

Esso Highlands Limited

PNG LNG Project

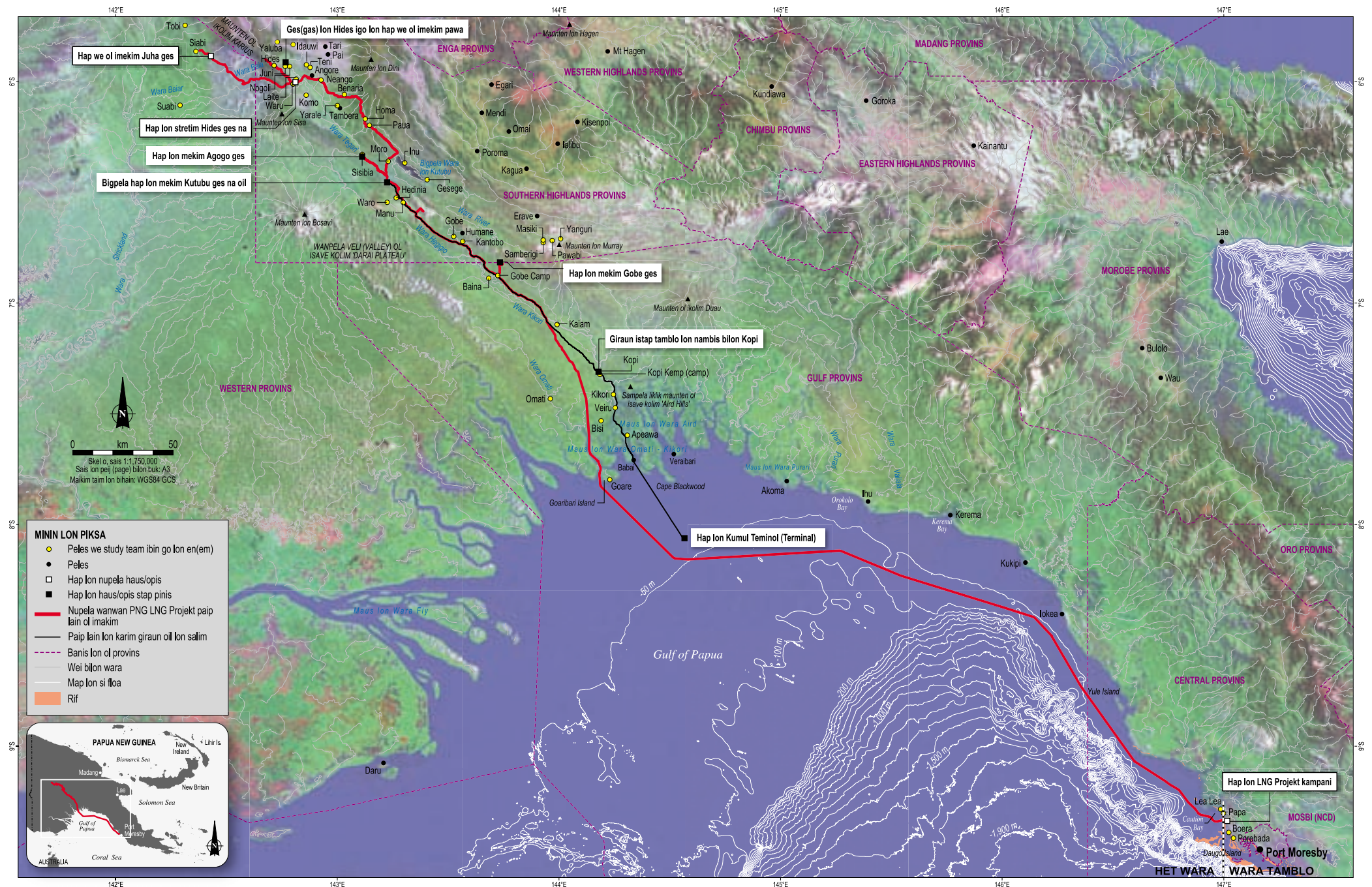
Environmental Impact Statement

Sotim Tok



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Prepared by:
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Toksave: Dispela toksave long olsem wanem long olgeta paip lain bai sindaun long giraun ikam long save lain long Engineering ol ibin givim lon mun Octoba 2008.

TOKSAVE LON WANEM SAMTING TRU EM EIS

Igat nain (9) volumes lon Papua New Guinea Liquefied Natural Gas Project Environmental Impact Statement (PNG LNG Project EIS). Lon Volume 1, emi igat Executive Summary, istap lon English, Tok Pisin na Motu. Na lon Volumes 2 igo lon 9 em ol istap lon English tasol.

Insait lon table of contents, em igat drowin olsem piksa, tables, piksa tru na, sampela moa infomeisen ol ikolim appendices. Yu ken kisim dispela kain infomeisen lon frant lon Volumes 2 and 3; na olgeta volume lon appendices bai stat wantaim wanpela list lon olgeta appendices.

Volume 1	Sotim Tok	Em igivim shotpela toktok lon Projekt, na hau ol iwokim impact assessment stadi wantaim olsem toksave lon olgeta lain husat stap insait dispela Projekt. Em isi liklik lon ridim bikos tok English we ol iyusim ino hat tumas.
Volume 2	EIS insait lon Bigpela Ripot (Parts I and II)	Part I – Projekt: stori lon projekt, olgeta lain wok na stap wantaim projekt, tru stori bilon en, lo bilon en; na nupela wan wan samting lon Projekt em ikamap, woksait bilon en, na kisim infomeisen lon olgeta lain lon stori bilon project. Part II – Hap we olgeta man, bus na giraun save stap lon en: Olgeta stori yu laik save lo olsem wanem stap lon giraun, olgeta man na meri lon Projekt, na olsem wanem lon solwara taim Projekt kam insait.
Volume 3	Bigpela Ripot lon EIS (Parts III and IV)	Part III – Hau Projekt bai affectim giraun, bus na peles na hau yumi ken lukluk lon en: Insait lon ripot, iwok lon tokaut lon skelim kain kain samting bai kamap taim Projekt ikam, na hau bai yumi ken stopim kain kain bagarap bai kamap. Olsem bagarap lon solwara, wara, giraun we em bai kam nau o bihain taim. Na lon lukautim olgeta pia Projekt bai kamapim, bagarapim bus na olgeta samting. Lon pinisim toktok, igat plans istap lon stopim kain kain problem bai kamap, na olsem plan lon lukautim bus, wara, giraun na solwara tu. Na bihainim dispela kain plans, igat wei lon bihainim na pusim diepela lon wok, skelim wok lon dispela plans, na ripotim igo lon husat lain I bosim dispela hap. Part IV – Ples lon kisim infomeisen na stori: Wanpela section ol ikolim ‘glossary’ we yu ken lukim na ridim minin lon olgeta bigpela English toktok na toktok lon kain kain wok tu. Na tu, igat list lon olgeta buk na articles we infomeisen mipela bin kisim.
Volume 4	Appendix 1	Specialist studies.
Volume 5	Appendices 2 to 11	
Volume 6	Appendices 12 to 16	
Volume 7	Appendices 17 to 25	
Volume 8	Appendix 26 (Part 1)	
Volume 9	Appendix 26 (Part 2)	

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1. TOK IGO PASTAIM

1.1 Wanem Ting Ting Tru Lon Projekt (Proponent and Project Objectives)

Esso Highlands Limited (Esso) laik kirapim wok lon Papua New Guinea Liquefied Natural Gas Project (PNG LNG Project) wantaim sampela Kampani husat laik wok wantaim (Table 1.1).

Esso (em olsem bosim wok) bai wokim na stretim nupela wantaim ol arapela ges lon giraun husat stap pinis from new and existing insait lon Southern Highlands na Western provins lon Papua New Guinea (Droim 1.1) na, salim dispela ges lon paip lain bai go lon Gulf Provins, solwara lon Guf na, bai go lon wampela 6.3-Mtpa LNG Projekt haus lon Central Provins. Bihain gen ol bai tanim ges bai go olsem wara ges na loudim insait lon traipela sip lon salim lon arapela kantri. Dispela Projekt tu bai wokim sampela ges ol ikolim 'condensate' lon salim wantaim.

Nambawan ting ting lon dispela bisnis wok bai kirapim gupela wok tru lon olgeta ges ikam lon giraun lon Hides, Angore, Juha na South East Hedinia wantaim ges ikam lon Kutubu, Gobe, Agogo na Moran we oil stap wantaim. Lon olgeta Kampani husat iwokim na salim oil istap, dispela Projekt bai kirapim wok bilon ges bilon ol na tu, Projekt bai kirapim na sapotim wok lon oil. Blo wanem sampela wok lon oil bilon ol em igo daun liklik. Ol dispela Kampani husat istap insait lon PNG LNG Projekt ol ihamamas lon kamapim na salim dispela LNG ges. Ass bilon dispela ting ting ikam olsem:

- Nau lon Wel (world) maket yu ken salim na baim LNG o, wara ges. Na tu, planti ol projekt nau ken salim LNG lon olgeta hap. Ino olsem bipo we yu baim stap wantaim wampela hap tasol lon salim wara ges.

Table 1.1 Husat ol Bisinis Kampani istap insait lon dispela PNG LNG Projekt na, hamas seia (share/interest) ol igat insait lon PNG LNG Projekt

Nem bilon Kampani	Hamas seia em igat insait lon PNG LNG Projekt
Exxon Mobil Corporation (Esso Highlands Limited, em nem bilon Kampani iwokim wok lon PNG)	32.9%
Oil Search Limited	28.7%
Santos Ltd	13.7%
AGL Energy Limited*	3.6%
Nippon Oil Exploration Limited	1.7%
PNG state na Papa/Mama Giraun**	19.4%

*AGL ibin tokaut lon mun October 30, 2008 olsem em ibin kisim baim na salim 'agreements' wantaim wampela 'international oil na ges Kampani lon olgeta ges na oil seia bilon em insait lon Papua New Guinea. Em wantaim 3.6% seia bilon en lon PNG LNG Projekt.

**PNG state na Papa Giraun imin olsem Minerals Resources Development Company (MRDC) husat igat 2.78% seia na, Eda Oil Limited (0.24% seia bilon em) na, wampela liklik kampani bilon Independent Public Business Corporation of Papua New Guinea (IPBC, 16.39% seia bilon en).

- Lon putim na salim wara ges insait lon paip lain em ihat liklik. Olsem lon PNG yumi ken karim wara ges lon paip bai go lon Australia, em klostu na isi liklik. Tasol, insait lon Australia maket nau em igat planti lain husat salim kain kain ges lon ol. Em ino gupela tumas.
- Insait lon Wel maket, igat strongpela tru lukluk olsem LNG ges prais bai kamap strong.

Lon Inglis, ol isave tok olsem lon said bilon 'social, cultural na economic' nambawan lukluk mas go lon wei lon kamapim Projekt we em bai kisim ikam daun planti 'benefit' o gupela samting, lon peles o, local kominiti wantaim liklik tasol bagarap lon bus, solwara na sindaun lon olgeta man. Ting ting bai kamap olsem:

- Projekt mas luksave lon wanem strong, pasin lon ples, na sindaun lon kominiti husat stap klostu lon Projekt.
- Projekt mas soim hau em bai lukautim gut, wantaim plan lon bus,

giraun, wara, solwara na sindaun bilon olgeta man, kain kain abus, pisin na binatang.

- Hau Projekt bai kamapim na givim 'benefit' igo lon gavman wok, moni bilon em na, olgeta man meri lon PNG.

Lon Gavman wantaim Provincial Gavman na olgeta lain lon papa giraun, dispela Projekt bai kamapim planti gupela 'benefit' na kirapim gupela sindaun.

Esso laikim olsem em bai skelim gut tru lon wok bilon em we bai liklik bagarap tasol bai kamap lon bus, wara, giraun lon olgeta man istap klostu lon Projekt. Olgeta plan bilon Kampani lon putim rot, paip lain o sanapim haus mas stap insait lon olgeta lo istap wantaim Gavman, kampani lo lon wokim wok na, kominiti ting ting wantaim ol arapela kantri lon lukautim bus na sindaun lon olgeta man na meri.

Ass bilon dispela kain ting ting ikam lon ting ting lon olgeta Kampani husat

ibin bung wantain lon kirapim dispela Projekt. Na tu, dispela ting ting ibin kisim planti sapot ikam lon lo lon Gavman lon Independent State lon Papua New Guinea wantaim pasin tumbuna lon peles na, olgeta stret pasin ting ting lon lukautim kantri.

1.2 LNG o, wara ges, em wanem samting tru?

Liquefied natural gas (LNG) o, wara ges, em kol nogut tru, inogat poisen bilon en, ino nap bagarapim paip na, em olsem win nating.

LNG wara ges em bilon olgeta man husat laikim ges tasol ol ino stap klostu lon hap we ol iwokim giraun ges we bai ol iken kisim ikam lon ol lon ges paip lain. Taim yu srukim ges igo kul kul tru olsem lon -161°C, em bai kamap olsem wara, we bai sais bilon em bai go daun samting olsem 600. Taim sais bilon em igo daun, LNG wara ges basi isi liklik lon kisim planti ges igo lon olgeta hap insait lon sip tu.

Wokim na salim LNG wara ges ino nupela samting bikos dispela kain wok ol ibin wokim klostu olsem tenpela siks faiv krismas igo pinis. Na ol ibin karim lon sip igo inap faivpela ten krismas igo pinis na, wan wan bagarap tasol em bin kamap. Dispela gupela 'record' lon LNG wara ges iwinim ol arapela kain wok lon wokim na stretim 'petrochemical plants': faivpela taim tasol we sampela man bin dai lon wok taim ol istatim dispela wok lon 1944. Tasol dispela bagarap ino bin kamap wantaim wok bilon Esso wantaim ol arapela Kampani husat bung wantaim lon kirapim PNG LNG Projekt insait lon Exxon Mobil Corporation (ExxonMobil). Tru tumas, nogat wanpela dai bin kamap lon ExxonMobil lon putim wara ges lon sip.

1.3 Lon Kirapim Bisnis, Wokim Moni na, ol wokman

Projekt mas painim na putim bigpela moni tru insait lon Projekt samting olsem K36 billion. Dispela kain moni bai kirapim bisnis moni (PNG's GDP) insait PNG klostu olsem, K18.2 billion lon wanpela krismas. Na lon wan wan krismas Projekt bai yusim klostu

olsem K680 million. Krismas bilon Projekt bai samting olsem tripela ten na, insait lon dispela taim Gavman bai kisim olgeta tax moni klostu olsem K67 billion. Lon givim seia moni igo lon Provincial Gavman, Local Level Gavman (LLG) na, Papa Giraun em bai klostu K5.3 billion. Lon dispela moni, sampela bai go lon provincial gavman (one-third), LLG (one-tenth) na, olgeta istap yet (klostu olsem 50%) bai go lon olgeta lain lon Papa Giraun.

Lon moni kam insait ol isave kolim 'revenues', sampela bai go lon 'tax credits' (klostu olsem K0.5 billion) we bai Esso bai yusim lon wokim rot, bris nabaut. Nogat, sampela bai stap olsem 'trust fund' we bai ol iken kamapim moa project lon peles lon sindaun lon olgeta pikinini lon kominiti lon bihain taim. Dispela moni em bai olsem K4 billion.

Lon April 2012 we 'construction' bai stat pinis, samting klostu 12,500 wokman bai stap full taim lon Projekt wok. Insait lon said lon 'Operations', samting klostu 850 wokman bai go insait. Planti ol PNG lain tasol ('Nationals') bai stap insait lon 'construction'. Bihain taim planti ol PNG man meri bai stap insait lon 'Operations' taim ol ikisim gupela save lon 'training'.

Ol dispela moni namba yumi givim em ikam lon lukluk lon said bilon moni kam insait taim Projekt istat wantaim gupela ting ting lon sherim ('equitable distribution') moni lon klia ples na, bihainim gupela lon sherim moni. Olsem sapos sampela istilim moni na, hait hait nabaut, em bai olgeta man bai lus na bel hat, laka?

1.4 Sapos Yumi Tok Maski, Lusim Projekt

Em itru olsem sapos dipela projekt in nap go het bai yumi lus lon 'benefits bai kam lon en, na tu giraun na sindaun bai stap olsem yet. Wanpela bigpela samting tu, sapos nogat projekt bai yumi lus lon gupela sans lon bungim olgeta pawa na wei lon wokim bigpela moni, masin na save wantaim ol bigpela kampani insait lon oil na ges bisnis. Lon wokim oil lon PNG na salim em igat liklik taim istap yet lon pinisim dispela bisnis. Tasol tru tok bai go olsem. Sapos wok lon kamautim oil lon

PNG ipinis, em bai hat tru lon kamapim ges istap lon giraun na salim olsem nau PNG LNG Projekt laik wokim. Em bai bigpela moni tumas lon putim insait lon wok na olgeta bigpela kampani bai les lon wok wantaim.

1.5 Tok Ikam Lon Sait Lon Giraun, Bus, Wara na Solwara (ol ikolim EIS)

Dispela ripot em isurukim na karapim bigpela ripot ol ikolim 'environmental impact statement' (EIS) lon PNG LNG Projekt. Esso ibin wokim dispela EIS lon bihainim lo olsem s. 53 insait lon Environment Act 2000 wantaim tok ikam lon Department of Environment and Conservation's (DEC) Section 50 'Notice to Undertake an Environmental Impact Assessment', lon mun May 31, 2007.

Olsem kaikai bilon EIS em bai givim pawa igo lon Esso lon kamapim na wokim dispela PNG LNG Projekt.

Samting olsem namel lon 1980s ol ibin lukim planti oil na ges lon bus lon we PNG LNG Project hap ibin stap nau. Tasol bipo, nogat planti save man isave gut tru lon dispela hap insait lon ailan New Guinea.

Tasol Kutubu Petroleum Development Projekt (1992, Piksa 1.1 wantaim planti ol stadi ol wokim lon nupela 'petroleum' projekt em bn kamautim planti save lon bus, giraun, wara, solwara na sindaun lon olgeta kominiti istap lon en (Piksa 1.2).

Nau yumi gat gupela save liklik lon hamaspela bagarap igo lon bus na sindaun lon olgeta man taim 'petroleum' wok ibin stat lon sampela tupela ten faiv krismas igo pinis. Kain kain senis ibin kamap tasol planti ol em seim olsem dispela EIS stadi ipainim aut. Olsem na, planti ol tokaut lon wokim Projekt plan, na wanem kain samting bai kamap olsem gupela o, nogat, em olgeta cave ibin kam lon dispela stadi tasol.

Wanem kain senis (o, 'impact' ol isave kolim), bai kamap lon bus, abus, pisin wantaim sindaun lon ol man lon peles em olsem dispela tupela bigpela wari lon Projekt. Dispela EIS wok lon lukluk



Piksa 1.1 Bigpela hap lon wokim ges lon Kutubu



Piksa 1.2 Ol iputim dispela kemp taim oli bin wokim wanpela survey lon abus na bus tamblo Karius maunten nabaut

dispela tupela wari. EIS bin kamautim planti tru infomeisen lon dispela tupela 'area' lon stadi. Olgeta EIS 'impact' stori istap lon baksait lon 'Appendices'. Insait lon hia em olsem givim ol bigpela tokaut tasol.

Dispela EIS wantaim 'appendices' bilon em putim aut dispela kain stori: LNG projekt; kain kain hat wok bus na giraun bai givim, wantaim olgeta plans lon wok; na 'impacts' wantaim plan lon pasim bagarap lon kamap. Olsem EIS kamautim ikam lon ples kliia we bai ol man, Gavman, Papa Giraun lain ken luksave. Na sapos Projekt i go het, em bai isi liklik lon skelim wok lon olgeta insait long Projekt.

Sampela plan bin kamap lon EIS lon lukautim bus, giraun, na sindaun lon ol man, ibin kam lon projekt wok ibin stap pinis. Sampela bin kam lon kampani save lon dispela kain wok. Taim Projekt istat na igo lon taim liklik, planti ol plan lon lukautim bus nabaut bai kamap kliia. Bihain Esso ken putim dispela kain wan wan wei lon lukautim peles na bus insait lon 'contracts' lon husat man na lain wokim wok lon kirapim Projekt.

2. INSAIT LON LNG PROJEKT

2.1 Stori Lon Projekt

PNG LNG Projekt em bai kamap olsem wanpela moa projekt wantaim olgeta masin bilon em bai kamap lon Southern Highlands Provins insait lon 1990s. Sampela hap lon projekt bai kirap

klostu lon, na insait lon we wok lon oil ibin stap lon en. Olsem lon Kutubu igo inap lon Kopi.

Olgeta ges ikam lon giraun bai kamaut lon 'gas fields' lon Hides, Angore na Juha (wantaim Hides Gas Conditioning Plant na, Juha Production Facility). Arapela 'gas field' bai kam lon South East Hedinia wantaim olgeta 'oil fields' ibin stap lon Kutubu, Agogo na Gobe). Taim ol istetim dispela giraun ges pinis ol bai putim lon paip bai go daun lon nambis lon Gulf, bihain solwara na bai go daun lon hapsait lon LNG Plant, em olsem sampela 20 km northwest lon Port Moresby lon nambis ol ikolim Caution Bay. Lon dispela hap ol bai tanim ges ikamap olsem wara na putim insait lon ol traipela sip we bai go lon arapela kantri lon salim. Na tu, Projekt bai mekim sampela oil ol ikolim 'condensate' bai kam lon Hides na LNG Plant lon nambis tu. Ol bai putim dispela 'condensate' oil ikam lon Hides insait lon paip lain lon go daun lon sampela tenk istap lon Kutubu na, bihain gen salim igo wantaim 'crude oil' paip lain we em bai go lon Kumul Terminol antap lon solwara; 'condensate' oil bai stap insait lon sampela tenk bilon LNG Plant na bihain putim lon sip lon karim 'condensate' oil tasol we em bai go lon arapela kantri lon salim tu.

Droim 2.1 isoim sampela nupela haus na opis nabaut ol bai kirapim lon Projekt wantaim sampela haus na opis we ol istap pinis bilon wok lon mekim oil.

Igat sampela gas 'fields' we strong bilon ol igo daun liklik (olsem lon Hides, Kutubu na Gobe) olsem na Projekt mas kamapim nupela 'oil wells', 'gas fields' wantaim strongim masin wok lon ol. Nogut saplai bai go daun wantaim gutpela lon em. Igat faivpela step lon kirapim Projekt.

Phase 1: Dispela Wok Mas Go Pastaim (2014)

- Wok lon bus: kamapim na stretim tripela 'wellpads', sixpela wells, pinisim tupela well istap pinis lon Hides 'gas field'.
- Stretim olgeta masin na wok wantaim lon kisim ges lon Hides nus na igo lon Hides Gas 'Conditioning Plant'.
- Hides Gas Conditioning Plant bai skelim ges igo lon wanpela sait na, 'condensate' bai go lon nadapela sait, bihain gen stretim ges pastaim lon putim igo lon LNG Plant.
- LNG Facilities: LNG Plant wantaim olgeta masin na wof istap lon nambis na solwara (Droim 2.2).
- LNG Project Gas Paip lain lon nambis wantaim sampela 'section' lon paip lain istap lon bus olsem lon Hides ikam inap lon LNG Plant.
- Hides-Kutubu Condensate Paip lain istat lon Hides na ikam lon 'crude oil storage' tenk lon Kutubu bigpela hap lon wokim ges.
- Wanpela ges steisen we ol ikolim 'Scraper station' klostu lon Kopi kemp.

- Stretim sampela wok lon ges lon Kutubu bigpela hap lon wokim ges ('Central Processing Facility') na Gobe 'Production Facility'.
- Kutubu na Gobe ges paip lain bai konektim nupela 'gas treatment' masin bai go lon LNG Project Ges Paip lain.

Phase 2: Bai Skelim ('Drilling')

Sampela Moa Giraun (2017 – 2018)

- Wapela 'wellpad' na tupela nupela 'wells' lon Hides 'gas field'.
- Tupela 'wellpads' na tupela 'wells' lon Angore 'gas field'.
- Stretim olgeta wok na masin lon Angore 'field' na lainimap paip igo lon Hides 'Gas Conditioning Plant'.

Phase 3: Hides 'Gas Conditioning Plant Booster Compression' Lon Strongim Masin (2019 – olsem makim tasol)

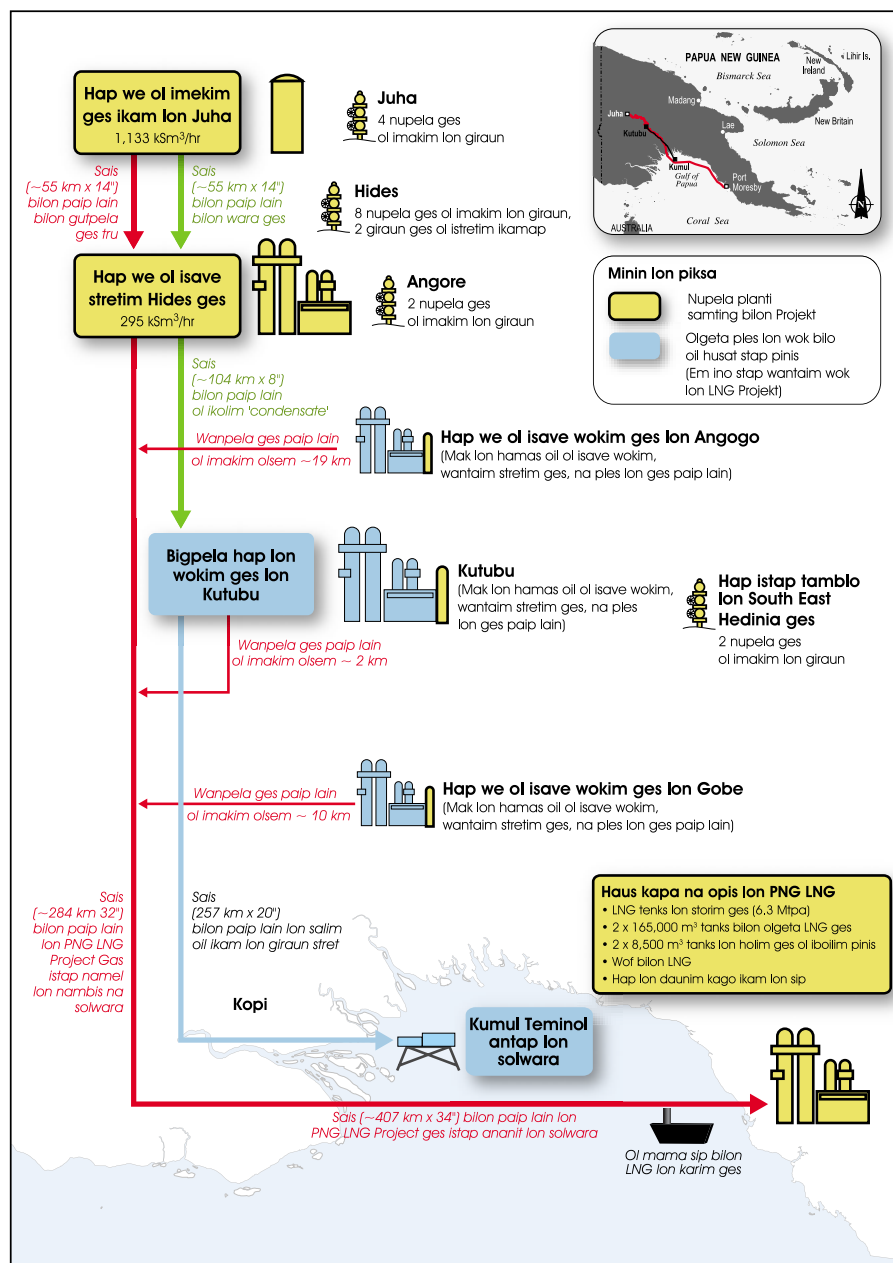
- Wapela moa masin bai go lon Hides 'Gas Conditioning Plant' nogut sais bilon kamautim ges, wokim na, salim bai go daun.

Phase 4: Kirapim Juha 'Gas Field' (2021 – 2022)

- Wok lon bus: Tripela 'wellpads' na fopela 'wells' bai kamap lon Juha 'gas field'.
- Stretim na taitim olgeta masin na paip lain bai go daun lon Juha 'Production Facility'.
- Putim ges win igo lon wan sait na, wara lon nadapela sait lon Juha 'Production Facility'.
- Lainim paip lain igo lon Hides 'Gas Conditioning Plant'

Phase 5: Ol Arapela Wok Lon Kirapim Wok Lon Ges (2024)

- Stretim wei lon wokim ges lon Agogo 'Production Facility' we em iken tanim gut ges ikam lon Agogo na Moran bus.
- Wapela nupela 'wellpad' na tupela 'wells' lon South East Hedinia ges field bai kamap.
- Stretim na taitim olgeta wok na masin lon karim ges lon South East Hedinia 'field' igo lon Kutubu 'Central Processing Facility'.



Droim 2.1 Glasim gut long olgeta sais bilong Projekt: olgeta nupela samting long Projekt wantaim olgeta paip lain bilong en(em)

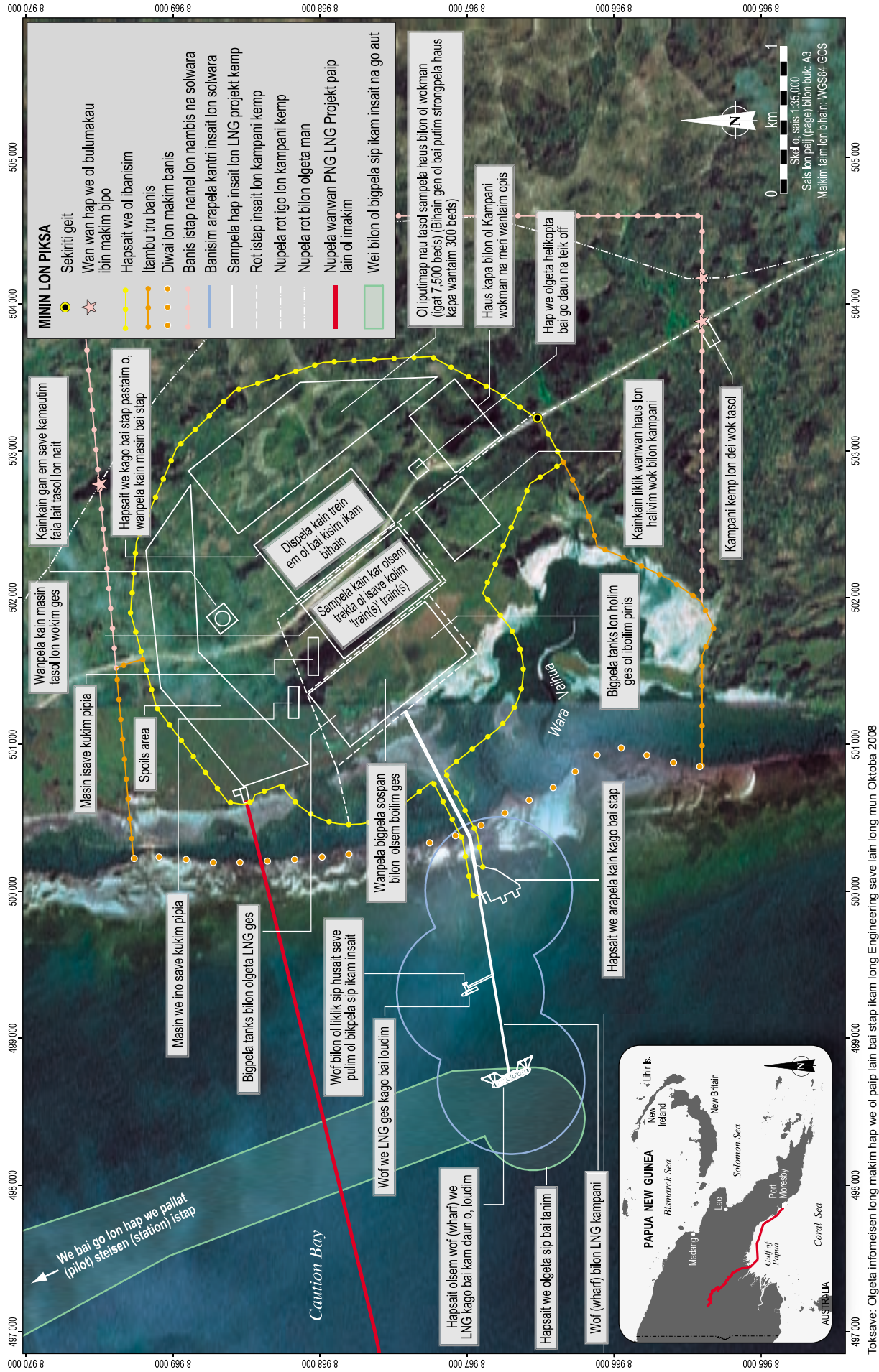
2.2 Skelim Taim Lon Kirapim Projekt

Taim Gavman bilon PNG wantaim olgeta Kampani husat bung wantaim lon wokim dipela Projekt wokim disisin lon last mun lon 2009 em bai opim wei lon kisim LNG projekt ikam daun lon olgeta man lon 2013-4. Bilon dispela taim em bai fopela krismas igo pinis lon pinisim nambawan step lon statim Projekt wok. Ol skelim laip lon dipela Proyet klostu olsem tripela ten krismas olgeta.

2.3 Olgeta Sapot Wok Lon Projekt

Tingting bilon stretim olgeta projekt 'construction' sapot wok laikim bai spredim olgeta kain kain kago bilon PNG LNG Projekt we bai sampela bai go lon Port Moresby na sampela bai go lon Lae, olsem (Droim 2.3):

- Long bihainim antap lon giraun na maunten, kago bai muv igo lon Lae bihain go lon Hides na, Moro olsem bihainim Highlands Highway na, igo lon Poroma na bihainim 'ring road' igo lon Hides o, Moro (em 'Northern Logistics Route').



Droim 2.2 Wanwan hap long ol LNG Projekt sait ol imakim



- Lon sip, kago bai muv igo lon Port Moresby bihain gen gop lon Kopi nambis 'Base' na, bihainim rot igo lon Kopi, bihain gen lon Hides, olsem bihainim 'ring road' tu (em 'Southern Logistics Route').
- Kago ken go lon rot o, sip lon go lon LNG Facilities beis.
- Kago ikam lon balus lon Port Moresby, bai go lon Komo ples balus na bihainim rot igo lon Hides.

Olgeta public rot ol ibin stretim na nupela rot, projekt rot wantaim liklik rot ol iwokim istap insait Table 2.1 (na Droim 2.3 bilon 'upstream project area').

Na tu, dispela kain wok bai go wantaim: kemp lon sapotim wok lon skelim na digim giraun (drilling), lainim paip lon giraun na kirapim kain kain wok haus; stretim hap where kago bai stap wantaim 'fuel depots'; hap lon olgeta kar na trucks lon klinim ol wantaim kain

kain marasin; hap lon kisim wesan lon giraun; hap lon stretim olgeta masin na kar lon wok; opis; lukautim 'traffic' olsem kar lon rot; na olgeta wei lon mekim hap lon wok, bus, sindaun bilon ol man iolsem seif tru.

3. PROJEKT HAPSAIT LON 'UPSTREAM' NAMBIS WANTAIM OLGETA WOK MASIN NA HAUS/OPIS NA 'IMPACT' LON WAN WAN HAP

3.1 'Upstream' Nambis

'Upstream' nambis hap sait we PNG LNG Projekt bai stap, olsem sindaun bilon en ibihainim 'northwest-southeast' maunten, stun na bus istap antap we ol ikolim 'Papuan Fold Belt' (Droim 3.1) na igo daun lon Kikori 'Basin' tamblo lon nambis na lon solwara we ol ikolim 'Gulf of Papua' (Droim 3.2).

Project 'area' istap insait tru lon maus lon wara Kikori River na hapsait bilon em. Em igat Juha istap lon 'west' sait we wara Baia save kamaut, em olsem wanpela liklik wara lon bigpela wara Strickland (lukim lon Droim 1.1). Kain kain giraun ol isave kolim 'karst karapim dispela hap olsem 'limestone' nabaut, wantaim maunten veli na, maunten paia stun lon Maunten Sisa, Maunten Kerewa na Maunten Bosavi. Igat planti gutpela malomalo giraun nabaut we ikarapim Kikori wara veli tu na igo antap. Dispela hap we igat kain kain bus istap lon em bin lukautim wanpela ten tu ol arapela kain bus wantaim laip bilon ol yet (lukim lon Section 3.3), na olgeta istap olsem yet Komo tasol ibin gat 'flat' olsem we emi gat gutpela diwai bus istap lon en.

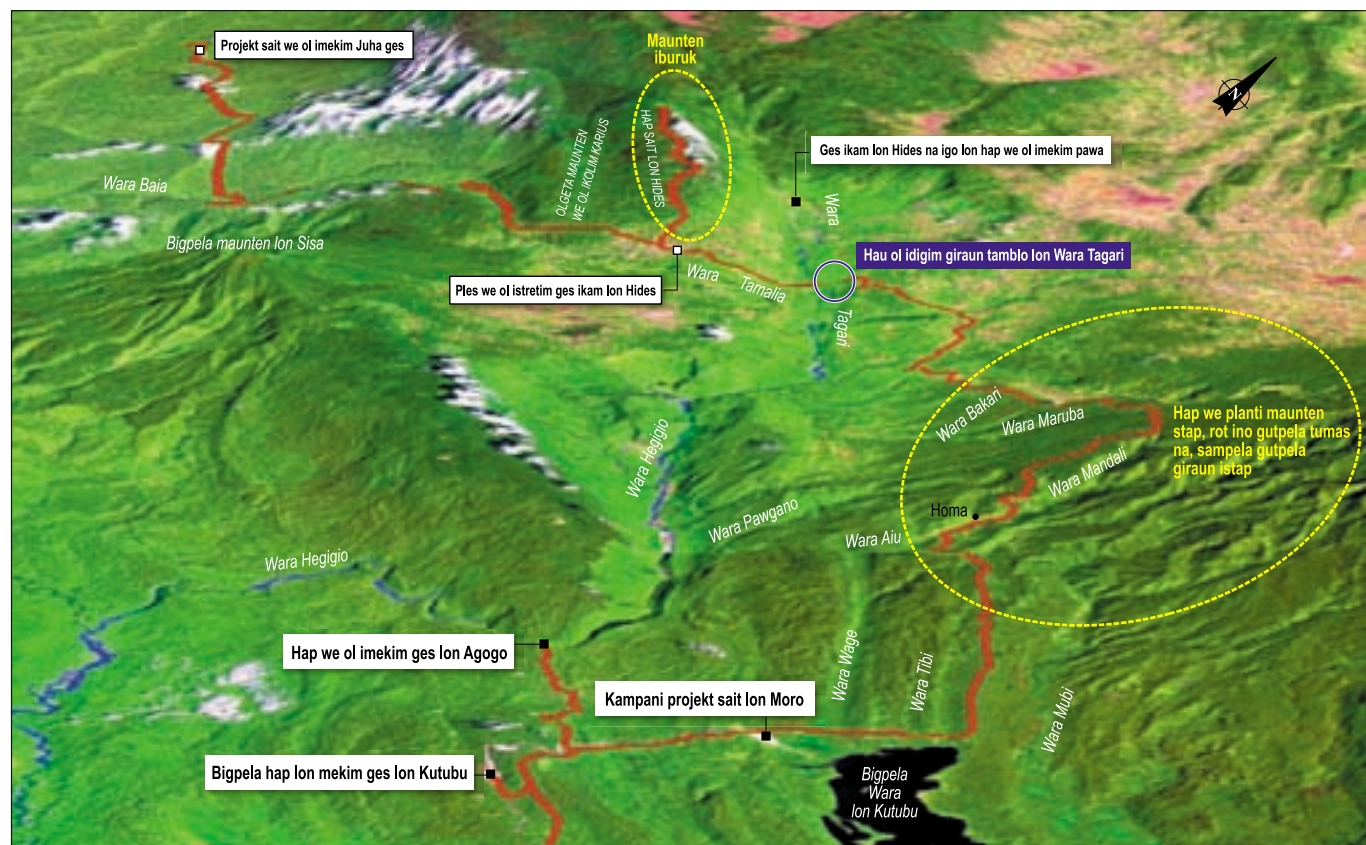
Igat planti kain kain diwai na flawa bilon dipela hap klostu samting olsem 6,000 na 12,000 'species' wantaim sampela gras tu.

Table 2.1 Nupela public rot, public rot ol istretim pinis, Projekt rot na, ol liklik rot

Wanem kain rot	Nem lon rot o, rot section	Sais lon rot	Husat save yusim
Public rot ol ibin stretim	Highlands Hwy: Lae–Poroma tanim Moro–Idauwi wantaim Poroma Poroma–Mendi Hap long stretim Hides ges na–Juha tanim Hap long stretim Hides ges na tanim–Komo Kopi–Samberigi tanim Lea Lea Rot: Port Moresby–LNG Kampani kemp	25 km ^a 236 km 25 km 2 km 17 km 77 km 22 km	Public save yusim nau na bihain taim tu
Nupela public rot	Lea Lea rot na nupela rot igo lon sait Idauwi– hap long stretim Hides ges na	8.3 km 21 km	Bihain taim ol public bai yusim
Projekt rot (ol istretim olgeta rot bilon oil projekt wantaim rot where Oil Kampani ibin kontrolim)	Samberigi Tanim–Moro ol istretim* Gobe ples balus igo lon hap long mekim Gobe ges ol istretim Agogo–Moro–Kutubu road	116 km 10 km 17 km	Nogat public save yusim nau na bihain tu wankain
Nupela Projekt rot	Juha tanim– hap long mekim Juha ges Idauwi–wara Dagia Bigpela hap long mekim Kutubu ges na oil liklik rot	57 km 6 km <1 km	Public ino nap yusim lon bihain taim
Nupela liklik bus rot igo lon wellpad (giraun ges hap)	Wara Dagia–Angore Juha tanim igo lon Hides wellpads hap sait Hap long mekim Juha ges–wellpads Rot long South East Hedinia ges	11 km 21 km 8 km 4 km	

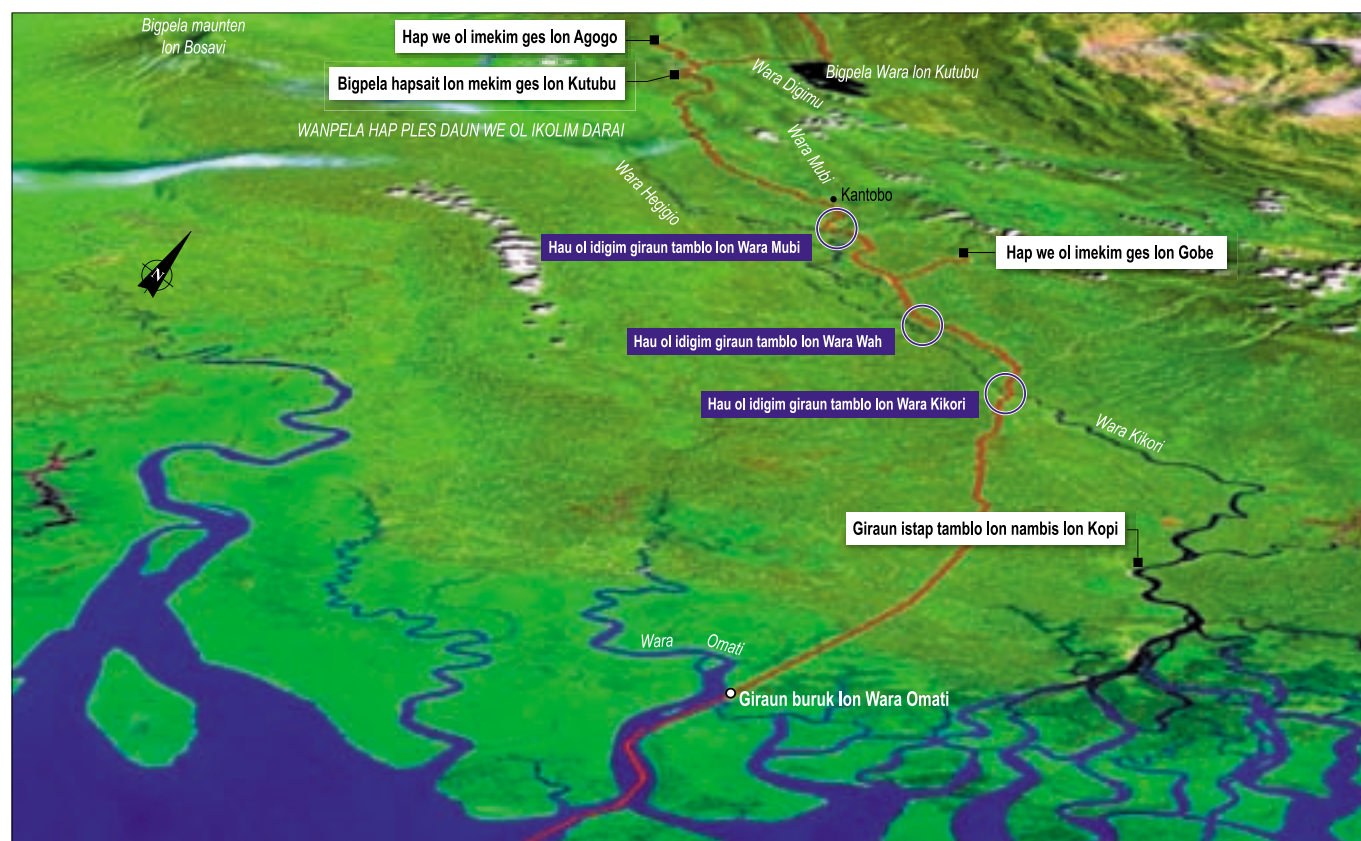
^aInsait lon dispela 604 km rot, ol bai stretim 25 km tasol

*Insait lon dispela rot, igat wanpela 10-km section lon nupela Projekt rot bai kamap lon wara Mubi na igo lon Kantobo.



Toksave: Dispela toksave long olsem wanem long olgeta paip lain bai sindaun long giraun ikam long save lain long Engineering ol ibin givim lon mun Octoba 2008.

Droim 3.1 Piksa natin: hap sait long Juha, Hides na Kutubu



Toksave: Dispela toksave long olsem wanem long olgeta paip lain bai sindaun long giraun ikam long save lain long Engineering ol ibin givim lon mun Octoba 2008.

Droim 3.2 Piksa long skelim maunten na giraun: Kutubu igo lon Omati giraun buruk



Piksa 3.1 Wanpela kain kapul ol isave kolim 'Plush-coated ringtail'



Piksa 3.2 Maunten kapul

Abus wantaim binatang tu em planti kain kain we plant bilon ol emi olsem ass ples tru tru. Igat eitpela ten nain (89) kain kain abus husat ino inap plai na, planti ol em olsem mumut na rat (faivpela ten/50 'species'), na kapul (wanpela ten wan/11; Piksa 3.1), 'macropods' (eit/8), nadapela kain kapul (six/6; Piksa 3.2) na nadapela kain abus husat save kai kai mit wantaim (7). Na ol 'bats' igat fopela ten seven (47) 'species' (Piksa 3.3), 407 pisin 'species', 61 kain kain snek, 'lizard' na pukpuk species na 107 kain kain rokrok 'species' tu.

Dispela hap em isave kisim planti rein olsem lon 2,500 mm lon Tari na igo lon 4,500 mm lon Kutubu na, 5,700 mm lon Kikori, wantaim liklik rein wara istap lon giraun na planti ol save go daun insait lon 'karst' stun bihain gen joinim ol wara istap ananit lon giraun. Ol liklik wara istap lon maunten na ol bigpela wara tamblo isave karim planti giraun lus giraun lon taim lon planti rein bin pun daun. Igat sampela we inogat wei lon wara lon go na bigpela swamp save kamap.

Bikos dispela ples istap lon wei tumas, na giraun ino gutpela tumas lon lanim kaikai, wantaim maleris ipulap tru lon en olsem na inogat planti man istap lon en. Olsem na inogat planti man isave go painim abus bus o, wokim gaden lon en. Olsem na bus bilon dispela hap em bin stap olsem yet na inogat planti bagarap ikam lon en.

Olgeta bus 'species' we ol iputim lon list istap lon 'PNG's Fauna (Protection and Control) Act' lo, na tu lon 'International

Union lon Conservation of Nature's Red List' insait lon 'upstream project area' ibin gat eitpela (8) diwai, tupela ten tu (22) 'non-flying mammals', tupela ten seven (27) 'bats', seven ten (70) pisin, wanpela ten wan (11) snek na faivpela (5) rokrok o olsem pis. Nau tasol igat planti man wok lon painim dispela pisin na abus insait lon Papua New Guinea. Na sampela bilon ol em klostu namba bilon ol bai pinis olgeta olsem wanpela diwai wantaim sampela kain kain abus. Inogat wanpela hap (ol ikolim 'bioregion') bilon dispela hap o, sampela liklik hap lon em we projekt paip lain igo lon en we bai bus bilon en wantaim planti abus na pisin istap we ol ibagarapim.



Piksa 3.3 Dispela bat/pisin we ol isave kolim 'Greater tube-nosed' bat (*Nystimene aello*) inogat planti moa istap

Tru tru 'Industrial development' lon hapsait lon wara Kikori em lon oil na ges wantaim sampela bigpela 'logging' ol wok lon katim timba lon nambis sait. Itru olsem olgeta hap inogat planti man save stap o, namba lon wan wan peles em liklik tasol. Tasol lon hap klostu lon Kutubu nabaut em igat bigpela liklik lon namba bilon ol man lon wan wan peles. Na dispela ino senis tumas taim 'petroleum' wok ibin stat lon 1990 (Piksa 3.4).

PNG LNG Projekt bai wokim na kamapim bai go bigpela liklik lon wok lon 'petroleum' na extendim laip bilon em tu.

Bai luk olsem planti ol samting bai stap olsem yet na bus, wara, stun, tumbuna hapsaits bai stap yet tu (Piksa 3.5). Tasol itru olsem sampela hap bai kisim moa 'impact' ikam lon projekt na, sampela bai olsem liklik tasol. Em olsem tenpela hap tasol ol i makim lon putim gutpela plan tru lon lukautim na katim daun wanem 'impact' bai kam lon em taim projekt istat. Nem dispela 'areas' olsem:

- Diwai bus tamblo lon Juha – lon wei tru, nogat rot, inogat planti man, bus istap olsem yet, wantaim wanpela ten six (16) 'species' diwai na rokrok na ol nupela lon 'science records', remote. Igat gutpela hap lon stap na hait, bilon olgeta kain kain abus na pisin.
- Maunten diwai ol ikolim '*Nothofagus*' sanap lon 'karst' stun hapsait lon Hides – nogat man gaden lon hap, plantin kainkain diwai 'species', wanpela ten six (16) nupela diwai



Piksa 3.4 Kantobo, lon wara Mubi



Piksa 3.5 Kain kain stun ol isave kolim 'Karst'

lon 'science records', nupela pisin tu, bats na sampela abus tu na tripela rokrok 'species' ol ibin recordim pinis. Igat liklik wok lon gas ol ibin wokim lon hap tasol em igat liklik impact tasol lon bus.

- Diwai bus istap antap tru olsem 1,800 m – maunten paia stun istap olsem hapsait lon Hides lon kain kain bus na abus na projekt bai lukaut lon dispela hap na noken bagarapim.
- Hul insait lon stun – planti ol ibin stap lon 'upstream project area' tasol planti ol ino gutpela tumas lon pulim ol 'bats' igo insait.
- Hul insait lon swamp – wan wan tasol istap na em igutpela hap we diwai rokrok wantaim rokrok lon wara ken stap gut lon en (Piksa 3.6 na 3.7).
- Liklik wara stap antap – gutpela hap lon ol rokrok, pisin na sampela rat.
- Diwai bus lon swamp – gutpela hap tru lon pisin, torosel na, pukpuk.
- Sampela hap we giraun ibin buruk lon en olsem klostu lon wara Baia wantaim het lon liklik wara - gutpela hap lon kain kain abus na binatang lon hait hait nabaut.
- Ol wara istap tamblo klostu lon nambis – gutpela hap lon pukpuk, torosel, pisin lon hait hait taim lon san na nogat rein.
- Hapsait we giraun buruk ipasim liklik wara em tu bai gutpela hap lon pukpuk bai hait na karim (Piksa 3.8).

Wanpela hap olsem 'Lake Kutubu Wildlife Management Area' – igat olsem peles lon planti ass peles pis insait lon em. Dispela hap em ol ilistim insait lon 'Ramsar' olsem wanpela 'wetland lon international' (Piksa 3.9).

Olgeta dispela hap istap lon list antap em ol bai kam insait sampela 'special plan' lon lukautim gut tru.

3.2 UPSTREAM NAMBIS FACILITIES NA TRAVELOGUE

Table 3.1 isoim wei lon hau ol iwokim disisin lon paip lain 'right of way' (ROW).

Wok lon stretim paip lain igo yet bikos kain kain problem ikam insait lon wok lon wan wan hap we paip igo lon en. Ol woklain mas go lon olgeta lik lik giraun we paip bai go na skelim wok gut tru. Stori lon paip lain igo lon wan wan hap em olsem.

Juha bai go lon Hides 'Gas Conditioning Plant' (55 km)

Gutpela diwai bus tru we no gat man istap lon en lon ol (two-thirds) dispela



Piksa 3.6 Kain swamp we emi malomalo nogut tru



Piksa 3.7 Kiau lon diwai rokrok we taim ol ikarim, liklik blo ol bai pun daun na, go insait lon wanpela hul lon giraun we igat sampela wara lon stap na kamap



Piksa 3.8 New Guinea pukpuk (*Crocodylus novaeguineae*) istap lon wara Baia



Piksa 3.9 Rot ikam lon Moro na go lon Homa we igat stun 'Karst' wantaim swamp na giraun malomalo lon antap said lon bigpela Lake Kutubu

hap olsem 55 km lon Juha igo lon 'Hides Gas Conditioning Plant. ROW em bai sotpela tru bikos em bai klostu tumas lon sait bilon maunten. Olsem na wok lon rausim giraun wantaim bus diwai em bai liklik tru.

Lon Juha 'gas field' (950 m ASL), maunten baksait bihain nogut stun ('karst') ples (Piksa 3.10) na kam kamap lon 'Juha Production Facility', na bihainim 'southeast' igo lon sampela

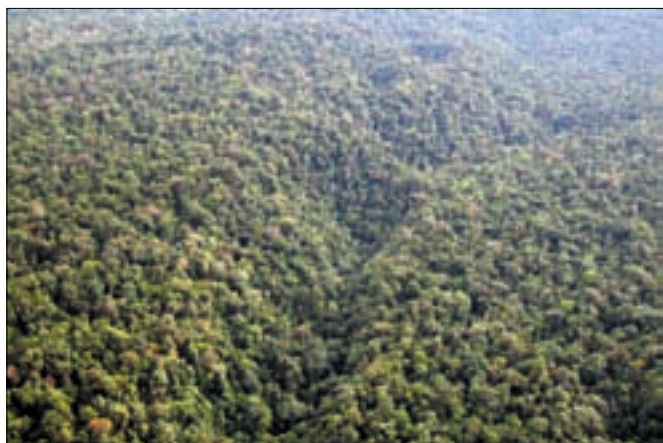
olsem lus giraun nabaut lon sait lon Wara Baia lon 380 m ASL. Lon hap we em bai katim wara, ROW bai kalap lon hap we igat planti giraun buruk istap lon en (Piksa 3.11) na igo daun lon 'swamp' hap namel lon Karius maunten lain na Maunten Sisa (lukim lon Piksa 1.2). Bihain gen bai go lon hap we giraun is stret liklik lon tamblo lon Hides maunten sait na, igo daun lon 'Hides Gas Conditioning Plant' klostu lon Laite lon 1,250 m ASL.

Hides 'Gas Field' wantaim 'Spine' (24 km)

ROW long Hides maunten sait (lukim lon Droim 3.1) em bai go lon nogut hap liklik antap lon maunten olsem 1,800 m na 2,800 m. Em bai joinim 'production wells' wantaim baksait maunten klostu olsem 24 km na bai kamap lon 'Hides Gas Conditioning Plant'.

Table 3.1 Wanem tingting stret isoim lon putim paip lain rot

Rot bilon paip lain - Srukim sais bilon paip. - Olgeta paip lain rot mas igat 'right of way' (ROW) – sapos nogat, lusim. - Paip lain rot mas stap klostu lon rot o, bris olsem. - Paip lain rot mas stap klostu lon hap we igat bus o, sampela klia ples pinis. - Paip lain mas stap lon wei liklik lon hap we ol man ibin stap, olsem peles. - Paip lain mas stap klostu lon Kampani wok ples nabaut. Taim paip lain ikam kamap lon wara - Hamas paip lain, sais bilon paip lain, na wok bilon putim paip lain mas igo daun olgeta. Nogut Kampani bai lusim planti moni nating. Lon sanapim paip lain lon giraun na stun - Noken putim paip lain lon hap we igat maunten tumas, wantaim lus giraun, nogut bihain giraun bai buruk. - Noken putim paip lain lon hap we giraun ibin buruk bipo na stap olsem. - Noken putim paip lain lon said said lon maunten. - Noken putim paip lain lon hap we igat stun na giraun isave guria na buruk wantaim. - Noken putim paip lain lon hap we igat hul lon giraun. Dispela kain hul igat planti lon hap we igat stun 'karst' lon en. - Noken putim paip lain lon hap we igat malo malo giraun lon en.	Hap lon bus, wara na solwara - Ol wok man mas gat plan lon usim giraun taim paip lain isindaun pinis. - Noken putim paip lain we igat hap we ol pisin na abus ibin stap lon en. Na, ol wokman mas lukaut lon hap we igat tumbuna stori istap wantaim dispel hap giraun, bus na wara tu. - Ol wokman mas lukaut lon wanem kain bagarap bai kamap lon sindaun lon man lon peles taim paip isindaun pinis lon giraun. Taim lon putim daun paip lain - Noken putim planti paip lain igo lon maunten na sait lon maunten. - Noken lusim planti paip lain lon hap lon giraun malomalo. - Noken putim planti taim tumas lon rausim na stretim giraun lon putim paip. - Wokman mas tingim tu lon rot bilon ol man nogut bihain em bai bagarapim rot o, wokabaut. - Sapos giraun em in nogut na hat tumas lon stretim, maski lusim. - Noken brukim planti wara tumas lon putim paip bikos em igat hatwok tumas na planti moni bai lus lon en. - Ol wokman mas gat inap speis lon wokim wok nogut wanpela bai kisim bagarap. - Wokman mas lukaut lon hul istap insait lon giraun. - Sapos sait bilon maunten ino stret tumas, maski lusim.
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Piksa 3.10 Dispela hap em istap lou tru wantaim gutpela bus stret taim yu bihainim rot ikam lon Juha na kam kamap lon Hides Gas we ol bai stretim ges



Piksa 3.11 Giraun buruk lon bipo, lon wara Baia

Lon nau, igat tupela 'gas production wells' wok istap wantaim paip lain ('flowlines') na, tupela 'wells' wantaim bai kamap lon Hides maunten sait. Olsem na bus bilon dispela hap istap orait yet. Na bikos planti snou save karapim dispela hap olsem na ples ya, em iwet liklik na, diwai tu ol istap orait (Piksa 3.12). Olsem na diwai bus bilon diepela hap em stap orait. Na, olgeta maunten sait stap klostu lon dispela hap, olsem 'southwest na northwest', istap orait tu.

Lon Hides maunten sait, na baksait maunten bai go daun lon hap we bus iklia pinis we ol man bin stap lon en na, bai jonim ROW lon Juha na bihainim gen igo lon 'Hides Gas Conditioning Plant' (Piksa 3.13).

Lon Hides Igo Lon Moro (88 km)

ROW lon 'Hides Gas Conditioning Plant' na igo lon Moro em 88 km. Em

bai stat lon hap we igat planti gaden bilon ol man na, bai go antap lon sampela nogut maunten we igat wan wan gaden istap lon Wara Tagari na Wara Dagia na, bihain gen bai go lon sampela diwai-bus we ol ikatim pinis wantaim nupela diwai-bus ikamap klostu lon Tari rot bipo em bin stap. Lon hia ROW bai katim Wara Benaria igo daun dip tru (Piksa 3.14) na, bai raunim hetwara lon Wara Bakari na Wara Maruba wantaim Homa na igo daun lon Wara Kondari. Lon hia ROW bai bihainim rot bilon Homa igo lon Moro. Droim lon dispela hap bai bigpela liklik we ol iken makim gut olgeta tumbuna hap namel lon Homa na Paua. Lon hia ROW bai bihainim sait lon sankamap na igo daun lon veli lon Wara Mubi wantaim sampela hap we ol man stap lon en wantaim sampela gutpela diwai-bus. Bihain gen bai tanim igo daun lon 'south' na bihainim swamp, na go antap

lon 'Lake Kutubu', olsem bihainim bigpela rot igo lon Moro (lukim lon Piksa 3.9).

Planti diwai-bus lon dispela hap iklia pinis we ol man bin stap lon en. Tasol igat sampela diwai-bus wantaim nogut maunten nabaut namel lon Wara Maruba (Piksa 3.15) na Wara Kondari we bai gat bigpela wok bai kamap lon rausim giraun wantaim katim diwai na, iluk olsem 'impact' lon digim giraun em bai bihain taim pasim sampela liklik wara. Stun lon dispela hap em ol 'limestone' tasol wantaim gutpela giraun lon rot igo lon Homa na Moro (lukim lon Piksa 3.9).

Moro Igo Lon Giraun Buruk Lon Wara Omati (196 km)

'PNG LNG Gas Paip Lain bai raunim 'Kutubu Central Processing Facility' na bihainim paip lain lon 'crude oil



Piksa 3.12 Maunten said lon Hides Gas kemp we emi igat liklik bus tasol wantaim 'small-crowned' na 'Nothofagus'



Piksa 3.13 Hapsait namel lon rot na wara Tagari we ol ibin makim lon putim haus bilon wokim na stretim ges

export' na go lon Gobe na katim igo lon Wara Kikori antap lon Kaiam (lukim lon Droim 3.2), na go daun lon giraun buruk. Dispela hap em olsem 196 km na bihainim 'Kutubu Crude Oil Export' paip lain igo lon hap we ol ibin katim timba klostu lon Kopi.

Lon Kutubu, ROW bai go daun lon sait lon maunten na insait lon sampela liklik maunten wantaim diwai-bus na igo lon Wara Ai'io bihainim igo lon sampela stun 'karst' wantaim diwai-bus na, go daun olgeta igo lon Wara Mubi na Wara Kikori. Lon hia, 'construction' rot bai senis liklik na go lon sandaun sait namel lon sait lon Kantobo na Wara Mubi na, 'PNG LNG Gas Pipeline' ROW bai stap insait lon klostu lon 'crude oil export' paip lain rot.

Lon Wara Mubi lon hap we ROW ijoinim wantaim 'access way' bai bihanim 'crude oil export' paip lain ROW na go insait lon swamp bilon Wara Kikori na, go lon liklik maunten diwai-bus antap lon hap we igat planti stun olsem 'limestone' na 'karst' we tu igat sampela hul lon stun ('caves') istap. Dispela hap, wok mas lukaut lon olgeta hul lon stun ('caves') we 'bats' save stap lon en. Insait lon 6 km klostu antap lon Kaiam, ROW bai katim igo lon Wara Kikori na bihain lusim 'crude oil export' paip lain ROW na go insait lon diwai-bus we ol ikatim timba insait lon swamp hapsait lon Wara Kikori. Lon hia, ROW bai katim gen diwai-bus we



Piksa 3.14 Ol imakim dispela hap lon traim na brukim wara Benaria

ol ibin katim timba istap lon tupela sait wantaim lon Wara Veiru na, moa yet igo insait lon swamp lon dispela hap we igat planti Nypa 'palm' sanap arere lon wanpela hap olsem giraun buruk lon Wara Omati (Piksa 3.16)

Sapot Wok Lon Kopi Kemp

PNG LNG Projekt bai kirapim na kamapim dispela kemp lon Kopi we ol ikolim 'Kopi Support Base' wantaim wof ('wharf') bilon en. Tasol olgeta wok lon dispela hap mas lukaut lon na stretim olgeta samting lon tumbuna o, 'archaeological' hapsait igut tru. Igat planti istap lon en.

3.3 Sampela Wari Lon Hap Sait Lon 'Upstream Onshore', Na Wei Lon Bosim na Lukautim 'Impacts'

Olgeta Wari Lon 'Upstream Onshore' Wok, Wantaim Plan, Wok Bilon En, Na Wei Lon Lukautim

Sais lon hapsait lon 'upstream project area' na, stap bilon em olsem lon wei tru, wantaim inogat planti man istap lon em, na olsem 'impact' em bai stap lon ples bilon em yet, na imekim olsem diwai-bus bilon em bai kamap wanpela gutpela hap tru lon lukautim gut (Piksa 3.17).

Lon daunim na lukautim 'impacts' bai kamap lon bus, wara, na solwara, Projekt ibin putim olsem wanpela strongpela tingting na plan bilon em. Na wantaim insait lon dispela hap we igat gutpela bus tru, em igat sampela hap we Projekt mas lukautim gut tru bikos sapos nogat bus bai bagarap hariap tru. Hap we igat (olsem Hides maunten sait na stun hul we igat 'bats' lon em), bai ino nap kisim bigpela hevi ikam lon en taim wok kamap, tasol Projekt mas lukautim gut (olsem Lake Kutubu). Projekt bin putim bigpela plan lon lukautim dispela kain hap.

Lukautim wok lon digim giraun em wanpela bigpela tingting tru lon lukautim bus, wara na giraun. Hap we



Piksa 3.15 Wara Maruba klostu lon Homa

igat maunten isanap stret wantaim we rein save kam daun klostu klostu, em dispela kain hap ken bagarapim giraun na bus hariap tru (lukim lon Piksa 3.11). Lon digim giraun lon dispela kain hap inogutpela tumas bilon wanem bikos wara save ron fast tru lon giraun, bagarapim giraun hariap tru, we ol isave karim kain kain pipia antap lon giraun. Bus, diwai na olgeta samting bilon em isave gut tru lon bus bilon em na em bai hariap tru lon 'take over' lon hap we giraun ikisim bagarap o senis liklik. Projekt ibin lukim dispela kain samting bin kamap lon sampela hap bipo we Kampani ibin wok lon en. Olsem na Projekt iredi istap lon lukaut lon dispela kain samting sapos em kamap.

Tasol lon giraun we inogat planti maunten em isi liklik we giraun ino save bruk karangi o senis hariap taim yumi digim. Wok lon dispela kain hap emi orait liklik tasol sapos inogat gutpela plan lon mekim wei lon wara ron gut, em bai hat liklik lon sanapim kain kain bigpela wok. Olsem na giraun ino nap senis hariap bilon wanem bikos inogat maunten nabaut we em bai mekim wara ron hariap na karim kain kain pipia nabaut antap loin giraun.

Lon lukautim ol liklik wara ron antap lon giraun na hapsait lon swamp gut tru, ol gutpela plan mas kamap na wok wantaim. Olgeta wara istap tamblo lon hap, we em inogat maunten, ol



Piksa 3.16 Giraun buruk lon wara Omati

isave luk olsem ol idoti nogut tru. Tasol planti ol em klia wara sapos ol iron gut olgeta taim. Na lon wara istap antap lon maunten nabaut planti ol em stap klia, Tasol sapos wara tait (em ino save kamap planti taim o, giraun iburuk) ol bai doti liklik. Olsem na Projekt plan lon lukautim, em ilukluk strong lon ol dispela liklik wara nabaut.

Minin lon olgeta samting istap antap emi olsem:

- Taim wok istat olgeta 'impacts' bai kamap stret – lon rausim giraun, na pipia bai ron nabaut – em bai olsem yet na bai stap lon sotpela taim tasol.

- Olgeta abus, pisin na, binatang lon bus isave gut tru lon ples bilon ol olsem na dispela Projekt 'impact' bai orait lon ol. Tasol sapos 'impact' ibigpela tumas em bai givim hevi lon ol. (Gutpela piksa em olsem lon Lake Kutubu. Wok lon 'petroleum exploration na production' em tupela ten faiv (25) krismas igo pinis tasol olgeta bus, abus, pisin na binatang istap orait.)
- Tasol olgeta bus, giraun na wara ken kisim 'impact', we em ken stap lon taim tru taim PNG LNG Projekt wok pinis. Em ol isave kolim 'indirect impacts': olsem planti paia bai kamap, nupela kain kain gras wantaim poisen tu, na kain kain abus we sampela lon ol ken bagarapim gaden bilon ol man.
- Na sampela 'impact' bai kamap nadapela kain tu. Olsem igat planti stun hul ('caves') istap tasol wan wan stun hul we 'bats' ken stap lon en. Dispela kain stun hul em impoten tru, bikos sapos wanpela bilon ol ibagarap em bai min olsem olgeta 'bats' tu bai dai olgeta - em olsem haus bilon ol, nogat nadapela olsem bai lukautim pikinini bilon ol. Seim kain stori ken go lon ples bilon olgeta Kumul pisin.
- Igat tupela wei lon lukautim dispela wari: Projekt mas lukautim gut lon olgeta hap we ol bai kisim 'direct impacts'; na tu, Projekt mas lukaut



Piksa 3.17 Steisen lon lukautim hamas oil bai go lon paip wantaim rot bilon Kutubu Crude Oil Export paip lain

gut lon stopim 'indirect impacts' we ol bai kamap taim Projekt wok ipinis.

Gutpela wara, win wantaim, liklik nois bai kam lon hapsait lon 'upstream project area', we imin olsem projekt wok 'impact' em bai liklik tasol lon hap. Projekt wok bai ino nap putim moa 'impact' antap lon 'impact' ibin stap pinis bipo, olsem na wanem wari istap lon 'cumulative impacts', em bai ino nap kamap. Sampela hap tasol bai gat, olsem lon hap we 'petroleum production' wok ibin stap pinis.

Tamblo, igat sampela moa toktok lon wei lon lukautim bus na giraun.

Lon Lukautim Olgeta Kain Kain Bus

'Direct impact' bai kam lon wok lon PNG LNG Project lon bus we Projekt bai stap lon en, na we ol bai katim diwai-bus, na digim giraun (Piksa 3.18). Table 3.2 isoim wan wan hap insait lon dispela wanpela ten tu (12) 'bioregions' husat bai kisim 'direct impact' hapsait lon 'upstream' nambis (Droim 3.3). Istap klia olsem nogat wanpela bilon ol bai kisim bigpela bagarap tru olsem lon katim bus.

Tasol igat liklik wari olsem olgeta lon dispela hap bai kisim 'potential indirect impacts' na em bigpela samting. Lon kain kain gras kam insait wantaim kain kain abus, we planti moa man bai go painim ol lon bus, wantaim kampani husat bai katim timba nabaut, na kilim ol diwai natin, em ibigpela samting tru lon bihain taim. Tasol emi tru olsem, dispela kain wari ihat tru lon bosim na lukautim. Na tu, dispela kain wari ino nap stap lon wanpela hap tasol. Em bai wokabaut lon wei, lon hap lon projekt, na ken kamap bigpela olgeta. Olsem na, lon olgeta 'indirect impacts' yumi mas putim gutpela plan tru, bihainim na bosim gut tru taim lon projekt wok istat:

- Projekt mas bihainim ol bigpela lo lon 'petroleum industry practice' insait lon wok ples we bai ol imas pasim public lon yusim olgeta projekt rot (Piksa 3.19, lukim tu lon Table 2.1 na Droim 3.4).
- Strongpela lo mas stap wantaim olgeta hap lon wok, ol wok man, wantaim olgeta kar na kago bilon projekt. Olgeta mas stap klin lon

Table 3.2 Skelim Bus we ibin Bagarap (ha). Igat Wanpela Ten Tu (12) Dispela Kain Bus Istap

	Tamblo lon Kikori bus	Tamblo lon Seribi bus	Libano- Hegigio	Tamblo bus lon Darai	Tamblo bus lon Western	Ass lon maunten lon Western	Stun (Karst) bus lon wari Mubi	Hapsait lon Moro	Stun antap lon lagifu- Agogo	Hap we maunten paia lon Western istap	Antap lon sankamap sait we igat maunten paia wantaim stun (Karst)	Antap lon Maunten stun Karst istap	Hamas Olgeta
Hamas bus wantaim diwai istap yet	773,405	97,077	80,234	178,520	50,616	41,381	283,689	23,973	33,617	178,471	415,791	108,322	2,265,096
Bus tru tru	176	0	0	0	20	208	110	52	125	60	193	111	1,056
Bus tru tru wantaim sampela liklik bus ibagarap pinis	55	0	0	0	0	0	34	68	183	11	51	22	424
Bus tru tru ibagarap nogut tru wantaim wanwan tasol nupela diwai ibin kamap	53	0	0	0	0	29	61	2	2	7	112	22	288
Arapela kain bus*	414	0	0	0	0	2	232	13	20	151	192	19	1,042
Hamas bus olgeta lon wanwan hap	698	0	0	0	21	238	437	135	331	230	548	175	2,811
% skelim lon hamas bus ilus/bagarap olgeta insait lon kain kain bus	0.0903%	0%	0%	0%	0.0406%	0.5763%	0.1539%	0.5638%	0.9841%	0.1286%	0.1317%	0.1611%	0.1241%

* Dispela mak ikarapim bus na hap we igat bus tru, nupela bus ikamap, olgeta gaden, bus we ol isave katim diwai blo timba, na wei lon rot na, wara tu.



Piksa 3.18 Luksave lon hau ol isave mekim kain kain wei lon stretim paip lain



Piksa 3.19 Rot we Kampani iputim liklik tambu lon en lon lukautim crude Oil paip lain klostu lon bigpela ples lon wokim ges lon Kutubu

wan wan taim. Lon nau, yumi laki liklik olsem insait lon hap sait lon projekt inogat kain kain gras wantaim poisen istap. Igat plan istap we bai projekt mas daunim na rausim dispela wari taim 'project construction' istat.

- Kontrolim olgeta paia.
- Bihainim na stopim olgeta dispela kain wari taim em ikamap.

Lon olgeta hap we bus, giraun, na wara istap, maunten sait lon Hides em wanpela hap we bus ken dai hariap tru. Bikos em igat nogut stun giraun ('karst'), kain kain bus istap lon en, na planti diwai bilon em islou tru lon kamap - em istap lon antap tru lon maunten. Olgeta plan lon lukautim bai lukluk lon katim daun wok lon digim giraun natin, katim diwai lon sait lon diwai-bus, lukaut lon wanem samting tru ol man karim ikam insait lon kemp, skelim wokabaut lon ol man lon kam insait lon kemp, lukluk lon ol wokman gut tru, na banisim olgeta diwai, plan, gras wantaim poisen, na lukaut lon ol paia. 'Direct potential impacts' lon ol swamp olsem giraun buruk, hul lon giraun ('sinkholes'), istap lon (olsem 50 m tamblo) em planti tru lon maunten sait lon Hides - klostu olsem fopela ten (40) hul lon giraun istap insait lon 100 m lon ROW lon baksait maunten lon Hides. Em igat olsem 5% na 9% lon olgeta hul lon giraun insait lon 50-km2 klostu lon Hides 'spine'. Igat wankain hap olsem klostu lon Karius maunten lain antap lon sandaun sait lon Hides.

Lon bipo na ikam lon nau, olgeta 'impact' ol ibin skelim lon Hides em ino bigpela tru. Bikos 'rating' lon 'impacts' em olsem namel tasol imin olsem Hides em wanpela hap we Kampani ibin stret lon givim strongpela tingting lon lukautim gut.

Lon ol arapela hap, olgeta diwai-bus lon swamp bai stap orait sapos igat gutpela plan lon wokim wei lon hau wara bai go aut; na igat plan lon dispela wari istap. Stun hul lon 'bats' wantaim ol arapela bus bai kamap nambawan samting bai stap lon plan lon stadi na lukautim, we em bai go wantaim wok lon ROW. Wok lon kontrolim, klinim bus, wantaim ron bilon wara antap lon giraun, em bin go wantaim plan bilon ROW. Sapos bus bai kamap lon hap we ol iklimin pinis, na istap klostu lon wara wantaim hapsait lon ROW, dispela hap bai stap orait. Lukaut lon paia, kain kain gras wantaim poisen lon taim bilon wok o, pasim rot lon public, em bai nambawan lukluk kontrolim 'indirect impacts'.

EIS tu ibin skelim PNG LNG Projekt wok olsem putim rot lon halivim olgeta kampani husat laik katim timba ('logging'). Sapos projekt igivim wei lon timba kampani lon yusim rot (tasol em bai ino nap), em bai liklik tasol lon timba kampani.

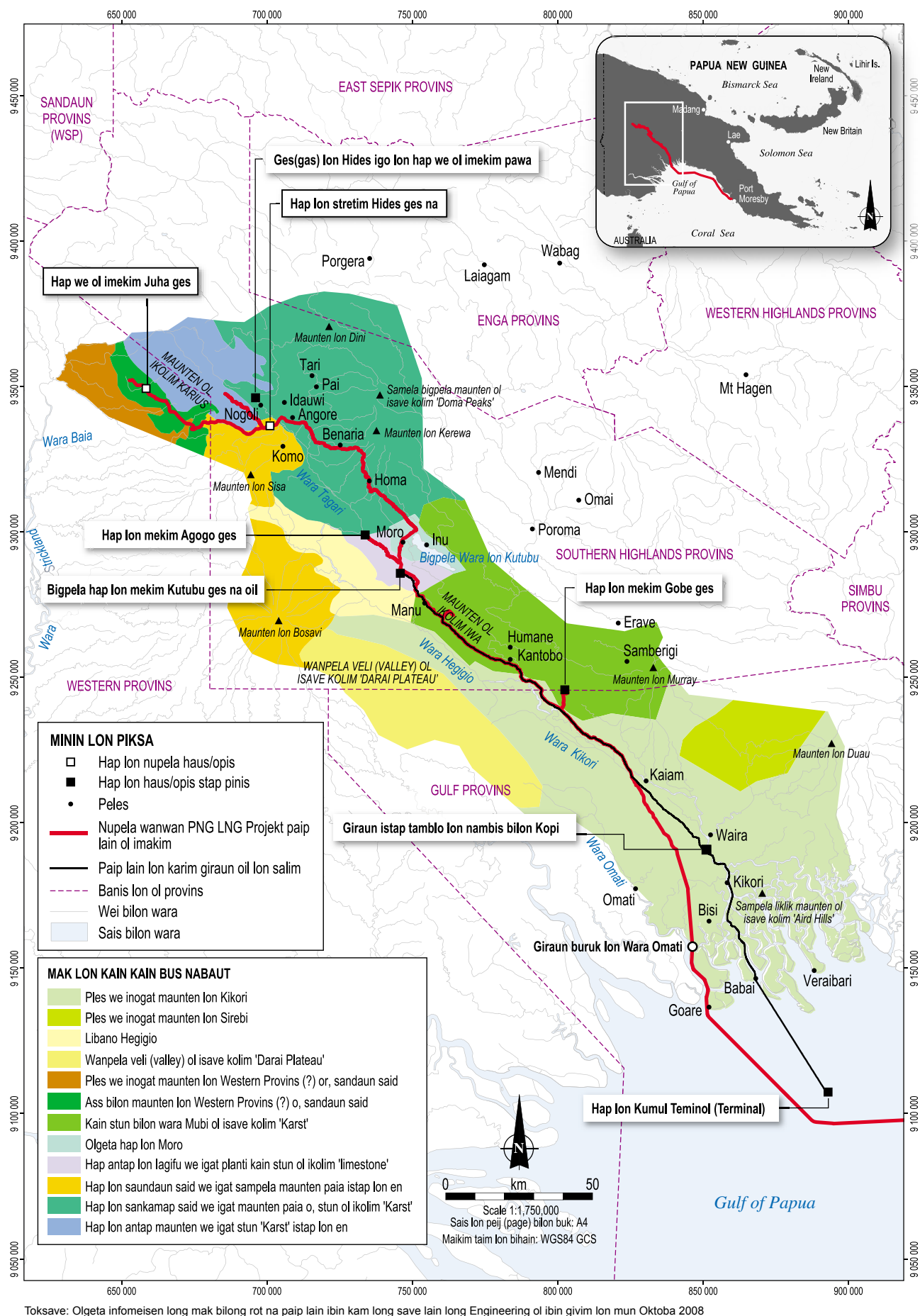
LNG Projekt bai go insait lon 'Kutubu Wildlife Management Area', we em ibin wanpela lon faivpela hap we ol imakim pinis olsem 'formal conservation areas' insait lon projekt 'area'. ROW lon Hides na igo lon Kutubu ibihainim rot nau ol

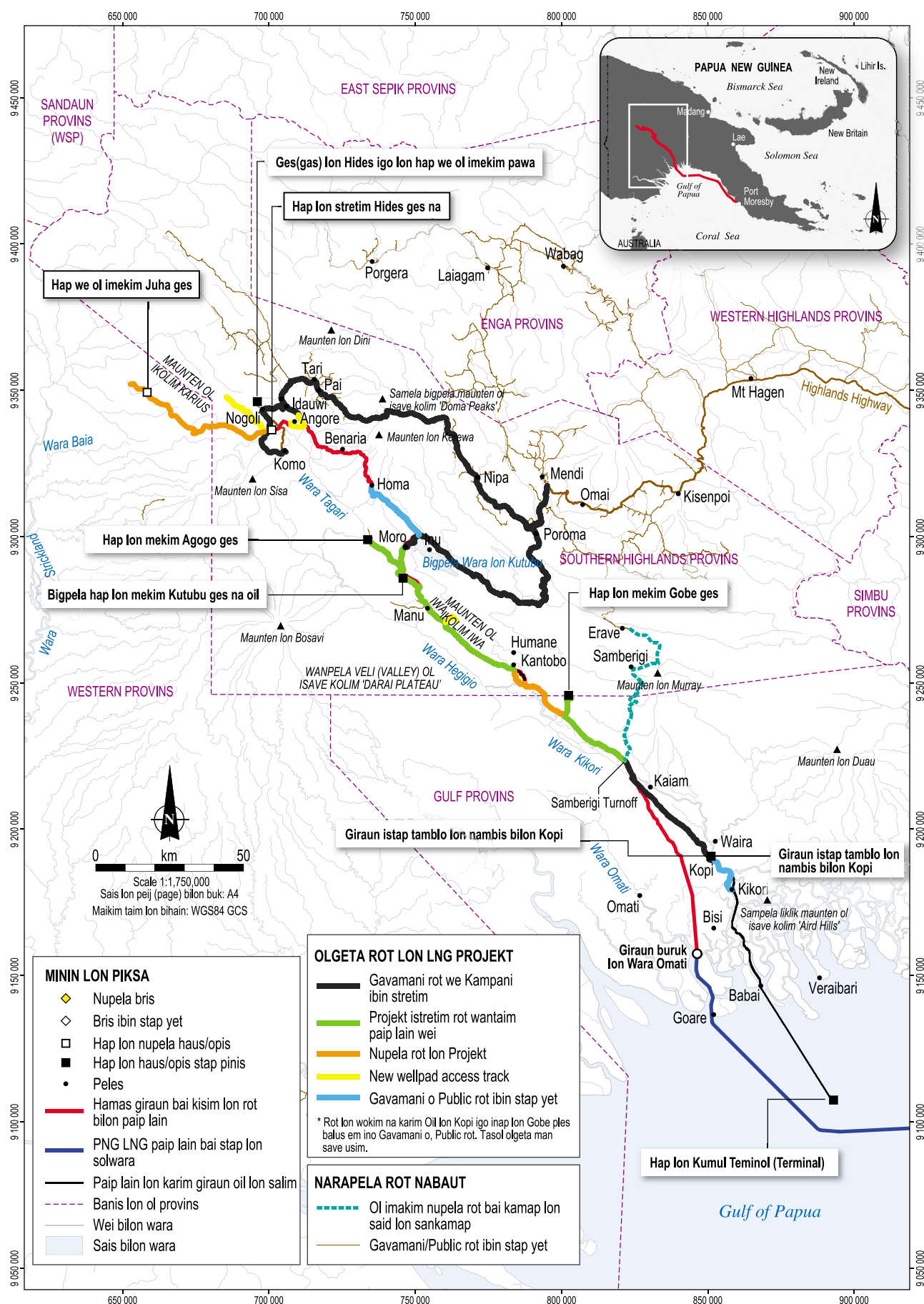
iyusim na, igat wan wan plan istap lon wan wan hap lon lukautim ol gut (lukim lon Piksa 3.9).

Taim ol istatim wok lon 'petroleum' lon hapsait lon Wara Kikori, em bin isoim olsem olgeta 'direct impacts' bin stap klostu tasol lon we wok ibin stap lon en. Na ol diwai kamap hariap tru lon hap we ol ibin digim giraun lon wok. Olsem na 'direct impacts' bai go lon bus, wara, abus, na pisin iluk olsem bai wankain tasol - bus istap klostu lon hap lon wok bai kisim 'direct impact' (lukim lon Piksa 3.17). Lon olgeta samting, EIS bin kisim kam lon ples klia olsem olgeta plan ol ibin putim lon lukluk lon 'direct' wantaim 'indirect impacts' lon bus na giraun bai inap lon lukautim olgeta hap bus olsem lon gutpela wei wantaim pisin, abus, pis na olgeta samting insait lon 'projekt area'.

Lon Wara, Swamp na, Solwara

Olgeta nogut wara bai kamaut lon masin lon wok na bai go antap o, insait lon giraun nabaut: olsem wara ikam lon toilet, masin wara nogut taim ol digim stun nabaut na wara lon testim paip lain, em ol mas bihainim Gavman lo ('permit conditions') istap insait lon PNG's Environment Act 2000. Projekt bai lukluk lon en strong tru na bihainim taim ol istatim wok na igo lon taim lon pinisim wok. Hau wara bai karim pipia na troim nabaut lon giraun em bai bigpela samting tru lon hap lon wok lon digim giraun. Planti hap insait lon projekt 'area' (olsem hapsait lon Lake Kutubu), hapsait lon swamp na





Droim 3.4 Rot, bus rot, na bris (hetwara)

maunten sait we 'limestone' istap lon en, planti ol giraun pipia bai pas pas klostu lon hap we ol ibin digim giraun. Wanpela hap tasol we igat 14-km-'section' lon ROW lon paip lain, em namel lon Homa na Idauwi. Dispela hap igat giraun ino sindaun gut antap lon maunten paia giraun, na ikam daun lon antap lon Wara Mandali (wanpela liklik wara we em bin sapotim kain kain abus na pisin). Lon hia, 'impact' lon 'construction' wok lon wara na klin bilon wara bai liklik tasol na, lon sotpela taim tasol (olsem klostu lon wanpela krismas) insait lon wok ples (insait lon 2 km). Wara Mandali em wanpela liklik wara ikamaut lon Wara Hegigio we em isave katim stun giraun na maunten sait na igo daun lon ass bilon Mauten Kerewa we igat wan wan man istap lon en.

Ibin soim bipo lon dispela kain wok olsem taim 'construction' wok ipinis diwai save kamap hariap tru (Piksa 3.20 na 3.21), pipia we wara save karim raun nabaut save stop wantaim.

Bai igat wok bilon lukaut lon wanem samting bai kamap taim 'construction' wok ipinis. Dispela bai soim olsem plan bilon Projekt istret o nogat, na tu, bai soim hap we bai gat sampela wok lon halivim bus na giraun lon kamap gut gen. Lon dispela kain wok, bigpela taim bai go lon Hides maunten sait, na veli lon wara Mandali wantaim wan wan 'sections' lon Moro-Homa 'public' rot na bai go olgeta lon Lake Kutubu. Wok lon halivim bus na giraun min olsem growim nupela diwai lon hap we igat planti giraun buruk lon en wantaim lon nambis we igat sampela 'impact' tasol olsem taim wanpela krismas igo pinis.

Klin win Lon Hapsait Lon Wok

PNG em inogat lo lon klin win ('formal air quality standards'), olsem na projekt wok lon bihainim lo lon ol wel (ol arapela kantri ibungim lo). Nambawan hevi bai kam lon win em lon nogut win lon ol kar bai kamautim taim 'construction' istat. Dast tu bai kam lon rot sapos olsem nogat rein. Tasol projekt bai yusim wara lon wasim dast lon taim bilon nogat rein.



(1991)



(1998)



(2005)

Piksa 3.20

Ol nupela bus ikamap lon bihainim wei ikam lon Kutubu na kam kamap lon Kopi. Igat liklik giraun buruk lon maunten said taim yu go daun lon wara Ai'io

Na 'Hides Gas Conditioning Plant' bai igat sampela kain 'neutral gas' lon ronim masin na nogut win em bai givim aut nadapela kain win (CO na SO₂), olsem na em bai lou tumas. Nambawan wei lon skelim na makim hamaspela nogut win istap antap em lon lukluk lon ('nitrogen oxides' NO_x). Gutpela tru olsem Esso ibin kisim na bihainim 'low-NO_x' masin lon kukim 'fuel' olsem na, wanem nogut win ikamaut lon masin em bai lou stret. Tu, 'air quality targets' wantaim NO_x olsem lon ausait lon hap we masin istap lon en bai orait olgeta.

Kain ges olsave givim lon 'Facilities' lon Kutubu, Gobe, na Agogo em olsem wara na planti bilon ol isave salim igo lon sampela tenk ol isave kolim 'oil reservoirs'. Na tu, project gat 'gas compression' stap pinis olsem na masin ino nap givim aut planti nogut win lon bus na ples.

Lon Lukautim Nois Ikam Lon Masin

Dispela tu, PNG inogat lo olsem 'formal environmental noise standards' istap, olsem na projekt wok lon bihainim lo bilon ol wel (ol arapela kantri ibungim lo) lon lukautim hapsait lon wok ples.

Taim lon putim daun paip igo lon giraun, bigpela nois bai ino nap aburusim lo lon nois sapos wok istap olsem 500 m 'distance away' lon san, na 1,600 m 'distance away' lon nait. Sapos sampela peles istap insait lon dispela 'distance', nois em bai sotpela taim tasol (nois save mov olsem 300 m na 750 m lon wanpela dei), na tu, planti ol wok bai kamap lon san.

Olgeta masin digim giraun wok ('drilling') bai stap lon san na nait. Igat wankain masin we em bai stap na skelim nois ikam lon wan wan rig we bai ol iken putim 'kontrol' wantaim kompenseisen lon en.

Planti ol nois taim lon 'construction' bai kam lo ol masin olsem 'compressors', 'generators', 'flares', na 'pressure let-down valves' lon 'Hides Gas Conditioning Plant'. Projekt bai inap lon bihainim lo klostu lon ol masin lon skelim nois 'sensitive receptors'.



(1991)



(1998)



(2005)

Piksa 3.21

Nupela bus kamap klostu lon ol paip lain (ROW) taim yu kam kamap lon wara Mubi Valve steisen

4. 'UPSTREAM OFFSHORE PROJEKT SETTING', 'FACILITIES' NA 'IMPACTS'

4.1 'Upstream Offshore Setting'

'Offshore section' lon LNG Project Gas Paip lain ikam lon Port Moresby igutpela tru olsem emi no nap sindaun antap lon giraun na bus, wantaim kain kain wari we em bai kirapim lon ples we ol man bin stap lon en (lukim lon Droim 1.1). Paip lain ikarapim olsem 407 km na lusim olgeta 'oil export facilities' istap pinis na katim tupela bigpela solwara: giraun malomalo wantaim olgeta diwai bagarap pinis lon solwara lon Gulf ('Gulf of Papua') na ikam daun lon Wara Kikori na Purari, na igo daun lon solwara; na antap lon rif stun ('reefs') wantaim karanas solwara bihainim sankamap sait igo lon sampela giraun ipundaun klostu lon LNG 'Facilities site' lon solwara lon 'Caution Bay'.

Dispela 'offshore section' paip lain ibin kisim wanpela olsem 'direct' rot we bai emi lusim olgeta 'oil export infrastructure' wantaim sampela giraun we em ino sindaun gut (lukim lon Droim 1.1).

Lon 'offshore section' lon Kutubu 'crude oil export' paip lain bilon em i-ron igo lon Kumul Solwara Teminol olsem sampela 35 km tamblo lon 'Cape Blackwood'. LNG Project Ges Paip lain i-ron klostu tasol istap lon sandaun sait lon oil paip lain na, ikam kamap lon sankamap sait lon solwara sait lon Kumul 'platform', wantaim hap we ol bigpela sip save stap lon en.

Na LNG paip lain kam insait lon 'Caution Bay' lon wanpela liklik pasis insait lon rif ('barrier reef'), na katim igo lon tamblo liklik lon wanpela 'lagoon' we em igat kain giraun (olsem 'silt' na 'clay') na lusim wan wan karanas stun nabaut klostu lon nambis. Taim lon kamap lon hap antap we giraun ipundaun, paip lain ikatim wanpela liklik stun rif lain, wantaim sampela solwara gras, na mangro, bihain gen lon sampela wesani ol ikolim 'salt flats', istap antap lon nambis na mak lon solwara.

4.2 Kain Kain Wari, Na Plan Lon Lukautim 'Impacts Lon 'Upstream Offshore'

Nambawan tingting lon stretim na lusim kain kain trabel bai kamap taim lon putim paip lain lon solwara, em lon projekt mas lusim hap we igat karanas stun ('coral reefs') istap lon en, na lusim kain kain trabel bai kamap wantaim 'oil export infrastructure' husat ibin stap pinis. Igat bigpela hap stret we paip lain bai katim giraun tamblo lon solwara, na 'impact' lon putim daun paip em bai kamap lon hap we paip bai sindaun lon en. Dispela bagarap bai kamap lon wok, na em no nap stap lon taim - sotpela taim tasol na em bai pinis. Bai igat nois wantaim lait bilon masin bai sut nabaut taim lon putim paip igo daun, em wankain olsem sip ol isave wokim. Ino nupela samting. Taim paip isindaun pinis, em bai stap olsem yet lon giraun tamblo lon solwara. Projekt bai lukluk lon en klostu klostu lon halivim sapos sampela samting ikamap. Igat traipela solwara stun kuka ('Tropical Rock Lobsters') husat save wokabout taim lon karim, na save kam lon Torres Strait na katim lon solwara lon Gulf ('Gulf of Papua') na kam kamap lon Yule Island. Dispela kuka bai ino nap painim hat lon wokabout antap lon paip lain bikos ibin gat sampela 'test' we ol bin wokim lon paip na inogat wanpela hevi lon kuka bin kamap. Na tu, taim lon paip istap lon solwara giraun pinis wesani bai isi tasol karamapim em lon bihain taim. Paip lain rot bai nogat 'impact' lon stun rif lon Yule Island, hap we dispela stun kuka save karim na, tu hap we ol man lon ples save kisim lon wan wan taim lon kaikai. Itru olsem paip lain bai katim wanpela hap ('right angles') we ol stun kuka save karim na bihain gen paip lain bai go daun bek lon solwara. Wei ol iputim paip lain bai no nap pasim wei lon kisim pis ('trawling') tasol sapos wanpela samting lon kisim pis ('gear') ipas lon paip na lus, man husat lusim 'gear' bai kisim kompensen. Tasol dispela kompensen bai bihainim lo bilon ol wel ('normal international procedures').

5. 'LNG FACILITIES' PROJEKT KEMP 'SETTING', 'FACILITIES' NA 'IMPACTS'

5.1 'LNG Facilities' Kemp 'Setting'

Lon 'Caution Bay', giraun ipundaun (lukim lon Droim 1.1), ROW igo daun lon sankamap sait insait tru lon kunai gras na pinis lon wanpela liklik wara we LNG Plant istap lon en (lukim lon Droim 2.2). Igat planti hap we ol tumbuna ('archaeological') ples istap antap lon ROW rot.

LNG 'Facilities' kemp istap lon nambis samting olsem 20 km antap ('northwest') lon Port Moresby, na namel lon Boera na Papa (lukim lon Droim 1.1). Dispela hap igat planti kain kunai gras we ol man lon ples bin wok lon en (Piksa 5.1). Planti lon dispela hap giraun ol ibin klinim lon wokim gaden lon bipo yet, olsem lon 1900s ('early in the twentieth century'). Olsem nau planti ol gutpela diwai-bus em lon mangro, na Boroko diwai nabaut ('melaleuca woodland') wantaim sol wesani ('saltflats') istap lon nambis na lon Wara Vaihua (lukim lon Piksa 5.2). Bigpela hap giraun lon mangro (klostu olsem 600 m) ibin stap lon Wara Vaihua na bihain gen isuruk liklik lon wanpela liklik nambis antap lon sekiriti banis bilon kemp. Sampela bus tru istap olsem wan wan diwai-bus klostu lon Wara Vaihua, na namel lon ol mangro, na rot lon Lea Lea we igat wan wan 'pandanus palm' isanap wantaim kain kain diwai istap insait lon ol liklik drein wara, igo lon joinim Wara Vaihua.

Olsem lon paip lain ibin kam lon solwara, wei lon wof ('jetty') bai katim kam lon sait lon sampela stun rif, nambis gras, na kam insait lon mangro. Wof wantaim wei lon ol bigpela sip lon kam insait bai no nap antapim karanas stun.



Piksa 5.1 Kunai grass bus wantaim wan wan diwai tasol sanap; ino bus tumas



Piksa 5.2 Mangro wantaim swamp lon klostu lon wara Vaihua

5.2 Sampela Wari Lon LNG Facilities Kemp, Wei Lon Lukautim, Na 'Impacts'

Hapsait lon LNG 'Facilities' kemp em inogat maunten tasol ol man ibin wokim planti kain wok lon en (Piksa 5.3). Hapsait lon ol mangro, na bus bilon Wara Vaihua, wantaim hap we igat planti ol tumbuna samting istap lon en, em projekt ibin putim bigpela lukluk wantaim plan lon lukautim. Em olsem wei lon sanapim kemp 'facilities' igo lon lukautim bus, na olgeta samting lon peles. Olgeta wok lon 'construction' lon 'LNG Facilities' ikamap insait tru lon banis bilon LNG 'project area', we klostu total lon 700 ha giraun istap, tasol dispela wok lon 'construction' bai rausim giraun olsem 350 ha.

'Construction' wok bai bihainim lo lon lukautim bus, giraun olsem wokim gutpela wei lon ol liklik wara, we bai pipia antap lon giraun bai no nap ron nabaut, na tu wokim sampela 'tests' lon giraun we kain kain pipia o, poisen ibin stap.

Lon olgeta wok lon 'construction' wantaim 'operation' lon LNG 'Facilities', iluk olsem liklik tasol bagarap bai kam lon bus, giraun na wara. Lo lon bihainim gutpela wok pasin lon 'construction' na 'operation' bai stap orait na projekt bai bihainim gut. Olsem lon: banisim lon olgeta samting kam insait, olsem lon kain kain gras, na poisen wantaim wok lon klinim kemp, na lukautim olgeta hapsait lon wara, na stopim ol man lon katim diwai natin, giraun

buruk na wesana ron nabaut nabaut, na putim strongpela tambu lon kukim bus wantaim kilim abus.

List lon kain kain abus, pisin, pis, binatang, wantaim diwai na gras istap lon 'facilities site', iluk olsem projekt bai no nap bagarapim ol tumas: olgeta han mak lon projekt bai stap lon hap giraun we ol ibin ikliam pinis lon bipo, olsem ibin gat wanpela bulumakau project (nau nogat moa), olsem na wanem bagarap bai kamap lon dispela hap we gutpela bus istap lon en, em bai liklik tru. Nadapela gutpela samting olsem, olgeta giraun we ol man ken go lon en na painim abus nabaut, em ol bai stap insait lon LNG 'Facilities' kemp banis. Tasol iluk olsem bai gat sampela 'indirect impacts' we sampela lain lbai kam lon arere lon banis na putim haus

olsem 'squatter settlement' wantaim sampela stil man lon painim abus lon bus (lukim lon 'Social Impacts' lon 'Section' 6.4.2).

Lon solwara sait, ibin gat wanpela plan bipo we wanpela lonpela wof ('causeway') bai ron igo lon hap we ol bai kamautim kago lon sip. Dispela plan isoim olsem bihain taim bai affectim ron bilon solwara ('current') wantaim sindaun lon olgeta pipia istap klostu lon Wara Vaihua na bus bilon em. Ol isenisim dispela plan pinis nau, olsem em istret liklik—plantu wok bai go lon klinim wara, sotpela taim tasol bai go lon klinim wara wantaim 'impact' lon pipia ron lon wara. Olsem na em bai nogat 'effect' lon bihain taim. Ol isensim plan bikos em gutpela lon lukautim peles.



Piksa 5.3 Ol lain katim mango diwai lon kukim kaikai klostu lon Vaihua

Bai igat pipia lon go daun insait lon 'Caution Bay', olsem: wara lon testim paip lain (wampela taim tasol), na nogut toilet wara ikam lon kemp (we ol bai putim marasin lon en), na rausim solwara ('brine') taim ol istretim solwara igo olsem wara natin. Tasol ol bai putim marasin lon olgeta dispela kain pipia wara ('waste discharge') olsem bihanim lo lon projekt 'permit', na sekim gut lon wan wan taim. Lon skelim solwara ol irausim pinis, iluk strong tru olsem bai pinis hariap tru na stap lon liklik hap tasol lon 'bay'.

Dispela banis lon banisim kemp ('Project Facilities') imakim olsem nogat wampela man bai go insait natin - nogat tru, nogut ol bai kisim bagarap. Lon sait lon klin win wantaim katim daun nois, lon ol peles istap klostu emi orait na istap insait lo lon lukautim klin win wantaim nois.

Droim 5.1 isoim klostu olsem tru piksa lon LNG 'facilities' lon kemp istap olsem wampela hap bilon en tasol-em yet. Lukluk ikam lon tripela mak lon giraun ('vantage points') (Droim 6.1).

6. LON 'SOCIAL SETTING' NA 'IMPACTS'

6.1 'Social Setting' Lon 'Upstream Onshore'

6.1.1 Hamas Man, Wei Lon Yusim Giraun, na Wei Lon Sindaun Lon Peles

'Upstream PNG LNG Project area' isindaun lon wampela hap lon Papua New Guinea we emi stap insait tru lon bus, na emi hat tru lon go lon en. Inogat planti man bin stap lon en, na nambawan kaikai bilon ol em saksak, na gaden pasin bilon ol em olsem katim, kukim bus na planim kaikai, wantaim painim planti kain kain abus lon bus, na painim pis lon wara. Itru tu olsem planti ol lon dispela hap ol ino bin lukim nadapela kain man lon ausait olsem na, taim 'petroleum industry' igo insait em olsem nambawan taim bilon ol-seim lon 'field production' wok, 'processing wok na putim paip lain.

Tasol 'project area' igat kain kain tumbuna pasin lon wan wan lain istap, wantaim ol liklik lain bilon ol istap,

tokples tu igat wan wan bilon ol istap. Planti ol isave bihainim lain bilon papa tasol, olsem na hau olgeta man bai stap na marit, wantaim wanem giraun bai ol ilukautim na yusim, na tu bihainim wanem bilip lon ol tumbuna stori - em ol bai bihainim sait lon papa tasol.

Igat giraun we ol man lon peles bin wokim gaden lon en bipo, lon Hides na Komo, tasol insait lon 'project area' inogat wampela hap istap we 'agriculture' olsem plenteisen bai kamap - na nogat wampela bin kamap bipo.

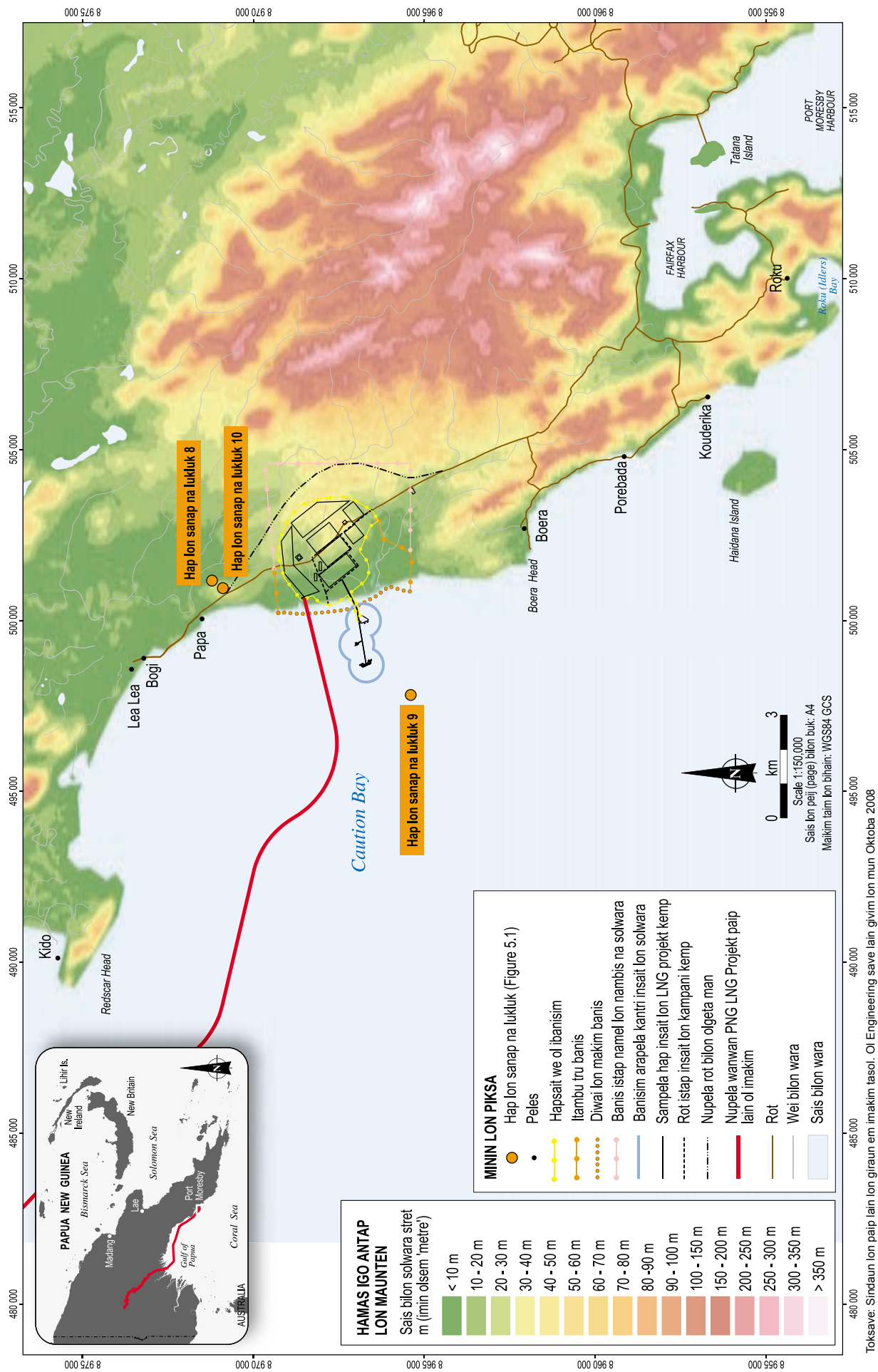
Olsem lon lukluk lon projekt Kampani wantaim lain bilon en, wampela bigpela samting tru lon PNG 'society' em lon strongpela pasin lon wan wan liklik lain o, grup, na pawa bilon en lon holim na bosim giraun.

6.1.2 Lon 'Infrastructure' na 'Services' Olsem Rot, Haus Sik, na Skul

Rot istap pinis lon joinim olgeta hap lon Hides wantaim Kutubu na igo insait tru lon arapela hap lon Southern Highlands Provins. Igat wampela 'public' rot lon



Droim 5.1 Piksa natin long LNG Projekt sait



Droim 6.1 Planti ol samting ol kolim 'facilities' lon LNG imin olsem rot, peles na, hap bilon lukluk

Kikori, na igo joinim Samberigi, na bihain gen lon Erave, na igo lon arapela hap lon Southern Highlands. Tasol itu olsem inogat planti ol bigpela rot istap lon planti hap lon provins.

Lon 'health' olsem lukluk lon olgeta man lon dispela hap ino gutpela tumas, na tu 'public health facilities' bilon ol ino planti o, nogat tru olgeta. Ol dispela wan wan istap em 'petroleum' kampani tasol ibin putim o, halivim ol.

'Public education', em olsem skul bilon ol em tu olsem na planti taim inogat ol 'teachers' wantaim nogat buk, pen, na olgeta samting lon skulim ol mangi. Olsem na save lon raitim ('write') na ridim ('read') Inglis (English) o, tokples em lou tru na namba bilon ol husat ken rid na rait istap olsem 55% lon ol man, na 40% lon ol meri. Skel ('levels') bilon lon kisim skul olsem lon Univesiti, na kolij ('college') em tu ilou tumas klostu olsem 1% lon populeisen bilon ol.

Kain halivim ol 'petroleum producers' lain bin givim lon skul na haus sik imoa yet olsem lon klinik ('clinic') bilon ol namba bilon ol man na meri ol isave lukautim na givim marasin em olsem 10,000 lon wanpela krismas. Na tu, ol bin sapotim skul bilon ol pikinini husat save go insait lon Univesiti o, kolij.

6.1.3 Lon Mekim Moni, Bisnis ('Economics') na Gavman

Lon moni igo lon han ('cash income') bilon ol man lon 'upstream project area', nambawan wei tru bai kam lon fotnait pei taim ol iwok wantaim projekt na moni lon baim papa giraun (olsem 'royalties'). Sampela bai kam lon ol

kampani husat save katim timba lon Gulf bus tamblo.

PNG LNG Projekt bai givim moa yet na bigpela tru 'benefits', na sais lon wok, wantaim we em bai stap bai bigpela moa, na krismas lon stap bai go moa yet. Lukluk lon planti ol man husat gat giraun, hamaspela moni bai ol ikisim, moni bai go we, na hau ol bai yusim dispela moni em ikam lon han bilon ol. Dispela em nambawan wari tru lon sait lon yusim moni wantaim sindaun bilon ol.

Dispela 'State-managed negotiation' we Gavman wantaim Projekt Kampani tasol save sindaun na strongim tok igo ikam lon kain kain 'benefits' bai kam lon ol tripela gavman 'level' wantaim papa giraun, em istap insait lon lo na igat wan wan step lon bihain gut. Olsem na dispela lo ilukautim gut lon toktok lon sherim gut ol 'resource project benefits' lon olgeta Gavman 'level' wantaim papa giraun. Dispela lo tu bai bosim hau Gavman bai lukautim na sherim gut.

6.1.4 Ting ting lon ol man lon Projekt

Iluk olsem wok bilon oil na ges insait lon wanpela ten eit (18) krismas go pinis, em ino senisim laik na sapot bilon ol man lon wok lon 'petroleum industry'. Planti ol 'project-area' papa giraun bilip olsem Projekt bai kirapim sindaun bilon ol, na lon Table 6.1 isoim sapot lon Projekt istap lon 95%. Dispela em bin aburusim mak lon 2005 PNG Gas Projekt 'Social Impact Assessment' (SIA) stadi we em bin stap lon 80% nabaut.

6.2 Lon 'Downstream Social Setting'

LNG 'Facilities' kemp wantaim fopela bigpela ples klostu lon kemp em lon Lea Lea, Porebada, Boera na Papa (lukim lon F268, ol istap insait lon 'Hiri Rural Local-Level Government area', we populeisen bilon em istap klostu olsem 20,000 wantaim. Na skelim lon wan wan man lon stap lon giraun em klostu olsem tenpela lon wanpela 'kilometre' ('10 persons/km2').

6.2.1 Hamas Man/Populeisen, Yusim Giraun, na Wei Lon Sindaun Lon Peles

Olgeta man lon dispela fopela peles igat tupela bigpela tumbuna stori lon ol (Koita na Motu), husat save stap wanatim. Wei bilon ol iluk olsem ol ibihainim lain bilon papa, na igat 'big-man' na 'Chief' 'system' istap. Planti ol tumbuna stori lon wokabaut na pait isoim olsem planti liklik grup (iduhu) save bung lon strongim sais, kisim ol ausait man ikam insait lon grup tu, na brukim grup tu lon bihainim pait lon holim giraun olsem wanpela nambawan iduhu grup. Namba bilon wan wan ples lon dispela fopela olsem: Lea Lea - 1798 insait lon 212 haus ('household'); Porebada - 4510 insait lon 479 haus; Boera - 1310 insait lon 155 haus; na Papa - 959 insait lon 114 haus.

6.2.2 Lon Moni, Bisnis na Gavman

Lon kisim kaikai na sindaun lon ol lain lon 'Caution Bay', olsem Lea Lea, Papa, Boera, na Porebada, planti ol em ikam tru lon solwara. Nambawan wok bilon ol em lon panim pis lon solwara lon kaikai, na sampela ol isave salim lon maket lon Port Moresby (Piksa 6.1). Lon gaden bilon ol em ol isave planim yam, banana, na cassava o, tapiok tasol, giraun bilon ol ino gutpela tumas, na tu rein ino save pundaun planti taim tumas. Painim abus lon bus em wok lon ol man olsem 'deer' wantaim magani o, 'wallaby'. Sampela ol isave lukautim stoa lon sait lon rot tasol, ino bigpela moni tumas save kam lon en.

PNG Gavman laik kirapim 'Konebada Petroleum Park' (KPP) lon lukautim wanem samting bai kamaut lon

Table 6.1 Tingting bilon olgeta man na meri lon Projekt

Hamas isapotim Projekt:	
• PNG Gas Projekt 2005*	83%
• PNG LNG Projekt 2007 – greenfields (nupela Projekt hapsait)	95%
• PNG LNG Projekt 2007 – brownfields (Projekt hapsait istap pinis)	97%
Hamas ibilif olsem Projekt bai halivim na kirapim sindaun bilon ol:	
• PNG Gas Projekt 2005 – brownfields	48%
• PNG LNG Projekt greenfields 2007 – Komo	100%
• PNG LNG Projekt greenfields 2007 – Juha	75%
• PNG LNG Projekt greenfields 2007 – LNG Facilities site	78%

*PNG Gas Project em plan ibin kamap pastaim lon wokim na salim PNG LNG Project ges ikam lon giraun.

'petroleum developments'. Tasol olgeta liklik plan lo kirapim dispela wok lo giraun em ino kamaut yet.

Igat wanpela ten eit (18) 'ward councillors' lon 'Hiri Rural Local Level Gavman' husat ilukautim olgeta man insait lon dispela hap, na moni ('development budget') bilon olgeta em olsem K100,000. Planti ol wok lon lukautim peles, em wok igo lon sios, olsem lon boubou - givim natin igo lon sios - ('church tithes'), we em isave winim wok lon painim skul 'fees'.

6.2.3 Lon Rot, Skul, Haus Sik Nabaut ('Infrastructure' na 'Services')

Bigpela wari tru lon dispela fopela ples olsem ol inogat gutpela wei lon stretim gutpela, strongpela, na seif wara igo lon ol man, wantaim ino gutpela wei lon toilet na lukautim pipia lon ples istap. Igat liklik haus sik ('aid posts') istap lon Papa na Boera wantaim bigpela haus sik istap lon Port Moresby. Tasol lon olgeta, wok olsem 'health services' emi lou tumas olsem lon lain istap antap lon 'upstream project area', na tu, iluk olsem wok lon skelim kain bigpela sik olsem HIV/AIDS na TB ol ino wokim gut tru.

Igat 'elementary' wantaim 'primary schools' istap insait lon ol dispela fopela ples na wanpela 'high school' istap lon Porebada, tasol ol papa na mama save sapotim ol pikinini man pastaim bihain lon ol pikinini meri.

Rot igivim gutpela sevis stret lon dispela hap. Igat klostu olsem 500 kar save kam lon Baruni 'Junction' na klostu lon 140 kar igo lon Konebada Petroleum Park, lon hap lon tanim (planti ol em bigpela truck tasol) lon wan wan dei.

Nau tasol ol i putim wanpela polis steisen lon 'junction' (KPP) igo lon 'Caution Bay', na hap lon tanim lon Napa Napa.

6.2.4 Ting ting Bilon Ol Man Lon Projekt

Tingting lon ol man husat stap klostu lon LNG 'Facilities site area' istap lon Table 6.1, we sapot lon projekt istap lon 95%, na bilip olsem projekt bai



Piksa 6.1 Laki Boera man wantaim tuna pis em ibin hukim

kirapim sindaun bilon ol istap lon 78%. Kirapim gutpela wara 'supply', wantaim bisnis bilon ol em, em planti ol man ibin tok olsem lon dispela asikim "wanem 'benefit' tru yu laik lukim bai kam lon PNG LNG Projekt?".

6.3 Olgeta Kain Kain Wari Ikam Lon Projekt

Wanpela samtin emi impoten tru lon 'social' sait lon PNG LNG Projekt, em istap lon strong bilon olgeta man lon ples/kantri olsem lon stretim pasin tumbuna bilon ol, kain 'style' na pasin lon gavman, na wok wantaim pasin lon bisnis bilon ol, we hau ol bai sanapim wantaim ol nupela 'industries', 'institutions', na 'infrastructure' taim ol ikam insait lon ol. Dispela nupela olsem hapkas 'culture' ibampim kain ting ting bilon ol arapela bigpela kantri (olsem lon ol man na meri mas stap wantaim, na wei lon yusim moni mas kamaut lon ples klia) wantaim tingting bilon ol man lon ples/PNG olsem, planti wok lon gavman mas hait hait nabaut, olgeta bigpela, na ples klia disisin mas stap lon han bilon ol man tasol, na lon bihainim ol lida na kisim pawa mas kam lon lain ikam lon ol tumbuna, sapos nogat bihainim ol 'big-man' o, 'Chief'— na ol dispela kain isoim olsem igat pawa istap lon han bilon ol 'grass-roots' lain insait lon PNG - ino Gavman.

Sampela bigpela hap we projekt bai hatwok lon stretim, halivim, na kisim 'benefits' lon PNG em olsem:

- Igat planti kain kain ol liklik grup nabaut insait lon 'project area'.
- Wei lon stretim ol nupela ting ting olsem lon 'contract' wantaim sampela moa bisnis lo, na wei lon kisim kastom pasin ikam insait lon bisnis wok, olsem 'agreement'.
- Gutpela wei lon givim ol gutpela gavman sevis lon ol lain.
- Lainim ol man lon save lon gutpela pasin lon wokim, lukautim moni, na bosim bisnis gutpela stret.

Itru olsem, igat planti komplein ikam lon ol papa giraun lon makim maus, na wok bilon ol lon stretpela pasin (olsem wei lon sherim moni na ripotim lon ol lain). Igat wei lon stretim dispela kain wari tasol ol papa giraun mas kirap na rausim ol dispela liklik pasin kastom olsem wei lon yusim moni, wari lon ol lain birua, na ting ting lon big-man pawa. Tasol dispela kain senis lon ting ting em bin hat liklik lon wokim.

EIS isoim na putim aut strong stret olsem wei lon givim aut 'funds' wantaim lukautim sevis mas senis, sapos yumi laik kisim bigpela 'benefit' lon dispela projekt bai givim. Tasol igat sampela gutpela luksave, ibin kamaut tru lon

ol meri, olsem planti ol man lon peles laikim olsem olgeta wei lon yusim moni na 'benefits' nau mas senis.

Emi klia olsem PNG LNG Projekt bai go yet lon wokim senis insait lon 'project area' wantaim kirapim wei lon kisim gupela sevis na bisnis. Lukluk lon nadapela sait, bai gat sampela bigpela wari lon sait lon Lo na Oda ('Law and Order'), 'health', na sindaun bilon ol man we Gavman mas lukluk gut lon en.

Lon taim bihain, bai gat sampela bigpela wari istap lon gupela sindaun bilon ol man lon sait lon kisim moni na kaikai, wantaim sans lon yusim moni gut lon wokim bisnis wantaim kirapim sevis lon ol man lon peles/kantri.

6.4 Plan Lon Pasim Ol Arapela 'Impacts'

6.4.1 Lon Ol Plan

Lon olgeta 'social' na 'economic' wari em kamaut lon PNG LNG Projekt, em ol istap lon han bilon Gavman olsem wei lon hau ol man lon ples bai kam insait lon projekt, wantaim sait lon gavman lon peles, na strongpela pasin lon sherim moni wantaim olgeta kain sevis.

Plan na wok lon ol dispela kain samting em bin stat lon taim yet, na igat planti taim lon raunim planti hap lon wan wan peles na 'city' olsem lon soim gut na tok tok wantaim ol man. Em ol wokman lon gavman wantaim, sampela wokman lon Projekt ol ibin wokim.

Tasol igat sampela hap lon 'social impacts' insait lon 'project area' we PNG LNG Projekt mas lukaut lon en na stopim, olsem lon: hapsait lon wok; lon 'health', skul na 'agriculture' (olsem lon halivim ol meri); lukaut na lukautim olgeta hap we ol tumbuna stori wantaim ol tewel/masalai istap; baim kompanseisen we Gavman ioraitim na sapos kamap stret na tok tok istap lon ples klia; na tok tok stret wantaim ol kominiti lon 'problems'.

Iluk olsem PNG LNG Projekt gat wanpela sait lon lukautim 'social impact', PNG Gavman wantaim Provincial gavman, na ol Papa Giraun em ol nadapela, tasol em wanpela

bigpela wok lon EIS lon lukautim, wokim, na ripotim 'socio-economic impacts'. Olsem na EIS bin stretim pinis lon olgeta hapwok bilon wan wan grup istap. Lon sait bilon Esso, em ol dispela kain ol isave kolim 'commitments' olsem Kampani mas bihainim gut. Olsem lon painim wok, kisim 'training', na lon PNG wokman kisim ples lon ol wokman lon arapela kantri, kirapim bisnis, stretim sindaun wantaim ol kominiti, na baim kompanseisen. Na ol dispela plan EIS imakim lo ol arapela grup, em ol yet bai lukluk lon en, plenim gut, na bihainim. Kain kain 'area' we EIS bin putim lon dispela kain grup lon lukautim 'socio-economic impacts' istap lon:

- Makim maus, wantaim sherim 'benefits' lon gupela pasin na mas stap lon ples klia lon ol papa giraun.
- Lukautim gut lon ol moni igo lon Gavman.
- Plan lon gavman 'infrastructure' wantaim givim aut sevis igo lon ol man olgeta.
- Wok wantaim ol arapela bisnis lain lon kirapim bisnis lon statim kai kain projekt nabaut.
- Lukautim moni gut na putim igo lon gupela 'wealth' we em bai stap lon taim.
- Kirapim na lukautim gut lon ol local bisnis 'structures'.
- Tingim pawa lon ol meri wantaim 'programs'.
- 'Health' wantaim moa toksave lon gupela sindaun.
- Wei lon lukautim ol 'benefits' mas stap olsem yet lon wan wan projekt.
- Lo na oda (wei lon stopim trabel).
- Wei lon stretim na strongim sindaun igo lon taim stret, we em bai aburusim mak lon projekt.

Bigpela samting stret em olsem, ol dispela kain plan lon pasim 'socio-economic impacts' em lon stretim problem ol kampani bin lukim bipo tasol ino stretim, na sherim wankain ting ting wantaim olgeta poro kampani istap insait lon projekt. Bihain taim projekt bai kamap gut.

6.4.2 Ol Arapela 'Impacts'

Moni lon kam insait

PNG LNG Projekt bai givim moni igo lon 'project area' insait lon tripela ten (30) krismas. Em olsem:

Gavman bai kisim gupela benefit lon LNG kampani, na pei bilon ol wokman na, takis ikam lon pei.

Na tu, wanem profit kampani bai kisim em bai igat seia ('share') istap lon Gavman, provincial gavman na, ol papa giraun. Ol tu bai kisim seia bilon ol.

- Planti ol 'benefits' bai kam lon 'tax credit', lon baim papa giraun, wantaim kainkain takis moni lon kampani bai igo lon Southern Highlands, Gulf, Western, wantaim Central provincial gavman.
- Olgeta tax credit benefit bai kam yet inap kampani istap yet lon wokim wok.
- Benefit tu bai kam lon olgeta 'Contracts' kampani bai givim igo lon ol papa giraun bisnis kampani.
- Ol wan wan man tu bai kisim pei taim ol ikisim wok wantaim kampani, olsem husat ol igat krismas lon 16 na igo antap bai kisim wok.

Olgeta wei lon sherim 'benefits' bai luk olsem; lukim lon Table 6.2.

Tasol, sapos PNG LNG Projekt ino nap kam insait, oil kampani bai stap yet lon halivim ol man tasol, benefit bai ino nap bigpela tumas olsem Ges kampani bai givim.

Na tu, sapos PNG LNG Projekt ino oraitim lon wok, 'petroleum industry' bai stap yet insait lon Papua New Guinea na givim sampela liklik moni ('income') igo yet. Taim ol iskelim wantaim Gavman 'receipts' insait lon 2008 na igo lon 2022, em bai kamap klostu olsem K6 billion lon oil (na wantaim PNG LNG Projekt, em bai K43 billion).

Lon 'Social Impacts'

Plantil lon 'social impacts' lon PNG LNG Projekt' bai 'depend' lon hau PNG Gavman wantaim ol pipol ilukluk lon en.

Bikos lon olgeta hap, projekt bai go het lon givim sevis olsem lon rot, bris, haus sik, na skul, givim moni lon ples, wok lon projekt, 'training' wantaim, na planti olgeta samtin olsem ol man lon ples bin asikim lon en.

Dispela em igutpela tru olsem em bai wok wantaim wok we 'petroleum industry' ibin statim pinis olsem lon: planti moa wei lon makim maus lon ol man; moa wei lon baim kaikai wantaim moni, moa lon 'political' wantaim kot wei ibin kamap; moa lon bigpela bisnis wantaim ol arapela bisnis lain, na gutpela wei lon wokim disisin lon yusim, na lukautim moni.

Tasol lon nadapela sait lon bigpela 'industry' wantaim ol nupela wei em olsem: planti kain kain trabel bai kamap, ol meri bai salim bodi bilon ol lon moni, na planti sik olsem HIV/AIDS bai kamap tu. 'Social conflicts' olsem pait nabaut lon ol arapela man lon Southern Highlands Provins wantaim ol man lon peles em wanpela bigpela 'problem' lon Kopi na Kikori. Tasol nupela 'wealth lon dispela hap bai liklik, ino olsem lon 'production fields' insait lon 'Southern Highlands'. Na ol man lon 'Caution Bay' igat seim kain wari we iluk olsem em itru liklik. Bikos LNG 'Facilities' bai pulim kain kain ol man lon kam insait olsem ol 'squatters' na raskal man husat save pul ap tru lon Port Moresby. Em olsem na, Gavman mas putim strongpela lo na bosim gut lon 'squatter settlements' wantaim lukautim lo na oda - insait lon projekt wantaim olgeta pipol.

'Impact' Lon Giraun Wantaim Kain Kain Samting Bilon En

Bigpela 'social impact' em bai stap lon hau gaden wok lon painim kaikai bai senis igo lon yusim cash lon baim kaikai insait lon 'project area'. Tasol dispela em bai slou tru lon senis na iluk olsem painim kaikai lon bus, giraun na solwara bai istap lon taim yet.

Lon sait lon painim kaikai lon giraun, iluk olsem projekt bai ino nap bagarapim na olgeta bai stap olsem yet. Lon hap igat planti man istap lon en olsem lon 'Hides Gas Conditioning Plant', em tenpela tu (20) haus bai muv,

Table 6.2 Wanem kain 'benefit' tru bain kam lon PNG

Gavman	Provincial gavman
- Kampani bai baim takis - takis lon pei bilon ol wokman - Takis lon kain kain kago ikam insait kantri - Seia 'benefit' bilon Gavman istap insait lon kampani - nadapela kain takis lon said lon wokim bisnis	- Olgeta takis lon kain kain development kamap lon provins - Moni igo lon kamapim skul, ples balus, haus sik, rot, bris, nabaut - Moni lon baim giraun lon en - Seia lon gavman istap insait lon kampani taim profit kamap
OI Papa Giraun – 'benefit' we inogat cash lon en	OI Papa Giraun – we igat 'benefit' wantaim 'cash'
'Contracts' lon ol papa giraun bisnis kampani - Kain kain projekt lon ol ples lain olsem skul, haus sik, rot, nabaut - Givim wok na save wantaim lon ol	- Moni lon baim ol papa giraun lain - Baim giraun na diwai tu we ikisim bagarap - Pei lon ol papa giraun lain husat wok lon kampani - Baim giraun olsem 'rent' taim bisnis istap antap lon wan wan giraun - Seia bilon ol papa giraun istap wantaim kampani taim 'profit' ikamap - Bis kampani bilon ol papa giraun wantaim seia bilon ol - Moni lon halivim ol papa giraun lon statim bisnis bilon ol - Moni lon baim skul 'fee' lon ol papa giraun sumatin wantaim moni lon wokim 'sports', halivim kominiti nating, na halivim ol meri, mangi nabaut

na sampela hap wantaim gaden bilon ol lon 'wellpads' lon Angore na Hides bai muv tu.

Lon LNG 'Facilities site', hap we igat banis olsem 'exclusion zone' klostu lon wof ('causeway' na 'jetty') em bai ol iputim tambu lon painim pis insait lon 'Caution Bay' wantaim hapsait lon mangro. Husat ol man bai lus lon 'income' wantaim 'access' lon dispela kain hap em projekt bai baim kompenseisen lon ol - wantaim sampela moa toktok lon ol arapela wei lon painim pis lon ol stun rif na mangro.

Lon Rot Seifti Wantaim Ron Bilon Ol Kar

Taim lon 'construction' em bai planti ol kar bai ron lon 'Highlands Highway' wantaim rot lon Port Moresby igo lon 'Caution Bay'. Lon lukautim olgeta kar ron lon rot wantaim seifti, em bigpela samting tru istap wantaim projekt. Taim 'construction' ipinis, olgeta rot istretim pinis bai stap olsem public rot bilon ol man.

OI Meri Na Sampela Turangu Lain

Iluk olsem dispela kain grup em ino planti bilon ol tumas, olsem lon Onabasalu na Febi we ol isave stap namel lon Hides na Juha. Dispela ol lain ibin tokaut stret olsem ol ilaikim 'social wantaim economic development', na tu ol igivim strongpela sapot stret lon PNG LNG Projekt. Planti bilon ol nau save givim tok Huli na ol imuv igo insait lon bigpela hap lon Southern Highlands tu. Ol yet ibin statim wei bilon senis bilon ol.

Strongpela ting ting lon projekt olsem, bikos planti ol giraun istap lon han bilon wan wan man/grup, husat man/grup bin 'affected' lon wok lon projekt, bai gat 'right' lon kisim projekt 'benefit'. Na lon nadapela sait, sampela smat ausait stil man bai taim lon kisim dispela 'benefits' igo lon en, na igat plan istap lon toksave lon olgeta papa giraun lain lon lukaut lon dispela kain lain.

Posisen na pawa lon ol meri insait lon kominiti em wanpela bigpela samting lon olgeta hap wantaim wan wan grup. Lon taim bipo, planti ol meri inogat pawa stret lon tokaut, we wok bilon ol em lon lukautim haus tasol. Olgeta wok lon wokim bigpela disisin lon namel lon kominiti em ol stap lon han bilon ol man tasol. Tasol nau planti ol meri wok lon sakim dispela kain wei, na olgeta nupela 'development' (we ol igat wok 'policy' bilon ol yet na we ol isave sapotim edukeisen lon ol meri) bai luk olsem (wantaim sapot ikam lon ol sios na NGOs) inap lon kirapim dispela senis. Tasol bai ino nap isi bikos ol man bai no nap sapotim gut, na planti ol papa giraun grup wantaim pawa istap yet lon han bilon ol man. Planti ol dispela kain grup save kisim na bosim 'project benefits', na wantaim slek bilon 'local level' gavman, we ol meri ken kisim sapot tasol iluk olsem nogat yet. Tasol iluk olsem lon bihain taim, senis bai kamap, nau tasol em islou tumas.

Gutpela Wantaim Strongpela Sindaun Lon Bihain Taim

Nambawan samting lon lukautim 'capital wealth' insait lon PNG bilon ol man lon bihain taim mas stap lon han bilon 'Future Generations Trust'. Olgeta kampani ('Resource industries') bai putim moni igo lon 'Trust', na ol dispela 'benefits' bai kamaut olsem 'cash' o 'non-cash' igo lon olgeta 'beneficiaries' (olsem provincial gavman, papa giraun, na ol arapela grup husat igat rait lon en). Bikos PNG LNG Projekt bai stap lon taim liklik lon wokim wok, na em olsem ino isi tumas lon skelim hau dispela 'trust wealth' bai kamap taim projekt ipinis. Baim na mumutim planti ol 'capital' lon wokim 'wealth' em bai nambawan lo lon wokim disisin lon putim moni igo lon gutpela na strongpela bisnis. Dispela 'Trust' bai bihainim dispela lo igo yet.

7. PASIN TUMBUNA LON PELES

Planti ol mak lon pasin tumbuna istap insait lon 'project area' em olsem olgeta 'archaeological' wantaim we, em igat sampela tumbuna stori o, emi olsem stap impoten tru lon ol man.

Igat planti lon dispela kain istap - we emi soim olsem ol man lon ples igat gutpela na 'special relationship' stret wantaim olgeta samting lon bus, giraun, wara, na solwara. Na tu, ol man save kisim strong bilon ol ikam lon olgeta dispela hap, na ol isave gut tru lon en na lukautim wantaim.

Antap lon 'upstream project area' igat sampela 'special' hap (olsem lon stun hul, ples matmat, stun igat tambu lon en, hap we ol tumbuna bin stap lon en bipo, na hap we ol tumbuna save wokim kain kain wok bilip bilon en), na sampela nadapela hap we em ol ibigpela liklik (olsem lon 'lakes, swamps', na liklik wara, hap we ol masalai istap lon en, ol bigpela stun nabaut, wantaim ol kain kain bus we em igat sampela tambu ol i putim lon en).

Olsem na nau, ol ibin stretim ROW lon Hides na Moro we bai em istap lon wei lon ol bigpela stun ples, ol tumbuna peles tu, hap we igat tumbuna mak olsem solwara we igat sel/selpis pulap lon en - olsem lon Kopi. Planti ol tumbuna hap bai ino nap kisim bagarap o, muv lon mekim wei lon ROW lon bihain taim. Wok istap yet lon painim aut na kisim olgeta liklik save wantaim infomeisen lon ol tumbuna hap we ol istap klostu lon ROW.

Olgeta hap we ol man bin stap lon en bipo, na ples matmat, na hap we igat stori lon en o, igat tambu lon en, na

stun o, diwai we igat kain kain stori lon en, em olgeta istap insait lon Pasin Tumbuna. Igat olsem sampela impoten tru samting na kain kain hap lon hiri 'trade', olsem lon olgeta hap we ol meri bin mekim giraun sospan klostu lon Port Moresby nabaut, na karim igo lon ol bigpela lagatoi kanu lon go lon Gulf na salim o, givim ol wantok (Piksa 7.1). Igat sampela impoten hap we ol ibin kamap taim ol 'white man' bin kam pinis olsem lon World War II wantaim 'equipment' bilon en (Piksa 7.2), ol balus ibagarap, haus lotu, na ol nadapela hap we ol Misinari bin stap lon en.

Projekt ibin wok hat tru lon lusim dispela kain hap istap insait lon 'project area', na bai bihainim moa yet lon dispela kain pasin sapos sampela nupela ikamap tu. Na sapos sampela hap bai kisim bagarap, na samting bilon ol kampani ibin kisim taim ol imekim rot lon 'construction', olgeta dispela kain samting Kampani bai recordim gut tru o, bihainim lo na kamautim ol, wantaim toksave lon ol peles lain na 'PNG National Museum na Art Gallery'.

8. PROJEKT TOKSAVE WANTAIM OLGETA LAIN

PNG LNG Project igat planti kain kain 'partners' lon wok. Em impoten tru olsem olgeta dispela wan wan lain mas save gut tru lon ass bilon projekt,



Piksa 7.1 Lagatoi peles kanu lon ol Motu lain isindaun lon Port Moresby Harbour

wok bilon em we ol bai klia lon wanem hap stret ol bai stap lon projekt. Em olsem na, Esso ibin putim planti taim lon toksave lon projekt wok, minin lon wan wan hapwok, na hau projekt bai lukautim kain kain 'problem' taim ol ikamap.

Lon wan wan mun, 'Department' save givim toksave igo lon Gavman, na sapos sampela wari o wok ikamap, ol ken holim kain kain mitin lon en. Lon Provincial na 'local level' gavman, ol tu bin kisim toksave lon wanem bigpela samting kamap lon projekt tasol.

Planti ol toksave, em olsem pasin bilon Papua New Guinea stret, isave go lon olgeta man istap insait lon 'project area'. Lon 1998 na ikam nau, ibin gat klostu olsem 6,700 wan wan haus lon famili, ol iseveim pinis (olsem asikim lon minin lon projekt nabaut)—em klostu olsem 40% lon olgeta man insait lon 'project area'. Na stori tru lon PNG LNG Projekt stret, ibin gat tupela 'roadshows' (olsem Kominiti toksave) ol ibin wokim pinis lon ples ol imakim lon Droim 1.1: em lon skelim wok lon EIS (lon mun Novemba 2007, Piksa 8.1, na 8.2), na taim lon putim aut 'development proposal' wantaim 'environmental mitigation measures' (wei lon lukautim bus-giraun-wara nabaut) taim ol laik putim insait lon 'EIS commitments' (lon mun Novemba na Disemba 2008).

Dispela kain wok em istap pinis lon kampani lon givim toksave igo lon ol kominiti, na ol wok man lon PNG LNG Project's 'Land and Community Affairs team' isave wokim olgeta kominiti wok wantaim 'engineering' na EIS stadi.



Piksa 7.2 2008 battery: gun pit number 2. O ibin painim sampela WWII kain kain pipia olsem battery

Lon taim bilon ol yet, 'Department lon Environment na Conservation' bai wokim toksave 'roadshow' bilon em lon kisim ting ting bilon ol wan wan kominiti lon projekt. Wanem samting bai kamap lon dispela toksave 'roadshow', Department bai kamautim na ol bai yusim lon skelim wok lon EIS na 'conditions' istap lon en.

Na tu, igat kain kain grup ol isave kolim 'non-governmental organisations' (NGOs) husat stap insait lon dispela toksave 'program' tu. Sampela bilon ol em 'international', na sampela 'local' wantaim ol sios tu.

Esso ibin recordim gut na lukautim olgeta toksave emi bin wokim wantaim olgeta kominiti, Gavman, wantaim olgeta ting ting lon wan wan grup. Insait lon dispela 'record', igat planti lon sapotim projekt, na komplein wantaim lon ol wokman lon opis, wei lon sherim

'benefits' olsem islou na inogutpela tumas. Sampela ol wan wan wari bin kamap olsem: bai no nap lon go lon bus bilon ol we igat projekt tambu istap lon en nau, lon painim pis, kisim gutpela klia wara; na wanem 'impact' bai kamap lon nambis na solwara wantaim; na 'petroleum production facilities' em seif tru o, nogat; lon win antap bai bagarap o nogat; sampela nupela abus wantaim kain kain sik bai kam insait na em bai olsem wanem; wok 'training' na skul; na, wei lon painim kai kai taim projekt ipinis lon tripela ten (30) krismas; ol ausait man kam na wokim 'skwata settlement'; kain kain senis bai kamap; Lo na Oda - kain kain trabel na wei lon stopim.

Planti ol istap pinis lon plan bilon stopim bagarap lon kamap ('mitigation measures') - ol bai kamap gen lon tok tok wantaim ol man lon wan wan hap.



Piksa 8.1 Papa Projekt Awareness/Toksave na Environmental Inception Roadshow toksave



Piksa 8.2 Projekt awareness wantaim roadshow lon Idauwi, SHP, lon mun Novemba, 2007

9. 'IMPACTS' BAI GO YET WANTAIM OL ARAPELA KAIN

Sapos dispela tambu lon olgeta projekt rot lon pasim ol man lon yusim bai stap olsem yet olsem lon 1992 na ikam nau, em bai kirapim namba bilon ol man lon muv igo insait klostu lon 'oil settlements' lon 'highlands of project area' (olsem lon Moro na Hides) wantaim Komo, na ol bai wokim gaden lon hap wantaim sampela wok lon katim timba lon salim igo lon ol man lon ples nabaut. Dispela luksave istret na strong tumas taim 'oil na gas industry' istat lon kam insait na ol nupela haus wok lon kamap klostu lon ol public rot - tasol inogat planti nupela haus kamap lon wei lon 'industry'.

Dispela 'project area' ikaramapim olgeta bigpela hap lon Wara Kikori River na igo lon olgeta hapsait lon Juha, ikisim klostu olsem 2.7 M ha. Na, ol ikatim daun 5% (132,000 ha) diwai-bus pinis, na 97% bilon en ikamap olsem ples lon stap, na wokim gaden bilon ol man, na istap klostu lon Komo na Nogoli. Planti lon dispela hap ibin kamap bipo yet - 'oil na gas industry' em nupela tasol. Na dispela 3% istap em lon wok lon katim timba, wokim oil na ges ('oil and gas production') wantaim ol arapela wok olsem rot, skul, sios, taun, ples balus, em olsem. Emi hat liklik lon luksave klia tru hamas bus stret projekt bai rausim, tasol iluk olsem insait lon tripela ten (30) krismas em bai klostu olsem 15,000 ha, na (52%) lon mekim gaden, katim timba ('logging') bai kisim (36%), na PNG LNG Projekt, olsem EIS bin skelim bai kisim klostu olsem (12%).

Namba bilon ol man lon 'highlands lon projekt area' (olsem hap istap klostu lon Hides) bai go antap olsem 10,000 bikos pei bilon ol wok man, na planti ol 'benefits' bai kam lon PNG LNG Projekt em bai givim gutpela sindaun wantaim.

Lon tamblo lon nambis nabaut, namba bilon ol man em bai stap tamblo tru tasol wan wan hap olsem lon Kopi na Kikori bai kisim namba igo klostu lon tausen. Em bikos projekt 'benefits' na rot igo joinim Mendi, Kikori wantaim Kagua, Erave na Samberigi bai kirapim bisnis na kain kain wok wantaim (lukim lon Droim 1.1).

Wanem bigpela lain laik lusim wanpela hap na wokabout igo lon nadapela hap na stap olgeta (lon 'mass migration'), dispela em in o bin kamap bipo insait lon 'project area'. Na taim lon projekt istat, iluk olsem bai nogat bigpela senis kamap lon dispela hap tu.

Tamblo lon 'downstream', PNG LNG Projekt bai gat bigpela impact stret lon olgeta hap lon 'economy' lon Papua New Guinea bilon wanem bikos em laik dabolim o, kirapim gut tru 'gross domestic product' lon kantri. Olsem na hapsait lon kemp ('LNG facilities area') em bai pulim ol skwata lain ('squatters'), we em bai affectim bus, giraun na wara, ol tumbuna hapsait, ol asples man wantaim olgeta wokman lon kemp ('project facilities site'). Tasol PNG Gavman ibin rausim sampela 'squatters' lain lon Port Moresby, na Moro wantaim lon 2008, na iluk olsem em bai wokim gen lon 'LNG Facilities site' sapos 'problem' ikamap.

'Associated impacts' (ol arapela kain) em olsem kain 'impacts' we ol isave kamap ausait lon 'project area' lon wok bilon ol arapela lain olsem kamapim ol arapela kain ges lon 'fuel' lon ol kar, na kain kain masin, insait lon Papua New Guinea. Igat wan wan kain 'project' we sampela lain bin traim na Gavman iwok lon sapotim dispela kain ting ting lon wok.

10. 'GREENHOUSE GAS' (OLSEM KAPUPU BILON OL MASIN)

PNG LNG Projekt bai autim 'greenhouse gas emissions' (olsem kapupu bilon olgeta masin lon projekt) igo antap olsem 3.1 Mt CO₂-e lon wanpela krismas. Insait lon dispela tripela ten (30) krismas bilon projekt, olgeta kapupu ges bilon masin bilon em bai kamap klostu olsem 77 Mt CO₂-e. Bai igat lou CO₂ taim lon 'feed gas' wantaim kain masin ol bai yusim, we em min olsem olgeta 'greenhouse gas emissions' bilon en iorait na seim olsem lon ol LNG wok stap lon arapela kantri.

Emi tru olsem projekt bai addim moa lon olgeta 'gas emissions' lon Papua New Guinea. Tasol, insait lon Wel, olgeta wok wantaim salim LNG ges

ikam lon dispela projekt, em bai daunim ol nogut win ('gas emissions') istap antap lon Wel. Na sapos olgeta man husat bai baim ges lon dispela projekt, na bai lusim na igo lon baim 'coal, fuel oil' na 'diesel', 'green house gas emissions' lon Wel bai go antap stret.

11. LON OLGETA PIPIA

Lon lukautim olgeta pipia ikam lon projekt bai orait, sapos bai gat ol nupela masin 'project facilities' o, olgeta kampani bai bungim strong bilon ol lon lukautim pipia. Bikos lon nau inogat wanpela gutpela wei stret ('waste management facilities') istap lon ol wan wan hap lon PNG LNG Projekt. Sapos pipia bai no nap olsem 'recycled' o, 'reused', em ol bai kukim lon masin.

12. NOGUT SAMTING TRU OLSEM PAIA, POISEN, MASIN WOK

Ol bigpela hap lon kisim bagarap em istap olsem lon hap sait lon wok, projekt 'facilities' we em bai givim bagarap lon ol man olsem affectim 'health' bilon ol, katim bodi bilon ol o, kilim man, bus, giraun, wara, solwara, na win tu. Planti ol em i hat liklik lon lukautim, we ol iken kamap enitaim, na wei bilon stopim dispela kain em olsem lon luksave na lusim, taim em kamap klostu. No ken holim, na no ken go klostu, em olsem igutpela pasin. Plan bilon projekt lon lukautim ol nogut samting em bai kam lon lo bilon PNG wantaim Wel ('international standards na guidelines'), wantaim 'internal ExxonMobil standards', na kain pasin olsem. Sampela wok lon skelim ol ibin wokim na ol imakim pinis sampela hap we igat nogut samting istap lon en, wantaim plan lon lukautim. Dispela wok bai go yet lon skelim gut tru inap lon pinisim 'design' lon lukautim.

13. LUKAUTIM, BOSIM, NA SEKIM GUT

Namba bilon olgeta plan lon lukautim bus, giraun, wara, solwara na olgeta samting emi olsem 223 lon wan wan wei lon bihainim ('commitments') istap insait lon EIS. Esso bai bihainim na

wokim ol dispela wan wan plan olsem lon stat lon projekt ('preconstruction'), namel lon en ('construction') na ol bigpela wok lon en ('operations phases'). Em bai kamap olsem wanpela bigpela plan lon lukautim olgeta hap lon projekt ('environmental management system'). Olgeta plan lon lukautim bus, giraun, wara, win, na solwara ikaramapim ol dispela kain hap:

- Wan wan bus, abus, pisin, binatang, wara, giraun, na solwara.
- Olgeta win antap na kapupu bilon ol masin.
- Kain kain nois wantaim nois lon masin.
- Kain kain pipia.
- Wara na, kain kain pipia we wara bin kamautim lon giraun na karim raun.
- Wei lon stretim giraun na wara tu.
- Olgeta kain kain poisen na nogut samtin we em bai kilim man, giraun, bus na olgeta samting.
- Ges kapsait na wei bilon lukautim.
- Wei lon klinim wara na solwara.
- Lon Lukautim paia.
- Lukautim lon ol man, giraun, solwara na olgeta samting bilon ol man.
- Lon lukautim kain kain giraun.
- Lon lukautim wei lon ol kar na sip.

Total namba bilon plan lon lukautim peles we ol itok orait lon ol, na ikam lon 'social impact assessment' (SIA) iolsem klostu faivpela ten wan (51) lon lukautim sait lon sindaun ('social issues'). Sampela bilon ol, em ino istap lon sait lon Esso lon lukautim. Dispela kain istap lon han bilon Gavman, na ol Papa Giraun, na ol igo lon hap olsem lon: sherim lon 'benefits'; olgeta sevis wantaim rot nabaut; 'squatter settlements'; Lo na Oda.

Na tu, olsem tripela ten nain (39) plan lon lukautim peles lon pasin tumbuna ikam lon sindaun bilon ol man na 'Cultural Heritage Impact Assessment'.

Ol arapela plan we Esso bai wokim (olsem 'commitments') em ol bai kam insait lon wan wan plan bilon ol:

- Olgeta pasin tumbuna.
- Muvim haus/ples, rot, na baim kompenseisen.
- Painim wok wantaim 'training'.
- Bihainim pasin lon PNG (i.e., 'National content').
- Toksave, igo lon ples klia.
- Wei lon lukautim sait lon sekiriti.
- Kominiti, ol wok man, 'health, na seifti.

Esso bai givim olgeta lukautim ('management') plan bilon em taim ol 'engineering design' na 'construction planning' step ol ikamap, we olgeta 'management plans' bai gat inap

infomeisen. Dispela bai go insait lon 'contract' lon husat ol 'contractors' we Esso bai pulim ikam insait lon projekt. Em olsem, 'contractors' ken bihainim dispela wan wan 'management plan' olsem lo. Bai igat olsem lo lon: painim aut wanem kain ron/trabel bin kamap; givim 'training'; kamautim ol liklik infomeisen lon kain kain wok; givim piksa lon hau ol wokman stap lon hapsait lon 'project's social, security, environment na safety team'; ol wokman ('staffing'), wei lon lukautim moni ('budgets') na pawa lon bosim na wokim ripot lon lukautim moni; wokim kain kain ripot ('reporting procedures'); lukautim ol lo lon wokim projekt wok, na bihainim wan wan lo, 'management plan', 'mitigation measures', nabaut; lukatim sait lon kamapim gutpela wok ('quality assurance and control'); na sekim klostu klostu olgeta wok, na infomeisen lon pastaim ripot lon EIS - istret o nogat.

Sapos sampela samting ikamap na, bihain 'construction' bai stat, dispela EIS ripot bai gat sampela moa nupela stadi we ol bai kamautim sampela moa infomeisen, we em bai halivim wok lon statim plan lon lukautim wan wan wok ('mitigation measures') wantaim EIS lon sekim ol 'impacts' ibin skelim bipo. Dispela wok em ol ikolim 'baseline monitoring program' we em bai bigpela liklik lon lukluk lon olgeta 'management plans' wantaim 'review' lon EIS, we ol imas bihainim. Sapos nogat, nogut projekt bai no nap go het.