



**FRIEDA RIVER**

Frieda River Limited

## **Sepik Developmen Projek**

('Sepik Development Project')

## Envaironmentol Impek Statmen

('Environmental Impact Statement')

### Buk A – Ekseketiv Samari

('Executive Summary')

SDP-6-A-00-01-T-084-002







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Usait em papa bilong dispela buk

#### **Frieda River Limited**

Usait raitim na wokim dispela buk

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<b>Hamas taim ol wokim dispela buk</b>	<b>Wanwan taim ol wokim dispela buk em minim wanem</b>	<b>Mun na Yia</b>	<b>Nem bilong man i givim tok orait</b>
V1	Nambawan taim papa bilong buk i lukim	June 2018	Daniel Moriarty
V2	Nambatu taim papa bilong buk i lukim	August 2018	Daniel Moriarty
V3	Papa bilong buk i givim laspela tok orait long dispela buk	September 2018	Daniel Moriarty
V4	Papa bilong buk i re re long givim buk igo long gavaman	November 2018	Daniel Moriarty

# IMPOTEN TOKSAVE

## Dispela em wanem kain dokumen

Coffey i bin wokim dispela Sepik Developmen Projek Envairementol Impek Statmen (EIS) bilong Frieda River Limited insait long stron na position blo em olsem Meneja bilong Frieda River Joint Venture na wankain tu lo makm ol narapela joint venture wok bung bilong Frieda River Limited na Highlands Frieda Limited, long kamapim dispela Sepik Developmen Projek insait long Papua Niugini.

Wanwan sapta bilong dispela EIS ripot em i impoten moa long wanem em i givim stron long olgeta narapela hap bilong dspela ripot. Olgeta hap bilong dspela ripot imas ridim gut. Husait em i lukim na ridim dispela EIS gut em i tok klia olsem em i kisim klia tingting na wanbel long displa ol toktok, diskleimas na wok mak ol i givim insait long dispela 'Impoten Notis'. Husait i ridim dispela ripot em yet i mas skelim wanem kain hevi em ba bungim, na i noken putim tingting strong antap long dispela ripot long skelim tingting lo makim wanem kain hevi.

## Risponsibiliti bilong ol infomesen

Long sampela taim Frieda River Limited i save relai long data na ol narapela infomesen na edvais bilong ol ted pati ogenaisesen i save givim long em. Ol gutpela tingting na ki ol infomesen we ol ekspet o ol save man meri i givim mipela harim na bihainim na ol dispela infomesen i kamapim dispela sapta na ol i stap insait long dispela sapta.

## Deit bilong Ripot

Deit bilong ripot em dei 7 bilong mun Novemba long yia 2018, em dispela deit em ol i raitim na pinis wok bilong ripot.

## Diskleima stetmen i kamapim pas toktok

Dispela infomesen stap insait long dispela EIS i sidaun antap long ol infomesen istap ples klia long public, ol save ol i mekim na kamapim long ol yet, ol save ol i kisim long ol arapela konsaltens na ol narapela infomesen ol i bungim long ol narapela rot. Long ol hap we ol i tok stret long ol infomesen ol i kisim na husait givim, nogat wanpela lain i ken makim as bilong wanpela hap tasol we ol i bungim infomesen na tu ol tingting ol i tokaut insait long dispela EIS, em i stap long tingting na wanem skel save ol igat insait yet na tu ol i mekim tok bihanim tingting na save ol gat long dispela taim yet tasol. Nogat pasim tok or makim maus tok ken kamap long kamap bilong toktok, wanem em trupela tok, wanem em stretpela tok, wanem em olgeta toktok, wanem tok i stret wantaim nau taim or tok we i orait stret. Olsem meneja na patisipen insait long Frieda Jont Venture, Frieda River Limited i disklaimit na rausim em yet long birua or hevi (lo mak we lo i tok orait long em) lo ol bagarap, stronpela askim, long wanem na ekspens bilong olgeta kain hevi we i kamap lo rot bilong wanpela lain i yusim dispela infomesen, sapos i stret, sapos i olgeta, or sapos ol i putim strong lo dispela tok em assua stap lo dispela lain man or meri yet.

## Ifekt bilong ol sampela toktok

Taim ol i stretim ol namba sampela namba na makmak ikamap olsem pesentage, ol prais, estimat, kalkulaisen bilong ol namba na hap namba insait lo dispela EIS i ken senis. Long dispela as ol namba insait long ol sampela tables lo dispela EIS ino inap mak stret olsem 100% taim ol i kalkuletim

## Ol sats, meps na ol narapela piksa samting

Olgeta piksa, mep, o tabol i kamap insait lo EIS ol givim skul piksa tasol na ino givim trupela piksa sais blo ol haples. Tasol sapos ol i tok nogat, olgeta data antap long ol piksa, mep, na tabol i bin kamap antap lo informesen i bin stap lo pastaim ol raitim dispela EIS.

## Minerol Risos na Ore Resev

Ol infomesen na samtin insait long dispela EIS i kamap long Projek Minerol Risos na Or Risevs wok skelim na ol bin givim ripot we i wanbel wantaim stendet bilong JORC Code, 2012 Edition.

# TOKSAVE LONG HALPIM YU LONG RIDIM DISPELA ENVAIRONMENTOL IMPEK STATMEN

Dispela envaironmentol impek stetmen ol i wokim long tripela hap.

## Buk A Eksektiv Samari

Buke B	Ripot Trutru
<b>Seksen 1</b>	Chapter 1 – Introduction Chapter 2 – Viability and Purpose of the Development Chapter 3 – Policy, Legal and Administrative Framework Chapter 4 – Stakeholder Engagement Chapter 5 – Description of the Proposed Development Chapter 6 – Assessment of Alternative Development Options Chapter 7 – Description of Existing Environment
<b>Seksen 2</b>	Chapter 8 – Physical and Biological Impact Assessment Chapter 9 – Socio-Economic Impact Assessment Chapter 10 – Cumulative Impact Assessment Chapter 11 – Extreme Natural Hazards and Incidental Events Chapter 12 – Environmental and Social Management, Monitoring, Auditing and Reporting Framework Chapter 13 – Conclusion Chapter 14 – References Chapter 15 – Study Team Chapter 16 – Acknowledgements Chapter 17 – Glossary
<b>Seksen 3</b>	Attachment 1 – Environmental Management Commitments Attachment 2 – Environmental Management and Monitoring Plans <i>Frieda River Copper-Gold Project</i> <i>Frieda River Hydroelectric Project</i> <i>Sepik Infrastructure Project: Public road from Vanimo to Hotmin</i>
<b>Seksen 4</b>	Attachment 2 – Environmental Management and Monitoring Plans (cont'd) <i>Sepik Infrastructure Project: Vanimo Ocean Port</i> <i>Sepik Infrastructure Project: Green River Airport</i> <i>Sepik Power Grid Project</i> Attachment 3 – Water Quality Criteria, Guidelines and Standards Attachment 4 – EIS Guidelines and EIR Cross Reference Table

## Buk C Ol Wanwan Ripot

<b>Seksen 1</b>	Appendix 1 – Assessment of the Geochemical Characteristics of Waste Rock and Process Tailings
<b>Seksen 2</b>	Appendix 2a – Frieda River Hydroelectric Project Selection Phase Study
<b>Seksen 3</b>	Appendix 2b – Frieda River Hydroelectric Project Limnology Study, Phase 2 Appendix 3a – Frieda River Copper-Gold Project Conceptual Mine Closure Plan Appendix 3b – Frieda River Hydroelectric Project Conceptual Closure Plan Appendix 4 – Sepik Development Project Regional Groundwater Assessment
<b>Seksen 4</b>	Appendix 5 – Sediment Transport Assessment Appendix 6a – Site-wide Water Balance Appendix 6b – Site-wide Load Balance Appendix 7a – Water Quality, Sediment Quality and Aquatic Ecology Baseline Appendix 7b – Integrated Storage Facility Bioaccumulation/Biomagnification Analyses - Sepik Development Project
<b>Seksen 5</b>	Appendix 8a – Terrestrial Biodiversity Field Assessment for the Frieda River Copper-Gold Project and the Frieda River Hydroelectric Project
<b>Seksen 6</b>	Appendix 8b – Terrestrial Biodiversity Field Assessment in the May River and Upper Sepik River Catchments Appendix 8c – Terrestrial Biodiversity Impact Assessment Appendix 9 – Desktop Assessment of Commercial Forestry and Agroforestry within the Sepik Development Project Infrastructure Corridor
<b>Seksen 7</b>	Appendix 10 – Noise Impact Assessment Appendix 11 – Air Quality and Greenhouse Gas Assessment Appendix 12a – Vanimo Ocean Port Marine Ecology Baseline Study Appendix 12b – Diffuser Modelling near Vanimo Harbour for the Sepik Development Project
<b>Seksen 8</b>	Appendix 13 – Social Impact Assessment

# OL HET TOKTOK BILONG OL STORI ISTAP INSAIT LONG DISPELA PEPA

OL HET TOKTOK	viii
1. TOKTOK IGO PAS	1
1.1 Projek bai kamap olsem wanem	3
1.2 Tingting bilong kirapim Projek	3
1.3 Ol lain kampani husait bai kamapim projek	4
2. TOKTOK ANTAP LONG WANEM PROJEK BAI KAMAP NA AS TINGTING BILONG DISPELA PROJEK	7
2.1 Toktok antap long wai na Projek i laik kamap	7
2.2 Minerol Risos na Or Risev	8
2.3 Stori bilong hau ol bai kamapim Projek	8
2.4 Divelomen Skejol	12
2.5 Wei bilong skelim ol narapela rot bilong developim projek	12
2.6 Plen bilong hau main or Projek bai pas bihain	13
3. PELES WE PROJEK BAI I KAMAP LONG EN	17
3.1 Envaironmen bilong bus na graun	17
3.2 Envaironmen bilong wara	20
3.3 Sait bilong sosel na iekonomik (hau ol kominiti i sindaun)	22
4. ROT BILONG EIS	25
4.1 Rot bilong ol lo we i putim was long envaironmen na sosel	25
4.2 EIS Structure	26
5. WEI BILONG WOK BUNG WANTAIM OL STEIKHOLDA	29
5.1 Tok antap	29
5.2 Ol lo tingting we Projek i mas mekim long sait bilong bung na toktok wantaim ol steikholda	29
5.3 Ol kain wok we Projek i bin wokim long bung na toktok wantaim ol steikholda	30
5.4 Wanem i bin kamap antap long wok we Projek i bin wokim long bung na toktok wantaim ol steikholda	31
5.5 Hau wok bilong Projek bung na toktok wantaim ol steikholda bai igo yet	32
6. TOKTOK ANTAP LONG OL NOGUT SENIS NA GUTPELA SENIS WE I KEN KAMAP LONG SAIT BILONG ENVAIRONMEN NA TU LONG KOMINITI LONG SAIT BILONG SOSEL NA IKONOMIK	35
6.1 Ol benefit o gutpela bilong Projek	35
6.2 Ol bus graun na wara insait long Projek eria	37
6.3 Stadi bilong ol envaironmen bilong wara	42
6.4 Stadi bilong sosel o sindaun bilong ol kominiti na iekonomik o rot long ol kominiti save kisim moni	52
6.5 Luksave long ol narapela projek na ol hevi bilong ol we i kamap pinis o bai kamap long taim Sepik Developmen Projek kamap	57
7. WEI PROJEK BAI MENIJMEN, LUKSAVE, SKELIM NA RIPOTIM OL SAMTIN	59
7.1 Wei bilong lukautim na kontrolim	59
7.2 Wei bilong lukluk na luksave	60
7.3 Wei bilong skelim gut na toksave	61

**PIKSA FIGAS**

Piksa Figa ES1	Mep soim we Projek bai stat long Frida na i bihainim rot igo long Vanimo long Sandaun Provins	2
Piksa Figa ES2	Piksa soim ol wan wan projek ananit long Sepik Developmen Project we wok painim aut bilong envaironmen na sosel i kamap	3
Piksa Figa ES3	Mep we i soim main eria o hap we main stret bai kamap	8
Piksa Figa ES4	Mep we i soim main eria antap, na hau infrastraksa osem rot na ol wof bai sindaun long wara Frida na wara May	9
Piksa Figa ES5	Piksa we em i soim hau na ol save kamautim kopa-gol ston na rausim kopa na gol long en long kamapim kopa-gol weisan	9
Piksa Figa ES6	Skejol o plen bilong divelopim Sepik Developmen Project	13
Piksa Figa ES7	Piksa em i osem yu flai antap (olsem long balus) na lukluk daun long main eria na rot igo long main	17
Piksa Figa ES8	Hap we ol katim ol diwai long Sandaun (West Sepik) Provins long yia 2011, 2014 na 2017	19
Piksa Figa ES9	Hap long ol wara we ol save wokim stadi na kisim sempol bilong wara long infrastraksa korido	21
Piksa Figa ES10	Mep we i soim olgeta kominiti we Projek i bin wokim wok bilong steikholda engeijmen long mekim dispela EIS i kamap	30
Piksa Figa ES11	Dispela em map we i soim wanwan hap we ol bai putim was long en na kisim ol sempol bilong wara long testim	42

**TEBELS**

Tebel ES1	Namba mak bilong ol kopa-ston risos long HITEK	8
Tebel ES2	Namba mak bilong ol kopa-ston risev long HITEK long yia 2018	8
Tebel ES3	Sepik Developmen Projek EIS – Ol Wanwan Ripot bilong ol stadi i stap long Buk C	26



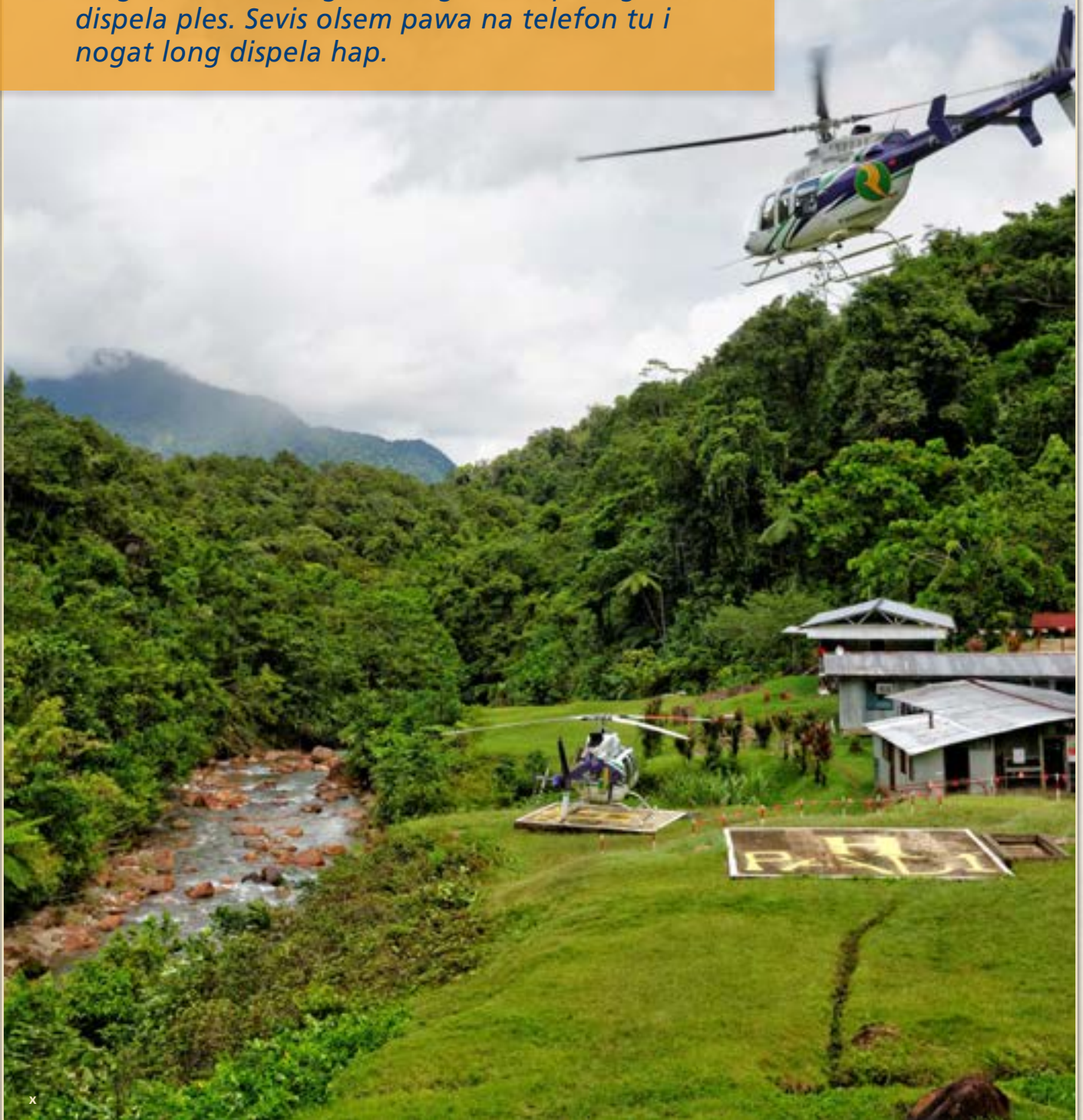
## OL HET TOKTOK

- Sepik Dvelopmen Projek bai wanpela traipela projek tru insait long ol tupela provins bilong Sepik (Sandaun na East Sepik) na long PNG tu. Long wanem Projek i lukluk long kisim ol sevis olsem rot, wof ('wharf'), ples balus na pawa igo insait long ol hap we i no stap pastaim long Sepik. Projek bihainim tingting bilong nesenol gavaman, tingting we i stap insait long bikpela go pas plen bilong kantri ol kolim PNG Development Strategic Plan 2010 to 2030.
- Insait long Sepik Dvelopmen Projek i gat fopela projek ananit long en. Tupela bilong ol dispela fopela projek em ol komesol ('commercial') projek o projek ol save wokim moni long. Nem bilong ol em Frida Riva Kopa-Gol Projek na Frida Riva Haidropawa Projek. Narapela tupela projek em ol sapatim dispela ol tupela projek na ol kolim ol Sepik Pawalain Projek na Sepik Infrastraksa Projek.
- Moni mak we projek mas tromoi long kirapim projek i sanap olsem US\$6.9 billion or PGK21.7 billion
- Namba mak o bikpela bilong giraun we projek bai karamapim long en em i 16,000 hekta ('hectares') olgeta (wanpela hekta em klostu olsem tupela soka fil). Namba wan samting we bai i karamapim mo giraun em i traipela raun wara ol kolim Integret Storis Fasiliti o ISF ('Integrated Storage Facility'). Namba tu samting we bai i karamapim bikpela giraun, em i ol traipela hol long giraun ('open-pits') ol rot insait long main ('haul roads'), na ol hap bilong putim pipia ston ('spoil dumps'). Namba tri samting we bai karamapim sampela giraun em i ol rot i lusim main na igo long Vanimo wantaim paip bilong kopa-gol weisan (dispela paip bai bihainim rot).
- Taim Projek wok i stat, insait long taim we ol kolim konstrakson ('construction) ol bai wok long sevenpela (7) krismas olgeta long sanapim main, haidropawa na ol narapela sapat samting olsem rot na wof. Long taim bilong stat wok stret, we ol kolim oporeison ('operations') Frida Riva Kopa-Gol Projek o main bai ron long tenpela tri na tripela (33) krismas olgeta na Frida Haidropawa Projek o haidropawa bai ron abrusim tenpela ten (100) krismas.
- Projek bai kamapim planti ol gutpela samting na benefit igo long dvelopmen bilong PNG. Projek bai i nidim klostu long 5,190 wok manmeri long taim we konstrakson wok igo bikpela. Na tu long taim bilong opereison we main i stat wok stret, Projek bai nidim yet 2,510 wok manmeri insait long dispel 33 krismas we main bai ron.
- Takis ('tax'), royalti ('royalty') na prodakson levi ('production levy') we bai igo long gavaman bilong PNG na ol papa giraun, bai i sanap long moni mak olsem PGK29 billion sapos yu bungim olgeta wantaim insait long dispela 33 krismas we main bai i ron long en.
- I bai gat fopela peles we Projek mas kirapim ol manmeri na movim ol igo long narapela hap long stap. Dispela ol i kolim risetelmen ('resettlement'). Projek i lukluk long risetelim klostu 1,316 manmeri insait long 194 femili inapOl toktok wantaim wanwan ples na plen bilong risetelim ol dispela peles i stat pinis na bai i gat moa toktok i kamap yet.
- Projek i bin wok nau i winim tenpela (10) krismas long wokim planti ol stadi long sait bilong envaironmen ('environment'), sindaun bilong ol kominiti long sait bilong sosel na ikononik ('socio-economic') na tu long sait bilong kastam pasin ('cultural'). Projek i wokim dispela long kamapim samting ol i kolim 'beslain' ('baseline'). Beslain em i wok painaut long wanem samting i stap nau taim, taim bifo long Projek i kirap. Na tu, insait long dispela 10 krismas, Projek i bin wokim planti bung na toktok na awenes wantaim ol stekholda ('stakeholder'). Minin bilong stekholda em man o meri husait bai i gat pat insait long Projek. Kain olsem ol kominiti arere long main, ol kominiti ol kominiti we rot bai ron long en, ol kominiti long wara Sepik, ol wanwan han bilong PNG gavaman na planti ol narapela manmeri.
- FRL bai wok stron long daunim ol bagarap long kominiti long taim projek i stap. Na tu bai i wok stron long kamapim o mikem bikpela mo yet ol gutpela ol benefit long ol kominiti long taim bilong Projek na long taim bihain. Bifo long dispela Projek bai i sanap, ol ol bai bung na toktok igomoa yet wantaim ol kominiti husait i stap arere long main, waintaim ol kominiti we rot bai ron long en, na tu wantaim ol kominiti husait i sindaun arere long wara Sepik.
- FRL bai kirapim wanpela komiti ol i kolim 'independent advisory committee'. Dispela komiti bai bungim planti ol save lain long halivim FRL long wok lukaut long sait bilong envaironmen na sidaun bilong ol pipol long sait bilong sosel na ikononik. Dispela komiti bai wok bung wantaim FRL long daunim ol envaironmen na sosel bagarap long kominiti husait i stap arere long main, long ol kominiti we rot bai ron long en, na tu long ol kominiti husait i sindaun arere long wara Sepik.



- Projek i gat tupela bikpela wei bai i daunim bagarap long wara. Nambawan wei, em olsem, Projek bai putim pipia ston ('waste rock') na pipia o teilins bilong kopa-gol weisan ('tailings') we i kamaut long haus bilong prosesin ('processing plant'), olgeta igo aninit long wara insait long wanpela traipela raun wara ol i kolim Integret Storis Fasiliti o ISF ('Integrated Storage Facility'). Dispela ISF em i traipela moa yet haidro-dem ('hydro-dam') ol i kolim Frida Riva Haidropawa Projek. Nambatu wei, em olsem, olgeta wara we i kamaut long hol bilong mainin ('pit'), Projek bai putim marasin bilong klinim dispela wara bifo ol i putim tu igo insait long ISF. Projek i no inap tromoi pipia ston na teilins igo stret insait long wara Frida o wara Sepik. Dispela em i tambu na i tambu tru.
- Wara we i save lusim wara Frida na igo insait long bikpela wara Sepik em em i mak bilong faiv pesent (5%) tasol bilong olgeta wara we i save ron insait long wara Sepik. Em minim olsem wara Sepik save kisim 5% wara tasol long wara Frida na narapela nainti faiv pesent (95%) wara i save kam long ol narapela han wara. Em minim olsem wara Frida em i no bikpela tumas taim yu skelim olgeta han wara long wara Sepik. Long taim bilong konstrakson bilong Projek bai i gat liklik moa deti i kam daun long wara Frida na go insait long wara Sepik. Tasol dispela deti i no marasin, em i giraun tasol, giraun we i save kam daun planti nau. Long taim bilong konstrakson tu, ol sip o 'barge' bai ron na dispela em ken givim liklik hevi long ol manmeri husait i pulim kanu long wara Sepik sapos yumi no lukaut gut.
- Long sait bilong wara Frida, taim Projek i stap long konstrakson, bai i gat sampela ol liklik senis i kamap long sait bilong gutpela bilong wara. Nambawan senis bai i olsem. Wara bai igo moa deti liklik bikos mak bilong giraun we i wok long was i kam daun na mikis wantaim wara, bai igo antap liklik. Dispela i ken mekim liklik ol senis long ol samting we i stap laif insait long wara Frida. Namba na planti bilong ol liklik liklik ol kumu we yu no inap lukim long ai bilong yu (ol i kolim 'microalgae') na tu long ol binatang bilong wara (ol i kolim 'benthic invertabrates') i kenigo daun liklik. Nambatu senis bai i olsem. Namba bilong ol pis we ol i save stap gut mo yet long wara we em i deti liklik bai igo antap (ol pis olsem 'bol kata' na 'java kap'). Na namba bilong ol pis we ol i no save stap tumas long wara we em i deti liklik bai igo daun. Tasol taim konstrakson i pinis na ol i pinisim banis bilong ISF o haidro dem, long dispela taim ISF bai stopim na holim olgeta giraun we bai kam daun. Dispela bai mekim wara Frida i ron moa klin long we nau i stap.
- Long sait tu long wara Frida, mak bilong ol metol insait long wara Frida olsem 'aluminium' na kopa ('copper') we i stap pinis na mikis insait long wara i keni no go antap liklik long taim Projek i kirap. Tasol mak em baigo antap long en em i noinap bagarapim ol pis, o binatang o kumu o ol enimol we i stap insait long wara.
- Ol wok painimaut bilong gutpela bilong wara ol kolim wara kwaliti ('water quality') na helt bilong ol pipol i soim olsem ol wara we bai kam aut long ISF i no inap bagarapim ol manmeri stap arere long wara Frida na wara Sepik. Em minim olsem, wara we i kam daun long ISF em bai klin inap we ol manmeri ken usim wara Frida yet.
- Long sait bilong lukautim environmen ('environment') na sidaun bilong ol pipol long sosel na ikonmik ('socio-economic'), Projek i kamapim wanpela menismen plen ('management plan') we i tok kilia long planti wei long hau bai Projek i wokim dispela lukaut. Dispela ol i kolim 'environment and socio-economic management strategies' na i stap insait long pepa we ol i kolim 'Project Environmental Management and Monitoring Plan'. Dispela menismen plen em i stap ananit long ol bikpela tok promis o stended ('standards') we PanAust i save bihainim long ol narapela peles na insait long wol, we PanAust i kamap wanpela lida long dispela sait. Na tu dispela menismen plen em i tok kilia long olgeta wei long lukaut na tu olgeta tok promis bilong kampani Frieda River Limited (FRL) long sait bilong environmen, sosel na ikonmik.

*Frida Riva Kopa-Gol Projek na Frida Riva Haidropawa Projek bai i kamap long wanpela hap we i stap long boda bilong tupela Sandaun (West Sepik) na East Sepik Provins bilong PNG. Dispela hap em bik bus stret, igat planti maunten, na i save ren planti tumas. Dispela hap tu i nogat planti man i save stap long en. Na tu i nogat rot i go kamap long dispela ples. Sevis olsem pawa na telefon tu i nogat long dispela hap.*





# 1. TOKTOK IGO PAS

## 1.1 Projek bai kamap olsem wanem

Frida River Limited (FRL) i wok long go pas long kirapim wanpela projek long not wes sait bilong Papua Niugini (PNG) na dispela projek ol kolim Sepik Dvelopmen Projek. Dispela projek em wanpela traipela projek tru na em bai karamapim tupela distrik bilong Sandaun Provins (em Vanimo-Grin distrik na Telefomin distrik) na wanpela distrik bilong East Sepik Provins (em Ambunit distrik) insait long PNG.

Dispela projek bihainim tingting bilong nesonal gavaman insait long plen ol kolim PNG Dvelopmen Stratijik Plen 2010 igo long 2030. Dispela plen i toktok long karim sevis olsem rot na pawa igo insait long ol niupela eria long kantri pastaim long via 2030. Sepik Dvelopmen Projek lukluk long dispela plen na kamap wantaim fopela projek aninit long en, na nem bilong ol em i:

- Frida Riva Kopa-Gol Projek
- Frida Riva Haidropawa Projek
- Sepik Infrastraksa Projek
- Sepik Pawalain Projek

Sotpela stori long wanwan ol dispela projek istap aninit long Seksen 1.1.1 go long Seksen 1.1.4. Piksa Figa ES1 na ES2 soim ol wanwan projek aninit long Sepik Dvelopmen Projek we wok painim aut bilong envaironmen na sosel i kamap.

FRL bai igo pas long bosim na divelopim Frida Riva Kopa-Gol Projek. Ol narapela tripela projek bai stap aninit long lukaut bilong ol narapela kampani we bihain bai ol i makim.

### 1.1.1 Frida Riva Kopa-Gol Projek

Frida Riva Kopa-Gol Projek i stap long as bilong ol maunten we ol i ron long senta bilong meinlen PNG. Main stret bai i kamap long wanpela hap we i stap long boda bilong tupela Sandaun (West Sepik) na East Sepik Provins. Klostu olsem 200 kilomita ('kilometres') long wei long not kos (north coast) bilong Sandaun Provins (peles Aitape) na klostu 50 kilomita antap long wara Sepik. Dispela hap em bik bus stret, igat planti maunten, na i save ren planti tumas. Dispela hap tu i nogat planti man i save stap long en. Na tu i nogat rot igo kamap long dispela peles. Sevis olsem pawa na telefon tu i nogat long dispela hap.

Long dispela projek, ol bai brukim giraun na opim wanpela traipela raunpela hol igo daun insait long giraun, ol i kolim 'open pit'. Ol masin we ol i wok antap long giraun bai i brukim giraun na kisim ol ston kopa na gol igo long wanpela prosesin haus ol i kolim 'communitation and flotation process plant'. Long dispela prosesin

haus, ol bai yusim ol marasin na ol bikpela tenk long rausim kopa na gol long ston, long kamapim kopa-gol weisan. Dispela weisan bai ron gen long wanpela longpela paip klostu 325 kilomita bihainim rot long Hotmin igo antap long niupela Vanimo wof. Long Vanimo sip bris ol bai salim dispela weisan igo autsait long PNG long ol bikpela sip igo long ol peles we ol i ken kukim dispela weisan long kamapim trutru kopa na gol.

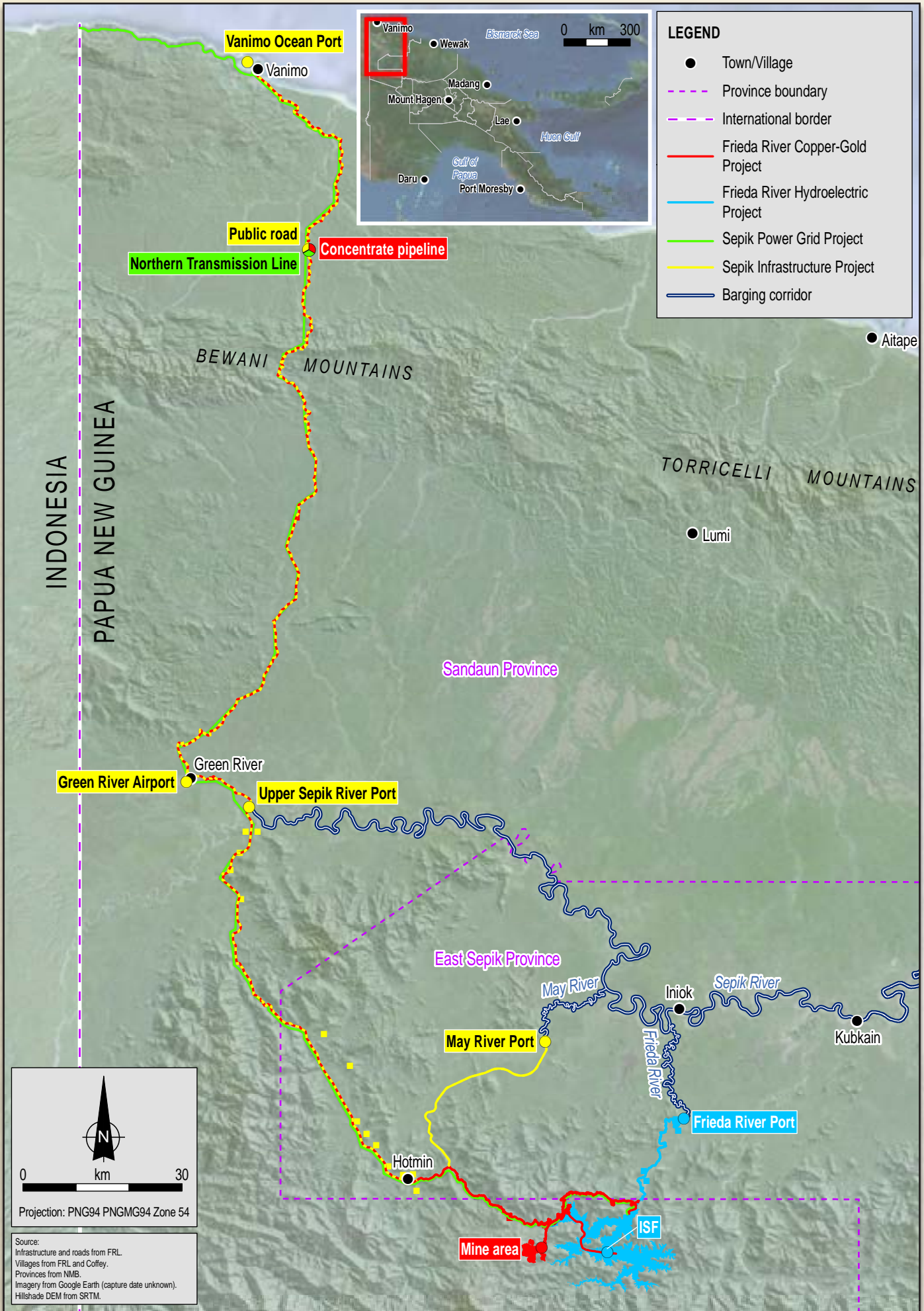
Taim Projek wok i stat, long taim bilong konstrakson ('construction') ol bai wok long sevenpela (7) krismas olgeta long sanapim main. Bihain long dispela, main bai igo insait long prodakson ('production') o ol i kolim oporeison ('operations') we i stat nau long wokim kopa-gol weisan. Oporeison bai i ron long tripela tenpela na tripela (33) krismas olgeta.

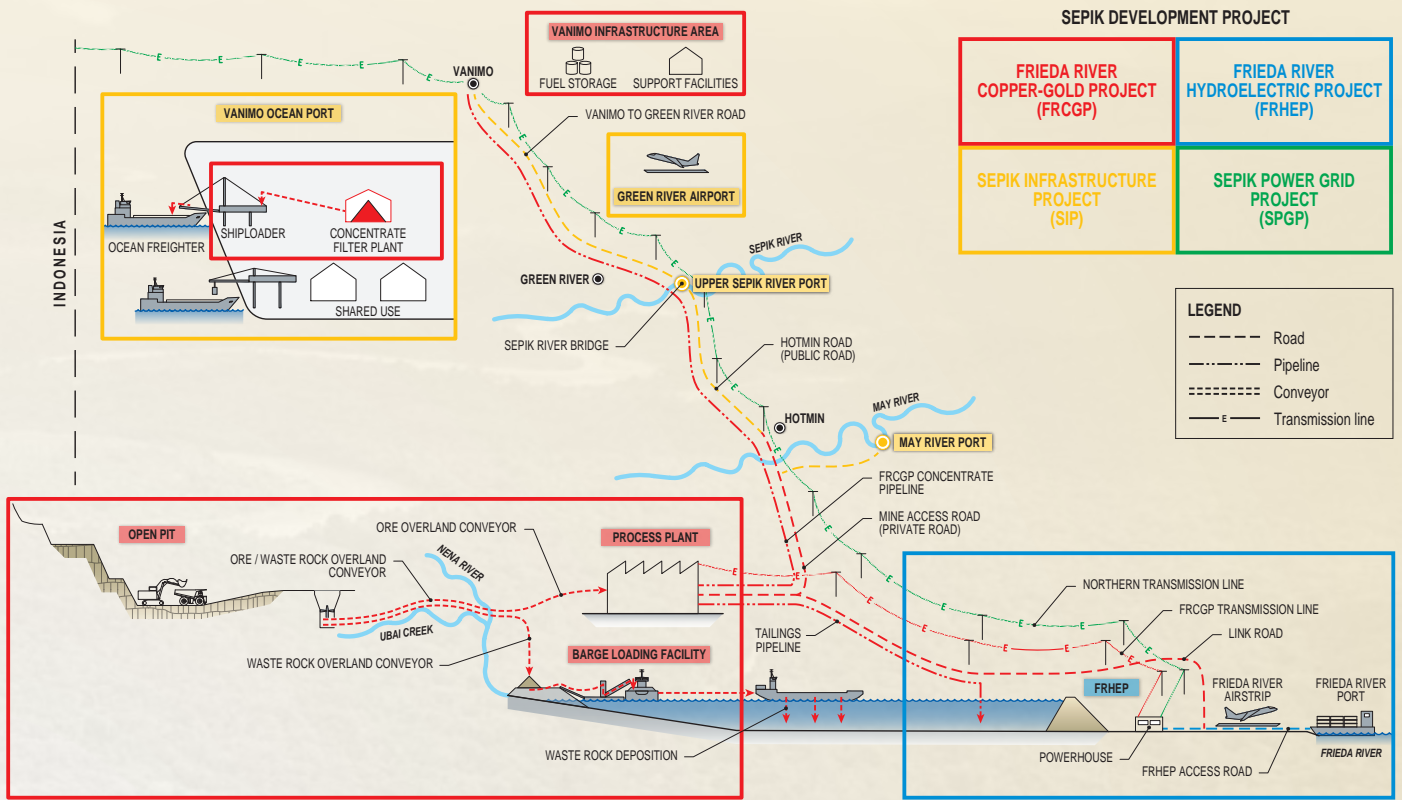
### 1.1.2 Frida Riva Haidropawa Projek

Frida Riva Haidropawa Projek bai i gat wanpela traipela dem (bikpela bilong banis bilong dem em olsem tenpela soka fil na antap bilong em klostu olsem fopela mobail tawa). Wanpela traipela raunwara ba kamap baksait long dem (bikpela bilong em bai wankain olsem Chambri raunwara) na dispela dem na raunwara bai kamap long hap we wara Frida, Nena na Niar save bung. Ananit long dem bai i gat wanpela bikpela pawa haus we inap long kampim 600 megawat (MW) pawa. Tasol long stat bilong en, em bai kamapim klostu 490 MW pawa. Frida Riva Kopa-Gol Projek bai kisim pawa bilong em long dispela haidropawa projek long wanpela 22 kilomita pawa lain we i ron lusim pawa haus na go antap long main.

Main bai putim pipia ston ('waste rock') na pipia weisan bilong kopa-gol ol kolim teilins ('tailings') we i kamaut long haus bilong prosesin, olgeta igo aninit long dispela raunwara bilong Frida Riva Haidropawa Projek o dem. Hap bilong dem we ol bai putim teilins na pipia ston ol i save kolim Integret Storis Fasiliti o ISF ('Integrated Storage Facility').

Dispela haidropawa projek ol bai wokim long faipela (5) krismas na em bai wokim pawa klostu long 100 krismas.





Piksa Figa ES2 Piksa soim ol wan wan projek ananit long Sepik Developmen Project we wok painim aut bilong envaironmen na sosel i kamap

### 1.1.3 Sepik Infrastraksa Projek

Sepik Infrastraksa Projek em wanpela sapot projek we em i lukluk long stretim rot long Vanimo igo long Grin Riva na wokim niupela rot long Grin Riva igo long Hotmin. Displea rot bai olgeta manmeri ken kam igo long em olsem em bai pablik rot. Tasol rot long Hotmin go long main na haidropawa projek eria em bai rot bilong kampani tasol.

Aninit long dispela projek tu bai ol wokim niupela ples balus long Grin Riva na niupela wof long Vanimo ol kolim 'Vanimo Ocean Port'.

### 1.1.4 Sepik Pawalain Projek

Frida Riva Haidropawa Projek bai wokim pawa inap long sevisim main na i bai gat bikpela moa pawa i stap nating. Olsem na Sepik Pawalain Projek i lukluk long kisim dispela moa pawa na salim igo long ol narapela kastoma insait long PNG na long hapsait long boda long kantri Indonisa ('Indonesia').

## 1.2 Tingting bilong kirapim Projek

Fes taim tru ol i bin, painim kopa long Frida Riva em i bin long yia 1960s, tasol luksave stret bilong yusim dispela kopa long rot bilong kamapim na wokim moni em bin long 1970s. Ol i bin stat wok painim aut long sait bilong envaironmen na sosol beislain long 1979. Long dispela taim PNG gavaman na Frieda Copper Pty Ltd i bin bung na kamapim wanpela tim long lukluk long dispela wok. Long dispela taim na i kam inap nau, planti kampani i bin karim aut ol eksplorasen na wok painim aut o stadi long yia igo pinis long taim bilong 1980s na 1990s na kam klostu olsem yia 2007 i kam inap long nau.

Ol dispela ol wok painim aut long ol planti yia i kam inap nau, em i mekim na yumi i gat planti painim aut pinis, planti save na planti ripot long sait bilong envaironmen na wei kominiti i save stap long hap we projek bai kamap. Planti bilong ol dispela wok painim aut we husait ol i bin karim aut bipo em i gutpela yet long nau projek na i bin halivim dispela Envaironmen Impek Stetment

o EIS ('Environmental Impact Statement'). Antap long dispela ol stadi bilong bifo, i bin i gat niupela ol wok painim aut ken, as bilong dispela niupela stadi em long kamapim niupela painim aut o save na painaut long wanem ol niupela senis i kamap long olupela painim aut.

*Envaironmen Ekt 2000 o Envaironmen Ekt (Environment Act 2000)* em mama lo we i save lukautim wok long sait bilong ol envaironmen, sosel na ikonmik birua we emi inap long kirap taim niupela ol mainin projek i kamap long PNG. Ananit long *Envaironmen Ekt*, dispela Projek bai kirapim ol wok we ol i kolim level 2 na 3 wok ('activity'). Level 2 na 3 emi emi minim olsem wok we bai kamap emi i mas gat bikpela luksave long sati bilong envaironmen, sosel na ikonmik. Ol han bilong *Envaironmen Ekt* we Projek mas lukluk long en emi sub-category 14.2, 17.1, 19.1 and 19.2. Dispela em i minin olsem, wok we Projek bai wokim i stap aninit long ol 'prescribed activities'. Bikos long dispela, *Envaironmen Ekt* i tok Projek i mas submitim o putim wanpela eplikeison ol i kolim Envaironmen Impek Stetment o EIS. Dispela eplikeison i mas go long han bilong wanpela gavaman opis ol i kolim Konsevesen na Envaironmen Proteksen Atoroti o CEPA ('Conservation and Environment Protection Authority').

FRL i bin kisim wanpela ovasis kampani ol kolim Coffey, long go pas na wokim EIS. Coffey i bin go pas long mekim olgeta envaironmen wok painim aut bilong Projek, long wei long *Envaironmen Ekt* i laikim. Ol planti wok painim aut i kamap pinis na ol ripot bilong ol dispela ol wok i sapotim o halivim dispela EIS. Yu ken painim dispela ol ripot na ol narapela pepa wok long ol dispela wok painim aut long website o intanet bilong PanAust, husait em i mama kampani bilong FRL.

Dispela pepa nau yu wok long ridim em i pepa we ol kolim Eksekativ Samari ('Executive Summary'). Dispela pepa em i sotpela toktok long kisim na bungim ol bikpela het toktok tasol bilong EIS. EIS trutru em i longpela na i gat planti planti toktok mo. Na tu, dispela Eksekativ Samari em i mekim isi na kilia ol toktok bilong

EIS. EIS trutru em i gat planti stronpela na hatpela toktok, toktok we ol save manmeri bilong wokim ol dispela wok tasol i save long en. Na tu, dispela Esekativ Samari ol i raitim long Tok Inglis ('English') na Tok Pisin wantaim. EIS trutru ol i raitim long Tok Inglis tasol. Dispela Eksekativ Samari em i tok kilia long ol dispela samting:

- Wanem kain ol lain bai wok bung long kirapim Projek, wanem kain ol wok bai ol i kamapim, na wanem ol as bilong ol dispela wok.
- Insait long Projek eria, wanem graun, bus, wara na ol narapela samting i stap, na tu wei bilong hau ol kominiti i save stap long sait bilong sosel, iekonomik na kalsa.
- Wanem em i wei o rot bilong wokim EIS na wei bilong wok bung na toktok long ol manmeri na ol steikholda we ol ken save long Projek.
- Tok aut kilia long olgeta painim aut Projek i painim aut, na tok kilia long dispela painim aut long sait bilong wanem senis bai i kamap long sait bilong envaironmen, sosel, iekonomik na kalsa taim Projek i kamap.
- Tok kilia long wanem ol menismen wok o wok bilong lukaut o wok banis we Projek bai i wokim long sait bilong luksave long envaironmen na sosel, na tok aut long hau bai Projek i putim was ('monitoring') antap long dispela wok, na hau bai Projek i sekim na inapim dispela wok ('auditing') na tu hau bai Projek i givim toksave o ripot bilong dispela wok ('reporting').

Long dei 24 bilong mun Jun long yia 2016, Projek em i givim nambawan Spesol Mainin Lis o SML ('Special Mining Lease') eplikeison o pepa bilong kisim tok orait, igo pinis long Minerol Risos Atoroti or MRA ('Mineral Resource Authority'). Bikos Projek i senis, FRL bai givim nambatu SML eplikeison pastaim long mun Disemba 2018. Dispela eplikeison em bilong kisim laisens bilong mainin na ol narapela wok long sapotim mainin. Na dispela EIS em i nambatu eplikeison bai igo long CEPA. Em long kisim laisens bilong envaironmen na sosel.

### 1.3 Ol lain kampani husait bai kamapim projek

Kampani ol kolim Frida Riva Join Vensa ('Frieda River Joint Venture') baigo pas long developim Frida Riva Kopa-Gol Projek. Frida Riva Join Vensa emi wanpela join vensa bilong tupela kampani ken, Frida Riva Ltd (FRL) na Highlands Frida Limited. FRL em i wanpela pikinini kampani bilong mama kampani bilong kampani PanAust Ltd. FRL bai igo pas long bosim na lukautim Frida Riva Kopa-Gol luka. Ol narapela tripela projek bai stap aninit long lukaut bilong ol narapela kampani bihain bai ol i makim.

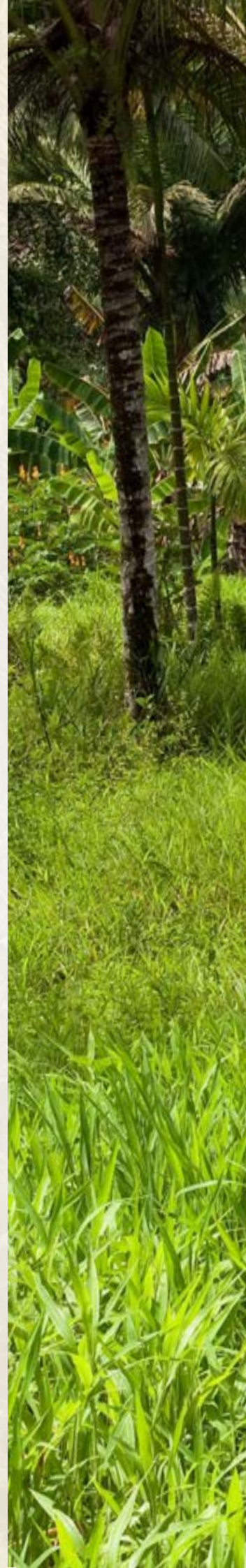
Kampani PanAust, emi wanpela kampani ol i kamapim na registerim, long taim yet, long kantri Ostrelia ('Australia'). Long sampela yia igo pinis, wanpela Saina ('Chinese') kampani ol i kolim

Guangdong Rising H.K (Holding) Limited, em i bin kirap na i baim aut PanAust na nau em i kamap mama kampani bilong PanAust. Guangdong Rising H.K. (Holding) Limited em tu em i wanpela pikinini kampani bilong wanpela bikpela kampani mo yet. Dispela mama kampani ol i kolim Guangdong Rising Assets Management Co, Ltd (GRAM). GRAM em wanpela kampani bilong gavaman long Saina. GRAM em i save ron aninit long lukaut bilong supavisen na administresen komisen bilong pipol's gavaman bilong Guangdong Provins bilong China ('State-owned Assets Supervision and Administration Commission, the People's Government of the Guangdong Province in China').

PanAust em wanpela kampani we i wok pinis long mekim gold na kopa insait long kantri ol kolim Laos. Na tu, PanAust i wok tu long traime na kamapim sampela ol narapela niupela mainin developmen o projek long ol kantri Laos, PNG, Myanmar na Chile. PanAust em i gat tupela main pinis we ol i save mekim win moni bilong kampani. Nambawan em i Phu Kham Copper-Gold Operation. Nambatu em i Ban Houayxaigne Silver Operation. Tupela wantaim i stap insait long wanpela hap giraun ol kolim Phu Bia Contract Area, insait long kantri Laos. Bikpela bilong dispela hap giraun em olsem 2,600 skwe-kilomita ('square-kilometre').

PanAust em wanpela kampani we i lida insait long wol long wei bilong lukautim envaironmen. PanAust i bin kisim sampela prais na luksave long wei bilong em long ronim ol sasteinabiliti progrem ('sustainability programs') bilong em. Minin bilong 'sasteinabiliti' em olsem hau long lukatim envaironmen na pipol we ol ken stap nau na stap taim bihain. Ol main na oporeison bilong PanAust long Laos i bin develop gut na long nau taim, i ron gut yet. Dispela em i soim olsem PanAust em i fit long kamapim o developim na tu ronim o operetim ol mainin projek long kain peles olsem Frida. Kain peles we i longwei long taun, kain peles we i insait tru long bik bus, kain peles we i gat planti maunten, kain peles we i save gat planti ren, kain peles we i stap long kantri we i no develop gut yet na kain peles we i save gat ol asples i stap klostu long main.

Narapela join vensa patna, Highlands Pacific Limited, em wanpela PNG kampani ol i registerim na kirapim long hia. Na tu, nem bilong Highlands i stap tu o i rejista tu long bikpela bisnis ol i kolim Australian Securities Exchange (ASX) long kantri Ostrelia. Highlands em i wok na i oporeit long PNG long mo olsem tupela-ten (20) krismas olgeta na i gat bikpela save long wok mainin. Insait long dispela krismas, Highlands i bin wokim planti kain mainin wok. I wokim wok painim aut bilong mainin, i wokim wok bilong sanapim niupela main na tu i wokim wok bilong prodakson o mekim ol gol.



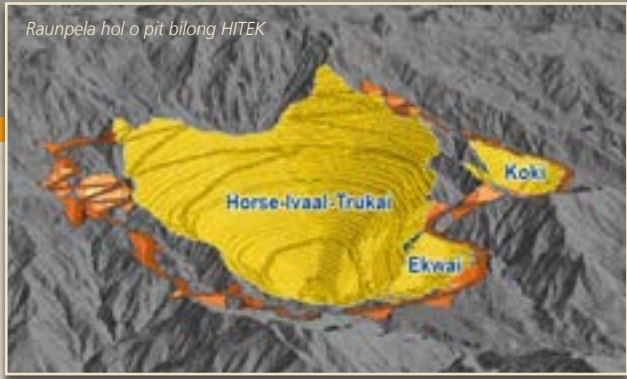


*Dispela projek em i go bek longpela taim na planti kampani i bin kam i go long karim aut ol eksplereison wok painimaut na ol narapela stadi long taim bilong 1980s na 1990s na tu i kam klostu olsem yia 2007 i kam inap long nau.*

*Frida Riva Kopa-Gol Projek bai i sanap antap long developim o wokim main long risos ('resource') o diposit ('deposit') ol i kolim HITEK ('Horse-Ivaal-Trukai, Ekwai na Koki (HITEK) porphyry copper-gold deposit'). HITEK em i bikpela risos tumas na i stap wankain olsem ol narapela bikpela kopa risos insait long wol.*







## 2. TOKTOK ANTAP LONG WANEM PROJEK BAI KAMAP NA AS TINGTING BILONG DISPELA PROJEK

### 2.1 Toktok antap long wai na Projek i laik kamap

Projek Fisabiliti Stadi ('Project feasibility study') em i wanpela bikpela pepa we em i givim olgeta plen na tingting long hau bai ol i sanapim o developim na tu hau bai ol i ronim o oporeitim dispela Projek. Fisabiliti Stadi i painim aut olsem long dispela Projek long kamap em mas gat gupela win moni bilong em, ol wok painim aut bilong enjanirin ('engineering') mas gupela, na tu ol wok painim aut long environmen na sosel o hau ol kominiti i sindaun i mas gupela. Na sapos wok painim aut na Fisabiliti Stadi i soim olsem dispela olgeta ol samting i ken kamap gut em bai Projek i ken kamap. Dispela Projek bai kamapim planti wok bilong ol manmeri bilong PNG na tu em bai pulim foren invesmen ('foreign investment') o moni bilong ol narapela kantri i kam insait long PNG. Projek bai kamap antap long stron bilong developim risos ('resource') o diposit ('deposit') ol i kolim 'Horse-Ivaal-Trukai, Ekwai na Koki (HITEK) porphyry copper-gold deposit' long ples Frida. Minin bilong risos of diposit em i hap we kopa-gol ston i sidaun insait stret long giraun.

Dispela Projek bai no inap kamap sapos wanpela bilong ol fopela projek (Frida Riva Kopa-Gol Projek, Frida Haidropawa Projek, Sepik Infrastraksa Projek na Sepik Pawalain Projek) i no kamap. Fopela projek i mas kamap wantaim o olsem wanwan projek i nidim old narapela projek sapos em laik ron gut. Olsem sapos yu laik kirapim haidropawa projek yu mas kirapim main wantaim long wanem main emi nambawan kastoma na bai baim pawa bilong yu. Wankain olsem sapos yu laik kirapim main yu mas kiripim haidropawa wantaim long wanem main mas gat ples bilong kisim pawa. Wankain tu olsem sapos yu kirapim main na haidropawa yu mas gat rot na wof long salim kopa na gol long ol kastoma na yu mas gat pawalain long pulim pawa igo long ol kastoma.

Long 2016, FRL bin givim wanpela Fisabiliti Stadi pinis igo long han bilong gavaman na MRA wantaim eplikeison bilong Spesol Mainin Lis (SML). Dispela i bin kamap long mun Jun 2016. 2016 EIS bin lukluk long 2016 Fisabiliti Stadi na i bin tok kilia long wanem ol environmen, sosel na ikonmik samting bai kamap bikos long dispela Fisabiliti Stadi. Tasol ol i bin apdaitim o wokim sampela moa wok painim aut long dispela Fisabiliti Stadi long yia 2017 na givim

ken long MRA. Na long yia 2018 FRL apdaitim ken Fisibiliti Stadi antap long niupela tingting long kirapim Sepik Developmen Projek. Bikpela bilong moni we Projek bai troimoi antap long sanapim main konstraksonprodaksonem i sanap klostu moni mak olsem US\$2.8 billion.

Dispela eria we Projek bai stap em i bik bus stret na i nogat sevis tru, olsem na Projek bai troimoi bikpela moni tru long wokim rot, wokim pawa na ol narapela sapot sevis pastaim long main bai kamap. Olsem na tingting bilong wokim niupela rot, ples balus na wof na tu wokim haidropawa we i no main tasol bai usim em i moa gupela long developim ol bik bus eria insait long Sepik. Olsem na Projek i no lukluk tasol long wokim mainin tasol em tingting long kisim ol benifit we bai stap oltaim long dispela eria.

As tingting bilong Projek em long kirapim main na haidropawa projek. Wantaim dispela tupela projek ol infrastraksa sevis olsem rot, ples balus na wof tu bai developim dispela hap we developmen i no go long yet long PNG. Dispela olgeta samting mas kamap wantaim wok we i ron bihainim o i noken abrusim ol lo bilong PNG, lo bilong PanAust we ol kolim 'Group Sustainability Policy na Sustainability Standards' na ol narapela ol lo i stap we i karamapim olgeta kantri. FRL save sanap antap long ol stendet o lo we i stap antap tru long sait bilong environmen performens ('environmental performance') o sait bilong lukautim environmen, long wok bung wantaim ol kominiti, na kamapim sastainabal developmen o developmen we em save skelim sait bilong environmen, sait bilong sosel na sait bilong ikonmi.

Plen we Projek i wokim em bai wokim rot bilong kamapim ol bikpela bisnis na halivim kantri long develop. Plen we Projek i gat em i bihainim bikpela go pas toktok o lo o developmen plen bilong gavaman bilong PNG. Kain go pas toktok o developmen plen olsem 'Papua New Guinea Development Strategic Plan (PNGSDP)'. Na kain toktok o development plen bilong PNG ol kolim 'Vision 2050' we em i tokaut long driman bilong nesenol gavaman long PNG i mas stap insait long ol nambawan 50 kantri insait long wol long wanpela pepa ol kolim 'United Nations Human Development Index' bifo long yia 2050.

Olsem pastaim yumi tok, Projek em bai developim main na dispela em i nambawan tingting tu bilong nesenol gavaman. Tasol developmen plen bilong kantri noi toktok strong tu olsem kantri i noken sainap stron tasol long moni we em i kam long mainin na oil na ges tasol. Tingting bilong nesenol gavaman em olsem kantri i mas senis na lukluk long opim ol niupela eria insait long kantri wantaim ol niupela rot, pawalain, telefon, ples balus na wof. Dispela ol kain sevis bai wokim na ol kainkain kampani bai hamamas long troimoi moni bilong ol long developim na givim wok long ol manmeri bilong ol dispela ol hap. Dispela Projek i sanap na bihainim dispela kain tingting.

Sepik Pawalain Projek we Projek tingting long wokim em bihainim ikonmik boda korido bilong Westen, Sauten Hailens na Sandaun provins we developmen plen bilong nesenol gavaman i toktok long pinis en. Tingting bilong Projek em long haidropawa na pawalain projek bai kamapim pawa long not we eria bilong PNG na taim main i pas dispela pawa bai stap yet. Developmen bilong boda korido infrastraksa olsem rot, pawa, ples balus na wof bai halivim ol narapela kampani olsem ol oil palm oporeison. Pawa na rot em ol bikpela sevis we ol save karim developmen i kam long ol kantri we ol i no develop yet. Dispela ikonmik korido bai strongim wok bung wantaim gavaman bilong PNG na Indonesia.

## 2.2 Minerol Risos na Or Risev

Frida Riva Kopa-Gol Projek sanap antap long rausim kopa-gol ston long risos o diposit ol i kolim HITEK. Ol planti narapela kampani ol i bin statim wok painim aut long kopa-gol ston long HITEK long 1960s yet i kam inap nau. Na nau FRL tu em bin wokim dispela wok painim aut ol kolim eksplorseison ('exploration') na dril ('drilling'). Antap long olgeta dispela wok bilong planti kampani, nau ol i kamap wantaim ol namba mak bilong haumas risos i stap long HITEK. Tebel ES1 ('Table ES1') em i soim dispela namba. Tebel ES1 em i bihainim wei bilong ripotim risos o diposit ol i kolim 'Ore Reserves Committee Code (JORC Code, 2012)'. Dispela wei long ripotim diposit save katim kopa-gol ston igo long tripela kain. Meisa ('Measured') i minim olsem ol i save gut tru long dispela kopa-gol ston i stap na bikpela bilong en. 'Indiket' ('Indicated') em i minim olsem ol save long dispela kopa-gol tasol i gat sampela wok painim aut yet long wokim. Na 'Infe' ('Inferred') em i minim ol gat bikpela painim aut wok long wokim pastaim bifo ol ken save long bikpela bilong kopa-gol ston. Sapos yu bugim ol Meisa, Indiket na Infe deposit bilong HITEK risos o bikpela bilong kopa-gol ston i stap, HITEK i stap long mak olsem 2,640 milion tan ('million tonnes') (Mt) we greid o gutpela bilong dispela ston i stap olsem 0.44% kopa na 0.23 grems long wanpela tan ('grams per ton') (g/t) gol. Bikpela bilong diposit na gutpela bilong greid i mekim na Projek i stap insait long namba 10 insait long wol long sait bilong kopa-gol diposit we ol no developim yet

Tebel ES1 Namba mak bilong ol kopa-ston risos long HITEK

Class	Tonnes (millions)	Copper Grade (%)	Gold Grade (g/t)	Silver Grade (g/t)
Measured	620	0.53	0.30	0.82
Indicated	1,240	0.44	0.22	0.75
Inferred	780	0.35	0.18	0.83
<b>Total*</b>	<b>2,640</b>	<b>0.44</b>	<b>0.23</b>	<b>0.79</b>

\*We I winim 0.2% kopa

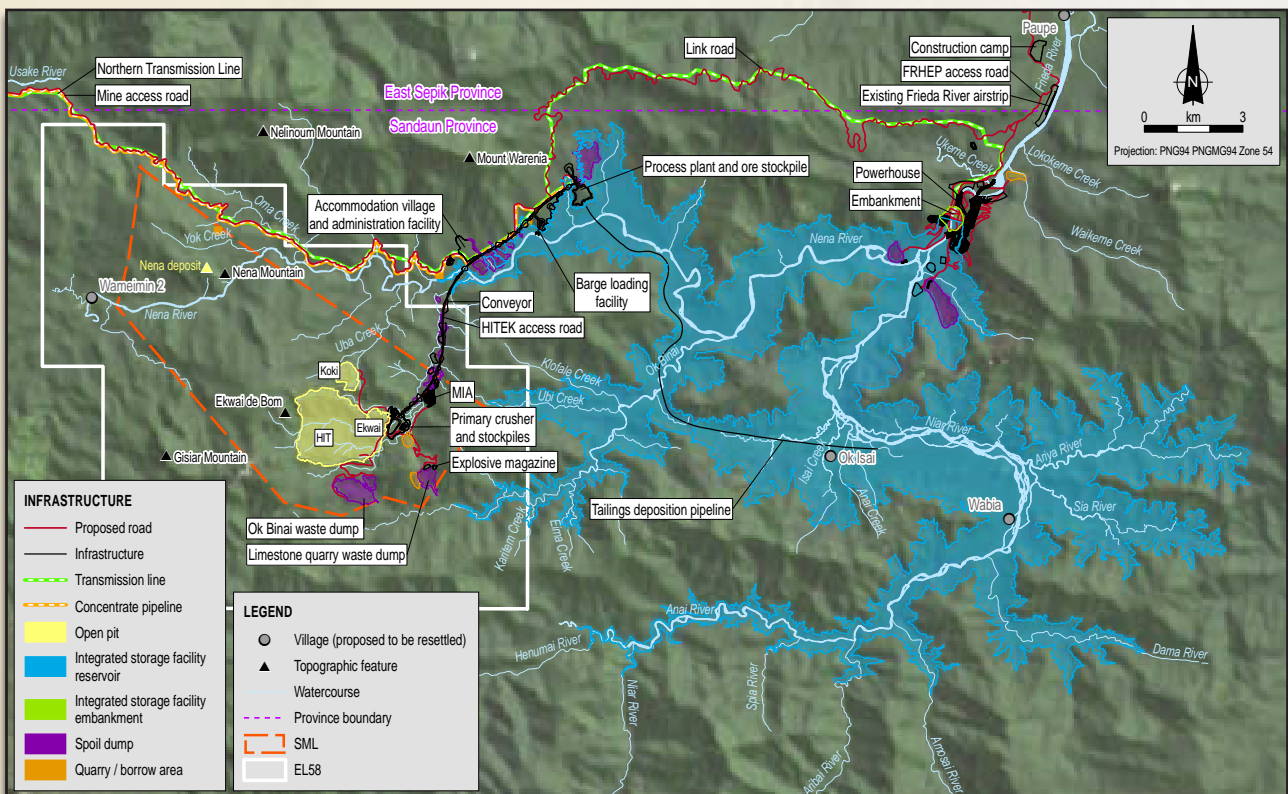
Ol namba mak stap long Tebel ES1 sapatim hamas kopa-gol stap insait long ston. Tebel ES2 em i soim ol namba mak bilong or risev lon HITEK.

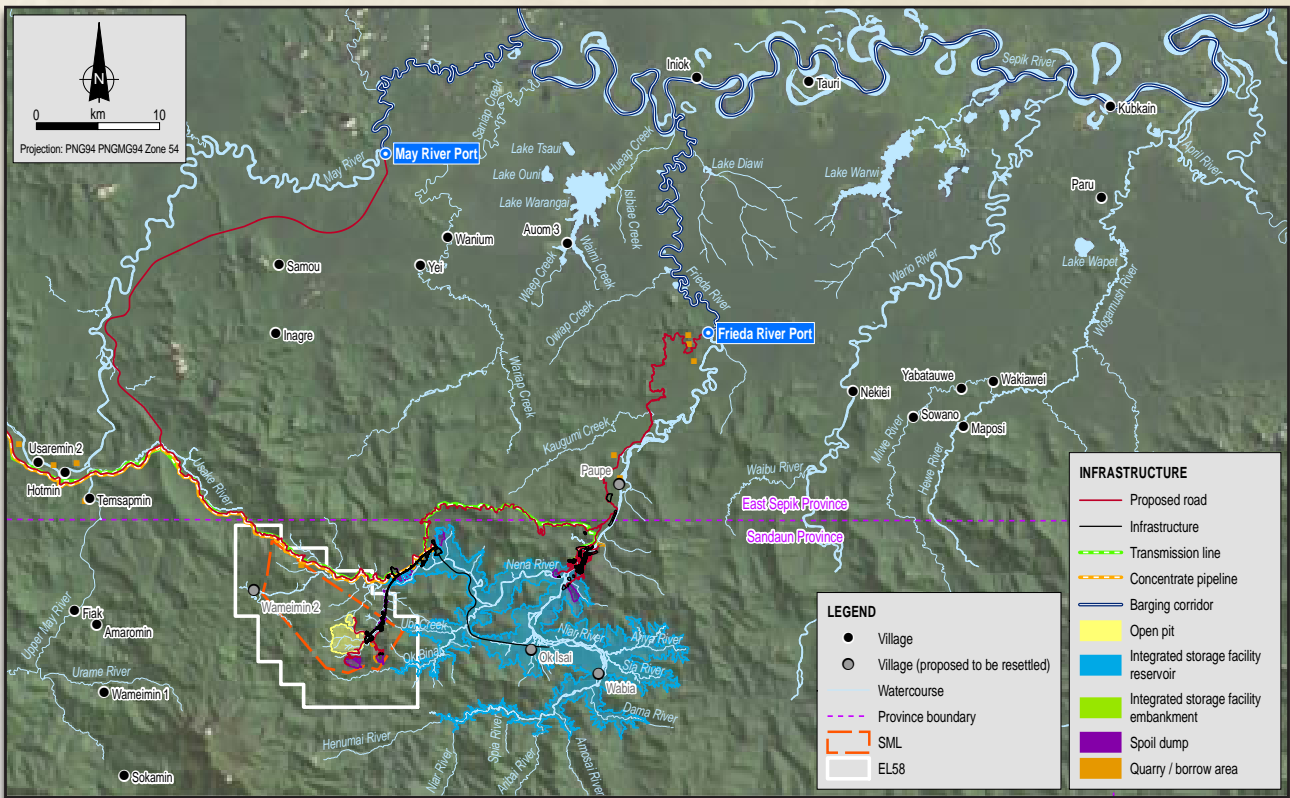
Tebel ES2 Namba mak bilong ol kopa-ston risev long HITEK long yia 2018

Class	Tonnes (millions)	Copper Grade (%)	Gold Grade (g/t)
Proved	604	0.51	0.30
Probable	761	0.42	0.21
<b>Total</b>	<b>1,365</b>	<b>0.46</b>	<b>0.25</b>

## 2.3 Stori bilong hau ol bai kamapim Projek

Projek bai gat wanpela bikpela plen ol kolim 'project implementation plan' dispela plen bai tok kilia long wanwan wok bai kamap na long wanem taim dispela ol wok bai kamap. Long stat bilong sainapim Projek, olgeta kago bilong Projek bai sip i kisim kam antap long wara Sepik. Dispela bai kamap wanpela o tupela yia tasol. Bihain long en, taim niupela wof long Vanimo ('Vanimo Ocean Port') i sanap, kago bilong projek bai stat kam long hap na bihainim Vanimo – Grin Riva rot. Long Grin Riva em bai gat wanpela wof long sait bilong wara Sepik na kago nau bai bihainim





Piksa Figa ES4 Mep we i soim main eria antap, na hau infrastraksa olsem rot na ol wof bai sindaun long wara Frida na wara May

wara Sepik igo daun long narapela wof long Frida inap ol pinisim niupela rot long Grin Riva igo long Hotmin na igo olgeta long main.

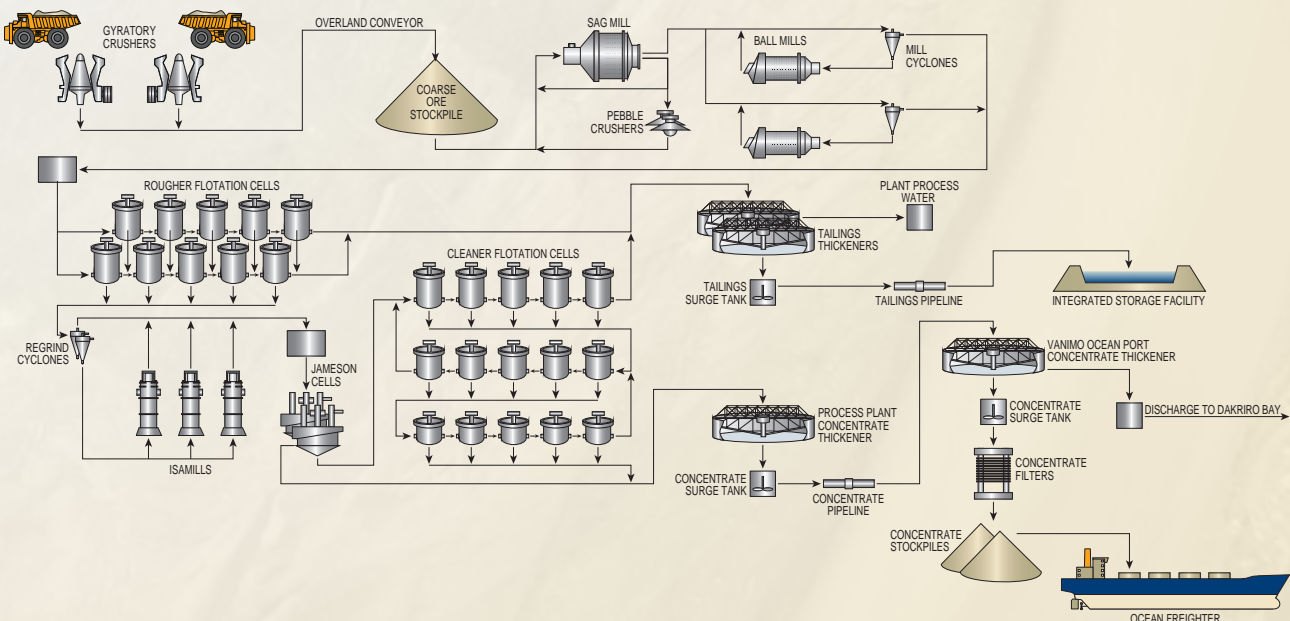
Piksa Figa ES3 em mep we i soim eria we main, ISF, HITEK raupela hol ('open pit') na ol narapela haus samting bai stap. Piksa Figa ES4 em soim main eria antap, na hau infrastraksa olsem rot na ol wof bai sindaun long wara Frida na wara May.

### Wok bilong mainin na bilong brukim ston na rausim kopa-gol long en

Long Frida Riva Kopa-Gol Projek, ol bai brukim giraun na opim wanpela traipela raupela hol igo daun insait long giraun, ol i kolim 'open pit'. Ol masin we ol i wok antap long giraun bai i brukim giraun na kism ol ston kopa na gol igo long wanpela prosesin haus ol i kolim 'communion and flotation process plant'. Long dispela prosesin haus, ol bai yusim ol marasin na ol bikpela tenk

long rausim kopa na gol long ston, long kamapim kopa-gol weisan. Dispela weisan ol bai i salim igo autsait long PNG igo long ol peles we ol i ken kukim dispela weisan long kamapim trutru kopa na gol.

Wanpela marasin we i no gutpela tumas, ol i kolim salfa ('sulphur'). Salfa em i save stap insait long kopa-gol ston ('sulphide mineralisation'). Salfa bilong HITEK em i gutpela salfa o kain salfa we i nogat planti pipia samting i bung wantaim. Dispela i mekim i isi liklik long yusim ol nomol prosesin masin long kamautim na brukim kopa-gol ston igo liklik ('crushing and grinding') i kamap olsem das stret. Na tu, dispela i mekim i isi liklik long bungim dispela kopa-gol das wantaim wara na ol sampela marasin insait long ol proses tenk ('tank') we i ken pulim kopa na gol i kamaut long kopa-gol das long kamapim kopa-gol weisan na larim pipia bilong das we ol i kolim teilins ('tailings') i stap bek. Taim ol wokim dispela, bikpela bilong kopa em i lusim 0.5% long taim i stap yet



Piksa Figa ES5 Piksa we em i soim hau na ol save kamautim kopa-gol ston na rausim kopa na gol long en long kamapim kopa-gol weisan

olsem kopa-gol ston igo antap long 26% taim i kamap kopa-gol weisan. Piksa Figa ES5 em i soim hau na ol save kamautim kopa-gol ston na rausim kopa na gol long en long kamapim kopa-gol weisan.

Frida Riva Kopa-Gol Projek i putim plen bilong mainin o plen bilong hamas kopa-gol ston ol bai kamautim na putim igo insait long haus bilong kamautim kopa na gol ('mill') long mak bilong 1,500 milion tan ('Mt') long wanwan yia. Dispela mak bilong kopa-gol ston igo insait bai kamapim o bai mekim 175,000 tan ('tonne') (t) kopa na 230,000 auns ('ounce') (oz) gol insait long wanwan yia.

Namba mak bilong giraun we Frida Riva Kopa-Gol Projek bai karamapim long en em i 1,145 hekta ('hectares') olgeta (wanpela hekta em klostu olsem tupela soka fil). Ol samting we bai i karamapim bikpela giraun moa, em i ol traipela hol long giraun ('open-pits') ol rot insait long main ('haul roads'), na ol hap bilong putim pipia ston ('spoil dumps').

Taim Projek wok i stat, ol bai wok long sevenpela (7) krismas olgeta long sanapim main. Faipela (5) bilong ol dispela sevenpela krismas ol bai wok long konstrakson ('construction') wok tasol. Bihain long dispela faipela (5) krismas, main bai igo insait long prodakson ('production') we i stat nau long wokim kopa-gol weisan. Main bai i ron long tripela tenpela na tripela (33) krismas olgeta. Wok long kamautim kopa-gol ston na pipia ston long giraun ('pit') bai igo het olgeta dei long yia na long san na nait wantaim, olsem, bai i nogat wanpela taim we wok i malolo.

Taim ol i wokim plen o disain ('design') bilong digim hol long giraun ('pit'), ol bai mekim long wei we olgeta taim i gat gupela na inap kopa-gol ston i redi long kisim igo long haus bilong kamautim kopa na gol ('mill'). Na tu ol bai mekim plen na digim pit long wei we ol han wara we i stap nau i noken ron igo insait long pit. Dispela bai daunim hatwok bilong lukautim ol wara insait long pit na em bai daunim moni we FRL bai troimoi.

Ol wara we bai i kamap insait long dispela traipela hol long giraun ('pit') i no gupela wara long wanem dispela wara bai i gat salfa na esid ('acid') na ol metol ('metals') i stap insait. Dispela esid na metol bai i kamap taim ol pipia ston na ol sait sait bilong pit i stap peles kilia na i bung wantaim wara na win ('air'). Long stretim o mekim dispela wara bilong pit i gupela ken we i noken bagarapim ol peles o han wara i stap tambolo ananit long main, Projek bai rausim dispela wara bilong pit na putim sampela ol marasin igo insait. Dispela wok ol i kolim 'wara tritmen' ('water treatment'). Projek bai stat long Yia 1 bilong prodakson long wokim dispela wara tritmen. Taim ol i wokim pinis dispela wara tritmen na mekim wara i orait ol bai larim dispela wara igo insait long wara Ubai ('Ubai Creek') na wara Ubai bai karim dispela wara igo insait long ISF o haidrodem we em bai bung o mikis insait long traipela wara we i stap long dispela raun wara. Long sait bilong ol han wara we i stap antap o arere long pit, ol han wara we i klin yet, Projek bai i digim ol baret long pulim dispela ol han wara i raunim pit we i noken go insait long pit na mekim nogut wara bilong pit i bikpela.

## Ol infrastraksa we ol bai wokim long sapatim Frida Riva Kopa-Gol Projek

Ol wokmanmeri bilong kampani bai usim appraided ('upgraded') ples balus long Grin Riva long go i kam long peles bilong wok. Em bai gat wanpela rot ('main access road') ron olsem long ples balus igo long main na haidropawa eria. Nambawan peles o kemp ('accommodation village') we ol wokman na wokmeri bilong main bai silip bai stap arere long wara Nena klostu olsem 5 kilomita (km) long prosesin haus. Dispela kemp bai inap long 3,500 manmeri ken silip, long taim bilong konstrakson. Na bai i gat nambatu kemp we ol wokman na wokmeri bilong haidropawa projek bai silip long en. Dispela kemp bai inap longinap 3,300 manmeri ken silip insait long taim bilong konstrakson. Long taim bilong oporeison dispela tupela peles bilong silip bai inap long 3,000 manmeri tasol wantaim narapela peles bilong silipim 100 manmeri long Vanimo bilong wokim wok bilong lukautim wof.

Bai i gat wanpela paipain ('concentrate pipeline') bilong karim kopa-gol weisan igo daun long wof long Vanimo. Longpela bilong dispela paip em 325 kilomita na em bai stap arere long rot we bai ron long main igo long Vanimo.

Sepik Infrastraksa Projek lukluk long kamapim ol infrastraksa we olgeta manmeri ken usim. Olsem niupela wof ol bai wokim long Vanimo, olsem rot ol bai stretim gut we em i ron long Vanimo igo long Grin Riva, olsem konstrakson bilong niupela rot long Grin Riva igo long Hotmin, na olsem Grin Riva ples balus we ol bai mekim i go bikpela.

Projek bai mekim Wof we nau i stap long Vanimo long ist sait bilong Dakriro nambis bai kamap wanpela intanesenol wof we ol planti kampani na kain kain intanesenol sip ken sua long en. Na tubai i gat hap bilong holim na salim aut ol kopa-gol weisan, na tu bai i gat hap bilong kago na benzin bilong main i stap tu long dispela hap. Na bai i gat ol hap we ol narapela indastri, olsem oil palm na forestri ken usim tu.

Projek bai mekim moa beta ('upgrade') Vanimo igo Grin Riva rot na konstrakson bilong niupela rot long Grin Riva igo Hotmin bai kamap. Rot i no inap bilong main tasol em bilong olgeta manmeri long usim long sait bilong pasinja na kago ron, sait bilong wokim bisnis na ol narapela ol gupela samting arere long rot. Em bai i gat faipela hap we ol bai wokim ol bris ('bridge') long abrusim ol bikpela wara. Dispela ol wok bilong rot bai hitim taget i stap long developmen plen bilong gavaman long sait bilong wokim moa rot netwok insait long PNG.

Ples balus we nau i stap long Grin Riva i stap olsem 150 kilomita long main eria. Em wanpela gupela ples balus tasol i no planti balus save pundaun long nau taim. Dispela ples balus bai ol appraidim igo kamap wanpela rijji nol ('regional') ples balus long larim ol bikpela balus i ken pundaun long en. Wantaim appraid bilong ples balus, bai gat niupela haus we i ken sindaunim 80 pasinja, em bai gat ples bilong stretim na putim kago,

na em bai gat eria we ol imaigrasen na kastoms ('immigration and customs') wok manmeri bai wok tu. Long taim main igo insait long prodakson ol balus bai pundaun na kirap sevenpela taim long wan wan wik long ol narapela rigi nol ples balus na 14 taim long wan wan wik long ol bikpela ples balus olsem long Wewak na Mosbi.

## Frida Riva Haidropawa Projek na Intagreted Storis Fasiliti

Insait long ron bilong main (33 krismas), i stat long stat long en na igo long pinis long en ('mine life') klostu 2,950 milion tan ('Mt') pipia bai kamap. Long dispela pipia, 1,500 Mt bai kamap olsem pipia weisan. Dispela ol i kolim teilins ('tailings') na em i save kamap taim ol pinis long brukim kopa-gol ston na rausim kopa na gol long en, insait long haus bilong prosesin ('processing'). Teilins em i olsem weisan nating (nogat marasin insait) i bung wantaim wara. Narapela hap pipia, em pipia ston ('waste rock') na dispela bai kamap olsem 1,450 Mt bilong olgeta pipia. Pipia ston em i ston we ol i rausim stret long hol long giraun ('pit') we i nogat kopa o gol insait na emi no save go long prosesin. Long lukautim dispela tupela pipia ol bai wokim olsem. Sapos ol i larim dispela pipia i stap peles kilia na i bung wantaim ren na win ('air'), dispela pipia em inap long kamapim tupela samting nogut. Nambawan, em i ken kamapim esid ('acid') we giraun samting ('chemical') ol kolim salfa bai bung wantaim ren na win. Nambatu, em i ken kamapim metol ('metal') nogut, we sampela ol metol olsem kopa ken kamaut long ston o teilins na bung wantaim wara. Long daunim ol dispela samting nogut, Projek bai i putim olgeta pipia igo insait na i silip ananit long bikpela wara bilong haidrodem o Integret Storis Fasiliti o ISF ('Integrated Storage Facility'). ISF em i pat o hap bilong haidrodem we we ol bai banisim wara Nena na traipela raun wara bai kamap. Taim ol i putim pipia ston na pipia weisan o teilins i silip ananit long wara, dispela bai i stopim esid na metol nogut i noken kamap, bikos i nogat wei long bung wantaim win ('air') na ren. Dispela ol i kolim weist menisem ('waste management').

Ol bai wokim banis bilong ISF long wara Frida long wanpela hap we i stap 16 kilomita ' daun long main eria na 35 kilomita igo antap long maus bilong wara Frida we em bung wantaim wara Sepik. Taim ol wokim banis, wara bai igo bek na karamapim traipela hap peles daun ('valley') ol kolim Nena, Ok Binai na Niar o Frida. Bikpela bilong giraun we wara bai karamapim em klostu olsem 12,700 hekta ('hectare'). Bikpela wok bilong ISF em long holim gut olgeta pipia ston na pipia weisan o teilins we i kamaut long traipela hol long giraun ('pit') na i kamaut long haus bilong prosesin ('mill and processing plant').

Long wokim plen na disain ('design') bilong ISF, Projek i bin kisim wanpela save kampani, ol kolim 'SRK Consulting'. Olgeta liklik plen na disain long hau ol bai sanapim ISF em stap insait long Apendiks 2 ('Appendix 2') bilong EIS ripot. Dispela plen o disain bilong ISF i no SRK tasol ol i kamapim. PanAust i bin wokim wanpela komiti, ol i kolim 'Tailings Independent Reiview Panel (TIRP)'. PanAust i kisim ol bikpela save lain husait i gat nem insait long wol long sait bilong wokim ol dem ('dam') o traipela banis, na i putim ol insait long dispela komiti. Wok bilong dispela komiti em long galasim olgeta disain bilong ISF, lukluk gut long olgeta stadi na ripot na tokim PanAust sapos ol i ting olsem i nidim mo disain, plen na stadi. Dispela komiti em i gat pawa long tokim PanAust olsem i mas wokim mo wok o mekim ol senis bifo long ISF bai sanap.

Narapela samting long sait bilong plen or disain bilong ISF bilong Projek em olsem. I gat tupela kain banis o dem. Nambawan dem ol save kolim 'Teilins Storis Fasiliti' ('Tailings Storage Facility') na dispela kain dem em i save holim planti pipia ston na pipia weisan o teilins na liklik wara tasol. Disain na plen bilong dispela kain dem ol i no save mekim stron olgeta. Nambatu dem em kain banis we ol i save mekim long banisim ol traipela traipela dem or raun wara long kamapim haidropawa ('hydro power') o long holim wara bilong fidim ol taun o siti. Disain na plen bilong dispela nambatu kain dem ol i save mekim i stron olgeta. ISF bilong Projek bai yusim dispela nambatu dem long mekim ISF long Frida i stap stron na i stap longpela taim.

Ol i mekim plen o disain bilong ISF i mas bikpela na stronpela inap long holim 1,450 milion tan ('Mt') bilong pipia ston na klostu long 1,500 Mt bilong pipia weisan o teilins. Wantaim dispela em bai holim ol graun we em kam tasol long ol sait maunten, wantaim wara we em i kam long ol liklik han wara bilong wara Nena. Maski ISF i holim dispela olgeta samting, tasol em bai i bikpela inap we i gat 50 milion tan eria we i stap nating yet. Na tu, bikpela bilong ISF long holim bikpela wara bai i mekim olsem olgeta taim pipia ston na pipia weisan o teilins bai i stap ananit long wara. Dispela yumi tok pinis em bikpela samting we ol esid na metol nogut i noken kamap na bagarapim ol han wara we i stap ananit long ISF.

*Piksa sowim banis bilong ISF o dem, ples we wara bai ron long sait bilong banis ol kolim 'spillway' na we pawahaus bai stap bilong Frida Riva Haidropawa Projek*

## Sepik Pawalain Projek na Pawa

Long taim long konstrakson bilong main ol bai usim ol disel genereta we bai i sanap long ol wanwan hap insait long main eria inap taim haidropawa projek i stat.

Long taim main i statim operesen olgeta pawa bilong em bai kam long haidropawa projek. Haidropawa steison bai givim pawa igo long wanpela 22 kilomita long pawalain ol bai wokim igo long proses plent. Pawa we main bai nidim pastaim em klostu 180 megawat (MW) na em baiigo antap long mak bilong 280 MW long namba 8 yia main i ron.

Sepik Pawalain Projek bai ronim wanpela niupela pawa lain, longpela bilong em bai 370 kilomita . Dispela pawa lain bai ron long haidropawa projek eria igo olgeta long boda bilong Indonesia. Dispela pawalain bai ron bihainim infrastraksa korido na givim pawa igo long ples balus long Grin Riva na niupela wof long Vanimo. Long Vanimo pawalain bai bihainim rot igo long Jayapura.

Bai gat wanpela 'single wire earth return' lain ron arere long rot pawalain igo long em. Wok bilong dispela lain em long givim pawa igo long ol peles stap arere long pawalain. I nogat planti kastoma bilong pawa arere long rot korido. Tasol long peles Jayapura long hapsait bilong boda bilong PNG na Indonesia i gat planti moa kastoma bilong pawa i stap.

Wok painim aut bilong dispela EIS ripot i no lukluk long givim pawa igo long ol narapela ol kastoma. Tasol i gat bikpela laikim long dispela pawa na em bai gat nambatu 'stage' long wokim sampela moa pawalain igo long ol narapela hap.

Na taim main i pas bai gat bikpela pawa tru bai stap long ol narapela kastoma long usim.

## Risetolmen

Taim ol wokim bilong raunwara long ISF na haidropawa projek em bai karamapim peles o vilis bilong Ok Isai na Wabia. Olsem na FRL i wok wantaim dispela tupela vilis long kisim ol go long niupela hap giraun.

Vilis bilong Paupe i stap long noten end bilong Frida Riva ples balus, arere long Frida Riva na faivpela kilomita daun long hap ol laik wokim ISF banis. Long taim bilong konstrakson o taim bilong sanapim Projek, ol manmeri bilong Paupe bai sindaun bilong ol i bagarap long wanem bai gat planti samting kamap na ol stap klostu tru na nogut sampela hevi kamap long ol. Wankain long vilis Wameimin 2 i stap klostu long hap ol laik makim SML na ples main rot bai ron long em no nogut planti autsait manmeri igo kam tumas long dispela peles na tu nogut mainin go klostu tumas long dispela peles. Antap long dispeal ol manmeri bilong Wameimin 2 nogut kar bampim ol long wanem main rot bai ron arere long peles bilong ol.

Antap long dispela ol as ol manmeri bilong Ok Isai, Wabia, Paupe, na Wameimin 2 mas go long ol narapela hap na stap. FRL i wok wantaim ol dispela peles na painim sampela hap pinis long ol ken go stap tasol ol i no kamap wantaim hap gutpela stret long ol long go stap yet. Dispela wok FRL bai wokim yet. Ol peles we FRL i risetolim (resettle) ol long bai ol wokim niupela haus bilong ol wantaim ol narapela samting save kam wantaim haus tu.

## Sampela moa infrastraksa we dispela EIS ripot ino lukluk long em

Gavaman i gat tingting long surukim rot long Hotmin igo olgeta long peles Telefomin, tasol wok painimaut bilong dispela EIS ripot i no lukluk long en ananit long dispela Projek. Sapos dispela rot i kamap em bai kisim sevis igo insait tru long dispela hap we rot i no ron yet.

Wanpela 'single wire earth return' lain bai stap arere long Sepik Pawalain Projek. Dispela em long wanpela kampani igat save long salim pawa ken bosim na salim pawa igo long ol kominiti arere long infrastraksa korido. Tasol ol pawalain na ol infrastraksa long kamapim dispela wok dispela wok painimaut bilong EIS ripot i no lukluk long en long wanem i no pat bilong dispela Projek.

## 2.4 Divelomen Skejol

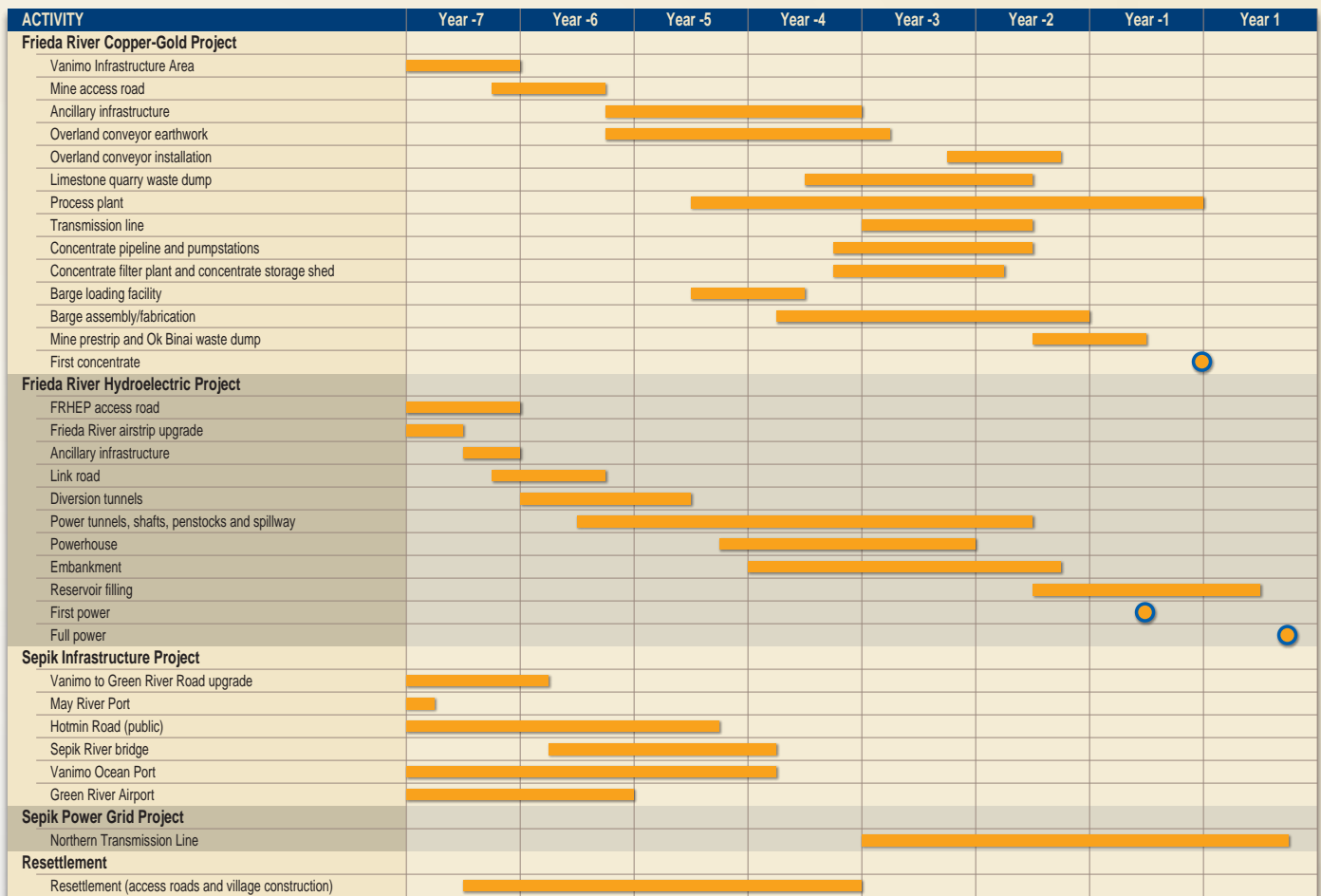
Piksa Figa ES6 em i givim wanpela plen o piksa ol i kolim divelopmen skejol ('development schedule'). Dispela divelopmen skejol em i givim taim bilong wanwan wok we i mas kamap bifo ol ken mekim wanpela kopa ol gol. Dispela divelopmen skejol em i soim ol bikpela bikpela han bilong wok olsem EIS, tok orait bilong gavaman na wok long sanapim o konstrakson bilong Projek. Long nau taim, taim Projek i wok antap long ol stadi long sait bilong envaironmen na sosel long kamapim EIS, ol save lain long sait bilong enginia ol tu ol wok long wok antap long plen bilong sanapim main, ol kolim projek enginia ('engineering') and disain ('design'). Tupela EIS wantaim enginia na disain stadi bai i ron wantaim yet, olsem taim ol painim aut sampela samting long EIS ol enginia tu ol mas luksave long dispela samting insait long disain na plen bilong ol.


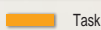
As tingting bilong dispela divelopmen skejol em bilong kisim tok orait bilong gavaman long givim Spesol Mainin Lis or SML ('Special Mining Lease') wantaim tok orait bilong ol bos lain bilong kampani olsem Projek em i ken go het nau. Dispela tok orait bai i sanap antap long sampela ol bikpela samting long sait bilong wok bisnis. Nambawan, em olsem, moni mak bilong kopa em I mas gutpela. Nambatu, em olsem, ol lain husait bai putim o givim moni long sanapim main, ol tu mas tok orait na redi long givim moni we Projek i nidim.

## 2.5 Wei bilong skelim ol narapela rot bilong divelopim projek

I stat long yia 2014 i kam inap nau, i bin gat planti wok painim aut o lukluk long sait bilong ol narapela rot bilong divelopim o sanapim Projek. Minin bilong dispela em olsem, long lukluk long kain traipela traipela projek olsem Sepik Divelopmen Projek, olgeta taim ol save lain i mas tingim na traim ol kainkain rot o plen o wei bifo ol i ken kamap wantaim wanpela fainol plen. Pastaim long 2017, long nambawan plen, ol i bin lukluk tasol long Frida Riva Kopa-Gol Projek. Tasol bihain long dispela nambawan plen, ol bin skelim sampela moa samting. Long skelim ol narapela rot o plen o wei bilong sanapim Projek, ol save lukluk long ol dispela ol samting:

- Ol save skelim hevi long sait bilong ikonomiks ('economic constraints') o sait bilong Projek i mas wokim gutpela win moni. Ol save skelim ol samting olsem prais o moni mak bilong kopa na gol long ovasis maket na hau prais i save go antap na go daun. Ol i save lukluk long kain plen we maski prais o moni mak bilong kopa na gol igo daun, Projek i ken mekim yet kopa na gol na mekim gutpela win moni wantaim.



 Milestone  Task

Piksa Figa ES6 Skejol o plen bilong developim Sepik Developmen Projek

- Ol save skelim hevi long sait bilong peles we Projek bai sindaun o yusim long en ('physical constraints'). Ol save skelim hau, na tu, we kopa-gol ston i stap (kain olsem i stap klostu o tambolo stret long graun o i stap antap tumas long ol maunten). Ol save skelim ren na san na win ('climatic') long ol hap we Projek bai yusim. Ol save skelim ol bikpela bilong maunten o bikpela bilong ol peles tais o peles daun long ol hap we Projek bai yusim. Na, ol save skelim ol samting i stap insait long graun, olsem strong bilong ol ston o we graun bruk bai kamap o we guria ken kamap.
- Ol save skelim hevi long sait bilong environmen we Projek bai stap ('environmental constraints'). Ol save skelim gut olgeta bus, wara, na ol samting i stap laif insait long ol hap peles we Projek bai yusim long en.
- Ol save skelim hevi bilong ol sait bilong ol pipol na kominiti we Projek bai stap ('social constraints'). Ol save skelim ol benefit samting ol pipol klostu long Projek bai i askim kampani long mekim long ol. Ol save skelim wei bilong hau ol pipol i save stap na wanem ol samting i bikpela long sidaun na laif bilong ol. Na ol save skelim ol wari bilong ol pipol na kominiti antap long Projek.

Olsem na long kam kamap long fainol plen o wei bilong sanapim Projek, fainol plen we i stap nau insait long EIS, ol i bin wokim planti wok painim aut antap long olgeta ol dispela samting. Tingting ol i bin bihainim long kam kamap wantaim dispela fainol plen em i stap insait long Saptu 6 ('Chapter 6') bilong EIS.

## 2.6 Plen bilong hau main or Projek bai pas bihain

Olgeta mainin projek na tu olgeta haidro projek, maski ol i no sanap o stat yet, i mas gat wanpela plen bilong hau bai ol i pasim long bihain taim. Ol kolim dispela plen, klosa plen ('closure plan'). Olsem na long dispela Projek na EIS, ol i wokim pinis wanpela klosa plen bilong pasim main na haidropawa projek bihain. Dispela plen em i no fainol plen, em i stat tasol long plen we bihain ol bai wok moa antap long en. Long klosa plen we nau i stap, FRL i gat dispela ol tingting. Long sait bilong ol hap we Projek bai bagarapim bus na graun, tingting o plen em olsem. We FRL inap long wokim, FRL mas planim bek ol diwai na bus we i bin stap bifo long bagarap i bin kamap. Long sait bilong kominiti insait long Projek eria, tingting o plen em olsem. Bifo long Projek i pas, FRL bai wok wantaim kominiti long skulim o lainim ol long hau long ol ken stap gut yet bihain long Projek i pas. Na tu, FRL bai wok wantaim kominiti long kamapim ol developmen insait long peles o vilis bilong ol we i ken holim ol na halivim ol bihain long Projek i pas. Long sait bilong Sepik Infrastraksa Projek na Sepik Pawalain Projek ol developmen insait long ol dispela tupela projek bai sanap oltaim na no nap gat klosa plen.

Insait long dispela klosa plen, i givim plen o tingting tu long taim mainin oporeison i pinis olgeta. Taim oporeison i pinis, wok bilong rausim olgeta samting na wok long redi long lusim olgeta main peles, bai i kamap. Dispela ol kolim dikomisin ('decommissioning'). Na dispela wok bai kisim tripela (3) krismas olgeta. Insait long dispela tripela krismas ol bai rausim olgeta haus bilong wokim

kopa na gol na peles bilong silip, olgeta masin, na olgeta ol sevis. Tasol dispela bai kamap wantaim wok bung wantaim gavaman na kominiti, na sapos ol i gat sampela plen long yusim sampela ol dispela samting, toktok bai i kamap pastaim. Bihain long dispela, bai i gat narapela 10 o 20 krismas we kampani bai wokim yet wok bilong lukluk na skelim ('post-closure monitoring') na wok bilong mentenim o lukautim ol environmen samting. Bai i gat sampela ol klosa taget ('closure criteria') we FRL i mas winim, ol taget long sait bilong mekim environmen i kam bek gut. Insait long dispela 10 o 20 krismas, wok bilong tritim o putim marasin insait long wara we i kam long traipela hol long graun ('pit') bai kamap yet. Long halavim dispela wok, bai i nidim sampela ol haus, masin na peles bilong silip i mas stap bek yet. Bihain long dispela 10 o 20 krismas na taim FRL i hitim olgeta klosa taget ('closure criteria'), FRL bai givim olgeta lis ('lease') na giraun igo bek long gavaman na ol papa graun.

Insait long klosa plen tu, i ken gat plen o tingting long sampela ol infrastraksa we bai i gat wei long yusim yet, maski main i pas. Taim Projek igo klostu long klosa o taim bilong pas, FRL bai toktok wantaim ol narapela lain husait i gat laik na save long lukautim ol dispela infrastraksa. Na sapos toktok igo gut, ol dispela lain bai kamap papa bilong dispela ol infrastraksa. Na tu ol dispela lain bai lukautim infrastraksa we i noken bagarap na tu ol lain we ol wok long lukautim main klosa ken yusim yet dispela ol infrastraksa insait long klosa wok bilong ol.

Long taim bilong klosa, ol bai rausim o brukim olgeta haus na masin na infrastraksa bilong mainin. Sampela tasol we inap long yusim ken ol bai kisim igo aut. Sampela infrastraksa we i stap pinis ananit long graun, kain olsem paip, ol bai larim tasol i stap. Bihain long dispela, ol bai karamapim olgeta peles wok bilong bifo wantaim graun na mekim peles i luk gut. Projek bai toktok wantaim ol kominiti na ol narapela lain steikholda ('stakeholders') long kamap wantaim tingting bilong ol long hau ol i laikim dispela peles wok bilong bifo i lukluk nau o hau ol bai yusim long en

Taim main i pas na ol laik rausim ol samting bilong wok wantaim ol infrastraksa na narapela ol samting, ol bai larim dispela ol infrastraksa i stap yet (ol no inap rausim):

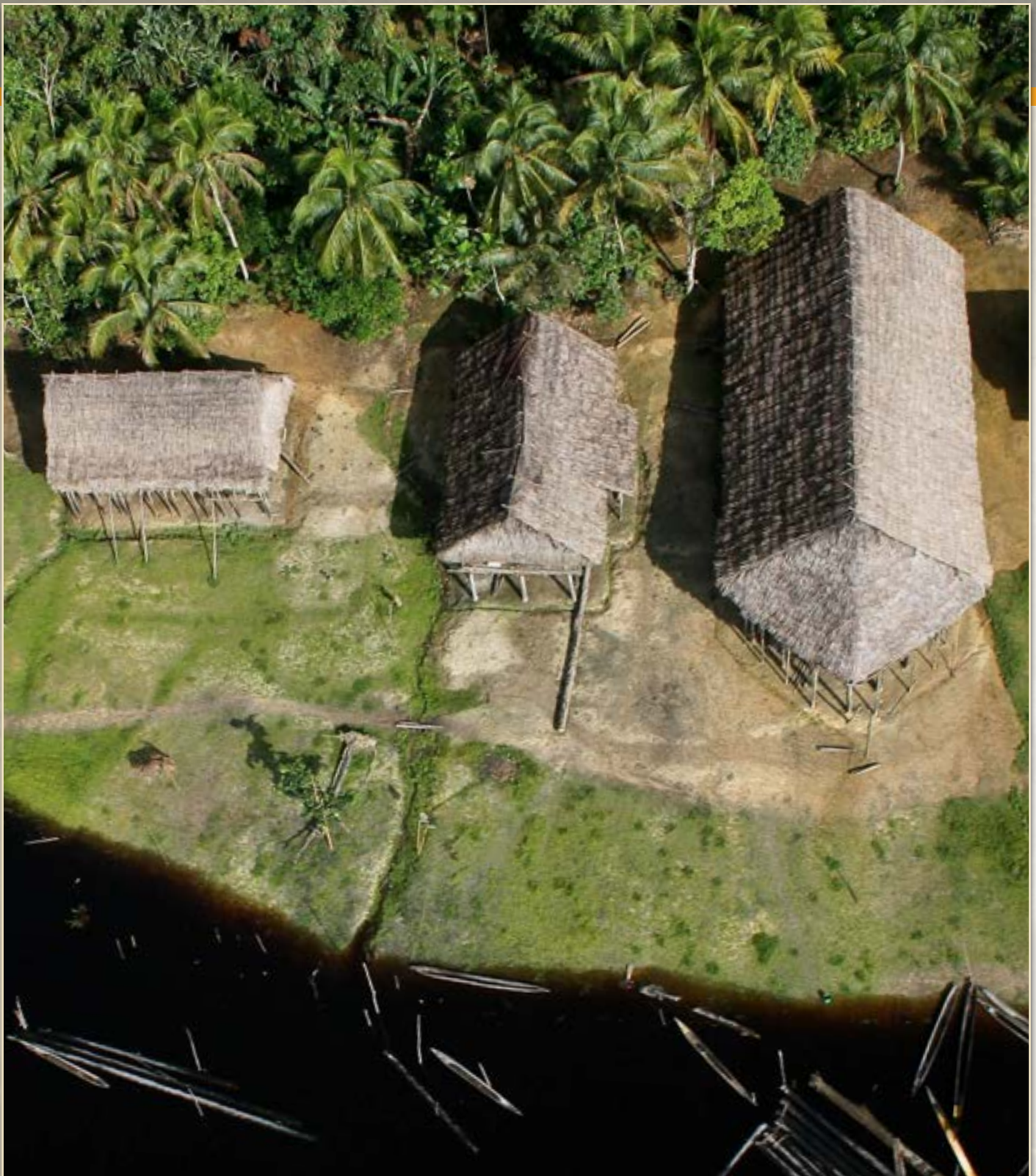
- Ol bai larim bikpela wara igo insait long traipela hol long graun ('pit') long kamapim wanpela raunwara insait long pit. Dispela bai kisim tripela krismas olgeta long kamapim raunwara. Taim dispela bikpela raunwara i kamap em bai karamapim klostu olsem mak bilong 40% (mak ananit liklik long haf) we pastaim dispela hol i bin stap. Antap long dispela raunwara bai i gat traipela arere o sait bilong maunten o sait bilong pit ('pit high wall') we i sanap olsem klostu 600 mita ('mitres') igo antap. Tritmen bilong wara o wok bilong putim marasin long wara na mekim klinim ol samting nogut, bai i kamap insait long taim bilong mainin o taim bilong oporeison, na em baigo yet klostu narapela 50 krismas ken taim main i pas. Dispela em bai i mekim wara i stap gut na kamap klin inap we i noken bagarapim ol wara i stap tambolo long main eria (olsem wara Frida).
- Ol bai larem main rot (mine access road) i stap bek, dispela rot we i lusim peles Hotmin na i kam antap long main eria na go daun long niupela peles Paupe. Rot bai stap long larim ol ken kam igo long haidropawa haus, long ol peles bilong silip ('accomodation village') na long haus bilong tritim wara o putim marasin long wara ('water treatment plant'. Long taim blo main klosa kampani ba givim dispela rot igo long papa bilong haidropawa projek.

Ol bai larem ISF i stap bek yet, bilong wokim pawa long na tu long holim olgeta pipia ston na pipia weisan bilong main. Haidropawa projek bai stap abrusim 100 krismas. Wara bai karamapim yet dispela olgeta pipia we i noken bung o mikis wantaim ren na win ('air') na kamapim esid na metol nogut. Na tu long lukautim banis bilong ISF we si o weif bilong raunwara i noken wasim na brukim o bagarapim, ol bai putim planti ol ston na graun klostu olsem 500 mita ('metre') long wei long banis bilong ISF na dispela bai banisim stopim wara i noken bagarapim banis bilong ISF.





*Taim Frida Riva Kopa-Gol Projek o main i pas,  
Frida Riva Haidropawa Projek bai wokim pawa  
yet long wanem ron bilong em i winim 100 yia.*



*Projek i stap long hap eria we ol wara i save ron i go insait long bikpela wara Sepik. Dispela hap em i wanpela hap we i gat planti kain bus, wara, abus, pis na kainkain ol narapela ol samting i stap laif long bus na wara. Long dispela sait em i gat nem insait long PNG na Pacific. Na tu, ol han bilong wara Sepik ol i planti moa yet, i winim olgeta wara insait long PNG. Na tu wara Sepik em i gat moa eria we ren i save pundaun na ron i go insait long wara Sepik ('catchment'). Dispela eria em i stap long mak bilong 78,700 skwea kilomita ('km<sup>2</sup>').*



### 3. PELES WE PROJEK BAI I KAMAP LONG EN

Ol fopela projek ananit long bik nem Sepik Developmen Projek bai karamapim planti hap peles. Frida Riva Kopa-Gol Project na Frida Haidropawa Project bai i stap long peles maunten long Sandaun Provins klostu long boda bilong East Sepik Provins. Sepik Infrastraksa Projek na Sepik Pawalain Projek bai gat hap bilong em stap insait long Usake na apa May Riva eria na tu long ol peles tait bilong apa ('upper') wara Sepik na em bai stap tu long ol maunten bilong Bewani na bihainm ol not cost plain igo olgeta long not cost bilong Vanimo.

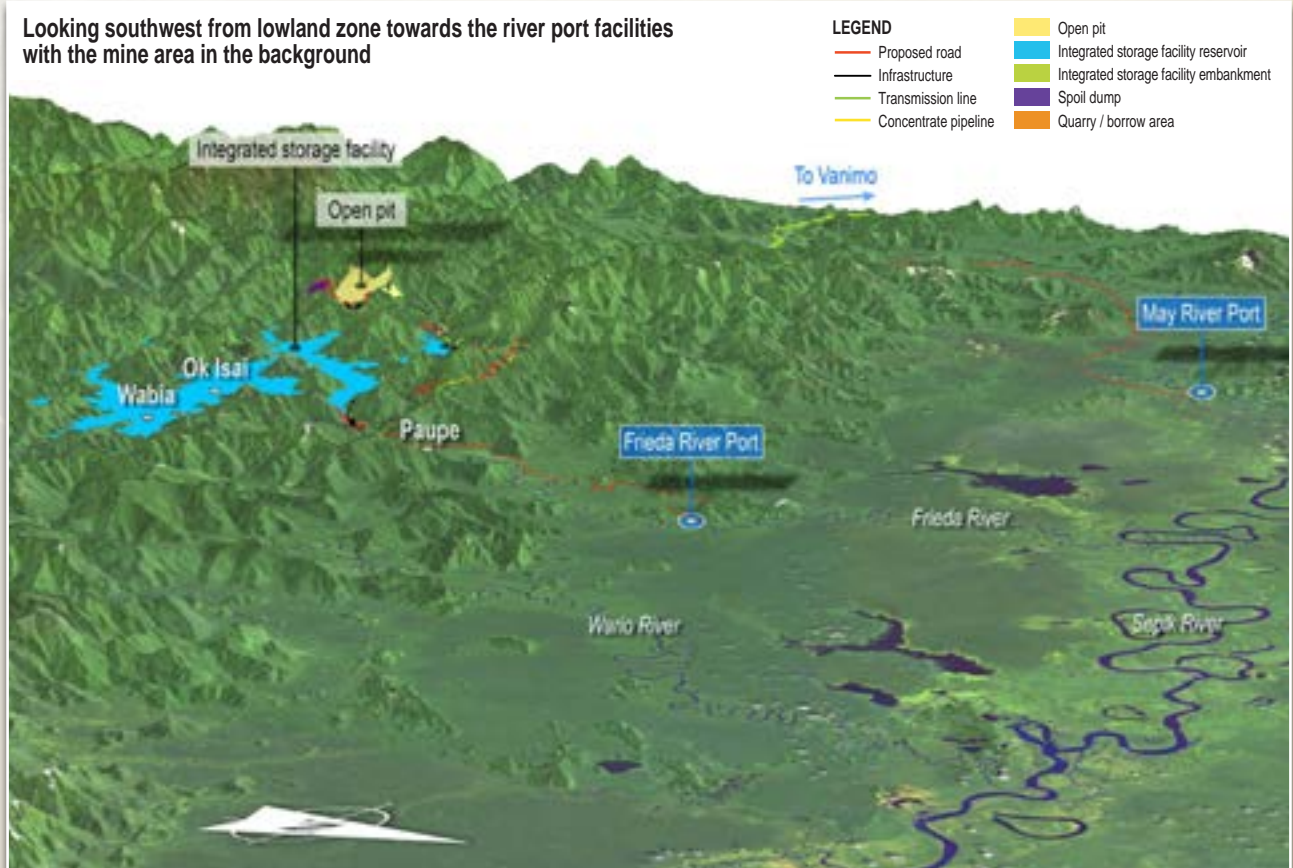
#### 3.1 Environmen bilong bus na graun

Frida Riva Kopa- Gol na Haidropawa Projek bai stap antap ken long han wara bilong wara Sepik long peles we ol maunten bilong hailens bilong PNG i stat long en. Antap o bikpela bilong

dispela hap maunten peles em i sanap olsem RL 1,500 mita ('mitre'). Dispela em i minim olsem dispela maunten peles em i 1,500 mita antap long solwara. Long dispela peles tu i gat bikpela bus na diwai.

Piksa Figa ES7 em soim piksa bilong dispela hap. Em i soim hau peles i save sidaun we yu bai lusim wara Sepik tambolo stret na lukluk igo long main na raunwara bilong haidropawa projek antap long ol maunten.

Long dispela hap bilong Sandaun na East Sepik Provins we Projek i stap long en, taim bilong wet o taim bilong bikpela ren i save pundaun em i save kamap namel long mun Novemba ('November') igo long mun Eipul ('April'). Ol i kolim dispela 'not na wes monsun wet sisen' ('northwest monsoon wet season'). Na taim bilong drai, taim we liklik ren i save pundaun, i save kamap namel long mun Mei ('May') igo long mun Okotoba ('October'). Ol i kolim dispela 'saut na is monsun dry sisen' ('southeast monsoon dry season'). Na tu dispela hap peles em i hot peles. Olsem hot bilong peles em



Piksa Figa ES7 Piksa em i olsem yu flai antap (olsem long balus) na lukluk daun long main eria na rot igo long main.



Piksa Plet ES1

i save stap namel long 23°C antap long mauten peles we main i stap long en, na 27°C long ol peles i stap tambolo arere long wara Sepik. Mak bilong ren i save kamap long wanwan yia em igo stap namel long 7,700 milimita ('milimetres') igo long 8,000 milimita (mm) long sait bilong main, na 3,700 igo long 6,000 mm long peles tambolo arere long wara Sepik. Long dispela hap eria tu, planti guria i save kamap. Olsem na insait long disain na plen bilong Projek, ol i tingim dispela taim ol i wokim plen bilong olgeta infrastraksa, haus na ol samting bilong main, na tu ol i tingim dispela guria i save kamap taim ol i wokim disain na plen bilong traipela raun wara ol i kolim ISF.



Piksa Plet ES2

Projek i stap long hap eria we ol wara i save ron igo insait long bikpela wara Sepik. Dispela hap em i wanpela hap we i gat planti kain bus, wara, abus, pis na kainkain ol narapela ol samting i stap laif long bus na wara. Long dispela sait em i gat nem insait long PNG na Pacific. Na tu, ol han bilong wara Sepik ol i planti mo yet, i winim olgeta wara insait long PNG. Na tu wara Sepik em i gat mo eria we ren i save pundaun na ron igo insait long wara Sepik ('catchment'). Dispela eria em i stap long mak bilong 78,700 skwea kilomita ('km<sup>2</sup>').

Insait long dispela eria bilong Projek we i stap long tupela Sandaun na East Sepik Provins, i gat kainkain ol bus na diwai. I gat ol mangoro ('mangrove forest'), i gat ol bus ol kolim 'heb tais' ('herb swamp'), i gat ol traipela diwai long peles daun o peles i no maunten ('tall lowland rainforest'), i gat bus we em i stap antap stret long maunten we ol i kolim 'klaut bus' ('cloud forest') na i gat hap eria we i nogat bus, we gras na kunai tasol i save gro antap stret long maunten, we ol i kolim 'alpain gras' ('alpine heath'). Long dispela hap peles i gat planti ol kain kain spisis ('species'). Minin bilong spisis em olsem olgeta samting we i stap laif, maski diwai, o kumu, o binatang o pis o ol enimol, olgeta ol i kolim spisis. Long sait bilong ol spisis o kain bilong ol rokrok na ol narapela enimol olsem rat na kapul, dispela hap bilong Sepik i winim ol narapela hap bilong PNG. Olsem na dispela hap bilong Projek, i stat long maunten na igo daun long wara Sepik, em i gat nem insait long PNG na insait long wol, long sait bilong ol kain kain spisis i stap laif.



Piksa Plet ES3

Long wok painim aut long wanem i stap long Projek eria, ol i bin lukluk long traipela eria we i karamapim 660,571 hekta ('hectares') olgeta. Olsem na long dispela wok painim aut o stadi long kamapim EIS, ol klostu winim olgeta ol narapela stadi we ol narapela lain ol i wokim insait long PNG. Sapos yu bungim olgeta taim ol lain bilong EIS i bin troimoi long stadi, dispela taim bai winim 2,000 awa ('hours') olgeta. Na tu, afta o bihain long Indipens, i nogat narapela stadi we i bin kisim kain planti namba bilong ol spisis ('species'), olsem dispela stadi bilong EIS. Dispela stadi i mekim na nau yumi i gat bikpela save long planti ol spisis bilong PNG, we bifo yumi i no bin gat save long ol.

Insait long wok painim aut bilong EIS, ol i bin painim mak bilong 2,229 ol spisis ('species'). Sampela piksa bilong ol spisis ol i bin painim insait long stadi long bus bilong Projek eria, ol i stap long Piksa Plet ES1 igo long ES4 ('Plates ES1 to ES4').



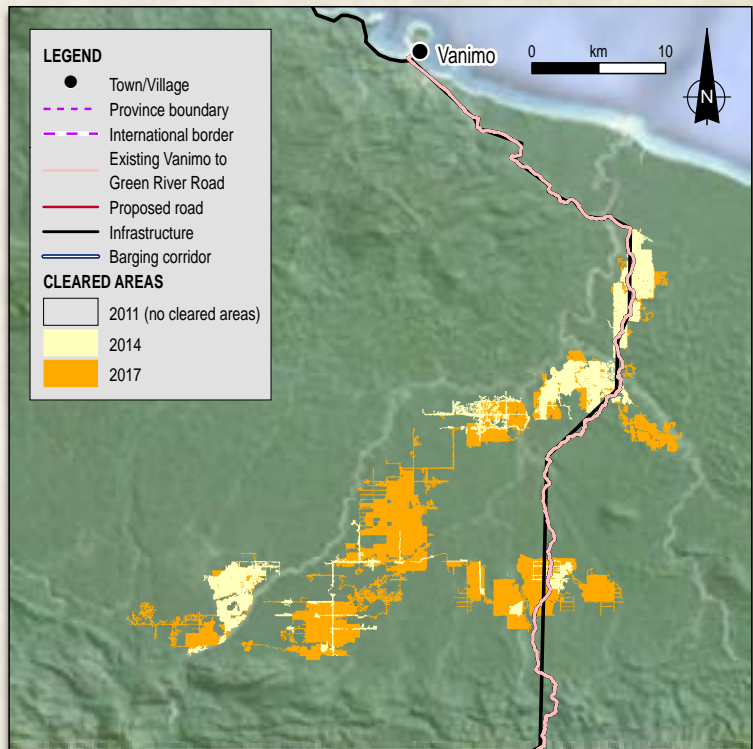
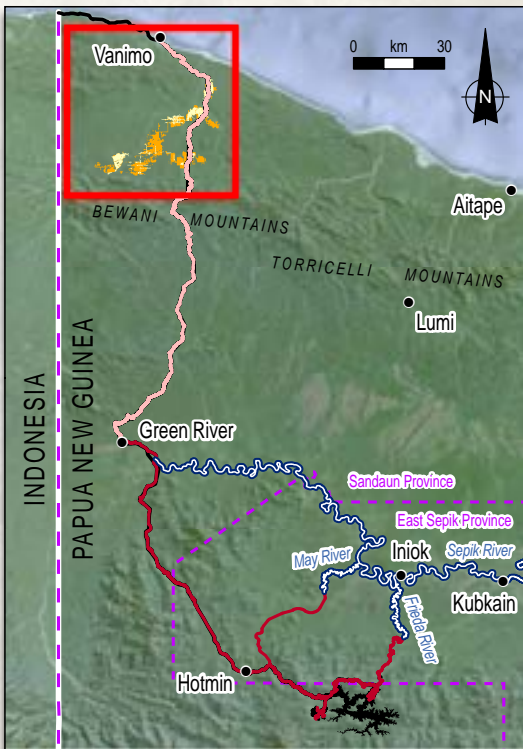
Piksa Plet ES4

- Piksa Plet ES1 Wangepela bilong ol niupela kain o spisis bilong liklik ol kapul ol kolim 'feather-tailed possum (*Distoechurus* sp)' we ol i painim long peles Iniook. Dispela spisis ol i no bin painim yet long narapela hap.
- Piksa Plet ES2 Wangepela pisin ol i bin painim, ol i kolim 'Coroneted fruit-dove (*Gallucolumba rufigula*)'
- Piksa Plet ES3 Narapela pisin ol i bin painim, ol i kolim 'Common paradise kingfisher (*Tanysiptera galatea*)'
- Piksa Plet ES4 Wangepela rokrok we i stap insait long femili bilong ol rokrok we ol i kolim 'Hylidae (*Nyctimystes fluviatilis*)'



Na tu dispela eria bilong Projek em i gat planti ol spisis we bai yu painim tasol long not ('northern') Niugini, yu no inap painim long ol narapela hap bilong PNG. Na ol i bin painim aut sampla namba bilong ol wanwan spisis na tu sampela hap bus o peles we i gutpela olsem yumi mas lukautim o konsevim ('conservation') bikos ol i no planti nau.

Long eria bilong Frida Riva Kopa- Gol na Haidropawa Projek bus i stap yet olsem bik bus, i nogat planti lain i katim o wokim gaden o bagarapim. Tasol long eria karamapim Grin Riva igo long Vanimo ol loggin na oil palm kampani wok long daunim ol diwa tumas olsem Piksa Plet ES5 na ES6 i soim. Piksa Figa ES8 soim ol hap ol katim ol diwa pinis long krismas 2011, 2014 na 2017 arere long rot lusim Vanimo igo daun long Bewani long Sandaun (West Sepik) Provins.



Piksa Figa ES8 Hap we ol katim ol diwai long Sandaun (West Sepik) Provins long yia 2011, 2014 na 2017





Piksa Plet ES7



Piksa Plet ES8



Piksa Plet ES9



Piksa Plet ES10

### 3.2 Environmen bilong wara

Insait long eria we Frida Riva Kopa- Gol na Haidropawa Projek bai kamap, ol han wara i save ron i kamdaun long ol maunten na tu ron bihainim ol peles daun ('valley') we ol i gat sait sait maunten i stap klostu. Wara insait long dispela ol han wara i save klin na i save ron hariap tru na tu dispela ol han wara i gat planti ol liklik na bikpela ston olsem Piksa Plet ES7 ('Plate ES7') i soim. Sampela taim, long taim we ren i pundaun planti stret o long taim we i gat wanpela graun bruk, dispela ol wara i save deti o i save karim graun wantaim. Tasol klostu olgeta taim wara i save klin, na dispela i soim olsem bus i stap yet olsem bik bus, i nogat planti lain i katim o wokim gaden o bagarapim.

Taim yu lusim dispela ol han wara na yu go daun liklik bai yu bungim ol namel wara olsem wara Nena tambolo o wara Niar na wara Ok Binai. Dispela ol wara i save ron nau long peles we i lusim pinis ol maunten o ol bikpela peles daun ('valley'). Na tu ron bilong wara i stat long go isi isi, i no tanim tanim planti tumas na i stat long go bikpela lik lik, olsem Piksa Plet ES8 ('Plate ES8') i soim. Wara long dispela hap em i stat long ron deti bikos i stat long karim graun insait. Na tu i nogat nau planti ol bikpela ston, tasol nau i gat planti gravel ('gravel') ananit long wara na long sait sait bilong wara.

Taim yu go daun mo yet, long wara Frida tambolo, wara i no mo ron long ol peles daun ('valley') o peles we i gat ol maunten, i ron nau long ol flet graun. Olsem na wara igo bikpela na tu bai yu lukim i gat planti ol sait baret o sait rot we wara i save senisim ron bilong en planti na katim niupela rot, olsem Piksa Plet ES9 ('Plate ES9') i soim. Long dispela hap, wara i save deti klostu olgeta taim, bikos nau i karim planti graun insait. Taim yu go daun mo long wara Frida, klostu kamap long wara Sepik, graun long sait sait bilong wara em i flet olgeta. Olsem na, long taim bilong bikpela tait o flad ('flood'), wara i save antapim ol sait na kapsait igo insait long ol peles tais we i gat wara i save stap antap long graun klostu olgeta taim. Dispela hap bilong wara Frida i wankain olsem ol narapela bikpela han wara bilong wara Sepik na tu wankain olsem wara Sepik stret, we olgeta ol i save senis senis tumas ron bilong ol na brukim o katim niupela rot klostu klostu na tu we ol i gat planti ol sait raun wara. Piksa Plet ES10 ('Plate ES10') i soim kain wara.

Ol wara ron namel long main eria na Vanimo em wara Usake/ May, wara Idam na wara Horden. Dispela ol wara em ol han wara bilong wara Sepik. Wara Usake/May na wara Horden em ol namel wara ron namel long ol bikpela peles daun ('valley'). Wara Idam long antap bilong em save ron olsem namel wara na long tambolo bilong em save ron long flet graun.

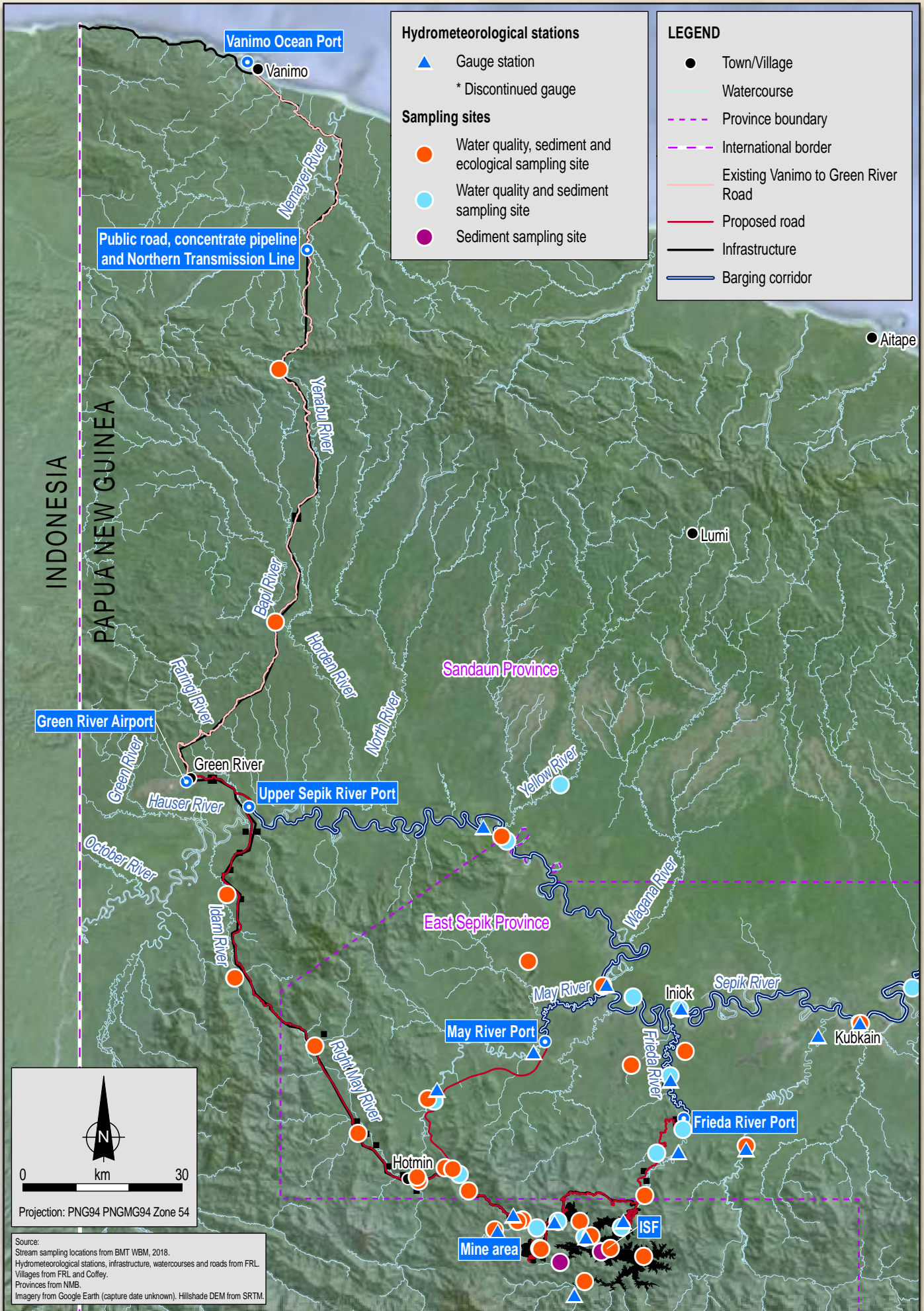
Long wokim wok bilong kamapim EIS, ol i bin wokim 20 stadi olgeta we ol i bin raun long ol han wara na ol bikpela wara na ol i bin kisim sempol ('sample') bilong wara long karim igo testim ('test'). Dispela 20 stadi i bin kamap namel long yia 2007 igo inap long yia 2017. Ol bin wokim ol dispela stadi long kisim sempol long wara Usake na May, wara Idam na wara Horden, wara Nena, Niar na Frida, wara Wario na tu long wara Sepik igo olgeta long maus bilong Sepik. Long ol dispela wara i bin i gat 44 hap o poin we ol i save kam igo long kisim ol sempol bilong wara. Piksa Figa ES9 (Figure ES9) i soim ol dispela poin o hap we ol save kisim sempol long main eria na bihainim rot igo olsem long Vanimo. Olgeta wara mipela testim i sowim olsem wara i wankain olsem ol narapela kain wara stap long PNG. Tasol wara klostu long main eria mipla lukim olsem igat liklik esid na ol metol i antap dispela em soim olsem igat

Piksa Plet ES7 Hap bilong wara Nena i stap antap long het wara (hap bilong Projek eria klostu long we main bai kamap long en)

Piksa Plet ES8 Hap bilong wara Niar we i bungim wara Isai (hap bilong Projek eria klostu long we main bai kamap long en)

Piksa Plet ES9 Hap bilong wara Frida tambolo we wara igo bikpela liklik

Piksa Plet ES10 Hap bilong wara Frida tambolo we wara i kamapim ol sait baret ol kolim 'oxbow lake'





mineral istap long dispela hap. Antap long olgeta ol dispela wok long sempel na testim wara, ol i painaut olsem ol wanwan wara ol i stap gut na nomol. Long sampela ol han wara tasol long peles antap we main bai i kamap bihain, ol i gat liklik esid na metol insait.

Long taim bilong dispela wok painim aut bilong EIS long sait long wara, ol i bin lukluk tu long wanem ol spisis ('species') o samting i stap laif, i stap insait long olgeta ol dispela liklik han wara, bikpela han wara bilong wara Sepik na tu wara Sepik stret. Olsem na ol i bin painim 33 kain pis we ol i kolim neitiv ('native') pis spisis, dispela i minim ol pis we ol i stap bifo bifo yet i kam inap nau. Wanpela bikpela samting ol painim aut long dispela ol stadi em olsem envaironmen long antap na namel bilong wara Sepik em i stap gut yet, olsem planti ol samting i stap laif. Tasol long sait bilong ol pis insait long wara Sepik, ol i bin painim aut olsem ol namba bilong pis bilong bifo yet (ol kolim neitiv pis) igo daun na i senis olgeta taim ol i bin putim ol niupela pis bilong narapela hap (we ol i no neitiv). Na tu i gat sampela namba bilong ol pis spisis ('species') waintaim tupela (2) kain o spisis bilong torosel we ol i painim aut olsem yumi mas lukautim gut nau na konsevim ('conserve') bikos namba bilong ol em i wok long go daun olgeta. Dispela tupela kain torosel ol no save painim long ol narapela wara long PNG. Antap ken long ol dispela pis na torosel, i gat tu tupela kain pukpuk i save stap long wara Sepik na ol sait raun wara.

Na long pinisim stadi bilong EIS long sait bilong wara, ol i bin lukluk tu long Vanimo wof ('wharf'), peles we ol bai wokim peles bilong ol ovasis sip long sua ol kolim Vanimo Ocean Port. Long dispela hap solwara, i gat ol hap save tait na tu ol hap i no dip tumas na ol hap bilong rif olem Piksa Plet ES11 na ES12 i soim (Plates ES11 and ES12). Wara silip antap long solwara kwaliti ('quality') bilong em i wankain olsem ol narapela solwara we hot bilong em i stap namel long 30 digri celsius (~30°C) na wara i no deti tumas. Long dispela hap nambis na solwara igat hap weisan save stap, hap tait save karim weisan i kam ('subtidal sands'), ol hap solwara save buruk long rif or kembang, na tu hap ol gras bilong solwara ('seaweed') save stap. Long sait bilong ol pis ol stadi tim i no bin lukim planti na em i no wankain long ol narapela hap igat wankain nambis na solwara long PNG. Long wanem dispela hap nambis na solwara em stap klostu long Vanimo taun na ol manmeri save painim pis tumas.

### 3.3 Sait bilong sosel na ikonomik (hau ol kominiti i sindaun)

Long sait bilong ol kominiti we Projek bai i stap, i gat bikpela save bikos planti stadi i bin kamap long klostu 20 krismas igo pinis na i kam inap nau. Insait long dispela 20 krismas ol Projek lain i bin kam go planti taim long ol kominiti na ol vilis o peles, na tu toktok na bung planti taim wantaim ol manmeri bilong ol dispela ol kominiti.

Long wokim ripot we bai i stap insait long EIS, ripot ol i kolim sosel beislain ('social baseline'), ol i bin skelim olsem hap eria bilong Projek i bikpela tumas na tu sindaun bilong ol kominiti long dispela bikpela hap i no wankain olgeta. Olsem na ol i bin brukim dispela bikpela hap igo long ol liklik hap ananit long dispela bikpela Projek hap o eria. Dispela ol hap ananit ol i kolim sosel ketsmen ('social catchment') o zon. Long kamap wantaim dispela ol zon, ol i bin skelim dispela ol samting. Nambawan samting ol i bin skelim em long wanem hap ol wanwan kominiti i sindaun, kain olsem long maunten o peles tais o arere long wara o insait long bus. Nambatu samting ol i bin skelim em long wanem kain hap bilong Projek o wanem Projek infrastraksa bai i stap klostu long wanwan kominiti, olsem main o rot o wof. Nambatri samting ol i bin skelim em tok peles bilong kominiti na tu hau na ol i save sindaun long sait bilong sosel na kalsa o tumbuna pasin. Antap long dispela ol samting, ol i bin kamap wantaim ol dispela hap eria ol kolim sosel ketsmen o zon. Long zon o sosel ketsmen we ol kolim 1A ('Social Catchment 1A'), ol i makim ol kominiti klostu lon main eria, ol kominiti bilong ol Miyan, Telefol na Paiyamo. Na long zon o sosel ketsmen ol i kolim 1B ('Social Catchment 1B') ol i makim ol peles arere hap niupela rot bai kamap namel long Hotmin na Grin Riva. Na long zon o sosel ketsmen ol kolim 1C ('Social Catchment 1C') ol i bin makim ol peles we i stap arere long rot ron long Grin Riva igo long Vanimo. Na long zon o sosel ketsmen ol kolim 1D ('Social Catchment 1D') ol i bin makim ol peles stap klostu long niupela wof ('wharf') ol kolim 'Vanimo Ocean Port'. Na long zon o sosel ketsmen ol i kolim 2 ('Social Catchment 2') ol i makim olgeta peles o vilis i stap arere long wara Sepik, i stat antap long Auom 3 na igo olgeta long maus bilong Sepik. Na long zon o sosel ketsmen ol i kolim 3 ('Social Catchment 3') ol i makim tupela provins bilong Sepik, Sandaun Provins na East Sepik Provins.

Tripela sosel ketsmen o zon ol i stap klostu mo yet long main eria na ol Projek infrastraksa. Dispela ol zon em i zon 1A, 1B, 1C na 1D. Bikos ol i stap klostu o ol i raunim Projek, ol kominiti bilong dispela fopela zon bai pilim mo nogut na tu gutpela bilong Projek. Olsem na tim o ol lain bilong EIS ol i bin wok mo yet long dispela ol kominiti long sait bilong lukluk na skelim sindaun bilong ol nau na bihain long Projek i kirap. Long nau taim, ol dispela ol kominiti i save stap olsem sabsistens laif ('subsistence lifestyle'), minim olsem, ol i save usim ol samting bilong graun na envaironmen long lukautim ol yet na ol i no stap tumas long sait bilong moni (tasol ol kominiti bilong sosel ketsmen o zon 1D i no tumas long wanem ol stap namel long taun eria). Olsem na long kisim kaikai long wanwan dei, bikpela rot long ol em long mekim gaden, painim abus long bus, na painim pis long wara, i no long baim kaikai long stoa. Na tu, long dispela ol kominiti, rot bilong wokim o painim moni ol i no planti na ol i hat. Wanpela rot long sampela kominiti long dispela ol zon, em long wasim gol long wara na go salim na kisim moni. Narapela rot tu em long sampela ol



manmeri long sosel ketsmen o zon 1A, 1B na 1C i long painim wok wanwan taim wantaim FRL o wantaim Projek. Long sosel ketsmen o zon 1D rot long painim wok em isi liklik long wanem ol stap namel long Vanimo taun. Tasol long planti ol kominiti, narapela ol rot we ol peles manmeri i save kisim moni em long ronim mota na dingi ('motor and dinghy'), o wok leiba waintaim sampela ol bisnis lain, o kisim ol gaden kaikai o saksak o pis o pukpuk na salim long maket.

Long dispela ol zon, pasin tumbuna na kastom pasin em stron yet long peles na em i bikpela samting insait long laif bilong kominiti. Tasol ol lida manmeri ol i save na ol i tokaut tu olsem ol lukim we kastom pasin i wok long senis na i gat sampela niupela kain pasin i wok long kam insait long kominiti. Na tu ol i save olsem kastom na kalsa bai i senis yet. Long dispela ol zon tu, wei bilong holim o lukautim o usim graun em i stron yet, na wanwan kominiti o klen i papa bilong graun bilong ol na tu ol save gut long mak bilong graun bilong ol. Wanpela as bilong dispela em olsem, wanwan ol peles o vilis ol i stap long wei long ol narapela peles na ol i stap insait long bikpela bus.

Wei bilong stap na sindaun bilong ol manmeri long olgeta sosel ketsmen o zon bilong Projek eria em stap klostu wainkain long hau ol tumbuna i bin stap bifo. I nogat planti senis i wok long kamap hariap. As bilong dispela em i bikos peles i bikpela na namba bilong ol manmeri i liklik na tu peles bilong ol i stap longwe long ol taun o peles we ol pasin fait, na pasin long drin bia na simukim simuk nogut, i no stron tumas. Ol manmeri long dispela ol zon ol i gat gutpela graun long wokim gaden, ol i gat bikpela bus na diwai na saksak long lukautim ol na ol i gat gutpela ol wara, tasol hevi we ol i gat long en em long sait bilong ol sevis olsem helt na edukeison o skul. Planti ol kominiti i nogat tru dispela ol sevis. Sampela ol kominiti we ol i gat dispela ol sevis, ol i no save ron o wok gut tumas.

Long wokim stadi bilong EIS long sait bilong hau ol kominiti i save stap na sait bilong sosel na ikonimiks ('socio-economic') bilong ol, ol stadi tim o lain ol bin kamap wantaim sampela bikpela pasin o wei bilong ol pipol i save stap we ol i kolim sosel veliu ('social values'). Minin bilong sosel veliu em i olsem, wanwan sosel veliu em i wanpela bikpela samtin we i save holim na lukautim ol manmeri long nau taim na long taim bihain na tu i save sapotim na kamapim gutpela na stropela kominiti. Antap long dispela ol komuniti afes tim bilong FRL wantaim ol lida manmeri bilong ol projek eria peles i bin kamap wantaim 6 sosel veliu bilong ol Projek eria kominiti. Dispela ol i olsem:

- Eria Namba 1 – Hau ol manmeri i save lukautim ol yet ('Livelihoods')
  - Sosel Veliu 1 ('Social Value 1'): Hau ol manmeri i gat graun, bus, diwai, gaden, wara na ol narapela samting bilong envoironmen, na hau ol i save usim dispela ol samting long lukautim femili bilong ol.

- ('The capacity to support subsistence livelihoods').
- Sosel Veliu 2 ('Social Value 2'): Hau ol manmeri i gat sans o rot bilong kisim moni long lukautim femili bilong ol.
- ('Opportunities for participation in the cash economy').
- Eria Namba 2 – Pasin tumbuna na kastom na kalsa bilong ol manmeri ('Culture')
  - Sosel Veliu 3 ('Social Value 3'): Hau ol manmeri na kominiti i gat stron inap long holim na lukautim kalsa bilong wanwan na kalsa bilong kominiti na tu hau ol i gat stron inap long lukatim ol kastom na tubuna pasin bilong ol.
  - ('An enduring ability to sustain individual and group cultural identity and traditions, including connections to ancestors')
  - Sosel Veliu 4 ('Social Value 4'): Hau wanwan ol kominiti o klen i gat stron inap long holim na lukautim na usim graun, bus na wara bilong ol we ol narapela lain i noinap dispiutum ('dispute') ol na kisim graun bilong ol.
  - ('An enduring ability to maintain customary rights to land access and resource use')
- Eria Namba 3 – Hau wanwan manmeri na tu kominiti i stap gut ('Personal and community well being')
  - Sosel Veliu 5 ('Social Value 5'): Hau wanwan manmeri na wanwan femili insait long ol kominiti i gat sans long sindaun gut, we ol ken stap helti ('health'), ol ken painim gutpela edukeison ('education') o skul, ol ken stap seif ('safety') we i nogat planti birua samting long envoironmen na ol i gat gutpela sikiriti ('security') we i nogat planti raskol pasin o pasin fait i kamap.
  - ('An environment amenable to personal and family health, education, safety and security').
  - Sosel Veliu 6 ('Social Value 6'): Hau wanwan manmeri na wanwan femili insait long ol kominiti i gat sans o rot o ol i stap klostu long ol sevis, sevis bilong helt olsem ol haus sik o klinik ('clinic'), sevis bilong edukeison olsem skul na hai skul, na sevis we i givim gutpela seifti na sikiriti olsem kot na polis.

Ol EIS tim o lain i bin usim dispela 6 sosel veliu long wokim stadi bilong ol kominiti insait long ol Projek zon. Dispela stadi ol i kolim sosel na ikonimik impek asesmen ('socio-economic impact assessment'). Sosel na ikonimik impek asesmen em i stadi bilong hau ol manmeri i sindaun long nau taim na hau sindaun bilong ol bai senis taim Projek i kirap, o olsem, wanem ol samting nogut na tu ol gutpela samting bai kamap taim Projek i wok.

*Piksa Plet ES12  
Piksa soim nambis stap arere long ples Wesdeco*



*EIS em i ripot we ol bin wokim antap long ol samting insait long narapela repot ol i kolim EIR we ol i bin givim pinis long CEPA. Na tu, EIS em i bihainim olgeta het toktok na pepa bilong CEPA long sait bilong hau long wokim envaironmen impek asesmen ('environmental impact assessment') na to long hau long kamapim na raitim envaironmen impek stetmen ('environmental impact statement')*





## 4. ROT BILONG EIS

Gavaman bilong PNG em i save stronim na sapatim wok bilong developim ol minirol risos bilong kantri. Gavaman i save kamapim ol polisi ('policy') o lo toktok long pulim ol investa ('investment') o ol moni lain i kam insait, na tu ol polisi long lukautim na daunim ol samting nogut o bagarap we i ken kamap insait long ol minirol risos projek. Gavaman em i kamapim planti lo we i stronim dispela lukaut bilong envaironmen wantaim lukaut long sosel ('social') o ol komuniti insait long ol projek eria. Na dispela ol lo i putim was antap long ol kampani, na i mekim ol i wokim wok long daunim ol samting nogut we i ken kamap long tupela sait long envaironmen na sosel o komuniti. EIS em i bikpela samting long dispela sait.

### 4.1 Rot bilong ol lo we i putim was long envaironmen na sosel

PNG i gat wanpela mama lo we i karamapim na lukautim na stronim ol wok bilong daunim ol bagarap bilong envairon long ol peles long PNG we ol projek i save kamap. Dispela mama lo em i *Envaironmen Ekt* ('Environment Act'). Na tu, long mun Febueri ('February') long yia 2014, Gavaman bilong PNG em bin mekim wanpela niupela lo. Dispela lo ol i bin mekim long kamapim wanpela niupela han o dipatmen bilong gavaman ol i kolim 'Conservation and Environment Protection Authority' o CEPA. CEPA em i bin kisim peles bilong dipatmen bilong bifo we ol i bin kolim 'Department of Conservation' o DEC. Na CEPA nau em i han bilong gavaman we i lukautim na bosim dispela mama lo *Envaironmen Ekt*, na i save putim was antap long olgeta wok we i save kamap aninit long *Envaironmen Ekt*.

Envaironmen Ekt i gat wanpela pat o hap ol i kolim Sekson 53 ('Section 53'). Na dispela Sekson 53 em i putim lo antap long olgeta kampani husait i laik kamapim wanpela projek, olsem ol i mas wokim wanpela stadi na ripot ol kolim *Envaironmen Impek Stetmen* o EIS ('Environmental Impact Statement'). Na tu, Sekson 53 i tok olsem olgeta EIS stadi na ripot ol i mas bihainim olgeta poin na toktok bilong wanpela narapela ripot we ol kampani i mas wokim bifo long EIS, ripot ol i kolim *Envaironmen Insepson Ripot* o EIR ('Environmental Inception Report'). EIR em i ripot we i save go pas long EIS we i save tok kilia long olgeta wok painim aut o stadi we kampani i mas wokim insait long EIS. FRL i bin putim EIR bilong Projek igo insait long CEPA long dei 20 bilong mun Disemba ('December') long yia 2017 na CEPA i bin givim tok orait bilong dispela EIR long dei 14 bilong mun Fairbuari (February) long yia 2018. Dispela EIS we nau Projek i putim igo insait, em i bihainim olgeta ol samting insait long EIR ripot. Na tu, dispela EIS em i bihainim olgeta het toktok na lo pepa ('information guideline') bilong CEPA long sait bilong hau long wokim envaironmen impek asesmen ('environmental impact assessment') na to long hau long kamapim na raitim envaironmen impek stetmen ('environmental impact statement').

Rot bilong putim EIS igo insait na kisim tok orait o laisens bilong EIS em i olsem. Taim Projek i putim EIS igo insait wantaim CEPA, Menisin Dairekta ('Managing Director') bilong CEPA bai skelim EIS pastaim. Dispela i save bihainim hap o han bilong *Envaironmen Ekt* ol kolim Sekson 54 ('Section 54'). Na bihain long dispela, Menisin Dairekta bilong CEPA bai putim aut EIS long pablik, we olgeta lain husait i laik ridim o lukim, ken ridim o lukim. Dispela em i save bihainim hap o han bilong *Envaironmen Ekt* ol kolim Sekson 55 ('Section 55').

Na taim pablik i lukim na skelim pinis EIS, Menisin Dairekta bilong CEPA bai i givim tok orait long EIS. Dispela em i save bihainim hap o han bilong *Envaironmen Ekt* ol kolim Sekson 56 ('Section 56'). Tasol Menisin Dairekta bilong CEPA em i noinap givim tok orait sapos dispela ol samting i no stap insait long EIS o sapos EIS ripot i no inapim dispela ol samting.

**(a) EIS i mas putim kilia, givim gutpela toktok na givim planti painim aut antap long olgeta samting nogut o bagarap o birua we i ken kamap insait long Projek, long tupela sait bilong envaironmen na sosel o komuniti ('physical and social environmental impacts').**

**(b) Na tu, EIS i mas tok aut kilia long olgeta wei na rot we Projek bai i bihainim o kamapim long daunim dispela ol samting nogut o bagarap o birua we i ken kamap, taim wok i kamap na Projek i kirap na ron.**

**(c) Na tu, EIS i mas tok kilia long hau Projek bai i bihainim olgeta lo toktok we i stap insait long *Envaironmen Ekt* na tu han bilong *Envaironmen Ekt* we ol i kolim 'Environment Policies and the Regulation'.**

Taim Menisin Dairekta bilong CEPA i givim tok orait bilong em, em bai raitim wanpela ripot bilong em yet, long givim tingting bilong em long sait bilong olgeta toktok we i stap insait loing EIS. Na tu, sapos ol pablik (ol manmeri nambaut husait i bin galasim tu EIS) ol i gat sampela toktok, ol tu bai putim dispela igo insait long CEPA. Na dispela olgeta toktok bai Igo long wanpela komiti ol i kolim *Envaironmen Kansel* ('Environment Council'). Dispela *Envaironmen Kansel* em wanpela komiti we i bungim ol bikpela bikpela save manmeri long sait bilong envaironmen na tu sait bilong sosel o komuniti. Ol i save makim ol dispela lain ananit long hap o han bilong *Envaironmen Ekt* ol i kolim Sekson 57 ('Section 57'). Taim olgeta toktok igo insait long *Envaironmen Kansel*, kansel i gat 90 dei long galasim EIS na galasim ol toktok na bihain tok aut olsem ol bai givim tok orait bilong EIS orogut. Na sapos *Envaironmen Kansel* i no hamamas na i no givim tok orait long EIS, ol bai salim

EIS igo bek long ol Projek lain na tokim ol long wanem ol i mas wokim long stretim ken gut bifo ol i ken putim igo insait ken long kisim tok orait. Tasol, sapos Envaironmen Kansel ol i hamamas na i ol i givim tok orait long EIS, EIS nau bai igo long Minista Bilong Envaironmen ('Minister for Environment and Conservation') long givim tok orait bilong em. Dispela tok orait bilong Minista em i save bihainim hap o han bilong *Envaironmen Ekt* ol i kolim Sekson 59 ('Section 59'). Na taim Minista i givim tok orait, CEPA nau bai wok antap long laisens bilong envaironmen we ol i kolim Envaironmen Permit ('Environment Permit'). Insait long dispela Envaironmen Permit bai i gat olgeta lo toktok we Projek i mas bihainim long sait bilong lukautim envaironmen na kominiti taim Projek i kirap na ron. Na taim CEPA i pinisim dispela Envaironmen Permit, ol bai givim nau dispela laisens o permit igo long Projek na Projek nau bai i gat tok orait long kirap na ron. Dispela rot bilong CEPA i givim Envaironmen Permit em i save bihainim hap o han bilong *Envaironmen Ekt* ol i kolim Sekson 66 na Sekson 67 ('Section 66 and Section 67').

## 4.2 EIS Structure

Dispela EIS em i gat tripela buk ('volumes'):

- Buk A – Eksekutiv Samari ('Executive Summary') (em i dispela ripot nau yu wok long ridim).
- Buk B – Ripot Trutru ('Main Report'). Dispela buk em i karamapim olgeta tingting bilong EIS. Yu ken ridim na bai yu kilia long ol samting, maski yu nogat olgeta ol wanwan ripot bilong wanwan stadi we i stap long Buk C. Buk B i gat 17 septa ('chapter').
- Buk C – Ol Wanwan Ripot ('Appendices'). Dispela em ol wanwan ripot bilong ol wanwan stadi we ol i bin kamapim insait long wok bilong EIS (olsem EIS em i no wanpela stadi tasol em i planti ol stadi). Nem bilong dispela stadi we stap long Buk C bilong EIS ripot ol i givim long Tebel ES3 ('Table ES3').

Tebel ES3 Sepik Developmen Projek EIS – Ol Wanwan Ripot bilong ol stadi i stap long Buk C

Ol Wanwan Sapot Ripot		Man o kampani go pas long wokim dispela ripot
1	Wok painim aut antap long wanem ol esid na metol na ol narapela marasin bilong graun na ston bai i stap insait long pipia ston (' <i>Waste Rock</i> ') na pipia weisan (' <i>Process Tailings</i> ') we main bai i kamapim bihain (' <i>Assessment of the Geochemical Characteristics of Waste Rock and Process Tailings</i> ')	Environmental Geochemistry International Pty Ltd
2a	Plen bilong wokim Frida Riva Haidropawa Storis Facility o ISF (' <i>Frieda River Hydroelectric Storage Facility (FRHEP) Design</i> ')	SRK Consulting (Australasia) Pty Ltd
2b	Wok painim aut antap long hau raunwara bilong Frida Riva Haidropawa Storis Facility o ISF bai i stap (' <i>Frieda River Hydroelectric Storage Facility (FRHEP) Limnology and Lake Dynamics Assessment</i> ')	HydroNumerics Pty Ltd
3a	Plen bilong hau main o Frida Riva Kopa-Gol Projek bai pas bihain (Main Klosa Plen) (' <i>Conceptual Mine Closure Plan (FRCGP)</i> ')	Coffey
3b	Plen bilong hau Frida Riva Haidropawa Projek bai pas bihain (' <i>Conceptual Mine Closure Plan (FRHEP)</i> ')	Coffey
4	Wok painim aut antap long hau wara i save ron insait o ananit long graun long nau taim na taim Projek i ron bihain (' <i>Regional Groundwater Assessment</i> ')	Australasian Groundwater and Environmental Consultants Pty Ltd
5	Wok painim aut antap long haumas graun i save bung na mikis insait long ol wara bilong Projek eria long nau taim na hau mas bai i kamap taim Projek i ron bihain (' <i>Sediment Transport Assessment</i> ')	Golder Associates Pty Ltd
6a	Wok painim aut antap long haumas wara bai igo insait na kam autsait long main eria taim Projek i ron (' <i>Site Wide Water Balance</i> ')	SRK Consulting (Australasia) Pty Ltd
6b	Wok painim aut antap long haumas wara bai igo insait na kam autsait long main eria taim Projek i ron (' <i>Site Wide Load Balance</i> ')	SRK Consulting (Australasia) Pty Ltd
7a	Wok painim aut bilong wanem ol marasin na ol narapela samting i stap o mikis insait long ol wara bilong Projek eria long nau taim bifo long main i kirap, na tu long wanem ol samting i stap laif insait long ol wara long nau taim (' <i>Water Quality and Aquatic Ecology Baseline</i> ')	BMT WBM Pty Ltd
7b	Wok painim aut bilong wanem ol marasin na ol narapela samting i stap insait long ol pis bilong Projek eria long nau taim bifo long main i kirap (' <i>Bioaccumulation Study</i> ')	Tetra Tech
8a	Wok painim aut antap long wanem ol diwai, kumu, abus, animol, binatang na ol kainkain samting i stap laif insait long bus graun bilong Projek eria, long nau taim, bifo long main i kirap (' <i>Terrestrial Biodiversity Field Assessment for the Frieda River Project</i> ')	Crome, F.; Takeuchi, W.; Aplin, K.; Armstrong, K.; Woxvold, I.; Richards, S.; and Müller, C.
8b	Wok painim aut antap long wanem ol diwai, kumu, abus, animol, binatang na ol kainkain samting i stap laif insait long bus graun bilong Projek eria, long nau taim, bifo long main i kirap long ol infrastraksa korido o hap ol sevis olsem rot na wof bai kirap (' <i>Terrestrial Biodiversity Baseline Assessment – Infrastructure Corridor</i> ')	Takeuchi, W.; Armstrong, K.; Woxvold, I.; Richards, S.; Kale, E. and Helgren, K.

8c	Wok painim aut antap long wanem ol senis bai main i mekim i ken kamap long ol diwai, kumu, abus, enimol, binatang na ol kainkain samting i stap laif insait long bus graun bilong Projek eria, long taim Projek i ron bihain ( <i>'Terrestrial Biodiversity Impact Assessment'</i> )	Francis Crome Pty Ltd
9	Wok painim aut antap long hau umi usim graun na ol senis i wok long kamap long graun long nau taim na long pastaim long Projek eria ( <i>'Land Use Change Assessment'</i> )	University of Nottingham
10	Wok painim aut antap long nois o pairap we i ken kamap, na tu antap long hau graun i ken seksek o guria, long olgeta wanwan hap bilong Projek, long taim Projek i ron bihain ( <i>'Noise and Vibration Impact Assessment'</i> )	SLR Consulting Australia Pty Ltd
11	Wok painim aut antap long wanem ol nogut win olsem simuk na smel inap long kamaut na tu bikpela painim aut bilong win ol i kolim 'Grin Haus Ges' we i ken kamap, long wanwan hap bilong Projek long taim Projek i ron bihain ( <i>'Air Quality and Greenhouse Gas Assessment'</i> )	SLR Consulting Australia Pty Ltd
12a	Wok painim aut antap long wanem ol pis, kambang na ol narapela samting bilong sol wara, i stap klostu o raunim hap bilong putim wof (peles ovasis sip bai sua) long Vanimo taun, long nau taim bifo long Projek i kirap ( <i>'Nearshore Marine Characterisation'</i> )	BMT WBM Pty Ltd
12b	Wok painim aut antap long hau solwara save mikis na klinim em yet long ol deti long wanem sapos kopa-gol weisan i kapsait long wof (peles ovasis sip bai sua) long Vanimo taun mipela mas save long mak we solwara save tanim ol deti na kilim ol marasin, long nau taim bifo long Projek i kirap ( <i>'Nearshore Marine Mixing Zone Modelling'</i> )	Tetra Tech
13	Sosel Impek Asesmen (wok painim aut antap long hau ol manmeri na kominiti bilong Projek eria i save stap long nau taim bifo long Projek i kirap, na tu, wanem senis bai Projek i kamapim taim Projek i ron bihain ( <i>'Social Impact Assessment'</i> )	Coffey
13.1	Sotpela stori long sindaun bilong ol wanwan peles ol i wokim ol wok painimaut long em pastaim long nau taim bifo long Projek i kirap ( <i>'Study Area Social Profiles Baseline'</i> )	Coffey
13.2	Wok painim aut antap long kalsa, kastom na pasin tumbuna, na tu ol peles masalai bilong ol manmeri na kominiti bilong Projek eria, long nau taim na tu, wanem ol senis bai Projek i kamapim taim Projek i ron bihain ( <i>'Archaeology and Cultural Heritage Assessment'</i> )	Andrew Long + Associates Pty Ltd
13.3	Wok painim aut antap long ol helt bilong long ol man meri stap long Projek eria long sait bilong ol samtin ol save kaikai ( <i>'Baseline Health, Diet and Nutrition Survey'</i> )	Centre for Environmental Health Pty Ltd
13.4	Wok painim aut antap long wanem ol senis bai main i kamapim long sait bilong helt bilong ol manmeri na kominiti bilong Projek eria, taim Projek i ron bihain ( <i>'Health Impact Assessment'</i> )	Dempsey Toxicology and Risk Assessment

*Namel long 2008 i go long 2016 ol i bin wokim 24 ol stadi we i go insait long EIS.*

*Projek i bin wokim planti awenes na planti bung wantaim komuniti na gavaman long kamapim dispela EIS. Ol i bin wokim tupela EIR awenes, wanpela long 2010 na narapela long 2014. Long wanwan tri mun ol i bin mitin wantaim ol lida bilong ol komuniti arere long main eria na tu wantaim gavaman bilong tupela Sepik provins. Ol i bin wokim awenes long wara Sepik long 2011, 2015, 2016 na 2018. Na ol i bin wokim tu planti awenes wantaim ol wok manmeri.*





## 5. WEI BILONG WOK BUNG WANTAIM OL STEIKHOLDA

### 5.1 Tok antap

Wanpela bikpela samtin we Projek i bin wokim long planti krismas igo pinis, em long wok bung wantaim ol steikholda ('stakeholders'). Minin bilong steikholda em olsem olgeta lain husait bai i pilim o kisim gutpela o nogut bilong Projek. O olgeta lain husait i gat sampela kain tingting antap long Projek. O olgeta lain husait inap long bagarapim o daunim Projek. Wok bilong bung wantaim dispela olgeta lain steikholda ol i save kolim steikholda engeijmen ('Stakeholder Engagement'). Dispela wok bilong steikholda engeijmen we Projek i wokim em i kamap wantaim planti ol lain. I kamap wantaim ol wok manmeri bilong FRL na ol papa kampani bilong Projek bifo, wantaim ol konsaltens wantaim ol papa graun long main eria, wantaim nesenol na provinsol gavaman, wantaim planti ol kominiti, wantaim ol non-gavaman ogenaiseson o NGO ('non-government organisations') na wantaim planti ol narapela lain husait i gat sampela tingting antap long Projek. Projek i bin wokim dispela steikholda engeijmen long strongim sapot bilong Projek na tu long kisim tok orait bilong Projek.

Taim PanAust i bin baim FRL long yia 2014 ol i bin putim steikholda engeijmen olsem wanpela bikpela tingting na wok bilong ol, na i bin yusim planti rot long bung wantaim ol wanwan steikholda. Sampela ol dispela rot ol i olsem. Sampela rot em long bung long ol mitin olsem wanwan tripela mun, sampela em long mekim ol wokabout insait long ol vilis o peles ('engagement campaigns'), na sampela rot em long wokim ol awenes program ('awareness programs'). Na tu bin i gat ol bung wantaim ol gavaman dipatmen bilong nesi nol gavaman ('government departments'), wantaim ol provinsol gavaman ('provincial administrations'), wantaim ol NGO na wantaim ol narapela kampani o ol grup we ol i save halivim na sapotim wok bilong mainin ('industry groups'). Pastaim FRL i toktok wantaim ol steikholda long Frida Riva Kopa-Gol Projek, tasol long yia 2017 FRL toktok tu long ol narapela projek ananit long Sepik Developmen Projek.

Na insait long wok bilong kamapim EIS na insait long ol stadi bilong EIS, i bin gat planti mo ol bung we Projek i bin luksave long na kisim tingting bilong planti ol steikholda. I bin gat ol mitin wantaim ol lida manmeri long ol vilis na peles insait long Projek eria. Namel long 2010 na 2018, i bin gat ol sosel stadi ('social surveys') we ol i bin askim planti ol askim long wanwan haus insait long planti ol peles. I bin gat ol stadi we ol i askim ol kominiti long sindaun na ikonmik bilong ol ('socio-economic studies'). I bin gat ol stadi we ol i bin askim ol lida manmeri long sait bilong kalsa, kastom,

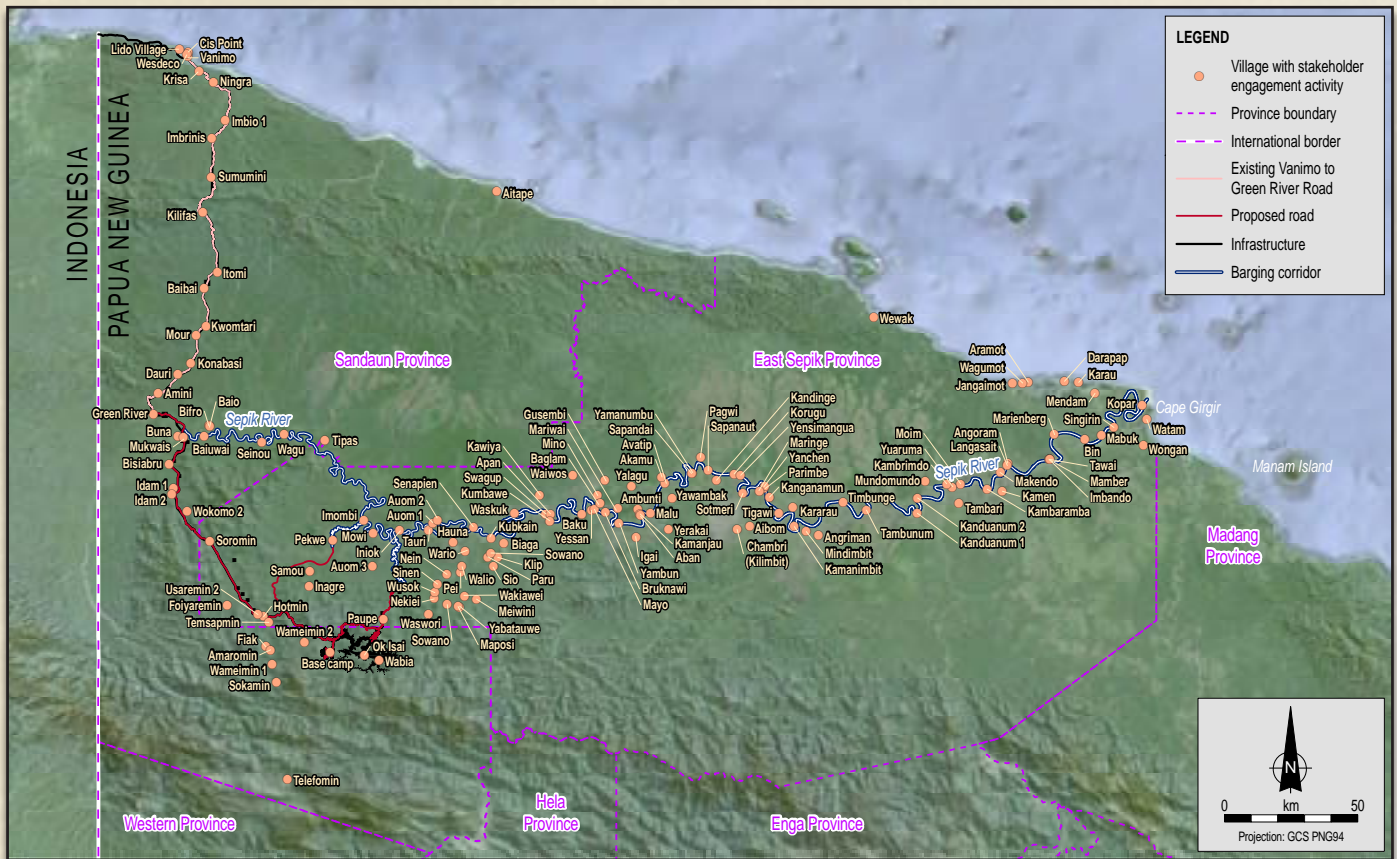
pasin tumbuna na peles masalai bilong ol. I bin gat ol stadi we ol i askim ol mama na papa long sait bilong helt na kaikai na hau ol save lukautim femeli. Na i bin gat planti mo bung antap ken long ol dispela, we olgeta ol i bin kamapim long wokim wok bilong dispela EIS.

### 5.2 Ol lo tingting we Projek i mas mekim long sait bilong bung na toktok wantaim ol steikholda

Ol lo bilong PNG na tu ol polisi bilong kampani PanAust ol i gat planti toktok long ol samting we Projek i mas bihainim long sait bilong bung na toktok wantaim ol steikholda. Na ol mas wokim dispela ol samting insait long wok bilong kisim tok orait o laisens bilong environmen na sosel, na tu, long sait bilong wokim ol stadi na ripot bilong EIS. Projek em i gat fopela rot we i save bihainim insait long wok bilong bung wantaim ol steikholda:

1. Projek i save kisim tingting bilong ol steikholda.
2. Projek i save yusim planti ol wei, olsem piksa, vidio na ol pepa, long wokim tok save na awenes ('awareness') igo long ol steikholda we ol ken save long Projek.
3. Projek i save wok bung wantaim planti steikholda olsem gavaman na sios long kamapim wok bilong developmen o halivim ol manmeri long peles.
4. Projek i save wokim ol treinin na skul na i save sapotim wok we i stronim ol lida manmeri long lukautim kominiti bilong ol yet.

Na tu, Projek i bin wok wantaim ol bikpela o ki steikholda, long ol tu i mas givim tingting bilong ol long sait bilong wanem ol steikholda engeijmen Projek i mas wokim. Sampela ol dispela tingting em i bin kamap long taim bilong ol sosol veliu mitin wantaim ol lida bilong main eria na tu insait long wok bung bilong kamapim rot bilong stretim ol wari bilong ol manmeri, samting ol kolim grivens mekenisim ('grievance mechanism'). FRL save usim wanpela complaints na grivens mekenisim na em save wok bung wantaim wanpela sistem ('system') bilong FRL save rekodim ('record') ol hevi bilong wok save kamap ol kolim insiden menjimen sistem ('incident management system').



Piksa Figa ES10 Mep we i soim olgeta kominiti we Projek i bin wokim wok bilong steikholda engejmen long mekim dispela EIS i kamap

### 5.3 Ol kain wok we Projek i bin wokim long bung na toktok wantaim ol steikholda

Projek i bin wokim planti awenes na planti bung wantaim kominiti na gavaman long kamapim dispela EIS na tu long kamap wantaim fai nol plen bilong Projek. Long wanwan tri mun ol i bin mitin wantaim ol lida bilong ol kominiti arere long main eria na tu wantaim gavaman bilong tupela Sepik provins. Ol i bin wokim awenes long wara Sepik. Na ol i bin wokim tu planti awenes wantaim ol wok manmeri. Piksa Figa ES10 em i soim mep bilong olgeta kominiti we Projek i bin wokim wok bilong steikholda engejmen, namel long 2009 na 2018, long mekim dispela EIS i kamap.

Wanpela bikpela wok bilong steikholda engejmen we Projek i bin wokim em bin long wokabout long ol peles arere long wara Sepik long wokim awenes bilong Projek na EIS. Long mun Julai ('July') na Ogast ('August') long yia 2015, i bin gat klostu olsem 7,000 manmeri husait i bin go insait long dispela awenes wokabout long wara Sepik we Projek i bin mekim long 41 peles ol vilis. Na long mun Septemba ('September') long yia 2016, i bin gat klostu wainkain namba long ol manmeri husait i bin go insait long narapela awenes ken long wara Sepik. Nambafor awenes i bin kamap long mun Ogast ('August') igo long mun Oktoba ('October') long yia 2018, olsem Piksa Plet ES13 ('Plate ES13'). Awenes kamap namel long ol peles arere long infrastraksa korido igo daun long maus bilong wara Sepik. Awenes tim bin toktok wantaim klostu olsem 7,400 man meri long klostu 97 peles olgeta.

Narapela bikpela wok bilong steikholda engejmen we Projek i bin wokim em bin wantaim ol gavaman. Projek i bin wokim ol dispela bung na mitin na awenes na ol woksop wantaim gavaman, antap long ol bikpela taget we ol i bin hitim o bihain long sampela bikpela wok we ol i bin pinisim. Kain taget olsem taim Projek i bin putim

ripot ol kolim EIR insait wantaim gavaman, na tu kain taget olsem taim Projek i bin putim eplikeison bilong Spesol Mainin Lis o SML igo insait. Antap long dispela eplikeison bilong SML, Projek i bin wokim ol mitin long Wewak na Vanimo wantaim ol ki gavaman dipatmen olsem CEPA, MRA, Dipatmen bilong Tresari ('Treasury'), Dipatmen bilong Treid, Industri na Komes ('Trade, Industry and Commerce') na Dipatmen bilong Jastis na Atoni Jeneral ('Justice and Attorney General').

Antap long dispela nesi nol gavaman bin wokim wanpela komiti ol kolim Stet Negosiasi Tim ('State Negotiation Team') wok bilong dispela komiti em long stiarim na bungim ol ki gavman dipatmen lo givim laisens bilong Projek olsem dipatmen bilon minerol polici na jiohezad menjimen ('Mineral Policy and Geohazards Management'), MRA na CEPA. Long taim dispela buk mipela wok long raitim, dispela komiti i bin bung tupela time pinis long yia 2018.

FRL save bung wantaim provinsal gavaman bilong Sandaun na East Sepik Provins long taim bilong Join Provinsial Komiti ('Joint Provincial Consultative Committee') bung long olgeta tri mun.

FRL i bin holim tu, mitin o woksop wantaim CEPA na MRA long Port Moresby long mun Ogast long yia 2018, long dispela woksop ol i bin bungim ol bikpela wok manmeri bilong CEPA na MRA wantaim stadi tim bilong FRL wantaim ol enjinia ('engineers') we ol i bin kamapim plen o disain bilong ISF wantaim komiti bilong ISF we ol kolim TIRP. Na ol i bin givim toktok long CEPA na MRA long olgeta sait bilong plen na disain bilong ISF na hau ol bai sanapim, ronim na pasim ISF. Na tu ol i bin givim ol save pepa bilong ol enjinia lain na ol TIRP komiti lain igo long CEPA na MRA long soim ol olsem Projek i kisim ol bikpela bikpela save manmeri tasol long wokim plen na disain bilong ISF.



## 5.4 Wanem i bin kamap antap long wok we Projek i bin wokim long bung na toktok wantaim ol steikholda

Ol kain wari na askim we i bin kamap long taim bilong EIS steikholda engeijmen wok em i no wankain na i bin karamapim ol kain kain samting. Olsem ol lain we ol i stap klostu long main eria ol gat sampela kain wari na tu ol lain we ol stap longwei long main ol gat ol narapela kain wari ken.

Ol komuniti stap arere long wara Sepik bin gat bikpela wari long sait bilong pastaim tingting bilong FRL long usim wara Sepik long kisim kopa-gol weisan na ol kago bilong main igo kam long em. Wari bilong ol em olsem ol no inap kisim wanpela gutpela samting long Projek na ol bai lukim tasol sip o bage igo kam tasol

Tasol sampela ol wari i bin wankain. Wanpela bikpela wari we olgeta komuniti ol i tokaut long en em long sait long ol developmen olsem pawa na rot. Dispela wari i kamap long planti peles bikos Projek em i stap long wanpela eria o hap we dispela ol developmen i nogat. Ol lain husait i bin toktok long rot, ol i bin tok olsem ol i laikim ol rot i mas kamap namel long ol wanwan vilis o peles bilong Projek eria na tu rot i mas go aut na bungim nambis o ol bikpela taun olsem Wewak na Vanimo.

Olgeta komuniti ol i bin autim tu wanpela wari olsem ol i laikim kampani i mas givim halivim long kamapim ol sevis long sait bilong helt ('health') o lukautim sik, sait bilong edukaisan ('education') o skul na sait bilong lo na oda ('law and order') olsem polis na ol kot.

Planti ol komuniti ol i toktok tu long sait bilong kisim wok wantaim Projek ('employment'), sait bilong kisim treinin na skul ananit long Projek ('training') na tu sait bilong bisnis developmen ('business development') olsem kisim ol kontrek ('contracts') wantaim Projek o salim ol samting igo long Projek. Sampela toktok ol bin autim em olsem:

- Long sait bilong wok, ol i laikim kampani i mas givim bikpela sans na luksave long ol manmeri insait long Projek eria pastaim bifo long ol manmeri autsait long Projek eria. Long sampela ples, ol i bin toktok planti antap long hau Projek ken skulim na givim wok long ol yut ('youth') olsem ol yangpela. Dispela toktok antap long ol yut o ol yangpela i bin kamap bikos planti bilong ol insait long ol Projek peles i nogat gutpela skul inap long painim wok. Na tu dispela toktok i bin kamap bikos ol i lukim olsem Projek em i sans bilong ol yangpela o sans bilong ol niupela jenereison ('generation') long kisim save na wok.
- Long sait bilong bisnis developmen, ol i bin laikim tu wankain, olsem kampani i mas givim bikpela sans na luksave long ol manmeri insait long Projek eria pastaim bifo long ol manmeri autsait long Projek eria.

Planti toktok na wari tu i bin kamap antap long ol benefit ('benefits') o olsem ol gutpela samting we Projek ken givim long ol komuniti, na tu antap long kompenseison ('compensation') o olsem ol kes moni we Projek bai baim igo long wanwan ol papa graun o papa bilong ol samting we em i bagarapim. Dispela ol toktok i no pat bilong EIS o i no stap insait long wok bilong EIS, olsem na ol dispela toktok ol i mas wokim bihain taim, long taim we toktok antap long ol Benefit



Piksa Plet ES13

Wanpela bung bilong wokabaut bilong awenes long peles Idam 1 na Idam 2 long mun Ogast ('August') long yia 2018

Agrimen ('Benefits Sharing Agreement') i kamap. Dispela toktok bilong Benefit Agrimen em i stap long han bilong gavaman bilong PNG, na kamapani o Projek i na save go pas long dispela. Long sait bilong ol lain husait i sindaun arere long wara Sepik, we Projek i bungim ol insait long awenes we ol i bin mekim long wara long 2015 na 2016, wari bilong ol i stap long tripela ol i bikipela samting:

- Wari long sait bilong environmen ('environment') – olsem taim Projek i kirap na ron, i noken bagarapim wara Sepik liklik na wara i mas klin na gutpela yet na stap olsem nau i stap.
- Wari long sait bilong yusim wara Sepik ('Sepik River use') – olsem taim Projek i kirap na ron, i noken bagarapim hau ol i save yusim wara long kainkain wei long sindaun na laif bilong ol.
- Wari long sait bilong ol benefit ('benefits') – olsem taim Projek i kirap na ron, ol tu i mas lukim sampela ol gutpela bilong Projek, olsem sans long painim wok na tu ol kompenseison ('compensation') sapos sampela ol liklik bagarap i kamap.

Long sait long ol gavaman lain, lain bilong provinsol na nesi nol gavaman, planti toktok we ol bin givim em i raunim o i antap long Projek stret. Kain toktok olsem, plen na disain bilong Projek, na hau ol bai kirapim, na tu, long wanem taim Projek bai kirap. Gavaman tu em i bin gat wari antap long ol impek o samting nogut we i ken kamap long sait bilong environmen na sosel o komuniti na em i gat wari tu long sait bilong sampela ol lain we nogut ol i bai kirap na bagarapim o stopim Projek.

## 5.5 Hau wok bilong Projek bung na toktok wantaim ol steikholda bai igo yet

Projek i wokim pinis wanpela plen ol i kolim steikholda engeijmen plen. Dispela plen em i plen bilong hau Projek bai i wokim steikholda engeijmen igo yet. Insait long dispela plen, em i tok antap long wanwan ol steikholda we Projek i toktok wantaim ol yet na wanem ol wari bilong dispela ol steikholda. Steikholda engeijmen plen em i tok kilia tu long wanem ol samting bai FRL i nidim na tu wanem o ol rot we bai i bihainim, long wokim ol wok bilong steikholda engeijmen. Projek i givim pinis EIS igo long gavaman. Olsem na nau bai i gat taim na wok bilong putim dispela EIS igo long peles kilia, we ol pablik ken galasim na sekim na skelim ('public disclosure'). Dispela wok bai i bihainim stret olgeta ol lo toktok we i stap insait long mama lo ol kolim *Environmen Ekt*. Wanpela long dispela lo toktok em i tok olsem bai i mas gat wanpela bikipela wokabaut long wokim awenes antap long EIS, wokabaut we ol i kolim EIS engeijmen kempein ('EIS engagement campaign'). Dispela EIS engeijmen kempein bai bungim ol wok manmeri bilong FRL wantaim ol wok manmeri bilong het konsaltent o kontrekta bilong EIS ol kolim Coffey wantaim ol ofisa na ol bik manmeri bilong CEPA na MRA, na olgeta bai wokabaut wantaim long wokim awenes. Na insait long dispela EIS engeijmen kempein tu, ol bai mekim awenes antap long ol bikipela ol painim aut samting we i stap insait long EIS. Na tu ol bai bekim ol toktok bilong ol steikholda we ol bin mekim bifo na givim ken toktok antap long ol wari we ol dispela steikholda i gat. Long sait bilong kamapim dispela EIS engeijmen kempein, dispela em i stap long han bilong CEPA. CEPA bai makim taim na tu mekim plen bilong dispela EIS wokabaut na FRL bai i stap tu long halivim CEPA long dispela wok. Sampela tingting we i kamap nau em olsem ol laik mekim dispela wokabaut namel long tripela mun igo long sispela mun bihain long taim Projek i putim EIS igo insait pinis.

Long sait bilong Projek, ol ofisa o wok manmeri bilong Komuniti Afes Tim ('Community Affairs Team') o CA lain bilong FRL bai i wokim yet wok bilong steikholda engeijmen antap long EIS na dispela wok bai igo yet igo inap long konstrakson ('construction') wok o wok bilong sanapim Projek i kamap. Sampela ol dispela wok em olsem. Ol CA bai wok yet long wokim awenes na givim ol tok save antap long EIS na tu ron bilong Projek. Ol CA bai wok yet long bung wantaim provinsol gavaman bilong tupela Sepik provins. Ol CA bai wok yet long kisim ol wari na bekim ol wari bilong ol komuniti insait long Projek eria. Ol CA bai wok yet antap long ol wari komuniti i gat long sait bilong wok. Na ol CA bai wok yet long halivim wok bilong gavaman antap long saptim Projek na mekim Projek i kirap.

**PANORAMA**  
GRUP NUSLETA BILONG OL WOKMAN NA WOKMERI LONG PANAUST LIMITED  
PANAU  
Su mamba 10 – Q1 2016

**TOKTOK BILONG FRED**

Mi gik bikipela amamas long tok olsem yia 2015 em i bin wanpela gutpela yia stret bilong Panaust wantaim ol mipela rekot bilong wok i kamap long olgeta ki bisnis indastri bilong mipela.

Long sait bilong sefi, Grup Total Rekodabul Injait Reki (TRIFR) i bin stap long 0.62 wan wan milien wok aus, we em i daunbilu tru long mak bilong 1.32. Mi kisin mak tu i winin taget o mak bilong mipela yet long 0.23 bilong kisin taim bilong wok long injait o bagarap kamap TRIFR taget na painim yia wantaim 0.16 wan wan milien wok aus.

2016 prodaksen, total 70,4491 kopa, 1,664,242oz silva long konsentret na doré na em stap antap waen taget bilong aamul long 74,0001 go 76,0001 kopa, 195,000oz i go 205,000oz gol, na 1.4Moz i go 1.5Moz silva.

Ol kos aukam bilong mipela tu i strong tru wantaim Phu Khai long kisin mak bilong CIUS51.301b (taget US\$1.471b) na AISC US\$1.691b (taget US\$1.991b); na Ban Houayoi CIUS51.602b (taget US\$2.110b) na AISC US\$687.02b (taget US\$686.00b).

Mak bilong sefi em mipela i brukim rekot, prodaksen kos we mipela i kamapim em i kamapim gutpela mak long kisin kisin no gut bilong konomi olsem. Mi lukuk i go long 2016 wantim strongpela tingting olsem mipela inap long mekim naubawan wok yet bihainim hasi standet mipela i kamapim long 2015.

Mipela i bin wok gut olsem wanpela pralwet kampani inap hap yia nau na wok bilong mipela wantaim mama kampani, GRAM i stap strong yet. Em i gutpela tru long kisin sapot bilong GRAM insait long dispela taim bilong ol prais bilong ol komoditi i go daun. Mipela i kamapim wanpela gutpela kisin prapiti i go long GRAM long pinis bilong 2015; mak bilong mipela em long mekim moa gut na kisin biki bikipela moa moa long yia 2016.

Long Enuei Jeneral Miting bilong GRAM long Guangzhou, mi bin amamas long kisin tapela awari long makim na Phu Bia Maining. Nauba wan pinis long 'Ekselens long Sefti' na ol narapela long 'Ekselens long Operesens'.

Dispela awari i sabin strongpela tingting bilong GRAM long bisnis bilong mipela na ol pipal bilong mipela; na long tingting bilong ol long mipela bai wok long kamapim yet ha! pefomans aukam long olgeta samting mipela i mekim.

Wok long Frieda River fisibiliti stadi i kam Mostol long pinis na ol tingting long painim insait long narapela tupela mun. Stadi i bihainim taim bilong em stret long givim ripoet i go long Gavamen bilong Papua Niugini long namba wan hap bilong dispela yia long saptim apukesen bilong mipela long kisin wanpela Sapat Maining 15b.

Long projek sai bilong Frieda River wok i go het yet long Eksploresens Aktes Trek (EAT). Taim em i pinis dispela trek bai sabin wanpela rot long gram stak long Frieda River i go long main sait na em bai helpim mipela long mo kan yusim tumas melitipela transport. Dispela tu bai kamapim gut sefti na kost aukam bilong Projek.

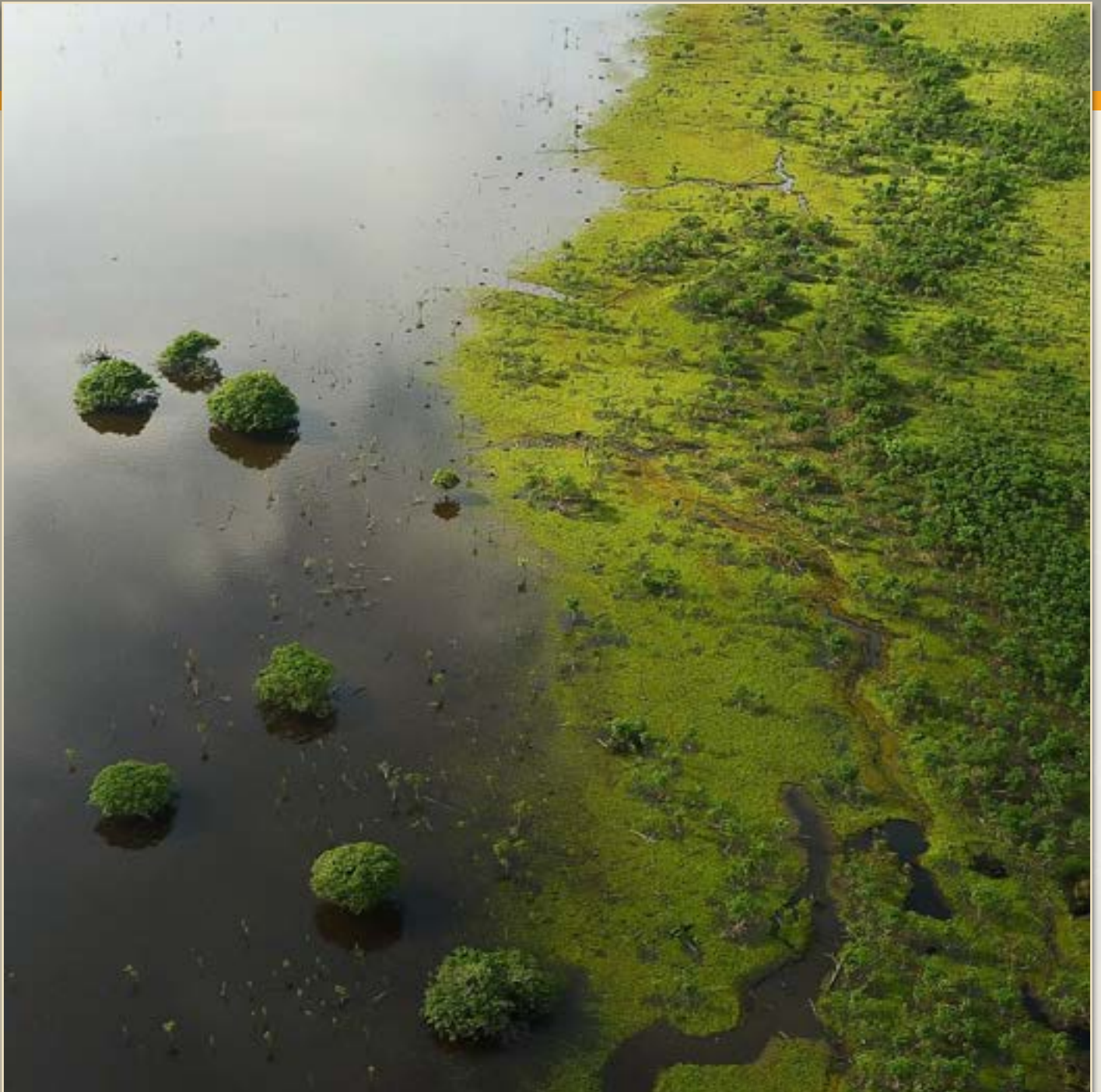
Long 2016 mipela i ting olsem mipela i ken lukim komoditi prais long salesim mipela yet. Lukuk bilong mipela i stap yet long helt na sefti bilong ol wokman na wokmeri bilong mipela na ol konsyulit na waukain taim tu mipela bai painim rot bilong daunim ol kost na kamapim gut ol pasin bilong wok bilong mipela. Long dispela sa, mipela i kiskuk long ol Lao-resenel wokman na wokmeri olsem long disyusim ol long kisin planti moa senas wok insait long Kampani olsem ol i bin mekim long 2015.

Temyu long olgeta kontribusien bilong yopela bilong gutpela wok kamap bilong Panaust.

Dr. Fred Heiss  
Menesing Daerakta

*Piksa long nau taim bilong ples ol kolim beis kem ('base camp') antap long we Frida Riva Kopa-Gol Projek eria bai stap. Beis kem em i ples we ol wok manmeri bilong Projek i save silip kirap na wokim wok*





*Bikpela wok painimaut o ol stadi bilong EIS em i bin kamap antap long ol wara insait long Projek eria we ol i stap ananti long wanwan hap bilong Projek we wok bai kamap bihain. Ol wokim dispela long wanem nogut bihain i gat sampela wara o graun bai i was i kam daun long ol Projek hap na i go insait long ol dispela wara. Insait long dispela ol wok painimaut o stadi, ol bin lukluk long planti ol samting we i stap nau bifo long Projek i kirap. Ol bin lukluk long gutpela bilong wara. Ol bin lukluk long hau ol manmeri i save yusim wara long kainkai wok. Ol bin lukluk long ol samtin we i stap laif insait long wara na tu insait long bus graun we i stap sait sait o arere long ol wara. Na ol bin lukluk long hau ol manmeri i save kisim pis long lukautim ol yet long sait bilong kaikai na tu long sait bilong salim na kisim moni.*



## 6. TOKTOK ANTAP LONG OL NOGUT SENIS NA GUTPELA SENIS WE I KEN KAMAP LONG SAIT BILONG ENVAIRONMEN NA TU LONG KOMINITI LONG SAIT BILONG SOSEL NA IKONOMIK

Sepik Developmen Projek bai karim bikpela developmen ikam long Sepik. Tasol bikpela hap we developmen olsem main na haidropawa projek bai kamap long wanpela hap we i stap long bik bus stret, we i gat planti maunten, na we i save ren planti tumas. Na tu dispela hap i nogat planti man i save stap long en, i nogat rot igo kamap long dispela peles na i nogat ol sevis olsem pawa na telefon. Projek baigo tu long hap we ol loggin na oil palm kampani i stap long infrastraksa korido ('infrastructure corridor') stat long main na ron go olsem long not cost bilong Vanimo. Olsem na luksave bilong dispela EIS em olsem. Bai i gat sampela ol nogut na gutpela senis we i ken kamap, ol senis we ol i kolim impek ('impact'). Na dispela ol senis o impek bai i kamap long sampela sait bilong envaironmen ('environmental impacts') na tu long sampela sait bilong kominiti we ol i kolim sosel na ikonomik (socio-economic impacts'). Na dispela ol impek i ken kamap insait long taim bilong konstrakson ('construction') o olsem taim bilong sanapim Projek, long taim bilong oporeison ('operation') o olsem taim bilong ronim main na haidropawa projek, bilong klosa ('closure') o olsem taim bilong pasim main na haidropawa projek.

Antap long dispela luksave bilong impek bai kamap, FRL i gat planti ol plen i mekim insait long EIS, plen we i tokaut long ol wei na rot bilong menesim na daunim ol impek ('management and mitigation measures'). Na FRL i bilip olsem taim ol i bihainim dispela wei na rot bilong daunim ol impak, em bai i mekim dispela ol impek igo liklik.

### 6.1 Ol benefit o gutpela bilong Projek

Dispela Projek bai i kamapim planti ol gutpela senis o benefit insait long kominiti bilong Projek eria. Long nau taim dispela ol kominiti ol i nogat planti developmen o sevis. Kain olsem, ol nogat planti wei o rot bilong painim moni na nogat planti wei o rot bilong painim wok na wokim bisnis. Na tu, insait long ol dispela kominiti, ol sevis olsem helt na edukaisan i no gutpela o long sampela i nogat olgeta na i wankain long ol developmen olsem kominiti infrastraksa, rot na pawa. Olsem na Projek bai i kamapim planti ol gutpela senis o benefit, na sampela long dispela senis em bai olsem:

- Ol man na meri wantaim, arere long Projek na insait long Projek eria bai i gat sans long painim wok wantaim Projek long kisim moni, na ol bai gat sans tu long kisim bikpela save antap long hau long wokim kainkain ol wok.
- Ol manmeri arere long Projek na insait long Projek eria bai i gat sans long kamapim ol gutpela ikonomi o wei bilong wokim moni insait long kominiti bilong ol, ol kain wei olsem: kamapim ol tred stoa bisnis, salim ol samting igo long Projek na kamapim ol kes krop olsem kakao na kofi.
- Ol manmeri arere long Projek na insait long Projek eria husait i papa graun, bai i kisim ol moni we Projek bai baim, kain olsem kompensaisan moni ('compensation') long ol samting we Projek i bagarapim na tu royalti moni ('royalties') we i pat bilong prodakson o kopa-gol we Projek bai i mekim. Na ol ken yusim dispela ol moni long baim ol samting olsem kaikai o ka o haus ('consumption') o ol ken yusim dispela ol moni long wokim bisnis o wokim ol invesmen ('investments') we i kamapim mo moni.
- Ol kominiti arere long Projek na insait long Projek eria bai i gat sampela ol niupela ol kominiti infrastraksa ('infrastructure') kain olsem klinik o haus bilong mitin o pawa na tu ol sevis olsem helt na edukaisan bai i mo beta.
- Ol kominiti we ol sindaun long hap ISF bai kampa bai ol risetolim ('resettled') o kisim igo long narapela hap graun long stap bai i gat sampela ol niupela ol peles o vilig infrastraksa olsem niupela haus bilong silip, wara saplai ('water supply') na ples bilong 'toilet' o pekpek.
- Ol manmeri arere long Projek na insait long Projek eria we ol i stap longwe stret long provinsol taun na ol distrik steison bai i gat gutpela liklik mo wei long go i kam antap long sampela rot o peles balus we Projek bai mekim o ol sip we Projek bai ronim. Na tu sampela kominiti we ol nogat kain developmen olsem fon sevis bai i gat sans long kisim dispela ol sevis.
- Ol kominiti arere long Projek na insait long Projek eria bai i gat sampela ol niupela kominiti progrem long halivim ol, kain ol progrem olsem: progrem bilong ol meri, progrem bilong ol yut o yanpela na progrem bilong ol lain we ol i gat hevi long sait bilong wokabaut o hevi long sait bilong tingting.

Dispela Projek bai kamapim tu ol gutpela samting o benefit igo long ol provinsol na nesi nol. Bikpela ol dispela benefit bai kamap long sait bilong ol royalti moni ('royalties') na takis moni ('taxes') we Projek bai baim igo long provinsol na nesi nol. Sampela long ol dispela benefit em bai olsem:

- Projek bai putim o troimoi moni mak olsem 8.4 bilion ('billion') US Dola ('US\$') o olsem moni mak olsem 26.5 bilion ('billion') PNG Kina igo antap long sanapim o kirapim main, moni ol i kolim kepitol invesmen ('capital investment'). Na dispela moni ol bai putim insait long PNG long kamapim Projek.
- Projek bai troimoi moni mak olsem 685 milion ('million') US Dola ('US\$') o olsem moni mak olsem 2.2 bilion ('billion') PNG Kina igo antap long ronim main na Projek long wanwan yia, taim ol i kirapim Projek pinis na igo insait long oporeison ('operations'). Dispela moni ol i save kolim oporeison ekspens ('operating expenditure'). Na bikpela bilong dispela moni ol bai troimoi antap long baim ol lokol kontrekta bilong PNG na ol lokol samting insait long PNG.
- Projek bai mekim moni mak olsem 1.5 bilion ('billion') US Dola ('US\$') o olsem moni mak olsem 4.8 bilion ('billion') PNG Kina long wanwan yia taim ol salim kopa, gol na silva we bai i mekim long en. Dispela kopa, gol na silva ol i save mekim ol kolim prodakson ('production') bilong main. Antap long dispela Projek bai baim bikpela takis moni ('tax'), royalti moni ('royalties') na moni ol kolim prodakson levi ('production levy') igo long nesinol gavaman, ol provinsol gavaman na tu ol papa giraun. Sapos yumi bungim ol dispela moni, em bai winim moni mak olsem 29 bilion ('billion') PNG Kina we Projek bai i baim insait long 33 yia Projek bai ron.
- Projek bai i nidim o laikim planti planti ol wok manmeri. Long taim bilong konstrakson o olsem taim bilong sanapim Projek, namba mak bilong ol wok manmeri bai sanap olsem 5,190. Na long taim bilong oporeison ('operations') o olsem taim bilong ronim Projek, namba mak bilong ol wok manmeri bai sanap olsem 2,510.

Ol gutpela samting bilong dispela Projek em long sait bilong Projek wok long lukluk long ol developmen gol ('goals') na gaitlain ('guidelines') o developmen plen bilong kantri ol kolim Papua Niugini Developmen Stretjijik Plen ('PNG Development Strategic Plan'). Dispela plen save halpim nesenol gavaman long wokim wok bilong em na kamap long bikpela driman mak bilong kantri stap insait long narapela bikpela plen ol kolim Vison ('Vision') 2050.

Projek i laikim olsem dispela olgeta ol benefit o ol gutpela bilong Projek, i mas kamap long wei we ol i kam gut, long wei we ol i ken stap o ron longpela taim na tu long wei we ol niupela genereison o olsem ol pikinini na tumbuna bihain bai kisim sampela gutpela long en. Olsem na Projek i gat bikpela tingting we i mas gat gutpela pasin bilong wok bung namel long kampani wantaim komuniti arere na insait long Projek eria na tu wantaim gavaman long mekim ol dispela samting i kamap. Na antap long dispela wok bung, i mas gat ol gutpela plen bilong hau long kamapim gutpela developmen insait long komuniti na tu kantri. Na olgeta wanwan pati o wanwan ol dispela lain steikholda i mas save gut long wok bilong ol insait long dispela ol plen bilong developmen na tu ol i noken givim baksait long dispela ol wok.

Insait long olgeta benefit we Projek bai kamapim, wanpela benefit long sait bilong ol manmeri arere o insait long Projek eria na tu long ol manmeri bilong tupela Sepik Provins, benefit we i winim ol narapela benefit, em long sait bilong sans long painim wok. Long mekim dispela sait i ron gut, Projek i kamap wantaim wanpela plen

ol i kolim Treinin na Developmen Plen ('Training and Development strategy'). Projek i bin wokim dispela plen long kamapim gutpela treinin na developmen bilong ol wok manmeri insait long peles wok na tu long halivim ol lokol na provinsol lain we ol i no skul gut long kisim sampela save we ol tu i ken painim kain wok we ol inap long mekim. Na tu, taim ol manmeri i kisim kain treinin na skul na save long wokim wok insait long Projek, gutpela bilong en i no stap tasol long wok peles, gutpela bilong en i save halivim tu ol komuniti bilong ol na i save stap na igo igo yet. Kain olsem, sapos yu wanpela wok manmeri na yu kisim bikpela save long wokim wok, maski Frida Riva Kopa-Gol Projek i pas bihain o yu les long wok mo long Frida Riva Kopa-Gol Projek, bai yu gat ol save we yu ken wok long ol narapela mainin na kain industri olsem mainin, insait long PNG na tu autsait long PNG. Na Frida Riva Kopa-Gol Projek em i putim bikpela taget olsem i laikim planti long ol manmeri bilong ol sosel ketsmen o zon 1A (ol main eria komuniti), zon 1B (ol komuniti stap namel long Hotmin na Grin Riva), zon 1C (ol komuniti stap namel long Grin Riva igo long Vanimo ) na zon 1D (ol peles stap arere long Vanimo wof) ol i mas lainim planti wok samting na kisim gutpela save insait long wok peles bilong Projek.

Narapela bikpela benefit we Projek bai kamapim em long sait bilong infrastraksa na ol wei bilong ol manmeri igo i kam long Projek eria na ol autsait peles ('transportation linkages'). Wanpela bilong dispela em i rot we Projek i gat plen long wokim, rot we bai lusim main eria na go olgeta long Hotmin na bungim rot ron long Grin Riva igo long Vanmio (Sepik Infrastraksa Projek). Dispela rot bai i mekim isi long ol lain i stap insait long bik bus long go i kam long salim ol samting bilong ol long maket. Na tu, sapos i gat gutpela plen, dispela rot ken halivim ol insait lain long kamapim sampela ol kes krop ('cash krop'), kain olsem kakao na kofi, we rot nau bai i halivim ol long karim dispela ol kes krop igo long maket o peles long salim. Rot tu i ken mekim we planti ol liklik famili bisnis i ken kamap, ol liklik bisnis we ol peles lain ken salim ol samting igo long ol wok manmeri bilong Projek na ol narapela lain we ol bai yusim rot. Kain liklik bisnis olsem ol liklik maket long peles, o ol tred stoa o kentin, o ol taka boks long salim kaikai, na planti ol narapela liklik bisnis. Na rot bai mekim i isi liklik long ol insait komuniti igo i kam long painim ol sevis olsem haus sik, klinik, skul na sampela ol narapela sevis. Na sapos Projek i mekim i kamap ol fon sevis na ol narapela sevis long singaut long autsait lain, dispela bai halivim ol insait komuniti long sait bilong kisim save long helt na skul, na tu long yusim ol kain sevis olsem benk ('banking') na tu bai halivim ol sapos ol i bungim taim nogut o bikpela sik we ol i gat nid long singaut long ol lain husait i ken halivim. Antap long dispela wanpela bikpela moa samting em long wokim moa bisnis wantaim ol kantri stap lon hap ol kolim 'Asia'. Long wanem developmen bilong niupla wof o peles sip save sua ('Vanimo Ocean Port') long Vanimo bai klostu moa na ba ol sip long ol dispela kantri bai kam sua klostu tasol na kamapim planti bisnis. Na tu Sepik Pawalain Projek lukluk long salim pawa igo long 'Indonesia' na displea tu bai strongim wok bung wantaim 'Indonesia' na PNG.

Wanpela wari we Projek i gat em olsem. Ol komuniti bilong Projek eria ol noken sindaun tasol na putim aut han bilong ol na ting olsem Projek bai wokim olgeta developmen. Ol mas wok yet long lukautim ol yet na wokim developmen insait long peles bilong ol. Na tu ol i noken stap olgeta long moni tasol na lusim ol wei bilong peles long sindaun na stap. Sapos ol dispela samting i kamap, ol dispela komuniti bai kisim taim stret long taim main klosa i kamap o olsem taim Projek i pas. Long mekim ol dispela samting i noken kamap, Projek i gat tingting long wok bung wantaim ol narapela steikholda long kamapim ol developmen program we bai i stap na halivim ol lain yet bihain long main klosa.



Piksa Plet ES15

Piksa we em i soim hau bris bai katim wara Sepik we i stap long plen bilong Projek we bai i kamap bihain

## 6.2 Ol bus graun na wara insait long Projek eria

### Senis o impek we i ken kamap long ol graun insait long Projek eria

Taim kain developmen olsem Projek i save katim bikpela hap bus na digim o katim bikpela hap graun long ol wanwan wok eria, planti ol samting i save kamap. Kain olsem, dispela wok i save mekim na graun nau em i stap peles kilia na nogat samting long stopim ren o wara long wasim. Na tu, dispela wok i save senisim ol graun kain olsem we yu bin lukim maunten i bin stap bifo nau bai yu lukim peles daun o flet peles i kamap. Na tu, dispela wok i save senisim ol rot bilong ol wara i save ron o rot bilong ol baret. Ol senis nogut o impek i ken kamap long taim we ol i wok long digim o katim niupela graun long wanwan wok eria. Long dispela taim, planti graun i ken was igo daun insait long ol sait peles o bus arere o ananit long wok eria o i ken was igo daun insait long ol wara tambolo long ol wok eria. Dispela impek i save kamap planti na bikpela long taim bilong konstrakson ('construction') o olsem taim bilong sanapim Projek we ol i wok long katim bikpela niupela graun. Sampela ol dispela impek i save kamap tu insait long taim bilong oporeison ('operations') o olsem taim Projek i kirap na ron pinis, tasol impek em i save liklik mo, long wanem, ol i save mekim pinis sampela rot o wei long daunim dispela impek na tu, long wanem, ol gras, diwai na bus i save gro pinis na banisim ken graun.

Bikpela wok bilong daunim dispela samting nogut o impek em i wok we ol i kolim riheb ('rehabilitation'). Riheb em i wok we ol Projek lain i save planim bek ol gras na diwai na bus antap long ol wok eria we graun i stap nating. Frida Projek em bai i gat plen bilong riheb, plen we i lukluk long olgeta wanwan wok eria o hap bilong Projek na givim tingting long hau bai ol i wokim riheb long wanwan eria. As tingting o taget bilong olgeta ol dispela wok riheb em long mekim graun i stron we i noken buruk o was igo daun, long mekim i kamap ken ol bus diwai we i bin stap bifo na long mekim planti ol kainkain samting i stap laif o ol spisis ('species') i kam bek na stap insait long dispela riheb bus.

Projek bai senisim olgeta lukluk bilong planti ol hap, kain olsem maunten i kamap peles daun. Na dispela ol hap bai i noinap luk olsem em bin luk bifo. Tasol taim dispela ol hap i gat taim long kamap stron na tu taim ol i wokim riheb pinis antap na bus i kamap ken, long dispela taim, ol senis nogut o impek we graun i save bruk o was igo daun bai igo liklik o bai i pinis olgeta.

I gat tupela impek we Projek i save olsem bai kamap bihain taim ol wok antap long ol maunten peles. Long sampela maunten peles we ol i wok long en, ren bai wasim na pinisim olgeta gutpela graun, graun we i gutpela long wokim riheb wok na planim ken ol

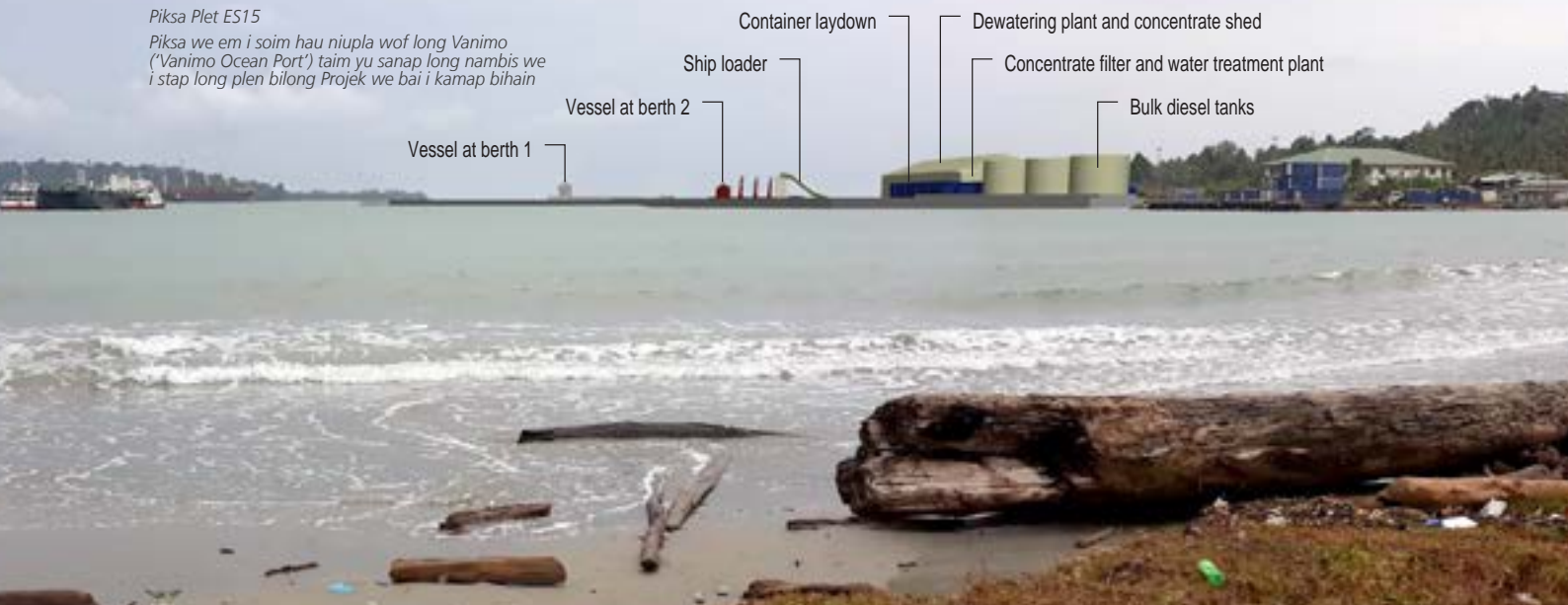
gras na diwai. Na long ol sampela ol narapela maunten peles we ol i wok long en, stron bilong wara bai i katim ol bikpela niupela baret na rausim planti graun. As bilong dispela ol samting bai kamap em i tupela samting. Frida Riva Kopa-Gol Projek na Frida Riva Haidropawa Projek bai kamap long peles we i gat ol bikpela maunten na tu bai kamap long peles we i gat planti planti ren.

### Senis o impek we i ken kamap long hau ol peles insait long Projek eria i lukluk na senis long sait long wanem ol manmeri bai i lukim

Insait long Projek eria i gat sampela traipela traipela ol hap we bai i gat bikpela senis i kamap. Dispela ol hap em i peles we traipela raun wara o ISF bai kamap, em i ol peles we rot bai i ron long en, na em i peles we ol bai mekim traipela hol insait long graun ('pit'). Long dispela ol hap, bai yu lukim olsem hau ol peles i lukluk em i senis olgeta we i no mo luk olsem i bin lukluk bifo. Na tu long dispela ol hap, bai yu lukim olgeta bus bai i no mo stap, we ol i katim olgeta pinis o we wara bilong ISF i karamapim pinis. Wanpela gutpela samting long sait bilong kominiti o ol manmeri long dispela ol eria em i olsem. Ol peles o vilis bilong ol i stap longwe tru long ISF na 'pit', we ol no inap lukim dispela ol hap sapos ol i sindaun long peles o vilis bilong ol. Tasol, sampela ol peles na vilis bai i stap klostu o arere long we rot bai i ron na ol bai inap long lukim rot taim ol sindaun long peles o vilis bilong ol. Olsem na bikpela wok o stadi bilong EIS long dispela sait em i bin lukluk long senis we rot bai i kamapim long hau lukluk bilong ol peles we rot bai i ron bai i senis.

Bikpela senis long sait long niupela rot long main igo long Hotmin na Grin Riva bai i kamap long taim bilong konstrakson ('construction') o olsem taim bilong wokim o katim niupela rot. Long dispela taim lukluk bilong ol hap we rot i ron bai i senis, long wanem, ol bai katim o daunim ol diwai na graun bai stap peles kilia. Ol peles olsem Dioru, Uramesin 2 na Hotmin bai lukim dispela ol senis. Tasol insait long taim bilong oporeison ('operations') o olsem taim we Projek i ron pinis, lukluk bilong ol dispela hap bai kamap ken klostu wankain long we i bin lukluk bifo, long wanem, ol gras na diwai bai i gro ken long sait sait bilong rot. Narapela hap eria bilong Projek we bai i gat senis long hau peles i lukluk em ol peles we rot baigo daun long na bris bai i katim wara Sepik. Piksa Plet ES14 ('Plate ES14') ol i soim hau dispela bris bai i lukluk bihain.

Ol sampela ol hap eria olsem infrastraksa korido na ol wof arere long wara May, wara Frida na wara Sepik bai we senis bai kamap ol dispela ol senis bai stap oltaim. Tasol dispela ol senis i no inap bikpela tumas. Wankain olsem long bikpela pawa lain bai ron long haidropawa hap igo long Vanimo bai ol manmeri usim rot na ol manmeri raun long antap sait bilong wara Sepik bai lukim ol pawalain sanap.



Antap long dispela niupela wof long Vanimo ('Vanimo Ocean Port') bai kamap ples kilia stret na ol komuniti bilong Wesdeco, Lido na ol narapela peles insait long Vanimo taun bai lukim. Piksa Figa ES15 (Plate ES15) i soim hau wof bai lukluk taim yu sanap long nambis long Vanimo.

Projek bai i mekim wok bilong riheb ('rehabilitation') o olsem wok bilong planim ken ol gras na diwai, antap long olgeta hap bilong Projek we ol i save olsem ol no inap katim graun o bagarapim bus ken. Na ol bai mekim dispela wok i kamap hariap tru long ol hap eria bilong Projek we i stap klostu o arere long ol vilis o peles, long wanem, ol manmeri i noken lukim graun nating long longpela taim. Na tu, taim ol i wokim riheb long wanpela wok eria, ol bai kisim ol diwai na bus we i luk wankain long ol hap bus we i raunim dispela wok eria, ol hap bus we ol no bin katim, long wanem, taim riheb bus i gro, lukluk bilong en i mas luk wankain long ol dispela bus ol no bin katim.

### Senis o impek we i ken kamap long wara we i save ron o stap insait o ananit long graun

Insait o ananit stret long graun, i gat bikpela hap wara we i save stap o i save ron, we ol i save kolim graunwara ('groundwater'). Wok painim aut o ol stadi bilong EIS antap long dispela graunwara em bin painim aut olsem bai i nogat bikpela senis we bai Projek i kamapim long sait bilong graunwara. Tasol ol steikholda na komuniti ol i save i gat bikpela tingting na wari antap long dispela graunwara, olsem na EIS em i mekim sampela toktok liklik antap long en.

Long taim mainin i kamap na ol i wokim dispela traipela hol long graun ol kolim HITEK pit, ol bai i gat nid long rausim i kamaut sampela graunwara long ples we ol bai digim graun igo daun long en. Ol nid long wokim dispela long mekim ples insit long HITEK pit i drai ('pit dewatering') inap long ol masin i ken wok na tu long daunim stron ('pressure') bilong wara insait long graun we wanwan taim i ken pairap. HITEK pit bai i kamap olsem wanpela bikpela ples daun ('groundwater sink') we bai i pulim ol graunwara insait long ol graun arere long pit i kamaut na igo insait long pit. Dispela bai i mekim bikpela bilong graunwara igo daun liklik long hap we HITEK pit bai kamap. Taim main klosa i kamap o olsem Projek i pas, ol bai stop long mekim dispela wok bilong rausim wara i kamaut long pit ('pit dewatering'). Long dispela taim, HITEK pit bai kamap olsem wanpela dip raun wara, long wanem, insait long tripela krismas, ol wara bai igo insait long pit na i kam antap olgeta long mak we ol bai i mekim ol baret we wara ken antapim na ron igo daun ananit long pit. Long dispela taim, ol graunwara bai stop long go insait long HITEK pit na bai i ron insait long graun na igo

tambolo na go insait long ISF.

Tasol, long sait bilong senis nogut o impek we i ken kamap long ol komuniti long dispela hap long sait bilong graunwara, bai i nogat wanpela senis nogut o impek i kamap. Long wanem, dispela graunwara we bai i wok long go insait long HITEK pit long taim bilong main i ron long en, em bai kam tasol long mak we i stap olsem 5 o 6 kilomita ('kilometre') long ol eria we i raunim pit. Na olgeta komuniti i stap longwe stret long HITK pit, we i winim 4 kilomita. Na tu, bai i nogat impek, long wanem, ol komuniti o vilis long dispela hap ol i no save yusim graunwara o olsem digim hol insait long graun long kisim wara long drin o waswas.

Wanpela hap we sampela senis bilong graunwara bai kamap em dispela traipela raun wara ol kolim ISF. Long hap bilong ISF, taim ol i banisim wara Frida, wara bai igo bek na i karamapim bikpela hap bilong Frida na Niar na ol han wara bilong ol na Nena ples daun o veli ('valley') na tu dispela wara bai igo dip olgeta. Wanpela samting we dispela wara insait long ISF bai i mekim em olsem hevi bilong wara we nau em i stap bai i mekim ol graunwara i noken kamaut planti long dispela hap we bifo i save kamaut. Olsem na graunwara ananit long ISF na tu long sait sait maunten bilong ISF bai igo bikpela moa long mak bilong 150 mita ('metre') igo antap ken long mak we i bin stap bifo long ISF i kamap.

Wanpela wari long dispela graunwara bilong ISF em olsem nogut dispela graunwara igo bikpela na kamaut long ol ples tais we ol saksak bilong ol manmeri i stap long en. Long dispela sait, wok painim aut bilong EIS em bin painim aut olsem ol bikpela hap saksak bilong ol komuniti em i stap longwe stret long ISF, olsem na long dispela sait tu bai i nogat wanpela senis nogut o impek i kamap.

Narapela wari long sait bilong graunwara em olsem, nogut sampela esid na metol na ol narapela marasin o samting nogut we i save stap long ston insait long graun bai igo insait long graunwara na dispela graunwara bai kamaut long ples we ol manmeri i save stap o drin long en. Long dis sait tu ol bin wokim wok painim aut bilong EIS na ol painim aut ol dispela samting. Ol painim aut olsem long taim bilong Projek i ron na ol wok yet long dispela HITEK pit, ol mainin lain bai rausim olgeta wara na graunwara we igo insait long pit na bai ol i tritim wantaim sampela ol marasin long pinisim stron bilong esid na tu long rausim ol metol na ol narapela samting, bifo long ol i putim dispela wara igo insait long ISF. Na long taim bilong main klosa o olsem taim bilong Projek i pinis, dispela HITEK pit bai kamap olsem raun wara we wara baigo insait na tu kam autsait bihainim ol baret ol bai mekim. Long dispela taim ol painim aut olsem bai i gat liklik stret long dispela wara insait long raun



wara bilong HITEK pit bifo, we inap long go insait na ron insait long graun na kamaut long ol narapela hap. Olsem na long dispela sait tu bai i nogat wanpela senis nogut o impek i kamap.

Na wanpela las painim aut ol i wokim em long sait bilong ol graun o liklik liklik ol hap metol we i ken stap insait long graun wara na ron insait long graun na kamaut long narapela hap. Ol i painim aut olsem bai i nidim 2,000 yia o krismas long dispela ol liklik liklik ol hap graun o metol long ron igo long mak bilong 2,500 mita ('metre'). Olsem na long dispela sait tu bai i nogat wanpela senis nogut o impek i kamap.

## Senis o impek we i ken kamap long ol samting we i stap laif insait long bus graun

Frida Riva Kopa-Gol Projek na Frida Riva Haidropawa Projek bai kamap long hap we i gat traipela traipela hap eria long bik bus we ol manmeri i no bin katim yet. Na dispela hap bus bilong Projek eria em i gat bikpela long samting ol i kolim 'biodives' ('biodiversity'). Minin bilong biodives em olsem namba bilong ol kainkain samting we i stap laif ol samting we ol i kolim spisis ('species'). Kain olsem, sapos biodives bilong wanpela hap em i bikpela, i minin olsem yu bai painim ol kainkain spisis long dispela hap. Na tu, dispela hap bus long Projek eria em i gat planti ol spisis we bai yu painim tasol long not ('north') Niugini. Dispela ol spisis o samting i stap laif we bai yu painim long wanpela hap tasol ol i save kolim endemik ('endemic'). Na long sait bilong dispela olgta bus graun na biodives bilong ol spisis, i gat sampela ol senis nogut o impek we Projek i ken kamapim we bai i daunim namba bilong ol spisis.

Taim yumi lukluk bipo i kam inap nau long ol narapela hap long PNG we ol i bin developim ol risos bilong ol, ol lain long narapela hap we kam insait long projek na stap na efekts bilong dispela em ken afektim ol bus giraun na gutpela bilong ol. FRL I wok long developim wanpela In-Migration Plan long menejim ol impekts bilong ol lain autsait husait bai kam na stap insait long Projek eria. Ol indairekt ('indirect') impekts em ol samting olsem: Planti ol fores eria bai senis go kamap ol gaden long givim kaikai long ol man na meri, ol plents na animols long bus bai ol kisim na ol bai katim ol diwai long bus long wokim haus na long salim we bai lukim namba bilong ol plents na animols long bus na peles ol save stap long baigo i no mo stap na namba bilong ol dispela samting baigo daun tru. Projek bai gat ol menijmen mesa bilong halpim long daunim ol

impek long ol hap environmen we kain kain spisis we yu no inap painim long narapela hap save stap.

Klostu abrusim 85 spisis we ol saintist i no painim yet we ol I painim long Projek eria, faivpela em ol plents, wanpela em animol we save karim pikinini long bel, na narapela em wanpela animol olsem pukpuk na tupela em ol insekts we isave kaikai ol narapela insekts na na i no save kaikai plents, em ol dispela spisis ol i painim ol tasol long eria we bai igat projek distenbense long em; ol narapela spisis em ol painim ol autsait long Projek distebens eria na tu sampela em ol painim insait. Tasol long expirens bilong wokim ol wok painim aut long ol spisis bilong plents na animols autsait we pastaim ol ting ol dispela spisis i stap tasol long Projek distenbens eria. Planti bilong ol ekstra wok ibin kamap long wok bilong Projek EIS wok painim aut I soim olsem: Ol dispela niupela spisi we nau tasol ol painim bai ol save painim abus bai laikim o ol lain bai kisim long kaikai em olsem na ol lain we kam insait long stap long hap projek istap bai i no laik kisim ol dispela spisis. Taim ol lain abrus na karim ol niupela samting olsem ol plents na binatang we I ken bagarapim environmen, em tasol ba igat bikpela impekt. Em olsem na ol bai sekim dispela niupela plants, animols na binatang nabaut we bagarapim bus, giraun na manmeri long taim bilong konstrakson na taim main I oporeit, dispela em bikpela wei bilong stretim o stopim dispela kain birua.

Taim ol wokim wok bilong EIS long sait bilong skelim wanem ol impek o samting nogut bai kamap, ol i bin skelim gutpela o bikpela long biodives na hau Projek bai senisim dispela biodives. Wok painimaut i bin painimaut olsem Projek bai i noinap kamapim bikpela impek o senis nogut we bai daunim biodives. Tasol i painimaut olsem bai i gat bikpela hap liklik igo olsem mak bilong 16,000 hekta ('hectare') olgeta bilong bus graun we bai Projek i bagarapim. Na long dispela ol hekta, mak bilong 91 pesen ('percent') bai i lus olgeta we ol noinap mekim riheb antap long en, long wanem bikpela raunwara bilong ronim haidropawa bai stap.

Na tu ol bin painimaut olsem maski dispela bikpela bus graun liklik bai i bagarap na lus olgeta, tasol long wanem Projek eria i gat traipela traipela hap bus bai stap yet, ol painimaut olsem ol gutpela bilong dispela bus graun bilong Projek eria bai stap yet, gutpela olsem: bai bikpela hap bus i stap we i bikpela inap long lukautim olgeta samting I stap laif insait ('intact habitats'); bai biodives ('biodiversity') bilong bus graun i gutpela o bikpela yet; bai i gat yet planti bilong ol spisis we ol i endemik ('endemic species')

*Amethystine Python (Morelia amethystina)*



o olsem we bai yu painim tasol long bus bilong Projek eria na bai I gat sampela ol spisis, olsem ol pisin, we ol i save igo i kam namel long Projek eria na ol narapela hap longwe stret ('migratory and congretry species').

Wok painim aut bilong EIS i ting olsem mak bilong impek long giraun we bikpela bus i karamapim bai bikpela liklik ('major'), long wanem ol bikpela diwai na bus bai lus. Dispela impek bai long ol hap eria Projek bai stap long em tasol. Long sait bilong ol impek long bus we ol samting save stap laif long em bihain long Projek i kamap i no no inap bikpela stret ('moderate'). Na ol impek we i no kamap long Projek stret tasol em ken kamap long ol narapela samting Projek ken kisim i kam olsem mak bilong painim abus na wokim gaden bai moa yet long wanem bihain long Projek i kamap bai i gat ol manmeri long ol narapela hap bai kam igo long Projek eria ('in-migration'). Na dispela bai kamapim i no bikpela impek stret ('moderate') long mak bilong biodives, ol niupela spisis na tu long ol pisin save kam igo long Projek eria na ol long wei hap. Ol narapela impek we ken kamap bihain long Projek i kamap long giraun we bikpela bus i karamapim bai i no inap kisim wanpela bagarap.

Wok painim aut bilong EIS i ting olsem mak bilong impek long ol maunten bus sanap long Projek eria bai bikplea stret ('major') bihain long Projek i kamap. Long wanem ol manmeri long narapela hap bai kam igo long Projek eria na ol bai kamapim moa rot bilong paia long kirap na kukim ol maunten bus na tu ol niupela plent spisis ('exotic invasive species') we i no save stap bipo long Projek eria bai bagarapim dispela ol maunten bus. Ol narapela impek we i ken kamap bihain long Projek i kamap long ol dispela eria we ol wet bus i stap, we ol laim ston i stap, ol ples we raun wara i stap, na ol ples bikpela ol maunten ron olsem long not kos bai i no inap kisim wanpela bagarap long wanem Projek bai abrusim dispela ol hap long taim ol wokim infrastraksa ol rot, ples balus na wof.

Wok painim aut bilong EIS i ting olsem mak bilong impek long ol bus arere long wara na ol wara klostu long Projek eria bai bikpela

liklik ('moderate') bihain long Projek i kamap. Na tu bai gat bikpela impek liklik long ol eria insait long hul bilong ston we ol animol save stap insait long Projek eria long wanem ol manmeri kam igo long Projek eria na tu ol ples ol bai risetalim bai painim abus moa na kisim sik kam long ol dispela ol animol.

Wok painim aut bilong EIS i lukluk long 85 spisis we i ting bai gat impek long ol bihain long Projek i kamap. Ol impek we bai kamap stret long Projek wok painim aut i ting olsem bai gat faipela spisis gat bikpela impek liklik ('moderate'), sixpela spisis bai gat liklik impek ('minor') na nogat baragarap bai kamap long 74 spisis. Long sait bilong ol impek we i ken kamap long ol narapela samting we Projek ken kisim kam olsem ol manmeri kam igo nating nating, wok painim aut i ting olsem bagarap bai antap liklik moa long wanem Projek i hat long menisim dispela ol samting. Olsem na bihain long Projek kamap i ken gat bikpela impek ('major') long eightpela spisis, liklik impact ('mi nor') long 24 spisi na nogat ('negligible') impek long 45 spisis ken kamap long ol narapela samting Projek ken kisim i kam. Ol eightpela spisis stap long Projek eria we wok painim aut i ting bai gat bikpela impek long ol manmeri painim abus. Nem bilong ol dispela spisis em 'critically-endangered black-spotted cuscus' (*Spilocuscus rufoniger*); 'Telefomin cuscus' (*Phalanger matanim*); 'Sir David's long-beaked echidna' (*Zaglossus attenboroughi*); na 'Bulmer's fruit bat' (*Aproteles bulmerae*); 'endangered Western Montane tree kangaroo' (*Dendrolagus notatus*) na 'Goodfellow's tree kangaroo' (*Dendrolagus goodfellowi*); na 'culturally significant northern cassowary' (*Casuarius uinappendiculatus*) na 'dwarf cassowary' (*Casuarius bennetti*).

## Senis o impek we I ken kamap long sait bilong nois na guria long graun

Wok painim aut em soim olsem sampela hap em i luk olsem bai abrusim ol Projek gaidlain bilong nois:

- Long taim bilong konstrakson bilong infrastraksa korido (em

Dispela piksa em i wanpela geko ol i kolim 'De Rooij's bow-fingered' (*Cryptodactylus sermowaiensis*) we ol i painim insait long sampela stadi bilong EIS





Dispela piksa em i wanpela pisin ol i kolim 'Black Kite (Milvus migrans)' we ol i painim insait long sampela stadi bilong EIS

karamapim konstrakson bilong konsentret paiplain, niupela rot, na pawalain) bilong ol peles olsem Wokomo 2, Dioru, Green River Station, Aminii, Kwomtari, Itomi, Kilifas, Sumumini, Imbrinis na Vanimo.

- Long taim bilong konstrakson bilong niupela Grin Riva ples balus.
- Long taim bilong konstrakson na operasion bilong niupela wof long Vanimo ('Vanimo Ocean Port') bilong ol lain silip klostu long wof (dispela em wof nau em stap) na ol kominiti bilong Wesdeco tasol ol stap beksait long wof bilong Vanimo Fores Prodak.

Long taim bilong konstrakson bilong rot na paip, sapos graun i hat na i gat planti ol bikpela ston, i luk olsem bai i gat sampela taim we ol bai pairapim bom o dainamait ('dynamite') long brukim graun. Na ken, sapos rot igo klostu stret long dispela ol ples Hotmin, Wokomo 2, Dioru, Grin Riva, Aminii, Kwomtari, Itomi, Kilifas, Sumumini, Imbrinis Temsapmin na Vanimo, bai i gat liklik nois na stron bilong win bilong pairap we ol bai pilim. Olsem na bai ol i lukluk gut bihain we long rot i mas ron long hap we i longwei liklik long ol viles.

Dispela taim bilong nois o guria we i ken kamap antap long wok bilong Projek bai i kamap wanwan taim tasol, i no olgeta taim. Olsem na, long sait bilong kominiti, ol kominiti afes ('community affairs') lain bilong Projek bai putim was na givim tok save long ol kominiti we ol i ken save long ol dispela taim bilong nois o guria bai kamap. Na tu, sapos ol kominiti i gat moa wari, bai i gat planti toktok we bai igo pas long stretim ol dispela wari.

### Senis o impek we i ken kamap long sait bilong gutpela o nogut bilong win na ges das

Long taim bilong konstrakson bilong Projek, bai i gat sampela win o ges na das nogut we i ken kam aut long ol dispela hap we wok i kamap long en. Sampela bilong ol dispela ges nogut em i ges we ol kolim 'NO<sub>2</sub> na SO<sub>2</sub>' na tu ol liklik liklik das bilong ol metol i stap insait long graun. Tasol wok painimaut bilong EIS em i painimaut olsem maski wok i kamap insait long konstrakson taim na tu oporeisen taim, tasol nogut bilong dispela ol ges na das bai we i ken go long ol komyuniti bai i stap yet ananait long mak nogut we i stap insait long lo pepa ol kolim eya o win kwalati bilong Projek ('Project air quality criteria'). I minim olsem, dispela ol win na das i no inap bagarapim ol manmeri. Wanpela bikpela samting we bai i daunim dispela win na ges na das nogut em olsem, olgeta ples o viles ol i stap longwei stret long ol ples bilong wok we Projek bai kamapim dispela ol birua.

Ol i bin wokim tu wok painimaut antap long hau win i ken karim das na ges o win nogut igo longwei. Na long dispela sait ol i bin painimaut olsem sapos ol ples i stap klostu long mak bilong 500 mita na 800 mita, wanwan taim i ken abrusim mak bilong win nogut. Tasol, dispela ol i skelim olsem i hat long kamap.

Ol kominiti stap klostu long wof long Vanimo nogut sampela taim em save gat taim win na das na ges nogut ken bagarapim ol. Tasol taim ol wokim na ronim niupela wof ('Vanimo Ocean Port') kampani bai bihainim ol gutpela menijmen prektis ('good management practices') long daunim dispela ol impek long kamap.

### Senis o impek we i ken kamap long sait bilong win ol i kolim Grinhaus Ges (GHGs)

I gat wanpela win we ol i kolim grinhaus ges o GHG ('greenhouse gases'). Dispela win o ges em i save kamap taim yumi i kukim wanpela samting olsem diwai o bus o benzin na disil. Na bikpela bilong dispela ges em i win ol kolim 'CO<sub>2</sub>'. Long sait bilong mainin, ol i save putim was antap long hamas grinhaus ges bai i kamap o hamas CO<sub>2</sub> bai i kamap. Olsem na long dispela sait, ol i painimaut ol dispela ol mak. Long wanwan yia o krismas, long taim bilong konstrakson na tu oporeisen, Projek bai kamapim mak namel bilong 639 kiloton ('kiloton per annum') CO<sub>2</sub>. Na sapos yu bungim olgeta CO<sub>2</sub> insait long grinhaus ges we Projek bai kamapim insait long laif o ron o longpela bilong Projek, dispela bai kamap long mak bilong 24, 930 kiloton ('kilotons') CO<sub>2</sub>.

Na tu ol EIS stadi lain ol i bin skelim hamas grinhaus ges Projek bai kamapim wantaim hamas grinhaus ges olgeta PNG i save kamapim. Ol i bin skelim yia 2013 we ol i gat mak bilong olgeta grinhaus ges we PNG i bin kamapim. Taim ol i skelim bikpela bilong grinhaus ges we Projek bai kamapim long wanwan yia wantaim dispela mak we PNG bin kamapim long yia 2013, ol painimaut olsem Projek bai kamapim 1.1 pesen ('percent') bilong bikpela we PNG i bin kamapim. I minim olsem, Projek bai i no inap kamapim planti grinhaus ges sapos yu skelim wantaim grinhaus bikpela tru we PNG i save kamapim.

### 6.3 Stadi bilong ol environmen bilong wara

Stadi bilong EIS em i bin lukluk long planti ol hap na samting bilong ol wara insait long Projek eria. EIS stadi i bin lukluk long samting ol kolim 'haidroloji' ('hydrology'). Haidroloji em i wei o hau wara i save sidaun na ron antap na tu insait long graun. EIS stadi bin lukluk tu long samting ol kolim 'sedimen trenspot' ('sediment transport'). Sedimen trenspot em i hamas graun ol wara i save karim, olsem hau mas graun i mikis o bung insait long ol wara na mekim wara i deti. EIS stadi i bin lukluk tu long samting ol i kolim 'wara kwaliti' ('water quality'). Wara kwaliti em i mak bilong klin o gutpela bilong wara, olsem i klin we i nogat planti ol marasin o metol o narapela samting insait. Long painimaut antap long dispela tripela samting ol i bin kisim wara long wanwan hap we mep i soim insait long Piksa Figa ES11 ('Figure ES11') na ol bin testim dispela wara. Na antap long dispela tripela samting, ol i bin skelim olgeta impek o senis nogut we Projek i ken kamapim we bai kilim o daunim wanwan olgeta samting i stap laif insait na arere long wara.

### Stadi bilong hau wara i sindaun na ron antap na insait long graun

EIS stadi i bin lukluk long samting ol kolim 'haidroloji' ('hydrology'). Haidroloji em i wei o hau wara i save sindaun na ron antap na tu insait long graun. Olsem na insait long eria Projek bai i stap long en, ol EIS lain i bin wokim wanpela stadi bilong haidroloji long painimaut hau wara i save ron long nau taim na tu hau bai i ron bihain taim, taim Projek i kirap na senisim sampela ron o rot bilong ol wara. Na ol bin painimaut olsem wanpela samting we i ken kamap em long sait bilong traipela raun wara ol kolim ISF, we ol bai banisim wara Frida. Na ol painimaut olsem ron bilong sampela

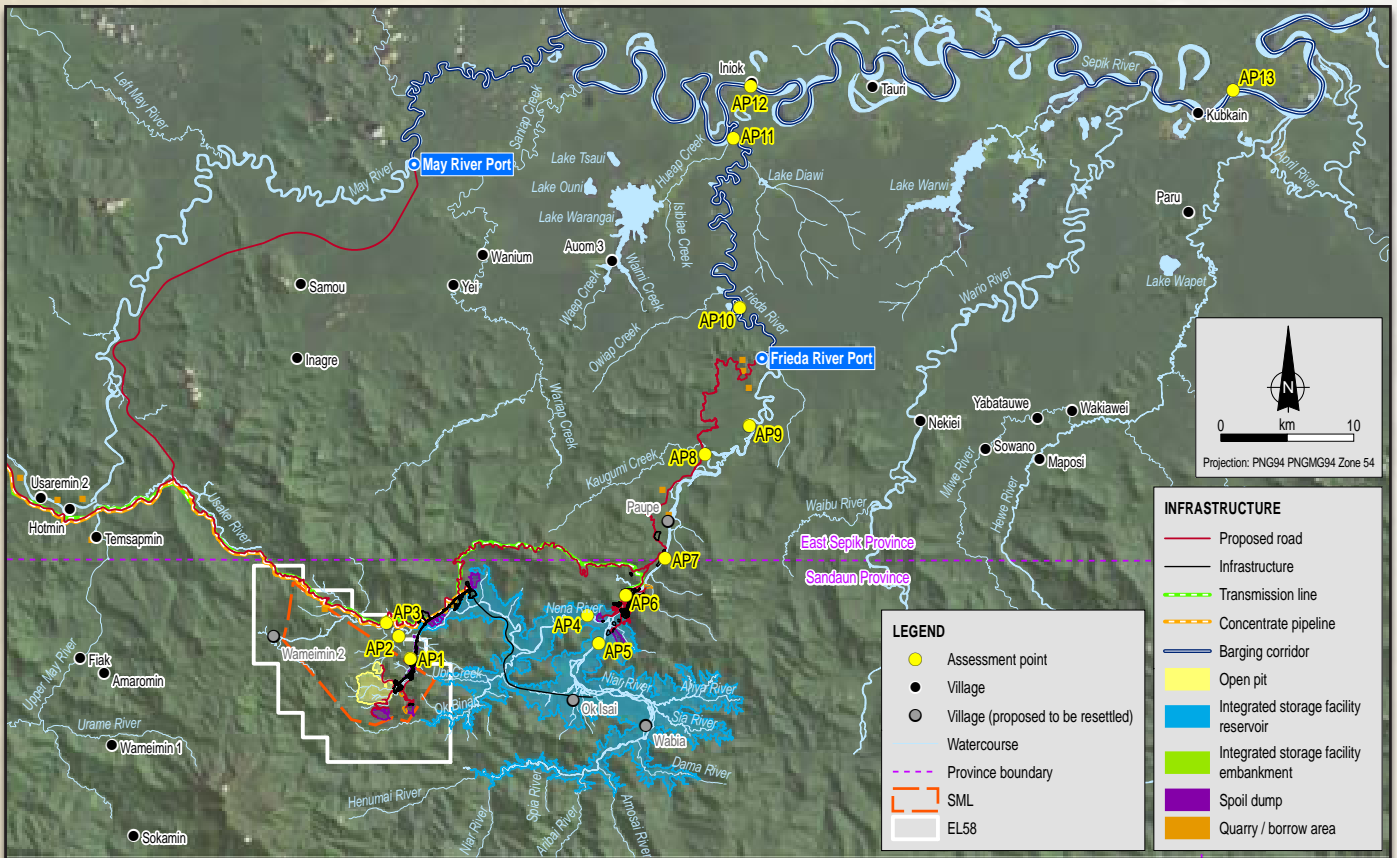
ol wara tombolo long ISF bai i senis na igo liklik taim ol wok long wokim banis igo antap, long wanem, banis bai stopim o banisim wara igo inap wara i bikpela insait long ISF.

Long taim konstrakson bilong banis bilong ISF i stat em bai daunim wara wok long ron go insait long wara Frida. Tasol mak bilong ron bilong wara bai stap olsem 50 m<sup>3</sup>/s oltaim long ten mun ol bai kisim long wokim dispela banis.

Taim maining i stat ron bilong ol wara antap lon main eria bai tambolo liklik tasol taim wara ron go daun long wara Frida na wara Sepik em bai ron hariap gen. Dispela em bai wankain olsem hau wara wok long ron tete tasol bai gat liklik sensis tasol long we ol infrastraksa bilong main olsem 'pit' na ISF. Ron bilong wara long wara Uba baigo daun liklik long wanem taim mainin bilong Koki 'pit' i stat ol bai sensis ron bilong dispela wara. Tasol long wara Ubai ron bilong wara bai antap liklik long wanem taim mainin bilong 'pit' i kamap olgeta wara insait long graun na ol narapela liklik han wara ron antap long graun na tu ol wara stap insait long 'pit' ol bai tritim na displea olgeta wara bai ron go insait long wara Ubai.

Long taim bilong sun ron bilong ol wara insait long wara Frida baigo antap long mak bilong 65%. Na long taim bilong ren displea mak baigo daun klostu long 30 or 40%. Dispela bai kamap olsem long halpim mak bilong wara we operesen bilong haidropawa i nidim long kamapim pawa.

Taim main i pas bihain long 33 yia, ISF bai sanap yet na ron bilong wara bai wankain tasol long wanem em long halpim wok bilong wokim pawa. Na taim haidropawa operesen i pas displea samting ol kolim 'spillway gate' bai ol i rausim long wanem taim bikpela ren pundaun em ken ron isi tasol igo daun long dispela 'spillway' we em bai nogat gate. Dispela em long allowim ol ron bilong wara



Piksa Figa ES11 Dispela em map we i soim wanwan hap we ol bai putim was long en na kisim ol sempol bilong wara long testim

Dispela piksa em i wanpela hap bilong  
wara Ekwai ananit stret long beis kem  
("base camp") bilong Frida Riva Kopa-  
Gol Projek eria na i soim hau ol liklik  
han wara antap i save ron



istap wankain long taim bilong operesen na taim wok i pas. Ron bilong wara insait long wara Frida bai i no inap wankain olsem nau istap long wanem ISF bai kontrolim ron bilong wara. Na long wara Ubai ron bilong wara bai antap moa long wanem ol wara stap insait long 'pit' bai ron go daun long wara Ubai.

Na wanpela bikpela painimaut bilong EIS stadi em long sait bilong wara Sepik. Ol i painimaut olsem ron na bikpela bilong wara Sepik bai i no inap senis na go daun liklik long wanem wara bilong ISF na wara bilong wara Frida i liklik tumas na wara Sepik i gat planti moa ol han wara long givim wara i go insait.

Stadi bilong 'sedimen trenspot' o olsem hau mas graun i save mikis o bung insait long ol wara we wara i karim igo daun

EIS stadi bin lukluk tu long samting ol kolim 'sedimen trenspot' ('sediment transport'). Sedimen trenspot em I hamas graun ol wara i save karim, olsem hau mas graun i mikis o bung insait long ol wara na mekim wara i deti. Olsem na ol i bin wokim wanpela stadi ol i kolim sedimen trenspot stadi long painimaut hamas graun bai i kam daun taim Projek i kirap na ron. Long dispela stadi ol i bin skelim bikpela bilong graun we i ken bung insait long wara. Ol i skelim tu hau dispela graun ken kamapim weisan na mekim dip bilong wara igo liklik. Ol i skelim tu hau dispela graun i ken mekim wara i katim niupela rot. Ol i skelim tu hau dispela graun i ken mekim na wara ken antapim sait sait bilong wara. Ol i skelim tu hau dispela graun ken mekim sait sait bilong wara igo bikpela na bikpela bilong wara igo liklik. Na ol i skelim tu hau dispela graun ken mekim na ol sait baret na ol raun wara bilong ol bikpela wara i ron bai lgo liklik.

Sampela ol liklik han wara bilong wara Nena ol i stap insait stret long mainin eria ('mining area') o olsem, ol i stap tambolo stret long dispela traipela hol long graun ol kolim 'open pit' na ol stap ananit stret long ol bikpela haus bilong brukim kopa-gol ston na wokim o pulim kopa-gol weisan ('mining and processing infrastructure'). Wanpela bilong dispela ol liklik han wara em i wara Ubai ('Ubai Creek'). Narapela em i wara Uba ('Uba Creek'). Na i gat sampela moa han wara. Long dispela ol han wara we ol stap insait stret long mainin eria, bai i gat bikpela graun liklik we bai i was igo insait long wanem ol bai katim graun antap long wokim wok mainin. Na dispela graun i was igo daun bai kamapim sampela impek o senis nogut. Wanpela em wara bai ron deti. Narapela em olsem, bikpela graun bai karamapim ol ston na sait sait bilong ol wara na mekim wara igo liklik na mekim wara i no moa dip. Na dispela graun bai stap olsem igo inap tupela samting i kamap. Wanpela em olsem Projek i pinisim wok bilong konstrakson na ol i karamapim graun o planim diwai antap long graun we ol i bin wok long en, we bikpela graun i no moa ken was i kam daun. Narapela em olsem sapos i gat bikpela bikpela ren na dispela ol han wara i tait na strong bilong wara yet i rausim graun. Na wanpela gutpela samting em olsem. Ol bai wokim dispela traipela raun wara ol kolim ISF tambolo ken long dispela ol han wara. Na dispela bai I mekim na olgeta graun we ol han wara i karim i kam daun bai igo insait tasol long ISF na bai i no inap go daun moa na mekim wara Frida tambolo i deti. Na tu, long taim bilong main klosa ('mine closure') o olsem taim Projek i pas, ol bai mekim 'wok riheb' ('rehabilitation'), o olsem, wok we ol bai planim ken ol gras na diwai long hap we bifo main na ol haus bilong mainin i bin stap. Na dispela bai mekim na bihain ol dispela han wara bai kamap klin ken we planti graun bai no moa was i kam daun.

Long sait bilong narapela wara ol kolim wara Ok Binai, bai i gat liklik graun we bai iwas igo insait na tasol dispela bai i no inap kamapim bikpela impek o senis nogut. Graun we i was igo daun bai kamap long ol hap ol bai putim graun long em dispela ol hap ol

kolim 'spoil dump'. Graun bai ron go daun long Ok Binai na bihain go daun long ISF long taim mainin i stat. Dip bilong wara Ok Binai bai kam antap olsem 2 to 3 mita (m) long klostu 20 krismas.

Long sait bilong lukautim ol sedimen trenspot ('sediment transport') o olsem, graun we i was i kam daun insait long ol wara, wanpela bikpela samting long daunim na stopim dispela em i raun wara ol kolim ISF.

Ol EIS stadi lain ol i skelim olsem 99 pesen ('percent') bilong graun o olsem klos tu olgeta graun we i was i kam daun long ol han wara bai i stap long ISF tasol. I minim olsem, kostu olgeta graun bai i no inap kapsait ken na go tambolo na go insait long wara Frida na ol narapela wara tambolo. Na dispela em i wankain long olgeta pipia ston ('waste rock') na pipia weisan ('tailings') we ol bai putim insait long ISF. Long liklik graun o dispela 1 pesen ('percent') we bai i stap insait long wara we i kapsait long sait baret bilong ISF ('ISF spillway') o we bai i stap insait long wara ol i pulim igo long kamapim haidro pawa ('hydroelectricity'), dispela graun em i ol liklik liklik das tasol we i save mikis o bung insait long wara. Dispela das tasol bai lusim ISF na igo insait long wara Frida na ol narapela wara tambolo.

Long tambolo bilong haidropawa haus we wara bai ron kam aut long em igo insait long wara Frida (AP6), EIS stadi i painim aut olsem sedimen bai antap moa long taim bilong konstrakson bilong bikpela raun wara. Na taim dispela wok i pinis sedimen insait long wara baigo daun. Taim bilong operesen sedimen bai antap moa long fes 14 krismas na bai ga daun bihain long dispela. Long yia 28 ol mak bilong sedimen baigo daun olsem 15 igo long 20% long hap AP6.

Long sait bilong hamas sedimen o graun i save go daun long nau taim na bai igo daun long taim Projek i ron long ol hap bilong wara Frida tambolo, ol EIS stadi lain ('EIS team') i bin wok painimaut tu long dispela ol samting na em bai wankain olsem hap AP6. Em soim olsem i no inap gat planti impek o bagarap long ol narapela han wara na tu long ol Projek infrastaksa kamap long ol dispela hap bilong wara Frida. Dip bilong wara Frida baigo daun olsem 3 mita (m) tambolo long ISF na sapos nogat ISF em bai dip em 1 m tasol inap long 60 krismas. Long wanem ISF bai stap na wara Frida bai no inap kisim bikpela sedimen na graun olsem nau wok long kisim.

Ol EIS stadi lain i bin wokim narapela wok painimaut tu long wara Sepik. Long dispela ol i bin lukluk long dip bilong wara Sepik. Na ol i painimaut olsem long nau taim, long sampela hap bilong wara Sepik, dip bilong wara i save kam antap o lgo daun long mak bilong 2.5 mita ('metres'). Dispela i minim olsem. Wara Sepik i save karim planti sedimen na graun na long sampela taim olsem taim bilong drai ('dry season') wara i save putim planti graun na dip bilong wara igo daun o igo liklik. Tasol long ol narapela taim, olsem taim wara i tait o taim bilong ren planti ('wet season') wara i save rausim planti graun na dip bilong wara Sepik em igo bikpela. Na ol painimaut olsem dispela senis senis bilong dip i save kamap long nau taim, taim Projek i no kirap na ron yet. Na ol i painimaut na skelim olsem maski Projek i kirap na ron, tasol, Projek bai i no inap kamapim wanpela impek o senis long sait bilong dip bilong wara Sepik.

Narapela samting we i save kamap long wara Frida tambolo stret klostu we i bungim wara Sepik na tu we i save kamap planti long wara Sepik stret, em i olsem. Long taim bilong planti ren, dispela ol wara i save tait na wara i save antapim sait sait bilong wara na kapsait igo insait long ol sait raun wara na ol sait baret o ples tais o flet graun. Na taim I save antapim olsem, na bihain wara igo



daun ken o igo drai ken, dispela wara i save putim planti sedimen o graun antap long ol sait hap graun arere long ol wara na ol baret na ol raun wara. Dispela em i nomol samting we em i save kamap long nau taim. Na wok painimaut bilong EIS i skelim olsem maski Projek i kirap na ron, tasol, Projek bai i no inap kamapim wanpela impek o senis long dispela sait bilong hau wara Frida na wara Sepik i save antapim ol sait sait bilong ol. Na tu, Projek bai no inap mekim wanpela senis nogut I kamap insait long ol sait raun wara na ol sait baret na ples tais o flet graun bilong dispela tupela wara long sait bilong mekim planti graun moa yet i kamap.

### **Stadi bilong ‘wara kwaliti’ o olsem, mak bilong klin bilong wara we i nogat planti ol marasin o metol o narapela samting insait**

EIS stadi i bin lukluk tu long samting ol i kolim ‘wara kwaliti’ (‘water quality’). Wara kwaliti em i mak bilong klin o gutpela bilong wara, olsem i klin we i nogat planti ol marasin o metol o narapela samting nogut insait. Na long dispela sait, EIS stadi i bin testim ol wanwan

wara insait long Projek eria, ol wara i save ron wantaim tu ol sait baret na sait raun wara long painimaut skel bilong wara kwaliti bilong ol long nau taim. Na tu ol i bin skelim hau Projek i ken kamapim sampela impek o senis nogut antap long ol wara sapos Projek i kirap na ron.

Na ol i painimaut olsem sampela impek o senis nogut we I ken bagarapim wara kwaliti i ken kamap antap long dispela ol samting sapos ol i no lukautim gut:

- Wara kwaliti ken bagarap sapos ol i no lukautim wara we ol bai rausim long ‘open pit’ o olsem, rausim long dispela traipela hol bilong mainin insait long graun.
- Wara kwaliti ken bagarap sapos ol i no lukautim na putim gut pipia weisan o ‘teilins’ (‘tailings’) o olsem, pipia weisan we i save kamap taim ol i brukim ston na rausim kopa-gol long en na tu sapos ol i no lukautim gut ‘wes rok’ (‘waste rock’) o olsem, pipia ston we i nogat kopa-gol insait.

Olsem na long lukautim gut ol dispela samting na mekim we wara kwaliti i noken bagarap pastaim ol putim go daun long wara Ubai, Projek bai wokim na sanapim planti ol samting. Long sait bilong wara nogut we ol i rausim long 'open pit' ('open pit') o olsem, ol i rausim long dispela traipela hol bilong mainin insait long graun, ol bai sanapim wanpela haus ol kolim 'wara tritmen haus' ('water treatment plant') o olsem haus bilong putim marasin long wara nogut long daunim na stretim nogut bilong en. Na taim ol pinisim wok bilong tritim o stretim wara, olgeta samting nogut bai kamaut long wara na bai i stap olsem wanpela 'nogut tais' ('sludge'). Na dispela nogut tais ol bai salim igo insait long wanpela paiplain ('pipeline') na igo long hap we ol save rausim teilins ('tailings') o olsem, ol i save rausim pipia weisan we i save kamap taim ol i brukim ston na rausim kopa-gol long en. Na ol bai bungim dispela nogut tais wantaim teilins na bihain ol bai putim dispela insait long ISF we bai i stap ananit long wara. Na tu bihain long main klosa ('mine closure') o olsem, taim Projek i pas long en, ol bai wokim yet dispela tritmen bilong wara igo inap long 50 yia afta long main i pas.

Wok painimaut bilong wara em soim olsem taim ples i drai, wet na stap namel long wet na drai:

- Wara kwaliti stendeds bilong PNG em ol bai mitim long Wara Frida na Wara Sepik.
- Projek bai mitim olgeta World Helt Oganisesen gaidlains blong wara kwaliti blo dring long Wara Sepik na Wara Frida. Ol kemikols olsem aluminium na iron we ol kwaliti levul blong ol i save stap antap olgeta taim lo tupela wara em bai nogat. I luk olsem ol dispela kemikol stap long wara bai i no inap go planti abrusim mak we istap pinis.
- Ol stendet bilong olgeta pasin bilong Australia long lukautim ekosistem em bai kamap long Wara Frida tasol i no long sait bilong ol kemikols olsem kopa na zinc (olgeta kain weda kodisen) na aluminium (ol drai weda kondisen). Ol narapela

toktok lo sait velius blo kopa em i stap aninit. Projek bai bihanim olgeta wara kwaliti gaidlain bilong Australia tasol em bai nogat blo zinc na kopa we dispela tupela kemikol ol velius blo ol i save stap antap olgeta taim na i no save stap stedi. Ol predikted velius blo kemikols we ibai stap long wara bai i no inap abrusim wanem samting em stap insait pinis long wara. Ol kemikol olsem aluminium na cadmium long Wara Sepik em luk olsem bai abrusim ol Australian gaidlains lo taim ples em drai olsem kopa na zinc, Ol narapela kemikols we ol istap lo wara em ol bai stap olsem bipo.

- Projek bai mitim olgeta International Finance Corporation (IFC) disjarg kraiteria bilong metol insait long wara kam aut long ISF, ion disjarg kraiteria tasol bai Projek i no mitim long wanem ion istap antap pinis insait long wara Frida na long hap ples wara bai kam aut long ISF.

Kopa we i stap lo wara em wanpela kemikol we i bai abrusim 95% gaidlain bilong Australia long lukautim ekosistem taim yumi skelim wantaim nau mak bilong em istap pinis insait long Wara Nena, Wara Frida na Wara Sepik. Ol bin mesarim kopa kompleksin kopacsti blong ol wara sempol ol kisim long planti hap long Wara Nena, Wara Frida na Wara Sepik na taim ol skelim ratio blong kopa kompleksin kopasiti wantaim ol antap konsentresen blong kopa we ibai kamap behain taim long taim bilong projek ol lukim olsem ibai gat planti moa kopa kompleksin kopasiti den kopa we istap pinis long wara.

Dispela em minim olsem ol kopa stap wantaim wara bai i abrusim mak bilong 95 pesen ekosistem proteksen triga veliu, igat bikpela saplai bilong gutpela bilong ol kopa we bai daunim birua long wara long olgeta yia long taim bilong main operesen. Antap long dispela gutpela samting bai kamap long kopa, ol kopa kemikols we ol narapela ol pipia istap antap long wara olsem sedimen we bai ikisim bai ol daunim stron bilong dispela ol wara kopa long Wara Nena, Wara Frida na Wara Sepik.





Narapela stadi ol wokim long hap bikpela raunwara bai stap ol kolim 'limnological modelling'. Em stadi lukluk long hau raunwara long antap bilong em na igo daun long tambolo bilong em long lukluk long hau dispela raunwara bai mikis. Stadi i soim olsem wara antap bai no inap mikis wantaim ol waste na teilins we bai stap tambolo tru lon dispela raunwara. Olsem na em bai no inap impek long wara kawaliti long taim bilong operesen na bihain long main klosa.

Long lukautim ol wara we istap antap long graun long stap gut, FRL bai mekim olsem:

- Bai igat tupela komplaiens poin istap, wanpela bai istap long AP7 insait long wara long het blong Wara Frida long Paupe ples (Komplaiens Poin 1). Long dispela ol komplaiens poin, kwaliti bilong wara bai stap na bihainim ol toktok we istap long PNG Ambient Kwaliti Stended (Schedule 1) na PNG Gaidlain blong ol wara blong drin kain olsem lo itok. Dispela ol komplaiens poin em karamapim baundri bilong ol ples we wara save mikis na wara stap namel long ples bilong rausim na ol komplaiens poin em hap bilong wara isave mikis, em hap we i nogat nid long mitim PNG wara kwaliti stendeds na gaidlains long wanem em stap antap pinis long wara.
- Ol wara nogut we ikam aut long ISF igo daun long Wara Frida em imas bihainim wanem samting ol toktok we istap insait long IFC stended blong ol wara nogut igo aut. Lon tasol bai i no inap mitim dispela stendet.
- Sapos ol wokim ol wok painimaut na ol antap veliu blong konsentresen blong ol kemikols (olsem kemikol insait long wara na olgeta kemikol) insait long Wara Frida (long AP7) em ol abrusim ol kriteria we istap insait long lo, em olsem nitiet (90th) persentail blong ol konsentresens long wara em ol ken yusim olsem stended kriteria blong wokim wok painimaut long wara we istap long projek aria.

Em bai igat moa wok painimaut long wara kwaliti, olsem:

- Ol moa wok painimaut long lukluk long veliu blo alaminum na kopa long wara.
- Ol wok painimaut long levol blo kemikol we istap insait long ol pis blong wara insait long Wara Frida na Wara Sepik.
- Ol wok painimaut long levol blo kemikol we istap insait long ol bikpela binatang blong wara insait long Wara Frida.

### Stadi bilong ol plent na animol laif i stap insait long wara

Ol birua long laif long wara i ken kamap long ol dairek o indairek wok o ol proses long taim Projek istap.

Long taim bilong konstrakson, Projek impek o bagarap we i ken kamap em long dus o doti long wara ketsmen stap antap na tambolo long ISF banis. Igat tripela ketsmen stap antap long ISF banis em Wara Nena ketsmen, Wara Ok Binai ketsmen na Wara Niar ketsmen. Long ol dispela tripela ketsmen stap antap long ISF banis, Wara Nena ketsmen bai kisim planti bilong dipela ol impek o bagarap. Ol bikpela samting we ibai kamapim bikpela birua long ol plent na animol laif i stap insait long wara long taim bilong konstrakson em ol: long sait bilong bagarapim ples ol plent na animol save stap; long sait bilong senisim ron bilong ol wara; na long sait bilong kamapim moa dus o doti igo daun long ol wara. Taim konstrakson laik pinis na banis bilong ISF i sanap dispela banis bai pasim olgeta dus o doti na TSS konsentraisen long ol wara stap tambolo long banis bilong ISF.

Ol ples we animols na plents isave stap bai lus long ol eria we wara isave ron stron, kilia wara long ol liklik han wara olsem Ekwai, Ubai na Uba (em ol eria insait long ples ol traipela raunpela hul o 'open-pits' bai stap) bai ol sensis ron bilong ol dispela wara long abrusim ol 'open-pits'. Long wanem ol dispela het wara mas ron yet igo





daun long tambolo bilong dispela ol han wara. Ol ples we enimols na plents isave stap bai lus na ol niuplea ol ples kamap long ol niupela hap wara bai ron bai wara kwaliti no inap gutpela tumas long gat ol enimols na plents ol nau em stap long en.

Ol impek o bagarap we ken kamap bihain long konstrakson long wara Frida bai antap liklik ('moderate'). Ol dus o doti long wara we ikamap long taim ol wokim banis bilong ISF bai wokim na ples tambolo long wara we ol liklik plent save stap laif bai no inap gutpela. Na em bai gat ol dairek impek o bagarap long ol ples bikpela binatang save stap tambolo long wara. Ol bagarap olsem ol dispela bikpela binatang bai sotwin long wanem bai gat moa dus na doti na tu bai gat ol indairek impack long ol kaikai bilong ol dispela bikpela ol binatang. Ol dispela ol bikpela binatang na pis save stap gut taim igat sotpela taim we dus o doti save kamap long wara. Long wara Frida ol pis save stap orait tasol ol bikpela binatang bai no inap. Taim ol bikpela ol binatang sot long wara Frida em ken sensim ol ples ol enimol na plent bilong wara bai stap long ol eria insait long wara Frida.

Olgeta ol impek na bagarap we iken kamap taim ol eria we ol plent na enimol save stap long wara i senis ken senism tru ol dispela eria long wara olgeta. Em bai kamap long ol wara we bai abrusim ol 'open-pits' na ples bikpela raunwara bilong ISF i kamap. Bai pis i sot long ol dispela ol wara we konstrakson ikamap long main na ISF. Ol ketsmen stap antap long ISF banis bai lukim dispela ol sensis tasol ol no inap bikpela tumas long pinism olgeta pis insait long ol wara long dispela ol ketsmen eria.

Bihain long konstrakson ol eria tambolo long wara Frida bai kamapim ol gutpela eria bilong ol pukpuk na trosel long kamap. Long wanem ron bilong wara baigo daun long bus arere long wara na tu long ol hap wara save tait. Em bai nogat bagarap kamap bihain long konstrakson long ol eria ol pukpuk na trosel save stap long tambolo long wara Frida na tu long wara Sepik.

Ol ples tambolo long wara Frida olsem ol liklik han wara, ol raunwara, na ol wet graun bai no inap gat impek o bagarap long taim bilong konstrakson. Long wanem ol dus o doti save ron long main han wara bilong Frida tasol. Dispela bai wankain long wara Sepik we ol dus na doti long ol konstrakson wok kamap long Projek eria no inap tru kam daun long wara Sepik. Long wanem wara Sepik stap long wei tru na em gat bikpela dus o doti pinis long em.

Long taim mainin operesen i stat ol impek o bagarap we i ken kamap long ol plent na enimol stap laif insait long wara em long: ol trited wara kam aut long ol raunpela hul long graun o 'open-pits' we ol bai putim go insait long wara Ubai; na ol teilins na pipia ston ol bai putim go tambolo tru long bikpela raunwara bilong ISF, dispela bai wokim ol metol insaid long raunwara na tambolo long banis bilong ISF igo antap liklik.

Konsentraisen bilong kopa insait long wara Frida bai antap liklik long taim wara em ron isi (olsem long taim

nogat bikpela ren) na nogut bai gat impek o bagarap kamap long ol liklik plent na ol binatang save stap tambolo tru long ol wara. Tasol long AP7 (komplians poin)dispela konsentraisen bilong kopa bai kam daun ken na mitim Australian gaitlain bilong kopa save stap insait long wara. Long wanem dispela kopa bai mikis wantaim wara Frida na ol dus o doti bilong ol diwai na bus stap insait long wara bai brukim dispela konsentraisen igo daun. Long sait bilong metol ol kolim 'aluminium' konsentraisen bilong em long nau taim save mitim gaitlain bilong US EPA long AP7. Long dispela tok kopa na 'aluminium' konsentraisen bai i no inap tru kamapim wanpela birua long ol plent na enimal save stap laif insait long wara Frida long taim mainin istat.

Ol impek o bagarap long ol ples ol plent na enimol save stap laif long antap sait bilong wara Frida bai birua mak antap liklik ('medium magnitude'). Long wanem bikpela banis bilong ISF bai senism sindaun bilong ol dispela plent na enimol stap laif insait long wara. Long namel na tambolo hap ples bilong wara Frida mak bilong impek o bagarap long ol plent na enimol save stap laif insait long wara bai mak bilong em nogat tru ('negligible').

Long taim mainin operesen ikamap bai i no gat wanpela impek o bagarap kamap long ol plent na enimol save stap laif insait long wara Sepik. Long wanem wara Sepik istap long wei tru long ples mainin bai kamap na bikpela banis bilong ISF bai banisim olgeta pipia.

Long taim main ipas pinis bai i no gat wanpela impek o bagarap kamap long ol ples ol plent na enimol save stap laif insait long wara long wara Frida na tu long wara Sepik. Olgeta wara insait long ol bikpela raunpela hul bai ol tritim na ol bai sekim wara kwaliti long AP7 na tu long wara Sepik long mekim sua olsem ol dispela komplians poin i mitim Australian gaitlain. Tasol kopa insait long wara bai antap liklik long wanem nau yet em save stap antap olsem long wara Frida.

Wanpela stadi ol kolim 'bioaccumulation' stadi we em save lukluk long ol rot ol kemikol o metol insait long wara ken bihaim ol liklik binatang bilong wara na bihain pis save kaikai ol na bihain ol manmeri kaikai pis na painim sik bihain. Dispela stadi lukluk long raunwara bilong ISF na sapos dispela bai kamap long ol metol olsem 'aluminium', 'cadmium' na kopa insait long raunwara, long wanem teilins na pipia ston bai stap insait tru long tambolo long raunwara. Insait long wol i no gat wanpela stendet long mak bilong 'aluminium', 'cadmium' na kopa save stap insait long pis. Tasol stadi i lukluk long stendet bilong kaikai na painimaut olsem i no bai gat wanpela mak abrusim ol stendet bilong kaikai long givim birua long ol plent na enimol laif stap insait long bikpela raunwara bilong ISF.



## Stadi bilong ol plent na enimol laif i stap arere long nambis insait long solwara

Ol birua long ol plent na enimal stap laif long nambis na solwara we ol tingting long appraidim ples sip save anka (pot) long Vanimo. Dispela hap nambis na solwara em ol sip save sua long em pinis na i no niupela hap olsem na igat ol birua stap pinis long em.

Konstrakson bilong dispela pot long Vanimo bai ol karamapim solwara wantaim graun klostu long ples Wesdeco. Taim ol karamapim solwara wantaim graun em bai karamapim ol rif na gras bilong solwara stap arere long nambis klostu 500 mita (m). Mak bilong ol rif na gras bilong solwara graun bai karamapim em klostu 3.4 hekta. Tasol em bai olsem 10% bilong ol rif na gras bilong solwara stap long Dakriro Bay we pot bai kamap long en. Konstrakson bilong ol hap sip bai kam na anka bai givim hevi long graun stap tambolo long solwara long we ol bai sanapim ol bikpela pos. Na tu taim ol sanapim ol pos ol masin ol usim long paitim pos igo insait long graun bilong solwara bai wokim planti dus o doti long solwara na bagarapim ples ol liklik binatang save stap tambolo long solwara.

Ol impek o bagarap we i ken kamap long graun ananit long solwara long taim bilong konstrakson na tu long moto bilong ol bikpela sip we em ken givim hevi long ol pis long pulim win na bagarapim ol ples ol enimol save stap tambolo tru long solwara. Tasol dispela impek o bagarap long ol enimol stap laif long solwara long ol dus o doti bai no inap liklik tasol ('mi nor'). Long wanem ol enimol save stap long Dakriro Bay i save stap long dispela hap solwara we i gat planti dus na doti pinis ikam long ol dren bilong Vanimo taun na tu long wara save go insait long solwara bilong fopela wara stap long sout bilong Dakriro Bay.

Ol impek o bagarap we i ken kamap long ol samting ol kolim 'quarantine-related impacts' we istap pinis na ken kam bihain long taim pot sanap long ol sip bilong Projek o ol sip i no bilong Projek. Dispela em minim olsem ol plent na enimol save kam long narapela kantri long sip na kamap birua long ol plent na enimol stap pinis long Dakriro Bay. Projek bai gat wanpela menismen plen long kontrolim na daunim dispela kain birua long kamap. Olgeta sip kam sua mas bihain lo bilong kantri stap anait long kontrol bilong PNG kastoms na 'quarantine'.

Ol wara we ol no inap usim we em stap insait long konsentrait tikna we em bai sanap long pot bai ol i putim dispela wara go daun long solwara long taim mainin istat. Ol PNG solwara kwaliti stendet kampani ting ol bai mitim long 10 mita long we ol i putim dispela wara igo insait long solwara. Na tu Projek i ting ting long wokim wanpela mak long solwara dispela mak ol kolim 'mixing zone' na dispela mak bai raunpela bilong em bai 100 mita long we ol putim dispela wara igo daun long solwara. Dispela em long laraim solwara mikis wantaim dispela wara na tu long wokim ples i seif long sekim wara.



*Piksa bilong hap ples ol ting ting long sanapim niupela ples bilong ol sip long kam na anka ol i kolim "Vanimo Ocean Port".*

*Long Vanimo Ocean Port ol bai putim ol kopa-gol weisan igo long ol bikpela ol sip. Long menijim dispela wok bai i gat ol enjanirin kontrol long daunim sans long kopa-gol weisan long kapsait igo insait long solwara*





## 6.4 Stadi bilong sosel o sindaun bilong ol komuniti na iekonomik o rot long ol komuniti save kisim moni

Section 6.1 em tokaut long ol benefits we projek bai givim long ol komuniti. Tasol Projek em ken kamapim tu sampela gutpela sindaun na birua long sindaun bilong ol komuniti. Dispela em sampela senis we i ken kamap na bagarapim sindaun bilong ol komuniti long taim projek i kamap:

- Ol lain autsait long projek eria bai kam insait, em gutpela bai halivim wok bilong salim samting, wok moni, infrastraksa na ol narapela sevises tasol em nogut bilong em, ol dispela lain kam insait ken kamapim ol samting long sait bilong wok bisnis, health na sosol problems na iken kam kisim ol giraun na sindaun we bai sotim ol giraun bilong ol pipol long peles na ol narapela risos tu, prais bilong ol kaikai samting bai igo antap bikos planti lain igat rot bilong kisim moni, ol lain kam insait bai resis wantaim ol asples long kisim wok moni na wokim bisnis. Pasin kastom na tumbuna pasin bai senis, ol asples bai lusim kastomeri raits bilong ol, na pasin bai stap wanbel wantaim i no inap stap tu namel long ol komunitis. Niupela ol pasin bai kamap na olupela pasin bilong peles i no inap stap mo, na ol planti lain bai stat long kisim simuk nogut (marijuana) na bia bai ken bagarapim peles na statim planti trabel na pait insait long ol komunitis.
- I bai igat rot bilong kisim moni long peles, provins na nesenol level tasol tasol igat nogut bilong em long wei bilong pasin bilong peles na wanbel namel long ol komuniti I ken bruk, laif bilong ol manmeri long peles bai senis, na wei bilong sindaun bilong peles bai senis tu na dring bia na simuk ol simuk nogut na bikhet bai igo antap na iken bagarapim sindaun bilong ol man na meri long peles.

## Sosel ketsmen 1A – Main Eria

Long ol tripela liklik hap ketsmen we i kamapim sosel ketsmen 1A, ol manmeri bilong 'sub-catchment' Telefol bai kisim bikpela senis long wanem peles bilong ol (Ok Isai na Wabia) bai bikpela raunwara bilong ISF na haidropawa projek bai karamapim giraun na peles bilong ol. Bihain long dispela em bai ol manmeri bilong 'sub-catchment' Paiyamo long taim konstrakson bilong main na haidropawa projek i stat. Narapela senis we ol dispela tripela 'sub-catchment' long ketsmen 1A bai kisim em long distebens long rot bilong ol long kisim kaikai na ol risos long bus na gaden na I isave yusim long em, bai igat senis olsem ol bai na igat rot bilong kisim moni na bai ol stat long baim ol kaikai long moni em i no olsem bipo, na igat ol narapela senis tu bai kamap taim ol man na meri long autsait istat long kam insait long ple na stap.



Luk olsem ol dispela peles olsem Paupe na Wameimin 2 em ol peles we bai ol lain long outsait bai traim long kam stap long ol. Taim planti ol lain outsait I kam stap long ol kominitis insait long Projek bai luk olsem igat planti senis tu bai kamap. Taim planti lain I kam stap long ol dispela kominitis, em iken benefitim ol pasin bilong salim nab aim ol samting, wok mon, infrastraksa na sevises, igat nogut na kikkbek bilong em long sait bilong ekonomi, helt na sosol laif long ol man na meri long ol kominitis:

- Giraun bai sot na planti risos raunim ol peles we ol bai yusim planti risos, em bai mekim na ol gaden kaikai tu bai pinis, ol asples bai hat long holim stron ol kastom na pasin tumbuna bilong ol na ol peles tambu olsem peles masalai na matmat na hap giraun bilong ol tumbuna samting I ken bagarap.
- Sans bilong ol asples long wokim bisnis na painim wok moni long taim Projek kamap bai igo daun.
- Ol belhat I ken kamap namel long asples long kominitis, planti sik nogut save kamap long kuap I ken kamap na ibai igat planti lain laikim marasin na helt sevises na rot bilong kisim ol dispela sevis hariap, ol dispela samting em nau yet i no stap, i no planti rot bilong kisim na tu hat tru long kisim.

FRL em wok long wokim wanpela In-Migration Plan we em bai menejim ol lain kam-insait nating long asples kominitis na tu ol narapela hevi save kamap long taim ol lain kam insait long peles.

Long sosel ketsmen 1A, Paiyamo sub-catchment em bai bikpela bikpela bagarap long ol risos bilong em we ol manmeri save kisim kaikai na yusim long em, wanpela em wara bai bagarapim long taim bilong konstrakson bikos em stap klostu stret long ol Projek infrastraksa na rot bilong ol. Luk olsem planti ol lain outsait bai i laik go stap long Paiyamo eria. Antap long ol dispela samting Paupe bai kisim ifekt we kamap wantaim taim ol kar na sip samting i karim ol

samting bilong wok long main igo kam. Ol dispela ol senis we bai kamap long olgeta hap peles namel long ketsmen 1A kominitis na long Telefol na Paiyamo 'sub-catchment' em bai mekim na igat bikpela senis tru long ol wei bilong laif bilong ol man na meri long ol dispela hap long wanem FRL bai painim niupela hap bilong ol long go na stap olsem na Projek imas bihainim plen bilong em long stretim ol dispela hevi, projek nidim tu halivim bilong steikoldas outsait long patna na stretim ol dispela hevi gut.

## Sosel Ketsmen 1B – Dispela em eria we niupela rot bai kamap long namel long Hotmin igo long Grin Riva

Ol peles stap insait long dispela ketsmen bai wok gaten yet na taim rot i kamap bai i gat ol sans long wokim moni. Wanpela wari we niupela rot bai kisim i kam em long sait bilong ol loggin na oil palm kampani long kam na kisim giraun. Dispela bai wokim giraun sot long wokim gaten samting.

I bai gat sans long ol outsait manmeri long kam insait long ol peles stap arere long niupela rot. Wok painim aut ting olsem peles Hotmin na Grin Riva em ol outsait manmeri bai tingting long sindaun long dispela tuplea hap tasol. Dispela bai kamapim sans long ol as peles long salim sampela gaten kai kai bilong ol long dispela ol kam manmeri. Niupela rot bai givim sans tu long ol didiman i kam na lainim ol as peles long plani ol kes kop ('cash crops') na lukautim pis long ol liklik raunwara ('fish pond') long kisim moni. Nogut ol outsait manmeri kam na kisim giraun natin natin na kamapim hevi tu.

Niupela rot na sans long pulim pawa igo long ol haus bai halpim ol wan wan hauslain long kisim moni kam insait long femili. Dispela moni ken halpim long baim haus kopa na wara tenk. I bai gat sans tu long sanapim tret stoa o taka bokis na ol sevis bilong gavaman

*Ol wokman bilong FRL i karim hap graun i kam long boa*





bai kamap long ol kominiti long wanem rot em i sotim lek bilong ol. Niupela rot bai wokim na ol manmeri long narapela hap bai marit wantaim ol as ples na dispela ken senisim ol pasin tumbuna.

Long taim bilong konstrakson bilong niupela rot em ken kamapim sampel hevi sapos i nogat gutpela menjimen mesa we em bai stap long wanpela plen ol kolim 'construction social mangement plan' wantaim dispela ol kemp bilong ol konstrakson wokman bai stap long wei long ol peles long daunim sampela hevi.

Bai gat ol birua taim ol stat long wokim niupela rot na taim ol kar igo kam long em. Ol birua olsem kar i bamim ol manmeri o pikini bai stap. Tasol rot bai gat ol kain kain piksa sain olsem ol narapela bikpela rot long PNG igat long toksave long ol draiva long ol lo bilong rot.

### Sosel Ketsmen 1C – Dispela em eria we rot nau i stap namel long Grin Riva igo long Vanimo

Ol giraun bilong wokim gaten long dispela ketsmen em ol loggin na oil palm kampani i senisim pins. Tingting bilong Projek long apgradim dispela rot bai nogut wokim na ol niupela loggin na oil palm kampani kam gen long senisim giraun.

Ol manmeri stap long dispela ketsmen lukim planti developmen kamap pinis long sait bilong loggin pastaim na nau long oil palm. Olsem na tingting bilong ol lain long dispela ketsmen i op pinis na i save long ol kain kain pasin na winim ol pasin bilong ol lain long sosel ketsmen 1B.

Taim rot ikam gutpela moa em ba wokim na ol outsait manmeri bai kam igo daun long Grin Riva. Tasol provinsal gavman bilong Sandaun i laikim dispela long wanem gavman i wokim Grin Riva wanpela 'Level 2 Growth Centre' ananit long Sandaun Provinc Growth Centre Strategy. Vanimo em i 'Level 1'. Dispela bai luk olsem giraun arere long Grin Riva ol papa giraun mas sindaun na toktok wantaim gavaman long gutpela wei long givim giraun igo long kisim developmen i kam. Tok tok bilong giraun save kamapim kain kain hevi tasol i no inap bikpela hevi tumas.

Taim dispela rot i apgraded em bai sapotim wok bilong gavaman long karim ol sevis olsem helt, edukayson na polis i kam. Pastaim long dispela long kamap gavaman mas luksave long sapotim ol manmeri long peles long kirapim ol developmen insait long eria bilong ol. Nogut ol ovasis lain bai kam na statim ol stoa samting na kisim moni igo outsait long kantri.



### Sosel Ketsmen 1D – Dispela em eria we wof bai kamap long Vanimo ol kolim Vanimo Ocean Port

Ol hevi we bai kamap long taim bilong konstrakson na operesen bilong niupela wof bai stap arere long wof eria tasol. Ol hevi we ol peles arere long wof bai kisim em bai long sait bilong nois, lait, na lukluk bilong wof eria bai senis bikpela. Dispela ol hevi bai Projek menjim wantaim wanpela plen ol kolim 'Environment Managemnet Plan' na 'Traffic Management Plan'.

Konstrakson bilong niupela wof bai kamapim sans bilong wok bilong ol manmeri silip long Vanimo na ol papa giraun bilong wof eria. Na tu taim bilong operesen bai igat ol liklik sans bilong wok tu bai stap.

### Sosel Ketsmen 2 – Dispela em eria we ol kolim 'Sepik River Corridor'

Sampela peles stap long ketsmen 2 bai lukim sampela hevi kamap long ol peles long wara we ol save painim pis long en. Long wanem ol sip o bage bai ron long wara Frida long taim bilong konstrakson tasol. Long wara Sepik i no inap gat dispela hevi long ol pis ronowe long wanem ol pis save stap long ol liklik han wara bilong wara Sepik. Tasol nogut ol sip ron long wara Sepik kirapim wara na bai karim tait igo long ol haus stap arere long wara Sepik long taim bilong hai wara.

Ol pukpuk no inap gat hevi long taim sip igo na kam. Long wanem ol pukpuk save putim kiau long ol liklik han wara bilong wara Sepik.

Ol peles stap arere long wara Sepik save stap laif long stron bilong wara Sepik na ol dispela kominitis igat bikpela wari olsem wara Sepik bai bagarap sapos main i kirap. Bikpela wari bilong ol em stap long ISF long wanem sapos em i buruk ol kain kain marasin nogut na pipia bai kam daun long wara Sepik na bagarapim. Long sait bilong sip ron long wara Sepik, FRL bai gat ol menjimen mesa long daunim ol hevi we em ken kamap long operesen bilong sip long taim bilong konstrakson olsem benzin ken kapsait. Long sait bilong wara bilong wara Sepik i bagarap, dispela tingting bai stap wantaim ol manmeri bilong ol dispela ples oltaim na em wanpela hevi FRL bai lukluk stron long en na wokim moa awaness.



### Sosel Ketsmen 3 – Sandaun na East Sepik Provinses

FRL bai lukluk long kisim ol planti wok man na meri we ol I bilong Sandaun na East Sepik Province. Bihainim dispela tingting bai ol mekim na karim aut wanpela sistem bilong kisim ol man na meri long wok, ol lain husait I laik wok imas igat save na ekspirens bilong wokim wok. Ol wokman na meri we ol kisim long Sandaun na East Sepik Province long treinim ol long wok na wok em bai mekim na Projek i no inap depen long kisim ol wokman na meri long ovasis I kam wok na em bai mekim laif bilong ol nesenol wok manmeri I kamap gut na ol I ken tingting lo go long narapela wok long PNG o ovsasis taim ol kisim training na ekspirens pinis.

### Sosel totok na wok long taim main ipas

Taim ol I mekim tok long pasim main ol bai stretim plen bilong rausim na brukim daun ol samting olsem masin bai kamap, proses bilong pasim main bai stat. Ol rot bilong ol manmeri long eria long main long kisim moni baigo daun stret bikos wok long main baigo daun stret. Em dispela bai kamap mo long eria main sret olsem Sosel Ketsmen 1A na 1B, em ol lain we planti bilong ol bai wok long Projek na ol save kisim ol narapela halivim tu long sait bilong moni.

Long taim kampani I laik rausim ol masin samting na pasim main, namba bilong wok man na meri bai igo daun stret inap igat liklik namba bilong ol wokman we save wokim wok mentenens tasol istap inap main stop olgeta. Dispela em wanpela bikpela samting na iken kamapim birua taim planti man na meri I lusim wok. Long rot bilong stretim dispela problem we ken kamap, FRL bai preperim wanpela Human Resource Plan we em bai toktok long wei bilong holim ol wokman ken we igat nid long em na painim ol sampela rot bilong wok bilong ol nesenol na ovasis wok man na meri we I bai nogat wok.

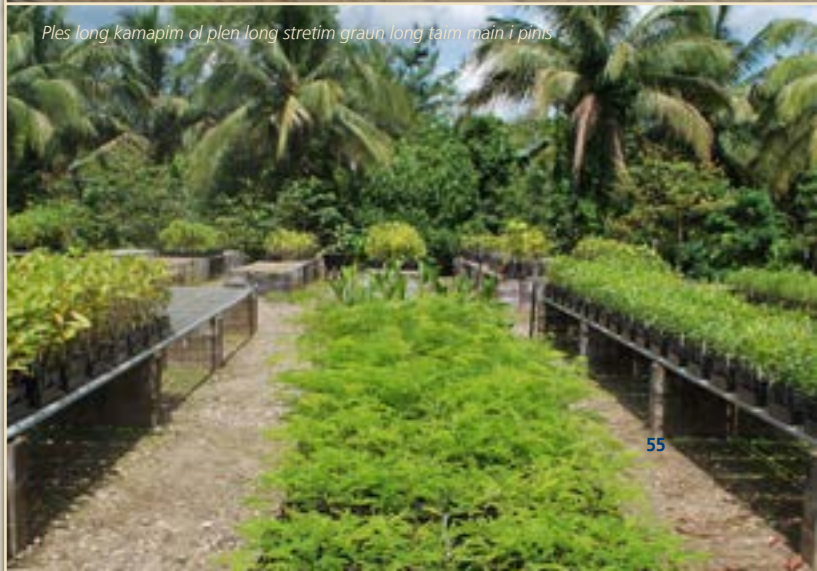
Wanpela rot we FRL I ken mekim long ol wok man na meri em long treinim ol em bai igat mo benefit long bihain taim. Dispela 33 pela yia laif bilong Projek em givim i inap taim long FRL long kirapim wanpela gutpela training program bilong ol wokman na meri bilong em long kisim save we bai (1) mekim ol I wok long taim Projek istap, and (2) we ol I ken go wok long narapela hap we maining istap or ol narapela projek taim main I pas, sapos ol I laik.



Tupels kanu long ples



Pis i drai na redi long kaikai



Ples long kamapim ol plen long stretim graun long taim main i pinis





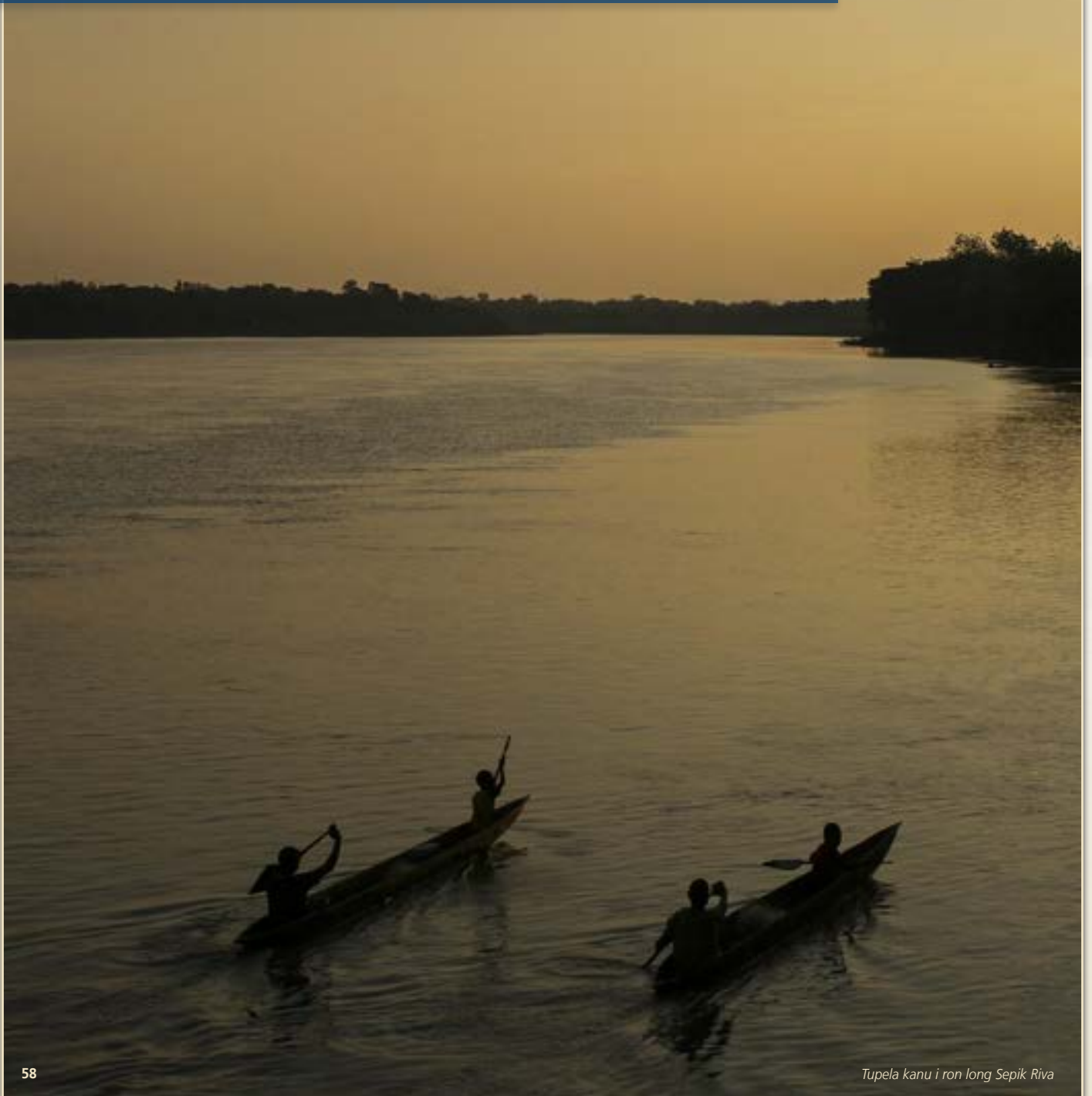
## 6.5 Luksave long ol narapela projek na ol hevi bilong ol we i kamap pinis o bai kamap long taim Sepik Developmen Projek kamap

Tenpela projek dispela wok painim aut i lukluk long en long sekim sapos em i tru tru projek o em tingting tasol na sapos em bai kamap long wankain taim na eria olsem Sepik Developmen Projek. Long dispela wok painim aut i bin painim olsem sixpela long dispela tenpela projek i tru tru na bai kamap o i kamap pinis na ken kamapim samplea ol wankain hevi ol painim long dispela EIS ripot pinis. Dispela ol projek em:

- Bewani Oil Palm Plantations.
- Idam-Siawi Agroforestry.
- Sandaun Special Economic Zone.
- Sepik Plains Agriculture Project.
- Turubu Oil Palm Project.
- Hotmin to Telefomin Road.

Dispela ol sixpela projek ken kamapim o kamapim pinis ol kain hevi olsem 'vegetation clearance', 'sedimentation', 'road use', 'shipping' na 'construction workforce'. Projek bai kamap wantaim ol manijmen plen long daunim ol kain ol hevi. Projek bai toktok wantaim wanwan ol kampani ronim dispela ol sixpela projek long kamap wantaim ol gutpela wei long wok bung wantaim long menijim dispela ol hevi. Antap long dispela, ol wei we ol kamap wantaim bai ol serim wantaim tupela provinsal gavaman bilong Sandaun na East Sepik long halpim ol long ronim provinis long sait long luksave olsem namba bilong manmeri long ol provinis baigo antap wankain long moni insait long ol provinis bai bikpela moa tasol em mas gat luksave long menijim ol hevi save kam wantaim divelopment na tu menijim envaironmen tu.

*Envaironmen Menijmen na Monitorin  
Plen bilong Projek bai stap aninit long  
Sastenabiliti Menejmen Stended. Dispela  
plen bai lukautim ol samting bilong  
menijim, monitorin, audit na ripot long  
olgeta fes bilong projek, olsem konstraksen,  
opereisen na taim projek i pas.*





## 7. WEI BILONG MENIJIM, LUKSAVE, SKELIM NA RIPOTIM OL SAMTIN BILONG PROJEK

FRL bai lukautim dispela projek long bihainim Sastanabiliti Polisi bilong mama kampani PanAust. Igat 14 pela sastanabiliti stendeds we i sapotim dispela polisi, ol dispela sastanabiliti stendeds i tok tok long lidasip, lukautim risk, helt na sefti, trenin, envaironmen na bung long kampani na ol steikolda na komyuniti. PanAust i bin wokim dispela stended long givim rot long ol pikinini kampani bilong em long kamapim sastanabiliti long ol bisnis.

Proses bilong ESIA we em stap insait long EIS ripot na yumi lukim antap long Seksen 6 i bin painimaut sampela hevi we ibai kamap taim projek wok i stat long envaironmen na long ol sindaun bilong ol pipol. Ol planti plen na menesmen mesa we projek i kamapim em ol bai halivim lon banisim na daunim ol dispela hevi na stronim rot bilong kisim ol gutpela samtig we i bai kam long Projek.

### 7.1 Wei bilong lukautim na kontrolim

Ol wei bilong lukautim envaironmen we istap insait long EIS ripot i gat mak ol i kolim 'in prinsipol', we igat wei long luksave na daunim ol hevi we ibai kampa long taim bilong projek istap. Ol Envaironmen Menesmen na Monitarin Plen (EMMP) bilong Projek we projek ibai kamapim, em ol bai stap insait long Sastanabiliti Menesmen Stended, we ol bai lukluk long ol menesmen, monitarin, wok painimaut na skelim na ripotin bilong olgeta hap bilong Projek long taim long konstrakson, operesen, na taim we Projek i pinis na ol rausim ol samtig long Projek.

Nem bilong ol EMMP em i:

- Frida Riva Kopa-Gol Projek EMMP.
- Frida Riva Haidropawa Projek EMMP.
- Sepik Infrastraksa Projek: Ol rot long Vanimo igo long Hotmin EMMP.
- Sepik Infrastraksa Projek: Ples balus long Grin Riva EMMP.
- Sepik Infrastraksa Projek: Vanimo Ocean Port EMMP.
- Sepik Pawalain Projek EMMP.

As tingting long Projek EMMP i olsem:

- Soim rot bilong FRL long wei na pasin bilong em long lukautim envaironmen, na tu ol envaironmen menesmen sistem na taim ol bai wokim wanem samtig na husait i gat mak lon wokim.

- Soim wei Projek i laik banisim ol ris long envaironmen wantaim ol sosel menesmen plens we i bihainim ol 'in prinsipal' promis i stap long dispela EIS ripot.
- Soim ol samtig i stap insait long EMMP, na rot long bihainim ol lo na lisens we gavaman i givim long kampani long kamapim projek. Dispela em bai skelim impek sapos i wankain long EIS ripot o nogat.
- Soim ol promis ol i bin mekim long EIS olsem ol i ken sekim bihain long taim ol wokim ol wok painimaut.

EMMP i namba wan bikpela plen na i gat sampela pikinini plen long lukautim wanwan samtig olsem:

- Nogut wara i kam long ol mineral ston, wes ston na rabis I kam long proses fektori long kamautim gol na kopa.
- Gutpela bilong win, na rot bilong daunim nois na liklik guria i kam long projek.
- Ol wei na rot bilong lukautim ol plents na animol.
- Wei bilong menejim ol pasin tumbuna na kastom.
- Wei long menejim ol paia na ol arapela bagarap.
- Rot bilong kontrolim ol graun long bruk na sedimen.
- Ol tambu samtig, benzin teng na wei bilong banisim sapos i kapsait.
- Mekim graun i kamap gut ken.
- Wei bilong lukautim wara.
- Wei bilong lukautim ol kar, rot na wok bilong karim kago long rot na wara.
- Wei bilong menejim na daunim ol pipia na rabis.
- Wei bilong menejim na sekim ol liklik plent nogut na binatang nogut we i save bagarapim ol hap.

Na tu, FRL bai wokim sampela plen long daunim ol hevi we ibai kamap long sait bilong ol sosel na pasin tumbuna na kastom we i bai kamap long taim bilong projek. Dispela em bai halivim ol pipol na daunim hevi long taim bilong Projek. Ol dispela plen em:

- Plen bilong bungim na wok wantaim ol stekolda.
- Plen bilong lukautim wei kastom na ol pasin tumbuna.
- Plen bilong kamapim komyuniti.
- Plen bilong baim planti samtig bilong PNG, na kamapim bisnis long ples.
- Plen bilong kamapim wok lain long ples.
- Plen bilong pasim ol lain ikam nating insait long Projek eria.
- Plen bilong lukautim sefti bilong komyuniti.



## 7.2 Wei bilong lukluk na luksave

As bilong lukluk na luksave long environmen olsem skelim impak sapos i wankain long EIS ripot o nogat, na soim olsem projek i bihainim ol lo na lisens we gavaman i givim lon tok orait long kamapin Projek. Sapos wok painimaut i soim olsem ol menesmen mesa Projek I kamapim em ol i no wok, em Projek bai i kamapim ol rot o wei we i ken daunim ol hevi long environmen na tu long komyuniti.

EMMP i soim wei Projek bai lukautim environmen long konstrakson. Ol bai wokim sampela wei moa long lukluk long environmen long taim ol i plenim ol samting long Projek na dispela ol wei bai ol bihainim ol toktok we istap insait long Environmen Permit. Plen bai gat stori long wanwan samting long Projek, wanem samting Projek bai luksave, na wanem taim ol bai sekim dispela samting. Sapos ol samting i kamap orait, bai Projek i ken larim taimlong sekim go longtaim mo.

Ol samting long environmen ol i laik sekim i gat mak, na Projek bai sekim dispela mak na ples bilong sekim na taim bilong sekim, long taim i wokim EMMP i kamap niupela liklik. Projek bai kisim saveman tru long sekim ol samting long environmen na raitim ripot igo long menesmen long FRL. Na tu ol bai putim ol dispela wok painimaut long ripot we i baigo long gavaman olgeta taim Projek i stap o long wanem taim ripot ibaigo long gavaman we istap insait long Environmen Permit.

### 7.3 Wei bilong skelim gut na toksave

Long wanwan yia FRL bai sekim win bilong plen sapos I kamap long mak long taim bilong operesen. Ol bai lukluk long EMMP na ol rot we istap insait long em longtaim long konstrakson na operesen olsem plen inap long kisim:

- Ol wok bilong Projek i ken bihainim ol lo bilong PNG.
- Projek i winim ol mak bilong environmen ol i bin putim.
- Wanpela wei bilong mekim wok go moabeta i stap.
- Sapos Projek i painimaut infomesen mo, dispela i ken stap insait long plen.

Oltaim Projek bai wokim wok painimaut long sekim sapos ol proses i bihainim ol toktok we istap insait long Environmen Permit na gutpela pasin bilong wok long lukautim environmen.

Long wanwan yia PanAust i autim wanpela ripot long hau ol i bihainim na kisim mak bilong sustainabiliti. Dispela ripot I bihainim toksave long Global Reporting Initiative G4.

FRL bai putim ol ripot long skelim environmen long han bilong CEPA na arapela opis bilong gavaman olgeta taim, long bungim wanpela oda long Environmen Permit. Na tu, FRL bai wokim wanpela bikpela ripot long wanwan yia long givim stori long bihainim EMMP, na tok skul long wei I moabeta long lukautim environmen. Dispela ripot ol i kolim Annual Environmen Ripot.

Long planti taim FRL bai givim toksave long ol steikolda husait i gat laik long ol arapela wok bilong lukautim na lukluk long environmen. Insait long dispela toksave i gat wanpela pepa, ol i kolim 'helt bilong wara', na dispela pepa i soim ol infomesen

i kam long skelim na lukautim wara we istap tamblo long main sait. Ol bai raitim dispela toksave long wei olsem ol tingting bilong manmeri long ples i kilia. Dispela anuel ripot bai givim infomesen long ol samting olsem:

- Skel bilong antap long wara.
- Skel bilong wara long dring.
- Skel bilong ol kaikai na ol samting i kam long wara.
- Inap long ol sip i save ron long Wara Frida na Sepik.
- Ol tok long Projek i kam long komyuniti.

FRL bai wokim wanpela independen komiti long givim toksave na halivim kampami long wok menesmen long environmen na sosel hevi long ol mammeri husait i stap klostu long main na husait i stap arere long wara tamblo long main. Ol bai kirapim dispela komiti bipo ol i stat long konstrakson long main, na ol memba long komiti mas i gat gutpela save long ol samting long main na environmen. Memba long komiti i man o meri husait i gat namba long PNG, o tu i ken kam long narapela kantri. Komiti bai givim daireksen na sekim ol wok teknikal long lukluk na luksave long ol environmen na sosel impek long ples klostu long main na ples i stap tamblo long wara. Mekim olsem na ol manmeri bai gat gutpela tingting long ol hevi long projek, na i ken stap bel isi long ol wok long FRL long environmen menesmen.

Ol tingting na wok painimaut long dispela komiti baigo long olgeta manmeri long kantri.

*White-lipped tree frog (Litoria infrafrenata)*





**FRIEDA RIVER**

Frieda River Limited  
**Sepik Development Projek**  
(‘Sepik Development Project’)  
Environmental Impek Statmen  
(‘Environmental Impact Statement’)  
Buk A – Eksektiv Samari  
(‘Executive Summary’)

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