where a major ceremonial area was reported (McDonald 1988) and ceremonies apparently held every month. Alternatively they would follow inland that contained permanent water, such as Munduran Creek, Humpy Creek and Boat Creek, inland to access the huge green chert quarries along the Rundle Range, located during the Enertrade survey . . .*

Enertrade Gas Pipeline, 2006

Archaeo Cultural Heritage Services (2006) undertook a survey of the southern section of the proposed Enertrade Moranbah to Gladstone gas pipeline between Raglan Creek (40 km to the northwest of Gladstone) and Gladstone itself. Two routes were surveyed: one crossing the Mount Larcom Range, while the second crossed Larcom Creek near the location of the old Mount Larcom Homestead.

While a number of small artefact scatters were located along the route, the most significant place identified was described as being an extensive source of lustrous fine-grained greenish chert in the Mount Larcom Range near Nichols and The Narrows Roads. This source consisted of water-rolled cobbles present in the bed of the creek. It was thought that the quality of these cobbles was being tested via the removal of a flake from one end. Following this, the cobble was either discarded or, if considered appropriate, would then be further flaked. Thousands of flaked cobbles (cores) and the flakes that have been struck from these were located at, and in proximity to, this area.

Again, not appearing in the search results of the ICHR and D, it can only be assumed that the results of this work were not submitted to DERM. On the basis of the location of infrastructure of the Arrow LNG Plant, however, the cultural heritage place as described does not fall within the RSA.

Gladstone Nickel Project, 2007

In May and June 2007, Archaeo Cultural Heritage Services (2007) undertook an inspection of two development areas associated with the proposed Gladstone Nickel Project. Of these, only the Nickel Refinery site has areas which are contiguous with, or partially fall within, the RSA identified for the Arrow LNG Plant. This area is located between the existing Orica Plant and the Calliope River to the south of Hansen Road.

A total of 89 individual areas containing Aboriginal cultural heritage areas and objects were identified during the surveys. These were, however, broadly representative of 23 separate cultural areas or site 'precincts'. Stone artefacts entirely dominate the cultural record of the area being found both as areas containing isolated stone artefact/s (n=17) or stone artefact scatters (n=6). The scatters covered areas ranging from 2 to around 3,000 m^2 (60 m in diameter). Although somewhat a factor of ground surface visibility conditions, identified cultural heritage places tended to be concentrated along the littoral margins and immediately adjacent intertidal flats.

None of the places so identified will be affected by the project.

Surat Gas Pipeline, 2009

Throughout 2009, a series of cultural heritage investigations were undertaken with the Aboriginal parties associated with the alignment of the proposed Surat to Gladstone gas pipeline. Part of this route, at the Gladstone end of the pipeline, lies within the RSA.

The surveys of this area (i.e., east of the Bruce Highway) identified a total of 28 areas containing Aboriginal cultural heritage. With one exception, these consist of places containing isolated stone artefact/s generally numbering between one and four at each location. Additionally, one of the places identified as being just to the south of the pipeline route is located some 200 m to the west of a similarly described area identified by Strong in 1998 and included on the ICHR and D as place JF:C71. This was noted as having been previously fenced. It is not in the RSA.

One of these stone artefact areas, located in the Boat Creek area, was also found to be in association with fragmented shell material across an area some 10 m in diameter. This is in accordance with previous investigations that have included this portion of Boat Creek.

Management of these sites will be subject to management arrangements settled with the Aboriginal Party for the Arrow Energy Surat Pipeline. They will not be directly affected by the project.

5.2.4 Cultural Heritage Investigations Associated with the Project

Associated with the feasibility and EIS development phases of the Arrow LNG Plant, two geotechnical programs have been undertaken. Both of these have been preceded by Aboriginal cultural heritage investigations undertaken with the Aboriginal Parties for the proposed development area and their technical advisers. The details of these and their results are summarised below.

Geotechnical Study February 2009

Over two days in early February 2009 inspections were undertaken of 30 test pits and a further 10 bore hole locations. This work included consideration of access into these areas. The inspection areas were located across the site of the proposed LNG plant on Curtis Island. Locations covered by the program included hill slopes and level areas, as well as a number of areas adjacent to drainage channels. A summary report (Archaeo Cultural Heritage Services 2009) was produced as a result of this work.

Three cultural heritage places were identified. All were in the southern half of the plant site across more level areas. Two places (Places 2 and 3 located in the central east and south respectively) consisted of isolated stone artefacts. Place 2 contained a single unmodified siltstone flake (located adjacent to the main access track in undulating open woodland), while Place 3 (located on top of a small knoll overlooking the coastline) consisted of what was described as an axe blank (see Figure 5).

Place 1 was a low density stone artefact scatter located across an area approximately 120 m (north-south) by a maximum of 75 m (east-west). Approximately 30 stone artefacts – including a number of unmodified flakes, a broken blade, two cores and a broken hammerstone – were identified along the banks of the main ephemeral creek system that traverses this area. Raw materials used in the manufacture of these artefacts included quartz, quartzite, chert, silcrete and siltstone. In addition, the base of a purple glass bottle that possibly containing evidence of having been flaked, was also recorded. Further unrecorded cultural heritage material was considered to be present in this area. Low ground surface visibility (stated as being in the order of 0-30%) was noted as being a constraint to the effectiveness of the surveys. (A site, called CH04, is listed separately but constitutes part of Place 1).

Archaeo Cultural Heritage Services was requested to provide some observations regarding the overall cultural heritage potential of the proposed LNG plant site based on observations made during the geotechnical fieldwork program.

To facilitate this discussion, the area was divided into three main land units with these being described as being:

- Elevated, gravely ridges and steep gullies with skeletal soils featuring lemon scented gum and ironbark dominated woodland located primarily in the northeast of the study area;
- Low-lying, relatively flat wetlands and coastal lowlands intersected by ephemeral creeks and drainage lines and featuring fine sedimentary, alluvial soils and a variety of vegetation including melaleuca, swamp mahogany and cabbage tree palms, and remnant riparian vegetation on creeks and incorporating occasional areas of elevated land and hillocks including elevated banks of creeks such as those in the vicinity of Place 1; and
- Coastal flats incorporating melaleuca forest, mangroves and marine couch on the fringe of the intertidal zone.

The latter two of these areas were considered to possess the highest potential for further cultural heritage material. Within these, it was noted that the focus would be elevated areas both in the vicinity of the major creek lines that traverse the lowland areas where proximity to water and several environmental zones would have provided easy access to essential resources, and those close to both the tidal flats and creeks and swamps (e.g., the Place 2 area).

The report also notes that due to historic land clearing and subsequent landuse practices across much of the plant site area, it is considered that additional cultural material would likely be restricted to stone artefacts found both as isolates and scatters. It was considered that there was only a small likelihood that shell middens may be located on the coastal fringe.

Geotechnical Study - May 2010

Cultural heritage investigations ahead of a second proposed geotechnical program were undertaken across five days in May 2010.

The proposed geotechnical program consisted of an additional 89 locations and their associated access. Of the 89, 82 were situated on land and 7 were marine locations. Attachment 3 summarises relevant data concerning these. Of the total, 48 were in areas to be affected by proposed project infrastructure.

Nineteen places with Aboriginal cultural heritage were identified and recorded during this fieldwork. Eight of these were located within the plant site with the results being generally consistent with the results of the previous work undertaken in February 2009. The material was dominated by locations containing single isolated stone artefacts manufactured from a range of raw materials including chert, quartz and quartzite. The largest site consisted of a stone artefact scatter. Here a cluster of about 14 stone artefacts was identified within an area of 1 m in diameter. This included a multi-platformed core, four flakes and a range of other debitage that appeared to have come from the reduction of a single mudstone cobble (and this type of site is commonly referred to as a knapping floor). Additionally, but separately, a number of rocks with oyster shells on them were also recorded.

The remaining eleven places were all identified during the investigations of the four geotechnical areas and their associated access located on the mainland. Again single isolated stone artefacts dominated the recorded assemblage. While raw materials including chert and mudstone were again noted, silcrete was by far the most prevalent. Artefact types included unmodified flakes and the cores from which they had been struck, but also included an artefact which showed evidence as having been used as an anvil.

Although of low density (noted as being a maximum of two stone artefacts per square metre), an extensive scatter of stone artefacts was also identified and recorded. This covered approximately 6,000 m^2 measuring 150 m running north-south and 40 m in width and consisted of tens of flakes (at least two of which were noted as having been used) and around ten multi-platformed cores.

A low density scatter of oyster shell deposit across an area of 2 m in diameter was also recorded during these investigations. It was unclear if this was Aboriginal in origin or a result of other factors. Adopting the precautionary principle, this was recorded. A decision as to whether this is indeed cultural in origin, whether it relates to Aboriginal occupation of the area and whether any management measures are required will be made at a later date in consultation with the Aboriginal Party.

All of these cultural heritage places were able to be avoided by the proposed geotechnical activities and as a result formal clearance was provided from the Aboriginal Party for the geotechnical program to proceed at all of the investigated areas. Nine of these locations lie within areas that will be directly affected by the project. Their locations are shown on Figure 5. Management measures for these sites will be settled in negotiations with the Endorsed Party as provided for in the ILUA schedule/CHMP.

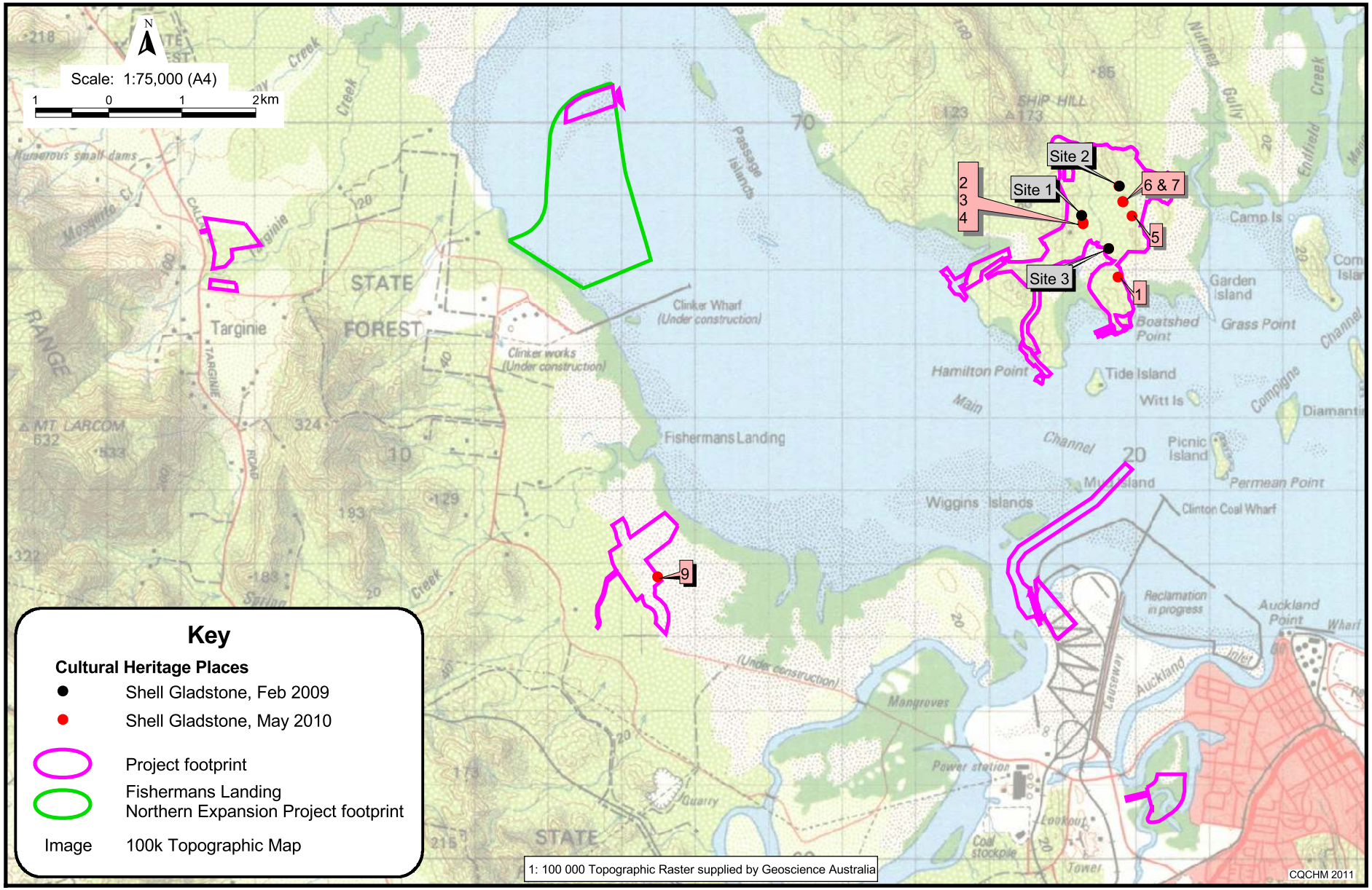

Figure 5: Arrow LNG Plant footprint and current recorded cultural heritage places.

5.3 Summary of the Aboriginal Cultural Heritage Landscape of the Study Area and Implications for the Project

The above summary of database searches and other studies relevant to the project, make it clear that the RSA apparently contains a limited number of sites of particular form, notably stone artefacts, some scarred trees and a shell midden. However, these cultural heritage areas and objects may be of particular significance to the local Aboriginal community. 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 by Aboriginal people.

While only a few places have been identified as being present within the RSA, these form part of the knowledge-base of the Aboriginal community that links them to this area; they are a material manifestation of the 'old people' with whom the current and future generations are directly associated. Moreover, it can be seen from the results of the ADSA as well as examination of a broader literature for the general area as a whole that there are many other places of cultural heritage significance. The results to hand for the RSA, constrained as they are for reasons discussed earlier, should not be taken at simple face value. Further examples of Aboriginal cultural heritage places and issues that have been identified in the ADSA include the following:

- The marine 'spiritscape' generally, and associated places (such as the intertidal stone arrangement found during the Stuart Oil Shale work in particular);
- Great Barrier Reef marine area including The Narrows;
- Curtis and Balaclava islands;
- Marine resource management (notably that of turtle and dugong in the above areas);
- Round Hill;
- Aboriginal / European contact and conflict sites; and
- Courses and waterholes contained within a number of waterways.

Other Aboriginal cultural heritage places created as the result of subsistence associations with the ADSA have also been identified. These include:

- Stone artefacts found either in isolation or as scatters;
- Sources of high quality stone which were utilized in the manufacture of stone artefacts (sometimes referred to as quarries).
- Scarred trees;
- Accumulations of shell midden material both as surface scatters and as stratified deposits; and
- A feature referred to as a 'well'.

These individual cultural heritage places are part of a larger cultural landscape for which many more similar places are both known to exist and also would be expected to occur. 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 RSA and may be recorded as part of further cultural heritage studies undertaken as part of the Arrow LNG Plant.

The RSA has been substantially impacted, albeit differentially throughout, by a range of land use practices. This has been greatly exacerbated over time as the larger pastoral runs that originally encompassed the bulk of the ADSA have been subsequently sub-divided into smaller and smaller lots, often used for either residential or industrial development as Gladstone has grown. This has been most keenly felt in the eastern and southern portions of the ADSA, which includes the RSA and where this land has been subject to intensive industrial development.

The types and intensity of these activities will have had an effect upon the Aboriginal cultural heritage of the ADSA. 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 archaeological profile. Despite this, a distinct measure of cultural patterning is still evident in the types of places likely to be present across the ADSA, including the RSA.

Based on the results of a range of cultural heritage fieldwork from the broader central Queensland region (including specific information relating to the ADSA), various components of the Aboriginal cultural landscape have been identified in the ADSA. These include 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. As outlined above, a few of these components have been recorded within the RSA, a wider range in the ADSA, and more are likely to be identified as and when a comprehensive examination of the areas to be disturbed by this project is undertaken. Some already identified sites are likely to be impacted by the Arrow LNG Plant as currently envisaged and more likely when the comprehensive examination is undertaken.

The most common of these are likely to be stone artefacts found either as isolated examples or as scatters, based on a very large dataset Australia-wide. While sometimes extensive, these scatters are generally restricted in size and of low density. Both flaked and ground (such as grindstones and axes) artefacts could be expected to be readily identified among the assemblages. Places containing

subsurface cultural heritage material have been identified within the RSA and tend to be associated with coastal sand ridges as well as alluvial terraces of 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 occurrence of flaked stone artefacts in the ADSA, and in all likelihood within the RSA, is that there is a high diversity of naturally-occurring stone suitable for artefact manufacture. Materials such as such as silcrete, cherts, mudstones, and a range of volcanic materials (the dominant raw materials used), are found in a variety of forms – including most notably as floaters within the clay soils that area present in the ADSA ; as water-rolled cobbles within waterways; and as outcropping reef. Examples of sources of very high quality material, sometimes over extensive areas, have been identified. Within the ADSA and in close proximity to the RSA, this has included the Dry Creek 'greenstone' source as well as a silcrete quarry identified at Phillipies Landing.

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, flaking event), short-term campsites, and places associated with other specific activities such as hunting and resource procurement and processing.

The vast majority of survey 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 the permanency of water within. 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. This need not be restricted to fresh water resources but numerous stone artefact scatters have been identified as being associated with marine shell midden material (such as at Bashfords Sand Ridge on Curtis Island).

Scarred trees have also been a relatively regular feature of 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 in the disposal of the dead.

The removal of bark from trees to produce these items created the scars that are recorded during contemporary field assessments. Because wood often rots away - museums generally have only small collections of Aboriginal wooden artefacts - scarred trees provide valuable insights into the use of otherwise perishable materials by Aboriginal people.

Today, scarred trees are expected to be found along the margins of the watercourses and on the edges of adjacent floodplains, as well as other remnant-wooded areas where other cultural heritage place-types (such as stone artefact scatters) are present. Although this will vary a little depending on specific land use history of a particular block of land, 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, they have also been noted along road reserves. Such is the situation for instance, with one scarred tree identified as being in the RSA.

Shell middens created from the use and discard of shellfish species would undoubtedly have been a ubiquitous feature of the Aboriginal cultural landscape; the result of everyday subsistence activities. A number of these have been identified during cultural heritage investigations undertaken within the RSA (such as Bashfords Sand Ridge and in the Boat Creek area). It could be expected that wherever conditions are favorable, their presence is not an unreasonable expectation. These locations tend to be in close proximity to the areas from which they were collected: adjacent to watercourses and billabongs in an inland context and estuaries in proximity to the coast.

As noted above, these can be present as either surface accumulations or as stratified sub-surface middens of considerable antiquity. In addition to be being able to provide detailed insights into patterns of Aboriginal land and resource use over time, shell middens are significant in that they provide material suitable for radiocarbon dating. Indeed in the broader area which encompasses the ADSA, the vast majority of such determinations have been made from marine shell samples.
Water management infrastructure such as wells and weirs (an example of the former which has been recorded within the ADSA associated with the Stuart Oil Shale studies) again would likely have been 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, poor. This directly reflects upon the likelihood of additional such places being present within areas to be impacted by the Arrow LNG Plant, which likewise would be considered as low.

As with shell middens, fires for cooking and warmth, commonly called hearths, are assumed to have been a common feature throughout the cultural landscape. Fire can be controlled by a range of techniques such as using different types of timber, stones or clay (the latter being used as heat retainers in the fire), with each of these creating a distinctive resulting pattern or hearth type. While the

literature review undertaken as part of this study did not note such places within the RSA, two such features have been identified in the ADSA – both on the seaward coasts of Facing and Curtis Islands. Additionally, charcoal (also a dateable material) possibly from hearths has also been noted within shell midden deposits. Although finding intact hearths in areas that may be associated with the project would appear to be low, dispersed charcoal that may be from them may be more readily identified, particularly in areas where other cultural materials are identifiable.

On the basis of the review undertaken as part of this study, human skeletal remains have only been identified on very limited occasions, and none within the RSA. The closest recording that has been verified is a burial that has been repatriated to the northeast of Curtis Island. No additional details regarding the remains, or their original location, are known. Although considered to be of low likelihood given the generally restricted nature of the proposed Arrow LNG Plant, and in the absence of known discoveries during the intensive development that has been undertaken throughout substantial portions of the RSA, and parts of the ADSA to date, in-ground interments are a possibility in a variety of contexts where a deposit is suitable for excavation with wooden tools such as digging sticks. Within the RSA, such opportunities would tend to be concentrated in the sandy alluvial soils located alongside waterways or in other areas where wind-blown sands accumulate. Utilised areas are most commonly located above tidal / flood levels and so sand dunes and creek terraces have also been a commonly identified location for such places in other locations. The most likely prospects, to the extent that any are likely, would be on southern Curtis Island.

The previous identification of a range of places associated with traditional ceremonies within (such as the intertidal stone arrangement identified during the Stuart Oil Shale surveys) and adjacent to the RSA (such as the Connor Creek and Hummock Hill stone arrangement to the north and south of the RSA respectively) would indicate that the identification of other such places during cultural heritage investigations cannot be excluded as a possibility, although can be considered a low risk of occurrence.

Although it would appear unlikely given the location of elements of the Arrow LNG Plant and the results of work undertaken to date in these areas, there is a possibility of other currently unknown but important places coming to light during the course of further cultural heritage investigations with Aboriginal Parties. These could take a great variety of forms including landscape features. It should be noted, however, that in ongoing discussions with representatives of the Aboriginal Parties, no claims regarding such places have been made in respect of areas to be affected by the project.

5.4 A Statement on Traditional and Historical Associations with the Area

The issue of group associations with an area can be hotly contested, notably because of the large implications for native title that are associated with it. With respect to the present case, it is noted that data in various authorities such as Roth (1897) and Tindale (1974) make it clear that the situation is by no means clear cut when one examines the historical record. These two sources alone provide very different pictures of which groups had associations with the area. It is because of this lack of clarity in such sources, and their inconsistency with the knowledge held by various Aboriginal parties, that substantial efforts are made through detailed anthropological analysis for what are commonly known as connection reports that ultimately are tabled in the Federal Court for adjudication to examine and provide definitive answers on just such issues. Arrow Energy has no intention of intruding into an area that is appropriately the province of the Court system. Any statements made here could be construed as Arrow Energy having intervened in this difficult arena, to have made a partisan decision and already decided who is and is not the appropriate party for the area when such is not the case. Rather, Arrow Energy intends to operate in strict accord with regulations laid down in legislation for issue of notices, and with its actions also informed by recent decisions of relevant tribunals and case law.

Arrow Energy notes that at this stage the area in question is subject to the claims of the Port Curtis and Coral Coast native title claim (QUD6026/01), otherwise known as the PCCC native title claim. It understands that this claim represents the amalgam of a series of previously registered native title claims of the Gurang, Goreng Gooreng, Bailei and Taribelang Bunda groups who no longer have separate procedural standing. Various procedural rights fall to the PCCC native title claimants from both the Native Title Act and the ACH Act. Arrow Energy intends to allocate such procedural rights in strict accordance with the law. Arrow Energy will, subject to any decision of the Federal Court, take direction from the PCCC native title group as to how they are constituted, who are members of the claim group, and how any benefits deriving from an ILUA, if such can be settled, should be shared.

6. SIGNIFICANCE ASSESSMENT AND CUMULATIVE AND REGIONAL IMPACTS

6.1 Cultural Significance

At the time of undertaking this study, direct engagement with the Aboriginal Parties for the Arrow LNG Plant has not been completed. As a result it has not been possible to explore with them the specific significance of the cultural areas, object and values identified within the above searches, investigations and analyses, although the commissioning of a constraints statement from them has been requested in which it is expected that such issues would be explored. They have, however, offered various comments (either directly to Arrow Energy, Arrow Energy's consultants or in various reports cited above) regarding the sites described above, and it has been noted that they attach a particular significance, as that term is understood within the ACH Act, to those areas and objects.

Some general observations derived from previous similar projects undertaken with this Aboriginal Party, and observations of other groups from elsewhere in Queensland also are pertinent to this point. Godwin and Weiner (2006) have commented that:

> *Archaeologists themselves are now acknowledging that they work in situations where they must take regard of the social and political dimensions of their interpretive tasks. They are being asked not just to comment on the material properties of artefacts and sites but also on the social and political conditions under which the research is being conducted in the first place. . . . In other words, the organization of the research itself is a social, political and cultural act that frames the archaeological inquiry as such. It is therefore not limited to the accretion of our understanding of the stylistic or categorical features of the artefacts as such. The value that Aboriginal people place on material culture is likely to be very different than that of the archaeologist and this fact more and more must be a part of the survey rather than an adventitious comment upon it. It is noteworthy, however, that few archaeological reports prepared as part of the EIS process have included any significant methodological acknowledgement of this contemporary socio-political act of framing.*

Arrow Energy recognises these comments and intends to construct a process that is cogniscent of this issue, and allows Aboriginal people to give expression to their views on such matters whilst affording those views a primacy in the management process.

Over the last fifteen years or so the Aboriginal Party for the majority of the Arrow LNG Plant has 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 could be suggested that the attitude towards these studies and the materials found during them perhaps has a link with traditional processes of custodianship and management of areas and objects of cultural significance.

This involvement in part reflects general changes in attitude in the mid-1990s and the recognition of Native Title wrought a tremendous change in cultural heritage management as well as more recent legislative changes to cultural heritage management in Queensland dating from 2004. It was recognised that there were both moral and legal imperatives to involve Aboriginal people directly in the EIS process, and this had particular force in relation to the cultural heritage component of such investigations. Aboriginal people took this opportunity to assert what they saw as their traditional responsibilities in relation to the management and custodianship of cultural places. Aboriginal people accepted the chance and have sought to maintain that involvement ever since. Secondly, they also sought to reinforce their rights in relation to their cultural heritage areas, objects, values and information by entering into direct contractual relationships to undertake such studies, engage any necessary technical advice, obtain the necessary permits, maintain control of the cultural information deriving from these studies, and to negotiate and control all subsequent management activities. Aboriginal people have generally adopted a measured and graduated response, guided by the results of the studies they have undertaken. They have taken the position that they have an exclusive custodial responsibility for, and right with respect to, the cultural places and values found in a particular area, and the information deriving from the studies. They have effectively and forthrightly protected that exclusivity as needed.

The significance of cultural heritage areas and objects can often be multivalent: it might be a camping site that also was of significance because of the presence of an important creator being, such as the rainbow serpent but many others as well. There are also general locations that were associated with major ceremonial gatherings in the course of which large numbers of people regularly congregated, and where there were designated areas for camping (which resulted in the creation of large concentrations of material culture).

It is also important to note that in Aboriginal society there was no static list of places that were deemed to be culturally important (Godwin and Weiner 2006). 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 sentities could manifest themselves. People regularly had experiences in the course of the daily round, 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 what duty of care they owe to the material culture, as a manifestation of their ancestors, spiritual entities resident in particular areas or mythical hero figures, and to the area as a whole, recognising they are being watched by their ancestors, spiritual entities and hero figures. Indeed, as Aboriginal field researchers often note in the course of fieldwork, they are aware they often are being observed by the 'old people' when they are in the field.

Arrow Energy is highly sensitive to the fact that contemporary Aboriginal people take extremely seriously the responsibilities they have to their ancestors, spiritual entities and hero figures, and to the management and protection of the cultural heritage areas and objects they have inherited from them.

6.2 Scientific Significance

The sites that have been identified within the RSA and that will be affected by the project footprint do have some capacity to yield some information regarding Aboriginal occupation of the general locale. Potentially, they might provide information of the following issues, among other things:

a. Settlement patterns of Aboriginal people: what were the favoured locations, and why were such locations favoured;
b. The source of stone used in artefact manufacture, and matters such as trade and exchange of material culture and raw materials in this area, noting that the stone artefacts that have been identified so far appear to be made of locally available raw material;
c. Shell midden deposits and other stratified sites containing organic material such as charcoal deriving from cultural activities can be dated by using radiocarbon techniques to yield data on the antiquity of occupation;
d. Occupation deposits may also contain other organic remains of plants and animals that were exploited by Aboriginal people, and thus yield insights into subsistence economy, seasonality of occupation and realted matters; and
e. The stone artefacts and any tools made of material such as bone or wood can provide information on aspects of technology.

Individually, the sites that have been recorded in the RSA are not, in our opinion, such as would warrant high order scientific investigation or analysis. In our opinion, none represent a unique or major site when measured against regional data sets. None of the shell middens, for example, compare positively with those excavated by Ulm on the southern Curtis coast near the Town of 1770 (Ulm, 2006), where a series of deeply stratified sites each yielded a wealth of material for analysis providing data that allowed the construction of a detailed chronology of occupation, as well as assisiting in answering many other questons of considerable importance not just for this region but to Australian archaeology as a whole. Furthermore, it is noted that despite the considerable amount of work on

cultural heritage sites undertaken for EIS related projects in the Gladstone region, and noting that this has included mitigation programs, none of the sites identified and investigated in such work has attracted interest to warrant publication of results in any peer-reviewed scholarly journal or other publication. Nor to our knowledge has any detailed description been given at any recognised conference devoted to consideration of the results of archaeological surveys or excavations (the only exception to this might be some very limited work associated with Awoonga Dam). This may reasonably be taken as some measure of significance attached to these sites by the archaeological community through its members in the area of consulting.

Even taken together, it is hard to see this set of recorded sites as a whole contributing a major corpus of information that would fundamentally shift our understandings regarding occupation of this region, let alone having national significance. This is not to say that such information as they may yield should not be secured, particularly in the event that they were to be destroyed as part of the development process. It is to observe, however, that were this not the case it is difficult to see such sites attracting interest for a research program if other sites elsewhere were available for investigation.

6.3 Regional Impacts and 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.

Arrow Energy 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.

While the datasets that are currently available to us are partial and uneven in their coverage, a comparison of all sites recorded in the RSA with those in the ADSA is instructive. All types of sites that have been identified in the RSA are well represented in the ADSA. There are no types of sites in the RSA that are not found elsewhere, with in many cases larger or better examples of these to be found elsewhere. Further, there are examples of various types of sites in the ADSA that have not been identified in the RSA .

There is little doubt that the continued development of Gladstone as an industrial and export hub has likely had a significant impact on the cultural heritage values of the area in the past and will do so in the future. The consequences of this industrial development, which includes the expansion of residential areas as well as the advent of a wide range of smaller enterprises to service industry as well as the local population, will have exacerbated the issue. The question then arises as to what extent this project will further add to this ongoing loss of cultural heritage values. The fundamental problem in attempting an assessment of this kind is that there is no comprehensive baseline study against which ongoing loss can be measured such that one can say, for example, that an additional 5% or whatever it may be of the resource is to be lost. Nor is there necessarily high order analysis available against which to measure the relative values and qualities of what might be lost against what still exists. Keeping the absence of such baseline data in mind, the following general qualitative observations can be made.

On present indications, there will be the loss of the some sites associated with the project and these are of particular cultural significance to the Aboriginal Party. The Cultural Heritage Agreements currently in negotiation recognise this, and accept that it is a possible outcome but also give explicit expression to the avoidance principle: mitigation will only be considered if avoidance (and thereby continued protection) cannot be achieved. The Cultural Heritage Agreements also provide for the development of agreed management procedures (or resolution by other means if necessary) where avoidance is not an option. Arrow Energy also has taken account of the avoidance principle by electing to construct a tunnel between the mainland and Curtis Island to transport gas to the production facility, thereby avoiding aseries of major impacts that arise from trenching the pipe across the Narrows, further to the north. Aboriginal Parties have communicated to Arrow Energy that this trenching across the Narrows was of particular concern due to the potential natural environmental impacts, possible impacts on culturally important resources and culturally important fauna (notably dugong and flying foxes) as well as damage to a site of major cultural significance to the Aboriginal Parties (Kangaroo Island). Arrow Energy's decision to progress a tunnel option ensures that there is no cumulative impact on these cultural values at the Narrows. Nor will there be increased impact through the construction of a pipeline through an additional secton of the GSDA to use the trench, nor one down the spine of Curtis Island to connect with the production facility. In so doing Arrow Energy has thereby already demonstrated its commitment to the avoidance principle with respect to Aboriginal cultural heritage. It is also noted that data collated during the Gooreng Gooreng Cultural Heritage Project conducted by researchers from the University of Queensland did not identify any major places of outstanding cultural significance to some of the people who constitute the Aboriginal Party within the RSA despite considerable direct interaction with them on precisely this issue. On this basis, there appears to be no direct cumulative impact to be expected on places of cultural significance currently

known to the Aboriginal Party. This observation, however, will be further tested through the constraints statement process, if this opportunity is taken up.

The cumulative impacts contribution from the project, when viewed exclusively from a scientific perspective, are considered to be negligible. There are many examples of the archaeological sites that have been identified in the RSA to be found elsewhere in the region, and the point is even more so for the construction footprint. These include numerous examples that are directly comparable with the scientifically low-order examples to be found in the ADSA. The ADSA also includes many that offer far more opportunity for detailed investigation and analysis than those currently known to exist in the RSA. The loss of these sites would be offset by a suitable program of mitigation that ensures that such data as they may hold is secured by the sites being collected and therefater preserved for future reference for research purposes if avoidance is not possible.

7. PROPOSED ABORIGINAL CULTURAL HERITAGE STRATEGY

7.1 Aboriginal ILUA Party/Endorsed Party Expectations and Agreement Structure

The native title and/or endorsed parties will retain a strong interest in ensuring that the cultural heritage areas, objects and values identified throughout the project area are managed in a culturally-appropriate fashion, and with their direct input. Wherever possible, it will be done by conservation of the area or object/s *in situ* and avoidance of impact. Nevertheless, it will also be recognised that the controlled removal and storage of cultural objects in locations acceptable to the native title and/or endorsed parties will be necessary in some or many situations given the constraints that will operate upon the project. It has been anticipated that the native title and/or Aboriginal parties will require the implementation of a management process that embodies culturally appropriate mechanisms for the management of their cultural heritage, along with the conclusion of an ILUA that provides compensation for the suppression of their native title interests.

The ACH Act duty of care for the project can be met through either a suitable native title agreement that does not expressly exclude cultural heritage, or an approved Cultural Heritage Management Plan (CHMP). Where the former is decided upon, the proposed cultural heritage strategy could involve concluding a Cultural Heritage Agreement (CHA) negotiated with the relevant Aboriginal Parties, as a schedule in an ILUA to the extent that this is an available option, Arrow Energy were to consider this an appropriate strategy, and if was agreed by the native title and/or Aboriginal parties.

It should be noted, however, that if an ILUA is not completed in accordance with the project timetable or is not registered, Arrow Energy will be required to comply with Part 7 of the ACH Act in another manner (i.e., development of a CHMP for approval by the Chief Executive DERM). With this in mind, it is proposed to develop a CHMP in parallel with the negotiation of an ILUA to ensure that the project is compliant with the Duty of Care irrespective of outcomes in the sphere of native title.

A CHMP can take two forms. The first is the process model. This is an holistic document aimed at establishing the principles and processes for the undertaking of cultural heritage investigations, the management of identified cultural heritage values and consideration of a range of administrative and logistical matters. This is Arrow Energy's preferred model for engagement as part of this project and is outlined in detail below (Section 7.2).

This may not always be achievable, however, and a second type of CHMP is countenanced under the ACH Act. This second form is more of a pure management document that is prepared following the conduct of cultural heritage investigations. Such investigations would be undertaken as s.23(3)(a)(iii) 'another agreement' under the ACH Act. Such agreement is captured within a Terms of Reference developed for the investigations.

The project has decided in the first instance to develop a process CHMP with the Endorsed Parties.

7.2 Principles of Cultural Heritage Management

7.2.1 Base Management Principle

Arrow Energy's management principles relating to Indigenous cultural heritage fully recognise that the Aboriginal Parties retain a strong interest in ensuring that the cultural heritage areas, objects and values identified throughout the project area are managed in an appropriate fashion and with the Aboriginal Parties direct input. Wherever possible, Arrow Energy anticipates that this will be done by conservation of the area or object/s *in situ* and avoidance of impact, consistent with 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 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 Energy is committed to providing the opportunity to achieve this outcome.

7.2.2 Agreement-Based Process

Arrow Energy has not yet settled any agreement, CHMP or otherwise, for the project and, therefore, cannot provide a definitive statement of the contents of these plans. In any case, the confidentiality provisions in these would likely preclude the inclusion of precise details in the EIS. Arrow Energy can, however, describe the principles it has adopted in its engagement with relevant Parties.

Arrow Energy wishes to meet the cultural heritage duty of care by settlement of agreements with Endorsed Parties. Arrow Energy will agree to situate such agreements within the framework of ILUA's to be negotiated with the Aboriginal Native Title parties but only where this is the formally expressed wish of the relevant Native Title party: where this is not the case it will develop a CHMP.

Arrow Energy also notes, however, that where it concludes that an ILUA will not be registered within the required project timeframe, or other contingencies arise such that Arrow Energy concludes this option is not a feasible means of meeting the duty of care, Arrow Energy reserves the right to pursue any other option available to meet the duty of care. This will involve the development of a CHMP or CHMPs. Arrow Energy's preference in this regard is that these will be agreement-based but, where circumstances militate against this, Arrow Energy may adopt other means provided in the ACH Act to secure a CHMP or CHMPs.

The base Cultural Heritage agreement or CHMP will consist of five major sections, with four of them being substantive in nature and the fifth consisting of standard commercial conditions. The four substantive sections include:

1. The principles that are to be adopted in relation to cultural heritage. These include ownership of cultural heritage, management of information, responses to cultural issues that might arise (e.g. death and bereavement issues), dispute resolution, general administrative arrangements, etc;
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 areas and objects that exist in the area subject to the agreement or CHMP. This will be covered in the Terms of Reference agreed for the fieldwork;
3. The development of a Cultural Heritage Management Strategy (CHMS) and the implementation of this in the context of construction. This will relate to how the significant 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;
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.

The fifth major section relates to standard commercial conditions relating to the agreement. The nature of these conditions include the following:

- Assignment
- Variation
- Severance
- Entire Agreement
- Governing Law
- Counterparts
- No Waiver
- Relationship

- Further Co-Operation
- Agreement to Benefit and Bind Successors
- Notices
- GST
- Execution

7.2.3 Arrow Energy's Management Principles

Arrow Energy is committed to adopting a range of principles with respect to 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 Energy for the Arrow LNG Plant.

1. Arrow Energy may act to the strict timelines of the ACH Act with respect to the development of the CHMP where Arrow Energy decides to develop a CHMP. Where it decides to do so, Arrow Energy will inform the Aboriginal Parties of its intention to do so;
2. Arrow Energy will develop and implement the agreement or CHMP through negotiation with the Aboriginal Parties. In relation to implementation this will explicitly involve the Aboriginal Parties in all aspects of management through establishment of a Coordinating Committee/s that has membership of representatives of the Aboriginal Parties, with decisions to be made by consensus between the Parties, and which will make all decisions in relation to the management of cultural heritage;
3. Arrow Energy is conscious that this project may be the catalyst for tensions and stresses within Aboriginal communities. To minimise this, Arrow Energy will not act in a partisan fashion (and avoid the perception of this to the extent it can), will not enter into group or inter-group politics, and will set in place mechanisms designed to lessen adversarial behavior between second parties who may be in conflict with each other;
4. Arrow Energy will use current best practice in the measures implemented as against base compliance and will work with the Aboriginal Parties to develop key performance indicators to ensure that it is best practice;
5. Arrow Energy will seek agreement of Aboriginal Parties on the core and subsidiary principles that influence the design of the process and its implementation;
6. Arrow Energy will initially draft agreements in accordance with the agreed principles, and these will then be negotiated between the parties;
7. Arrow Energy accepts as a base principle underwriting the entire cultural heritage exercise 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 Energy 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 Aboriginal Parties is to manage their cultural heritage in a culturally appropriate fashion in the context of the proposed developments proceeding.

8. Arrow Energy 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 Aboriginal Parties to nominate technical advisers with their appointment to be subject to Arrow Energy's agreement;
9. Arrow Energy 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 Aboriginal Parties;
10. Arrow Energy proposes to adopt, the greatest extent possible, an agreement-based process between the parties for authorization of all project activities where such 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 Energy 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. Arrow Energy expects cultural heritage data will be integrated into GIS. The GIS will be developed in fashion that recognizes and gives expression, to the extent practical, to the other principles included herein;
12. Arrow Energy accepts that the Aboriginal 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 Energy 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 Aboriginal Parties;
14. Arrow Energy must be guaranteed access to such information and it must be available in a timely fashion. To that it end, Arrow Energy will only agree to data management processes that Arrow Energy considers will guarantee this access in the format Arrow Energy considers necessary and provide it in a timely fashion;

15. Arrow Energy 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;
16. A dispute resolution processes will constitute a component of the agreement or CHMP 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;
17. The agreement or CHMP should provide a formal mechanism for investigation of alleged substantive breaches and subsidiary agreements, and should make provision for appropriately graded sanctions for those who breach the CHIMA;
18. Arrow Energy 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 and that Arrow Energy ensures that, wherever possible, Aboriginal Parties or their nominees will assist in the development, and participate in the presentation, of any cultural heritage induction process and that this will include a component on cultural awareness;
21. Provision will be made in the agreement or CHMP 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; and
22. Provision will be made in the agreement or CHMP to allow parties have a right to review and vary provisions of the agreement or CHMP at regular intervals (probably on an annual basis) for the duration of the agreement or CHMP or if particular issues arise at any time.

Contingency Principle

Arrow Energy reserves the right to terminate the negotiation of the agreement or CHMP or to suspend various provisions relating to the implementation of the CHIMA, subject in the latter case to the provisions of the agreement in this regard. Where it does so, Arrow Energy will meet the duty of care through other means provided for in the ACH Act in relation to compliance with Part 7 of the ACH Act or by contingency provisions of an agreement or CHMP. The circumstances where these contingencies would apply include:

- Where Aboriginal Parties advise that they will not engage with Arrow Energy in negotiation of an agreement or CHMP or otherwise unreasonably attempt to delay the development of an agreement or CHMP – this also covers circumstances where Arrow Energy determines to invoke the 84 day rule for development of a CHMP provided in the ACH Act;

- Where the Aboriginal Parties fail to comply with responsibilities and processes freely agreed in an agreement or CHMP, or the parties fail to reach agreement on the implementation of the same after reasonable attempts; and
- 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 Energy.

In doing so:

- Arrow Energy will not initiate any other actions provided for in the ACH Act without first advising the Aboriginal Party of its intention to do so;
- Arrow Energy will continue to seek negotiated agreement in the event that Arrow Energy does initiate such actions; and
- Arrow Energy will cease any action provided for under the ACH Act if and when negotiated agreement is reached.

7.3 Subsidiary Management Processes

While no agreement or CHMP have yet been finalised, and it would therefore be premature to suggest exactly what these would include (setting to one side issues of confidentiality), Arrow Energy considers that the following measures, subject to negotiation and refinement, would constitute standard elements of the management process.

Notable in its approach, Arrow Energy intends to establish coordinating committees for an agreement or CHMP that it develops. These will include representatives of both the Aboriginal Parties and Arrow Energy. The purpose of the committee, among other things, will be to oversee implementation of an agreement or CHMP, 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 Energy anticipates that an agreement or CHMP 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 agreement or CHMP
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: 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

Additional schedules that will include:
Procedures for Treatment of Human Remains
Provisions to Handle Procedural Breaches of CHIMA and Subsidiary Agreements
Principles Applying to Conduct of Expert Review
Initial Cultural Heritage Assessment Agreement

These sections cover all elements of the management process that were stipulated as mandatory in the ToR – noting of course that the ToR are inconsistent with the ACH Act to the extent that the ACH Act does not make any of these measures mandatory, save for provision of a dispute resolution process.

7.4 Constraints Statements

Arrow Energy recognises that the data and information regarding Aboriginal cultural heritage to which it has access in the preparation of the EIS is by no means comprehensive. Even if complete access had been available to all documentary sources, not all cultural areas, objects and values of significance to Aboriginal people may have been mentioned, nor the full dimensions of their significance to Aboriginal people elicited. Accordingly, Arrow Energy has taken specific measures to address this issue by offering resources to the Aboriginal Parties to identify major places that they consider might be affected by proposed development activities within the project area. Arrow Energy has sought to formally commission them to provide statements outlining what they consider to be major constraints to the project proceeding. The terms offered for these studies were intentionally 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 seek to identify:

1. Any area or object of cultural heritage significance to the Aboriginal 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 area that the Aboriginal 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 Party in the area to be affected.

Special arrangements, in the form of confidentiality agreements, are also available if necessary to ensure that in providing such information the Aboriginal Parties is not breaching any cultural protocols in providing such information and that Arrow Energy would not be in breach of s29 of the ACH Act. The resultant data, if this opportunity is taken up the Aboriginal Parties, will be incorporated in a suitable fashion within the GIS Arrow Energy is building for cultural heritage, and then factored into more detailed project design so as to give effect to the avoidance principle.

7.5 Engagement with Aboriginal Parties

As required under Part 7 of the ACH ACT, formal written notices have been issued to all Aboriginal Parties who responded to the notices issued pursuant to Part 7 of the ACH Act advising them that they were accorded the status of Endorsed Parties for the development of the CHMPs. In this regard, the project area includes two distinct categories of Aboriginal Party. These can be reasonably divided into those who are Aboriginal Parties for the terrestrial portions of the project (including Curtis Island) and those for the marine sections. The terrestrial areas lie within the bounds of the Port Curtis – Coral

Coast native title claim (QUD6026/01). As per provisions of the ACH Act, and noting that this claim is a registered native title claim, this claim constitutes the exclusive Aboriginal Party for those parts of the Project that lie within the bounds of this claim. This includes, as noted, all parts of the project on the mainland and on Curtis Island. Notices were issued in accordance with the provisions of the ACH Act to the relevant Aboriginal Cultural Heritage Board, as well as to all named applicants and to their nominated legal advisers. A response nominating the named applicants for status as Endorsed Parties was received within the notice period, and this status has been accorded.

However, the boundary of the claim, while including the mainland and Curtis Island, extends only to mean high water and, therefore, does not include those portions of the project area that lie below this point. These portions do not fall within the bounds of any native title claim, either currently registered or registered as of 16 April 2004 but thereafter deregistered or failed. Accordingly, the provisions of s35(7) of the ACH Act pertaining to Aboriginal Parties in such circumstances apply, and provisions of Part 7 pertaining to unclaimed areas were implemented. A public notice advising of an intention to develop a CHMP covering the unclaimed area was published in written media widely circulating in the relevant area.

In response to the notice, 10 of the named applicants on the PCCC native title claim as individuals as seeking endorsement as Aboriginal Parties under Section 35(7) of the ACH Act, with an additional applicant as an individual separately sought endorsement. Everyone asserting status as an Aboriginal Party and, on this basis, sought endorsement was endorsed. Subsequently, and although they sought endorsement as individuals, all these persons chose to act collectively, and to negotiate both for the area within the bounds of their registered claim as well as the area outside of that claim but within the project area. Arrow Energy was amenable to this request and has acted in accordance with this wish.

A further five individuals who were not named applicants also sought endorsement for the unclaimed portion of the project area. These persons were also granted endorsement. At a meeting subsequent to their endorsement, they chose to act collectively with each other but separate to the endorsed parties who are also named applicants on the PCCC native title claim. This request was consistent with the request of the PCCC applicants with regard to these other persons. Accordingly, Arrow Energy respected this request and has engaged with these persons on this basis.

Arrow Energy has now moved to initiate engagement with all the endorsed parties. This has been done in a manner consistent with the principles enunciated above. Draft agreements have been developed and a series of negotiating meetings have been held with parties described above. The PCCC Aboriginal Party advised that they would prefer to settle cultural heritage issues as part of an ILUA. Arrow Energy was amenable to this preference. However, before the ILUA could be finalised and

taken to an authorisation meeting, procedures under the Native Title Act (notably section 66B) were implemented in relation to this native title claim, in accordance with orders issued in the Federal Court. As a result of these procedures, which took place in July 2011, the named applicants on the native title claim may be changed, subject to additional orders from the Federal Court. In circumstances where the Court orders the changes take place this will have a significant impact on the negotiation of the ILUA and in terms of persons who would constitute the Aboriginal Parties, and hence those persons with whom Arrow Energy should engage for an ILUA and CHMP respectively. Accordingly, Arrow has deferred engagement and resolution of these matters until such time as the situation is resolved. The Federal Court is hearing the matter on 28 October 2011 and is expected to make orders shortly thereafter. Arrow Energy will re-engage with appropriate parties once orders have been made by the Court.

8. CONCLUSIONS AND RECOMMENDATIONS

Arrow Energy fully appreciates that the management of Aboriginal cultural heritage is an issue that will require ongoing management throughout the course of implementing the Arrow LNG Plant. Irrespective of its form and nature, all Aboriginal cultural heritage is accepted as being of particular significance, as that term is defined in the ACH Act, to the relevant Aboriginal Parties. It is expected that most Aboriginal Parties will express a desire to exercise a primary role in the management of this heritage. Arrow Energy is determined to give this desire the greatest expression in its management process, subject only to the willingness of Aboriginal Parties to engage with Arrow Energy 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:

a. The data and information that have been used in the preceding description of the Aboriginal cultural heritage landscape cannot be construed as definitive, and this point has been made explicit. They certainly are not of an order whereby a firm opinion could be offered as to in what ways proposed development activities within the Report Study Area (RSA) should be modified to best give effect to the avoidance principle. This is simply a result of the inherent limitations of these data, something that has been discussed in detail earlier;

b. There clearly are some Aboriginal significant areas and objects that are either situated within, or in close proximity to, areas that will be disturbed by the project. It is, therefore, a reasonable prospect that additional Aboriginal cultural heritage will be found throughout the RSA;

c. There is limited flexibility in relation to the relocation of specific elements of the project to give greatest effect to the avoidance principle. In circumstances where there is no opportunity to give effect to this principle, provision needs to be made to mitigate the unavoidable impacts. The selection of the tunnel to cross from the mainland to Curtis Island rather than to pursue the Narrows option represents a clear commitment to and implementation of the avoidance principle. The cultural heritage process already in negotiation makes express provision for the implementation of the avoidance principle for all other elements of the project;

d. On current understandings, based on admittedly constrained knowledge of the nature of the Aboriginal cultural heritage in the RSA, and more particularly the project footprint, the impact of the project measured against regional cultural heritage values would be rated low risk. Measured against registered sites and those recorded in other literature, the currently identified sites neither are unrepresented elsewhere nor are they of an order that would see them described as

outstanding examples of that particular site type such that their loss would be scientifically unacceptable; and

e. It is stressed, however, that the observation made in (d) does not in any way diminish that these sites, and any others identified in areas that will be disturbed by the project, whatever their form, are of particular significance to the Aboriginal Parties.

Taking note of this, it is recommended that Arrow Energy take the following actions:

1. Continue the ongoing process of engagement to settle formal Cultural Heritage Agreements of the types specified in Part 7 of the ACH Act with the Aboriginal Parties;

2. Move to conduct comprehensive cultural heritage studies (to be known as Initial Cultural Heritage Assessments - ICHA) for all elements of the Arrow LNG Plant with these to be undertaken with the direct input of the relevant Aboriginal Parties in a manner that is consistent with the provisions of the Cultural Heritage Agreements;

3. Based on the results of the ICHA, Arrow Energy should, in collaboration with the Aboriginal Parties and/or otherwise in a manner consistent with the Cultural Heritage Agreements, develop a comprehensive program of management of all Aboriginal cultural heritage to be directly affected by the Arrow LNG Plant. This should 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 Arrow LNG Plant; and

4. Arrow Energy should also continue its attempts to commission high order constraints papers from Aboriginal Parties to identify places of outstanding Aboriginal cultural heritage significance of which Arrow Energy should be immediately aware so that it can design its operations to give effect to the Avoidance Principle as enunciated in the ACH Act.

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Attachment 1 Terms of Reference Cross-reference table

Terms of Reference		**Central Queensland Cultural Heritage Management Pty Ltd**	
Section	**EIS Requirement**	**Technical Study Name**	**Technical Specialist Report Section**
Section 3.10 Indigenous Cultural Heritage	Key requirement: Define and describe the practical measures for protecting Aboriginal cultural heritage values including describing the strategies to be applied for Aboriginal cultural heritage management, and how the achievement of the strategies will be undertaken	Indigenous Cultural Heritage Impact Assessment	Section 7, note application of avoidance principle as per s102 of the ACH Act
	Key requirement: To the extent practicable, significant Aboriginal areas should be avoided by the project. The EIS should provide an assessment of likely effects on Aboriginal cultural heritage values of the project, including but not limited to the following:	Indigenous Cultural Heritage Impact Assessment	Section 7 – application of the avoidance principle
	Description of the Aboriginal cultural heritage values likely to be affected by the project including any of national significance;	Indigenous Cultural Heritage Impact Assessment	Section 5
	Recommended means of mitigating any negative impact on Aboriginal cultural heritage values by appropriate management strategies	Indigenous Cultural Heritage Impact Assessment	Section 7 – application of avoidance principle
	As a minimum, impact assessment, management and protection strategies should satisfy statutory responsibilities	Indigenous Cultural Heritage Impact Assessment	Sections 2 and 7
	The first requirement under the ToR is to provide a description of the known Aboriginal cultural heritage values, including significant Aboriginal areas that may be affected by the Arrow LNG Plant. In doing this, it should describe how, in conjunction with the appropriate Aboriginal people, the Aboriginal cultural heritage values were ascertained. Examples of this include: the results of any Aboriginal cultural heritage survey undertaken; the Queensland Department of Environment and Resource Management (DERM) Aboriginal Cultural Heritage Register and Database; and any existing literature relating to Aboriginal cultural heritage in the study area	Indigenous Cultural Heritage Impact Assessment	Sections 5 and 6
	The aim of second requirement under the ToR is	Indigenous	Section 7

	defining and describing the practical measures for protecting Aboriginal cultural heritage values including describing the strategies to be applied for Aboriginal cultural heritage management, and how the strategies will be achieved.	Cultural Heritage Impact Assessment	
	Within Queensland, Aboriginal cultural heritage must be managed in such a way as to be consistent with the requirements of the *Aboriginal Cultural Heritage Act 2003* (ACH Act): notably the procedures must be such as to be compliant with the cultural heritage duty of care. Under this, where an EIS being prepared, it is necessary, in the absence of a Native Title agreement (NT agreement), to conclude an approved Cultural Heritage Management Plan (CHMP) for the Arrow LNG Plant as provided for under Part 7 of the ACH Act. The CHMP will need to be concluded with the relevant Aboriginal Endorsed Parties throughout the project area prior to development activities covered by the EIS taking place	Indigenous Cultural Heritage Impact Assessment	Section 7
	A CHMP under the ACH Act, or a NT agreement (as that term is defined under the ACH Act) that includes management and protection strategies for Aboriginal cultural heritage, should be initiated during the EIS process	Indigenous Cultural Heritage Impact Assessment	Sections 2 and 7
	If an NT agreement is not finalised or a CHMP has not been approved, by the time of the submission of the EIS to the Coordinator General, then the following should be provided:	Indigenous Cultural Heritage Impact Assessment	
	Subject to any confidentiality restrictions, an outline of the proposed management and protection strategies for Aboriginal cultural heritage within the proposed CHMP or NT agreement, including outlining the position of the relevant parties and the status of negotiations	Indigenous Cultural Heritage Impact Assessment	Section 7
	Details of the proposed steps and timeframes for finalising the CHMP or NT agreement	Indigenous Cultural Heritage Impact Assessment	Section 7 – note reference to s66B (Native Title Act) processes under way that have profound impact on this issue
	An NT agreement or CHMP should be negotiated between the proponent and the appropriate native title/Aboriginal parties and should address and include the following (subject to contrary agreement between the parties):	Indigenous Cultural Heritage Impact Assessment	
	A process for including Aboriginal people in the protection and management of Aboriginal cultural	Indigenous Cultural	Section 7 – Arrow Energy's principles

	heritage associated with the Arrow LNG Plant	Heritage Impact Assessment	make express provision for this
	Processes for mitigation, management and protection of identified Aboriginal cultural heritage in the project areas, including associated infrastructure developments, during both the construction and operational phases of the project	Indigenous Cultural Heritage Impact Assessment	Section 7 – application of avoidance principle and agreement will make express provision for this
	Provisions for the management of the accidental discovery of Aboriginal cultural heritage, including human remains	Indigenous Cultural Heritage Impact Assessment	Section 7 – agreement makes express provision for management of this issue
	A clear recording process to be developed to assist initial management and recording of accidental discoveries	Indigenous Cultural Heritage Impact Assessment	Section 7 – agreement provides for comprehensive survey and recording of all Aboriginal cultural heritage
	A cultural heritage induction for project staff	Indigenous Cultural Heritage Impact Assessment	Section 7 – Arrow Energy's principles make express provision for this and agreement provides for implementation of this
	The development of a cultural heritage awareness program	Indigenous Cultural Heritage Impact Assessment	Section 7 – Arrow Energy's principles make express provision for this and agreement provides for implementation of this
	A conflict resolution process	Indigenous Cultural Heritage Impact Assessment	Section 7 – it is noted that this is actually the only issue of the above requirements in ToR for which there is a legal mandate requiring provision of such a process in a CHMP. None of the above, nor this condition are a mandated

			requirement for an ILUA. Notwithstanding this, Arrow Energy has made such provision through its principles.

Attachment 2 Recorded Aboriginal cultural heritage areas and objects from the Queensland Indigenous Cultural Heritage Register and Database (ICHR and D)

Source	Place ID	Place Name	Cultural Heritage Identified	Within Study Area	Within Project Disturbance Area
ICHR&D	JE:A04	Hummock Hill Stone Arrangement	Stone Arrangement	No	No
ICHR&D	JE:A41	Hummock Hill Island Site 1	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JE:A42	Hummock Hill Island Site 2	Shell Midden	No	No
ICHR&D	JE:A43	Hummock Hill Island Site 3	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JE:A60	Hummock Hill Island CC-190	Shell Midden	No	No
ICHR&D	JE:A61	Hummock Hill Island Site CC-192	Stone Artefact/s	No	No
ICHR&D	JE:A62	Hummock Hill Island Site CC-193	Stone Artefact/s	No	No
ICHR&D	JE:A63	Hummock Hill Island Site CC-195	Shell Midden	No	No
ICHR&D	JE:A64	Hummock Hill Island Site CC-196	Shell Midden	No	No
ICHR&D	JE:A65	Hummock Hill Island Site CC-197	Shell Midden	No	No
ICHR&D	JE:A66	Hummock Hill Island Site CC-187	Shell Midden	No	No
ICHR&D	JE:B15	Little Oaky Creek A	Stone Artefact/s	No	No
ICHR&D	JE:B16	Little Oaky Creek B	Stone Artefact/s	No	No
ICHR&D	JE:B60	Awoonga A25 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:B97	Awoonga A63 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:D28	Awoonga A199 - Site Complex	Historic Camp / Waterhole	No	No
ICHR&D	JE:D28	Awoonga A199 - Site Complex	Historic Camp / Waterhole	No	No
ICHR&D	nr	Awoonga A213 - Site Complex	Stone Artefact/s	No	No
ICHR&D	JE:D45	Awoonga A216 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:D46	Awoonga A217 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:D47	Awoonga A218 - Single Artefact	Stone Artefact/s	No	No
ICHR&D	JE:D48	Awoonga A219 - Site Complex	Stone Artefact/s	No	No
ICHR&D	JE:D49	Awoonga A220 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:D50	Awoonga A221 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:D51	Awoonga A222 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:D52	Awoonga A223 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:D53	Awoonga A224 - Single Artefact	Stone Artefact/s	No	No
ICHR&D	JE:D54	Awoonga A225 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:D55	Awoonga A226 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:D56	Awoonga A227 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:D57	Awoonga A228 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:D58	Awoonga A229 - Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	JE:E16	Calvale - Aldoga AS1	Stone Artefact/s	No	No
ICHR&D	JE:E17	Calvale - Aldoga AS2	Stone Artefact/s	No	No
ICHR&D	JE:E18	Calvale - Aldoga AS3	Stone Artefact/s	No	No
ICHR&D	JE:E19	Calvale - Aldoga AS4	Stone Artefact/s	No	No
ICHR&D	JE:E23	Calvale - Aldoga AS19	Stone Artefact/s	No	No
ICHR&D	JE:E24	Calvale - Aldoga AS20	Stone Artefact/s	No	No
ICHR&D	JF:A02	Calliope Midden	Shell Midden	No	No
ICHR&D	JF:A12	Facing Island Hearth Site	Hearth	No	No
ICHR&D	JF:A16	R1	Stone Artefact/s	No	No
ICHR&D	JF:A17	R2	Stone Artefact/s	No	No
ICHR&D	JF:A18	R3	Stone Artefact/s	No	No
ICHR&D	JF:A19	R4	Stone Artefact/s	No	No
ICHR&D	JF:A20	R5	Stone Artefact/s	No	No
ICHR&D	JF:A21	R6	Stone Artefact/s	No	No
ICHR&D	JF:A22	R7-11	Stone Artefact/s	No	No
ICHR&D	JF:A25	Curtis Island	Scarred Tree	No	No
ICHR&D	JF:A26	Facing Island	Stone Artefact/s	No	No
ICHR&D	JF:A27	North Point Midden - Facing Island	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:A28	Castle Rocks Midden - Facing Island	Shell Midden	No	No
ICHR&D	JF:A58	Gatcombe Head	Stone Artefact/s	No	No
ICHR&D	JF:A59	Farmers Point Midden	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:A83	Shepherd Creek	Stone Artefact/s	No	No
ICHR&D	JF:A84	Hut Creek	Stone Artefact/s	No	No
ICHR&D	JF:A85	Bracewell Road	Scarred Tree	No	No
ICHR&D	JF:A86	Machine Creek	Stone Artefact/s	No	No
ICHR&D	JF:A87	Black Head Site 1	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:A88	Black Head Site 2	Stone Artefact/s	No	No
ICHR&D	JF:A89	Black Head Site 3	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:A90	Connor Creek Stone Circle	Stone Arrangement	No	No
ICHR&D	JF:A91	Stuart Oil Shale Project 1	Stone Artefact/s	No	No
ICHR&D	JF:A92	Stuart Oil Shale Project 2	Stone Artefact/s	No	No
ICHR&D	JF:A94	Alfredson '89	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:A95	Wild Cattle Creek	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:A96	Wild Cattle Creek 2	Shell Midden	No	No
ICHR&D	JF:B10	Aldoga	Stone Artefact/s	No	No
ICHR&D	JF:B12	Ramsay Crossing CC-010, CC-011	Stone Artefact/s	No	No
ICHR&D	JF:B13	Ramsay Crossing CC-012, CC-013, CC-014, CC-015	Stone Artefact/s	No	No
ICHR&D	JF:B14	Telegraph Creek CC-016	Stone Artefact/s	No	No
ICHR&D	JF:B15	Telegraph Creek CC-017	Stone Artefact/s	No	No
ICHR&D	JF:B16	Telegraph Creek CC-018, CC-019, CC-020	Stone Artefact/s	No	No
ICHR&D	JF:B17	Mt Barker CC-022	Stone Artefact/s	No	No
ICHR&D	JF:B18	Curtis Island CC-023, CC-024, CC-025, CC-026	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:B19	Curtis Island CC-027	Stone Artefact/s	No	No
ICHR&D	JF:B20	Curtis Island CC-028, CC-029, CC-030	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:B21	Curtis Island CC-031	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:B22	Curtis Island CC-032, CC-033	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:B23	Curtis Island CC-034, CC-035	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:B24	Curtis Island CC-036, CC-037	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:B25	Curtis Island CC-038, CC-039, CC-040, CC-041	Shell Midden	No	No
ICHR&D	JF:B26	Connor Creek CC-053, CC-054	Stone Artefact/s	No	No

ICHR&D	JF:B27	Connor Creek CC-055, CC-056	Stone Artefact/s	No	No
ICHR&D	JF:B28	Connor Creek CC-057, CC-059	Stone Artefact/s	No	No
ICHR&D	JF:B29	Connor Creek CC-058	Stone Artefact/s	No	No
ICHR&D	JF:B30	Connor Creek CC-060	Stone Artefact/s	No	No
ICHR&D	JF:B31	Gonong Creek CC-061	Stone Artefact/s	No	No
ICHR&D	JF:B32	Gonong Creek CC-062	Stone Artefact/s	No	No
ICHR&D	JF:B33	Gonong Creek CC-063	Stone Artefact/s	No	No
ICHR&D	JF:B34	Wild Cattle Creek CC-106, CC-107	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:B35	Wild Cattle Creek CC-108	Shell Midden	No	No
ICHR&D	JF:B36	Wild Cattle Creek CC-109	Shell Midden	No	No
ICHR&D	JF:B37	Wild Cattle Creek CC-110	Shell Midden	No	No
ICHR&D	JF:B38	Wild Cattle Creek CC-111	Shell Midden	No	No
ICHR&D	JF:B39	Wild Cattle Creek CC-112	Shell Midden	No	No
ICHR&D	JF:B40	Wild Cattle Creek CC-113	Shell Midden	No	No
ICHR&D	JF:B41	Wild Cattle Creek CC-153, CC-154	Shell Midden	No	No
ICHR&D	JF:B42	Wild Cattle Creek CC-159, CC-161, CC-164	Shell Midden	No	No
ICHR&D	JF:B43	Wild Cattle Creek CC-160	Stone Artefact/s	No	No
ICHR&D	JF:B44	Wild Cattle Island CC-162, CC-163	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:B45	Wild Cattle Creek CC-168	Stone Artefact/s	No	No
ICHR&D	JF:B46	Canoe Point CC-165, CC-166	Shell Midden	No	No
ICHR&D	JF:B47	Canoe Point CC-167	Shell Midden	No	No
ICHR&D	JF:B48	Connor Bluff CC-021	Stone Artefact/s	No	No
ICHR&D	JF:B49	Connor Bluff CC-171, CC-106b	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:B50	Connor Bluff CC-186a	Shell Midden	No	No
ICHR&D	JF:B51	Graham Creek CC-173, CC-177	Stone Artefact/s	No	No
ICHR&D	JF:B52	Graham Creek CC-174, CC-176	Stone Artefact/s	No	No
ICHR&D	JF:B53	Graham Creek CC-175	Stone Artefact/s	No	No
ICHR&D	JF:B54	Graham Creek CC-178	Stone Artefact/s	No	No
ICHR&D	JF:B55	Ramsay Crossing CC-179a	Stone Artefact/s	No	No
ICHR&D	JF:B56	Ramsay Crossing CC-180a	Stone Artefact/s	No	No
ICHR&D	JF:B57	Barker Creek CC-181a	Stone Artefact/s	No	No
ICHR&D	JF:B58	Barker Creek CC-182a	Shell Midden	No	No
ICHR&D	JF:B59	Barker Creek CC-183a	Stone Artefact/s	No	No
ICHR&D	JF:B60	Curtis Island CC-184	Shell Midden	No	No
ICHR&D	JF:B61	Curtis Island CC-185a	Stone Artefact/s	No	No
ICHR&D	JF:B62	Connor Creek/Balaclava Island CC-200	Stone Artefact/s	No	No
ICHR&D	JF:B63	Connor Creek/Balaclava Island CC-201	Shell Midden	No	No
ICHR&D	JF:B64	Wild Cattle Creek CC-155	Shell Midden	No	No
ICHR&D	JF:B65	Wild Cattle Creek CC-157	Shell Midden	No	No
ICHR&D	JF:B66	Wild Cattle Creek CC-158	Shell Midden	No	No
ICHR&D	JF:B67	Facing Island CC-206	Stone Artefact/s	No	No
ICHR&D	JF:B68	Facing Island CC-208	Shell Midden	No	No
ICHR&D	JF:B69	Facing Island CC-210	Scarred Tree	No	No
ICHR&D	JF:B70	Connor Creek/Balaclava Island CC-202	Stone Artefact/s	No	No
ICHR&D	JF:C08	Eastern Boyne Island Site 1	Shell Midden	No	No
ICHR&D	JF:C09	Connor Creek Midden	Shell Midden	No	No
ICHR&D	JF:C10	North Lagoon Midden	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:C11	Pearl Ledge Midden	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:C12	Sable Chief Rocks Midden	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:C13	Settlement Point Midden	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:C14	South Trees Island Stone Axe	Stone Artefact/s	No	No
ICHR&D	JF:C15	Alcan Smelter Site	Stone Artefact/s	No	No
ICHR&D	JF:C20	Wallin 10/1995 (QCL 95)	Shell Midden	No	No
ICHR&D	JF:C51	Carrara	Stone Artefact/s	No	No
ICHR&D	JF:C52	Alfredson 1	Stone Artefact/s	No	No
ICHR&D	JF:C53	Wurdong Creek	Stone Artefact/s	No	No
ICHR&D	JF:C54	Alfredson 2	Stone Artefact/s	No	No
ICHR&D	JF:C55	Stockyards	Stone Artefact/s	No	No
ICHR&D	JF:C56	Alfredson 3	Stone Artefact/s	No	No
ICHR&D	JF:C57	Telegraph Creek	Stone Artefact/s	No	No
ICHR&D	JF:C58	Kerosene Creek	Stone Artefact/s	No	No
ICHR&D	JF:C59	Munduran Creek 1	Stone Artefact/s	No	No
ICHR&D	JF:C60	Ti Tree Gully 1	Stone Artefact/s	No	No
ICHR&D	JF:C61	Ti Tree Gully 2	Stone Artefact/s	No	No
ICHR&D	JF:C62	Munduran Creek 2	Stone Artefact/s	No	No
ICHR&D	JF:C63	Clay Gully	Stone Artefact/s	No	No
ICHR&D	JF:C64	Black Swan Creek	Stone Artefact/s	No	No
ICHR&D	JF:C70	High Hill	Cultural Place / Stone Artefact/s	No	No
ICHR&D	JF:C71	High Hill 2	Stone Artefact/s	No	No
ICHR&D	JF:C73	Nickel Refinery Midden	Shell Midden	No	No
ICHR&D	JF:D10	Facing Island Site 1	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:D11	Facing Island Site 2	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:D12	Facing Island Site 3	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:D13	Facing Island Site 4	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:D14	Facing Island Site 5	Shell Midden / Stone Artefact/s	No	No
ICHR&D	JF:D16	Yellow Patch	Hearth / Stone Artefact/s	No	No
ICHR&D	JF:D47	Calvale - Aldoga AS5	Stone Artefact/s	No	No
ICHR&D	JF:D48	Calvale - Aldoga AS6	Stone Artefact/s	No	No
ICHR&D	JF:D49	Calvale - Aldoga AS8	Stone Artefact/s	No	No
ICHR&D	JF:D50	Calvale - Aldoga AS9	Stone Artefact/s	No	No
ICHR&D	JF:D51	Calvale - Aldoga AS11	Scarred Tree	No	No
ICHR&D	JF:D52	Calvale - Aldoga AS12	Stone Artefact/s	No	No
ICHR&D	JF:D53	Calvale - Aldoga AS14	Stone Artefact/s	No	No
ICHR&D	JF:D54	Calvale - Aldoga AS15	Stone Artefact/s	No	No

ICHR&D	JF:D58	Repatriated Human Remains - Curtis Island	Cultural Place / Stone Artefact/s	No	No
ICHR&D	JF:D62	-	Stone Artefact/s	No	No
ICHR&D	JF:D62	-	Stone Artefact/s	No	No
ICHR&D	JF:D62	-	Stone Artefact/s	No	No
ICHR&D	JF:D62	-	Stone Artefact/s	No	No
ICHR&D	JF:D62	-	Stone Artefact/s	No	No
ICHR&D	JF:D62	-	Stone Artefact/s	No	No
ICHR&D	JF:D63	-	Landscape Feature / Quarry / Contact Place	No	No
ICHR&D	JF:D64	-	Stone Artefact/s	No	No
ICHR&D	JF:D65	-	Stone Artefact/s	No	No
ICHR&D	JF:D65	-	Stone Artefact/s	No	No
ICHR&D	JF:D66	-	Stone Artefact/s	No	No
ICHR&D	JF:D67	-	Shell Midden / Stone Artefact/s / Resource Place	No	No
ICHR&D	JF:D67	-	Shell Midden / Stone Artefact/s / Resource Place	No	No
ICHR&D	JF:D67	-	Shell Midden / Stone Artefact/s / Resource Place	No	No
ICHR&D	JF:D67	-	Shell Midden / Stone Artefact/s / Resource Place	No	No
ICHR&D	JF:D67	-	Shell Midden / Stone Artefact/s / Resource Place	No	No
ICHR&D	JF:D67	-	Shell Midden / Stone Artefact/s / Resource Place	No	No
ICHR&D	JF:D67	-	Shell Midden / Stone Artefact/s / Resource Place	No	No
ICHR&D	JF:D68	-	Shell Midden	No	No
ICHR&D	JF:D69	-	Stone Artefact/s	No	No
ICHR&D	JF:D70	-	Landscape Feature / Resource Place	No	No
ICHR&D	JF:D71	-	Resource Place	No	No
ICHR&D	KB:F94	Police Creek Artefact Scatter	Stone Artefact/s	No	No
ICHR&D	KE:A08	Boyne Creek I	Shell Midden / Stone Artefact/s	No	No
ICHR&D	KE:A09	Boyne Creek II	Shell Midden	No	No
ICHR&D	KE:B24	Hummock Hill Island Site CC-194 (KE:A93)	Shell Midden	No	No
CHIMS	4052	Historic Trig Point - Hummock Hill	-	No	No
CHIMS	20874	Homestead Complex - Hummock Hill Island	-	No	No
CHIMS	22974	Large Stone Quarry	-	No	No
CHIMS	23111	Telegraph Route (at track junction)	-	No	No
CHIMS	23112	Telegraph/Telephone Line (centre)	-	No	No
CHIMS	23113	Telegraph/Telephone Line (North end)	-	No	No
CHIMS	23114	Telegraph/Telephone Line (south)	-	No	No
CHIMS	23412	Old truck body	-	No	No
CHIMS	23462	Dam and camp (recreation)	-	No	No
CHIMS	23582	Oil Bore	-	No	No
CHIMS	23616	Rundle Shale Oil Camp (former timber yard)	-	No	No
CHIMS	23617	Rundle Shale Oil Test Shafts & Pits (former timber yard)	-	No	No
CHIMS	23619	Telegraph? Route, Devil's Elbow	-	No	No
CHIMS	23720	Camp site (Aboriginal and European)	-	No	No
CHIMS	23721	Camp site (cutters or Quarry)	-	No	No
CHIMS	24287	Midden	-	No	No
CHIMS	24385	Old Timber Gate and SF boundary	-	No	No
CHIMS	24456	Pyealy Creek yards	-	No	No
CHIMS	24509	Shale Diggings (pits and bores)	-	No	No
CHIMS	24606	Survey Trig (East Stowe)	-	No	No
CHIMS	24644	Transmission Tower	-	No	No
CHIMS	24676	Wallaby Fence	-	No	No
CHIMS	24689	Well (sleeper covered), camp site	-	No	No
CHIMS	30105	Blazed Survey Tree - Hummock Hill Island	-	No	No
CHIMS	30108	Causeway - Hummock Hill Island	-	No	No
CHIMS	30209	Airfield - Hummock Hill Island	-	No	No
CHIMS	30210	Various Dams - Hummock Hill Island	-	No	No
CHIMS	30210	Various Dams - Hummock Hill Island	-	No	No
CHIMS	30210	Various Dams - Hummock Hill Island	-	No	No
CHIMS	30210	Various Dams - Hummock Hill Island	-	No	No
CHIMS	30210	Various Dams - Hummock Hill Island	-	No	No
CHIMS	30210	Various Dams - Hummock Hill Island	-	No	No
CHIMS	30210	Various Dams - Hummock Hill Island	-	No	No
CHIMS	30211	Possible grave - Hummock Hill Island	-	No	No
CHIMS	30983	Hazeldean	-	No	No
CHIMS	30984	Hazeldean Graves	-	No	No
CHIMS	30986	Mount Larcom Yards	-	No	No
CHIMS	30987	Fmr Mount Larcom Homestead Site	-	No	No
CHIMS	30988	Mount Larcom Station Yards (site of reported milking yards)	-	No	No
CHIMS	31311	Curtis Island Well	-	No	No
QHR	602001	Block B, Gladstone Central State School	-	No	No
QHR	602385	Fig Tree	-	No	No
QHR	601330	Kullaroo House	-	No	No
QHR	601332	Gladstone Court House	-	No	No
QHR	601333	Gladstone Regional Art Gallery & Museum	-	No	No
QHR	600389	Raglan Homestead	-	No	No
QHR	601723	Cape Capricorn Lightstation	-	No	No
QHR	601331	Former Gladstone Post Office	-	No	No
QHR	601334	Former Port Curtis Co-op Dairy Assoc. Ltd Factory	-	No	No
QHR	601338	Former Commonwealth Bank Building	-	No	No
QHR	601341	Friend Park and Graves	-	No	No
QHR	600521	Our Lady Star of the Sea Church and School	-	No	No
QHR	600385	St Luke's Anglican Church	-	No	No
QHR	600387	Langmorn Homestead	-	No	No
QHR	600388	Parson's Inn	-	No	No
QHR	601811	William Wyndham's Gravesite and remnant orchard trees	-	No	No
QHR	602711	Port Curtis Sailing Club	-	No	No

ICHR&D	JF:A93	Stuart Oil Shale Project 3	Scarred Tree	Yes	No
ICHR&D	JF:C65	Boat Creek 1	Stone Artefact/s	Yes	No
ICHR&D	JF:C66	Boat Creek 2	Stone Artefact/s	Yes	No
ICHR&D	JF:C67	Bashfords Sand Ridge	Stone Artefact/s	Yes	No
ICHR&D	JF:C68	Coolamon Scarred Tree	Scarred Tree	Yes	No
ICHR&D	JF:D17	QCL Clinker Plant Midden	Shell Midden	Yes	No
ICHR&D	JF:D72	-	Stone Artefact/s	Yes	No
ICHR&D	JF:D73	-	Stone Artefact/s	Yes	No
CHIMS	23601	Old yards and dip	-	Yes	No
CHIMS	24077	Fenceline	-	Yes	No

Attachment 3 Recorded Aboriginal cultural heritage areas and objects from geotechnical studies

Geotech Program	Total Program	Total in RSA	Total in Infrastructure	Notes	Total CH from Program **	Details	Total in RSA	Total In infrastructure	Notes	Total Program Holes with CH	Total Holes in RSA with CH	Total Holes in Infrastructure with CH	Notes
Archaeo (2-4 Feb 2009)	40 geotech areas, 30 test pits (TP01-30) and 10 bore holes (BH01-10)	Entire program	Entire program	All of these were done. No grid references for any of these holes but all appear to be within the RSA and the vast majority if not all are also in the infrastructure areas for the plant. No marine holes.	3 sites - Sites 1-3 but also noting that there was another place close to Site 1 that is in table separately but not identified separately on map or in summary notes. This place CH04 appears to have been merged within Site 1.	Site 1 (also possibly including CH02 below) - Artefact scatter found in the original location of TP15 (but also near BH05). Extent approximately 120 X 75m and containing 20-30 artefacts including two single platformed cores (manufactured from chert & silcrete), flakes (from quartz, chert, silcrete, siltstone), 1 broken quartz blade & a broken quartzite hammerstone. Also a piece of purple glass containing possible flaking scars was also identified. More material was thought to be likely in general area as well as in top 10cm of deposits. Test pit 15 was relocated to avoid & cleared for use. Site 2 - Isolated stone artefact found 40m from TP14. Was one mudstone flake. Test pit was cleared for use. Site 3 - Isolated stone artefact found 40m from TP30. Was an axe blank manufactured from some volcanic material.. Test pit was cleared for use CH02 or 04 depending on section of the report but also likely merged into Site 1 - Isolated stone artefacts found between track and location of BH05. No extent but consisted of 2 silcrete flakes and a piece of purple glass which contained possible flake scars (core). Bore hole was cleared for use.	All 3 sites - Sites 1-3 as outlined in previous column	All 3 sites - Sites 1-3 as outlined in previous column	Details taken from the map & notes in the summary report noting that there are some differences between this and the map (which appear consistent) and the table at the end.	Four - BH05 (Site 1 & CH04), TP14 (Site 2), TP15 (Site 1), TP30 (Site 3) with details of places as per previous descriptions	Four - BH05 (Site 1 & CH04), TP14 (Site 2), TP15 (Site 1), TP30 (Site 3) with details of places as per previous descriptions	Four - BH05 (Site 1 & CH04), TP14 (Site 2), TP15 (Site 1), TP30 (Site 3) with details of places as per previous descriptions	While these are related to the geotech locations this includes the access as well.

Geotech Program	Total Program	Total in RSA	Total in Infrastructure	Notes	Total CH from Program **	Details	Total in RSA	Total In infrastructure	Notes	Total Program Holes with CH	Total Holes in RSA with CH	Total Holes in Infrastructure with CH	Notes
2010 Program (ours - 18-21 May 2010)	Noting that there were several iterations, the final (v3) contained 89 locations to be inspected. There were 31 bore holes (BH1-3, 5-8, 10-18, 20-21, 23-25, 27-36); 15 ERT locations (ERT1, 3, 5,-17); 34 test pits (TP1-5, 9-11, 14-25, 27-29, 31-36, 40-44); 2 VBRC locations (VBRC 6 & 8); and 7 marine bore holes (MBH1-7)	Entire program is in the RSA. Excluding the marine holes as per your note this would include 82 locations: 31 bore holes (BH1-3, 5-8, 10-18, 20-21, 23-25, 27-36); 15 ERT locations (ERT1, 3, 5-17); 34 test pits (TP1-5, 9-11, 14-25, 27-29, 31-36, 40-44); and 2 VBRC locations (VBRC 6 & 8)	48 locations (including one marine hole) are within infrastructure areas. There were 16 bore holes (BH5-7, 11-12, 15-16, 21, 23-25, 27-31); 11 ERT locations (ERT1, 3, 5-7, 9-10, 12-15); 20 test pits (TP1-2, 4-5, 9, 15-18, 21-24, 31, 35, 40-44)); and the 1 marine bore holes (MBH1)	-	19 areas containing CH were identified and recorded.	These included: 15 single stone artefacts (Places 1-3, 5-7, 10-18); one low density scatter (Place 9, 150x40m); 1 stone artefacts scatter / knapping floor (place 4, 1m dia); 1 shell midden (Place 19, 2m dia); and 1 other (a pile of rocks with oyster shell on them, Place 8, 1m dia)	All 19 Places as per previous column	8 places (1-7 & 9). These include: 6 single flakes made from chert, quartz & quartzite (Places 1-3 & 5-7); the stone artefacts scatter knapping floor (Place 4) which contains ~14 mudstone flakes & pieces and the core; the low density scatter (Place 9) whihch contains tens of flakes made form silcrete, chalcedony & mudstone, 2 retouched chert flakes & ~10 multi-platformed cores made from chert, chalcedony, mudstone & silcrete.	-	Seven geotech holes - BH6 (Places 2-4), BH24 (Places 6-7), BH36 (Places 18-19), TP21 (Place 5), TP36 (Place8), TP42 (place 1) & VBRC6 (places 9-17) with details as per previous description.	Seven geotech holes - BH6 (Places 2-4), BH24 (Places 6-7), BH36 (Places 18-19), TP21 (Place 5), TP36 (Place8), TP42 (place 1) & VBRC6 (places 9-17) with details as per previous description.	Four geotech holes - BH6 (Places 2-4), BH24 (Places 6-7), TP21 (Place 5) & TP42 (Place 1) with details as per previous description.	Note that all of the CH places are associated with access in to these respective impact locations. None were on any of the pads.