



Chapter 20

Cultural Heritage Impact Assessment

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The Permit Application is to be lodged with the Conservation and Environment Protection Authority (“**CEPA**”), Independent State of Papua New Guinea.

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The information in the EIS that relates to Golpu Ore Reserves is based on information compiled by the Competent Person, Mr Pasqualino Manca, who is a member of The Australasian Institute of Mining and Metallurgy. Mr Pasqualino Manca, is a full-time employee of Newcrest Mining Limited or its relevant subsidiaries, holds options and/or shares in Newcrest Mining Limited and is entitled to participate in Newcrest's executive equity long term incentive plan, details of which are included in Newcrest's 2017 Remuneration Report. Ore Reserve growth is one of the performance measures under recent long term incentive plans. Mr Pasqualino Manca has sufficient experience which is relevant to the styles of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012. Mr Pasqualino Manca consents to the inclusion of material of the matters based on his information in the form and context in which it appears.

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The information in the EIS that relates to Golpu Ore Reserves is based on information compiled by the Competent Person, Mr Pasqualino Manca, who is a member of The Australasian Institute of Mining and Metallurgy. Mr Pasqualino Manca, is a full-time employee of Newcrest Mining Limited or its relevant subsidiaries, holds options and/or shares in Newcrest Mining Limited and is entitled to participate in Newcrest's executive equity long term incentive plan, details of which are included in Newcrest's 2017 Remuneration Report. Ore Reserve growth is one of the performance measures under recent long term incentive plans. Mr Pasqualino Manca has sufficient experience which is relevant to the styles of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012. Mr Pasqualino Manca consents to the inclusion of material of the matters based on his information in the form and context in which it appears.

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20. CULTURAL HERITAGE IMPACT ASSESSMENT

This chapter of the environmental impact statement (EIS) describes the methods used and summarises the key findings of the cultural heritage impact assessment.

The purpose of the assessment was to identify potential impacts to cultural heritage sites arising from Project construction and operation, propose management measures to address impacts, and to assess the significance of the residual impacts assuming the successful implementation of management measures proposed.

The assessment focused on impacts related to the construction and operation of Project infrastructure within the three cultural heritage study areas: the Mine Study Area, Infrastructure Corridor Study Area and the Coastal Study Area (refer to Chapter 13, Cultural Heritage Characterisation). Cultural heritage impacts are also likely to arise from the Project's resettlement program, however given the early stage of resettlement planning, a detailed understanding of cultural heritage impacts associated with the resettlement program remains subject to further studies and consultation with communities that may potentially be involved in resettlement programs. This chapter therefore provides a preliminary discussion of the types of potential impacts and proposed approach the Wafi Golpu Joint Venture (WGJV) would take to developing management measures for resettlement-related impacts.

This chapter is based on the Cultural Heritage Baseline and Impact Assessment report (Appendix U).

20.1. Approach to Impact Assessment

The impact assessment approach first involved identifying the cultural heritage significance of sites in a manner consistent with the Burra Charter (Australia ICOMOS Burra Charter, 2013). As described in Chapter 13, Cultural Heritage Characterisation, this was informed by consultation with local communities to identify cultural heritage sites and the social, spiritual and historical significance of those sites to communities.

The impact assessment approach then involved three steps:

- Identifying the potential nature of impact to a site, e.g., physical disturbance, damage or destruction, restriction of access to sites, visual modification of the site or surrounding landscape, or disturbance to ecosystems that could in turn affect the condition of sites and/or the ways that communities interact with sites.
- Determining the (high, medium, low) magnitude of impact through an assessment of the severity, geographical extent and duration of the impact
- Assessing the significance of potential impacts on cultural heritage sites using the matrix set out in Table 20.1. The 'significance of impact' to a site is determined by considering both the cultural significance of the site and the magnitude of potential impact on the site.

Table 20.1: Impact significance assessment matrix

Impact Magnitude	Cultural Heritage Significance		
	High	Moderate	Low
High	Extreme	Major	Moderate
Medium	Major	Moderate	Minor
Low	Moderate	Minor	Minimal

Characteristics of impact significance ratings are provided in Table 20.2.

Table 20.2: Impact significance rating characteristics

Impact Significance	Characteristics
Extreme	<ul style="list-style-type: none"> • Likely to result in major widespread community and stakeholder concern at the local, provincial and/or national/international level. • Affects the majority of the people in the area of influence. • The effect is very intense with people experiencing a rapid rate of change. The effect is immediate and/or endures for, and beyond, the duration of the activity or Project phase. • The effect significantly disrupts a cultural group's spiritual connection to land and in turn their spiritual identity and/or spiritual health and wellbeing. • Archaeological site conditions are destroyed such that potential understandings about people, places, processes or practices associated with the Project area are irrevocably lost.
Major	<ul style="list-style-type: none"> • Likely to result in a strong community and stakeholder reaction at the local, provincial and/or national level. • Affects a large number of people in the area of influence. • The effect is intense with people experiencing a relatively rapid rate of change. • The effect starts in a short time and/or endures for, and potentially beyond, the duration of the activity or Project phase. • The effect disrupts a cultural group's spiritual connection to land and in turn their spiritual identity and/or spiritual health and wellbeing. • The effect disrupts a cultural group's social connection to land which contributes to their cultural identity. • Archaeological site condition is damaged such that the ability to derive potential understandings about people, places, processes or practices associated with the Project area is reduced.
Moderate	<ul style="list-style-type: none"> • Could attract community and stakeholder concerns voiced at local and provincial levels. • Affects a moderate number of people in the area of influence. • The effect is moderate with people experiencing a moderate rate of change. • The effect is gradual and/or endures for the duration of the activity or Project phase. • The impact affects a cultural group's spiritual connection to land and in turn their spiritual identity. • The impact affects a cultural group's social connection to land which contributes to their cultural identity. • Archaeological site condition is damaged such that the ability to derive potential understandings about people, places, processes or practices associated with the Project area is somewhat reduced.
Minor	<ul style="list-style-type: none"> • May result in community and stakeholder concern voiced in a localised area. • Affects a small number of people in the area of influence. • The effect is not very intense with people experiencing a slow rate of change. • The effect is delayed, medium-term and/or confined to the duration of the activity or Project phase. • A cultural group's spiritual or social connection to the land, and therefore spiritual or cultural identity, is largely undisturbed or maintained. • Archaeological site condition is largely undisturbed resulting in little effect on the ability to derive understandings about people, places, processes or practices.
Minimal	<ul style="list-style-type: none"> • Unlikely to create any concern in the community and among Project stakeholders. • Affects a very small number of people in the area of influence. • The effect is not intense with people experiencing a very slow rate of change. • The effect is immediate or delayed, short-term and/or confined to the duration of the activity or Project phase. • A cultural group's spiritual or social connection to the land is preserved resulting in little effect or maintenance of their spiritual or cultural identity. • Archaeological site condition is preserved resulting in little effect on the ability to derive understandings about people, places, processes or practices.

Management measures were then proposed to mitigate impacts on cultural heritage sites that have the potential to be impacted by the construction and operation of Project infrastructure. These proposed management measures are to be discussed and agreed with the affected communities and the PNG National Museum and Art Gallery (NMAG) prior to implementation.

The impact significance assessment matrix (see Table 20.1) was also used to assess the potential residual impacts by assuming successful implementation of proposed management measures.

Management measures to address impacts arising from the resettlement program will similarly be developed and agreed with the affected communities and the NMAG.

20.2. Potential Impacts

There is potential for both recorded cultural heritage sites and sites which may be discovered in the course of Project activities ('chance finds') to experience impacts.

Potential impacts to cultural heritage sites in the Project Area may include:

- Physical disturbance
- Physical destruction
- Restriction of access to sites
- Physical modification of the site or surrounding landscape
- Disturbance to ecosystems that could in turn affect the condition of and/or communities' interaction with cultural heritage sites

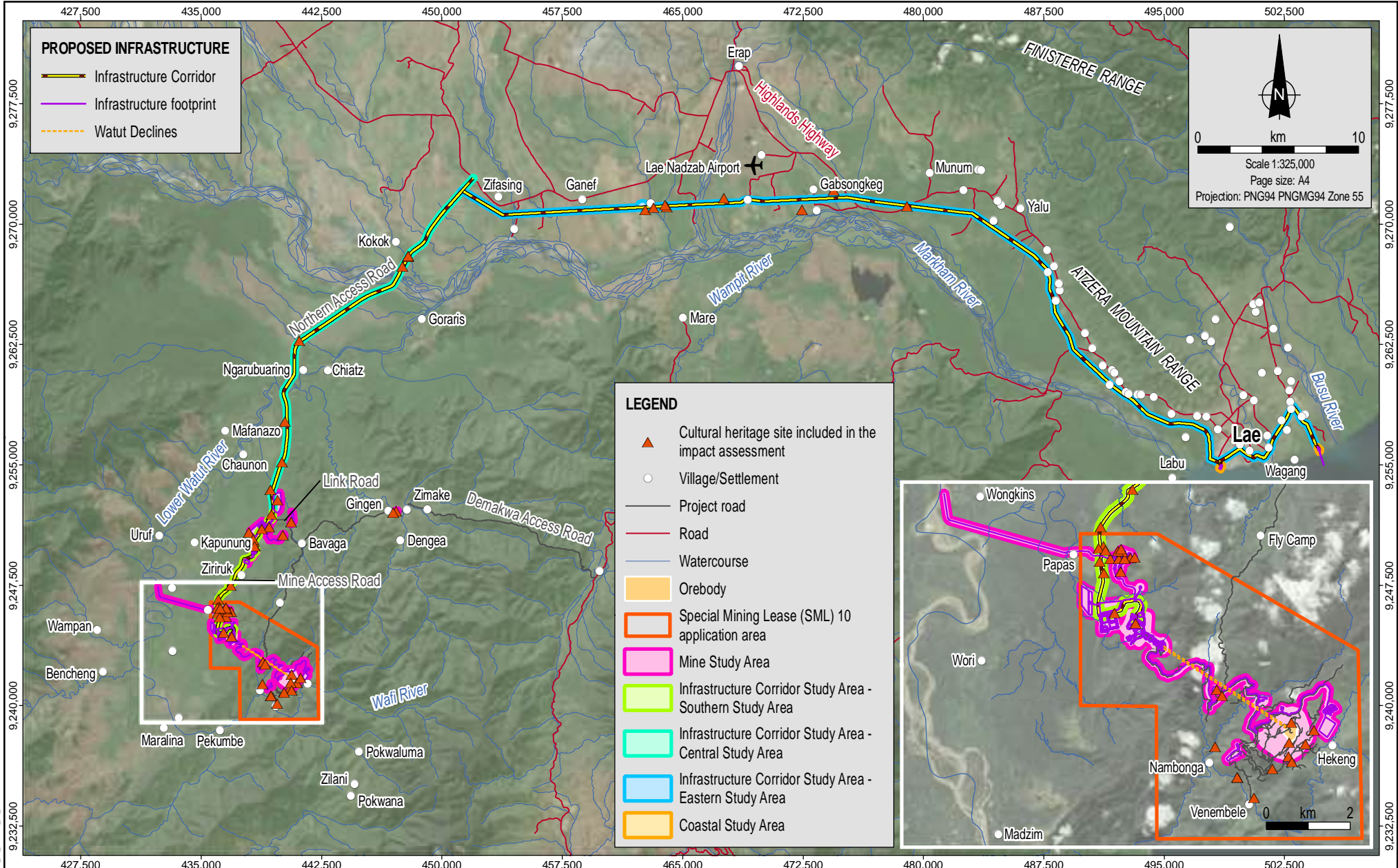
In the case of disturbance to ecosystems, of particular relevance is the effect of groundwater drawdown on cultural heritage sites that are associated with water sources (e.g., springs and creeks). Groundwater drawdown is principally related to the development of the declines and block caves, as described in Chapter 14, Physical and Biological Environment Impact Assessment.

In the case of restriction of access to sites due to the construction and operation of Project infrastructure, restrictions may also arise where villages or households are resettled.

20.2.1. Construction and Operation of Project Infrastructure

The Cultural Heritage Baseline and Impact Assessment (Appendix U) identified 60 cultural heritage sites that have the potential to be impacted by the construction and operation of Project infrastructure (Figure 20.1). Of these 60 recorded sites, 40 sites are located directly within the Project disturbance footprint; 15 are located within disturbance footprint buffers, and five are located in areas potentially affected by groundwater drawdown.

As noted in Chapter 13, Cultural Heritage Characterisation, buffers around Project infrastructure disturbance footprints were included in study areas (e.g., Infrastructure Corridor assumes 50m wide construction right of way buffered either side by a further 50m for a total Infrastructure Corridor Study Area width of 150m). These buffers were included to identify and acknowledge that where the construction and operation of Project infrastructure occurs within close proximity to a cultural heritage site, the potential for inadvertent impacts to the site is increased. The identification of potential impacts to the 15 recorded sites within buffers is therefore precautionary.



MXD Reference: 0520DD_10_GIS076_v01.3

Source:
 Recorded cultural heritage and study areas from ALA.
 SML and orebody from WGJV.
 Infrastructure and project roads from WGJV and Coffey.
 Roads and watercourses from NSQ.
 Imagery from ArcGIS Online (capture date unknown).



Date:
 13.06.2018
 Project:
 754-ENAUABTF100520DD
 File Name:
 0520DD_10_F20.01_GIS



Cultural heritage sites
 included in the impact assessment

Figure No:
20.1

The 60 recorded sites potentially impacted include 19 archaeological sites and 41 oral tradition sites. Table 20.3 summarises the cultural heritage significance ratings of the 60 recorded sites, according to cultural heritage study area. Two sites, Anga Masalai Tree (WG276) and Wames Story Site (WG319), are located in both the Mine Study Area and Infrastructure Corridor Study Area, however for the purpose this chapter are counted as Mine Study Area oral tradition sites.

Table 20.3: Cultural heritage significance ratings of potentially impacted sites

Cultural Heritage Significance	Oral Tradition Sites			Archaeological Sites		
	Mine Study Area	Infrastructure Corridor Study Area	Coastal Study Area	Mine Study Area	Infrastructure Corridor Study Area	Coastal Study Area
High	15	9	-	10	6	-
Medium	4	8	-	-	3	-
Low	3	2	-	-	-	-
Total	22	19	0	10	9	0

Oral tradition sites include 29 story sites, three burials, three camps, four former villages, one rockshelter and one subsistence/trade site. Twenty-four of these sites are rated of high cultural heritage significance based on information provided by communities. Sixteen archaeological sites are also rated of high cultural heritage significance, based on information provided by communities and the scientific characteristics (i.e., contents, condition and representativeness) of the sites.

Assuming that all 60 recorded sites experience impacts, the significance of these impacts, prior to the application of proposed management measures, is summarised according to cultural heritage study area in Table 20.4. Residual impacts remaining after the application of proposed management measures are discussed in the following section and shown in Table 20.5.

Table 20.4: Impact assessment ratings (pre-management measures)

Impact Significance	Oral Tradition Sites			Archaeological Sites		
	Mine Study Area	Infrastructure Corridor Study Area	Coastal Study Area	Mine Study Area	Infrastructure Corridor Study Area	Coastal Study Area
Extreme	13	2	-	9	-	-
Major	6	7	-	1	7	-
Moderate	2	9	-	-	2	-
Minor	1	1	-	-	-	-
Minimal	-	-	-	-	-	-
Total	22	19	0	10	9	0

Prior to the application of proposed management measures, sites rated as being of high cultural heritage significance that have the potential to experience an extreme impact include:

- Mine Study Area:
 - Sibal Sacred Site (WG026), identified by the Babuaf as a former village, and by the Hengambu as a place where ancestral spirits reside.
 - Gwavengo/Ngendakghoma II Rockshelter Site (WG040), which was used by Hengambu and Yanta hunters as an overnight camp, and features in Hengambu oral tradition of a significant historical expedition.
 - Seven Hengambu and Yanta *ples tambu* story sites located on Mt Golpu that have an association with springs, including Mea Gova Biangova Sacred Spring Site (WG043), Mea Gova Tongava Sacred Spring Site (WG044), Mia Yo Sacred Spring Site (WG060) and Mia Yo sites A-D (WG234-236 and WG238).
 - Beavemo Burial Site (WG045), which is located on Mt Golpu and holds significance to the Hengambu.
 - Mangese (WG121), which is a burial site located within a former Wampar village.
 - Sangia (WG261), which is a story site that marks the location of traditional fighting grounds where Towangola warriors fought with Markham River clans.
 - Anga Masalai Tree (WG276), which has high cultural heritage significance to the Babuaf and is used to educate Babuaf children about traditional values and lifeways.
- Infrastructure Corridor Study Area:
 - Fere C Archaeological Site (WG031), which is part of the Fere Cultural Landscape, which features in Babuaf migration stories.
 - Eight archaeological sites, including WSC1-1 (WG300), WSC1-2 (WG301), WSC1-3 (WG302), WSC1-4 (WG303), WSC1-4 (WG304), WSC2-1 (WG305), WSC2-2 (WG306) and WSC2-3 (WG207), located within the study area of the Fere Accommodation Facility. These sites, which feature ceramic rim and body sherds, stone artefacts and a stone axe-adze, were identified as holding high social significance to the Babuaf due to the connection they provide to the cultural group's ancestral past as pottery producers.
 - Fere Clay Source Site (WG308), a subsistence/trade site, from which the Babuaf source clay to make pottery to this day.
 - Litia Burial Site (WG327), which is the burial site of a Wampar woman named Litia, of the Chuaif clan.

Further details of the above sites were provided in Chapter 13, Cultural Heritage Characterisation. The above sites all have the potential to be impacted by vegetation clearance and ground disturbance (surface and subsurface) associated with infrastructure construction, with the exception of:

- Gwavengo/Ngendakghoma II Rockshelter Site (WG040), Beavemo Burial Site (WG045), Mea Gova Tongava Sacred Spring Site (WG044), Kelerel Grave Site (WG066) and Mia Yo D (WG238), which may be impacted by ground subsidence of Mt Golpu associated with block cave mining.
- Mea Gova Biangova Sacred Spring Site (WG043), Mea Gova Tongava Sacred Spring Site (WG044), Mia Yo Sacred Spring Site (WG060) and Mia Yo sites A-D (WG234-236 and WG238), which are located in the simulated dewatering zone and therefore may be impacted by groundwater drawdown.

No potentially impacted sites are located within the Coastal Study Area. This is due to changes that were made to the Project design to avoid potential impacts when the Hungkwangpup Story Site (WG342) was identified. The boundaries of the Hungkwangpup Story site were mapped in consultation with the local community and a buffer applied. The footprint of the Project was conservatively designed to avoid the site and the area in proximity to the site.

Similarly, the Infrastructure Corridor alignment initially intersected Fansun Story Site (WG325). Following the identification of the site, the Infrastructure Corridor alignment was moved 200 metres to the southwest to avoid this site.

20.2.2. Resettlement Program

The villages of Hekeng, Nambonga and Venembele, situated within the proposed Special Mining Lease (SML) 10, are intended to be relocated. The relocation of these villages has the potential to impact cultural heritage through:

- Restriction of relocated communities' physical access to, and the regularity of their engagement with, cultural heritage sites within SML 10. This is likely to include some graves and cemeteries.
- Physical disturbance or destruction of cultural heritage, or modification of its surrounding landscape, at proposed relocation sites and/or areas planned for associated infrastructure, e.g., Resettlement Road.

A full appreciation of potential cultural heritage impacts associated with the resettlement program is subject to further consultation and field assessment with the affected villages as resettlement planning continues.

20.2.3. Chance Finds

Due to the lack of surface visibility during field surveys and the potential for buried artefacts, opportunity exists to uncover further cultural heritage sites during construction. The potential for the discovery of further sites varies depending upon the nature of the cultural heritage site and the level of existing ground disturbance.

This likelihood was considered low with respect to:

- Mine Study Area – due to extensive community consultation during 2012-2016 field surveys.
- Infrastructure Corridor Central Study Area – due to community consultation and pedestrian field survey of the alignment during 2015-2016.
- Infrastructure Corridor Eastern Study Area – due to community consultation and pedestrian field survey of the Infrastructure Corridor alignment during 2017, including inspection by cultural heritage specialists of 46 test pit and eight bore hole locations along the alignment to gauge the potential for the discovery of subsurface archaeological materials.
- Coastal Study Area – due to extensive existing ground disturbance at the Port of Lae and consultation with the Wagang villagers regarding the siting of the Outfall Area and associated pedestrian field surveys.

This likelihood for additional cultural heritage sites, particularly oral tradition sites, was considered moderate for the Infrastructure Corridor Southern Study Area. This is due to this section of the alignment being opportunistically surveyed, and the predictive mapping model developed for the Mine Area indicating that cultural heritage sites are most likely to be found in this type of terrain, i.e., the alluvial swamps and meander floodplains of the

Watut River valley, and nearby low elevation mountains and foothills of the Watut Range (see Appendix 1 to Appendix U, Cultural Heritage Baseline and Impact Assessment).

20.3. Management Measures

Proposed management measures to minimise potential impacts to cultural heritage include:

- To the extent practical, situating Project components to avoid recorded oral tradition, historic and archaeological sites.
- Development and implementation of the Wafi-Golpu Project Cultural Heritage Management Plan (CHMP) (Attachment 5), which contains a suite of management measures pertaining to inductions, training, Project planning and design, ground disturbing works, site-specific management measures for recorded sites, and a procedure for chance finds.

Further details are provided below.

20.3.1. Avoidance through Design

Recognising that avoidance is the best means of reducing adverse impacts to cultural heritage, the WGJV has, in the first instance, used both desktop and field surveys to identify and subsequently avoid sites of importance to local communities through changes to the Project design.

Most recently, as discussed above, this included changes to the Infrastructure Corridor alignment to avoid Fansun Story Site (WG325), and to the Outfall Area to avoid Hungkwangpup Story Site (WG342).

Previously, significant recorded cultural heritage in the areas of Markham Gap, the Watut River floodplain near Madzim, and in and around Bavaga village had the potential to be impacted by proposed terrestrial tailings storage facilities in these locations. As previously described in Chapter 7, Assessment of Alternatives, the selection of deep sea tailings placement (DSTP) as the preferred tailings management solution for the Project avoids these impacts.

20.3.2. Cultural Heritage Management Plan

The Project CHMP (Attachment 5) has been prepared to guide the management of recorded cultural heritage sites and chance finds of cultural heritage during the construction and operational phases of the Project. The Project CHMP (Attachment 5) includes proposed management measures to address the potential cultural heritage impacts identified in Appendix U, Cultural Heritage Baseline and Impact Assessment.

The objectives of the Project CHMP (Attachment 5) are to:

- Provide all Project personnel with guidance and rules that will allow the Project to carry out its activities with due regard and respect for the cultural heritage of host communities.
- Wherever possible, design and locate activities to avoid disturbance to oral tradition, historic and archaeological cultural heritage sites.
- Manage unavoidable disturbance or destruction to the greatest extent in active collaboration with affected landowners.
- Manage WGJV responsibilities for cultural heritage sites:
 - In compliance with the State of PNG legislation

- In line with WGJV social performance responsibilities through the Social Responsibility Policy and Sustainable Business Management System (see Chapter 23, Integrated Management System)
- With guidance from the International Finance Corporation (IFC) Performance Standard (PS 8) (IFC, 2012) and International Council of Mining and Minerals (ICMM) Sustainable Development Framework (ICMM, 2015)
- Work with local communities in the management of cultural heritage sites

The Project CHMP (Attachment 5) provides for the protection and management of cultural heritage within, and in the immediate vicinity of, the Project Area. The plan restates the WGJV's practice of including cultural heritage management in Project planning and design and, to the extent practical, aligning or relocating Project infrastructure to avoid recorded sites where practicable.

The Plan contains:

- Standard management measures to be implemented by WGJV employees and contractors when undertaking Project activities. For example, when planning and designing infrastructure or conducting vegetation clearing, ground levelling, bulk earthworks and major excavations.
- Site-specific management measures, which are to be implemented by WGJV employees and/or contractors for individual sites that have the potential to be impacted by the construction and operation of Project infrastructure, and/or by Project-related resettlement.

20.3.2.1. Standard Management Measures

Standard management measures are already in place which provide for cultural heritage impacts to be considered and responded to when planning and undertaking activities in areas that have not previously been disturbed by the WGJV. The standard management measures within the Project CHMP (Attachment 5) include the following:

- Training and inductions:
 - Provision of cultural awareness and cultural heritage procedures training for relevant Project personnel and contractors including locations of and requirements for avoiding recorded sites, the identification of chance finds and implementation of the Chance Finds Procedure.
 - Stipulation of the requirement for avoidance of removal or interference with cultural heritage by unauthorised persons and development and application of a relevant procedure.
- Planning and ground disturbing works:
 - Requirement to obtain internal approval to conduct ground disturbing works, including cultural heritage clearance from external parties (e.g., landowners) as necessary. The permit for land disturbance places conditions on ground disturbing works, such as the requirement to undertake cultural heritage field surveys in any areas not previously surveyed, and/or the implementation of site-specific management measures as agreed with affected communities and the NMAG.
 - Requirement to consult with landowner custodians regarding the management of cultural heritage sites including endorsement prior to the disturbance of any sites.
 - In areas not previously surveyed, engagement of suitably qualified archaeologist(s) to undertake clearance surveys prior to ground disturbing works.

- Scheduling works to allow for proposed cultural heritage management measures to be employed ahead of ground disturbing works.
- Limiting vehicle movements off established roads and tracks.
- Provision of cultural heritage information to communities and consultation for ongoing management of sites where applicable, including understanding of WGJV's formal Concerns, Complaints and Grievances procedure should any disputes arise.
- Ground levelling, bulk earthworks and major excavations:
 - Conducting works in compliance with the conditions set out in the Permit for Land Disturbance.
 - Implementation of a procedure in the event of chance finds.
 - Limiting vehicle movements off established roads and tracks.
- Site-specific management measures for recorded sites potentially impacted by Project construction and operation.

Further details of site-specific management measures are provided below.

20.3.2.2. Site-Specific Management Measures

In addition to the standard management measures prescribed in the Project CHMP (Attachment 5), the plan sets out proposed management measures for sites that may be impacted by the construction and operation of Project infrastructure. These measures will be discussed and agreed with affected communities and the NMAG prior to implementation.

The proposed measures for each of the 60 potentially impacted sites are presented in the Project CHMP (Attachment 5).

Proposed site-specific management includes one or more of the following measures for each site and selection of measures is based on the site type and potential impact to that site:

- Identifying the site boundary and erecting a protective barrier and/or implementing other protective measures such as briefing staff and contractors on site protection requirements and circulating maps with GPS references to relevant personnel, during daily toolbox meetings
- Recording of oral traditions by a qualified anthropologist in accordance with any community preferences regarding public disclosure
- Confirmation of a site's boundary and salvage collection of surface artefacts and/or salvage excavation by a suitably qualified archaeologist/anthropologist in accordance with the method set out in the Project CHMP
- Culturally and legally sanctioned exhumation and relocation of skeletal remains
- Assist relevant clans or village communities with culturally appropriate ceremonies as required prior to construction

20.3.2.3. Resettlement Program

Further consultation with affected communities and field assessment is required to identify cultural heritage sites that may be impacted by the relocation of villages. Sites may be located either in the proposed SML 10 or the proposed resettlement areas. Site-specific management measures will be agreed for impacted sites with the affected communities and the NMAG. These agreed measures will then be incorporated into future updates to the Project CHMP (Attachment 5).

20.3.2.4. Chance Finds

The Chance Finds Procedure contained in the Project CHMP (Attachment 5) sets out the actions to be taken in the event that possible cultural heritage sites or skeletal remains are uncovered in the course of Project activities. In summary, this process involves ceasing work in the immediate vicinity of the potential site, investigation and evaluation of the cultural significance of the site by a suitably qualified archaeologist/anthropologist, and site management commensurate with the site's significance, including involvement of the NMAG where a site is considered to have high cultural heritage significance. The requirements of the procedure will be communicated to Project personnel and contractors during inductions and thereafter on a regular basis, e.g., during toolbox meetings. This will include informing Project personnel and contractors about the types of cultural heritage sites that may exist within disturbance areas which, if uncovered, will trigger the implementation of the Chance Finds Procedure.

20.4. Residual Impacts

The application of site-specific management measures contained in the Project CHMP (Attachment 5) aims to avoid or reduce impacts on recorded cultural heritage and chance finds.

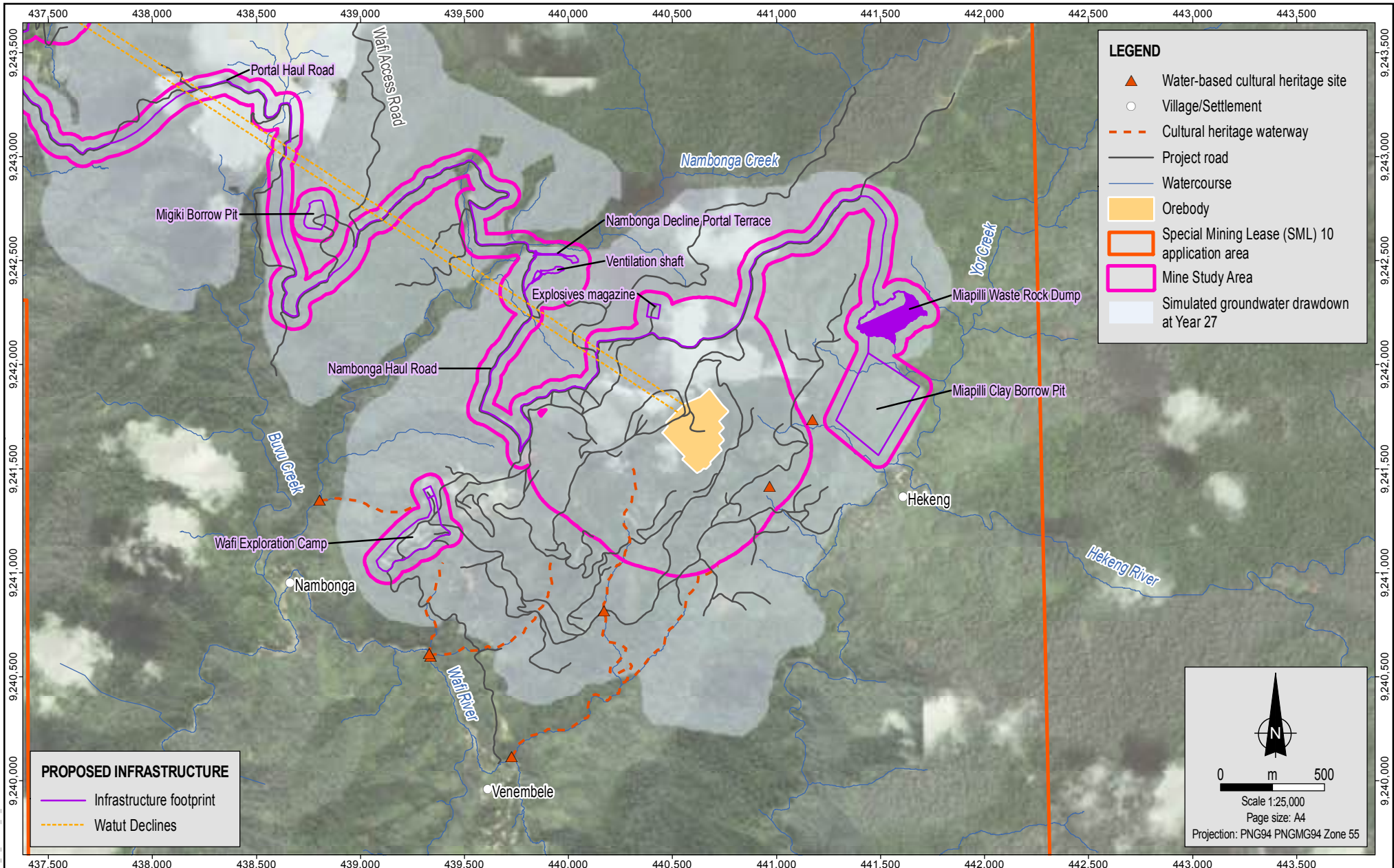
20.4.1. Recorded Sites

This section presents the findings of the residual impact assessment for the 60 sites potentially impacted by the construction and operation of Project infrastructure assuming successful implementation of site-specific management measures proposed in the CHMP (Attachment 5). These management measures will be finalised in consultation with landowners and the NMAG prior to implementation.

In every instance where a recorded cultural heritage site would be impacted by Project activities, the application of proposed management measures reduced the magnitude of the impact by at least one rating level, and in most instances by two or more rating levels. The residual impact assessment determined that no recorded cultural heritage site experienced a residual impact rated greater than 'major', with the number of 'extreme' impacts reduced from 24 (prior to mitigation) to zero (following mitigation).

The seven sites with a residual impact of 'major' (reduced from 'extreme' through implementation of measures such as recording of oral traditions and offering to assist communities with culturally appropriate ceremonies prior to the construction of the declines) include the Hengambu and Yanta *ples tambu* story sites located on Mt Golpu that have an association with springs. As all sites are located in the simulated dewatering zone, these sites may be unavoidably impacted by groundwater drawdown (Figure 20.2). This includes the Mea Gova Biangova Sacred Spring Site (WG043), Mea Gova Tongava Sacred Spring Site (WG044), Mia Yo Sacred Spring Site (WG060) and Mia Yo sites A-D (WG234-236 and WG238) (refer to Appendix F, Groundwater Management and Modelling of Inflows to Golpu Underground Mine and Appendix U, Cultural Heritage Baseline and Impact Assessment). Two of these sites, Mea Gova Biangova Sacred Spring Site (WG043) and Mia Yo D (WG238), may also be affected by the subsidence of Mt Golpu.

Ongoing monitoring will be undertaken during construction and operation to verify whether groundwater drawdown and ground subsidence occur in the manner predicted; refer to Chapter 14, Physical and Biological Environment Impact Assessment, Section 14.3, and Attachment 2, Conceptual Closure and Rehabilitation Plan.



MXD Reference: 0520DD_10_GIS077_v0.3

Source:
 Cultural heritage sites and waterways from ALA,
 Watercourses, SML and orebody from WGJV.
 Villages, infrastructure and project roads from WGJV and Coffey.
 Imagery from WGJV (capture date 2016).



Date:
 06.06.2018
 Project:
 754-ENAUABTF100520DD
 File Name:
 0520DD_10_F20.02_GIS



**Water-based cultural heritage sites
 predicted to be impacted
 by groundwater drawdown**

Figure No:
20.2

All other cultural heritage sites listed in Section 20.2.1 with a high cultural heritage significance rating are anticipated to experience a ‘moderate’ residual impact (reduced from ‘extreme’) following the implementation of proposed management measures. Furthermore, no impacts (reduced from ‘major’ and ‘moderate’) are expected to the 15 cultural heritage sites located in Project infrastructure disturbance footprint buffers following the implementation of proposed management measures, e.g., erection of protective barriers.

Table 20.5 provides a summary of the significance of impacts to the 60 identified sites prior to and following the application of proposed management measures.

Table 20.5: Summary of residual impacts

Impact Significance	Oral Tradition Sites		Archaeological Sites	
	Pre-Mitigation Impacted Sites	Post-Mitigation Impacted Sites	Pre-Mitigation Impacted Sites	Post-Mitigation Impacted Sites
Extreme	15	0	9	0
Major	13	7	8	0
Moderate	11	14	2	10
Minor	2	8	0	3
Minimal	0	3	0	0
Impacts Avoided*	N/A	9	N/A	6
Total Sites	41	41	19	19

20.4.2. Chance Finds

Implementation of the WGJV’s Cultural Heritage Chance Finds Procedure, which is included in the Project CHMP (Attachment 5), should minimise adverse impacts to previously unrecorded cultural heritage sites. The extent to which impacts can be minimised will depend on the specific nature of sites uncovered and the Project activity that led to their discovery.

20.5. Monitoring and Reporting

As described in the Project CHMP (Attachment 5), regular archaeological and cultural heritage monitoring will be undertaken which includes:

- Confirming that the Project CHMP (Attachment 5), including the site-specific management measures agreed with local communities and the NMAG, are implemented. This is to address both sites affected by Project infrastructure and resettlement activities.
- Routinely inspecting recorded archaeological and other cultural heritage sites in the Project Area to confirm they are managed as agreed.
- Ongoing liaison with local communities regarding cultural heritage issues, including receipt of complaints through the Concerns, Complaints and Grievance Procedure related to disturbance of oral tradition, historic and archaeological cultural heritage sites.
- Undertaking performance audits to evaluate the effectiveness of management measures.

Monitoring activities will be at their most intensive at any time when new ground disturbance occurs, irrespective of whether this is during the construction, operation or closure of the

Project. This includes, for example, the establishment of roads and infrastructure, when the risk of physical disturbance of sites is highest.

The WGJV will report to the Director of NMAG and the Managing Director of the Conservation and Environmental Protection Authority (CEPA) in accordance with relevant permit conditions and as per legislative requirements. Reporting to landowner communities will be as per the requirements of agreements with those communities and be guided by IFC PS8.

20.6. References

Australia ICOMOS. 2013. The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013. Australia ICOMOS Incorporated.

ICMM. 2015. Sustainable Development Framework, International Council on Mining and Metals, London, United Kingdom, viewed 28 July 2015, <https://www.icmm.com/our-work/sustainable-development-framework/10-principles>.

IFC. 2012, IFC Performance Standards on Environmental and Social Sustainability, IFC, Washington DC, viewed 20 August 2015, http://www.ifc.org/wps/wcm/connect/115482804a0255db96fbfd1a5d13d27/PS_English_2012_Full-Document.pdf?MOD=AJPERES.