Report

Papua New Guinea LNG Project

Independent Environmental and Social Consultant

IESC - PNG LNG Field Monitoring Report

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ABBREVIATIONS AND ACRONYMS

ECADR	Alternative Dispute Resolution
ALS	Alternative Livelihood Strategy
AWPAR	Angore Well Pad Access Road
asl	Above sea level
bbl	Barrel
BIMP	Biodiversity Implementation and Monitoring Program
BRC	(New Guinea) Binatang Research Centre
BS	Biodiversity Strategy
BVG	Broad Vegetation Group (or Broad Vegetation Management Group)
CA	Community Affairs
CBD	Convention on Biological Diversity
CBO	Community Based Organization
CDS	Community Development Support
CEPA	Conservation and Environment Protection Authority
CEXIM	Export-Import Bank of China
CH	Critical Habitat
CLIP	Community Livelihood Improvement Project
COH	Culture of Health (EMPNG Program)
CoV	Co-Venturers
CP	Cathodic Protection
CTA	Common Terms Agreement
CV	Check valves
DPE	Department of Petroleum & Energy
E&S	Environmental and Social
EC	Enterprise Centre
ECA	Export Credit Agency
ECCP	Enhancing Conservation Capacity Program
EHS	Environmental Health & Safety
EIS	Environmental Impact Statement
EM	ExxonMobil
EMP	Environmental Management Plan
EMPNG	ExxonMobil PNG Limited (formerly EHL – Esso Highlands Limited)
EQR	Earthquake Recovery
ERP	Emissions Reduction Plan (ExxonMobil Program)
ESMP	Environment and Social Management Plan
ESMS	Environmental and Social Management System
GBIF	Global Biodiversity Information Facility
GIIP	Good International Industry Practice
GoPNG	Government of Papua New Guinea
H&S	Health and Safety
HGCP	Hides Gas Conditioning Plant
HGDC	Hides Gas Development Company
HWMF	Hides Waste Management Facility
IESC	Independent Environmental and Social Consultant
IFC	International Finance Corporation
ISOS	International SOS

JBIC	Japan Bank for International Cooperation
Km	Kilometer
KP	Kilometer Pipeline
NBSAPL&CA	Land and Community Affairs
LANCO	Landowner Company (companies created to support PNG LNG)
LI	Linear Infrastructure
LK	Lake Kutubu
LKEF	Lake Kutubu Environment Foundation
LNG	Liquefied Natural Gas
LOBID	Landowner Beneficiaries Identification
LTI	Lost Time Incident
M&E	Monitoring and Evaluation
METT	Management Effectiveness Tracking Tool (World Bank/WWF)
MLV	Main Line Valves
MOC	Management of Change
MOH	Medicine and Occupational Health
MOU	Memorandum of Understanding
MTA	Million tons per annum
NAQIA	National Agriculture Quarantine and Inspection Authority
NBSAP	National Biodiversity Strategy and Action Plan
NC	Non-Conformance or Non-Compliance
NCCC	National Content Coordination Committee
NEXI	Nippon Export and Investment Insurance
NGO	Non-Governmental Organization
NNL	No Net Loss
NODs	Notice of Detentions (re NAQIA import inspections)
NRPIP	National Ranger Program Implementation Plan
NRPSP	National Ranger Program Strategic Plan
O&M	Operation and Maintenance
OIMS	Operations Integrity Management System
OSL	Oil Search Limited
P1, P2, etc.	Priority 1 weed, Priority 2 weed, etc.
PA	Protected Area
PCS	Pre-Construction Survey
PDL	Petroleum Development License
PIA	Project Impacted Areas
PMA	Program Monitoring Activity
PNG LNG	Papua New Guinea Liquefied Natural Gas Project
PS	Performance Standard
Q	Quarter
RAP	Resettlement Action Plan
RoW	Right-of-Way
SACE	Servizi Assicurativi del Commercio Estero
STP	Sewage Treatment Plant
TOR	Terms of Reference
TRIR	Total Recordable Incident Rate
TSS	Total suspended solids
TVET	Technical, Vocational Education and Training
TWM	Total Waste Management

UA	Upstream Area
USEXIM	Export-Import Bank of the United States
VLO	Village Liaison Officers
VMP	Vehicle Monitoring Plan
WCS	Wildlife Conservation Society
WMA	Wildlife Management Area
WMZ	Weed Management Zone
WP	Wellpad

EXECUTIVE SUMMARY

This report represents the 21st field monitoring and the 24th post-financial close review of the Papua New Guinea Liquefied Natural Gas (PNG LNG) Project with ExxonMobil PNG Limited (EMPNG) as the Operator made by RINA Consulting S.p.A. of Genoa, Italy serving in the role of the Independent Environmental and Social Consultant (IESC) on behalf of Export Credit Agencies (ECAs) and Commercial Banks providing Project financing (Lenders). The review was based on the documentation provided to the IESC as well as field observations.

2024 was another good year for production, with 8.1 million tons (MTA Eq) and 108 LNG cargoes loaded and 98.6% uptime. It should be recalled that the project was defined to the IESC in 2009 to be a development of 6.3 MTA Eq, so current production continues to be significantly more than originally projected. A contributor to the good performance was the startup of Angore production in Q4 2024. The new well F2 on Hides Ridge was spudded August 2024 and being dismantled at the time of this visit. The effort associated with the recovery from the M = 7.5 February 2018 earthquake is still ongoing. As of December 2024, U$S 543.5 million has been spent out of an estimated cost of U$S 585.5 million. Work is forecasted for completion in May 2025, the same schedule as predicted last year.

Environmental and Social Management System

The Environmental and Social Management System (ESMS) is a mature and active System. EMPNG continues to operate within their Production Environmental and Social Management Plan (ESMP) implemented through three Environmental Management Plans and seven Social Management Plans. EMPNG recognizes that the ESMP needs to be revised to reflect changes to operational procedures and the Environmental Permit with CEPA and this effort has started. Since the last IESC reporting period there have been no Lender-Reportable (Class II) MOCs reported, but IESC recommends that at least one be initiated to reflect the *de facto* Government takeover of the Angore Project roads (see below).

IESC also notes that the change in noise standard at the LNG Plant fenceline (made as a change to the Environmental Permit with CEPA) should also have been a Lender-reportable MOC as one of the definitions of a Class I MOC is a change to Project standards.

The Angore Access Roads connecting Well Pad C with Well Pads A and B (about 3.5 km of road in a previously undeveloped area) appear to now be public roads with Government maintenance and associated development. Two quarries were observed to be in development and power lines were in the process of being strung along the roads and the overall encroachment is considered an outcome of enhanced access from an EMPNG road. Road monitoring apparently did not inform EMPNG management that the Government had started activities and IESC considers this to be a failure of the ESMS and a Level II Non-Compliance has been assigned. Expectations from the Angore EMP were that monitoring for third-party activities would take place and that disturbed areas no longer used by the Project would be reinstated, in this case abandoned Well Pads A and B (about 9 Ha of land). IESC recognizes that there are complex factors related to security and community expectations that have prevented fulfillment of the EMP commitments, but EMPNG should have evaluated the consequences and potential mitigations of a Government takeover in a risk assessment followed up by a Management of Change procedure should it not prove possible to fulfill Project commitments. IESC believes this process should still be followed and discussions held with the Government to try to minimize environmental impacts of the encroachment.

There are two areas of biodiversity impact management where the current Upstream EMP is either out of date, or the reality on the ground has never met EMP requirements: access controls and invasive species. EMPNG should raise MoCs for discrepancies to fully understand the implications of non-compliance, and/or should revise the EMP accordingly having considered such implications. See discussion of ecological management and biodiversity for more detail.

At the time of the last IESC field visit the vacancies identified in February 2023 visit had been filled, but over the course of 2023 the lack of staff did impact the Project's ability to comply with ESMP commitments, especially with respect to biodiversity. This year we see that the staff doing the work on the ground have been stable over the past year and EMPNG has a better capacity to do work than we saw last year. Current staffing looks to be adequate to fulfill Project commitments.

A topic reviewed in detail in the 2023 IESC report was the identification and management of an "Associated Facility" and the issue was assigned a Level I Non-compliance. What we expected to see in 2024 was that EMPNG would have identified potential Associated Facilities, reviewed their operations and management, and undertaken a risk assessment to determine if EMPNG needs to exert influence to ensure the operations are undertaken safely and in reasonable compliance with environmental, social, and labor standards. This effort was not undertaken, and a Level II Non-compliance was assigned. During this visit IESC was presented with the identification of Associated Facilities and key components of the supply chain, and the procedures followed to improve their E&S performance. A finding this trip, however, is that EMPNG needs to follow-up the closure of Associated Facilities, and not just engage with the third-party operators when the Associated Facility is being used. The subject of Associated Facilities was

identified in 2023 with the mismanagement of the Para Quarry near Hides, which was closed in 2023 due to "community concerns." During this visit the Para Quarry was looked at and found to be visited by members of the local community. As closed quarries should never have public access, IESC has opened the observation that EMPNG needs to work with HESL (the quarry operator) to undertake a risk assessment and at least come up with a solution to prevent public access.

Pollution Prevention

EMPNG continues to monitor Environmental Compliance Incidents (ECIs) and EMP non-conformances (NCs), which indicates that the Environmental Management System is healthy. There were no ECIs recorded in 2024. The discharge of foam and sediment from the blooie pipe during Angore drilling in March 2023 was reviewed in our last monitoring visit and our understanding is that no long-term ecological impacts occurred. The discharge of foam and sediment from the blooie pipe during F2 drilling also occurred. We did not see any reporting of this, but the discharge was obvious from our walkover at F2. IESC informed EMPNG that the lack of ecological impact from this discharge should also be confirmed.

Waste and Water Management

Overall, there was a decrease in Upstream waste generated in 2024 with the completion of the Angore project. At the LNG Plant waste volumes have stabilized reflecting routine base operations and continued identification of qualified third-party waste management facilities. A milestone event that took place in 2024 was the completion and use of the third-party TWM landfill at Roku near the LNG Plant. TWM fits the definition of an "Associated Facility" as they were created to support EMPNG and EMPNG still represents about 65% of their business, although this percentage is slowly decreasing as they are picking up new clients. Restricted waste can now be landfilled at the TWM facility and the landfill cell at the LNG Plant can manage non-hazardous waste. TWM is managing the demolition of the old Camp B at the LNG Plant by shredding and sorting the demolition debris such that nearly 90% of the waste can be recycled. This is a major improvement from what took place with the demolition of the work camps around the HGCP where the demolition debris was landfilled at the HWMF at Kopeanda.

An issue with the use of the TWM waste management facility at Roku is emissions from the hazardous waste incinerator, used by EMPNG for the disposal of medical and food waste, representing about 8% of the waste stream from the LNG Plant. TWM personnel believe their incinerator is the best available in PNG, but stack emissions testing show levels of dioxin and furans above EU standards (although within most other published standards) and they recognize the incinerator is aging. Another area where the TWM facility could be improved is with respect to the treatment of amine contaminated water from the LNG Plant and e-waste. EMPNG exported 64 tons of amine and e-waste for overseas treatment/disposal in 2024, representing a significant cost. IESC has suggested on more than one occasion that EMPNG consider helping TWM make upgrades to their facility as a community development support project. Having TWM achieve international standards not only helps EMPNG but would represent a milestone achievement for PNG as a country.

Wastewater continues to be well managed. At the LNG Plant the Unidro STP was refurbished in February 2023 and continues to operate normally. The Toray STP is aging and had an TSS exceedance due to poor filtration of the effluent in the permeate tank caused by congested filter membranes. A new STP (750EP) that will replace both existing STPs is a 2025 Goal for the LNG Plant. There were three non-conformances with the Upstream STPs. The HGCP plant had good performance with the exception of an excursion of Ammonia-N after a sludge removal pump clogged, resulting in high biomass in the effluent. Two observed exceedances of Ammonia-N were measured at the Hides Wellpad F2 Drilling Camp STP, both events relating to delay in sludge removal after Sludge Dewatering Plant was taken offline for maintenance. These excursions were minor.

Groundwater monitoring around the HGCP and the LNG Plant continues to show no evidence of groundwater contamination. Conversely, at the Hides Waste Management Facility (HWMF), evidence of infiltration of leachate from the facility has been recorded since 2014 as reflected in groundwater chemistry. IESC has repeatedly asked that EMPNG conduct a risk assessment to evaluate the potential consequences of this leakage. A risk screening was undertaken consistent with ExxonMobil's OIMS management system in June 2024 with the conclusion that the risk is low with no further action required. IESC agrees and considers the matter closed, with the note that monitoring should continue.

Hazardous Materials Management and Spill Prevention

Hazardous materials management practice is undertaken in accordance with GIIP. Spills continue to be consistently recorded, and their causes investigated, and procedures developed to minimize future spills. There was a single "corporate reportable" diesel fuel spill from a leaking fuel line at the HGDP estimated to have been a loss of about nine barrels. This spill was managed by the Emergency Response Team and was cleaned up with no evidence of environmental impact or community complaint.

Air Quality and Noise

Substantial effort is being placed in the reduction of flaring. Flaring emissions continue to be reduced at both the LNG Plant and HGCP and 2024 set the annual record at HGCP for the lowest amount of flaring due to both ongoing flare reduction efforts and a reduced amount of downtime. A monthly record for the least amount of flaring was set at the LNG Plant in June 2024. This effort supports ExxonMobil's 2030 Emission Reduction Plan (ERP). Stack emissions testing was completed in Q1 2025 at HGCP and LNGP by Assured Environmental Pty Ltd. Results from their draft reports show 100% compliance with Project commitments.

Noise monitoring was undertaken in 2024 with no problems reported, with the note that the standard at the point of compliance at the LNG Plant (fenceline) has been changed from the residential standard of the IFC General EHS Guidelines to the industrial standard. As noted above, this should have been an MOC reviewed by the IESC. Nevertheless, IESC notes that fenceline noise measurements were obtained at the LNG Plant from only two locations. Measurements from 11 locations were measured by SLR Consulting Australia Pty Ltd on behalf of Tetra Tech Coffey for ExxonMobil in 2023 and this identified nighttime compliance problems with the residential standard, which resulted in the change to EMPNG's Environmental Permit in 2024. The detailed modeling of the PNG LNG Plant in this study identified borderline compliance issues at residences north of the PNG LNG fenceline. Monitoring for an industrial standard at the fenceline does not determine if there are any problems where people live. IESC requests a more detailed review of EMPNG's noise compliance, in particular as reflected in measurements from the nearest residential receptors.

Erosion and Sediment Control

The effort associated with the recovery from the M = 7.5 February 2018 earthquake (EQR project) is nearing completion. As of December 2024, U$S 543.5 million has been spent out of an estimated cost of U$S 585.5 million. Work at Hides is complete; pipeline RoW planned completion is May 2025, consistent with the schedule last year.

With respect to erosion and sediment control, Komo and Hides both look excellent, the result of good engineering, construction, and Mother Nature adding a lot of stabilizing vegetation. Numerous locations along the RoW where the earthquake recovery projects are complete were also visited and the erosion and sediment controls are working well with Mother Nature also playing a big role in preventing erosion along the RoW.

Ecological Management and Biodiversity

Staffing

The Biodiversity Team staffing challenges reported over the last few years have now been resolved. Those incumbents reported as new in positions last year are still in post, and there has been a period of relative stability and mentoring.

Biodiversity strategy: PS6-relevant incidents, implementation of the mitigation hierarchy and monitoring

EMPNG has continued to aim for compliance with the 2006 version of the IFC PSs due to the date that the loan was signed. According to the Critical Habitat assessment undertaken around the time of the loan, the whole area was deemed to be Critical Habitat. Critical Habitat may include both natural and modified habitat and may include some areas of particularly high biodiversity value. EMPNG should caution against the use of the term 'brownfield' (e.g. for the area Angore to MLV1) as this will give a false impression that the area is not one of outstanding, international biodiversity value. If EMPNG wishes to discuss amending their E&S compliance regime to the 2012 version of the Performance Standards with the potential to determine Critical Habitat on a more granular area of assessment, Lenders would no doubt be willing to discuss this further.

The IESC has observed several areas where impact mitigation approaches and activities do not align completely with the requirements of the EMP. Observations are noted specifically on induced access controls and weed control areas in specific sections presented below and in the Issues Table

Demonstrating avoidance of any construction impacts on stream conditions is key to preservation of upland streams and stream refuges in unstable landscapes, two of EMPNG's focal habitats. To understand whether impacts were being avoided and/or rate of recovery in affected freshwater ecosystems is acceptable, EMPNG has undertaken freshwater ecology macroinvertebrate surveys at a number of sites over repeated years. Information on freshwater ecologic surveys has not been presented since 2021, when the 2020 surveys were presented. Results indicated that most sites had shown some recovery since the construction phase, despite an increase in clay and silt fractions observed at all sites downstream of both Komo and HGCP. All three sampling sites downstream of Komo and HGCP were still considered 'impacted' although tracking closer towards reference site conditions. At the time of the 2020 sampling it was understood that periodic freshwater ecology monitoring was meant to continue. In 2023, EMPNG stated that freshwater ecology surveys were planned for 2023 or 2024. In 2024, EMPNG reiterated their intention to undertake such surveys, including around Angore wellpad-C once drilling was completed. Considering the extent of potentially impactful construction and stabilization work undergone since the last surveys, the IESC

considers that demonstration of avoidance is still an important deliverable during and following such earthworks – an Observation is noted.

Some highlights on the biodiversity monitoring program are below, but see report Section 5.2.2.2 for further detail:

- ✓ No update was provided on analysis of satellite imagery as a fresh imagery capture and analysis of the 2024 images is still underway. The Guidelines produced to clarify the attribution of indirect Project impacts of land use change have not been applied retrospectively; IESC opinion is that doing so would help EMPNG to understand any gaps in past attribution where indirect land-use change had not been captured as Project-related;
- ✓ The 2023 biodiversity surveys rescheduled for mid-2024 were undertaken successfully and the report will be made available at the end of 2Q 2025. The draft 10yr review will include an assessment of PMA3 findings to date, a review of objectives, and way forward.
    - Previous PMA-3 surveys had observed an increased prevalence of feral dog predation and hunting pressure over successive survey years, noting that hunters were preferentially using the pipeline corridor for accessing hunting grounds that might otherwise have been more difficult to target. Due to delays in undertaking any sort of review, the IESC raised an Observation in the Issues Table (M22.3) to flag that more urgency was required in completing this work; in IESC opinion the timescale from observation/specialist recommendation to characterizing the threat to addressing through enhanced mitigation measures was not cognizant of the potential threats posed to threatened species by this enhanced access. At the time of this visit, there was no information on whether this work was undertaken or how any findings can be used to address hunting threats from pipeline-enhanced access. Observation M22.3 is retained for future review.
- ✓ EMPNG presented their assessments of the biodiversity 'gained' from the offset programs to date for each of the three elevation zones; there was no change from last year. Gain is being calculated from averting losses, i.e., protecting areas from threats that might have occurred were there to be no company-secured protection. The gain claimed by averted loss can be highly uncertain and inadvertently overestimated. Support to conservation groups such as the Lake Kutubu WMA Committee and the Lower Kikori Conservation Deed holder groups is highly valuable, but a claim to averting predicted losses should be backed up by ongoing demonstration that losses have not continued during the period of support, and ideally that habitat condition is improving. This should lead to EMPNG's claim of biodiversity gain being more defensible.

Some highlights on the biodiversity offset program are below, but see report Section 5.2.2.3.1 for further detail:

- ✓ EMPNG has reviewed the support to PNG's NBSAP and now report additional elements. They have supported CEPA in socializing the PNG Protected Area (PA) Policy 2014, and the new PA Action 2024 – this has enabled direct engagement with various conservation stakeholders across multiple meetings.
- ✓ Support to New Guinea Binatang Research Centre[1] (BRC) in building capacity of rangers continues, and in 2024 directly supported the sponsorship of 20 trainee conservation rangers to acquire international tropical ecology skills and ranger training. This program is directly empowering rangers, some of whom work in conservation programs being implemented through EMPNG's biodiversity offset program. In addition, EMPNG has participated in the workshop for the establishment of the National Rangers Association of PNG.
- ✓ Supporting protected areas for conservation gain:
    - Lower elevation zone offset: EMPNG's program is designed to enable the creation of new community-based, regionally gazetted protected area(s) in the Lower Kikori. Progress continues and the Community Conservation Areas proposed to date represent over 27,623.5 Ha of wetlands committed to conservation by 11 communities. Four additional communities have completed resource mapping during 2024 and are progressing through the process for development of community agreed Conservation Deeds. EMPNG noted again that program implementation will need to be reassessed in light of the requirements from the PA Policy and new PA Act.
    - Mid-elevation zone offset: The pipeline RoW passes through the Lake Kutubu Wildlife Management Area (WMA), therefore triggering PS6 compliance regarding protected areas and EMPNG has a number of responsibilities to ensure biodiversity values are enhanced. They have worked with the LK WMA Committee for many years.
        - The IESC is sad to report that the LK WMA Chairman, Lawrence Kage, was killed in March 2025. Lawrence's legacy will continue through the work of the LK WMA Committee.

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[1] BRC supports EMPNG as service provider on a number of biodiversity work programs, including regeneration & weed audits.

  - PNG's new Protected Area Act requires changes in the requirements for new and existing PA establishment and registration, and therefore EMPNG's biodiversity offset work at LK WMA will need to adapt. EMPNG's support to the development of a management plan through the now more formalized, structured process will be key to delivering necessary ecological benefits from the community-based conservation model currently being supported. Under the new rule, LK WMA will be reclassified as a Special Management Area, and therefore EMPNG is revising their forward work plans to comply with the new Act and also still deliver a biodiversity offset appropriate for Lender-financed projects.
  - EMPNG held a multi-stakeholder workshop in Port Moresby to inform the participants of the process to develop a Management Plan for the LK WMA, describe the Plan's key components, and receive input on Lake Kutubu values, threats on biodiversity, priority mitigation actions, information gaps and funding opportunities. The workshop also increased opportunities for collaboration with industry, conservation NGOs and international government bodies. However, they acknowledge that the workshop also highlighted that additional mapping of stakeholders is necessary. They intend to also reassess and/or confirm the biodiversity, bio-cultural and socio-economic (livelihood) value of the LK WMA.
  - The IESC had requested that IESC/Lenders be kept informed on a more regular quarterly basis as the protected area management plan engagement and offset program progressed – one update was provided and passed to Lenders.

- The Montane altitude (elevation >1200m) represents the largest proportion of the overall residual biodiversity impact for the Project, therefore, the biodiversity gain required is greatest in this zone.
  - EMPNG acknowledge that traction has been slow due to a lack of community buy-in, exacerbated by a complex land tenure system and a challenging security situation – this has been summarized over the last decade of IESC reports, so does not require repeating here. Since the last IESC visit, they have adapted their previous approach to engaging in conservation, shifting more towards conversations around cultural heritage and interactive story-telling with an aim to discuss fauna and flora in a more culturally acceptable way. Now there have been invitations to EMPNG from the community; four communities were visited during 2024 and the IESC was involved in a traditional cultural meeting in Para where intentions and commitments were voiced by both community and EMPNG. The company reports that elders are leading the communities towards conservation, recognizing the threats and losses to biodiversity and cultural values The company report that they intend to make use of a local community-based organization who, once trained, will lead engagements with communities. As the upper elevation zone has the largest Project footprint and thus greatest residual impacts, and EMPNG's Biodiversity Strategy (and therefore offset program) is now over 13 years old with no conservation gain foreseeable, the Level 2 non-compliance opened in 2024 is retained.

✓ Implementation of 2023's Alternative Livelihood Strategy at each of EMPNG's biodiversity offset program locations had been slow during 2023 and an update for 2024 was not provided. In 2023, the next steps were to involve a scoping study using two or three of the existing offset areas to generate a SWOTs analysis (strengths, weaknesses, opportunities, threats), to then inform the development of a site-specific Alternative Livelihoods Plan. For conservation to be successful, it needs to be cognizant of the needs of people in and around areas of high ecological and ecosystem value. Managing Alternative Livelihood Strategy (ALS) in offset areas is to be welcomed, where the preservation of biodiversity values might otherwise restrict traditional access to natural resources

Legally Protected Areas

The IESC refers Lenders to the IESC's 2021 report for background on EMPNG's responsibilities in relation to PS6 (2006) Paragraph 11 regarding operating in a legally protected area, including those related to the promotion and enhancement of the conservation aims of the protected area. The IESC non-conformance in the Issues Table recommends that EMPNG consider the gaps in alignment between the approach taken for offsetting residual impacts on specific biodiversity values versus the requirement to promote and enhance the conservation aims of the protected area within which the Project is located. The IESC non-conformance M20.1 is retained, relating to the gap of EMPNG not yet supporting freshwater ecology studies in a WMA and internationally recognized Ramsar wetland site.

Induced Access

The government's road-building contractors are utilizing the company's Angore Wellpad Access Road. Two newly opened quarries were in active operation, one on the road from Angore Wellpad A to Wellpad C (note: with excavators working at dangerous angles on extremely steep extraction faces) and the other large quarry in close proximity to the gates of Angore Wellpad B. The EMP commitment to control access to prevent potential damage

by third-party activities accessing EMPNG roads by vehicles was clearly not being met, and encountering this breach of commitment was obviously a surprise to all personnel accompanying the IESC on the trip. The IESC has raised a Level II non-conformance for this breach of commitments.

For the pipeline RoW, during construction, EMPNG road construction to support pipeline RoW construction resulted in the linking up of the Santos/OSL roads between Kantobo and Gobe. This included the construction of the Mubi River Bridge and the Kaiam Bridge, thereby allowing vehicular access from Moro south to the Kopi Scraper Station and to the Omati landfall. The basis on which the EIS assessment of impacts and significance was based assumed that the use of project infrastructure by others would require assiduous control to maintain the conservation assets of the area, and that access should be controlled for Project use only, post-construction. The Project road and bridges were kept open, thereby enabling the 'Southern Highway'. It is imperative that EMPNG control access to Project roads to avoid and minimize impacts related to enhanced access such as damaging third-party activities, increased hunting to more easily accessible areas, land clearance/logging and the transmission of weeds, pests and pathogens along the corridor.

The 2019 EMP: (1) requires access controls that restrict vehicular access to EMPNG roads, (2) requires access to only pre-authorized vehicles, and (3) defines the mitigation controls at access points along project roads. In several locations, including the Angore Wellpad Access Road noted above, Access Monitors are not in place and haven't been in place for some time. Staffed gates at Kaiam Bridge and near Gobe are meant to record vehicle and destination details. Their presence however is not always reliable, and they ultimately allow free movement of vehicles along company roads. The IESC has questioned several times how this can be assumed to be 'control' of access and concludes that this information cannot be relied upon for the collation and analysis of vehicle frequency and vehicle type. This partial, unreliable data could mislead any conclusions that might be drawn, and it would be inadvisable to consider it an accurate representation.

There have been no MoCs developed or passed to Lenders for these intentional, non-compliant occurrences, as would be necessary to assess whether changes to commitments and procedures will potentially have environmental and/or social consequences. The existing Level II non-compliance is retained, based on direct observations of a significant breach of a commitment with EMP-compliance gaps flagged multiple times in previous IESC reports.

Reinstatement and Regeneration

The EMP Section 14 requires the regeneration of temporary work areas whether from construction or from new disturbance. The Angore Environmental Management Plan also includes the commitment to create ground conditions conducive to natural regeneration. The IESC recognizes that facilities have only just been removed following the drilling of dry-holes at Wellpads A and B. Nevertheless, there appears to be no current plan in place to restate or restore the large areas constructed for the wellpads(~9 Ha). Reinstatement and regeneration is important in areas no longer needed following new disturbance. For example, during the walk around the outside fence lines at Wellpads F and G on Hides Ridge, the IESC noted a number of large areas that were no longer in use by the company that would not necessarily regenerate naturally without some active assistance.

IESC observations during helicopter flyover and visits to various areas of AGIs or the pipeline RoW, reinstatement and regeneration were again generally positive, with impressions that it appears to be progressing well. At the LNG Plant, IESC direct observations during the site visit confirmed mangrove shrub revegetation across the cleared landfall area, although primarily as isolated individual plants, and coverage is still low density, with rhizome branching noticeable on some individuals. Vehicle tracks from previous incursions are still visible due to lack of mangroves in areas compacted by tyres. Unfortunately, signs of timber harvesting continue to be observed as felled trees from the edge of the landfall had been brought onto the landfall area presumably for ease of chopping or retrieval – initials and a mark had been etched into the trunk of the felled tree, and EMPNG noted to follow up through Community Affairs.

BRC's 5th regeneration survey report was made available to the IESC, with an overall conclusion that the assessment points to a broadly satisfactory direction of forest regeneration, and that ecological succession is progressing along the expected trajectory towards the secondary rainforest vegetation at all Broad Vegetation Groups (BVGs). Although a broadly satisfactory direction of forest regeneration was documented, BRC summarise several critical problems that require close monitoring:

- ✓ the lack of progress in forest regeneration above 2,000 m (above sea level, asl),
- ✓ persistent high cover of grasses, especially at mid- elevation, and
- ✓ the risk of canopy invasion by *Piper aduncum*, (especially around *Nothofagus* dominated forest along broad ridges in Moro Ridge camp area), with an increasing number of mature stems over the survey years.

Further, they note the progress towards the target secondary forest values for the parameters describing vegetation structure has been uneven, partly affected by the continuous vegetation clearance required for RoW maintenance. Continuous monitoring of these situations needs to be conducted.

Invasive Species and Quarantine Management

The latest annual weed survey was undertaken in 2024, again by Binatang/BRC. The survey recorded 98 weed species, down from 109 in 2023, including 16 high priority P1 species and 11 medium priority P2 species. Most weeds encountered are lower priority P3 species, but 12% belong to the highest priority category P1

Overall abundance of the five focal P1 species decreased between 2023 and 2024, with *Mikania micrantha* replacing *Cyperus involucratus* from 2023's top-five, as its presence increased *especially* in the Lowland Zone. *Piper aduncum* showed a decrease in the Foothills and Low Mountains compared to 2023. However, *Ludwigia leptocarpa* increased further in the two elevations zones from the coast up to Moro (Lowlands and Foothills); in these two zones it is now the dominant P1 found. *Desmodium sequax* emerged as the dominant P1 species in both the Lower Montane and Higher Montane areas.

BRC recommend active control of *Piper aduncum*, *Ludwigia leptocarpa*, and *Desmodium sequax* in the areas of their maximum abundance, after the evaluation of their abundance, dynamics and the potential to impact natural regeneration of the vegetation. These three species are also common and abundant in all four elevational zones. They found that the removal of *Piper aduncum* has seen an increase in number of native species then regenerating compared to plots where *Piper aduncum* was not removed but they acknowledge the need to continue monitoring these plots to see if these changes are persistent over time. They note that although *Ludwigia leptocarpa* shows a significant reduction in abundance, it still continues to establish itself in certain areas, although seemingly constrained in higher elevations zone so far – active control measures are still necessary where it is abundant.

Transects at EMPNG sites continue to host a greater number of weed species/transect than non-project affected disturbed sites and BRC recommends expanding weed surveys beyond the usual PNG LNG project area to other anthropogenetic and naturally disturbed sites within the wider area, to be able to more rigorously evaluate how weed density observations related to PNG LNG compare to other disturbed sites at various elevations.

EMPNG continues to maintain that certain P1 weeds currently found along the RoW in areas where they were not previously recorded were actually *present* prior to construction but were not correctly identified at the time. The potential for weed transmission along the RoW was a significant impact predicted in the EIS and is therefore a risk of significant interest to Lenders. The current 10-yr review is a good opportunity to consider IESC's recommendation that an independent specialist review be undertaken to try to resolve this significant, alleged discrepancy – the Observation M22.5 is retained.

Regarding weed control, the EMP requires control of P1 weeds in all weed management zones across the full footprint; there was no presentation on controls currently being performed, areas difficult to reach, outbreaks difficult to control, etc. During the 2024 road-trip discussions the IESC learned the full RoW (e.g. south of Moro) is no longer under active site inspection and ongoing control by the weed control contractor, primarily due to lack of availability of vehicles and Community Affairs Officers. This was confirmed by conversations with the ISOS weeds & pests control operator at Moro. When he is able to access a vehicle to search for and control weeds, due to the weight of the glyphosate used, he is limited to only accessing the first 2km from any road junction. This time, the operator was able to confirm the correct conditions under which glyphosate should be used, e.g., away from freshwater and not during/following rains.

A weed register was provided this time on request, updated to the end of Dec 2024. This version was more complete than the version seen two years ago but confirms that large areas across the Upstream footprint are not being visited for inspection/control. Angore has had no control since mid-2022 (and that control was only within the camp boundary). Komo has not had weed control since mid-2023. HGCP is regularly controlled. Moro control visits align with those reported by the ISOS operative, i.e., visits to areas on the RoW are made a few times a month, but large areas of the RoW are not covered.

The deliverables required to close non-conformance M20.2 were not presented or made available and therefore the NC is retained.

As reported in the last few IESC reports, cane toads (*Rhinella marina*) have become a challenging invasive species in the Upstream Highlands area. Following the detections of cane toads at Kopi Shore base during construction, at Tamadigi (around 2012/13), in Moro-B in 2015, at HWMF in 2016, and HGCP in 2018, a recorded increase in the number of sightings at HGCP and HWMF prompted an increased Project response. As noted previously, the numbers of juveniles/adults recorded were initially quite staggering, although depending on location, numbers of juveniles and adults have continued to decrease. Data presented indicates the reduction in scale of toads needing to be controlled across Upstream sites.

Lenders will recall previous IESC reports noting that the last four PMA3 surveys at Hides Ridge (2015, 2017, 2019 and 2021) had found canopy trees along the edge of linear clearings becoming increasingly stressed, and in many cases, dying. They were thought to potentially represent the effects of the fungus and plant pathogen, *Phytophthora cinnamomi*, to which *Nothofagus* species and Papua New Guinea Oak *Castanopsis acuminatissim* are particularly susceptible. During 2023, specialist field surveys were undertaken – more detail on these surveys was provided in the 2024 IESC report. That report noted that more detailed results, analysis and recommendations would be

provided once further sampling, study and lab work had been completed. However, EMPNG's challenge was finding sufficient laboratory space and capacity for processing and isolating Phytophthora from the soil samples. The delays in identifying adequate lab facilities have meant that results of these surveys are still pending. EMPNG now notes that commercial laboratory facilities within PNG have been identified. EMPNG's pathogen specialist consultant is contracted to perform the role of technical mentor and lead partner with the laboratory, and capacity building is underway to upgrade the lab to be able to test for *Phytophthera*. Due to the timescales since the last soil samples were sourced in 2023, a new sampling campaign (including repeating those sampled in 2023) is planned for Q2 2025 by EMPNG field staff, with results expected by the end of 2025. The IESC non-conformance M21.2 is retained until the work and analysis is complete and any adaptive management is understood.

As noted previously, wallaby (*Macropus agilis*, IUCN Least Concern) numbers within the Project's LNG Plant boundary fence had reached a level whereby EMPNG senior management deemed them a risk to personnel safety and plant integrity. Following an initial cull under permit from CEPA in 2023, a re-evaluation of potential management options including non-lethal methods was performed, and three trials of herding wallabies to open gates in the fence were undertaken during 2024. EMPNG report that Initial results are positive, and a draft Wallaby Management Plan is under development.

Social

Resettlement

In 2024, additional land was acquired for three project activities: KP98 Pipeline RoW Stabilization, KP76 spoil dump expansion, and KP25.2 River Crossing Mitigation. Only the KP25.2 activity required a RAP Addendum due to physical and economic displacement of one household, which was compensated at full replacement value. Other areas had minimal impacts and were addressed through direct compensation. The displaced household received a compensation package and chose solar panels as part of it. Resettlement monitoring is ongoing, with a final evaluation planned for March 2025.

Community Impacts Management-Community Security Conditions

The IESC emphasizes the importance of understanding the complex security conditions surrounding the PNG LNG Project, particularly in Hela Province. Tribal conflicts, driven by traditional Huli disputes over land, pigs, and women, continue to destabilize the region, with violence shifting toward targeted retaliatory attacks due to the spread of high-powered weapons. Crime remains widespread across the project footprint, including serious incidents such as kidnappings, murders, and roadblocks, exacerbated by socio-economic issues and weak law enforcement. Alcohol abuse also fuels insecurity and clan violence.

As mentioned above, EMPNG operations within the Highlands are under a "Severe" security threat characterization due to increased security complexity, increased law-and-order challenges, and significant security incidents. In addition to efforts to enhance the livelihoods of local communities, the Project includes communities in its security programs. An example is the case of the fractious area surrounding the Komo airport, where Community Affairs (CA) experimented with appointing two members from two conflicting clans as Village Liaison Officers (VLOs). This appointment forced them to engage in dialogue and initiate a phase of diplomatic conflict resolution, significantly reducing hostilities in the area. Further progress in stabilizing the area has also been made by creating a local rugby league, acting as a means to divert youth from cycles of violence. IESC considers this case emblematic of how the Project can serve as a mediator in the area and supports the EMPNG team in continuing in this direction. During the monitoring period, the Project tried to replicate the same initiative in Angore, with the establishment of the Angore Rugby League. Unfortunately, progress is currently being hindered by persistent security incidents and social instability in the area.

Community Development Support

In its 2024 review, the IESC acknowledged notable progress made by EMPNG in response to previous recommendations concerning the coordination and clarity of its social programs. Specifically, the IESC had called for a clearer understanding of how the various social teams—particularly the Community Development Support (CDS), Community Affairs (CA), and the Resettlement Team—collaborate, define responsibilities, and plan for future activities. This request was met with a productive dialogue during the site visit, followed by EMPNG's submission of an explanatory diagram outlining team interactions. The IESC found this information satisfactory, recognizing not only the teams' competent structure but also the added value of long-standing personnel with deep project familiarity. However, some areas for improvement remain, as highlighted in a later section of the report.

CDS expenditure in 2024 totaled approximately USD $3.69 million, significantly lower than the previous year. The funds supported a wide range of initiatives, particularly in health, education, livelihood enhancement, and law and justice. In the education sector, EMPNG continued implementing infrastructure programs initiated in 2023. Across both the upstream and plant areas, the company donated multiple classrooms and staff houses to local schools, provided uniforms and textbooks, and supported school events such as graduations and awards days. These efforts were enhanced through partnerships aimed at improving provincial education outcomes. The scholarship program

also expanded in 2024, with 216 positions awarded, including a notable increase in higher education and vocational training awards.

Livelihood initiatives continued to focus on empowering local communities, particularly in the upstream area. The weekly fresh produce market, involving local farming groups, generated significant income and has now accumulated over PGK 1.4 million in earnings since its inception. A new women's livelihood program in Pimaga was introduced, teaching garment-making skills and supporting economic resilience. This was complemented by financial literacy training delivered to 160 women from small and medium enterprise (SME) groups.

Law and justice programs also made progress. In the upstream region, EMPNG invested in sports infrastructure and community engagement, recognizing sport as a vital tool for youth development and social cohesion. Basketball and volleyball courts were constructed, and preparations began for a grassroots rugby league competition in Angore. Additionally, four traditional Haus Wins were built in Komo and Moro to support cultural preservation and community consultation. In the LNG plant area, EMPNG supported the construction of the Papa Village Court House and assisted with a neighborhood watch program over the festive season, reflecting its ongoing commitment to safety and law enforcement.

Throughout the site visit, community stakeholders expressed appreciation for EMPNG's role in local development, particularly in the upstream areas where government presence remains limited. Many residents look to the project as a first point of contact for addressing a wide range of community needs. While EMPNG has demonstrated a strong commitment to supporting these needs, it faces limitations in terms of mandate and capacity. One persistent constraint has been the performance of local landowner companies (LANCOs), which continue to face internal administrative and cash flow issues that delay CDS project delivery. Nonetheless, the IESC noted signs of improvement in LANCO capacity and encouraged EMPNG to continue supporting their development.

EMPNG also shared its CDS roadmap for 2025, which includes a combination of infrastructure and community development initiatives tailored to both upstream and plant areas. The IESC welcomed this forward planning and confirmed its alignment with expected standards.

Despite these efforts, the IESC highlighted some ongoing challenges and areas for concern. Law and order issues persist across many project-affected communities, and difficulties remain in managing landowner expectations around employment and business opportunities. In the upstream region, low literacy rates continue to hamper access to higher education scholarships. but the Project is actively addressing it, indeed EMPNG's 2024–2025 program intervention has expanded scholarship support to include both higher education and TVET (Technical and Vocational Education Training). By 2025, the program reported 216 total awards, including 75 students enrolled in TVET courses alone. In the LNG plant area, shortage of communal land continue to be an issue, but reportedly this is not a barrier to the implementation of community projects as the EMPNG has been able, through the collaboration with local stakeholders and the state, to successfully implement such projects also on state-owned land. .

Finally, the IESC noticed a recurring issue in EMPNG's tendency to underestimate the full social impact of certain project activities. Two specific examples were cited: the lack of a long-term engagement plan for the decommissioned Angore wellpads—despite the obligations for site restoration—and the deteriorated condition of the Para Clinic, which serves both EMPNG workers and nearby communities. The clinic, although managed by an external religious organization, is under strain from increased demand directly linked to the project's presence. To address these concerns, the IESC recommends that EMPNG enhance its internal awareness of potential social impacts across all levels of its organization, and that future CDS strategies should prioritize support for communities most directly affected by project activities.

National Content

In 2024, EMPNG continued to strengthen its National Content strategy by focusing on workforce localization and supplier development. PNG nationals made up 90% of the workforce, with increased representation from local communities. Training efforts remained substantial, with over 120,000 hours delivered, including graduate programs, supervisory development, and expatriate assignments for PNG staff. The O&M training program has now produced 333 trained nationals, with many progressing into leadership roles, reflecting successful localization.

On the supplier side, EMPNG spent over PGK1 billion in-country in 2024, including PGK365 million with landowner companies. The company also supported over 248 PNG businesses and launched initiatives like a supplier portal and new procurement agreements to streamline access for local vendors. EMPNG also played a national role by sponsoring events, running training masterclasses, and forming a National Content Committee to align with policy reform goals.

Stakeholder Engagement and Consultation

In 2024, EMPNG recorded a strong increase in community engagement activities, rising to nearly 9,730 events with over 38,000 attendees—numbers that match or exceed pre-pandemic levels. This improvement is largely due to the deployment of the IsoMetrics Mobile app, which streamlined the recording and reporting process. Grievance

levels remained very low, with only nine filed (all from the Highlands), and issue reporting declined slightly, suggesting improved day-to-day communication with communities.

It is IESC's understanding that there are currently no future plans regarding the management of Wellpads A & B, whose reinstatement is required by the Angore Gathering System EMP in line with PS6 requirements (see Section 5.3.2). Reportedly, EMPNG continues to compensate local communities for land use and will keep doing so in the near future.

Given that the two decommissioned well pads are likely to be seen by the communities as potential spaces for their own community development, the Project should start planning how to manage this issue, considering the potential conflict between local community expectations and the requirements of the ANGS EMP. It is recommended that the Project initiate discussions with local communities to understand their actual expectations regarding the affected land plots and assess whether this potential conflict is confirmed.

If confirmed, adequate engagement activities should be conducted to find a common ground that ensures both community acceptance of proposed activities and compliance with biodiversity requirements. As mentioned in Section 5.4.2, reinstatement may be hindered if an agreement with local communities cannot be reached—however, this should only follow a proper stakeholder engagement process and must also be addressed in a risk assessment, with the results incorporated into an MOC.

Landowner Beneficiary Payments

In 2024, the Project continued its strategy of mitigating short-term risks while supporting long-term benefit distribution processes led by the PNG Government. EMPNG maintained positive engagement with Co-Venturers and government stakeholders, providing logistical support as needed, though the actual management of benefits distribution, including LOBID and ADR processes, remains under state control.

Downstream, the third royalty payment was made in late 2022, and leadership elections confirmed continuity in governance. In upstream areas, progress varied: PDL 7 had its first royalty payment in 2022 with a second expected in 2025; PDL 1 made progress on account setup and leadership elections, though some final steps remain before royalties can be paid; PDLs 8 and 9 await legal clearances and further administrative steps before entering the account-opening phase, with actual payments expected no earlier than 2025 or 2026. Pipeline segments saw partial royalty disbursements, with a second round of payments projected for the second half of 2025.

Despite this progress, IESC noted frustration among some downstream stakeholders about the lack of clarity on how royalties are being used in their communities. While communities recognize that these issues fall under government responsibility, IESC recommends that EMPNG continue encouraging greater government transparency and stakeholder communication. This is seen as essential to preventing potential community dissatisfaction from being redirected toward the Project itself, in line with IFC PS 1.

Labor and Human Resources

In 2024, the Project focused on the professional and personal development of its workforce through various initiatives. Key programs included the Supervisor Network, which facilitates quarterly sessions between supervisors and senior management to discuss important topics like company goals and policy updates. The Eda Wanwok Toastmasters Club helped employees improve communication and leadership skills, and the LCM and Nambawan Awards recognized staff who demonstrated exemplary behavior and performance.

On the personal development front, the Project offered initiatives such as the Business Acumen Financial Literacy program and collaborated with Bel Isi PNG. Employees also participated in activities like the Staff Ball Night, Independence Day celebrations, and the Giving Back program, which included environmental and community-focused events like Environment Day and Mangrove Planting. The Project continued to support mental health through its Employee Assistance Program (EAP), providing 24/7 counseling services for employees and their families.

In terms of Labor Grievance Management, the Project maintained the HR Direct system for employee inquiries, receiving 802 inquiries in 2024, with an average response time of three days. Feedback was positive, with 84% of employees satisfied, up from 70% in 2023. However, the IESC noted that anonymous grievance submissions were not possible, as required by IFC PS 2, and recommended implementing a system for anonymous grievances. A confidential online platform was later introduced, allowing employees to submit inquiries with confidentiality maintained.

Regarding Employee Retention, the Project addressed past challenges, particularly in retaining staff for the biodiversity and environmental teams, which had been understaffed in 2023. The IESC observed that this issue was largely resolved, and the Project was urged to continue ensuring competitive salaries and working conditions to retain talent.

Health and Safety

Community and Occupational Health

Community health continues to be a component of the CDS program with the objective of reducing the factors that limit the capacity of Papua New Guineans to fully participate in livelihood/economic activities by targeting high risk diseases and health complications. CDS health activities in Hela Province and the Southern Highlands in 2024 focused mainly on infrastructure development but also includes community health initiatives including targeted support to enhance women's empowerment through Queenpads, a women's health not for profit organization to deliver awareness sessions and provide information on women's hygiene and sanitary practices. In the LNG Plant area the focus in 2024 also was infrastructure development, but in both the Upstream and LNG Plant areas there were also collaborations developed and strengthened to jointly contribute to Provincial Health issues. Community health programs have been well implemented since the start of the Project.

The occupational health program is world class and continues to perform well in all areas (clinical operations, public health and industrial hygiene). 11,060 clinic consultations were undertaken across all clinics (35% occupational health - 65% non-occupational health). EMPNG engages in organized blood drives and has an active tuberculosis control program. The Industrial Hygiene Program continues to review worker exposure to chemicals and noise and verifies that personnel protective equipment is appropriate for the different work environments. Personal exposure monitoring was undertaken in 13 groups of workers for benzene, noise and hydrocarbon exposure. Over 300 health inspections across food, water, public health and industrial hygiene activities were undertaken in 2024.

During the site visit, IESC inspected the Para Clinic, located near HGCP and operated by PNG's Evangelical Church. The facility was found in severe disrepair, with staff unpaid for months. Notably, according to the information provided by the Clinic Manager, the clinic serves not only local residents but also HGCP workers during off-hours and their families. This *de facto* reliance on the clinics likely exacerbated pressure on an already fragile system. This situation represents a direct impact of the Project on local healthcare services - an impact that should be addressed through the implementation of appropriate mitigation measures. In this regard, it must be emphasized that EMPNG has supported the clinic multiple times between 2016 (when it was completely refurbished) and 2024 (when staff housing was provided). Furthermore, it should be noted that further support interventions for the clinic are already included in the 2025 CDS workplan and considered priority actions. Considering the latter, IESC appreciates this and recommends that the scheduled interventions not be postponed.

Occupational Safety

EMPNG Production safety performance through Q4 2024 continues to be excellent, better than 2023. There were no Lost Time Incidents (LTI) and the Lost Time Incident Rate (LTIR) is 0.00 normalized to 200,000-man hours and the Total Recordable Injury Rate (TRIR) was 0.03, both of which are much better than industry standards. Safety statistics in the future will be presented differently, as EMPNG is transitioning to the OIMS Personnel Safety Management System (PSMS). This new system focuses on the highest risk activities to prevent fatalities and life-altering injuries.

Cultural Heritage

In 2024, cultural heritage assessments were completed for additional workspaces and laydown areas required for earthquake recovery works in the Upstream area and two archaeologists working back-to-back are based full-time onsite to implement EMPNG's Chance Finds Protocol. Ten Chance Finds were discovered during the recovery works and consisted of waisted tang blades, a polished stone axe and fossilized shell. These chance finds will be presented to the Papua New Guinea National Museum and Art Gallery. Implementation of the Chance Finds Protocol is ongoing in 2025 in association with the ongoing EQR project.

Community engagement during flora and fauna surveys around Hides Ridge has provided an opportunity for local communities to identify the totems, plants and animals, significant to their cultural heritage. These engagements triggered clan elders to gather young men in their "hausman" to share knowledge of their tradition/ history – (malu – Huli dialect). This cultural information is being compiled as future educational material.

The IESC team had the opportunity to visit the Para Village where cultural resources have been a stimulant for engaging with the community for ecological conservation. The sacred sites being identified often have a root in areas with special biodiversity, so it is appropriate that the two topics are merged as part of resource mapping undertaken by the local community.

1 INTRODUCTION

RINA Consulting (hereafter 'RINA'), formerly D'Appolonia S.p.A., located in Genoa, Italy, was appointed as the post-financial close Independent Environmental and Social Consultant (IESC) for the Papua New Guinea Liquefied Natural Gas Project (PNG LNG or the "Project") being developed by ExxonMobil PNG (EMPNG), the designated Operator and also representing a consortium of co-ventures including: Oil Search Limited; Kumul Petroleum Holdings Limited: Santos Limited; ENEOS Xplora (formerly JX Nippon Oil and Gas Exploration Corporation); and Mineral Resources Development Company Limited, and their affiliates. RINA's role as the IESC is to support the Export Credit Agencies (ECAs) providing Project financing, including the Export-Import Bank of the United States (USEXIM); Japan Bank for International Cooperation (JBIC); Export Finance and Insurance Corporation (EFIC) of Australia; Servizi Assicurativi del Commercio Estero (SACE) from Italy; Export-Import Bank of China (CEXIM); and Nippon Export and Investment Insurance (NEXI), as well as a group of commercial banks, collectively referred to as the 'Lenders' or 'Lender Group'.

The overall role of RINA as the IESC within the PNG LNG Project is to evaluate conformance with commitments made by EMPNG within their Environmental and Social Management System (ESMS) including health and safety. The benchmark for the ESMS is now the Production Environmental and Social Management Plan (ESMP), supplemented by the associated environmental and social support plans, also including associated commitments made within the ExxonMobil Operations Integrity Management System (OIMS) and the documents associated with biodiversity management.

The IESC Terms of Reference (TOR) requirements refer to an evaluation of Project "compliance", whereas the reporting requirements of the TOR state that the reporting will include a "list of non-conformance findings". Within this report, the terms "compliance" and "conformance" are considered to be equivalent. In general, issues to be resolved are identified as non-conformances, but one of the requirements of the IESC is to identify any "material non-conformances" within the context of the Common Terms of Agreement (CTA). The IESC believes that a "material non-conformance" within the context of the CTA would need to be a Lender decision, but for the purposes of this report a potential "material non-conformance" would be a Level III non-conformance or repeated Level II non-conformances as defined in the Section 2 Issues Table. It is emphasized that a Level III non-conformance is not necessarily equivalent to a "material non-conformance" and that extensive discussions among EMPNG, Lenders and the IESC would need to take place before any "material non-conformance" is identified.

The IESC's review has included the environmental and social (E&S) and health and safety (H&S) management activities of EMPNG. This report is based on the third field visit undertaken since February 2019 due to various international restrictions imposed by the Papua New Guinean Ministry for Immigration and Border Security and uncertainties related to the outbreak of the Coronavirus (COVID-19) and is the reason why this report is for the 21st field visit, but the 24th review. The review was based on the documentation provided to the IESC as well as field observations.

An activity that does not fall under the category of "monitoring" yet is within the scope of the CTA is a requirement for the IESC to certify certain non-Project operations (section 14.2(m)(iii) of CTA). Since the last review in May 2024, there have been no requests for the IESC to prepare any supplemental certifications.

RINA wishes to flag to Lenders that this may be the final IESC report pending discussions between EMPNG and Lenders during 2025. If this is the case, RINA would like to take this opportunity to thank the various E&S team members and senior management who have supported the IESC team through 24 independent reviews conducted since the first compliance monitoring visit in 2010, and the Due Dilligence phase prior to that starting in Jan 2009.

1.1 PRODUCTION OPERATIONS OVERVIEW

2024 was another good year for production, with 8.1 million tons (MTA Eq) and 108 LNG cargoes loaded and 98.6% uptime. It should be recalled that the project was defined to the IESC in 2009 to be a development of 6.3 MTA Eq, so current production continues to be significantly more than originally projected. Figure 1.1 depicts 2024 LNG production. A contributor to the good performance was the startup of Angore production in Q4 2024. The new well F2 on Hides Ridge was spudded August 2024 and being dismantled at the time of this visit.

The effort associated with the recovery from the M = 7.5 February 2018 earthquake, the Earthquake Recovery (EQR) project is still ongoing. Since the time of the last IESC visit the budget has increased from $583 million to $585.5 million and costs as of the end of 2024 were $476 million. As of December 2024, U$S 543.5 million has been spent and the EQR project is forecasted for completion in May 2025, the same schedule as predicted last year.

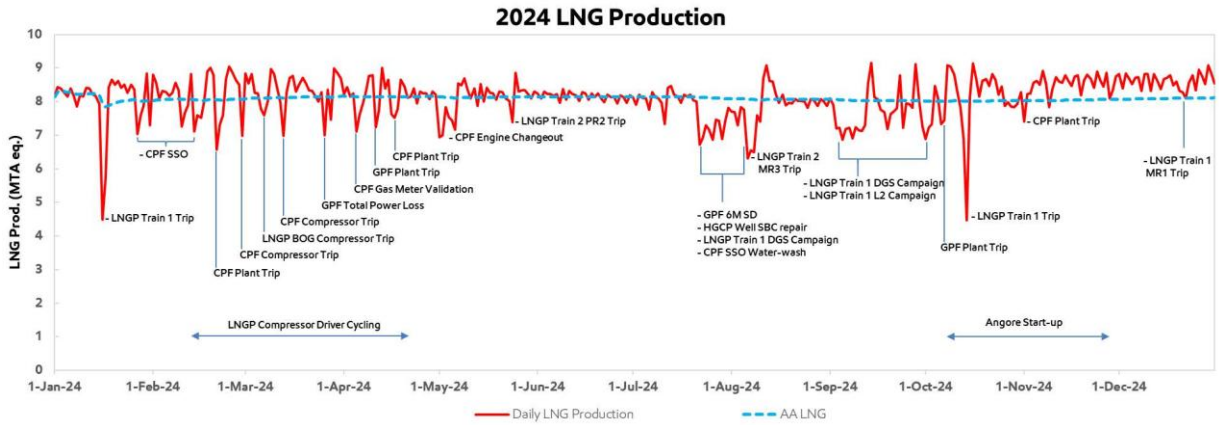

Figure 1.1: 2023 LNG Production

1.2 SOURCES OF INFORMATION

The main sources of information used to prepare this 21st IESC field trip report are primarily those provided by EMPNG, but RINA also obtained information by means of interviews with local stakeholders during the field visit in PNG as well as EMPNG employees. The information provided by EMPNG included presentations made to the IESC and additional support documents.

1.3 REPORT ORGANIZATION

Subsequent sections of this report are organized as follows:

- ✓ Section 2.0 – Issues Table;
- ✓ Section 3.0 – Environmental and Social Management;
- ✓ Section 4.0 – Pollution Prevention;
- ✓ Section 5.0 – Biodiversity and Ecological Management;
- ✓ Section 6.0 – Social;
- ✓ Section 7.0 – Labor and Human Resources;
- ✓ Section 8.0 – Health and Safety; and
- ✓ Section 9.0 – Cultural Heritage.

The basic findings of the review are presented in the form of observations, comments and recommendations that are generally described according to topics within each section. Significant findings are summarized in the Issues Table provided in Section 2.0.

2 ISSUES TABLE

This Chapter tabulates a summary of the non-conformances raised in this report, consistent with our TOR as discussed in Section 1.0. The Table has been structured to provide a color-coding for strict non-conformances raised during each site visit, as well as IESC observations for situations that if left unattended could result in a non-conformance. Non-conformance is referenced with respect to Project commitments as included in applicable Project documents and with respect to on-going compliance with Applicable Lender Environmental and Social (E&S) Standards. As noted in Section 1.0 of this report, “Applicable Lender Environmental and Social Standards” means the environmental and social standards applied by the Loan Facility Lenders to the Project in the form attached to Schedule H-1 (Environmental and Social – Applicable Lender Environmental and Social Standards) of the CTA. The nomenclature of the color-coded categorizations is assigned based on non-conformance levels similar to the non-conformance levels defined in the ESMP, somewhat revised to reflect the point of view of the IESC and to address that certain non-conformances need to be framed in the context of the Applicable Lender E&S Standards. The following descriptions are provided:

- ✓ **High**: Level III critical non-conformance, typically including observed damage to or a reasonable expectation of impending damage or irreversible impact to an identified resource or community and/or a major breach to a commitment as defined in Project documents or the Applicable Lender Environmental and Social Standards. A Level III non-conformance can also be based on repeated Level II non-conformances or intentional disregard

of specific prohibitions or Project standards. In some cases, Level III non-conformances or repeated Level III non-conformances may, but not necessarily, represent a material non-compliance with the CTA. This would be decided on a case-by-case basis;

- ✓ **Medium**: Level II non-conformance representing a situation that has not yet resulted in clearly identified damage or irreversible impact to a sensitive or important resource or community but requires expeditious corrective action and site-specific attention to prevent such effects. A Level II non-conformance can also represent a significant breach of a commitment, or a risk of a significant breach if not expeditiously addressed, requiring corrective action as defined in Project documents or Applicable Lender Environmental and Social Standards. A Level II non-conformance can also be based on repeated Level I non-conformances;
- ✓ **Low**: Level I non-conformance not consistent with stated commitments as defined in Project documents but not believed to represent an immediate threat or impact to an identified important resource or community. A Level I non-conformance can also represent a minor breach of a commitment requiring corrective action as defined in Applicable Lender Environmental and Social Standards; and
- ✓ **IESC Observation**: A potential non-conformance situation that could eventually become inconsistent with stated commitments as defined in Project documents or the Applicable Lender Environmental and Social Standards.

Item ID	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments/Report Reference
Environmental and Social Management System							
[2]M22.1	Feb '23	Apr '25	IESC's impression is that for various reasons, EMPNG is not fully staffed for EHS compliance.	Observation	Overall ESMS	Closed	At the time of the current IESC field visit the vacancies identified in February 2023 visit had been filled, but over the course of 2023 the lack of staff did impact the Project's ability to comply with ESMP commitments, especially with respect to biodiversity. This year we see that the staff doing the work on the ground have been stable over the past year and EMPNG has a better capacity to do work than we saw last year. Current staffing looks to be adequate to fulfill Project commitments
M22.2	Feb '23	Apr '25	Associated facilities are not being stewarded consistent with the commitment in the ESMP for Production that these facilities would be managed consistent with the practices developed during construction.	Medium – Level II	ESMP - Production	Closed	IESC was provided documentation that Associated Facilities, as well as significant supply chain providers, are being identified after appropriate due diligence and standards are being met.
M24.1	Apr '25		The closed former Associated Facility, the Para Quarry operated by HESL, was not left in a safe condition and the general public is allowed access.	Observation	ESMP	Open	Quarries should not be places of public access. IESC recommends that EMPNG work with HESL to undertake a risk assessment and at least come up with a solution to prevent public access.
M24.2	Apr '25		The Upstream EMP requires access controls and procedures to restrict vehicular access to EMPNG roads/infrastructure, to prevent potential damage by third-party activities that access through EMPNG roads. The Angore Access Roads connecting Well Pad C with Well Pads A and B (about 3.5 km of road in a previously undeveloped area) appear to now be public roads with Government maintenance and associated development. Use of the road has enabled third-party quarrying in a previously unreachable area, using EMPNG roads to access these quarries, The Environment and Social Managers with the IESC team were not aware of the issue and they had not been engaged by senior management to advise of the consequences of importance to meeting Lender E&S requirements. It is not clear whether EMPNG's Government Affairs department was aware of the encroachment, or if they were, whether E&S considerations were just not brought into any internal discussion. The IESC considers this to be a significant breach of commitment, hence a Level II non-conformance.	Medium Level II	MoC procedure Upstream EMP Section17 Angore EMP	Open	IESC recognizes that there are complex factors related to security and community expectations that have proved challenging in the Angore area. Nevertheless, EMPNG is operating in an area of Critical Habitat and should have predicted the likelihood of uncontrolled access. E&S Managers should have evaluated the consequences and potential mitigations of a Government takeover in a risk assessment followed up by a Management of Change procedure should it not prove possible to fulfill Project commitments. IESC believes this process should still be followed and discussions held with the Government to try to minimize any further environmental impacts of the encroachment due to the enhanced access made by EMPNG.
Environmental Issues – Environmental Management							

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[2] In order to better track project progress and accomplishments, the issues identified during each site visit are identified by a letter (M) and number (e.g. M1) that identifies the site visit (e.g.: M1 for the first visit, M2 for the second visit, etc.) followed by a digit that identifies the specific issue found (e.g. M22.1 refers to issue 1 found in visit 22).

Item ID	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments/Report Reference
M19.1	Desktop review Feb '20 Modified Feb '22 Modified Feb '23	April 2025	Groundwater monitoring at the HWMF at Kopeanda indicates that waste management operations are impacting groundwater (added 2/2023).	Low – Level I	Upstream EMP Section 9	Closed	A risk screening was undertaken consistent with ExxonMobil's OIMS management system in June 2024 with the conclusion that the risk is low with no further action required. IESC agrees and considers the matter closed, with the note that monitoring should continue.
Environmental Issues - Biodiversity and Ecological Management							
M20.1	Desktop review Feb 2021		**Freshwater ecology and protected area enhancement:** As the Project is located within a legally protected area, it has additional responsibilities to ensure tangible benefits to protection of the area, for example carrying out research needed for it to meet its conservation aims. The Project has undertaken over a decade of solid foundational work with the Lake Kutubu WMA Committee as part of the mid-elevation offset program. However, there is a need to consider the gaps in alignment between the approach taken for offsetting residual impacts on specific biodiversity values versus the requirement to promote and enhance the conservation aims of the protected area within which the Project is located. The Project's intentional exclusion of an updated scientifically robust aquatic biodiversity survey in the Lake Kutubu WMA in 2017, to support the preservation of the freshwater ecosystem, is not in alignment with primary conservation aims of the protected area. EMPNG report a program of collaboration with Santos that will enable a better understanding of the freshwater ecosystem.	Low – Level I	IFC PS6 Para.11	Open	An updated freshwater biodiversity assessment aligned with the other components of the 2017 PMA3 biodiversity surveys would have provided a comprehensive snapshot of species diversity and abundance, as a basis for the revised WMA Management Plan conservation objectives. The IESC recommends the Project plan to include an updated appropriate assessment of the Lake Kutubu freshwater ecosystem via a PMA3-type biodiversity assessment survey as part of the foundation for enhancing the conservation aims of the WMA. This will provide up to date, PMA-3 comparable data on biodiversity values for input to the development of a Lake Kutubu WMA Management Plan for the protected area. (Report reference for background detail: Offset component 4 in Section 5.2.2.3)
M20.2	Desktop review Feb 2021		**Consequences of weed control challenges:** As reported in previous IESC reports, access to key priority areas by the weed inspection and control contractors has been restricted. Security issues, the 2018 earthquake, and a lack of transportation for weed contractors to get to sites, have restricted the likelihood for effective, widespread weed inspection and control especially for Priority 1 weeds. Further security issues, lack of vector control personnel the COVID-19 pandemic and now earthquake recovery work all continue to mean that weed inspection/control is still hampered. Obviously, some of the challenges noted are outside of the control of the Project. However, the *consequences* of those challenges are that large parts of the Project's Upstream footprint, including priority ecosystem areas such as the Homa Benaria Ridge, weed inspection and control had been at a lower frequency than required) With regard to controlling Priority 1 weeds, the current situation is not consistent with stated	Low: Level I	Upstream EMP Section 15	Open	There was no presentation provided on weed control this trip. EMPNG should undertake an analysis of the weed inspection/control data of the Upstream area and present to Lenders: ✓ Locations (distribution) of P1 weeds of key concern currently, compared to distribution during the PCS; ✓ Areas where P1 weeds are now so well established and persistent that repeated control is required or is proving difficult; ✓ Ecological consequences of P1 weeds remaining established in these areas e.g. any detrimental impacts on the ability of native species to thrive in their natural habitat (this is now being considered as part of the ongoing 10yr review); ✓ What adaptive management is necessary in the Project's approach? ✓ Outputs from EMPNG's Strategic Weed Control Review. EMPNG needs to work with the weed inspection/control contractor to better resource the team, ensuring sufficient headcount and dedicated vehicles to access weed

Item ID	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments/Report Reference
			commitments in the EMP objectives as presented in EMP Table 15-2 – weed exclusion and control is not occurring as required across all zones as stipulated. It is unclear whether the situation represents an immediate threat or impact to priority ecosystem areas. The IESC does not receive analyses of weed inspection/control findings or Project-induced weed distribution/abundance status relevant to closing this NC.				inspection/control sites as regularly as necessary to meet the requirements of the Upstream EMP i.e. to exclude and control P1 and P2 weeds. (Report reference for background detail: Sections 5.5.2.2)
M21.1	Desktop review Feb 2022		**Project indirect impacts related to land use/land cover change:** PMA-1 uses remote sensing to monitor forest loss, land use change and degradation in the Upstream Area as caused by impacts that are directly Project-related, indirectly Project-related (third-party, induced), non-Project (third-party, expansion of pre-existing activity), and/or natural change (e.g., landslide). The Project had not been classifying instances of Project-attributable forest loss and land use change/degradation accurately, where they could potentially be the result of indirect impacts. Only change related to direct Project impacts e.g. installation of new infrastructure, were being considered as Project-attributable. Local landowners have the right to clear their land but when this is in direct proximity to the pipeline RoW or infrastructure, and therefore access to those areas newly cleared may have been enhanced by the presence of the Project (as noted in the 2019 PMA3 survey report), this should be acknowledged and categorized accordingly.	Observation	Biodiversity Strategy	Open	Following earlier discussions, EMPNG has produced a set of Field Guidelines intended to assess Project-attributable impacts in a more consistent, repeatable manner. However, it is IESC opinion that the database cataloguing all previous observations requiring follow-up inspection should now be reanalyzed according to the new guidelines. This will help the Project better understand any potential gaps in previous attribution analyses and ensure attributions of Project-related change (both direct and indirect) have been determined consistently. (Report reference for background detail: PMA1 in Section 5.2.2.1 of IESC report dated May 2022)
M21.2	Desktop review Feb 2022 Modified Feb 2023		**Plant pathogens: Dieback** During 2015 - 2019 PMA-3 surveys, dieback was noted during transect work up on Hides Ridge. Dieback is caused by the plant pathogen, *Phytophthera cinnamomi*, and *Nothofagus* trees as occur on Hides Ridge are particularly susceptible. Although EMPNG took photos of the potential dieback and sent these for visual assessment by PMA3 team leaders, on the ground specialist surveys had not occurred. Studies have now commenced with field surveys and training undertaken during 2023 and visual observations reported. Some aspects of survey work are due to be completed in 2024, along with more detailed results, analysis and recommendations once further sampling and lab work is complete.	Medium: Level II (escalated from an Observation to Level II NC in Feb 2023)	EMPNG's Dieback Infection Management Guidelines Upstream EMP Section 15.4 – 15.6 Multiple PMA3 reports 2015 - 2021	Open	EMPNG has continued to work with Dr Arentz to identify the best solution for soil sample analysis, and work is ongoing with a commercial laboratory now found within PNG. Further sampling, study and analysis are due to be undertaken, and the type of dieback determined (A1 or A2). Analysis should confirm whether adaptive management and active control measures should be implemented. If found to be A2, more stringent measures should be in place and/or re-evaluated, to prevent the movement of Type A2 (an introduced species) further into the priority ecosystem at Hides Ridge. (Report reference for background detail: Section 5.5.2.4)
M22.3	Feb '23 Modified Apr 2024		**Hunting and feral dog predation:** EMPNG's biodiversity survey specialists have noted increased prevalence of hunting and feral dog predation in the vicinity of the pipeline RoW and are	Low: Level 1 (escalated from an Observation to Level 1 NC in April 2024)		Open	EMPNG needs to better understand the threats posed by hunters preferred use of Project infrastructure and enhanced access. The IESC was advised that the PMA3 study leaders

Item ID	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments/Report Reference
			observing reduced numbers of hunting-sensitive IUCN Threatened species around BAA2 survey sites. EMPNG has been developing questionnaires to use with communities, and these are due to be used during 2024, but the development of the work has taken too long considering the potential threat level associated with use of Project infrastructure and enhanced access.				have assisted with the revision of questionnaires for use during hunting surveys with communities. EMPNG had previously advised that the PMA3 team would undertake hunting community surveys with relevant communities at both BAA1 and BAA2 sites during the deferred-2024 survey in 2025, but there was no mention of inclusion of hunting . EMPNG to provide results and an analysis on the threats and recommendations from the PMA3 study team, and information on the mitigation measures that EMPNG propose to implement. (Report reference PMA3 text in Section 5.2.2.2)
M22.4	Feb '23		**Access controls:** Access controls in situ are not in alignment with requirements as stated in the EMP, and the situation has continued for several years. During Q4 2022 and Q1 2023, Access Monitors have not been in place to record vehicles using Project roads, and report data for analysis. Observations made during the May 2024 visit have confirmed that current aspects of intended control measures as set out in the EMP are not in place at some locations and not clear in others. Some access controls have *never* aligned with those set out in the 2019 EMP (or previous versions). There have been no MoCs developed or passed to Lenders for these intentional, non-compliant occurrences.	Medium: Level II (upgraded from an Observation to Level II NC May 2024)	Upstream EMP Section 17	Open	Again, as repeated from previous IESC reports, EMPNG to provide Lenders a memo detailing how/when the physical access controls not yet meeting EMP requirements will be put into place. If EMPNG continue to claim that Access Monitors form some sort of control, then their presence should be demonstrably full-time and reliable. If vehicle monitoring data is to be considered reliable, then its collection should be much more robust. EMPNG should amend control mechanisms so that they comply with the EMP and/or undertake MoCs to understand the implications of non-compliance with an appropriate adjustment to the EMP where deemed necessary. (Report reference Section 5.3.2)
M22.5	Feb '23		**Baseline weed mis-identification discrepancy** EMPNG maintain that certain P1 weeds currently found along the RoW in areas where they were not previously recorded, were actually present prior to construction but were not correctly identified. Due to a number of P1 weeds now being found in areas where they were originally not observed there is a discrepancy that should be resolved in the interests of transparency and clarity. The EIS significance assessments related to weed impacts were based on planned mitigations being in place and implemented successfully e.g. limiting vehicular access along RoW and project roads. If implementation of mitigation measures have not been successful, the significance is therefore greater. This should be recognized, and the mitigation approach reassessed where necessary.	Observation	Upstream EMP Section 17	Open	The IESC recommends EMPNG consider an independent specialist evaluation and verification of baseline PCS and early weed audits versus more recent records of weed distribution, abundance and diversity.[3] The IESC believe an independent review of this data, of stated inconsistencies, of learnings, of risks/impacts related to construction/management of a long linear infrastructure in PNG, etc. is warranted. Lenders require assurance that potential impacts predicted in the EIS have not come to fruition and that the Project's mitigation approach is appropriate. The 10-yr review might assist in this, but again this would not be considered independent, informed as such by EMPNG's service provided, albeit specialists in their field. (Report reference Section 5.5.2.2)

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[3] EMPNG disagree with IESC opinion, and state that BRC contracted to undertake the weed audits currently are sufficiently independent.

Item ID	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments/Report Reference
M23.1	May '24		**Upper elevation biodiversity offset:** The IESC recognizes the importance of a solid foundational framework for community-based conservation in the offset program, however with the loss of personnel in the Biodiversity Team over the last few years, the Team has lost momentum in program implementation. As the upper elevation zone has the largest Project footprint, and the Biodiversity Strategy and therefore offset program is now over 13 years old, Lenders would have expected EMPNG to have made much more progress in development of an offset program here. It is still not clear which biodiversity values EMPNG intends to compensate for at the upper elevation zone, how this will be accomplished and monitored, timeframes, interim/final targets and the conservation outcomes that will be delivered.	Medium Level II NC	Biodiversity Strategy & PS6 Para 8 & 10	New	Initial stages of positive community trust and buy-in for EMPNG conservation vision are now being observed by some communities in the Hides area, building on the efforts taken to date over recent years. EMPNG should prepare an offset program to achieve both Biodiversity Strategy and NNL requirements, presented in a clear, timebound offset management plan targeted specifically for the upper elevation zone, for Lender/IESC approval.
M23.2	May 2024	April 2025	**Plastic litter at worksites:** The extent of litter, primarily plastic litter, observed around worksites was unacceptable. EMPNG is operating in Critical and Natural Habitat, and has the responsibility to not significantly degrade this. Changes in behavior must happen as a priority.	Low – Level I NC	PS6 Para 7 & 8, 9 & 10	Closed	A much-improved situation was observed by IESC during the site visit. EMPNG is undertaking a targeted campaign raising awareness on why people should not litter. The company is continuing to monitor to ensure practices further improve and will strengthen measures if found necessary.
M24.3	April 2025		**Quarantine:** Although 2024's import volumes have decreased from the previous year, the trend observed over the last few years of an increasing need for shipment containers to be re-fumigated following NAQIA inspection continues. Findings from NAQIA's Notice of Detention forms indicate company requirements are just not being adhered to by the company's importers, and extra vigilance is necessary.	Low: Level 1 NC	EMP 15.8	New	Implementation of EMP requirements and internal verification of company requirements should be improved. EMPNG's Logistics team should: a. investigate all reports for refumigations following NAQIA inspections (see graph) i.e. by analyzing the NAQIA Notice of Detentions for each refumigation/reinspection and acting on findings. b. work with the Environment team to: (i) ensure they have a full understanding of why quarantine might be an issue for Lenders. (ii) strengthen the understanding of freight forwarders regarding the importance of compliance with company requirements. (iii) reinforce EMP requirements (15.8) for effective mitigation and consider utlising the option for auditing suppliers/importers of goods. (Report reference Section 5.5.2.6)
Social Issues – Labor Management							

Item ID	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments/Report Reference
M23.3	May 2024	April 2025	It is IESC's understanding that workers do not have the possibility to submit anonymous grievances. This should be guaranteed as defined in paragraph 20 of IFC PS 2.	Low: Level I NC	IFC PS2 Para 20	Closed	During the monitoring period, a confidential online platform was established, allowing employees to submit questions or requests for consultation. Grievances are not strictly anonymous. However, as reported, only the team receiving and managing grievance is aware of the submitter's identity. IESC's opinion is that, provided this confidentiality is effectively upheld, the integration of this system now ensures compliance with IFC PS2 requirements. (Report reference Section7.2.3)

3 ENVIRONMENTAL AND SOCIAL MANAGEMENT

3.1 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

The Environmental and Social Management System (ESMS) is a mature and active System. EMPNG continues to operate within their Production Environmental and Social Management Plan (ESMP) implemented through three Environmental Management Plans and seven Social Management Plans. EMPNG recognizes that the ESMP needs to be revised to reflect changes to operational procedures and the Environmental Permit with CEPA and this effort has started. An example of a change in the Environmental Permit that needs to be reflected in the ESMP is the change of the noise standard at the LNG Plant fenceline.

3.2 ORGANIZATION AND STAFFING

At the time of the last IESC field visit the vacancies identified in February 2023 visit had been filled, but over the course of 2023 the lack of staff did impact the Project's ability to comply with ESMP commitments, especially with respect to biodiversity. This year we see that the staff doing the work on the ground have been stable over the past year and EMPNG has a better capacity to do work than we saw last year. Current staffing looks to be adequate to fulfill Project commitments.

3.3 MANAGEMENT OF CHANGE

Since the last IESC reporting period there have been no Lender-Reportable (Class II) MOCs reported, but IESC recommends that at least one be initiated to reflect the de facto Government takeover of the Angore Project roads (see below). IESC also notes that the change in noise standard at the LNG Plant fenceline (made as a change to the Environmental Permit with CEPA) should also have been a Lender-reportable MOC as one of the definitions of a Class I MOC is a change to Project standards.

There are two areas of biodiversity impact management where the current Upstream EMP is either out of date, or the reality on the ground has never met EMP requirements: access controls and invasive species. As flagged in the Issues Table previously, EMPNG should raise MoCs for discrepancies to fully understand the implications of such non-compliances, and either comply or revise the EMP accordingly having considered such implications. See Section 5.5.2 for more details.

3.4 INCIDENTS

EMPNG continues to monitor Environmental Compliance Incidents (ECIs) and EMP non-conformances (NCs), which indicates that the Environmental Management System is healthy. There were no ECIs recorded in 2024 (Figure 3.1).

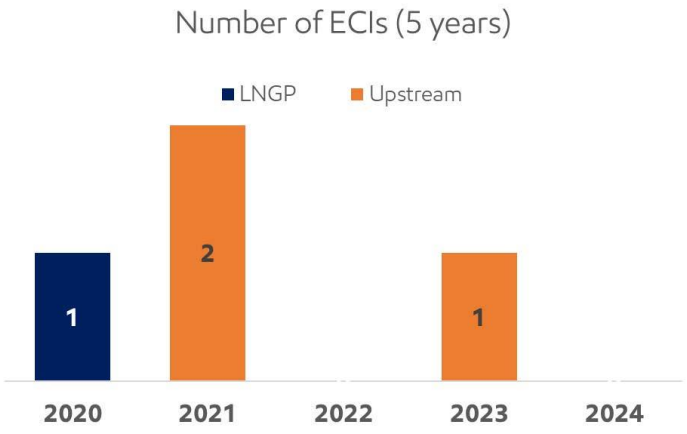

Figure 3.1: Environmental Compliance Incidents

The discharge of foam and sediment from the blooie pipe during Angore drilling in March 2023 that represented an ECI in 2023 was reviewed in our last monitoring visit and our understanding is that no long-term ecological impacts occurred. The discharge of foam and sediment from the blooie pipe during F2 drilling also occurred. We did not see

any reporting of this, but the discharge was obvious from our walkover at F2 (Figure 3.2). IESC informed EMPNG that the lack of ecological impact from this discharge should also be confirmed. An observation from the F2 supervisor was that the dead trees in line with the blooie pipe might have been killed with foam release from the drilling of Well F1. This was not observed by IESC when F1 was drilled, but at that time we were primarily focused on evaluating the damage from the construction of Wellpad F due to sidecasting.

Figure 3.2: Foam Released from F2 Blooie Pipe in 2024

3.5 ASSOCIATED FACILITIES

A topic reviewed in detail in the last IESC report is the identification and management of an “Associated Facility.” As described in the 2006 Performance Standard 1 followed by EMPNG: “Associated Facilities that are not funded as part of the project (funding may be provided separately by the client or by third parties including the government), and whose viability and existence depend exclusively on the project and whose goods or services are essential for the successful operation of the project.” As can be inferred from this description, Performance Standard 1 is not well written regarding Associated Facilities, which is why ExxonMobil and IESC worked out an acceptable procedure that is part of your Production ESMP.

The issue of Associated Facilities was assigned a Level II Non-compliance in the last IESC report. What we expected to see during the 2024 visit was that EMPNG would have identified potential associated facilities, reviewed their operations and management, and undertaken a risk assessment to determine if EMPNG needs to exert influence to ensure the operations are undertaken safely and in reasonable compliance with environmental, social, and labor standards. This effort was not undertaken.

During this visit IESC was presented with the identification of Associated Facilities and key components of the supply chain, and the procedures followed to improve their E&S performance. Figures 3.3 and 3.4 identify the facilities that could represent potential Associated Facilities, but also suppliers whose activities also need to at least be monitored. The facilities can be grouped into the categories of quarries/borrow pits, waste management facilities, and trucking companies.

PNG LNG Associated Facilities Register - Quarries Update: 30 | JAN | 2025

Primary A	Project Area	Associated Facility	Operator	EM Review/Approval Dates		Tier	Permit Expiry	Location	Comments
				EM Assessed	EM Status				
Quarry	Upstream	Timalia (TB1)	HESL	ASSESSED	APPROVED	3	16-Jun-2025	Hides, Hela Prov.	Currently in use
Quarry	Upstream	Usano Quarry	Kutmor/OSL	ASSESSED	APPROVED	3	N/A, <100kt	Kutubu MLV, SHP	Extract <10kt, hence no permit required. Only Due Diligence done
Quarry	Upstream	KM 09 Quarry	Kutmor/OSL	ASSESSED	APPROVED	3	N/A, <100kt	Kutubu, SHP	Site currently being used by OSL for upgrading roads in the area. Confirmed that the volume being extracted by OSL and our needs should not exceed the 100,000 tonnes requirement for an env. permit.
Quarry	Upstream	Halimbu Quarry	HESL	ASSESSED	APPROVED	3	31-Mar-2027	Tari, Hela Province	Also used for other projects
Quarry	Upstream	Tangori Quarry	HESL	ASSESSED	APPROVED	3	16-Oct-2029	Tari, Hela Province	Also used for other projects
Quarry	Upstream	Para Quarry	HESL	ASSESSED	DISCONTINUED	3	Expired 03/2025	Hides, Hela Prov.	HESL Closed Quarry in late 2023 due community issues.
Quarry	Downstream	Monier Quarry	Monier PNG Ltd	ASSESSED	APPROVED	3	TBC	Port Moresby,	Rarely used, only for pre-mix material
Quarry	Downstream	Mana Quarry/Quarry KP 76	HGDC	ASSESSED	APPROVED	2	4-Oct-2029	Hegero/Mana, Kutubu	Pre-existing quarry reopened by EMDC by the EPC5A contractor (Spiecapag). Site was closed and handed back to the landowners. Now owned by HESL
Quarry	Downstream	Laba Iokoru Quarry	Laba Holdings	ASSESSED	APPROVED	3	TBC	Port Moresby, NCD	Previously operated by Leighton. Environment Permit transferred to Laba Holdings Limited: EP-L2B(274)

Figure 3.3: Associated Facilities Register - Quarries

PNG LNG Associated Facilities Register - Wastes & Chemicals/Fuels Transport Update: 30 | JAN | 2025

Primary Activity	Associated Facility Name	Operator	EM Review/Approval Dates		TIER	Permit/License Status	Location
			EM Assessed	EM Status			
Waste Management	Roku Industrial Waste Management Fa	TWM	ASSESSED	APPROVED	3	Permitted	Roku, Central Province
Waste Management	Laloki Waste Management Facility	Pasifika Eagle Ch	ASSESSED	APPROVED	3	Permitted	Laloki, Central Province
Waste Recycling, Metals	PNG Recycling Limited, Lae	PNG Recycling	ASSESSED	APPROVED	3	Permitted	Port Moresby, NCD
Waste Recycling, Metals	PNG Recycling Limited, Lae	PNG Recycling	ASSESSED	APPROVED	3	Permitted	Lae, Morobe Province
Waste Recycling, Batteries	Pactrade PNG Limited	Pactrade	ASSESSED	APPROVED	3	Permitted	Port Moresby, NCD
Waste Recycling, Batteries	Pactrade PNG Limited	Pactrade	ASSESSED	APPROVED	3	Permitted	Lae, Morobe Province
Waste Recycling, Spent Oil	Carbon Recycling PNG, Lae	Dunlop PNG	ASSESSED	APPROVED	3	Permitted	Lae, Morobe Province
Waste Recycling, Metals	Chemsil PNG Limited	Chemsil	ASSESSED	APPROVED	3	Permitted	Port Moresby, NCD
Fuels Transport	IPI Transport, Mt. Hagen	IPI Transport	ASSESSED	APPROVED	3	TBA	Lae, Mt. Hagen
Fuels/Chemicals Storage/Transport	TWL Transport, Mt. Hagen & Lae	TWL Transport	ASSESSED	APPROVED	3	TBA	Lae Mt. Hagen
Waste Recycling, Metals	Best Deals PNG Limited, Lae	Best Deals PNG L	ASSESSED	APPROVED	3	N/A	Lae
Waste Reusing, Waste Oil	Lae Tablebirds Pountry	Tablebirds	ASSESSED	NOT APPROVED	3	Permitted	Lae, Morobe Province
Waste Recycling, Metals	Branis Recycling Limited, Lae	Branis Recycling	ASSESSED	NOT APPROVED	3	N/A	Lae

Figure 3.4: Associated Facilities Register – Wastes and Chemical/Fuels Transport

IESC is satisfied that the overall identification and approval process for Associated Facilities and primary supply chain facilities is adequate. As further discussed in Section 4.1.2, IESC visited the Total Waste Management (TWM) facility in Roku near the LNG Plant and found EMPNG regularly visited that facility (an Associated Facility as it was founded to serve PNG LNG, whose waste represents 65% of their business) to verify compliance of their operations with EMPNG standards.

A finding this trip, however, is that EMPNG needs to follow-up the closure of Associated Facilities, and not just engage with the third-party operators when the Associated Facility is being used. The subject of Associated Facilities was identified in February 2023 with the mismanagement of the Para Quarry near Hides, which was closed in 2023 due to “community concerns.” The Para quarry was being operated with benches that are too high and bench widths that are too narrow, zero erosion and sediment control systems, and unsafe working conditions, especially considering that what is being excavated is soft, fractured limestone (Figure 3.5).

During this visit the Para Quarry was looked at and found to basically have been abandoned in 2023 with no reinstatement. At the time of our visit (from a helicopter) it was observed to be visited by members of the local community (Figure 3.6). As closed quarries should never have public access, IESC has opened the observation that EMPNG needs to work with HESL (the quarry operator, a division of the Lanco HDGC) to undertake a risk assessment and at least come up with a solution to prevent public access.

Figure 3.5: Para Quarry in February 2023 Operated by HESL, a Division of HDGC

Figure 3.6: Para Quarry in April 2025 with Community Access

3.6 ENHANCED ACCESS

The Angore Access Roads connecting Well Pad C with Well Pads A and B (about 3.5 km of road in a previously undeveloped area) appear to now be public roads with Government maintenance and associated development (Figure 3.7).

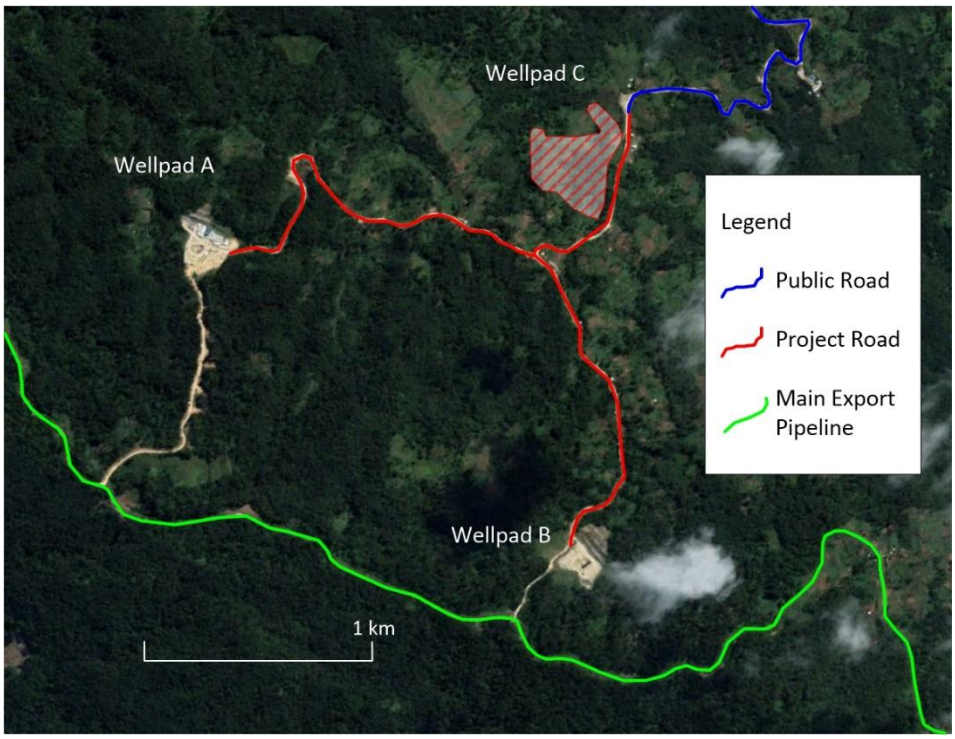

Figure 3.7: Location of Angore Project Roads

Two quarries were observed to be in development and power lines were in the process of being strung along the roads (Figure 3.8) and the overall encroachment is considered an effect of enhanced access. Road monitoring apparently did not inform EMPNG management that the Government (GoPNG) had started activities and IESC considers this to be a failure of the ESMS. The IESC has raised a Level II non-conformance for this breach of commitments. This is a subject further discussed in the context of biodiversity impact (Section 5.3).

Figure 3.8: New Quarry in Front of Wellpad B and Start of Utility Line Placement by GoPNG

The Environmental Management Plan (EMP) for the Angore Gathering System states:

> *EMPNG's objectives are to control vehicle access to EMPNG roads and infrastructure to prevent potentially damaging third-party activities through enhanced access to EMPNG roads and infrastructure by vehicle. This will be achieved by establishing access controls and procedures that restrict vehicular access to EMPNG roads and infrastructure.*
>
> *Where breach of access control is identified, EMPNG will engage with the relevant party/parties and endeavour to achieve access control.*

IESC understands that the use of a road monitor was discontinued at the end of December 2024.

The last version of the EMP, modified for the construction of Wellpad C, also had the following note:

> *This EMP has been revised to include ….. the decommissioning of gas wells previously installed at Angore Wellpads A and B, and reinstatement of these wellpads.*

In summary, expectations from the Angore EMP were that monitoring for third-party activities would take place and that disturbed areas no longer used by the Project would be reinstated, in this case abandoned Well Pads A and B (about 9 Ha of land), not including the abandoned flowline connection to the main PNG LNG Export Pipeline.

IESC recognizes that there are complex factors related to security and community expectations that have prevented fulfillment of the EMP commitments, but EMPNG should have evaluated the consequences and potential mitigations of a GoPNG takeover in a risk assessment followed up by a Management of Change procedure should it not prove possible to fulfill Project commitments. IESC believes this process should still be followed and discussions held with the Government to try to minimize environmental impacts of the encroachment.

IESC also recognizes that community expectations for the future use of the two abandoned wellpads may preclude their reinstatement, but the consequences of maintaining these wellpads should also be addressed in a risk assessment and the results included in an MOC.

4 POLLUTION PREVENTION

4.1 WASTE AND WATER MANAGEMENT

4.1.1 Project Strategy

EMPNG's objectives are to apply the waste management hierarchy (wastes will be preferentially and sequentially avoided, reduced, reused, recycled or recovered) and to dispose of all wastes at EMPNG facilities and approved third-party facilities only. EMPNG's objectives are also to avoid significant impacts associated with the release of pollutants to surface water and groundwater and meet applicable discharge criteria. These applicable discharge requirements are tabulated in Chapter 9 of the Upstream and LNG Plant EMPs.

4.1.2 Observations

4.1.2.1 Waste Management

Overall, there was a decrease in Upstream waste generated in 2024 with the completion of the Angore project. (Figure 4.1). Overall, there was a decrease in Upstream waste generated in 2024 with the completion of the Angore project, At the LNG Plant waste volumes have stabilized reflecting routine base operations and continued identification of qualified third-party waste management facilities.

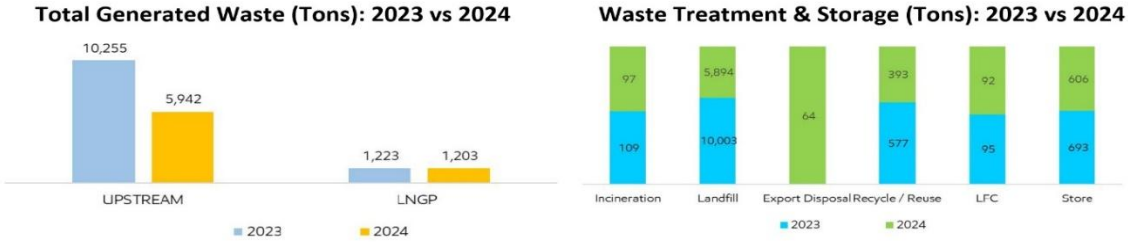

Figure 4.1: Total Project Waste Disposal 2022 and 2023

Upstream

The landfill at the HWMF at Kopeanda continues to be actively used and has about 10 years of remaining air space. This landfill also supports Santos, accepting 290 T of non-hazardous waste in 2024. Some operational problems with the MediBurn incinerator used to burn medical waste and cane toads were noted in February 2023 – problems expected to be resolved in 2024 but technical problems with the installation of the chimney have postponed the repairs until this year. 18 tons of Medical waste and 1 ton of cane toad carcasses are stored onsite pending incineration with the MediBurn unit.

A special initiative taken in the Upstream area in 2024 has been a campaign with the goal of eliminating littering along the Hides Spineline. Persistent littering along the Hides Ridge Wellpads and Access Roads from unknown actors increased in 2023-2024 following introduction of enhanced security. This issue was flagged in the last IESC monitoring report as a Level I non-conformance for its potential impacts to biodiversity. EMPNG has responded with an aggressive campaign based on several components:

- ✓ Including cleanup in the ePTW (Permit to Work) for activities along the spineline;
- ✓ Awareness campaigns, including a video of the Hides operations manager cleaning up litter, broadcast on screens at HGCP admin building, camp accommodation and mess hall (Figure 4.2), and an awareness deck developed and sessions held with site teams;
- ✓ Environmental inspections at the Wellpads and volunteer cleanups;
- ✓ Work group details including name of Supervisor stamped on packed meals, strongly encouraging the supervisors to make sure there is no litter identified with their names on it;
- ✓ Installation of signage and placement of waste bins along the spineline.

IESC observed substantial improvement in the field compared to last year.

Figure 4.2: Screen Shot of Video to Prevent Littering along the Hides Spineline

LNG Plant

A milestone event that took place in 2024 was the completion and use of the third-party TWM landfill at Roku near the LNG Plant (Figure 4.3). TWM fits the definition of an “Associated Facility” as they were created to support EMPNG and EMPNG still represents about 65% of their business, although this percentage is slowly decreasing as they are picking up new clients. Restricted waste can now be landfilled at the TWM facility and the landfill cell at

the LNG Plant can manage non-hazardous waste. TWM is managing the demolition of the old Camp B at the LNG Plant by shredding and sorting the demolition debris such that nearly 90% of the waste can be recycled (Figure 4.4). This is a major improvement from what took place with the demolition of the work camps around the HGCP where the demolition debris was landfilled at the HWMF at Kopeanda.

An issue with the use of the TWM waste management facility at Roku is emissions from the hazardous waste incinerator, used by EMPNG for the disposal of medical and food waste, representing about 8% of the waste stream from the LNG Plant. TWM personnel believe their incinerator is the best available in PNG, but stack emissions testing show levels of dioxin and furans above EU standards (although within most other published standards) and they recognize the incinerator is aging. Another area where the TWM facility could be improved is with respect to the treatment of amine contaminated water from the LNG Plant and e-waste. EMPNG exported 64 tons of amine and e-waste for overseas treatment/disposal in 2024, representing a significant cost. IESC has suggested on more than one occasion that EMPNG consider helping TWM make upgrades to their facility as a community development support project. Having TWM achieve international standards not only helps EMPNG but would represent a milestone achievement for PNG as a country.

Figure 4.3: TWM Engineered Landfill Starting to Accept Waste

Figure 4.4: Shredding and Recycling of Old Camp B at the LNG Plant at TWM

EMPNG continues to demonstrate the continued search for different third-parties capable of managing specific waste streams, including for treatment and recycling of waste oil, vehicle maintenance waste, scrap metals, and other. Some new qualified vendors are being found. The facilities reviewed and accepted to serve as third-party waste management facilities are shown in Figure 3.4.

4.1.2.2 Water Management

Wastewater continues to be well managed. At the LNG Plant the Unidro STP was refurbished in February 2023 and continues to operate normally. The Toray STP is aging and had an TSS exceedance due to poor filtration of the effluent in the permeate tank caused by congested filter membranes. A new STP (750EP) that will replace both existing STPs is a 2025 Goal for the LNG Plant. A "750EP" designation for a sewage treatment plant refers to its treatment capacity, measured in "Equivalent Population" (EP). This means the plant is designed to handle the wastewater generated by a population equivalent to 750 people.

There were three non-conformances with the Upstream STPs. The HGCP plant had good performance with the exception of an excursion of Ammonia-N after a sludge removal pump clogged, resulting in high biomass in the effluent. Two observed exceedances of Ammonia-N were measured at the Hides Wellpad F2 Drilling Camp STP, both events relating to delay in sludge removal after Sludge Dewatering Plant was taken offline for maintenance. These excursions were minor.

Groundwater monitoring around the HGCP and the LNG Plant continues to show no evidence of groundwater contamination. Conversely, at the Hides Waste Management Facility (HWMF), evidence of infiltration of leachate from the facility has been recorded since 2014 as reflected in groundwater chemistry. IESC has repeatedly asked that EMPNG conduct a risk assessment to evaluate the potential consequences of this leakage. A risk screening was undertaken consistent with ExxonMobil's OIMS management system in June 2024 with the conclusion that the risk is low with no further action required. IESC agrees and considers the matter closed, with the note that monitoring should continue.

4.2 HAZARDOUS MATERIALS MANAGEMENT AND SPILL PREVENTION

4.2.1 Project Strategy

EMPNG's objectives are to prevent spills of hydrocarbons and chemicals and to respond effectively to spills should they occur. EMPNG also has standards for materials management where objectives are to avoid significant impacts associated with the procurement and use of raw materials and to use materials that are less hazardous or otherwise preferable from an environmental perspective, where practical.

4.2.2 Observations

Hazardous materials management practice is undertaken consistent with GIIP. Spills continue to be consistently recorded, and their causes investigated, and procedures developed to minimize future spills. As shown in Figure 4.5 there was a total of 37 small spills in 2024 (predominantly hydraulic fluid), but in 2024 there was an EMPNG "corporate reportable" spill (>1 bbl) of about 9.1 bbls. None of these spills had significant environmental consequences.

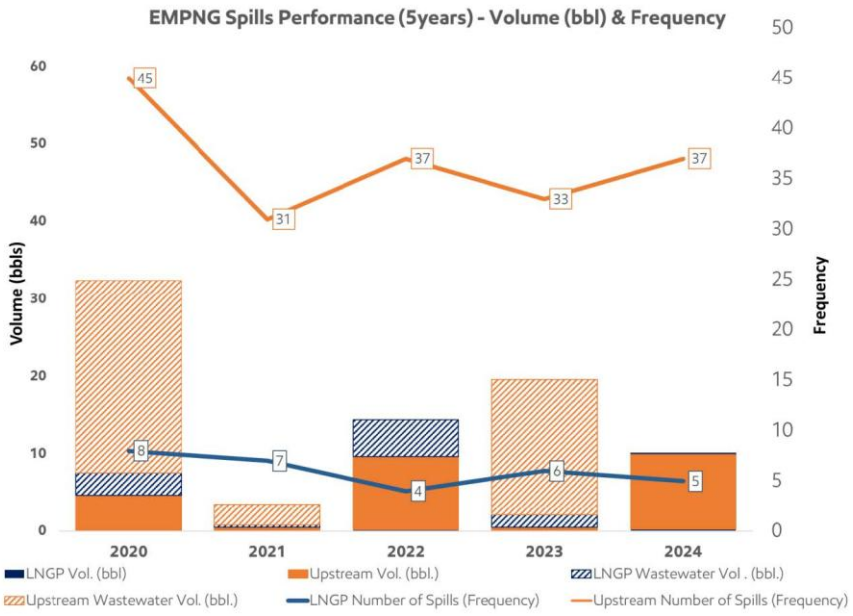

Figure 4.5: EMPNG Spill Performance – Volume (bbl) and Frequency

The reportable spill was from the leakage from an underground pipe connecting two diesel tanks at the refueling bay within the Hides Diesel Fuel Farm and was identified due to a surface sheen observed at on-site surface water bodies. The incident took place approximately 3.3 km upstream from the nearest community. EMPNG's Incident Management Team (IMT) immediately deployed spill response boom/skimmers/pads to prevent diesel fuel from entering the surface drainage systems and migrating offsite to the neighboring community and fuel was recovered (Figure 4.6). Surface and groundwater monitoring was used to monitor fuel migration, including a downstream/offsite monitoring point. EMPNG proactively notified both potentially exposed local communities and CEPA. No evidence of impairment of water quality of sources used by downstream communities, either as expressed by community or via monitoring. No grievances were recorded. IESC visited where the downstream booms were still in place and observed no evidence of any surface sheen that might have indicated the continued migration of the spilled fuel.

Figure 4.6: Collected Diesel Fuel from HGCP Reportable Spill

4.3 AIR QUALITY AND NOISE

4.3.1 Project Strategy

EMPNG's objectives are to avoid significant impacts associated with the release of pollutants into the air and meet applicable emissions and air quality criteria. Requirements for noise control are those identified in the IFC General EHS Guidelines.

4.3.2 Observations

Substantial effort is being placed in the reduction of flaring. Flaring is never routine and flaring emissions continue to be reduced at both the LNG Plant and HGCP. 2024 set the annual record at HGCP for the lowest amount of flaring due to both ongoing flare reduction efforts and a reduced amount of downtime. Flare emissions have been reducing progressively at HGCP over the past four years (Figure 4.7). A monthly record for the least amount of flaring was set at the LNG Plant in June 2024. This effort supports ExxonMobil's 2030 Emission Reduction Plan (ERP).

Stack emissions testing was completed in Q1 2025 at HGCP and LNGP by Assured Environmental Pty Ltd. Results from their draft reports show 100% compliance with Project commitments, which are for the monitoring of NOx from compressors and gas turbines. As EMPNG is no longer operating any incinerators, there is no requirement for monitoring of other parameters. Results as provided in the draft monitoring reports by Assured Environmental are shown in Figure 4.8.

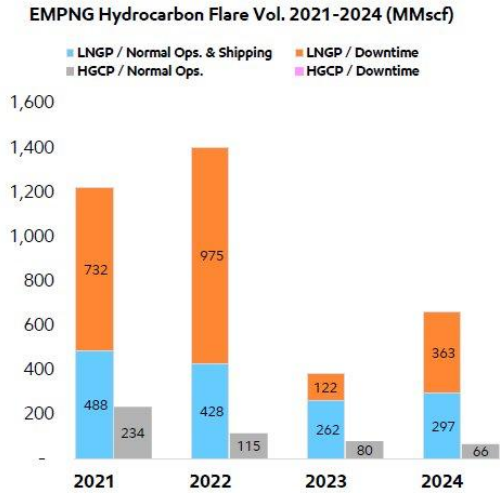

Figure 4.7: Flaring 2021 - 2024

Site	2025 EMPNG - Stack Emissions Testing - Sources	Status	NOx Criteria (ppm)	2025 Result** (NOx ppm @ 15% Oxygen)
HGCP	PLC 1	In Criteria	25	13.0
HGCP	PLC 2	In Criteria	25	15.1
HGCP	PLC 3	In Criteria	25	7.0
HGCP	GTG Alpha	In Criteria	42	34.0
HGCP	GTG Bravo	In Criteria	42	22.5
HGCP	GTC Charlie	In Criteria	42	31.3
LNGP	Propane Refrigerant Compressor Gas Turbine Driver #1 (TR-1)	In Criteria	25	15.4
LNGP	Propane Refrigerant Compressor Gas Turbine Driver #2 (TR-1)	In Criteria	25	13.4
LNGP	MR Compressor Gas Turbine Driver #1 (TR-1)	In Criteria	25	10.6
LNGP	MR Compressor Gas Turbine Driver #2 (TR-1)	In Criteria	25	22.0
LNGP	MR Compressor Gas Turbine Driver #3 (TR-1)	In Criteria	25	18.9
LNGP	Propane Refrigerant Compressor Gas Turbine Driver #1 (TR-2)	In Criteria	25	22.2
LNGP	Propane Refrigerant Compressor Gas Turbine Driver #2 (TR-2)	In Criteria	25	16.4
LNGP	MR Compressor Gas Turbine Driver #1 (TR-2)	In Criteria	25	15.8
LNGP	MR Compressor Gas Turbine Driver #2 (TR-2)	In Criteria	25	15.0
LNGP	MR Compressor Gas Turbine Driver #3 (TR-2)	In Criteria	25	17.4
LNGP	GTG 1	In Criteria	42	3.6
LNGP	GTG 2	In Criteria	42	2.4
LNGP	GTG 3	Not Tested - Out of Service	42	NA
LNGP	GTG 4	In Criteria	42	5.2
LNGP	GTG 5	In Criteria	42	4.2
LNGP	GTG 6	In Criteria	42	4.5
LNGP	GTG 7	In Criteria	42	4.7

***Source: DRAFT report by Assured Environmental as of 1st April 2025.*

Figure 4.8: Draft Stack Emissions Test Results from February 2025

EMPNG also tracks emissions in terms of greenhouse gases (GHG) and is actively attempting to reduce emissions as noted in the reduction of flaring. EMPNG attributes their relatively low GHG emissions due to their good designs and operations but also to:

- ✓ Low native CO_2, efficient plant designs, and favorable market proximity;
- ✓ Minimal fugitives, no natural gas pneumatic devices, underground pipeline;
- ✓ No routine flaring.

As shown on Figure 4.9 most GHG emissions originate from the turbines at the LNG Plant. Figure 4.10 shows that GHG emissions have slightly increased on an intensity basis (tons GHG per 100 tons of wellhead production) in 2024 primarily due to declining volumes from Hides field, and the late start-up of the new Angore wells. EMPNG notes that the emission and Intensity data provided in Figure 4.10 has some degree of uncertainty and is subject to change. IESC is not in a position to evaluate the efficiency of the various systems producing emissions but has been informed by the Independent Technical Consultant (ITC) that they have world-class efficiency.

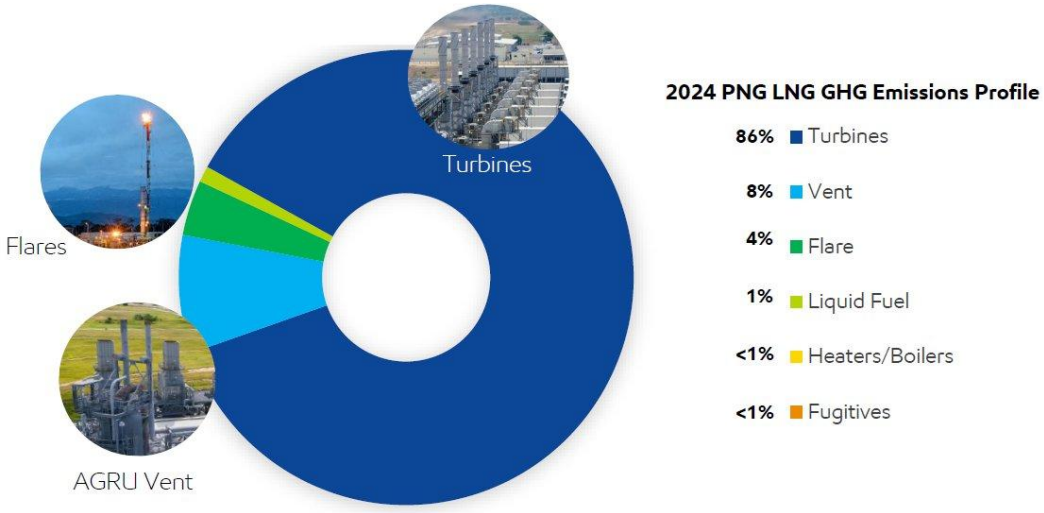

Figure 4.9: 2024 Project GHG Emissions by Component

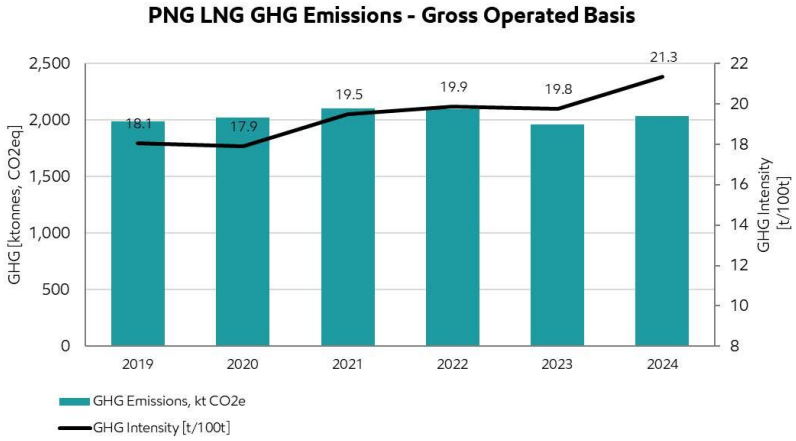

Figure 4.10: Project GHG Emissions – Gross Operated Basis

Noise monitoring was undertaken in 2024 with no problems reported, with the note that the standard at the point of compliance at the LNG Plant (fenceline) has been changed from the residential standard of the IFC General EHS Guidelines to the industrial standard. As noted in Section 3.3, this should have been an MOC reviewed by the IESC.

Nevertheless, IESC notes that fenceline noise measurements were obtained at the LNG Plant from three locations. Measurements from 11 locations were measured by SLR Consulting Australia Pty Ltd on behalf of Tetra Tech Coffey for ExxonMobil in 2023 and this identified nighttime compliance problems with the residential standard, which resulted in the change to EMPNG's Environmental Permit with CEPA in 2024. The detailed modeling of the PNG LNG Plant in this study identified borderline compliance issues at residences north of the PNG LNG fenceline. Monitoring for an industrial standard at the fenceline does not determine if there are any problems where people live. IESC requests a more detailed review of EMPNG's noise compliance, in particular as reflected in measurements from the nearest residential receptors.

4.4 EROSION AND SEDIMENT CONTROL

4.4.1 Project Strategy

EMPNG's objectives are to control significant erosion and prevent sedimentation of surface waters.

4.4.2 Observations

The effort associated with the recovery from the M = 7.5 February 2018 earthquake (EQR project) is nearing completion. As of December 2024, U$S 543.5 million has been spent out of an estimated cost of U$S 585.5 million. Work at Hides is complete; pipeline RoW planned completion May 2025, consistent with the schedule last year.

During 2024 repairs were performed at three major areas:

- ✓ Hides (HGCP, Wellpads & Spine Line) – Phase 1 Complete, Phase 2 Minor scopes complete, FWT repair works complete;
- ✓ Komo Airfield Phase 1 - Complete;
- ✓ Pipeline Right of Way (RoW) - Ongoing.

The overall level of effort that has been associated with the EQR project cannot be overstated. With much of the remedial work associated with micropiles, the size of the EQR effort can be appreciated as representing a significant percentage of the global micropile market, estimated to have been USD 656 million in 2023 by Global Market Insights. Much of the EQR effort along the RoW has been based out of Moro Camp B. A consequence of the completion of the EQR project is that Moro Camp B will be turned over to Santos.

With respect to erosion and sediment control, IESC at the time of the February 2023 visit was able to report major success stories, especially at the Komo airfield. During this IESC visit, the airfield was revisited, as was the area of the HGCP and around Angore, as well as several areas with closure after EQR remediation, which all look excellent, the result of good engineering, construction, and areas stabilizing through natural regeneration.

5 BIODIVERSITY AND ECOLOGICAL MANAGEMENT

5.1 INTRODUCTION

This section provides a record of IESC Observations and Recommendations associated with EMPNG's ecological management (terrestrial, marine and freshwater) including: the ecological monitoring of areas potentially impacted by the project to ensure the Biodiversity Strategy is being adequately implemented; the planning and implementation of the biodiversity offset program (to address those residual impacts remaining after impact avoidance and mitigation); the reinstatement and re-vegetation of areas cleared by the Project, including the Right-of-Way (RoW), camps, quarries, etc.; the management of issues related to invasive species, pests and plant pathogens (including importation quarantine management); and the avoidance of project-related induced access through the construction/retention of roads and the RoW corridor.

The whole Upstream Project area is deemed to be Critical Habitat, in accordance with IFC Performance Standard 6 (2006).

EMPNG's overall strategy for biodiversity and ecological management is described in the Biodiversity Strategy. Records from the EIA baseline studies and the Pre-Construction Surveys (see previous IESC reports for background) serve to establish the ecological conditions prior to any ground clearance or infrastructure development. These records include information on the presence of weeds, and the locations of ecological sensitivities such as (but not restricted to): pinnacles that contain bat colonies; potential Bulmer's fruit bat (*Aproteles bulmerae*) colonies; bird-of-paradise and bowerbird display grounds and trees; large individual trees (>1m diameter breast height); areas of Pandanus swamp forest; swamps in sinkholes less than 50m deep on Hides Ridge; and

Nothofagus (beech) forest that require special hygiene measures (due to risk of dieback as caused by pathogens such as *Phytophthora cinnamomi*). These detailed records were compiled into Registers (i.e. Focal Habitats Register and Weed Register), and information on existing and ongoing ecological condition are being collected through continuing monitoring studies.

5.2 STRATEGY IMPLEMENTATION & MONITORING IN CRITICAL HABITAT

5.2.1 Project Strategy

EMPNG's commitment is to safeguard biodiversity in areas where the company operates and in particular, the biodiversity values in the Upstream area with this being deemed Critical Habitat (IFC, 2006). The Biodiversity Strategy was developed to guide the long-term management of terrestrial and freshwater biodiversity within the Upstream area. The Strategy is to guide EMPNG's overall approach to mitigating impacts on biodiversity in alignment with the avoid, reduce, remedy, and offset mitigation hierarchy. The goal of the Strategy is to retain the biodiversity values of the Upstream Project Area on a regional scale for the long term. To achieve the overall goal, EMPNG's objectives are to:

i. maintain the intactness of the Upstream Area as a whole;
ii. conserve priority ecosystems;
iii. protect focal habitats; and
iv. identify, measure and offset significant residual impacts.

In order to achieve these objectives, avoidance, mitigation and monitoring of biodiversity values needs to take place at three levels:

- ✓ the large scale, which is the entire Upstream Project Area – biodiversity values at this scale include extensive intact forest, high levels of flora and fauna diversity and endemic species, unique assemblages of species, species of conservation concern, and biodiversity of importance to local communities;
- ✓ the medium scale, which is represented by particularly valuable areas referred to as 'priority ecosystems', including forests in the Hides Ridge and high-altitude Homa-Benaria Ridge areas, the Lake Kutubu area and forests in the Juha area; and
- ✓ the small local-scale, which are sensitive habitats referred to as 'focal habitats' and significant ecological features; these include caves and pinnacles, sinkhole swamps, upland streams, stream refuges in unstable landscapes, lowland rivers in stable landscapes, off-river waterbodies, flora/fauna/habitats of cultural significance and lekking trees/grounds.

To ensure that implementation of the Biodiversity Strategy is effective, the Biodiversity Implementation and Monitoring Program (BIMP) should assess on the ground performance against the following five Key Performance Indicators (KPIs) (and each are supplemented by Supporting Indicators):

i. intactness of forest;
ii. trends in species diversity and abundance;
iii. condition of focal habitats;
iv. occurrence of invasive species/pathogens; and
v. accumulated offset gains progressing towards No Net Loss targets.

Four Programmed Monitoring Activities (PMAs) are to be used to collect information for analysis against these KPIs:

- ✓ PMA-1: remote sensing[4] of broad-scale land cover every two years, designed to monitor forest loss, land use change and degradation in the Upstream Area as caused by impacts that are directly Project-related, indirectly Project-related (third-party, induced), non-Project (third-party, expansion of pre-existing activity), and/or natural change (e.g., landslide);

****

[4] Landsat data was acquired for 2009, 2011, 2013 and 2015 periods for the entire Upstream Area (UA), and higher resolution RapidEye data was acquired for 2011, 2013 2015 and 2017 periods for a linear infrastructure (LI) corridor containing the PNG LNG RoW, facilities and all other infrastructure within the Upstream area. Landcover classification of 2019 data was primarily based on 10m Sentinel-2 imagery. A combination of imagery sources was used for the 2020 change analysis including Sentinel-1, Sentinel-2a, Sentinel-2b (Sentinel-2), and high resolution Maxar Imagery captured by WorldView satellites. Data from Sentinel-1 SAR (20m resolution) and Sentinel-2 (10m resolution) satellites was used for RPCM (Radar Persistent Change Monitoring) and Two-date Optical change detection, respectively

- ✓ PMA-2: annual 'condition' surveys of focal habitats and significant ecological features adjacent to and in the vicinity of the pipeline RoW, facilities and other infrastructures;
- ✓ PMA-3: species specialist-led biodiversity surveys, designed to collect and analyze priority flora, fauna and ecosystem data both in/around areas affected by the project and in protected areas enhanced and/or established through the offset program. Areas of focus for these surveys have been Hides Ridge in Hela Province (termed site BAA1) and Agogo Range near Moro in Southern Highlands Province (BAA2) which have been surveyed during 2015, 2017, 2019 and 2021. The 2017 surveys also covered additional areas at Wau & Uro Creeks in Lower Kikori, plus non-aquatic aspects of Lake Kutubu; and
- ✓ PMA-4: to assess the efficacy of the various components of the biodiversity offset program, and to establish, over time, EMPNG's progress with respect to achieving NNL of biodiversity.

In addition, three Environmental Management Plan (EMP) Protocols are used to inform the KPIs. IESC observations on their implementation are provided in sections of this chapter:

- ✓ Access Control: the protocol is to formalize the monitoring of vehicle access to and along PNG LNG project roads and infrastructure to prevent potentially damaging third-party activities resulting from access;
- ✓ Regeneration Monitoring: the protocol is to formalize the collection and analysis of information relating to the regeneration of temporary work areas disturbed during construction and evaluated against established benchmarks; and
- ✓ Invasive Species and Plant Pathogens: the protocol is to formalize monitoring of the occurrence and distribution of invasive species, pests and plant pathogens, and provides guidance on remedial actions.

EMPNG is to evaluate monitoring results gathered via the various PMAs and EMP protocols, and depending on the significance of the findings, implement adaptive actions through management response.

To address residual impacts on Critical Habitat (CH), and in accordance with the Biodiversity Strategy, EMPNG is implementing a biodiversity offset program to ensure no net loss (NNL) in biodiversity (as per IFC 2006). The program components include protected area planning, supporting the national biodiversity strategy, building conservation capacity, enhancing existing protected areas and establishing new protected areas.

EMPNG's Biodiversity Strategy (BS) and Biodiversity Implementation and Monitoring Program (BIMP) documents are publicly available for download at https://pnglng.com/Environment/Biodiversity-management. Following a review of performance against EIS predictions in 2025, EMPNG advises they intend to review and revise the BS and BIMP as appropriate in line with Lender requirements.

5.2.2 Observations

The observations and opinions reported herein are derived from a physical in-country site visit, presentations made by and discussions held with EMPNG personnel and their contractors, and documentation provided during and post-visit.

One noteworthy point to flag is that EMPNG has undertaken a 10-yr review of various aspects of their biodiversity program, in conjunction with key technical external consultants involved in components of the company's monitoring program, e.g., PMA-3, regeneration, weeds etc. The review is in a draft stage and not yet complete but some initial findings were presented. The full review report will be available in the coming months and may be reviewed if Lenders wish. Within this, EMPNG is collating learnings from experience and analyses of certain assessments and analyses undertaken since the baseline studies that informed the 2009 EIS. In conjunction with the external consultants, EMPNG is taking a fresh look at assumptions made and impacts predicted, then assessing the effectiveness of mitigation since that time. The 10-yr review will then guide a program of revision to the current Biodiversity Strategy and Biodiversity Implementation and Monitoring Program. The IESC commends EMPNG for conducting this review and looks forward to learning more of the review and implications if there is an IESC review of the report required or if another IESC visit is scheduled.

5.2.2.1 Staffing and Resources

The Biodiversity Team staffing challenges reported over the last few years have now been resolved. Those incumbents reported as new in positions last year are still in post, and there has been a period of relative stability and mentoring led by the Environment & Regulatory Compliance Manager. Capacity building should continue and the Manager reports that training plans and professional development for implementation will take place in 2025.

5.2.2.2 Biodiversity Strategy, Implementation of Mitigation Measures and Monitoring Program

EMPNG has continued to aim for compliance with the 2006 version of the IFC PSs due to the date that the loan was signed. According to the Critical Habitat assessment undertaken around the time of the loan, the whole area was deemed to be Critical Habitat. Critical Habitat may include both natural and modified habitat and may include some areas of particularly high biodiversity value, e.g. Priority Ecosystems as per the Biodiversity Strategy. During site visit Access presentations, EMPNG declared the Angore to MLV1 area as considered 'brownfield', an assessment which the IESC wholly disagrees with. Use of more localized ecological value assumptions which might align more with the 2012 ecologically appropriate area-based CH interpretation should not be cherry-picked so that some areas be deemed to be less critical than others. Brownfield has very different connotations from Critical Habitat that might happen to have modified areas, and the IESC would caution against use of that term in case this gives a false impression to others within the company that the area is not one of outstanding, international biodiversity value. If EMPNG wishes to discuss amending their E&S compliance regime to the 2012 version of the Performance Standards with the potential to determine Critical Habitat on a more granular area of assessment, Lenders would no doubt be willing to discuss this further.

Avoidance of impacts on important ecology, including PS6 relevant Project incidents

The IESC has observed several areas where impact mitigation approaches and activities do not align completely with the requirements of the EMP. Observations are noted specifically on induced access controls and weed control areas in specific sections below and in the Issues Table.

EMPNG reports the drilling rig move from Angore up to Hides Ridge for F2, passed through and above the 'clean-line' with regard to controlling the spread of weeds, pests and pathogens and went smoothly. The Biodiversity Team developed a colour-code system to clearly identify stages of inspection and verification to document this

The extent of litter observed at/near EMPNG worksites during the 2024 visit has been addressed, and EMPNG reported on their actions to rectify and address the problem. Actions included work-team awareness events, the reinvigoration of team inspections, and periodic clean-up campaigns, culminating in the updates to procedures and the testing of stickers on items such as lunchboxes to help enable identification of which teams may have been responsible for the littering. EMPNG also reported the next steps to be taken to enhance current actions and that performance will continue to be monitored. The IESC observed a much-improved situation when touring work sites, including within priority ecosystem areas.

Freshwater Ecology

Demonstrating avoidance of any construction impacts on stream conditions is key to preservation of upland streams and stream refuges in unstable landscapes, two of EMPNG's focal habitats. The EMP notes key biological aspects in particular, including freshwater systems related to the Kikori River and Moro bioregions important for waterbirds and over-wintering waders, swamp-forests supporting a range of specialist vertebrates and aquatic fauna, streams in higher-altitude hill and mid-montane forest also maintaining specialist vertebrate populations, and lowland rivers supporting crocodiles and freshwater turtles. To understand whether impacts were being avoided and/or rate of recovery in affected freshwater ecosystems, EMPNG has undertaken freshwater ecology and macroinvertebrate surveys at a number of sites over repeated years and has undertaken analysis using multivariate statistics to compare ecological condition differences from pre-construction conditions or differences from reference sites. Measures of diversity (macroinvertebrate indices Also embeddedness is used to assess whether sites have experienced impacts.

During the Production phase, EMPNG has continued extensive site-specific work activities that have the potential to affect freshwater ecology including new construction areas and extensive earthquake recovery activities, such as recovery/stabilization work along the RoW, erosion stabilization at Komo airfield, Angore drilling & pipeline construction, etc.

However, information on freshwater ecology surveys has not been presented since 2021, when the 2020 surveys were presented. The 2020 Upstream Freshwater Ecological Monitoring report detailed the multi-variate analysis and macroinvertebrate sampling and results. These indicated that most sites had shown some recovery since the construction phase, despite an increase in clay and silt fractions observed at all sites downstream of both Komo and HGCP. All three sampling sites downstream of Komo and HGCP were still considered 'impacted', although classified at a 'weak' level with multivariate analyses indicating all were tracking closer towards reference site conditions. Results in 2020 indicated:

- ✓ The Akara Creek site (AKAR1) that was severely impacted from a project-induced mudflow in 2010 had attained a similar diversity and community composition to its reference sites, and only registered as impacted due to a slightly low macroinvertebrate index in 2020;

- ✓ At the Ariago Creek site (KOM4), the recovery seen at AKAR1 suggested that a similar pattern of recovery should have been possible at KOM4, which although having recovered substantially, still had fewer taxa than were present at its associated reference sites;
- ✓ The Wakuba River site (WAKU1) had also recovered when assessed using the original freshwater program indices but had fewer taxa present than it did in 2010.

At the time of the last survey, periodic freshwater ecology monitoring was meant to continue – in 2023, EMPNG stated that freshwater ecology surveys were planned for 2023 or 2024. In 2024, EMPNG reiterated their intention to undertake such surveys, including around Angore Wellpad C once drilling was completed. Considering the extent of potentially impactful construction and stabilization work undergone since the last surveys, the IESC considers that demonstration of avoidance is still an important deliverable during and following such earthworks. An Observation is raised in the Issues Table.

For this visit, there was mention of freshwater ecology testing at Angore, but no information was shared. There were no reports on follow-up freshwater ecology testing at other sites sampled previously, to close out those last impacts bulleted above.

Biodiversity Program Monitoring Activities

Monitoring campaigns have continued on a one/two/four-yearly cycle depending on frequency of data capture and analysis. PMA updates provided are summarized below.

PMA-1 Remote sensing update:

There was no update on remote sensing program this year – following some imagery procurement challenges, the 2024 data for the period 2021-2024 has been collected, and EMPNG expects a first draft analysis report soon. The draft 10yr review will also include an assessment of PMA1 over the 10-years with a view to assess any changes to objectives going forward.

Lenders will recall the issues related to the attribution of indirect Project-related change in landcover noted in the IESC's 2022 report, that is, relating to whether anthropogenic changes in land cover and land use are deemed to be as a result of the Project's presence or enhanced access. The IESC had observed some inconsistency when EMPNG was determining whether newly cleared areas were related to the Project, and not necessarily classifying those that might have been legitimate indirect impacts (and therefore Project related). In response, EMPNG produced Field Guidelines and a decision tree to help assess attributable impacts in a more consistent, repeatable manner. The approach uses proximity and connectivity of the observed change to any PNG LNG footprint/activities, and references levels of evidence thresholds required to determine attribution. However, this procedure has not been used to retrospectively analyze data where the original inconsistencies had been highlighted. As per Observation M21.1, the IESC considers that the Project should use the procedure to retrospectively re-analyze attribution of indirect impacts related to past instances of relevant land cover change (to enable EMPNG to understand any gaps in previous attribution).

PMA-2 Visual observations of 'condition' of sensitive sites avoided by the Project but potentially affected due to their proximity to Project RoW, Project roads and access by communities:

Focal habitat condition observations were made again in 2024, where 13 of the 20 intended sites were accessible – 7 being inaccessible due to vegetation regrowth: those inaccessible sites are deemed to not be impacted. Security issues were not noted this year. The visual observations indicate that the condition of all sites has been maintained, although one site (cave 3213) showed evidence of access by locals noticeable through their littering and graffiti.

All accessible sites will continue to remain on the PMA-2 register due to their proximity to infrastructure and nearby communities.

PMA-3 Rapid, standardized biodiversity survey updates:

The 2023 biodiversity surveys rescheduled for mid-2024 were undertaken successfully and the report will be made available at the end of 2Q 2025.

The draft 10yr review will include an assessment of PMA3 findings to date, a review of objectives and way forward.

There was no mention of whether the hunting surveys reported on previously were undertaken within the scope. Background: The PMA3 team had previously observed an increase prevalence of feral dog predation and hunting pressure over successive survey years and noted that hunters were preferentially using the pipeline corridor for access to hunting grounds that might otherwise have been more difficult to target. The PMA-3 survey team had recommended that EMPNG better understand the observed threats. In 2021 EMPNG committed to develop and implement a pilot study in one of the PMA-3 survey areas. During the 2023 IESC review, EMPNG had concluded that the study outputs were found to be less than satisfactory and that alternative ways to gather the data from

hunting communities would be explored. The IESC raised an Observation in the Issues Table (M22.3) to encourage EMPNG to demonstrate more urgency in completing this work. In IESC opinion the timescale from observation/specialist recommendation to characterizing the threat, to addressing through enhanced mitigation measures did not reflect potential threats posed to threatened species by this enhanced access. During the 2024 visit, EMPNG reported that the hunting questionnaire survey methodology had then been reviewed and adapted by the relevant team members of the PMA-3 survey team and would be implemented during the postponed PMA-3 surveys scheduled for 2024. However, there was no information on whether this work was undertaken or how any findings can be used to address hunting threats from pipeline-enhanced access. Observation M22.3 is retained for future review.

The IESC had previously recommended the PMA-3 survey reports from 2017 and 2019 missions be published in the Ecology Report section of the PNG LNG website, alongside the 2015 report. The Project has added the 2019 and now the 2021 reports, but the 2017 report is still missing – see Recommendation.

As noted previously, some Lenders have specifically requested that EMPNG share PMA3 data directly with the Global Biodiversity Information Facility (aka GBIF, www.gbif.org) in alignment with the Equator Principles – Lenders recognize that the majority of PMA-3 reports are published on the PNG LNG website (though not the 2017 report), but there would likely be datasets of value to the GBIF community. Recommendation retained.

PMA-4 Evaluation of the efficacy of the offset program, tracking progress in achieving NNL of biodiversity:

For purposes of representing targets for No Net Loss (NNL), a combination of known construction footprint and previous PMA1 assessments have determined the calculated losses that require suitable offset. Note, EMPNG's offset framework includes a notional 50,000 hectares in each of the three elevation zones to allow for contingencies and uncertainties.

EMPNG presented their graphs for each altitude level to represent biodiversity gain as claimed from offset program implementation to date, along with future trajectories of projected gain derived from predicted averted losses – the graphs below remain unchanged as there was no change in the area of land that comprises the offset in the past year.

The presented graphs are shown in Figure 5.1 below and observations on each biodiversity offset component are further described below.

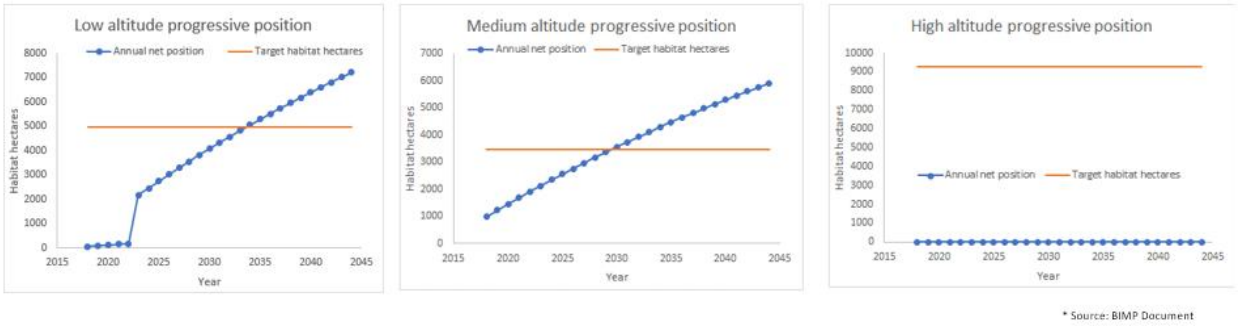

Figure 5.1: EMPNG's Representation of Current vs Future Biodiversity Gain

The gain claimed by averted loss can be highly uncertain and inadvertently overestimated[5] and good practice requires there to be a genuine threat of loss that requires averting, otherwise the Project could be accused of claiming gains inappropriately. The signing of Conservation Deeds, as has occurred in the Lower Kikori, follows extensive facilitated community involvement and, although being a legal declaration of conservation intent, should be combined with the demonstration of positive conservation outcomes so as to legitimately claim the associated gains. The IESC continues to recommend that such projections of gain derived from support to conservation activities be complemented by demonstrable improvements in habitat condition. Support to conservation groups such as the Lake Kutubu WMA Committee and the Conservation Deed holder groups is highly valuable, but a claim to averting predicted losses should be backed up by ongoing demonstration that losses have not continued during the period of support, and ideally that habitat is at least retained and restored successfully. This should lead to more defensible claims of biodiversity gain associated with the offset program. As reported in earlier IESC reports,

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[5] Maseyk et al, 'Improving averted loss estimates for better biodiversity outcomes from offset exchanges', Oryx, 2021, 55(3), 393-403.

EMPNG has agreed that best estimation of averted loss would still be tracked but that supplementing this with habitat condition data would help ascertain actual loss/gain levels.

5.2.2.3 Biodiversity Offsets

5.2.2.3.1 Offset Program Design and Early Implementation

To achieve NNL, EMPNG's offset program combines both direct and indirect (enabling) components. The Company has provided the IESC with updates on each component.

Offset Component 1: Protected area planning. Support to the Conservation and Environment Protection Authority (CEPA) in meeting its international Convention on Biological Diversity (CBD) commitments via production of a 'Protected Area System Plan' for a Kikori-wide river basin (on World Heritage 'Tentative' list).

As before, EMPNG considers this component complete with the publication of the 'Protected Area Planning for the Kikori River Basin' report written by WCS in 2017. They state the work has informed the identification of Project offset sites and protected areas established via Components 4 and 5 below.

Offset Component 2: Support the National Biodiversity Strategy and Action Plan (NBSAP). EMPNG's focus has been to support communication initiatives and networking workshops.

The company reports that CEPA is socializing the PNG Protected Area (PA) Policy 2014, and the new PA Action 2024. EMPNG has supported a number of meetings whereby CEPA have engaged directly with various conservation stakeholders, providing opportunities to present the new PA approach and discuss the new approach and answer questions. Going forward, EMPNG plans to support others on areas of overlap with NBSAP activities supporting CEPA in, for example, supporting CEPA and USAID in the development of the National Ranger Program Strategic Plan and National Ranger Program Implementation Plan (NRPSP and NRPIP), and in reviving the earlier World Heritage Work (the Kikori River Basin/Great Papuan Plateau entry remains on the on the WHS website Tentative list dated 2006[6]).

The IESC commends the company for looking more widely at which NBSAP supporting activities they are able to contribute towards.

Offset Component 3: Enhancing Conservation Capacity Program (ECCP).

Support to New Guinea Binatang Research Centre[7] (BRC) in building capacity of rangers continues, and in 2024 directly supported the sponsorship of 20 trainee conservation rangers to acquire international tropical ecology skills and ranger training. The program will take in a larger cohort in 2025 and 2026. This program is directly empowering rangers, some of whom work in conservation programs being implemented through EMPNG's biodiversity offset program, as well as building valuable conservation skills in young professionals.

EMPNG has continued the collaboration on capacity enhancement with the BRC sponsoring students in achieving postgraduate studies, plus the two PhD students due to graduate in 2026 .

Lastly, the company report that in 2024, they worked in collaboration with CEPA, donor, development partners and local conservation NGOs to facilitate the establishment of the National Rangers Association of PNG. In addition, they participated in the NRPSP and NRPIP noted in Offset Component 2 above.

Offset Component 4: Support for existing protected areas.

(1) Enhancement of the Lake Kutubu Wildlife Management Area (LK WMA) in the middle elevation zone has been the primary focus for achieving this component.

The IESC is sad to report that the LK WMA Chairman, Lawrence Kage, was killed in March 2025.

The IESC proceeded to visit the WMA as a result of the specific invitation of Lawrence's family and the Committee, we were told it would have been what he wanted.

However, this was not an appropriate time to continue the dialogue with the WMA Committee on conservation progress being made at the Lake as the visit coincided with the time of mourning. The IESC wishes to thank the family and Committee for the invitation to visit and pay respects. Lawrence's legacy will continue through the work of the LK WMA Committee. His son Ben has agreed to continue as Chairman.

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[6] UNESCO WHS available at https://whc.unesco.org/en/tentativelists/5060/ accessed in March 2021.

[7] BRC supports EMPNG as service provider on a number of biodiversity work programs, including regeneration & weed audits.

In 2024, EMPNG described plans to implement a Stakeholder Workshop Strategy for LK WMA.

They advised two specific multi-stakeholder engagements, one at the Southern Highlands regional level, and one at Port Moresby. CEPA used the opportunities to talk about the new PA Policy and PA Act. The new Act requires changes in the requirements for new and existing PA establishment and registration, and therefore EMPNG's biodiversity offset work at LK WMA will need to adapt. Under the new rule, LKWMA will be reclassified as a Special Management Area, and therefore EMPNG is revising their forward work plans to comply with the new Act and also still deliver a biodiversity offset appropriate for Lender-financed projects.

EMPNG also reports that the workshop in Port Moresby increased opportunities for collaboration with industry (including neighbouring Santos), conservation NGOs (WWF and WCS) and international government bodies, e.g., UN Food and Agriculture Organisation. However, they acknowledge that the workshop also highlighted that additional mapping of stakeholders is necessary and that potential risks should be assessed. They intend to also reassess and/or confirm the biodiversity, bio-cultural and socio-economic (livelihood) value of the LK WMA. With Santos, EMPNG notes an MoU is due to be signed for more structured collaborative working in Q3 2025. There has also been engagement with the national Ramsar Focal Point person in CEPA, who is also the Manager of Terrestrial Areas.

Following EMPNG's assessment of the requirements of the new PA Policy and the Act's more structured framework (and implications for their biodiversity offset program), their new proposed approach appears to generally align more closely to the IESC's recommended approach, i.e., the importance of the Lake Kutubu WMA protected area management plan being representative of the biodiversity values to be conserved, be scientifically robust, based on up-to-date information, setting clear ecological and ecosystem service preservation objectives and outcomes, and be well informed by a wide range of stakeholders' needs and opinions.

The IESC had requested that IESC/Lenders be kept informed on a more regular (quarterly) basis as the protected area framework is developed – this did not occur during 2024, but again IESC stresses that Lenders require more frequent progress updates considering the importance of Lake Kutubu to the delivery of conservation gain in the middle elevation zone.

As observed in previous years, EMPNG's support to the Lake Kutubu WMA Committee has been invaluable in building the capacity of Committee members to identify and undertake numerous WMA-relevant activities. Nevertheless, for a program within EMPNG's biodiversity offset to achieve No Net Loss, there is not yet a demonstrable direct linkage between ongoing efforts with the Committee and gains in biodiversity. EMPNG's support to the development of a management plan through the now more formalized, structured process will be key to delivering necessary ecological benefits from the community-based conservation model currently being supported. As explained more fully in the 2023 IESC report, the need for timely stakeholder mapping and effective engagement with a broad range of stakeholders will be crucial for the protected area management plan to be considered legitimate, be informed by an appropriate range of views, and therefore owned by the wider 'community' of stakeholders (see Recommendation, which is retained).

The IESC non-conformance M20.1 (raised as an Observation in 2021 and up to a non-compliance Level 1 in 2023) is retained, relating to the gap in EMPNG not yet supporting freshwater ecology studies[8], especially with regard to the importance of establishing a current reference point from which to develop management plan conservation objectives. EMPNG is of the opinion that the forthcoming collaboration with Santos will allow this to be addressed – however the fisheries study shared as an example of delivering on freshwater ecology was not sufficient as it focused primarily on fish as a resource as opposed to the overall health of the lake ecosystem recognizing the threats to the endemic fish species from introductions of tilapia.

(2) **Lower altitudinal zone: Neiru WMA (previously called Aird Hills WMA in earlier IESC** reports)

As noted above for Lake Kutubu, EMPNG is now reassessing their approach to formalize protection at the Neiru WMA according to the new PA establishment regime.

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[8] As EMPNG pipeline passes through the WMA, a legally protected area, to align with PS6 requirements, the Program should be representative of the aquatic conservation objectives of the lake. Regarding conservation objectives and understanding baseline ecology, as flagged multiple times, the IESC's opinion is that EMPNG should be more cognizant of the conservation of the lake's unique freshwater ecology and therefore this be represented more fully in the support provided via the Project's WMA offset program. It is clear that the WMA Committee has significant interest in understanding the aquatic ecology of the lake and in maintaining the unique endemic fish populations for which the lake is internationally recognized. For background, Lenders should refer to the 2022 IESC report Sections 5.2.2.2 (Component 4) and 5.2.2.3 (responsibilities of clients operating in Protected Areas) and updates in the 2023 report.

During 2024, EMPNG made two visits, including CEPA who again used the opportunity to socialize the PA Policy and new PA Act.

Following the visits, the company reports there may be some delays to the process whilst the community resolve disagreements over the boundaries of the WMA and committee representation. In the interim, some resource mapping may occur.

Offset Component 5: Establishing new protected areas.

a) At the Lower Elevation Zone (0-600m):

Progress continues at the Lower Kikori offset location, although EMPNG noted again that program implementation will need to be reassessed in light of the new requirements from the new PA Policy and new PA Act.

There have been two further visits to the communities in Lowr Kikori, and CEPA used the opportunity to visit to socialize the new PA Act requirements. The work with CEPA has also facilitated closer support to revive the World Heritage work in PNG,

EMPNG presented the plans for use of the World Bank and WWF's Management Effectiveness Tracking Tool (METT), developed in 2022. They have used CEPA's recommended measurement tool, the PNG specific METT to establish a baseline in the Lower Kikori. This provided an understanding of participants' perceptions on topics such as the importance of benefits provided by protected areas, community visions and objectives for the establishment of Community Conservation Areas (CCAs), and training needs.

The CCAs proposed to date represents over 27,623.5 Ha of wetlands committed to conservation by 11 communities – see figure below. Four additional communities have completed resource mapping during 2024 and are progressing through the process for development of community agreed Conservation Deeds.

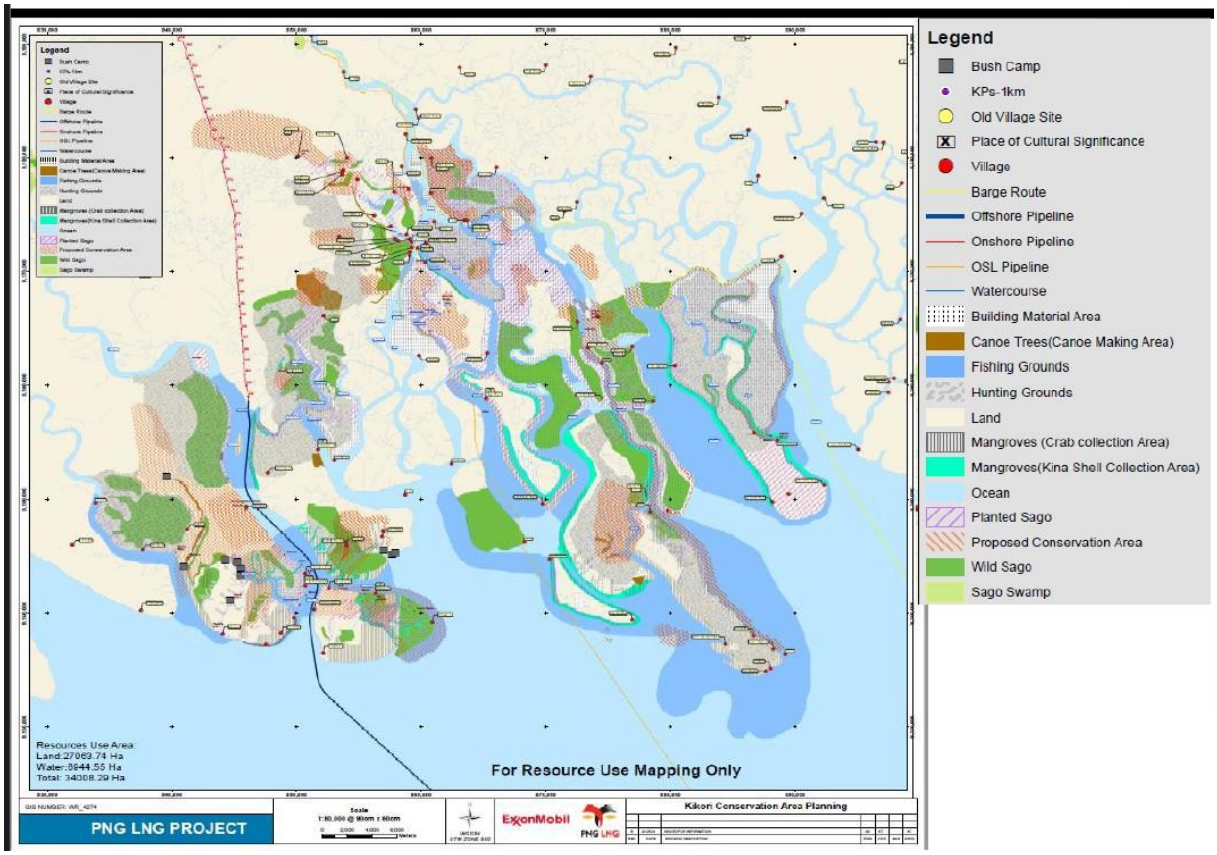

Figure 5.2: Lower Kikori proposed Community Conservation Areas, EMPNG.

b) The Upper Elevation Zone

The Montane altitude (elevation >1200m) represents the largest proportion of the overall residual biodiversity impact for the Project. Therefore, the biodiversity gain required is greatest at this higher altitudinal zone, through the creation of ecologically comparable areas managed for biodiversity.

EMPNG acknowledge that traction has been slow due to a lack of community buy-in, exacerbated by a complex land tenure system and a challenging security situation – this has been summarized over the last decade of IESC reports, so does not require repeating here.

Again, with the new CEPA process, with specific guidelines and processes to be followed to establish and register protected areas, EMPNG will adopt the process for the long-awaited higher elevation biodiversity offset.

Since the last IESC visit, EMPNG has adapted their previous approach to engaging in conservation, shifting more towards conversations around cultural heritage and interactive story-telling with an aim to discuss fauna and flora in a more culturally-acceptable way. Now there have been invitations to EMPNG from the community; four communities were visited during 2024, and the IESC was lucky to be involved in a traditional cultural meeting in Para where intentions and commitments were voiced by both community and EMPNG alike.

This new approach has resulted in clans now committing to build a new community house, to accommodate all genders, specifically to discuss conservation matters. EMPNG report that the recent discussions have triggered the elders to gather young men in their 'hausman' (traditional building) to share traditional knowledge and history – discussions so far had raised awareness that made locals aware of loss of traditions, cultures and conservation knowledge, along with the threats faced. Therefore the elders are leading the communities towards conservation, recognizing the threats and losses to biodiversity and cultural values.

EMPNG report that they intend to make use of a local community based organization who, once trained, will lead engagements with communities, both those already visited and those in more remote areas, For the four communities that have already agreed to collaborate EMPNG plans to create content to facilitate the story telling such as posters, story books of totem animals and plants.

Recognising the delays already experienced at this higher montane elevation, the company proposed to the IESC a contingency plan in the eventuality that the current efforts do not yield the desired results. Although their primary focus will be to exhaust all viable options within the Hides area, EMPNG has committed to explore conservation opportunities in other regions. As the upper elevation zone has the largest Project footprint, and EMPNG's Biodiversity Strategy (and therefore offset program) is now over 13 years old with no conservation gain foreseeable, the Level 2 non-compliance opened in 2024 is retained – see Issues Table (Section 2).

5.2.2.3.2 Alternative Livelihood Strategy implementation at Offset areas

A key enabler of Biodiversity Strategy implementation, and the long-term conservation gain required for a lender financed project, would be through supporting alternative livelihoods to increase the chances that natural resources in all forms can be preserved. For the last few visits, EMPNG had presented the importance of implementing an Alternative Livelihood Strategy (ALS) for offset implementation (see last IESC report, end of Section 5.2.2.3) which had been developed and provided earlier in 2023. This defined a work program for implementation in each biodiversity offset program area, recognizing that different location characteristics will mean tailored approaches, which was to be defined in site-specific plans.

For conservation to be successful, it should be cognizant of the needs of people in and around areas of high ecological and ecosystem value. Managing ALS in offset areas is to be welcomed, where the preservation of biodiversity values might otherwise restrict traditional access to natural resources – in addition, aspects of PS7 can be complemented by providing opportunities for development benefits.

In 2023, the IESC report noted that next steps would involve a scoping study using two or three of the existing offset areas to generate a SWOTs analysis (strengths, weaknesses, opportunities, threats), to then inform the development of a site-specific Alternative Livelihoods Plan. At the time of the 2024 visit, this had not progressed, primarily due to Biodiversity Team staffing constraints. However, since that time, development and implementation of the Strategy still does not appear to have progressed.

EMPNG has significant experience in tailoring and implementing livelihood and community development programs. As site-specific conservation objectives and sustainable natural resource plans (developed as part of the offset program) will be different for each offset area, so will the alternative livelihood activities – this complements a previous IESC recommendation to have site-specific offset management plans. The ALS program, if suitably funded, resourced and managed through time, should help EMPNG achieve sustainable gains over the required timeframe and increase the chances of offset success.

5.2.2.4 Legally Protected Areas

The IESC refers Lenders to the IESC's 2021 report for background on EMPNG's responsibilities in relation to PS6 (2006) Paragraph 11 regarding operating in a legally protected area, including those related to the promotion and enhancement of the conservation aims of the protected area. Also reference Section 5.2.2.2 above on Offset Component 4 (existing protected areas) for how the Project's support for conservation should address all priority biodiversity values within the protected area.

The Project has undertaken over a decade of solid foundational work with the WMA Committee as part of the mid-elevation offset program. The IESC non-conformance in the Issues Table recommends that EMPNG consider the gaps in alignment between the approach taken for offsetting residual impacts on specific biodiversity values versus the requirement to promote and enhance the conservation aims of the protected area within which the Project is located. The Project's previous exclusion from the 2017 PMA-3 scope of an updated scientifically robust aquatic biodiversity survey at Lake Kutubu to support the preservation of the freshwater ecosystem, is not in alignment with primary conservation aims of the protected area.

The IESC continues to recommend the Project plan to include an updated appropriate assessment of the Lake Kutubu freshwater ecosystem (e.g., via a PMA3-type biodiversity assessment survey) as part of the foundation for enhancing the conservation aims of the WMA protected area.

5.2.3 Recommendations

1. The IESC encourages the Project to seek improved engagement with conservation NGOs to help provide additional transparency and alternative viewpoints for the residual impact and offset programs.
2. The 2017 PMA3 biodiversity report should be posted on www.pnglng.com alongside the 2015, the 2019 and 2021 reports.

5.3 RESTRICTING VEHICULAR ACCESS ON EMPNG ROADS

5.3.1 Project Strategy

Opening up access to areas that would be otherwise inaccessible by vehicles can cause significant impacts such as enabling the degradation or destruction of critical or natural habitat, logging, the uncontrolled spread of invasive species and pathogens, and other impacts known to arise through enhanced access. EMPNG's objective as per the EMP is to control vehicle access to Project roads and infrastructure, to prevent potentially damaging third-party activities.

During construction, EMPNG constructed a road to link up OSL roads between Kantobo and Gobe for purposes of constructing the main RoW. The Kaiam and Mubi bridges were also built, thereby enabling access from Moro south to the Kopi Scraper Station and to the Omati landfall. The Project road and bridges were kept open post-construction, thereby enabling what the IESC has referred to in previous reports as the 'Southern Highway'.

EMPNG has retained a number of RoW construction access tracks/roads for permanent use during the Production-phase, so as to allow emergency access, maintenance and delivery of fuel to above ground installations (AGIs), such as main line valves (MLV), check valves (CV) and cathodic protection stations (CP). Background on the justification for access and methods of access control is provided in the Upstream EMP and in previous IESC reports detailing our opinion on the status and effectiveness of each vehicle access control.

EMPNG's strategy is that access will generally be allowed only to EMPNG vehicles. The Project's management plans state access by third-party vehicles serving operational needs may be sanctioned subject to prior approval from EMPNG, and that access by landowner vehicles may be sanctioned subject to approval from EMPNG. In both cases, access will be authorized only by designated EMPNG personnel. Vehicles will be inspected as deemed appropriate. A Vehicle Monitoring Plan (VMP) is meant to describe the process to be followed for vehicles seeking authorization to use EMPNG roads, and data is being gathered on the type of vehicles passing through points where Access Monitors are located.

CEPA's Environmental Permit states that EMPNG is "required to establish and maintain systems to ensure project infrastructure and road systems are not used in any way to provide support of logging activity or any other uncontrolled access. Prevention of access should continue until such time as natural vegetation regrowth prevents their use."

5.3.2 Observations

The basis for the EIS assessment of impacts and significance was that the vehicle movements along Project's roads and bridges would require assiduous control to maintain the conservation assets of the area, and that access should be controlled for Project use only. It is IESC opinion that EMPNG should control access to Project roads to avoid and minimize impacts related to enhanced access such as increased hunting to more easily accessible areas, land clearance/logging and the transmission of weeds, pests and pathogens.

Angore wellpad access roads and third-party activities

On the EMPNG-upgraded public road from Idauwi Junction towards the EMPNG-constructed Angore Wellpad Access Road (AWPAR – see Figure 3.7), upgrades to the public road were noticeable with construction upgrades around culverts, stabilisation measures, earthworks and installation of electricity posts with overhead cabling. It was not clear at that time why the road was being upgraded or where materials were being sourced from.

Once on the AWPAR, it was immediately clear that road-building contractors were utilizing the road, later confirmed to be working on behalf of the government. Two newly opened quarries were in active operation, one on the road from Angore Wellpad A to Wellpad C (note: with excavators working at dangerous angles on extremely steep extraction faces), the other a large quarry in close proximity to the gates of Angore Wellpad B (see Figure 3.8).

The EMP commitment to control access to prevent potential damage by third-party activities accessing EMPNG roads by vehicle was clearly not being met, and encountering this breach of commitment was clearly a surprise to all personnel accompanying the IESC on the trip.

It became clear that neither the Environment Manager (or the Community Manager) had been informed about the use of company roads and establishment/operation of the two quarries.

EMPNG's response to the observations was provided to the IESC within two days:

> *During the transition from the Angore Project to Operations phase in late 2024, EMPNG faced heightened community tensions and security challenges, driven by reduced local employment opportunities, clan fighting and revenge killings. Clan leaders from WPA and WPB, seeking to regain community stability through business prospects, independently facilitated access to ancestral lands to local contractors, contributing to the use of Project roads. This coincided with Local GoPNG contractors using the WPA-WPC road for quarrying to support government-funded road construction and upgrades, The implementation of critical road infrastructure, balances community needs with regional stability.*

The IESC raises a Level II non-conformance in the Issues Table in Section 2.0. The IESC acknowledge that community relations have been strained in the area. Nevertheless, the observation signifies a breakdown either in internal communications between the Government Affairs team and the E&S team Managers (who should have been consulted on any decision when an approach by the government was made relating to impact in Critical Habitat) or a breakdown in communications between the Government Affairs team and their contacts within the government. Observations made during an IESC visit should not be the first time the Environment and Community managers discover breaches of commitments made to Lenders.

EMP requirements for controlling access to Project roads & infrastructure

The EMP Table 17.1 is as per the 2019 version available on www.pnglng.com, where mitigation (1) requires access controls that restrict vehicular access to EMPNG roads, (2) requires access to only pre-authorized vehicles, and (3) defines the mitigation controls at access points along project roads.

As noted previously, EMP control mechanisms of only allowing access to EMPNG vehicles are not being fully implemented on the Project's Gobe to Kantobo stretch of the 'Southern Highway', thereby allowing open access from Kaiam Bridge/Kikori River up to Moro. Also, landowner vehicular access being sanctioned by prior approval by EMPNG is not being applied in some circumstances, e.g., Angore access road to Check Valve #1.

During this visit, the IESC was able to have a helicopter flyover from Moro to HGCP, although cloud cover prevented observation of some areas. Observations made in relation to all controls stated in the 2019 EMP are included in the table below. The table below is adapted from one compiled in 2024 by the IESC following the road trip from Kopi to Moro and updated to flag gaps between reality observed and the EMP, to help to show where gaps have not closed.

Table 5.1: Status of access controls and monitors versus 2019 EMP requirements

	Access location / infrastructure	Access reason	Current Vehicle Access Control/Monitor Status from EMPNG
1	Hides Ridge	Producing wells	EMP requires: **Staffed** station at vehicle wash at base of well pad access road. IESC observation 2025: Vehicle wash and check station is still operational. EMPNG advises that all vehicle access is logged, and all vehicles washed on entry to the road.
2	CV-1 near Tagari River crossing (access from Angore)	AGI (Above ground installation)	EMP requires: **Unstaffed** boom-gate between Angore WP-B and the RoW. IESC observation 2025: The gate as noted previously by EMPNG as having been removed, was reinstated but moved again (and now vandalized) but this time to the opposite side of the pipeline RoW, therefore providing zero control to vehicles in the vicinity of the RoW. The current placement of the broken gate is on the EMPNG track in a position that allows the landholder to operate multiple vehicles to/from their house. and there is no physical control measure in place. EMPNG reports 2025: boom gate vandalized, CV1 access road undriveable. ***Not in compliance with EMP***
3	Angore well pad access road, at end of public road from Idauwi	Drilling and future producing wells	EMP requires: **Staffed** via Monitor to be present adjacent to EMPNG facilities. In an attempt to control access onto the well pad access roads, EMPNG reported they had been working with the community on how the gate will be managed. IESC observation 2025: Construction gate no longer present. As noted on previous visits, no monitor present. **See section above on active, new third-party access/quarries on AWPAR.** EMPNG reports 2025: the area had not been inspected due to security issues. ***Not in compliance with EMP***
4	MLV-1 Benaria	AGI	EMP requires: **Unstaffed** boom gate at junction of public road and pipeline construction track. However, there has never been a boom gate in place. IESC was advised in 2016 that the lockable boom gate would be in place and the temporary construction bridge would be removed before the end of the year - this did not occur due to security issues in the area. The IESC was then told that a locked boom-gate would be installed once the government has completed the installation of a permanent bridge to link Benaria Station to the public road. IESC observation (from the air) 2025: EMPNG's temporary construction bridge to access MLV-1 is still present, and there is still no boom gate (even though the government replacement bridge has now been in place for several years). EMPNG reports 2025: the area had not been inspected due to security issues, which have also prevented removal of temporary bridge and installation of lockable boom gate. ***Not in compliance with EMP***
5	MLV-2 & Homa-Benaria Ridge access track	AGI / Road	EMP requires: access controlled via an **unstaffed** gate at the junction of the public road and the Homa Ridge Access Road i.e. the pipeline construction track. IESC observation 2025: from the helicopter flyover, it appears the gate is in place and locked.
6	MLV-3	AGI	EMP requires: access controlled via an **unstaffed** gate at the junction of the public road and the RoW. EMPNG report 2025: the gate is in place and locked.

	Access location / infrastructure	Access reason	Current Vehicle Access Control/Monitor Status from EMPNG
7	MLV-4	AGI	EMP requires: access controlled via an **unstaffed** gate at the junction of the public road and the RoW. IESC observation 2025: the gate is in place and locked.
8	CV-2, Moro	AGI	EMP requires: no access control deemed necessary as rely on OSL road controls at Moro.
9	Agogo tie-in (KP101.8)	AGI	EMP requires: an **unstaffed** gate at the junction between the RoW and the OSL road. EMPNG report 2025: the gate is in place and locked.
10	Kutubu MLV (KP 107.5)	AGI	EMP requires: **unstaffed** gate at the junction between the road and the RoW. EMPNG report 2025: the gate is in place and locked.
11	**Moro/Kutubu to Kantobo** OSL road, access to CP-1 (KP153).	AGI / Road	EMP requires: access to be controlled from the north via OSL **staffed** gates located at KP95 (CV2) and KP120 (Manu). The RoW runs adjacent to the OSL road. IESC Observation in 2024: did not notice being stopped by staff at either of the OSL gates noted above. Unclear if in compliance with EMP.
12	**Kantobo to Mubi River Bridge** **EMPNG road** (Heartbreak Hill)	Road & Bridge	EMP requires: access controlled from the north as above, and from the south as below.
13	**Mubi River Bridge to Gobe** **EMPNG road** (upgraded incl. Heartbreak Hill & Mubi Bridge)	Road / Bridge	EMP requires: access to be controlled from the south via **staffed** gates located close to Gobe. IESC Observation in 2024: did not observe any staffed gates close to Gobe apart from OSL gates on the side-road to Gobe airfield. EMPNG report 2025: access is monitored from the south via manned gates located close to Gobe but bar/pole pivot was removed by locals.
14	Gobe MLV (KP192)	AGI	EMP requires: an **unstaffed** gate at the junction between the road and the RoW. There is a 1km access track retained from construction, from the public road to the MLV. IESC observation in 2024: did not observe any closed unstaffed gate. EMPNG report 2025: access controlled via an unstaffed gate at the junction between the road and the pipeline construction track.
15	CP-2 (KP227)	AGI	EMP requires: an **unstaffed** boom gate at the junction between the public access track and the RoW. IESC observation 2024: did not observe any closed unstaffed gate. Not clear if in compliance with EMP. EMPNG report 2025: access is controlled via an unmanned gate at junction between RoW and public access track.
16	KP232	AGI	EMP requires: an **unstaffed** gate at the junction between the public road and the RoW. IESC observation 2024: the boom gate was closed but no padlock was in place.
17	Kopi Shore Base to Kopi Scraper Station	Road / Bridge	EMP notes that access to Scraper Station is directly from the public road, so no access control is necessary. EMPNG previously advised that this road was formally handed over to the government in 2016 following their request in 2015.

	Access location / infrastructure	Access reason	Current Vehicle Access Control/Monitor Status from EMPNG
18	South side of Kaiam / Kikori River Bridge	Road / Bridge	EMP requires: **staffed** boom gate with Access Monitor gathering data IESC observation 2024: the gate was still present but left in an open manner, the Access Monitor was not present. ***Not in compliance with EMP***

As noted in the table above, observations made during this visit have again confirmed that several aspects of intended control measures as set out in the EMP are not in place at some locations and not clear in others. Some controls have *never* been aligned with those set out in the 2019 EMP (or previous versions). There have been no MoCs developed or passed to Lenders for these intentional, non-compliant occurrences, as would be necessary to assess whether changes to commitments and procedures will potentially have environmental and/or social consequences. The existing Level II non-compliance is retained, based on direct observations of a significant breach of a commitment with EMP-compliance gaps flagged multiple times in previous IESC reports.

Access Control – data collection of Upstream vehicle movements

'Access Monitors' are meant to be stationed at various points where EMPNG has a responsibility to control access to company roads; they are meant to record vehicle data and destination details and perform some sort of control deterrent to deter vehicle incumbents from logging or hunting etc. Monitors are meant to be at Angore, where a monitor has not been in place for several years, also at Kaiam/Kikori River Bridge and on the RoW near Gobe neither of which had monitors in attendance when observed by IESC during the site visit road-trip in 2024. Essentially, the monitors allow free movement of vehicles along parts of the 'Southern Highway' section. The IESC has questioned several times how this can be assumed to be 'control' of access.

EMPNG advises that due to the Community Affairs team needing to allocate officers to priority active work fronts, there are no longer any designated officers available to work south of Moro to collect and verify vehicle log sheets for the southern logistics route. In addition, there have been delays in obtaining access control data for the purposes of updating and analyses of vehicle movement data. EMPNG again presented vehicle monitoring results from the Southern Logistics route, albeit a partial dataset in light of the above. IESC concludes that this data cannot be relied upon for the collation and analysis of vehicle frequency and type – partial, unreliable data could mislead any conclusions that might be drawn and it would be inadvisable to consider it an accurate representation. Vehicle data is therefore not presented in this report.

EMPNG advises they are undertaking a residual risk screening for the Southern Logistics route, commencing 1Q 2025. In addition, an environmental aspect assessment for the route will be commenced in 2Q 2025. It is not currently clear what data will inform these assessments (vis a vis unreliable nature of the vehicle data), but IESC presumes EMPNG intentions that they inform a revision to the Upstream EMP, process reported to have started in 4Q 2024.

Access Control – LNG Plant

IESC reports in 2018-2019 noted repeated vehicular incursions into the pipeline landfall RoW area, with evidence of mangrove trees being cut and extracted. During 2020/21, concrete blocks were placed blocking off the vehicular access route. EMPNG state that ongoing monitoring makes use of security cameras placed along the fenceline at the RoW pipeline landfall. They state there have been no further vehicular incursions onto the landfall RoW area.

See Section 5.4.2.3 for updates on observations of new timber harvesting at the pipeline landfall.

Ownership of roads / infrastructure between company and government and responsibility for mitigation

Notwithstanding the uncontrolled use of the company roads and new third-party quarries at the Angore wellpads reported above (probably government-sanctioned for public road building), EMPNG state there is no change in the current status of road-ownership negotiation descriptions, as reported repeatedly in previous IESC reports:

- ✓ The Project road linking the Kopi shore base to the Kopi Scraper Station at KP was formally handed over to the government in 2016 following their request in 2015;
- ✓ EMPNG advises there has been no significant change to previous updates regarding any requests from the Government related to handover of Project road-infrastructure such as the '**Southern Highway'** (Gobe to Kantobo road section) and the **Kaiam Bridge** (see IESC report November 2016, Section 3.2 and Section 5.4.2 p.42-43 for background).

- EMPNG completed an internal risk assessment for use in the event of a request to handover the Gobe-Kantobo section of the 'Southern Highway'. EMPNG now advise they plan to revisit the risk assessment mitigations,
- EMPNG is preparing for when the request comes and intends to develop an MOU with the government to detail commitments for environmental and social protection once dialogue restarts.

Lenders should note: The government has now embarked on a major multi-phased program to deliver 16,200 km of strategic roads on a rolling 20-year basis – see the Connect PNG 2020-2040 Program (brochure[9]). The 'Southern Highway', the section of road linking Moro-Kantobo-Mubi Bridge-Gobe down to the Kaiam Bridge is referred to as the Gulf-Highlands Highway, or the Highlands-Gulf Corridor. It is also worth noting that the government is seeking to develop alternate seaports in the Kikori, maximizing the access opportunities right up to the Highlands. This may potentially have repercussions on the extent to which EMPNG can secure any long-term influence on environmental and social protection of the area surrounding their infrastructure in the Gulf and Southern Highlands provinces and will require careful consideration on risks posed.

The IESC retains at the end of this section the recommendation noted previously.

5.3.3 Recommendation

1. As previously, and notwithstanding the new quarries and third-party use of the AWPAR, EMPNG should ensure as part of any negotiations with the PNG government regarding transfer of ownership of roads/infrastructure that every effort is made to prevent any ecological damage through third-party access to areas, and therefore allow the company to uphold their commitments made to Lenders with regard to invasive species, induced access, and ecological management. Potential risks need to be fully understood, and effective mitigation options discussed.

5.4 REINSTATEMENT AND REGENERATION

5.4.1 Project Strategy

EMPNG's objectives are to promote regeneration of temporary work areas disturbed during construction and achieve vegetation succession according to established benchmarks. Where new ground is disturbed, the objectives are to establish stable landform conditions and create ground conditions conducive to natural regeneration to then achieve vegetation succession as above.

The Regeneration Monitoring surveys, undertaken every two years by EMPNG's external partner Binatang Research Centre (BRC), uses fixed and random sampling and a benchmarking scoring system to evaluate the progression of plant community succession within the Upstream area. Project-affected areas undergoing natural restoration are visited, and progress compared against benchmark sites determined previously. The methodology is detailed in Appendix 3 of the Upstream EMP available at www.pnglng.com. EMPNG has also used aerial assessments of regenerating areas to check for evidence of encroachment or slope failure.

5.4.2 Observations

5.4.2.1 Reinstatement, regeneration, restoration of work areas no longer required

Reinstatement and restoration - Angore wellpads

The EMP Section 14 requires the regeneration of temporary work areas whether from construction or from new disturbance (14.5). The Angore Environmental Management Plan also includes the commitment to create ground conditions conducive to natural regeneration. The IESC recognizes that facilities have only just been removed following the drilling of dry holes at Wellpads A and B. Nevertheless, there appears to be no current plan in place to reinstate or restore the large areas constructed for the wellpads.

To enable this and to increase the chances of regenerating areas being preserved and restored towards a state in keeping with pre-disturbance conditions, it is important that EMPNG prepares for and enables dialogue with communities to carefully manage community expectations on future use of those areas. For example, now that Angore Wellpad A and Wellpad B will not host producing wells, discussions held during the site visit around their

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[9] See for example, https://www.businessadvantagepng.com/wp-content/uploads/2020/09/DOW-The-Connect-PNG-A4-Text_jjm.pdf

reinstatement indicate that there has been little preparation in managing community expectations about future land use at those sites in alignment with PS6 requirements.

EMPNG's response following these observations:

> *Reinstatement of Well Pads A & B: "The Angore Gathering System EMP requires reinstatement 'as soon as practical' post-construction, with flexibility based on subsequent activities and agreed end uses. Facilities at WPA were removed in March 2025 following the WPB Plug & Abandonment (end 3Q 2024). Due to security challenges (e.g., local unrest, clan fighting and revenge killings during the transition phase), discussions with Angore communities on end use and timing are ongoing, this is to ensure social stability is maintained within the community. EMPNG is cognizant that the annual lease payment fees for the well pads are important to the communities, and that continuation of these payments, or similar arrangements is important moving forward. As such, a decision on end use, and consequently on the timing of reinstatement activities has not yet been made.*

This is discussed more fully from the perspective of predicting and managing community access in Section 6.5.2.3.

Reinstatement and restoration - Hides

Reinstatement and regeneration is important in areas no longer needed following new disturbance. For example, during the walk around the outside fence lines at Wellpad-F and at Wellpad-G on Hides Ridge, the IESC noted a number of large areas that were no longer in use by the company but that would not necessarily regenerate naturally without some active assistance, as can be seen from the images below taken on Hides Ridge. For example, compacted areas previously used for wellpad construction or equipment storage would benefit from decompaction & ripping, potentially reprofiling, stabilisation and possibly active revegetation to enhance succession within a swifter timeframe than would otherwise be observed on these impacted sites. This would also help to minimize the area under active footprint and is especially important in Priority Ecosystem areas, such as Hides Ridge.

Figure 5.3: Examples of candidate sites for reinstatement & regeneration on Hides Ridge

Other examples should be identified across the Upstream area as this is all considered Critical Habitat according to IFC PS6 (2006).

5.4.2.2 Regeneration Monitoring - Upstream

IESC observations during helicopter flyover and visits to various areas of AGI or RoW reinstatement and regeneration were again generally positive, with impressions that it appears to be progressing well. The last IESC report noted specialist surveys undertaken in March-April 2023 and results from this survey were presented during this visit through the lens of the 10-yr review.

This is the 5th regeneration survey undertaken using the same protocol, so a useful dataset is being built. Again, the questions to which the surveys were seeking answers were: (1) is the RoW regeneration progressing towards restoration of the natural forest, (2) Has the RoW vegetation reached the structure and composition of the target secondary forest vegetation, (3) What are the problems and/or problematic parts of the RoW that require attention, and (4) What are the recommendations for future monitoring.

BRC's report was made available to the IESC, and the overall conclusion is that the assessment points to a broadly satisfactory direction of forest regeneration, that ecological succession is progressing along the expected trajectory towards the secondary rainforest vegetation at all Broad Vegetation Groups (BVGs). Based on observations to date, regeneration progression is predicted to reflect that of a full old secondary forest in approximately 1 year (2024) for tree density, and 5 years (2028) for basal area, and in 7 years (2030) for species diversity. There is an observed increase in both community and life form composition, with trajectories moving towards benchmarks. However, natural succession is slower above 1,000 m asl, and particularly slow above 2,000 m, where the lack of progress is of concern. BRC reports that persisting high grass cover is one of the problems that will require monitoring, as grass

can block or slow down the succession. The extensive grass cover in some low and mid-elevation areas is of particular concern. The RoW vegetation also retains a higher cover of weeds than the secondary forest benchmark plots – it is assumed these weeds are likely to be primarily Priority-3 species, although BRC does note that several BVGs harbor high densities of juvenile *Piper aduncum*, and issues already flagged in previous IESC report sections on weed control. They state this necessitates monitoring to ascertain whether the successional trajectory is being impeded by the further development of *P. aduncum* populations, i.e., understanding the dynamics of plots experiencing surges in *P. aduncum* populations will be crucial in evaluating the actual threat posed by this species to natural regeneration. They also note differences in the age distribution between impact and control plots but speculate this may be due to the clearance of vegetation required for RoW growth maintenance (to manage the height of vegetation above the pipeline and ensure species are not deep rooted). They acknowledge that there has been no convergence between impact and benchmark sites regarding species composition and conclude this is now thought to be highly unlikely in the future – they consider this not to be a problem as the composition observed at impact sites is still considered to be on a healthy success trajectory, even if different from that seen at benchmark sites.

Although they find a broadly satisfactory direction of forest regeneration, BRC summarises several critical problems that require close monitoring:

- ✓ the lack of progress in forest regeneration above 2,000 m (above sea level, asl),
- ✓ persistent high cover of grasses, especially at mid- elevation, and
- ✓ the risk of canopy invasion by *Piper aduncum*, (especially around *Nothofagus* dominated forest along broad ridges in Moro Ridge camp area), with an increasing number of mature stems over the survey years.

Further, they note the progress towards the target secondary forest values for the parameters describing vegetation structure has been uneven, partly affected by the continuous vegetation clearance required for RoW maintenance. Continuous monitoring of these situations needs to be monitored.

As flagged in their last report, they conclude forest regeneration is entering an important phase of closing the canopy cover when the tree canopy composition is established and partly fixed for a longer time. They therefore recommend that the existing protocols including the two-years survey period are maintained, and EMPNG confirms that the next survey is scheduled for 3Q 2025.

EMPNG report they intend to update the Regeneration Protocol in 2026 following a review of objectives and priorities later in 2025.

5.4.2.3 Regeneration observations – mangroves at the LNG Plant

The area of pipeline landfall at the LNG Plant has primarily been left for passive regeneration of mangrove, although some active restoration has occurred, whether targeted propagule planting during early regeneration attempts, or ad-hoc propagule planting activities for Earth Day/team building. The primary measure to enable restoration of mangrove habitat has been to restrict access and limit disturbance to preserve establishing propagules, seedlings and growth of young saplings of the naturally regenerating area.

There is no quantitative monitoring. EMPNG presented a fresh suite of static point photographs, continuing the visual reporting of progress over time. If EMPNG finds this exercise useful as a qualitative indicator, they would gain the best value from comparing more recent impacts to older images, rather than 2025 vs 2024 images presented. This time, the photos presented were taken when the tide was out, so it was clearer to see the plant structures from arching roots to tips.

IESC direct observations during the site visit confirmed mangrove shrub revegetation across the cleared landfall area, although primarily isolated individual plants, coverage still low density, with rhizome branching noticeable on some individuals. Vehicle tracks from previous incursions (see previous IESC reports) are still visible due to lack of mangrove in areas compacted by tyres – see Figure 5.4 below.

Figure 5.4: LNG Plant mangrove: example of timber harvesting, plus older vehicle tracks in substrate

Unfortunately, signs of timber harvesting were observed (see figure above) as felled trees from the edge of the landfall had been brought onto the landfall area presumably for ease of chopping or retrieval – initials and a mark had been etched into the trunk of the felled tree, and EMPNG noted to follow up through Community Affairs. EMPNG report that nearby fisherfolk use the area as a fishing stopover site, resulting in unauthorized access in the area – indeed, IESC observed villager mud crab collection at the edge of the regenerating landfall area.

EMPNG also reports they are noticing instances of matured mangroves decaying from roots with the presence of *Teredo navalis*, or shipworms.

5.4.3 Recommendation

1. Within its existing footprint, EMPNG should search out areas no longer needed for operations or development and identify candidate sites for reinstatement, regeneration and restoration.

5.5 INVASIVE SPECIES, PESTS AND PLANT PATHOGENS

5.5.1 Project Strategy

EMPNG's objectives are to prevent invasive species (i.e., priority weeds and pests) and plant pathogens from entering or becoming established in (or in the vicinity of) their facilities and infrastructure, and contain existing priority weeds, pests and plant pathogens already present. A Weed Identification Manual was developed, the Weed Monitoring Protocol revised (as per the revised audit approach in 2018), and a Register of Invasive Species, Pests and Pathogens tracks any changes in invasive species type, abundance and distribution (previously updated through external specialist audits). EMPNG utilizes external contractor ISOS for the control of weeds and field specialists team members undertake inspections.

The project footprint was originally split into separate Weed Management Zones (WMZs), each delineating broad ecological units based on previously understood patterns of distribution and abundance of weed populations. These zones were used for the phased mitigation approach as pipeline construction/reinstatement progressed through the

Project area – these WMZs are summarized in the Upstream EMP (2019). The current specialist monitoring approach utilized by BRC on the Project's behalf was developed and adopted in 2018 and assesses weed abundance and distribution across four elevation zones.

The EMP notes that invasive weeds exist in the natural environment but are categorized according to their potential for environmental harm and hence priority for management. The distinctions between different priorities of weeds are defined as: Priority 1 (P1) weeds have the ability to suppress and displace most native species especially in new disturbed areas; the Project aims to control and monitor all P1 weeds and exclude them from all work areas through active control. Priority 2 (P2) weeds have the ability to become locally dominant with potential to outcompete some native species; Priority 3 (P3) weeds have the potential to proliferate in new disturbed areas.

EMPNG commits to manage the threat of spread of *Phytophthora cinnamomi* by preventing the spread or introduction of Type A2 into unaffected areas, in particular ecologically sensitive areas susceptible to senescence.

With regard to quarantine implications of imports into PNG, EMPNG has developed and adopted quarantine requirements which aim to prevent the importation and spread of foreign invasive species, pests, pathogens or disease; quarantine requirements are contained within a Quarantine Procedure.

5.5.2 Observations

As predicted in the EIS for the Operational period, the impacts associated with weeds and exotic fauna were considered likely to increase with time (EIS Table 18.20). It predicted that 'over the 30-year operational life of the PNG LNG Project, the potential impacts such as wildlife, dieback, weed & pest invasion and enhanced access to these remote and pristine parts of PNG present some of the greater challenges to the Project'. Also, 'possible introduction of weeds, pests and pathogens could immediately impact on the core set of significant areas along the pipeline routes'. 'The control of wildfire initiation, quarantine and the control of access along the PNG LNG Project infrastructure are fundamental mitigations required to manage any indirect impacts on the significant biological areas'.

Aspects of EMPNG's invasive species monitoring, pests and pathogens have been included within the company's 10-year review, which has enabled some of the assumptions and predictions made with the EIS to be reviewed. Once this review is complete, EMPNG advises they intend to update the EMP and Protocols for Invasive Species, Pests and Pathogens during 2025/26.

5.5.2.1 Specialist Weed Surveys

The latest annual weed survey was undertaken in 2024, again by Binatang/BRC; the report dated Nov 2024 has now been provided to the IESC. As previously, the survey objectives were to

i. determine species diversity and population size of weeds in the context of previous surveys and regions outside the project area,
ii. identify species composition of weeds and evaluate critical high priority (P1) species and newly recorded species,
iii. provide advice on weed management, and
iv. recommend protocols for further weed monitoring.

The survey covered 1228 transects each of 100 m^2, almost twice as many as in 2023, again across four elevation zones: the coast up to EMPNG's Mubi Bridge (aka Lowlands, 0-122m above sea level, asl), from Mubi Bridge up to Moro (aka Foothills, 140-1248 m asl), from Moro up to the HGCP (aka Lower Montane, 1266 m asl) and the areas above the HGCP/Hides Ridge and Homa-Benaria Ridge (aka Higher Montane, 2574-2775m asl). Any new weed species found are assessed against dispersal ability, reproductive output, establishment ability, impact on succession, impact on land use, control costs, distribution across other geographic regions and dynamics across the EMPNG footprint – no new P1s were identified, and just one P2 out of the 12 new species.

The 2024 survey recorded 98 weed species, down from 109 in 2023, including 16 high priority P1 species and 11 medium priority P2 species. Most weeds encountered are lower priority P3 species, but 12% belong to the highest priority category P1, where EMPNG's aim is for active control of all P1 weeds to exclude them from all work areas. The top five most commonly observed P1 weed species represent over 80% of all P1 species recorded – these are *Piper aduncum, Desmodium sequax*, *Ludwigia leptocarpa*, *Cenchrus purpureas* and *Mikania micrantha*. Overall abundance of the five focal P1 species decreased between 2023 and 2024, with *Mikania micrantha* replacing *Cyperus involucratus* from 2023's top-five, as its presence increased *especially* in the Lowland Zone. *Piper aduncum* showed a decrease in the Foothills and Low Mountains compared to 2023. However, *Ludwigia leptocarpa* increased further in the two elevations zones from the coast up to Moro (Lowlands and Foothills); in these two

zones it is now the dominant P1 found. *Desmodium sequax* emerged as the dominant P1 species in both the Lower Montane and Higher Montane areas.

On the other hand, EMPNG reports that for individual transects taken across all elevations there was a marked decrease in the number of species per transect, indicating a shift from the previously observed, statistically significant trend of weed diversity from 2019 to 2023. Looking at elevations individually, for P1 weeds per transect, this now peaks in the Foothills Mubi to Moro range, compared to Mubi to the HGCP area (Lower Montane) previously. They also report a significant decline in the Lower Montane area species per transect, although acknowledge it is difficult to pinpoint the exact reason, e.g., continued vegetation maintenance on the RoW – see graphs in Figure 5.5.

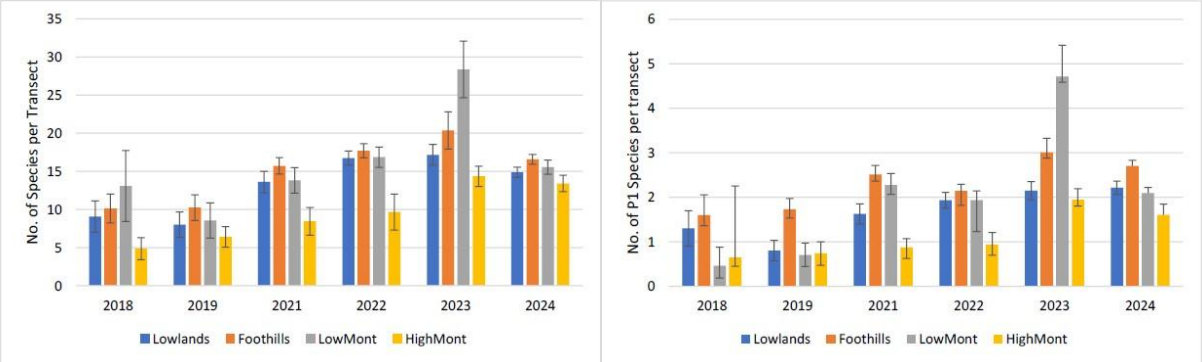

Figure 5.5: Trends across elevation for All (left) and P1 (right) weed species (BRC, 2025)

The Foothills retained the Highest Diversity of P1 species followed by the Lower Mountain, Foothills and Higher Mountain Zones. The weed density remained comparable to anthropic disturbance outside the PNG LNG area. The species composition of weed communities continues to change rapidly, with some particularly herbaceous annual species having volatile populations rapidly increasing or decreasing between years.

In 2022 BRC initiated a study to better understand whether *P.aduncum* (and potentially other common P1 species) have a negative impact on natural forest regeneration as they recognize this is important from the perspective of P1 presence but remains unclear. The study is a manipulative study, whereby *P.aduncam* is actively removed and then regeneration compared to control sites, with sites being chosen across the elevational range 20m to 1906. BRC report that the analysis to date reveals that species richness increased significantly in removal plots compared to control plots, demonstrating that Piper suppression plays a role in limiting native species diversity – they recommend further years to confirm conclusions so far.

BRC recommend active control of *Piper aduncum*, *Ludwigia leptocarpa*, and *Desmodium sequax* in the areas of their maximum abundance, after the evaluation of their abundance, dynamics and the potential to impact natural regeneration of the vegetation. These three species are also common and abundant in all four elevational zones. They found that the removal of *Piper aduncum* has seen an increase in number of native species then regenerating compared to plots where *Piper aduncum* was not removed but they acknowledge the need to continue monitoring these plots to see if these changes are persistent over time. They note that although *Ludwigia leptocarpa* shows a significant reduction in abundance, it still continues to establish itself in certain areas, although seemingly constrained in higher elevations zone so far – active control measures are still necessary where it is abundant.

Interestingly, they also now recommend expanding weed surveys beyond the usual PNG LNG project area to other anthropogenetic and naturally disturbed sites within the wider area, to be able to more rigorously evaluate how weed density observations related to PNG LNG compare to other disturbed sites at various elevations. Since 2018, BRC has been comparing species/transect found in old, abandoned gardens (as an example of understanding how regeneration is occurring at previously disturbed sites) – see Figure 5.6. This shows an increasing diversity of weeds/transects over time, although there was a reduction in 2024 across all elevations. There were significantly more transects undertaken during 2024, so it's not clear whether a greater number of transects might have influenced this. In any case, as seen from the graph, BRC recommends that disturbed sites other than old gardens also be surveyed in the future, providing other comparison opportunities of secondary vegetation developing after small-scale human-caused disturbance, such as regenerating food gardens created by slash-and-burn agriculture, or disturbance along the roadsides. This won't address potential landscape level distributional impacts but would provide interesting data for localized impact understanding.

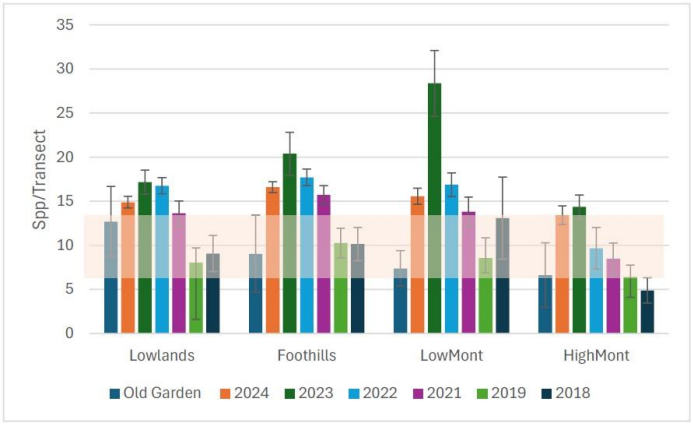

Figure 5.6: Number of weed species per transect comparing project-affected transects to old-garden disturbance (BRC)

As per discussions during the last IESC trip, the point was again raised that audit findings could potentially be skewed slightly, dependent on time of year of the BRC weeds audits versus the timing of Clan Caretaking RoW vegetation maintenance as it may be more difficult to identify or notice weeds if cutting has recently occurred. EMPNG is aware of this and will continue to review.

This is BRC's sixth annual Upstream-wide weed audit, so real benefits will be delivered with the continued use of a consistent methodology, eventually resulting in a comparable long-term dataset – the IESC concur with BRC's recommendations on continued annual monitoring.

EMPNG continue to maintain that certain P1 weeds currently found along the RoW in areas where they were not previously recorded, were actually *present* prior to construction but were not correctly identified at the time. For example, (1) Homa-Benaria Ridge is a key priority ecosystem and was deemed to be largely weed-free in 2012[10], but more recently there have been approx. 20 species recorded, (2) during pre-construction the P1 weed *Ludwigia leptocarpa*, was only found in the Omati and Kikori areas, but by late 2013 was found further up the RoW at Moro, and by 2015 was found further up at Angore – for this 2024 survey *L.leptocarpa* has become the dominant P1 species in both the Lowlands and Foothills, confirming the EPC5A pipeline construction contractor's fear. Speaking in 2022 and 2024 with different representatives that participated in some of those PCS surveys, they advised that specialist vegetation scientists were employed to undertake the work, and in their opinions it was highly unlikely that so many easily identifiable P1 weeds could have been *repeatedly* mis-identified. The potential for weed transmission along the RoW was a significant impact predicted in the EIS and is therefore a risk of significant interest to Lenders. The current 10-yr review is a good opportunity to consider the IESC's recommendation that an independent specialist review be undertaken to try to resolve this significant, alleged discrepancy – the Observation M22.5 is retained. Draft conclusions shown so far from the 10-yr review include that different questions may now need to be answered; for example, what ecological impacts might weeds have on the RoW if EMPNG studies show that weeds now observed do not appear to be spreading to adjacent primary forest, and overall general convergence is reported from the regeneration surveys. Similarly, what should be the focus for future control strategies – the 10-yr review will be finalized in the coming months once EMPNG's external technical specialists provide further review of the draft report.

5.5.2.2 Weeds Site Inspection and Control

The EMP requires control of P1 weeds in all Weed Management Zones south of Moro including:

- ✓ From Lake Kutubu to Mubi River – Control P1 weeds species. Plus control P1 and P2 species from roadsides between Mubi River and Kantobo;
- ✓ From the Mubi River to the Kikori River – Control P1 weed species. Manage the zone as a quarantine buffer between lowland and upland/Highland sections;
- ✓ Kikori River to Omati – Manage P1 species within EMPNG facilities as needed and put in measures to manage the further introduction of P1 weed species.

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[10] EMPNG Biodiversity Strategy Rev.2

The Weed Management Zones in the EMP do not align with those in the Weed Control Procedure, updated in 2022. The scope of the Procedure includes the full pipeline RoW and all AGIs and stipulates regular site inspections by the weed control contractor of all sites, including the RoW and AGI's. EMPNG advised this year that the EMP and protocols are due for review.

During the 2024 road-trip discussions the IESC learned the full RoW (e.g. south of Moro) is no longer under active site inspection and ongoing control by the weed control contractor, primarily due to availability of vehicles and Community Affairs Officers; an opportunity to meet with the contractor due to changeover schedule clashes.

Lenders will recall previous IESC reviews trying to gain an understanding of the distribution, abundance and spread of priority weeds, what ecological risks might arise from weeds observed in areas where they weren't seen previously, locations where weed control is particularly challenging, updates on priority areas for P1 high priority weeds control, etc.

For this trip, there was no presentation on controls currently being performed, areas difficult to reach, outbreaks difficult to control, etc. The 10-year draft review presentation did not include a review of how well weed control has performed over that timeframe.

For this trip, EMPNG provided the opportunity to meet with two ISOS weed control operatives, one near Lake Kutubu based at Moro and one on Hides Ridge based at HGCP.

- ✓ As reported in previous IESC reports, the ISOS operative at Lake Kutubu again was frustrated with the difficulties of sourcing vehicles and associated security team contingent to enable him to access the areas within his scope of work. He explained this is the case usually 3 or 4 times each week and he reported he therefore spends his time mostly working on foot around Moro on the off-chance that a car might be available in the afternoon. He also reported that when he is allocated a car with driver and security so as to access the RoW for weed inspection and control, his control is limited to only the first 2km from the RoW road/junction because of having to hand carry the tanks of glyphosate weedkiller he uses. This results in only pockets of RoW where weeds are being controlled. He requests having a dedicated vehicle with driver and security, and to be able to sub-contract for people to help carry the glyphosate tanks so his ability to control at greater distances along the RoW is increased.
    - The IESC suggested to EMPNG on site that with the reduction in pressure on vehicles/security as the earthquake recovery work comes to an end, this could potentially release a vehicle dedicated for weed inspection/control – but EMPNG report that all the vehicles no longer needed at Moro will now be relocated as they are needed at HGCP; the IESC recommends that ISOS at Moro be afforded permanent use of a vehicle with driver and security as a priority.
- ✓ The operative at Hides reported no issues, stating he considered there was sufficient vehicle and security detail to allow inspections and control visits around HGCP and Hides. However, there are no weed inspections or controls undertaken along the Row below HGCP and around Angore due to security issues.

A weed register was provided this time on request, updated to the end of Dec 2024. This version was more complete than the version seen two years ago but confirms that large areas across the Upstream footprint are not being visited for inspection/control. Angore has had no control since mid-2022 (and that control was only within the camp boundary). Komo has not had weed control since mid-2023. HGCP is regularly controlled. Moro control visits align with those reported by the ISOS operative in the bullet above, i.e., visits to areas on the RoW are made a few times a month, but large areas of the RoW are not covered.

The washdown unit was observed to be still in operation at Hides Spineline, and EMPNG reports that the mobile unit at the MLV2 access road is still in place and operational.

The deliverables required to close non-conformance M20.2 were not presented or made available and therefore the NC is retained.

5.5.2.3 Cane Toads

As reported in the last few IESC reports, cane toads (*Rhinella marina*) have become a challenging invasive species in the Upstream Highlands area. This toxic pest affects native fauna that die due to ingestion of their poison and can create imbalance across ecosystems wherever they are found. Following the detections of cane toads at Kopi Shore base during construction, at Tamadigi (around 2012/13), in Moro Camp B in 2015, at HWMF in 2016, and HGCP in 2018, a recorded increase in the number of sightings at HGCP and HWMF has prompted an increased Project response.

As noted previously, the numbers of juveniles/adults recorded were initially quite staggering, although depending on location, numbers of juveniles and adults continue to decrease. EMPNG reports that they continue to manage

cane toad presence in the Upstream area; discussions with ISOS operators indicate their primary focus for observation and control of toads at Moro camp, Kopeanda and HGCP.

During the last IESC visit, EMPNG stated there were less than 10 adults and juveniles combined found at HGCP during 2023 whereas the number of adults sighted there during 2024 had increased to 54 – this was put down to the restarting of the environmental awards program and therefore more cane toad sightings being reported by the workforce at HGCP. No other site-specific or juvenile-adult population data were provided for this visit, so the graph in Figure 5.7 presents the total number of juveniles and adults controlled across the HGCP, Kopeanda, Komo, Moro and Angore Upstream sites, and demonstrates the reduction in scale of toads being managed. This data is actual numbers collected and disposed of, so is not effort corrected, i.e., there is no way to identify whether reduced numbers might be down due to reduced inspection time overall, but EMPNG continues to understand the responsibility that comes with managing cane toads at their sites.

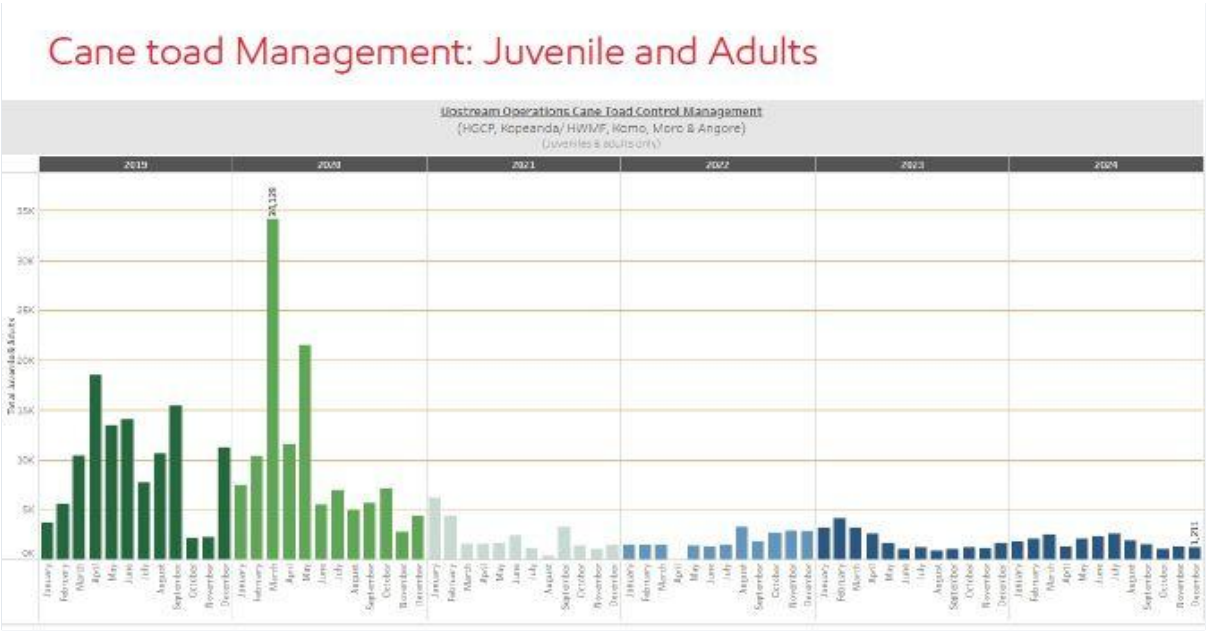

Figure 5.7: Number of Juveniles and Adult Cane Toads Managed at Upstream sites (2019-2024)

As noted in the Avoiding Impacts text of Section 5.2.2.2 above, the drilling rig move from Angore up to Hides Ridge for F2, through and above the 'clean-line' with regard to controlling the spread of weeds, pests and pathogens, went smoothly. The Biodiversity Team developed a colour-coded system to clearly identify stages of inspection and verification and they note that no cane toads were observed on any equipment moving through the clean-line inspection process.

As before, a key from a Lender risk perspective is that the Project should continue to prevent and manage the presence/spread of cane toads and continue to receive specialist advice from external experts. Considering the small size and mobility of juvenile toads observed whilst at the Kopeanda waste facility, the IESC is unsure about the efficacy of the vehicle checks that EMPNG guards perform using under-chassis mirrors at vehicle entry/exit gates. No documentation was provided to demonstrate requests or provision of advice during 2024, but verbal confirmation was provided that the conversation is ongoing with one of the lead expert-scientists instrumental in establishing the PMA3 monitoring program. The IESC acknowledges EMPNG is trying to locally manage a situation that is very challenging and recommends that EMPNG continue liaising with cane-toad management specialists, reacting responsively to their recommendations, to ensure their protocols, vehicle inspections and washdown locations are an effective approach to combatting unintentional transportation, appropriate for the Project's operations.

5.5.2.4 Plant Pathogens: Dieback

By way of context, Lenders will recall previous IESC reports noting that the last four PMA3 surveys at Hides Ridge (2015, 2017, 2019 and 2021) had found canopy trees along the edge of linear clearings becoming increasingly stressed, and in many cases, dying. This was particularly evident for *Nothofagus* trees along the eastern (lower) half of Hides Ridge. The affected canopy trees on Hides Ridge were thought to potentially represent the effects of

the fungus and plant pathogen, *Phytophthora cinnamomi*, to which *Nothofagus* species and Papua New Guinea Oak *Castanopsis acuminatissima* are particularly susceptible. The PMA-3 authors noted in their last field report the reduced field observations made on dieback due to changes in the Biodiversity Team, but they recommended the Team initiate regular quantitative assessments of vegetation condition along transects to provide a covariate of vegetation condition for future surveys. They also said similar assessments should be considered to more rigorously document dieback at regular time intervals at sites on Hides Ridge. They recommended further consideration to select an appropriate and rapid assessment method. EMPNG's 2019 Upstream EMP highlights the need to apply the precautionary principle, to inspect and sample instances of outbreaks of the spread of the fungus *Phytopthera cinnamomi*. In IESC opinion, EMPNG had not reacted sufficiently during the reports from the PMA-3 team, so following the Feb 2023 visit, a Level II non-compliance was raised to stress the urgency in acting on their specialist advisor's recommendations and to understand the nature of any outbreaks or spread of *P. cinnamomi*.

During 2023, specialist field surveys were undertaken by notable forest pathologist, Dr Frans Arentz and his team – more detail on these surveys is provided in the 2024 IESC report. The last IESC report noted that more detailed results, analysis and recommendations would be provided once further sampling, study and lab work had been completed. However, EMPNG's challenge was finding sufficient laboratory space and capacity for processing and isolation of Phytophthora from the soil samples, and last year were considering commissioning facilities in-house. These delays in identifying adequate lab facilities have meant that results of these surveys are still pending.

However for 2025, commercial laboratory facilities within PNG have been identified, and Dr Arentz has visited to confirm their service capacity, capability and facilities. He is contracted to perform the role of technical mentor and lead partner with the laboratory, and capacity building is underway to upgrade the lab to be able to test for *Phytophthera*. EMPNG's support will importantly help build overall capacity in PNG's resources to test for such pathogens in-country. Due to the timescales since the last soil samples were sourced in 2023, a new sampling campaign (including repeating those sampled in 2023) is planned for 2Q 2025 by EMPNG field staff trained by Dr Arentz, with results expected by the end of 2025.

The IESC non-compliance M21.2 is retained until the work and analysis is complete and any adaptive management is understood.

The regular surveys as recommended by the PMA-3 report authors have not yet been undertaken, as resources have been focused on securing a way to process and analyse samples from this last campaign.

The IESC recommends that EMPNG consider revisiting pathogen documentation and learnings from *Phytopthora* management to date so as to reflect current knowledge and requirements within the update of the Invasive Species, Pests and Pathogens Management Plan.

5.5.2.5 Wallabies at LNG Plant

As noted previously, wallaby (*Macropus agilis*, IUCN Least Concern) numbers within the Project's LNG Plant boundary fence had reached a level whereby EMPNG senior management deemed them a risk to personnel safety and plant integrity. Since construction, the barrier of the boundary fence and abundance of maintained grass within the fence has created a relatively safe habitat and breeding space. The population had reached such a level that local hunters were hunting through the fence from the public road, gunshots had been heard, and intruders were caught on CCTV trying to hunt wallabies at night inside the facility fence. An initial cull under permit from CEPA in was undertaken in January 2023, but since that time, EMPNG continued to observe increasing wallaby numbers and therefore a continued threat to Plant integrity and safety of personnel.

Following a re-evaluation of potential management options including non-lethal methods, three trials of herding wallabies to open gates in the fence were undertaken. EMPNG report that Initial results are positive in that 79 wallabies were released through the pre-identified exit gates. This trial did not require CEPA approval and is a relative common approach to wallaby management in Australia when increasing numbers deem them to be pests. EMPNG note that this could be a viable option for long-term wallaby number control and that the pilots identified learnings which will be adopted in the next phase.

EMPNG is preparing a draft Wallaby Management Plan to define the process to identify thresholds at which control becomes necessary, the method and approaches for control, and monitoring options. Counts were undertaken mid-2024 for the purposes of understanding the current population and to test the process for defining the control threshold.

5.5.2.6 Quarantine & Import/Export Permits

The National Agriculture and Quarantine Inspection Authority (NAQIA) is the public-funded institution under the Ministry of Agriculture and Livestock whose role is the protection of Papua New Guinea from infectious pests and diseases that have the potential to seriously harm PNG's unique animal and plant life and affect economic growth.

Prior to construction, a Lender concern was to ensure the project did not create undue pressure on NAQIA resources, hence the IESC has tracked EMPNG-related imports and NAQIA inspections over time.

EMPNG provides data related to the number of total shipments imported into PNG by EMPNG or their contractors, the number of these shipments inspected by NAQIA, and the numbers of refumigations that NAQIA believe to be necessary following that inspection (typically due to either dead or live species being found within, or incorrect/unclear documentation). As fumigations are meant to happen at the port of origin, refumigations should not be necessary if EMPNG's requirements to freight forwarders or shippers are properly followed – hence this is a good indicator of how well the process is going.

Updated data on inspections and whether refumigations have been necessary is shown in the IESC's graph provided in Figure 5.8.

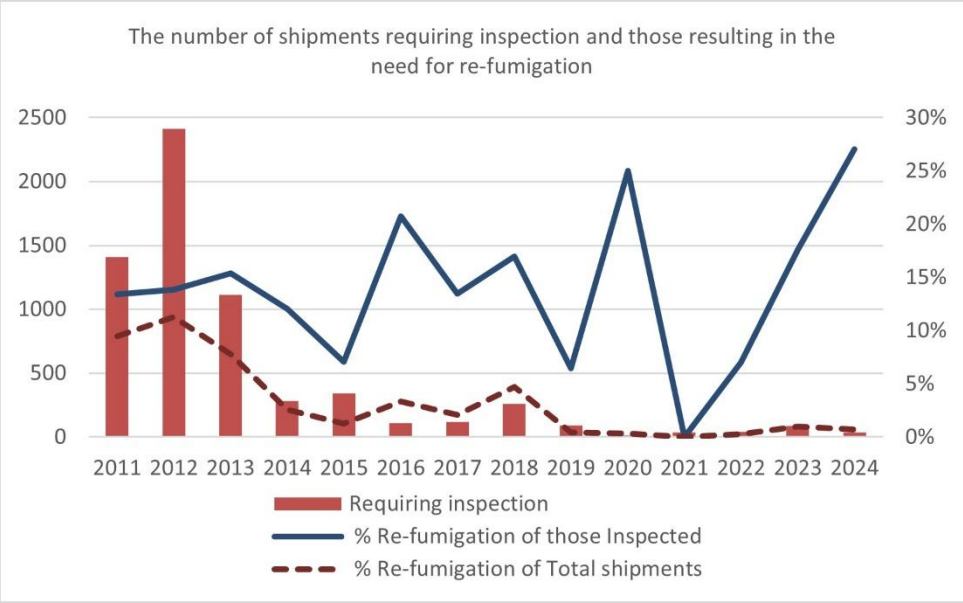

Figure 5.8: Inspection and re-fumigation data

The data indicates that although 2024 import volumes have decreased from last year, the trend observed over the last few years of increasing need for containers requiring re-fumigation continues. The IESC flagged this increasing proportion of shipments requiring additional fumigation once arrived at PNG and recommended that EMPNG investigate the increasing need for refumigations through analysis of NAQIA Notice of Detentions (NODs).

During presentations, the Logistics Team representative appeared unaware that this might be an area of IESC concern. Following the presentation, additional clarity and detail was provided noting that the NODs have, in fact, been assessed. The Logistics team report that NODs indicate that NAQIA had observed signs of pest infestation (including live insect/spider specimens), moldy wooden pallets that had not been treated, and dirt within containers. IESC's review of five NODs also indicates that shipments are not accompanied by valid certificates of inspection from the country of origin, and also that NAQIA has made observations of suspected noxious plants.

Although shipment numbers are decreasing, these findings indicate company requirements are not being followed and extra vigilance is necessary.

EMPNG report that instructions to EMPNG's freight forwarders have been updated and reinforced, and that findings from this internal assessment will be shared with each EMPNG contractor importing shipments. Company requirements relating to minimizing quarantine risks should be clear to freight forwarders, including the mandatory cleaning and treatment of containers before loading at point of origin, that wooden packaging materials used are to be heat-treated or fumigated according to international standards (ISPM15) and that all necessary documentation to verify quarantine hygiene is maintained. The reasons why quarantine is an issue for Lenders may need reinforcing internally. Implementation of EMP requirements and internal verification of company requirements should be improved – the EMP notes that EMPNG can, at its discretion, audit suppliers and importers of goods. The IESC Recommendation has been strengthened to Level I non-conformance and listed in the Issues Table.

5.5.3 Recommendations

1. The Weed Management Zones in the EMP do not align with those in the Weed Control Procedure, updated in 2022. The scope of the Procedure includes the full pipeline RoW and all AGIs and stipulates regular site inspections by the weed control contractor of all sites, including the Row and AGI's but this is not occurring. This should be reviewed – relates to non-compliance M20.2.
2. EMPNG to consider revisiting pathogen documentation and learnings from *Phytopthora* management to date to reflect current knowledge and requirements within the update of the Invasive Species, Pests and Pathogens Management Plan.
3. EMPNG to continue liaising with cane-toad management specialists to ensure their protocols, vehicle inspections and washdown locations are an effective approach to combatting unintentional transportation, appropriate for the Project's operations. Their assessment and advice should be reflected within the update of the Invasive Species, Pests and Pathogens Management Plan.

6 SOCIAL

6.1 LAND ACCESS, RESETTLEMENT, AND LIVELIHOOD RESTORATION

6.1.1 Project Strategy

The Land Access, Resettlement and Livelihood Restoration Management Plan – Production applies to any new land access required during the Production phase and for managing the commitments for land that was obtained in the construction phase. This Plan supersedes the Resettlement Policy Framework developed for construction phase land acquisition. Livelihood restoration obligations for displacement that occurred during the construction phase, as well as evaluation of resettlement and livelihood restoration outcomes and the independent external audit of the resettlement and livelihood program, are also covered by this Plan. The independent external audit was completed in 2015.

The Plan defines the principles and approach to be used for management of the inter-linked activities related to accessing land, resettlement, and livelihood restoration. The content of the Plan is consistent with IFC Performance Standard (PS) 5.

6.1.2 Observations

6.1.2.1 Current Resettlement

In 2024 additional land was accessed for (i) KP98 Pipeline Right of Way Stabilization, (ii) KP76 spoil dump site expansion, and (iii) KP25.2 River Crossing Mitigation.

Only the latter required the preparation of a RAP Addendum, which was reviewed and accepted by the IESC.

RAP Addendums were not required for the other areas acquired, as land acquisition caused no or only minimal economic impacts, with owners/users preferring direct compensation.

The area covered by the RAP Addendum (KP25.2) was affected by pipeline remediation activities requiring temporary and permanent mitigation workspaces. One household was physically and economically displaced. Relevant agreements were signed, and compensation was paid at full replacement value. Impacted gardens were fallow, minor, or small active gardens belonging to extended family members, so livelihood restoration support was not required.

The household was offered a compensation package that included (besides cash payments) the option of (i) solar panels (gas, battery, and lighting) or (ii) a 1000L water tank with installation accessories. The household selected the solar panel option. Monitoring the resettlement process is ongoing, with a final outcome evaluation scheduled for March 2025.

6.1.3 Recommendations

None arising from this review.

6.2 COMMUNITY IMPACTS MANAGEMENT AND SECURITY

6.2.1 Project Strategy

Project commitments to community impacts management during Production are contained in the Community Health, Safety and Security Management Plan – Production that addresses health, safety and security from a community perspective. See Section 8.2 in this report for IESC comments on Community Health.

The objectives of this Plan are to:

- ✓ avoid or limit risks to and impacts on the health, safety and security of the community during the production phase from both routine and non-routine circumstances through implementing targeted prevention programs to reduce risks, along with the implementation of an effective monitoring and evaluation program;
- ✓ ensure that safeguarding of personnel and property is conducted in an appropriate manner that avoids or limits risks to the community's safety and security; and
- ✓ maintain a monitoring and evaluation program that is community-based, participatory, and transparent and covers all phases of production and decommissioning.

Elements of the Production Community Development Support (CDS) Management Plan also apply as it relates to CDS activities undertaken to mitigate the impacts or potential risks generated by Company activities with the objective to avoid or reduce the risk of adverse social impacts.

6.2.2 Observations

Based on the IESC's long review history of the Project, we feel that understanding of the security conditions in which the Project and its surrounding communities operate is essential as the Project goes forward. The discussion below focuses on the main community contextual security circumstances.

Tribal Conflicts

- ✓ Clan fighting continued to destabilize political and economic community conditions in the PNG LNG Project footprint, particularly in Hela Province where intra and inter-clan rivalries persist. According to the tradition and value system of the Huli culture, the elements which trigger tribal fights are, in order: (i) land disputes, (ii) conflicts over pigs and (iii) conflicts over women. In addition, other triggering causes of conflicts can be generational disputes and other long-standing grievances that escalate simple disputes. The GoPNG, through official Peace and Good Order Committee work and by Hela Provincial Law and Justice advocacy, has been actively involved in mediating tribal conflicts and promoting dialogue between disputing factions in the Upstream Operating Area;
- ✓ Reportedly, the situation remains largely unchanged from 2023, with persistent growth in lethal events attributable to the spread of high-powered weapons. Additionally, post-incident patterns suggest a shift from group confrontations toward targeted retaliatory operations (frequently resulting in fatalities) against identified perpetrators. Tribal conflicts in Hela province continue to indirectly affect Project operations.

Crime

- ✓ Crime remained prevalent within communities across the EMPNG footprint. In 2023, incidents impacting these areas included assaults, kidnappings, thefts, civil disorder, robberies, rapes, vehicle hijackings, illegal roadblocks extracting unofficial 'tolls,' and murders. In January 2024, a State of Emergency was declared in Port Moresby due to an unprecedented outbreak of looting. EMPNG implemented precautionary security measures, including travel restrictions, which had no direct impact on personnel or operations, but delayed the IESC field visit from February to May. Crime continues to be exacerbated by ongoing socio-economic issues and unemployment, along with ineffective judicial mechanisms and infrequent prosecution of offenders.

Effects of Alcohol

- ✓ Drug and alcohol use continued to be a major source of insecurity in local communities, leading to antisocial behavior, criminal activities, and public disturbances throughout the Project area. Clan payback traditions often turned alcohol-related violence into destabilizing and persistent clan conflicts. During 2023 provincial governments and security forces continued to conduct outreach and awareness programs in response to the negative impacts of excessive alcohol consumption on law and order.

Project Effects

As mentioned above, EMPNG operations within the Highlands are under a “Severe” security threat characterization due to increased security complexity, increased law-and-order challenges, and significant security incidents. In addition to efforts to enhance the livelihoods of local communities, the Project includes communities in its security programs. An example is the case of the fractious area surrounding the Komo airport, where Community Affairs (CA) experimented with appointing two members from two conflicting clans as Village Liaison Officers (VLOs). This appointment forced them to engage in dialogue and initiate a phase of diplomatic conflict resolution, significantly reducing hostilities in the area. Further progress in stabilizing the area has also been made by creating a local rugby league, acting as a means to divert youth from cycles of violence. IESC considers this case emblematic of how the Project can serve as a mediator in the area and supports the EMPNG team in continuing in this direction. During the monitoring period, the Project tried to replicate the same initiative in Angore, with the establishment of the Angore Rugby League. Unfortunately, progress is currently being hindered by persistent security incidents and social instability in the area.

6.2.3 Comment

None arising from this review.

6.3 COMMUNITY DEVELOPMENT SUPPORT PROGRAM

6.3.1 Project Strategy

Project commitments related to community development support are described in the Community Development Support Management Plan – Production. This Plan covers all community development support activities undertaken by the Project. The objectives of the CDS program apply also to project functions undertaking other community support initiatives.

The objectives of EMPNG community development support activities are to:

- ✓ promote development of conditions that strengthen communities’ ability to benefit from the Project’s presence;
- ✓ avoid or reduce the risk of adverse social impacts on PNG communities;
- ✓ provide opportunities for sustainable development benefits in a culturally appropriate manner; and
- ✓ ensure that the development process fosters full respect for the dignity, human rights, aspirations, cultures and natural resource-based livelihoods of Indigenous Peoples, thus meeting both local regulatory and IFC Performance Standard 7: Indigenous Peoples (2006) requirements.

6.3.2 Observations

6.3.2.1 Update on IESC Recommendations from 2022 IESC Review

In the last monitoring report, in order to adequately understand the real impact of the Project's social activities on providing wide support to local communities, IESC recommended that EMPNG provide an overview (either in summarized form or as a diagram) of the activities of the various social teams (not limited to the CDS), how they integrate and operate synergistically, what their respective responsibilities are, and plans for the coming years.

During the site visit IESC had a fruitful discussion with the social teams (CDS, CA, and Resettlement Team), which significantly improved the understanding of their synergistic operations. In addition, after the site visit EMPNG provided an explanatory diagram illustrating such interaction between social teams. IESC deems the submitted information satisfactory and acknowledges the social teams have adequate competencies and structure. Moreover, many members have long-term experience with the project, which is an added value. IESC continues to encourage EMPNG to continue its efforts and ensure the needed support for CDS activities.

Nevertheless, some areas for improvement have been identified, as outlined in Section 6.3.3

In 2024, CDS's expenditure was USD$3,475,183 for the Upstream, and USD$218,000 for the LNG Plant site, for a total of USD $3,693,183 (it was USD $6,068,000 in 2023). Numerous activities were conducted, which included the delivery of health (see section 8.2) and education infrastructure along with initiatives for both local livelihood and law & justice development.

6.3.2.2 Summary Overview 2024

Education

Upstream:

Reportedly, CDS continued to deliver the infrastructure program started in 2023. Relevant activities have included:

- ✓ donation of two double classrooms at Juni Primary School and Hupikini Primary School, and two staff houses at Para Primary School and Tugupawi Primary School;
- ✓ provisions of school uniforms and textbook to 12 schools across Project's Area of Impact; and
- ✓ Support of school commemorative events such as Awards Day and Graduation, including schools within our PLROW communities.

Plant Area:

As for the upstream area, reportedly, CDS continued to deliver the infrastructure program started in 2023. Relevant activities included:

- ✓ donation of two double classrooms at Boera and Lealea, one staff house at Lealea, and one admin building and one two-story classroom at Porebada;
- ✓ provision of support for school commemorative events such as award day and Graduation; and
- ✓ support to Road Access Corridor communities of Baruni and Hanuabada.

These interventions were supported by the continuous development of several partnerships established or enhanced with local actors to collectively boost provincial education results. Finally, PNG LNG scholarships numbers improved in 2024, with 216 education positions (valued at PGK3,415,754.60) awarded (41x Continuing Students , 89x Higher Education and 86x TVET awards).

Livelihood

Upstream:

- ✓ Support provided to the Weekly Fresh Produce Market, aiding local farmers who supply produce to local service providers such as Hides Alliance Group and Angore Alliance Group.
- ✓ In 2024, a total of 76 markets were held by three core groups, generating a total revenue of PGK237,237. Since its inception in 2016, the fresh produce market livelihood program has generated revenue of PGK1,471,214 for the three local groups.
- ✓ In the second half of 2024, the Project launched a women's livelihood program in Pimaga to boost economic resilience. Participants gained garment-making skills—enabling them to earn income, support their families, and train others, creating a ripple effect of entrepreneurship in affected communities. Furthermore, financial literacy training was provided to 160 women from 10 local SME groups under the CLIP program.

Plant area:

No additional activities concerning Livelihood has been reported in the plant area during the monitoring period.

Figure 6.1: Komo community members who are recipients of CDS activities.

Law & Justice

Upstream:

Sport remains a powerful tool for youth engagement, fostering teamwork and strengthening community bonds. In 2024 the Project:

- ✓ Constructed new basketball and volleyball courts across PLROW communities from Biame Creek to Kekero;
- ✓ Laid groundwork for a grassroots rugby league competition in Angore, including: (i) Two PNG RFL-led training sessions covering compliance, governance, and coaching, (ii) Player medical assessments and match official training and (iii)Competition launch scheduled for April 2025.

In addition, for what concern Community Infrastructure & Engagement, The Project built 4 traditional Haus Wins in Komo and Moro to facilitate community gatherings, consultations on social issues and cultural preservation.

Plant area:

- ✓ Construction of the Papa Village Court House, started in 2023, supported by the design from the PNG Department of Justice village court;
- ✓ Assistance provided for the Festive Season Neighborhood Watch Program, including provisions for community volunteer rations to manage law and order issues during the festive season. Reportedly, collaborative effort between LLG Ward Councilors and the Village Court led to the establishment of this joint initiative.

During the site visit, IESC had the opportunity to visit several of these interventions. In all cases, the stakeholders interviewed expressed gratitude for the support provided by EMPNG. Overall, the Project is seen as a benchmark for the area's development (at least concerning the upstream sector), this is due to both the significant Project actions and the minimal presence of the PNG government in the area. This leads stakeholders to ask the Project for every request or issue arisen. The Project cannot meet all the requests it receives, although it shows a commitment to address them, within its responsibilities and capabilities. Concerning the latter, as in the past, these have been limited by LANCO's performance. In this regard, during the monitoring period while issues continued, the information gathered indicates that LANCOs are demonstrating a positive capability improvement trend. IESC, while recognizing the limited scope for action in this regard, maintains its recommendation for EMPNG to oversee the matter and pursue improvement opportunities where feasible.

Finally, the Project provided its 2025 CDS Program roadmap, which includes both soft and hard interventions targeting communities across upstream and plant areas. IESC acknowledges this proactive planning and confirms the program's alignment with expected standards.

Continuing Community Issues/Business Risks

- ✓ Law and order challenges are still present in most Project area communities;
- ✓ Difficulty in managing business development and employment expectations from Upstream Landowner companies;
- ✓ CDS project deliveries are behind schedule due to ongoing cash flow issues and internal administrative matters experienced across all LANCOs;
- ✓ Ongoing access to basic education and low literacy rates continue to be a challenge in meeting the quota for higher education scholarships in the Upstream area. More specifically, reportedly EMPNG receives enough applications to meet the quota of awards, however based on community feedback it is understood that year-on-year accessibility is limited. EMPNG in 2023 first expanded to include TVET offerings and will continue to do so to bridge the gap and provide move inclusive access to scholarship opportunities; and
- ✓ In the LNG Plant area, there are also current and future land access issues for implementing CDS projects, as communities are now facing a shortage of communal land, due to the fact that most of the land in the area is state-owned and privately owned.

6.3.3 Recommendation

Although the Project's social implications are managed extensively and with general effectiveness, IESC has noted a pattern of underassessment of the Project's direct impacts on local populations. Examples in this regard include:

- ✓ lack of a long-term plan for managing community expectations with regards to the dismissed Angore well pads, considering the restoration requirements mandated by PS6 (for more details see section 6.5.2.3).
- ✓ During the site visit, IESC inspected the Para Clinic located near HGCP (for more details see section 8.2.2.) This clinic, managed and funded by PNG's Evangelical Church, was found in dilapidated conditions with staff

unpaid for months. Reportedly, the clinic serves both HGCP workers (when off-duty) and their families. This increased user base creates external pressure on the clinic directly linked to the Project's existence and operations.

In order to improve performance in this regard, IESC recommends:

- ✓ Enhancing the social team's awareness and understanding of potential social impacts associated with each Project component and activity. This should be implemented from the management level down to the VLOs.
- ✓ When developing CDS strategies, the Project should prioritize interventions for communities directly affected by such Project activities.

6.4 NATIONAL CONTENT PROGRAM COMPONENT

6.4.1 Project Strategy

A key objective of the Project's National Content (NC) strategy is to replace expatriate staff with PNG citizens through both targeted recruitment and training and development. In addition, national content requirements set out in a National Content Exhibit are contained in agreements with key contractors. The exhibit states that contractors shall "develop and implement a Local and National Content Plan in accordance with the requirements in this Exhibit." The Exhibit requires maximization of employment of PNG citizens in all job categories and sourcing of all the PNG works will be in accordance with the requirements of this Exhibit and relevant law. The first priority is to be given to local people (proximate to Company locations), while the second priority is to regional citizens, and third priority to persons elsewhere in PNG. It also specifies that the contractors should give preference to local LANCOs for provision of employees.

6.4.2 Observations

6.4.2.1 National Content Plan

EMPNG National Content Plan focuses on the future - Suppliers and Workforce Development:

- ✓ Increased nationalization rates;
- ✓ Increased PNG business participation.

The Plan strives to sustainably optimize local content development:

- ✓ Facilitating the ability to operate without interruption by managing expectations;
- ✓ Building community support through capacity programs.

The Plan supports development of local skills, economic growth and improvements in the standard of living through the implementation of the plan. The NC Plan also aligns with EMPNG's Planning and Budget (P&B) cycle to leverage considerations for workforce and supplier planning for the forthcoming year as well as proceeding years. Some of the considerations for possible National Content 'demand' for the planning cycle are:

- ✓ Company workforce (employees and 'hat' contractors);
- ✓ Onsite contractor workforce;
- ✓ Company Suppliers: goods as well as services.

6.4.2.2 Workforce Statistics

PNG Nationals made up 90% of the Project's total workforce in 2024 (were 88% in 2023).

In terms of PNG workforce origins, workers from local areas continued to be the largest group with 39% (increased from 35%) followed by national workers at 37% and regional at 24%.

In terms of gender, females make up 17% of PNG workforce.

Table 6.1: Workforce Statistics

Statistics on Workforce	Year End 2022	Year End 2023	Year End 2024
Total Workforce across Project	3,772	3,714	3,509
PNG Workforce (% nationalization)	3,315 (88%)	3,255 (88%)	3,155 (90%)
EMPNG* PNG Workforce (% nationalization)	647 (76%)	713 (76%)	706 (77%)
3rd Party Contractor PNG Workforce (% nationalization)	2,668 (91%)	2,542 (91%)	2,449 (94%)
PNG Citizens Female workers (% Female)	633 (19%)	672 (18%)	588 (17%)
Local Origin – P1 (%)	1,474 (44%)	1,153 (35%)	1,222 (39%)
Regional Origin – P2 (%)	762 (23%)	901 (28%)	746 (24%)
National Non-Project Areas – P3 (%)	1,079 (33%)	1,201 (37%)	1,187 (37%)

*direct hire employees or employees from recruiting agencies

6.4.2.3 Workforce Development – Competency Enhancement

More than 120,000 training hours were delivered in 2024 - representing an average of 25 hours of training per person. Training highlights include:

- ✓ Supervisory skills development continues through the supervisor network and effectiveness sessions each quarter;
- ✓ 6th year of graduate management program – onboarded seven graduates in 2023 (total of 13) - first batch have settled into host function;
- ✓ Onboarded 11 engineering graduates and 8 interns;
- ✓ Seven PNG employees on expatriate assignment.

6.4.2.4 Operations and Maintenance (O&M) Progress

Recruitment Highlights in 2024

Papua New Guineans in the O&M training recruitment program to date:

- ✓ A total of 333 Papua New Guineans have been recruited and trained through the PNG LNG Operations & Maintenance (O&M) Training Program;
- ✓ Intake 3 reached a 10-year milestone;

- ✓ For Intake 9, 17 Trainees were selected and began training at Kumul Petroleum Academy in September 2024 (Operations 11, Maintenance 6 all involved in instrumentation training);
- ✓ For Intake 10, 11 Trainees graduated in October 2024 from Kumul Petroleum Academy (Operations 5, 6 mechanicals).

O&M Competency Building

- ✓ Of the total 333 Papua New Guineans trained through the PNG LNG O&M Training Program, 248 (75%) are active, of which eleven are currently training at Kumul Petroleum Academy. Within the active ones, 72% are male and 28% are female.
  - 248 (75%) are active employees.
    - 221 in Operations & Maintenance roles,
    - Twenty-one in "Above Field" roles.
  - 74 have been demobilized from the Company.
- ✓ Reportedly, Papua New Guineans recruited through O&M Training Program have progressed into increasingly senior roles, taking over positions previously held by expatriates who were training and mentoring the Papua New Guinea staff. Currently national PNG employees account for 74% of the leadership roles, while expats account for 23%.

6.4.2.5 Local Procurement and Supplier Development – Highlights

Local Supplier Spend

- ✓ During the Production phase to date EMPNG has spent over PGK8b in-country split between Papua New Guinean businesses (PGK5.5b) and PGK2.5b with Lancos;
- ✓ More than PGK1b spent by EMPNG in-country in 2024, of which over PGK365 million with Lancos);
- ✓ 248 Papua New Guinean owned businesses engaged by EMPNG for production-related activities includes 11 Lancos.

External Engagement on National Content

- ✓ EMPNG Served as Principal Sponsor for CANCONEX 2024 at UPNG (July).
- ✓ EMPNG hosted two National Content Masterclasses (July) with DAI, attended by 38 representatives from GoPNG and industry partners.
- ✓ EMPNG formed a National Content Committee under PNG CORE:
  - Finalized 2025 work plan; and
  - Created platform to advance collaborative NC initiatives (e.g., GoPNG policy reform).
- ✓ Wood initiated an innovative approach to Papua New Guinean suppliers:
  - Assisted PNG suppliers to streamline supply chain costs via Pentagon Freight Services by utilizing their Brisbane warehouse, where the key beneficiaries are: TE PNG, Bishop Bros, Badili Hardware, Supreme Group.
- ✓ Expanded preferred vendor list to prioritize PNG suppliers:
  - Awarded new catering contracts to JV Lanco (dual-site coverage); and
  - Partnered with Turra for T-wall installation (Angore post-demob) and FOC repairs.
- ✓ EMPNG Completed contract renewal for O&M sponsorship program with Kumul Petroleum Academy by leveraging local institution to grow PNG talents.
- ✓ EMPNG Supported set up of Supplier Management Portal with Enterprise Centre/IBBM - launched in August with 3,000+ registered companies.

6.4.3 Recommendations

None arising from this review.

6.5 STAKEHOLDER ENGAGEMENT AND COMMUNITY GRIEVANCE MANAGEMENT

6.5.1 Project Strategy

The Project commitments with respect to stakeholder engagement are contained in the Stakeholder Engagement Management Plan – Production. This Plan describes the processes and actions applicable during Production. The overall objective for stakeholder engagement during Production remains to keep all stakeholders informed with respect to their specific interests, engage people in decisions that directly affect them, and maintain stakeholder confidence and trust in the Project and its activities through open, informative, inclusive and timely communications. A Village Liaison Officer Strategy for the Production Phase supports implementation of the Management Plan and the Land and Community Affairs Plan.

6.5.2 Observations

6.5.2.1 Engagement Overview, January - December 2024

The number of engagements recorded in 2024 saw a notable rise compared to the previous year, increasing by 19.53% from 8,140 to 9,730 across both Upstream and LNG Plant operations. Similarly, engagement attendances grew by 20.14%, climbing from 32,287 to 38,791. This upward trend can likely be attributed to the rollout of the IsoMetrics Mobile app, which has streamlined the process for teams to log and register engagement activities in real time. Given that the 2024 figures align closely with pre-pandemic levels observed in 2019, the IESC considers these metrics to reflect a robust and sustainable level of stakeholder interaction.

Table 6.2: Community Engagements in 2024

Location	Engagements 2023	Engagements 2024	Attendees 2023	Attendees 2024
Highlands	6,909	8,545	26,317	32,062
Plant Site	1,219	1,1278	5,948	6,724
POM Area	13	7	22	8

6.5.2.2 Issues and Grievances Overview January - December 2024

The Project continues to effectively communicate and coordinate with cross-functional teams (Security, P&GA, Law, ERB) to enhance the effectiveness of grievance and issues management.

Grievances

The volume of community grievances in 2024 remained consistent with historical trends observed between 2019 and 2024, with the lowest annual count recorded this year (9). All nine received grievances originated from highlands communities.

Regarding resolution timelines, the majority of grievances were addressed within 100 days, though two cases required extended resolution periods exceeding this benchmark. Additionally, while three grievances carried over from 2023, they were successfully resolved in 2024; three others remain pending and will continue into 2025 for resolution.

Effective grievance management and closure rates across all EMPNG sites continue to rely on strong internal Land & Community Affairs (L&CA) coordination, supported by cross-functional communication and collaboration. This integrated approach has proven essential in maintaining consistent resolution performance despite periodic complex cases requiring extended attention.

Issues

The number of issues slightly decreased during 2024 – 1,633 compared to 1,913 in 2023. Reportedly, the decrease can be attributed to enhanced daily engagement efforts by EMPNG's VLOs and Community Safety Monitors

(CSMs), whose proactive presence in communities has significantly raised awareness. The main categories of issues were related to social, economic and land access queries and concerns.

6.5.2.3 Stakeholders engagement for Angore Wellpads

It is IESC's understanding that there are currently no future plans regarding the management of Well Pads A & B, whose reinstatement is required by the Angore Gathering System EMP in line with PS6 requirements (for more details see section 5.4.2.1). Reportedly, EMPNG continues to compensate local communities for land use and will keep doing so in the near future.

Given that the two decommissioned well pads are likely to be seen by the communities as potential spaces for their own community development, the Project should have been proactively planning how to manage this issue, considering the potential conflict between local community expectations and requirements of international standards.

It is recommended that the Project initiate discussions with local communities to understand their actual expectations regarding the affected land plots and assess whether this potential conflict is confirmed. If confirmed, adequate engagement activities should be conducted to find common ground that ensures both community acceptance of proposed activities and compliance with biodiversity requirements. As mentioned in Section 3.6, reinstatement may be not possible if an agreement with local communities cannot be reached—however, this should only follow a proper stakeholder engagement process and must also be addressed in a risk assessment, with the results incorporated into an MOC.

Figure 6.2: Stakeholders of the Elawi School met during the site visit

6.5.3 Recommendations

None arising from this review.

6.6 STATE CLAN BENEFITS INTERFACE - UPDATE

6.6.1 Project Strategy

The PNG Government is responsible and accountable for determination and payment of landowner beneficiary royalty and equity dividends. EMPNG's goal is to influence and support the Government in its effort to pay landowner State Cash benefits in accordance with the laws of PNG. Its main challenge in this objective is to help ensure safe, accurate, timely and effective delivery of cash benefits without having any actual control over the process. The IESC notes that the Projects' assiduous documentation of its support for the benefit sharing process is critical for risk management.

6.6.2 Observations on Status

The Project's strategy remains to mitigate near-term risk, support resolution of underlying issues, and capture lessons for potential future projects. To these ends, the Project continues to engage positively with the Co-Venturers, PNG Government and other key stakeholders. Continued progress is being made to deliver benefits to mandated beneficiaries.

The information given below is the Project's best understanding of the status of benefits distribution. Benefits distribution and related LOBID / ADR processes are managed and executed by the Government. EMPNG provides logistical support to related government activities as appropriate.

Status of benefit payments to Project Licensed Areas are as follows:

Downstream

- ✓ 3rd royalty payment made in Nov 2022; 2nd Gas Resource Director's elections held in Dec 2022 with all 4 incumbents re-elected.

Upstream

- ✓ PDL 7: Inaugural royalty payment of PGK19.6M made in March 2022; 2nd royalty payment indicated for 1H 2025
- ✓ PDL 1: Account opening exercise re-commenced Mar 2024 – 80% of accounts opened and elections for 4 GRC Directors' done in June 2024; 4 remaining Directors' pending election and expected to take place in 2H2025 – critical final step to enable payment of royalties to beneficiaries;
- ✓ PDL 8: Ministerial Determinations in place for all five blocks as of Nov 2023; progression to clan account opening phase indicated for 2H 2025 pending final legal clearance from the State;
- ✓ PDL 9: Ministerial Determinations in place for clan factions from Western and Hela Provinces as of May 2023; State indicates clan account opening phase for 2026 at the earliest; and
- ✓ Pipeline Segments: 1st royalty payment paid for Segments 8, 4, 5, 7, 1, 2 and 3 as at 3Q 2021; 2nd royalty payment indicated for 2H 2025. GR Director's election for Segment 6 currently pending clearance from Courts to proceed.

6.6.2.1 General observations

During IESC interviews, several stakeholders in the downstream area have expressed discontent over the lack of transparency regarding the use of royalties in their communities. These stakeholders were all aware that this is not due to EM, but rather to the GoPNG itself. However, IESC suggests that EM continue, as far as possible, to put pressure on the GoPNG to ensure that local stakeholders are adequately engaged and informed about the use of these royalties (as required by IFC PS1) in order to avoid the risk that such discontent may, in the future, be directed toward the Project.

6.6.3 Recommendations

None arising from this review.

7 LABOR AND HUMAN RESOURCES

7.1 PROJECT STRATEGY

Project labor commitments are defined in the Labor and Working Conditions Management Plan – Production (the "Plan"). The Plan describes the requirements and expectations in terms of compliance, reporting, roles, supervision and training with respect to labor and working conditions, including camp accommodation. It covers all production activities for Upstream Facilities, the Pipelines and the LNG Plant. This Plan is expected to be adopted and applicable to EMPNG contractors, recognizing that EMPNG's effectiveness in managing third parties will vary in accordance with the leverage EMPNG is able to exercise. To the extent that EMPNG can exert influence over its supply chain, the principles in this Plan will also apply.

The objectives of the Plan are to:

- ✓ promote fair and equitable labor practices for the fair treatment, non-discrimination and equal opportunity of workers;
- ✓ establish, manage and promote a healthy management-worker relationship;
- ✓ protect workers' rights including migrant and third-party workers; and
- ✓ promote healthy, safe, secure and comfortable accommodation that does not impact negatively on the communities in the surrounding area.

7.2 OBSERVATIONS

7.2.1 Professional Development

The Project uses a variety of materials and activities to promote the professional development of its workforce. The main elements of these support measures in 2024 were:

- ✓ The Supervisor Network, which includes quarterly sessions designed to enhance the effectiveness of EMPNG Supervisors in their crucial roles within the organization. During such sessions, Senior Management directly interacts with Supervisors to discuss and receive feedback on important current topics such as Business Unit Goals, the Employee Development Cycle, and the latest updates on the company's policies and programs;
- ✓ The Eda Wanwok Toastmasters Club, which is one of the most active clubs within EM PNG, helps employees build confidence by enhancing their communication, leadership, and public speaking skills. Reportedly last year, the Club became a Distinguished Club under Toastmasters International and celebrated its 10th anniversary.
- ✓ Various Award Programs, such as:
  - LCM Awards, annual awards open to all staff, recognize, promote and reward outstanding examples of *Em Pasin Bilong ExxonMobil PNG* values and behaviors. Nominations are made by the Country Leadership Team and selection is by the Employee Development Committee,
  - Nambawan Awards, introduced in 2022, nominated by staff to recognize, promote and reward peers' outstanding performance by demonstrating *Em Pasin Bilong ExxonMobil PNG* values and behaviors. Nominated staff receive vouchers;

7.2.2 Personal Development

The Project also supports staff personal development with various activities including:

- ✓ Business Acumen Financial Literacy program;
- ✓ Collaboration with Bel Isi PNG;
- ✓ Staff Ball Night;
- ✓ Participation in the Independence Day Celebration.

The Project continued its Giving Back program with activities such as staff participation in:

- ✓ Environment Day;
- ✓ Walk against corruption;
- ✓ Introduce a Girl to Engineering Day;

- ✓ Mangrove Planting;
- ✓ Christmas Gift Drive; and
- ✓ Buk Bilong Pikinini (Books for Children Program);

In terms of mental health, the Employee Assistance Program (EAP) continued. It provides confidential, professional counseling for employees and their eligible family members, including spouses and dependents. It offers support for personal issues, clinical referrals, well-being coaching, and financial services. Counseling is available 24/7 via a toll-free number, with counselors visiting EM Haus and Camp sites monthly.

7.2.3 Labor Grievance Management

The EM Connect system continues to be highly utilized, allowing employees to direct questions to appropriate teams through an automated system. In 2024, 8802 employee inquiries were received and assessed and closed. The average response time is 3 days. Positive feedback from 84% of employees (it was 70% in 2023). Most inquiries were related to Emergency Loans, Payroll Documents and Life and Disability Insurance. No time was lost due to industrial action.

In 2024 IESC noticed that workers did not have the possibility to submit anonymous grievances, as requested by paragraph 20 of IFC PS 2 and recommended EMPNG to address this issue by implementing on its online platforms a system for submitting anonymous grievances and adequately informing the workforce of this system and how to use it. During the monitoring period, a confidential online platform was established, allowing employees to submit questions or requests for consultation. Grievances are not strictly anonymous. However, as reported, only the team receiving and managing grievance is aware of the submitter's identity. IESC's opinion is that, provided this confidentiality is effectively upheld, the integration of this system now ensures compliance with IFC PS2 requirements. For this reason, Follow Up Issue Item M23.3 is now considered closed.

7.2.4 Employee Retention

As a general observation, in the past, IESC observed the Project's difficulty in retaining its employees, culminating in the biodiversity team being reduced to just one individual in 2023. According to the information gathered, the issue appears to have been adequately resolved. The biodiversity and environmental teams no longer seem to suffer from understaffing. IESC appreciates this and recommends continuing efforts to retain human capital by ensuring competitive salaries and working conditions.

7.3 RECOMMENDATIONS

None arising from this review.

8 HEALTH AND SAFETY

The PNG LNG Project has a well-developed program to manage both occupational health and safety of workers, as well as a community health and safety program. The success of both programs has been based on the understanding that community and occupational health and safety are linked and interdependent on one another.

8.1 OCCUPATIONAL HEALTH AND SAFETY

8.1.1 Project Strategy

Occupational health and safety are managed independently of the Production ESMP within the ExxonMobil Operations Integrity Management System (OIMS), which is summarized within the ESMP such that the linkages between OIMS and environmental and social management are well defined. The ultimate goal of managing personnel safety is to achieve an incident-free workplace where "Nobody Gets Hurt". Over the past few years the OIMS system has evolved to establish annual continuous improvement goals and objectives in a number of areas, including:

- ✓ Personnel Safety Management System (PSMS);
- ✓ Life-Saving Rules and Actions (LSRAs) and Start Work Checks;
- ✓ Human performance;
- ✓ Culture of Health;

- ✓ Training.

2024 marks where EMPNG formally initiated the Personnel Safety Management System (PSMS) which focuses on the highest risk activities to prevent fatalities and life-altering injuries. Accordingly, the PSMS is designed to consistently deliver “safety in the moment” by more effectively managing safeguards before and during higher-risk work. A core component of PSMS is ExxonMobil’s Life Saving Rules & Actions (LSRAs) where employees and contractors are expected to work cooperatively to execute the LSRAs for routine work activities that have higher risk elements. To improve the health, quality of life, and productivity of employees, ExxonMobil provides a comprehensive Culture of Health program that provides an environment and resources that actively and consistently promote healthy and safe behaviors. This includes encouraging biometric screening, periodic health surveys, access to wellbeing champions, resources to help employees with resiliency, and more. The Culture of Health program as implemented in PNG also includes protecting company personnel from health hazards prevailing in the environment with the recognition that there needs to be a linkage between occupational and community health programs.

8.1.2 Observations

8.1.2.1 Worker Safety

EMPNG Production safety performance through Q4 2024 continues to be excellent, better than 2023 (Figure 8.1). There were no Lost Time Incidents (LTI), and the Lost Time Incident Rate (LTIR) is 0.00 normalized to 200,000-man hours and the Total Recordable Injury Rate (TRIR) was 0.03, both of which are much better than industry standards Note that 1.3 is the average LTIR and 3.0 is the average TRIR across all industries in the United States.. Safety statistics in the future will be presented differently, as EMPNG is transitioning to the OIMS Personnel Safety Management System (PSMS).

8.1.2.2 Worker Health

The occupational health program is world class and continues to perform well in all areas (clinical operations, public health and industrial hygiene). A few highlights include:

- ✓ 11,060 clinic consultations across all clinics (35% Occupational Health - 65% non-Occupational Health);
- ✓ Organized blood drives at EM Haus & LNGP: 332 bags donated to POM General Hospital;
- ✓ TB Control Program: 739 individuals screened; one active case treated offsite;
- ✓ 7 Medevacs 6 from HGCP – 1 from Angore;
- ✓ Policy Review and update undertaken with First Aid Policy reviewed and updated across operational sites; Medical Emergency Response Plan (MERP) developed for Kiunga office; and fixed asset review of equipment required for emergency response (including mass casualty equipment based at Komo completed;
- ✓ Completed over 300 health inspections across food, water, public health and industrial hygiene activities;
- ✓ Personal exposure monitoring was undertaken in 13 groups of workers for benzene, noise and hydrocarbon exposure;
- ✓ Organized external Radiation Safety Officer (RSO) training to develop site competency in managing naturally occurring radioactive materials (NORM) at HGCP;
- ✓ Health risk reduction - Recommended use of quieter grinding discs – which further protect hearing of workers using tools (in addition to usual safety measures).

The Culture of Health (COH) program following OIMS continues to be implemented with 2,450 participants for biometric screenings and physical activity challenges. A touch rugby league ‘footy’ was started with eight mixed teams and other activities included Zumba classes, and the development of individual fitness plans for staff by personal trainers at gyms. EMPNG celebrated a Culture of Health Week in October 2024.

Personal Safety Statistics

Workforce	2023	2024
LTIR	0.01	0.00
TRIR	0.03	0.03
Work-hours	21,075,194	20,863,085

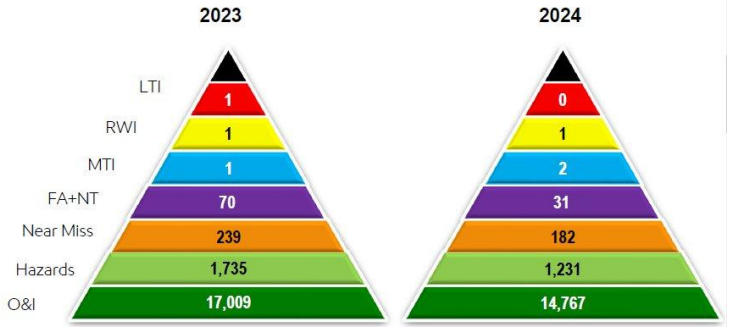

Figure 8.1: Safety Record 2023 - 2024

8.1.3 Recommendations

The H&S program continues to be implemented as a "best practice" system. The IESC does not offer any recommendations arising from the present review.

8.2 COMMUNITY HEALTH

8.2.1 Observations

Community health continues to be a component of the CDS program with the objective of reducing the factors that limit the capacity of Papua New Guineans to fully participate in livelihood/economic activities by targeting high risk diseases and health complications. CDS health activities in Hela Province and the Southern Highlands in 2024 focused mainly on infrastructure development:

- ✓ The Edauwi Community Health Post is expected to be completed in March 2025 and is estimated to benefit approximately 8,000 community members by improving access to quality health services, and emergency medical care and facilities for people in Angore;
- ✓ The Homa Aid Post facility was refurbished with new staff house construction and perimeter fencing. The Aid Post supports more than 4000 people from Homa village and nearby communities and aims to support health staff retention and strengthen access to first responders;
- ✓ A staff house was constructed for the Para Health Centre, with the note that this health center is in a dilapidated condition with staff unpaid for months as described in Section 6.3.2.
- ✓ Two water catchment structures were delivered near KP 76 along the RoW, contributing to reducing risk of waterborne diseases and increasing access to safe drinking water.
- ✓ Medical supplies to Government Security Force (Defense Forces) medics to support community outreach on basic medical needs.

Aside from the provision of infrastructure and supplies, EMPNG also supported a program to enhance women's empowerment through Queenpads, a women's health not for profit organization to deliver awareness sessions and provide information on women's hygiene and sanitary practices.

There were also collaborations developed and strengthened to jointly contribute to Provincial Health issues, including ongoing engagement with the Central Provincial Health Authority, school leadership and Ward Councilors to advance synergies on current and future projects, and ensure alignment with provincial health plans

Community health programs have been well implemented since the start of the Project.

8.2.2 Recommendations

As already mentioned in Section 6.3.3, during the site visit, IESC inspected the Para Clinic, located near HGCP and operated by PNG's Evangelical Church. The facility was found in severe disrepair, with staff unpaid for months. Notably, according to the information provided by the Clinic Manager, the clinic serves not only local residents but also HGCP workers during off-hours and their families.

This *de facto* reliance on the clinics likely exacerbated pressure on an already fragile system. This situation represents a direct impact of the Project on local healthcare services - an impact that should be addressed through the implementation of appropriate mitigation measures.

In this regard, it must be emphasized that EMPNG has supported the clinic multiple times between 2016 (when it was completely refurbished) and 2024 (when staff housing was provided). Furthermore, it should be noted that further support interventions for the clinic are already included in the 2025 CDS workplan and considered priority actions. Considering the latter, IESC appreciates this and recommends that the scheduled interventions not be postponed.

9 CULTURAL HERITAGE

9.1 PROJECT STRATEGY

Production has adopted the Cultural Heritage Program from Construction:

- ✓ Cultural Heritage Management Protocol;
- ✓ Cultural Heritage Investigation and Salvage Protocol; and
- ✓ Chance Finds Protocol.

EMPNG's objectives are to avoid impacts to cultural heritage sites, including archaeological and oral tradition sites and to manage cultural heritage sites in consultation with landowners.

9.2 OBSERVATIONS

In 2024, cultural heritage assessments were completed for additional workspaces and laydown areas required for earthquake recovery works in the Upstream area and two archaeologists working back-to-back are based full-time onsite to implement EMPNG's Chance Finds Protocol. Ten Chance Finds were discovered during the recovery works and consisted of waisted tang blades, a polished stone axe and fossilized shell. These chance finds will be presented to the Papua New Guinea National Museum and Art Gallery. Implementation of the Chance Finds Protocol is ongoing in 2025 in association with the ongoing EQR project.

Community engagement during flora and fauna surveys around Hides Ridge has provided an opportunity for local communities to identify the totems, plants and animals, significant to their cultural heritage. These engagements triggered clan elders to gather young men in their "hausman" to share knowledge of their tradition/ history – (malu – Huli dialect). This cultural information is being compiled as future educational material.

The IESC team had the opportunity to visit the Para Village where cultural resources have been a stimulant for engaging with the community for ecological conservation. The sacred sites being identified often have a root in areas with special biodiversity, so it is appropriate that the two topics are merged as part of resource mapping undertaken by the local community.

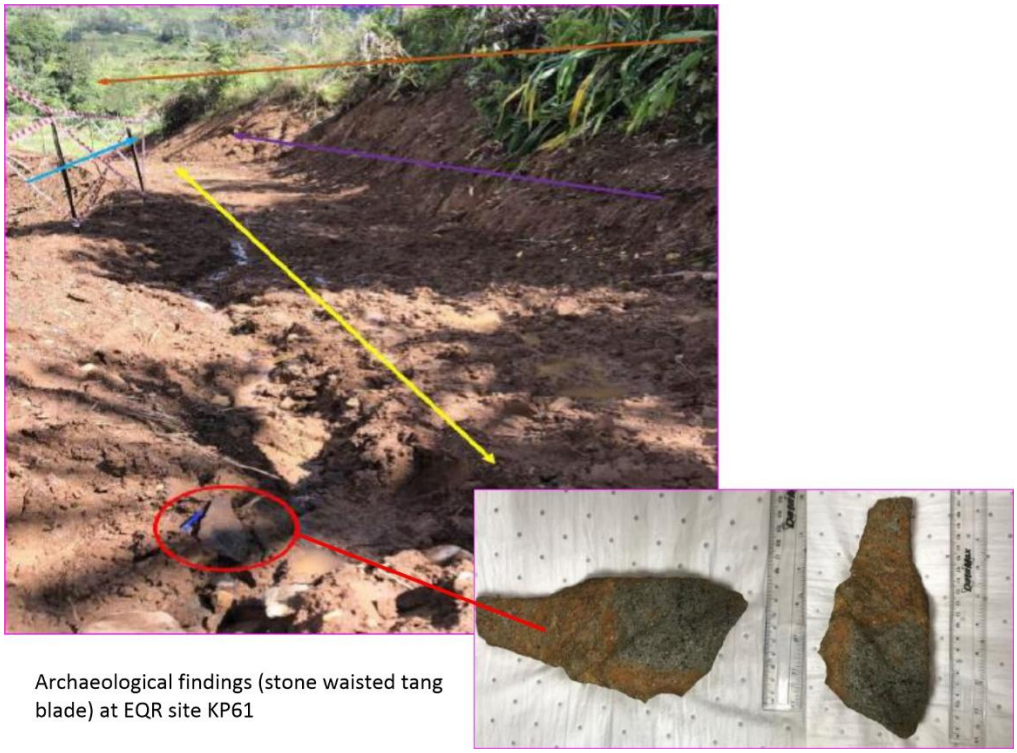

Figure 9.1: Portion of Chance Find Record from EQR Work at KP 61

Figure 9.2: Para Village Welcome to Discuss Cultural Heritage and Resource Mapping