Esso Highlands Limited

Papua New Guinea LNG Project

Environmental and Social Management Plan Appendix 13: Cultural Heritage Management Plan

PGGP-EH-SPENV-000018-015

Attachment 2: Cultural Heritage Investigation & Salvage Protocol

CONTENTS

ANNEXURES

1.0 INTRODUCTION

The purpose of this Cultural Heritage Investigation & Salvage Protocol is to define procedures, methods and standards for the management and mitigation of potential impacts arising from the PNG LNG Project (the Project) to cultural heritage sites and materials.

The Project area spans a wide range of different ethnic groups, from the Western and Southern Highlands Provinces to the Gulf Province and Central Province on the Papua New Guinea south coast.

Mindful of this variation in local culture and thus in the nature of cultural heritage sites, cultural heritage matters are to be addressed in terms of four broad regions:

- Highlands region – occupied by Huli speakers, from Komo / Hides to Homa / Paua
- Lake Kutubu region – the area occupied by Foi and Fasu communities
- Kikori-Gulf region – including Middle Kikori and Kopi
- LNG Facility site – occupied by the Motu and Koita communities.

The Highlands region, Lake Kutubu region and Kikori-Gulf region are collectively referred to as 'upstream' in the context of the Investigation & Salvage Protocol.

This Cultural Heritage Investigation & Salvage Protocol includes the following:

- Methods for surveys and pre-construction management of cultural heritage sites in the four distinct regions listed above.
- Cultural heritage salvage methods, which prescribe standards and procedures for archaeological salvage, (through surface collection and excavation) before and during construction.

This Cultural Heritage Investigation & Salvage Protocol should be read in conjunction with the main document, i.e., Company's Cultural Heritage Management Plan and Attachment 3 of the main document, Company's Cultural Heritage Chance Finds Protocol.

1.1 Cultural Heritage and Preconstruction Surveys

1.1.1 Objectives

As detailed in the Cultural Heritage Management Plan, Company and/or Contractor will undertake a Cultural Heritage Survey of the pipeline Right of Way (RoW), new roads/access tracks, facility laydown areas and other environmentally undisturbed areas to identify cultural heritage (archaeological and oral tradition) sites.

The objectives of the Cultural Heritage Surveys are to:

- Conduct ground surveys to identify and map cultural heritage sites that can be seen on the ground. (recognising that visibility in many areas is low), considering cutting and clearing of vegetation where practicable
- Determine and document the mitigation and management measures for each cultural heritage site and attempt to obtain agreement from the local communities for the proposed approach.

1.1.2 Cultural Heritage Survey Process

Cultural Heritage Survey will be undertaken in accordance with the following steps and sequence:

1) Land & Community Affairs (L&CA) to conduct awareness with the landowning communities (see section 1.3 below).
2) Preliminary meeting between L&CA and Cultural Heritage Survey team to:
    i) Identify issues arising from awareness activities
    ii) Confirm sequence of survey by area / clan
    iii) Approach clan representatives to arrange interview meetings.

3) Cultural Heritage Survey to:
    i) Confirm identity and nature of sites already recorded
    ii) Undertake site visits and documentation of sites
    iii) Conduct interviews with affected landowners to confirm previous findings and to identify any additional cultural heritage sites known to the landowners through oral traditions
    iv) Obtain conditional approval for the proposed management measures from landowners (see Section 1.2 below).
4) Site registration including:
    i) Input of data and site coordinates from site forms into Project GIS database.
    ii) Completion of PNG site clearance form (see Annexure 1).
5) Final report:
    i) Data to be assembled, described and analysed in a Final Report.
    ii) Annual Summary Report to be submitted to the PNG National Museum and Art Gallery.

1.2 Landowner Agreement for Management Approach

1.2.1 Site Clearance Agreement

Where possible, site clearance agreement should be obtained from the relevant landowners and the following recorded:

- A summary of site details, relating to the more complete documentation on the Site Clearance Form (Annexure 1) and the Project GIS Database
- Landowner(s) name, signature and contact / location details
- Photograph(s) of landowner(s) (as a form of landowner identification)
- Comments and further requests from landowners.

Impacts to sites of high significance (i.e., national or international significance) are generally avoided under the existing Cultural Heritage Management Plan.

New finds of high significance will be referred to the PNG National Museum and Art Gallery for input into the management approach.

1.3 L&CA's Role Prior to Commencement of Cultural Heritage Surveys

L&CA will conduct the following tasks prior to the arrival of cultural heritage teams:

- Identify communities and landowners who may have cultural heritage ties to the survey area
- Notify identified landowners of the objectives of the Cultural Heritage and Preconstruction Cultural Heritage surveys
- Request local involvement in interviews regarding known cultural heritage sites, explaining that such interviews will involve:
    - Identifying and documenting known cultural heritage sites that exist within the Project area
    - Identifying and documenting mutually agreeable management measures for each cultural heritage site recorded.

2.0 CULTURAL HERITAGE SALVAGE PROTOCOL

2.1 Introduction

This section of the Cultural Heritage Investigation & Salvage Protocol defines procedures, methods and standards to be observed in the salvage of cultural heritage (archaeological) materials during the pre-construction and construction phases of the Project.

Archaeological salvage may be in the form of surface collection or excavation. Both of these will under normal circumstances, consist of sample salvage of a site[1], however, where deemed appropriate by the PNG National Museum and Art Gallery or assessing archaeologist, a complete salvage may on some occasions be warranted.

Excavation salvage will follow established systematic professional archaeological procedures and will be supervised by a qualified archaeologist.

The decision to conduct salvage excavation shall rest with Company's archaeologists. Any and all material must be transferred to Company as per Company's procedure.

2.2 Typical Project-Wide Archaeological Salvage Method

2.2.1 Surface Collection Salvage

The location of cultural items collected during surface salvage will be systematically mapped in relation to each other during salvage. Where the collection of surface artefacts is considered to be appropriate, the following method should be considered when completing the site clearance form:

- Accurate mapping of surface artefacts prior to collection. This should be done using GPS co-ordinates and include the location of individual artefacts (where overall density is < 1 per square metre) as well as the extent of the site and the location and size of all relevant topographical, environmental and associated cultural features. Where GPS co-ordinates are unable to be obtained (e.g., due to dense vegetation, poor satellite reception etc.) the site shall be marked on a topographic map.
- Where overall artefact density exceeds 1 per square metre, a sample count should be undertaken of a representative area (e.g., a 1 m x 1 m square) to determine an approximate surface artefact density.
- Where possible artefacts should be photographed in-situ to show archaeological context. Where there is a high density of artefact material, individual photos are unlikely to be feasible and photos should be representative of the site and type of material present.

2.2.2 Salvage Excavation

Excavation techniques shall be the same for 'test pits' and full-scale excavations, in the sense that excavation must follow a high degree of care and control irrespective of its size.

Archaeological salvage applies in one or both of the following situations:

- Where information is required to assess a site's or area's significance for purposes of site or landscape management
- In order to obtain archaeological materials at a threatened significant site prior to its disturbance.

The decision as to the size and location of an excavation is to be made by Company's archaeologist, and may follow vertical and/or horizontal excavation methods befitting the aims of that excavation.

[1] Samples will be collected to characterize the site. The number and location of samples will be determined by Company archaeologist and approved by the PNG National Museum & Art Gallery.

All archaeological excavations are to follow standard archaeological procedures that include:

- Excavations typically proceeding in <10 cm thick Excavation Units (XUs) following sub-surface site stratigraphy.
- Excavated materials sorted under controlled conditions.
- Systematic mapping of the boundaries of each site.
- All excavated material is to be screened through 2.1mm sieves.

Sediment samples are to be taken from each XU.

Each site is to be radiocarbon-dated, typically one radiocarbon date for every approximately 20-25 cm depth where datable material is present.

Significant finds, which may be charcoal for radiocarbon dating, special ceramic/lithic artefacts, or unusual finds are to be recorded in three dimensions and individually bagged.

All excavated materials are to be sorted and catalogued in a report, including: taxonomic identification of faunal remains (vertebrate, shell); basic characterisation of ceramics; basic characterisation of beads, shell adzes, bone tools and other rare or unusual items; basic analysis of stone artefacts by raw material type; basic analysis of human skeletal remains.

Significant sites will be subject to basic sediment analysis including particle size analysis.

See Attachment 3, the Chance Finds Protocol for excavation of human skeletal remains.

Each salvage site report is to include completed recording tables (see Tables 4 to 8 of Annexure 2 for examples of reporting tables) which, together with site descriptions, site maps, section drawings (which includes section drawings and XUs plotted over section drawings) and a general summary of results, will constitute the Final Report, fulfilling the final reporting requirements to the PNG National Museum and Art Gallery. Minor modifications to these tables may be made to suit local conditions and finds.

2.3 Highlands Region

2.3.1 Background Information

Due to poor ground visibility and difficult topography, few archaeological sites have been identified from surface surveys in the Highlands or Huli region between the Hides/Komo and Homa/Paua areas.

Instead, Cultural Heritage Surveys have identified a large number of oral tradition sites in this region, which is occupied by culturally homogeneous Huli-speaking communities.

A proportion of these oral tradition sites, particularly caves or rockshelters and ancestral settlement sites, will also be archaeological sites, containing relatively rich deposits of archaeological material.

Cultural Heritage Surveys undertaken during 2009 at the Hides Gas Conditioning Plant (HGCP) site have established the presence of archaeological materials potentially dating to the earliest settlement of the New Guinea Highlands during the late Pleistocene.

The approach to cultural heritage site salvage for this region will take into account the high frequency of oral tradition sites (which may also prove to be archaeological sites) and the likelihood of rich archaeological sites being uncovered during construction.

2.3.2 Salvage Approach

Following completion of any cultural heritage surveys, the following approach will be implemented for salvage in the Highlands (Huli) region.

Existing cultural heritage documentation gathered during the cultural heritage surveys will be confirmed for all traditional sites known to the landowners within the project area of disturbance. Any further sites identified in the process will also be documented.

The following archaeological site types may be sample-salvaged prior to any disturbance, or if there is a reasonable chance of disturbance:

- Cave or rockshelter with potential for stratified sub-surface deposits
- Established grassland ridge with potential for stratified sub-surface deposits
- Ancestral settlement (gebeanda) sites known from oral traditions with potential for stratified sub-surface deposits
- Any area with dense stone scatters of stone artefacts.

Pipeline and site construction will be monitored for exposure of stratified sub-surface archaeological materials, which shall be managed as per Attachment 3, the Chance Finds Protocol.

2.4 Lake Kutubu (Foi/Fasu) Region

2.4.1 Background Information

Cultural Heritage Surveys undertaken during 2005-09 have identified a substantial number of oral tradition sites in the Lake Kutubu region, a region traditionally occupied by Foi- and Fasu-speaking communities.

Only a limited number of archaeological sites have been identified from surface surveys in this region due to poor ground visibility and difficult topography. A proportion of these cultural heritage sites identified through oral traditions, particularly caves or rockshelters and ancestral settlement sites, will also be archaeological sites, containing relatively rich deposits of archaeological material.

Historical finds and cultural heritage surveys in the Lake Kutubu region have established the presence of very rare archaeological materials, potentially dating to the earliest settlement of the New Guinea Highlands during the late Pleistocene.

2.4.2 Salvage Approach

Following completion of any cultural heritage surveys, the following approach will be implemented for salvage in the Lake Kutubu (Foi/Fasu) region.

Existing cultural heritage documentation gathered during the cultural heritage surveys will be confirmed for all traditional sites known to the landowners within the project area of disturbance.

Any further sites identified in the process will also be documented.

The following archaeological site types maybe sample-salvaged prior to any disturbance, or if there is a reasonable chance of disturbance:

- Cave or rockshelter with potential for stratified sub-surface deposits
- Established grassland ridge with potential for stratified sub-surface deposits
- Major camp sites at the intersections of traditional foot-trails with potential for stratified sub-surface deposits
- Any area with dense scatters of stone or other artefacts.

Pipeline and site construction will be monitored for exposure of stratified sub-surface archaeological materials, which shall be managed as per Attachment 3: Chance Finds Protocol.

2.5 Middle Kikori-Kopi-Gulf Region

2.5.1 Background Information

Occupation of this region is known to have changed through time. In particular, during the late 19th century villages moved from less accessible locations along creeks and on limestone peaks to more exposed locations along major waterways including Kikori River. Hunting camps, sacred sites and ossuaries also changed accordingly.

Site locations may thus be found in various parts of the landscape. While most villages appear to have been relatively small in size, numbering from a handful to a few dozen houses, some are known to contain rich cultural deposits, and it is the history of changing site types, sizes, locations and their contents that are of significance archaeologically. It is therefore important to consider all site types and contexts in determining whether a site should be salvaged or not.

Caves and rockshelters containing flat, soft deposits typically contain buried cultural materials representing hunting camps or ossuaries, irrespective of whether or not such cultural deposits are visible on the present-day surface. This is well exemplified by the archaeological site (recorded as OJP) near Kopi Oil Search base camp, containing 10,000 year old cultural remains only discovered during systematic sub-surface archaeological testing.

During the last few hundred years at least, both hunting camps and ossuaries tended to be clan-based. In some cases, sites known from oral traditions without exhibiting archaeological evidence on the surface today may contain buried archaeological deposits. Historically, any ceramics found in this region came from elsewhere, as the Kikori River area is not known to have ever been a pottery-manufacturing area. It was, however, an indirect partner in hiri (and ancestral hiri) trade.

Similarly, cherts and other high quality stone were traded into the mid to lower Kikori area (e.g. from near Baina), and therefore any stratified stone artefact has the potential to reveal important information about the history of trade and sago production (in that sago pounders were made of such traded stone artefacts).

It is also noted that many limestone outcrops and underground streams are sacred sites (e.g. gateway to clan land of the dead among the Rumu clans), and caves in limestone outcrops are in many cases ossuaries for dead clan members.

2.5.2 Salvage Approach

Prior to disturbance of a limestone outcrop, L&CA or archaeologists will liaise with the affected community and cultural heritage surveys will be undertaken.

The following site types may be sample-salvaged prior to any disturbance, or if there is a reasonable chance of disturbance:

- Cave or rockshelter with potential for stratified sub-surface deposits
- Ancient village site with potential for stratified sub-surface deposits
- Hunting camp with potential for stratified sub-surface deposits
- Any unusual archaeological site with potential to be dated
- Any large midden site
- Any ritual site with potential for stratified sub-surface deposits.

2.6 Portion 2456 LNG Facility Site, Bypass Road and Papa-Lealea Road Upgrade

2.6.1 Background Information

It is understood that the Koita and Motu today, and in the past, recognise the Portion 2456 area as being located in their traditional lands, and that Koita and Motu archaeological sites are located in this area.

During cultural heritage baseline surveys, approximately 453 archaeological sites were found inside the proposed Security Fence area of the LNG Plant Site.

Similar sites are expected to occur in surrounding areas (between the proposed LNG Plant Site Boundary Fence and the LNG Plant Site Security Fence).

Approximately 144 of the archaeological sites located inside the LNG Plant Site Security Fence area are stratified and may require salvage excavation prior to site disturbance. Of these, 34 are large sites (>1000m^2), 74 are medium-sized sites (26-1000m^2) and 36 are small sites (<26m^2).

As part of the archaeological excavations, surface artefacts will be collected from 9 significant (surface) sites prior to disturbance.

A total of 92 archaeological sites were identified along the Bypass Road outside of the security fence, of which approximately 13 require salvage excavation prior to site disturbance.

The cultural heritage survey along the Papa-lealea Upgrade Road was constrained by visibility and was therefore limited to cleared areas, so the number of sites may not be indicative of the total number of possible sites along the Heavy Haul Road. In the areas surveyed, a total of 45 cultural heritage sites were identified along the sections of the Heavy Haul Road RoW corridor surveyed, none of which are considered to be of high levels of significance.

2.6.2 Salvage Approach

Following completion of the cultural heritage baseline surveys, the following approach will be implemented.

Two protected zones may be declared for two sites that will be avoided by the Project:

- Konekaru in the north (the Konekaru Koita ancestral village site and its associated beach)
- Aemakara in the south (includes the Aemakara area and nearby Motu and Koita cultural sites.

Areas outside the LNG Plant Site Security Fence or Bypass Road corridor (e.g. road building, laydown areas, quarries, Papa - Lea Lea Road Upgrade and the like) will not be surveyed or salvaged since the general area has been comprehensively characterized by the extensive salvage within the LNG Plant Site Security Fence and Bypass Road corridor. These sites will be subject to disturbance from construction and/or operations activities.

Prior to construction, the Koita-Motu place names of the area inside the LNG Plant Site Boundary Fence are to be recorded by cultural heritage professionals.

The aim of the sample-salvage is to obtain for present and future generations cultural-historical data about each of the most significant sites before any disturbance or site destruction takes place.

These sites occur in an area of regional, national and international significance. People likely to have Austronesian linguistic affinities were living in the Portion 2456 area some 1,800 years ago, by all indications ancestors of present-day Motu/Koita. This salvage program will constitute a substantive archaeological record for future generations.

In order to adequately represent site contents, an estimated area of 5 to 25m^2 may be excavated at each of the large sites. Each medium-sized site may require 2 to 5m^2 to be excavated. Each small site may require 0.25 to 1m^2 to be excavated.

Annexure 1: Site Clearance Form

SITE CLEARANCE FORM

Site Code: _____ **Site name**: _____

Other site name(s): _____

Local Informant(s):

_____

_____

Clan(s): _____ **Subclan(s)** _____

Recorded by: _____ **People present**: _____

_____

Date: ____ / ____ / 2010

Site Typology:

☐Oral Tradition/Cultural Site

☐Archaeological Site

Archaeological investigation:

☐ Observation only

☐ Surface collection only

☐ Test pit dug

☐ Major excavation

Archaeological Site type:

☐ Open Shell Midden
☐ Rock-shelter
☐ Cave
☐ Stone Arrangement
☐ Shell Arrangement
☐ Isolated Shell
☐ Grinding Stone
☐ Isolated Stone/Ceramic
☐ Cultural Materials Scatter
☐ Quarry
☐ Rock-art
☐ Burial/Ossuary
☐ Garden
☐ Temporary Encampment
☐ Village
☐ Mound
☐ Ritual/Spirit/'Sacred' Site
☐ Fishing/Hunting Site
☐ Sago Processing Site
☐ Tree ☐ Culturally Altered
☐ Other: _____

Cultural materials/features present:

☐ Ochre
☐ Hearth/earth oven
☐ Charcoal/Ash
☐ 'European'/Asian Contact Materials
☐ Bottle Glass
☐ Metal Items
☐ Ceramic
☐ Other: _____
☐ Stone Artefacts
☐ Quartz ☐ 1-10 ☐ 11-50 ☐ 50+
☐ Volcanic ☐ 1-10 ☐ 11-50 ☐ 50+
☐ Metamorphic ☐ 1-10 ☐ 11-50 ☐ 50+
☐ Sedimentary ☐ 1-10 ☐ 11-50 ☐ 50+
☐ Shell MNI: ☐ 1-10 ☐ 11-50 ☐ 50+
☐ Melanesian Ceramics ☐ 1-10 ☐ 11-50 ☐ 50+
☐ Animal Bone ☐ 1-10 ☐ 11-50 ☐ 50+
☐ Human Bone
☐ Wooden Structures/Posts/Post-Holes
☐ Macrobotanical remains: _____
☐ Other: _____

Stratification:

☐ Surface Site
☐ Stratified/Buried Site
☐ Site Exposed by Disturbance
☐ Unknown

Collections made at site?:
(Specify artefacts and where held)

Human skeletal remains:

Skulls MNI: ☐ 1-10 ☐ 11-50 ☐ 50+

Mandibles MNI: ☐ 1-10 ☐ 11-50 ☐ 50+

Postcranials MNI: ☐ 1-10 ☐ 11-50 ☐ 50+

Shells: _____

_____

Rock-art:

☐ Paintings ☐ 1-10 ☐ 11+

☐ Drawings ☐ 1-10 ☐ 11+

☐ Stencils ☐ 1-10 ☐ 11+

☐ Prints ☐ 1-10 ☐ 11+

☐ Engravings ☐ 1-10 ☐ 11+

☐ Other ☐ 1-10 ☐ 11+

Modified Shells: _____ ☐1 ☐ 2-5 ☐ 5-10 ☐ 11+

_____

Vertebrate remains

☐ Cassowary ☐ Reptile

☐ Other bird ☐ Hunting trophies

☐ Mammal ☐ Bone implements

☐ Fish ☐ Other: _____

2.7 Site Landscape

Site Vegetation	Ecotone	Hill Top	Hill Slope	Base of Hill	Cliff	Rocky Outcrop	Sinkhole	Lakeside	Lake/Waterhole	Spring	River/Creek	Freshwater Swamp	Mangrove/Salt water Swamp	Plain	Floodplain	River Levee	Beach	Other
Vine-Thicket																		
Grassland																		
Secondary Forest																		
Primary Rainforest																		
Mangrove																		
Garden																		
Other																		

Surface sediment type at site:

☐ Clay ☐Silt ☐ Sand ☐ Loam ☐ Gravel ☐ Rock ☐ Freshwater ☐ Saltwater ☐ Other:_____

Ground surface visibility at site: **Bedrock**: ☐ Exposed ☐ Not exposed

☐ 0% ☐ 1-25% ☐ 25-50% ☐ 50-75% ☐ 75-100% ☐ Limestone ☐ Other: _____

Distance to nearest freshwater source:

Closest Permanent Water: _____ m

☐ Swamp ☐River ☐ Creek ☐ Waterhole/Lake ☐ Other: _____

Closest Temporary Water: _____ m

☐ Swamp ☐ Creek ☐ Waterhole/Lake ☐ Other: _____

Cultural Site Type

A. Sacred sites:
- ❑ 1. *Gebeanda* (ancestral settlement / ritual site)
- ❑ 2. *Liruanda / Honeanda* (sacred stone site)
- ❑ 3. *Damanda / Dama Nogo Baga / Dama Ne Miaga / Ega Kamianda* (spirit sacrificial site)
- ❑ 4. *Iba Kuyama / Iba Kundu* (spirit lake)
- ❑ 5. *Dindi Ainya Anda* (female earth spirit site)
- ❑ 6. *Wanelabo Anda / Wandarilabo Anda* (female water spirit site)
- ❑ 7. *Ibatiri Anda* (male water spirit site)
- ❑ 8. *Egeanda / Kundu* (cave)
- ❑ 9. *Dama Gana* (spirit ditch / channel)
- ❑ 10. Myth site

B. Ceremonial sites:
- ❑ 11. *Ibagiya Anda / Haroli Anda / More Anda* (bachelor cult site)
- ❑ 12. *Tegehama / Guruanda* (Tege Pulu performance site)
- ❑ 13. *Malihama* (dance ground)
- ❑ 14. *Tiariyaga* (divination site)

C. Settlement sites:
- ❑ 15. *Balamanda* (men's house)
- ❑ 16. *Waipabeanda / Pabeanda* (guardhouse)
- ❑ 17. *Homali* (cemetery / grave)
- ❑ 18. *Bambali gana / Bambali hariga* (ancient ditch or walkway)
- ❑ 19. *Kamia Kalane* (clan boundary ditch)

D. Economic sites:
- ❑ 20. *Iba Wena Gana* (fishing channel)
- ❑ 21. *Mabu* (garden site)

E. Archaeological sites:
- ❑ 22. Archaeological site
- ❑ 23. Surface artefact(s)
- ❑ 24. Artefact(s) held by landowner(s)

F. Other sites:
- ❑ 25. Other (describe):

Site area: _____ m^2

Site length (max): _____ m Site Width (max): _____ m

Site height (max) (for rockshelters/caves): _____ m

Related information recorded: ☐ Photos: How many? _____

☐ Drawings: What? _____

☐ Audio: Who? _____

Site description: _____

_____

_____

_____

_____

_____

_____

Additional notes/comments:

Site Condition:

☐ Destroyed

☐ Poor (0-20% intact)

☐ Fair (20-50% intact)

☐ Moderate (50-80% intact)

☐ Good (80-100% intact)

Possibility of destruction/damage:

(could construction impact this site?)

☐ No

☐ Yes (please explain):

Substantial deposits present?:

☐ No

☐ Yes

☐ Unknown

Site Significance:

☐ Not significant

☐ Local significance

☐ Regional significance

☐ National significance

☐ International significance

Recommendations for further action:

Tick and describe any further action that is needed at this site and why:

❑ Further interviews with landowners required

❑ Further survey and / or detailed recording required

❑ Archaeological testing or excavation recommended

❑ Site cleared for impact, conditional consent form attached

❑ Other – specify

Sketch Map of Site

Checklist:

- *Draw a map of the site showing where the key features are*
- *Include at least one GPS point and indicate where others were taken.*
- *Show distances/measurements and reference at least 1 of these back to a GPS point*
- *Take photo of the site from a distance.*
- *Include a North Arrow*

Sketch Map GPS readings (use additional pages as required) (include artefact or site coordinates):

E: _____	**N:**_____	**Photo #:**_____
E: _____	**N:**_____	**Photo #:**_____
E: _____	**N:**_____	**Photo #:**_____
E: _____	**N:**_____	**Photo #:**_____
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E: _____	**N:**_____	**Photo #:**_____

Annexure 2: Cultural Heritage in the PNG LNG Project Area

1. Highlands cultural heritage site classification

Twenty-five categories of cultural heritage sites have been identified in the course of the PNG Gas Project and PNG LNG Project surveys, and these are classed into six broad categories:

1. Sacred Sites
2. Ceremonial Sites
3. Settlement Sites
4. Economic Sites
5. Archaeological Sites
6. Other Sites

Many individual sites can be classed under more than one category. A summary list of these sites is given in Table 1 and described below.

2. Detailed Site Categories

2.1 SACRED SITES (CATEGORY 1)

Sacred sites were formerly the focus of ritual performances, but their locations are still generally regarded as sacred space and access is often still restricted to certain categories of the community.

2.1.1 Ancestral Settlement Sites (Gebeanda)

Sites identified as gebeanda are, literally, ancestor (gebe) homes (anda). For the most part, these locations are understood to be the actual former settlements of human ancestors of the living community, and the original occupants can usually be named and identified in genealogies. These sites are commonly located on defensible secondary ridges, extending into valleys from a main ridge, and with easy access to fresh water sources. Where undisturbed, gebeanda are also usually identified by the presence of key tree species such as guraya (Araucaria cunninghamii) and ayaga (Areca sp.). Table 2 lists culturally significant Huli tree species. However, some sites identified as gebeanda are associated with original spirit ancestors, and consist of uninhabitable caves or water features. There is considerable overlap between this second type of gebeanda and spirit residence sites or damaanda (Category 3). Both types of gebeanda — human and spirit — were formerly the sites of ritual performances, often consisting of the offering of small sacrifices of pork, pig fat, red ochre or mineral oil.

2.1.2 Sacred Stone Sites (Liruanda / Honeanda)

These sites, which are literally houses (anda) for liru or hone sacred stones, are usually found in association with other ritual sites, such as gebeanda (Category 1) or damaanda (Category 3). Liruanda often consist of little more than the former site of a small shelter or natural hiding spot, such as a hollow at the base of a tree, for sacred stones used in ritual performances. At many sites, the precise locations of these stones are still known, even though they have not been the focus of ritual for decades. A list of the different types of these sacred stones is given in Table 3.

2.1.3 Spirit Sacrificial Sites (Damaanda / Dama Nogo Baga / Dama Ne Miaga / Ega Kamianda)

These locations for the offering of sacrifices, usually of pork or pig fat, to either ancestral or non-ancestral dama spirits, are often unmarked by anything other than ritually significant trees or other plants (e.g. ID090, Annexure 4.7). They are commonly found as a component of larger gebeanda ancestral sites (Category 1).

2.1.4 Sacred Lakes (Iba Kuyama / Iba Kundu)

Most if not all lakes within Huli territory are held to be inhabited by dama spirits, some of them ancestral and others unrelated to modern humans. These lakes were formerly the focus of ceremonial sacrifices, usually in the form of pork, which was hung on a stake by the water's edge, or thrown into the lake, for the spirits to consume (e.g. sites BG211 and BG212, Annexure 4.7). No constructions were associated with these sites, but they continue to be regarded as significant by their owners.

2.1.5 Female Earth Spirit Sites (Dindi Ainyaanda)

These sites are associated with the female earth spirit (literally the earth [dindi] mother [ainya]), who is not usually a direct ancestress of the clan owning the site. These sites represent a very early stratum of Huli cosmological belief, and usually correspond to impressive natural features, such as Hewai Falls. Sacrifices to the female earth spirit were formerly performed at these sites.

2.1.6 Female Water Spirit Sites (Wanelaboanda / Wandarilaboanda)

Sites associated with paired female water spirits, often related to the clan owning the site. In many cases, these spirits are said to give warning when a clan member has died or is about to die; people hear the crying of these women coming from the sites. The sites are often forbidden to pregnant women and their husbands, and to the parents of newborn children. The sites usually consist of natural water features. There were no constructions formerly linked to these sites.

2.1.7 Male Water Spirit Sites (Ibatirianda)

These are sites associated with mythical water spirit or trickster (iba tiri) figures. In Huli belief, these figures were responsible for maintaining the correct drainage of the land and thus preventing disastrous floods. Sacrifices of axes bound together with pork were formerly thrown into the sites, which usually consist of large pooled sections of major rivers in which debris commonly gathers.

2.1.8 Caves (Egeanda / Kundu)

Caves, including even the smallest niches, are usually culturally significant either as the residences of dama spirits, as former hunting camps, or as ossuaries. The interior walls of caves in which offerings were made to dama are often decorated with red ochre, mixed together with pig fat and mineral oil.

2.1.9 Spirit Ditch (Dama Gana)

A unique site consisting of a ditch (gana) reputedly dug by dama spirits, and thus presumably of very ancient origin, even by Huli standards.

2.1.10 Myth Sites

This category of site has no obvious generic Huli label, but refers to sites associated with the mythical actions of animal (usually dog, bird or pig) spirits.

2.2 CEREMONIAL SITES (CATEGORY 2)

Ceremonial sites include those locations at which ceremonies were formerly performed, although the locations are not themselves regarded as sacred spaces.

2.2.1 Bachelor Cult Houses (Ibagiyaanda / Harolianda / Moreanda)

The former Ibagiya bachelor cult, in which senior men trained youths known as haroli or igiri more, usually entailed the construction of shelters in secluded locations, often in bush settings, slightly removed from the main settlements, so that the bachelors could avoid interaction with the polluting effects of women. Many of these sites served as de facto conservation areas, being planted with trees and shrubs usually associated with forested areas. Small pools of water are also common features of Bachelor Cult Houses.

2.2.2 Tege Pulu Performance Areas (Tegehama / Guruanda)

Tege Pulu was a complex of ceremonies that Huli began to perform in the late 19th century, incorporating both ancient rites, such as the painting of ancestral skulls (homa haguene), and novel introductions, such as the ceremonial beating of young initiates (guruma igiri). The spaces (hama) in which Tege was performed and in which the distinctive guruanda longhouses were constructed for the period of the ceremony, were not usually thought of as sacred areas, and are seldom marked by the presence of specific trees or hidden ritual stones.

2.2.3 Dance Grounds (Malihama)

These cleared spaces for dances (mali) are usually associated with, and found near to men's houses (balamanda, Category 3), but are not generally marked by other constructions or specific trees.

2.2.4 Divination Sites (Tiariyaga)

Only one site has been nominated under this category, which refers to the Tiari divination rite, formerly performed to identify thieves.

2.3 SETTLEMENT SITES (CATEGORY 3)

See also Ancestral Settlement Sites (gebeanda, Category 1) and Caves (egeanda, Category 8).

2.3.1 Men's Houses (Balamanda)

Huli men formerly lived apart from women and younger children, in their own houses. Sites designated as balamanda mark the locations of former men's houses, and are often associated with a closely related cohort of male ancestors who have become key ancestral figures in clan genealogies. Balamanda were not formerly the focus of any ritual performances or sacrifices but, in some respects, they represent a minor form of gebeanda, associated with male ancestors who have not yet achieved the status of gebe ancestors. In time, these balamanda locations might ultimately have become gebeanda (Category 1).

2.3.2 Cemeteries (Homali)

Huli burials take a variety of forms, ranging from the traditional deposition of bones at ossuaries in caves, in small boxes raised on stilts, on raised mounds surrounded by ditches, or on otherwise unmarked patches of ground, to the more contemporary construction of elaborate houses for the burials usually situated beside major road junctions.

2.3.3 Guardhouses (Waipabeanda / Pabeanda)

These sites are the former locations of men's houses positioned strategically to guard against enemy attack. Guardhouses are usually located near major river crossings or at the intersection of major ditch thoroughfares.

2.3.4 Ancient Ditches (Bambali Gana) and Walkways (Bamba Hariga)

These sites consist of large, ancient (bamba) garden ditches (gana) or ditch walkways (hariga) often associated with named ancestors. Ditches identified in this way are often located on the perimeter of a sacred site, or deep in the forest.

2.3.5 Clan Boundary Ditch (Kamia Kalane)

A unique site consisting of a gana ditch dug to mark, both symbolically and literally, the separation of two “brothers” or sub-clans, which then formed clans in their own right, capable of inter-marriage.

2.4 ECONOMIC SITES(CATEGORY 4)

2.4.1 Fishing Drain (Iba Wena Gana)

A unique site consisting of an artificially modified channel in which substantial numbers of fish would be trapped and caught during periods of heavy rain and flood. There may formerly have been a ritual aspect to this activity.

2.4.2 Garden Sites (Mabu)

Although sites of former gardens cover much of the inhabitable landscape, certain sites are nominated as culturally or historically significant through association with named ancestors, who are held to have been the first to clear these sites for gardening, usually establishing a pioneering claim to land.

2.5 ARCHAEOLOGICAL SITES (CATEGORY 5)

2.5.1 Archaeological Sites

Refers to sites and archaeological material in situ, identified through archaeological inspection of subsurface exposures, or excavation of stratified deposits.

2.5.2 Surface Artefacts

Individual stone or bone artefacts or groups of stone or bone artefacts found in an un-stratified context on the surface.

2.5.3 Artefacts Held by Community Members

Artefacts (stone, bone or wood) that have been removed from their original find spots and are held or stored by community members.

2.6 OTHER SITES (CATEGORY 6)

Sites not covered by any of the categories listed above.

Table 1: Highlands Cultural Heritage Site Categories				
1. Sacred Sites	**2. Ceremonial Sites**	**3. Settlement Sites**	**4. Economic Sites**	**5. Archaeological Sites**
Ancestral Settlement Site (Gebeanda)	Bachelor Cult Site (Ibagiyaanda / Harolianda / Moreanda)	Men's House (Balamanda)	Fishing Drain (Iba Wena Gana)	Archaeological Site
Sacred Stone Site (Liruanda / Honeanda)	Tege Pulu Performance Area (Tegehama / Guruanda)	Cemetery (Homali)	Garden Site (Mabu)	Surface Artefacts
Spirit Sacrificial Site (Damaanda / Dama Nogo Baga / Dama Ne Miaga / Ega Kamianda)	Dance Ground (Malihama)	Guardhouse (Waipabeanda / Pabeanda)		Artefacts held by Community Members
Sacred Lake (Iba Kuyama / Iba Kundu)	Divination Site (Tiariyaga)	Ancient Ditch (Bambali Gana) and Walkways (Bamba Hariga)		
Female Earth Spirit Site (Dindi Ainyaanda)		Clan Boundary Ditch (Kamia Kalane)		
Female Water Spirit Site (Wanelaboanda / Wandarilaboanda)				
Male Water Spirit Site (Ibatirianda)				
Caves (Egeanda / Kundu)				
Spirit Ditch (Dama Gana)				
Myth Site				

Table 2: Cultural Significant Tree Species for Highlands		
Huli	**Scientific name**	**Common name**
Ayaga	Areca sp	Black palm
Bai	Castanopsis acuminatissima	Oak
Baowa	Casuarina oligodon	Casuarina
Dagiruba	Nothofagus sp	Southern beech
Danda		
Guraya	Araucaria cunninghamii	Hoop pine
Hale	Elmerillia sp	
Kemu		
Kiabu	Podocarpus bracteatus	
Mindira	Gymnostoma papuanum [formerly Casuarina papuana]	Casuarina, She-Oak
Yuluba	Araucaria hunsteinii	Klinki pine

Table 3: Highlands Ritual Stone Categories	
Huli term	**Comment and description**
bari numbi	circular stone club heads with drilled central holes, employed in the yabo ritual.
erepole	"broken-back": corrugated crescent-shaped fossils, generally dark in colour.
guru wali	"guru-woman" (male dama spirit): cylindrical stones with appendages held to be "arms", sometimes sufficient in number to include "legs".
hone	"light-coloured": tan- or light-coloured cylindrical stones, varying in cross-section from oval to circular (cf. ni hone, wanelabo keba)
igiri labo	"boy-water spirit": stone pestles of all shapes and sizes.
liru/liru kui	"liru-bone/real": a broad category referring to rough-surfaced spherical or slightly elongated stones.
nanabe	a general category employed for most carved stone figures, including anthropomorphs, birds, etc..
ni tangi	"sun-hat": stone mortars of all shapes and sizes.
ni habane	"sun-egg": smooth, black spherical stones, commonly 8-12 cm in diameter, employed in toro sorcery.
ni hone	see hone.
wane labo	stones associated with paired wane labo female water spirits
wane labo keba	"female water spirit-digging stick": cylindrical stones, similar in form to hone though usually "flatter" in section, and generally light green in colour.
wane labo andu	"female water spirit-breast": thin black glassy stones.

3. Lake Kubutu Cultural Heritage Site Categories

Eighteen categories of cultural heritage sites have been identified in the course of the PNG Gas Project and PNG LNG Project surveys of the Lake Kutubu region, occupied by Foi and Fasu speakers. Note that many individual sites can be classed under more than one category. A summary list of these sites is given below.

The different cultural heritage site categories overlap extensively – for example, a cave may contain burials and rock art, and be a sacred site in addition. The category under which a site has been listed in site surveys is usually the status first nominated in interviews for that site.

3.1 Ritual Site (Category 1)

Ritual sites are generally locations at which rituals were formerly performed. The visible or tangible evidence of their presence will often consist of a cave, a built structure, or certain tree and shrub species. The location of a ritual site is often restricted to certain categories of person, both from within and beyond the community.

The Ayahabo sites of the Lower Foi are an important example of a ritual site in the survey area. These sites consist of large fig (Ficus sp.) trees, often located well within the forest at some distance from settlements. It appears that there is only one such site per clan (or perhaps, per longhouse, formerly). Senior men would gather for Ayahabo ritual performances, together with leaders from allied clans, and one of them would detach a length of cane from the trunk of the tree and pull on it vigorously, calling out to the spirits. This action would cause large quantities of leaf and other material to fall, and make a great racket.

After this they would kill one or more pigs as a form of sacrifice. Rituals would take four days, and then the men would return on the fifth day. If successful, this regeneration or increase ritual would result in an improvement in fertility amongst people and animals, boosting the prospects for hunting and fishing. After a week or so, people would find their traps filled with game. All sorts of taboos had to be observed during the period of the ceremony, and anyone breaking them, man or woman, was killed. Ayahabo is also associated with the sequence of burial rites in which a finger of the deceased would be brought to the site. Mothers would leave offerings at the base of these large fig trees to guarantee that newborn children prospered – these offerings consisted simply of wrapped-up leaves. Dead infants, however, would be hung from fig trees in a bilum and left to rot.

3.2 Ceremonial Site (Category 2)

Ceremonial sites are distinguished from ritual sites in that their locations are not generally considered to be sacred beyond the immediate period and context of a ceremonial performance. Locations where dances were performed, or the bodies of slain enemy cooked and consumed, appear not to have been forbidden spaces during the periods between ceremonial performances.

3.3 Spirit Site (Category 3)

These sites are often regarded as sacred to a particular spirit, often in the form of a water feature such as a river or pool. Some spirit sites may be approached for their healing powers, while others are avoided due to their malevolent effects on trespassers. In most cases, appropriate behaviour is an important factor in determining the outcome of a visit to a spirit site.

3.4 Women's Site (Category 4)

Ritual or ceremonial sites at which performances or access were formerly or are still restricted to women.

3.5 Prayer Station (Category 5)

Christian-era ritual sites at which devotees fast and pray. These sites are often located on hill-tops or small islands, and are regarded as particularly important by the owning communities.

3.6 Waterfall Site (Category 6)

Natural waterfall sites, often imbued with additional significance through the part they play in local mythology.

3.7 Cave / Rockshelter (Category 7)

Any cave or rockshelter to which additional significance is attributed by virtue of its function as a sleeping location, campsite, flying-fox or swiftlet roost, or ossuary for human skeletal material. Note that repeated use of these sites has the effect of endowing them with further significance through their association with ancestors.

3.8 Burial (Category 8)

Any burial of human remains, whether in a cave, rockshelter or rock niche, or in a platform or on the ground in open country.

3.9 Rock Art (Category 9)

Sites containing human markings on the walls of caves, rockshelters or cliffs, or on boulders. The art can consist of either paintings, engravings or finger-fluting in calcified muds. In the Kutubu region, all of the known art is painted and is found in sites along the south-eastern shores of Lake Kutubu.

3.10 Settlement Site (Category 10)

Any site of a former semi-permanent settlement, often marked by particular tree species, such as marita ("red") pandanus, okari, breadfruit, ficus spp, and various other fruit and nut trees. Larger settlement sites are commonly located on dry, raised ground, such as clay ridges, near sago groves and freshwater sources. The focus of each settlement would formerly have been a men's longhouse, surrounded by smaller women's houses, with seasonal movement between the communal longhouses and dispersed homesteads (Langlas 1974).

3.11 Traditional Road (Category 11)

Traditional routes (Foi: iga), often with individual names, along which people travelled by foot between settlements and regions, usually for the purpose of trade and exchange but also for warfare. These routes link together numerous other sites, such as water sources, hunting camps and fishing spots.

3.12 Economic Site (Category 12)

A site associated primarily with subsistence activity, including important fishing creeks, sago groves and fresh water sources. Note that any such site will also have significance for a community in terms of its long association with ancestors.

3.13 Archaeological Site (Category 13)

Refers to sites and archaeological material in situ, identified through archaeological inspection of subsurface exposures, or excavation of stratified deposits.

3.14 Surface Artefacts (Category 14)

Individual stone or bone artefacts or groups of stone or bone artefacts found in an unstratified context on the surface.

3.15 Artefacts Held by Community Members (Category 15)

Artefacts (stone, bone or wood) that have been removed from their original find spots and are held or stored by community members.

3.16 Stone Source (Category 16)

Traditional sources of the material for flaked stone artefacts, whether quarries or stream-bed cobble sources.

3.17 Fossil Site (Category 17)

Find-spots for extinct fossil species, commonly consisting of the mineralised remains of various megafaunal species.

3.18 Other Sites (Category 18)

Sites not covered by any of the categories listed above. These should be described in detail, for inclusion in a revised list.

Table 4 below provides an example of the information that will be captured in various reporting forms that will be used during cultural heritage surveys and salvage excavation. These tables will be modified for each section to suit local conditions and archaeological finds.

Table 4: Reporting table to be completed during salvage excavation (1)														
Excavation Details														
XU	**SU**	**^{14}C Date (where applicable)**	**Mean Depth Below Surface at Top (cm)**	**Mean Depth Below Surface at Centre (cm)**	**Mean Depth Below Surface at Base (cm)**	**Mean Thickness of XU (cm)**	**Area (m^2)**	**Weight (kg)**	**Volume (m^3)**	**Weight of >2.1mm Non-Cultural Sediments (g)**	**Weight of >2.1mm Cultural Materials (g)**	**% >2.1mm Sediments Non-Cultural (by weight)**	**pH**	**Munsell**
TOTAL														

Table 4: Reporting table to be completed during salvage excavation (2)																																							
Excavated Finds																																								
Cultural Materials																																						**Non-Cultural Materials**	
XU	**Shell**		**Bone**		**Otoliths**		**Egg-shell**		**Crab**		**Seeds**		**Beads**		**Human teeth fragments**		**Human bone fragments**		**Red Ochre**	**Yellow Ochre**	**Charcoal**	**Undecorated Ceramic Sherds**		**Decorated Ceramic Sherds**		**Flaked Stone Artefacts**		**Glass**		**Plastic**		**Metal**		**…**		**Land Snail**	**…**
	g		**#**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**g**	**g**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**g**	**g**
TOTAL																																							

Table 4: Reporting table to be completed during salvage excavation (3)										
Excavated Shells										
XU	**Unidentified shell fragments (g)**	**(Bivalve Taxon Name …)**						**(Gastropod Taxon Name …)**		**Total non-land snail shell (g)**
		MNE: L valve, umbo	**MNE: R valve, umbo**	**MNI**	**Weight (g)**	**Whole paired (MNI)**	**Whole paired (g)**	**MNE: most common part (=MNI)**	**(g)**	
TOTAL										

Table 4: Reporting table to be completed during salvage excavation (4)				
Excavated Bones				
XU	**Unidentified bone fragments**	**Taxon …**		
	g	**MNI**	**NISP**	**g**
TOTAL				

Table 4: Reporting table to be completed during salvage excavation (5)																
Excavated Flaked Stone Artefacts																
	Raw Material …								**Raw Material …**							
XU	**Cores**		**Flaked Pieces**		**Flakes**		**Potlids**		**Cores**		**Flaked Pieces**		**Flakes**		**Potlids**	
	#	**g**	**#**	**g**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**#**	**g**	**#**
TOTAL																