

C-5 Quarry Management Plan

Aim and Objective				
<p>The C-5 Quarry Management Plan (QMP) outlines how the Project will identify and manage potential impacts associated with the extraction and processing of aggregate for the dam and related infrastructure, temporary facilities and access roads. The QMP identifies the risks associated with both the immediate and ultimate extraction needs and provides mitigation strategies to be adopted by HEC to ensure risks are minimised.</p> <p>This QMP covers the sourcing and supply of aggregate for the construction phase sourced from within Core Land and from approved commercial sources (namely Solomon Sheet Steel). It excludes specific management requirements the potential gravel source from Vatumarasa Resource Limited (VRL) as this site is still under investigation. No hard rock quarries are proposed.</p>				
Summary of Impacts and Risks				
<p>The Project requires approximately 376,420 m³ of aggregate for the construction phase, including 165,140 m³ of blasted rock sourced <i>in-situ</i> from the dam site and access roads, and 211,280 m³ of alluvium from the Tina River (refer Annex C-5-I Aggregate Source Plan). HEC propose to source all blast rock and 66,918 m³ of the river aggregate from within Core Land. The shortfall of 144,362 m³ of river aggregate is to be sourced from commercial suppliers (Solomon Sheet Steel, SSS and ZYG Trading Co. Limited) and a new source to be developed on the Tina River by Vatumarasa Resource Limited (VRL). The VRL site is subject to a separate Environmental and Social Impact Assessment and outside of the scope of the QMP, but will be subject to the same requirements if and when developed.</p> <p>Sourcing and transporting aggregate have the potential to impact on environmental and social values, and carries a risk to construction personnel. The potential impacts and risks vary by gravel source and can include:</p> <ul style="list-style-type: none">• Blast Rock: Potential loss of vegetation and terrestrial habitats; health and safety risks of explosives;• River Aggregate: Impacts to water quality at the extraction site and the downstream environment; loss of habitat and direct killing of fish and invertebrates; changes in sediment transport; potential erosion and slumping of riverbanks.• Commercial Supplies: Sourcing aggregate from suppliers that are not licenced and/or are not adequately managing environmental and social safeguards.• Impacts common to all sources include discharges to air from extraction, transport and crushing activities (dust and exhaust emissions); noise and vibration; and accidental release of hazardous chemicals to soil or water.				
Mitigation and Management Actions				
#	Issue or Risk	Action	Timing / Frequency	Responsibility
C-5-1.	In-country permits and approvals	<ul style="list-style-type: none">• Sourcing of aggregate must be undertaken in accordance with in-country safeguards, including the conditions of all Building Materials Permits and Development Consent(s) granted by the Solomon Island Government (refer Annex C-5-II Regulatory Approvals).• THL is to be provided with the applicable permits and approvals prior to the commencement of extraction.	Prior to aggregate extraction	HEC HSE Manager
C-5-2.	Site-specific aggregate extraction plans	<ul style="list-style-type: none">• An Aggregate Extraction Plan (refer Annex C-5-III) will be prepared by HEC for each extraction site and shall be reviewed and approved by THL. The AEP shall be prepared in consultation with any affected stakeholders and/or subcontractors and shall include a delineation of the extraction site boundary, access point/s, stockpiles, and environmental controls such as bunds, cutoff drains and sediment basins. Any existing human use of the site shall also be documented, along with any economic displacement and/or compensation required (if applicable, for sites outside of Core Land).• The AEP for each site shall include the methodology for site disestablishment and rehabilitation at the conclusion of works.• Prior to extraction:<ul style="list-style-type: none">– All regulatory approvals shall be in place.– Extraction sites shall be clearly pegged / marked in accordance with the Aggregate Extraction Plan by HEC or its nominated contractor prior to commencement.– All environmental and social controls shall be in place prior to the commencement of extraction to ensure that the site is fully prepared prior to use.– All staff involved in material extraction shall be walked through the pegged sites and instructed on strict adherence to material extraction requirements at the site.– Site security, fences and/or signage are to be erected and maintained to prevent unauthorized access.– Each extraction site and crushing plant facility shall be inspected by THL prior to use, with a Notice to Proceed issued if the site or facility is set up.	Prior to aggregate extraction	HEC HSE Manager THL/OE (review)
C-5-3.	Impact to terrestrial flora and fauna	<ul style="list-style-type: none">• Terrestrial gravel extraction will:<ul style="list-style-type: none">– Minimise the area for vegetation clearance and be conducted in accordance with C-3 Forest Clearance Plan and P-2 Biodiversity Management Plan.– Topsoil shall be removed and stored separately for later reuse as per C-9 Soil and Topsoil Management Plan.– Stage vegetation clearance and revegetation to minimise the area of land disturbed at any one time.– Implement additional mitigation and management actions as per P-2 Biodiversity Management Plan.• Erosion and sediment control measures are to be established and maintained in accordance with C-10 Drainage, Erosion and Sediment Control Plan.	Prior to aggregate extraction	HEC HSE Manager HEC Biodiversity Officers
C-5-4.	Impact to aquatic ecology and water quality	<ul style="list-style-type: none">• River gravel extraction will:<ul style="list-style-type: none">– Be undertaken in the dry season to the extent possible, when the river is at its lowest;– Minimise tracking of machinery vehicles through the riverbed and flowing water;– Extract gravel from gravel beaches or dewatered sections of the river. Extraction from the active river channel will be avoided through buffer distances, bunding, sheet piles and/or coffer dams.– Not be undertaken such that river banks are undermined or result in erosion and instability.– Implement additional mitigation and management actions as per P-2 Biodiversity Management Plan.• Where community water sources are potentially impacted, replacement supplies shall be provided by the Project throughout the duration of extraction activities. The details of which shall be included in the Water Safety Plan to be prepared under C-7 Water Supply Replacement Plan.	During gravel extraction	HEC HSE Manager

C-5-5.	Aggregate transport, stockpiles and waste	<ul style="list-style-type: none">Transport of aggregate shall be in covered trucks and comply with P-11 Traffic Management Plan and P-15 Air Quality Management and Dust Control Plan.Aggregate stockpiles shall:<ul style="list-style-type: none">Be located at designated stockpiles as approved by the OE and as detailed in the Aggregate Extraction Plans (Annex C-5-III)Be located on existing cleared land, such as spoil disposal sites.Not be located in any area identified as part of terrestrial offset or core land protected area or buffer area for the terrestrial offset or core land protected area as per the Terrestrial OMAS avoid sensitive areas such as water sources of local communitiesOutside the normal flood zone (1:2 year flood) of the Tina River and at least 50 metres from other watercoursesBe located on flat terrain as much as possible and at least 50 metres from sensitive areas such as steep slopes, erosion-prone soils, and areas that drain directly into sensitive water bodiesAvoid areas used for agricultural activities by the local communities.Aggregate waste material and fines shall be disposed of at approved spoil disposal sites as per C-9 Soil and Topsoil Management Plan.	During gravel extraction	HEC HSE Manager	
C-5-6.	Community engagement	<ul style="list-style-type: none">The community shall be notified at least 7 days (one week) prior to aggregate extraction activities. Public notification is to be undertaken in accordance with P-3 Stakeholder Engagement and Communications Plan. This is additional to prior consultation as part of the Aggregate Extraction Plan preparation.	Prior to aggregate extraction	HEC EHS Manager HEC CLOs	
C-5-7.	Drilling and blasting	<ul style="list-style-type: none">Drilling and blasting shall be undertaken in accordance with C-11 Drill and Blast Management Plan.	During gravel extraction	HEC HSE Manager	
C-5-8.	Air quality, noise and vibration	<ul style="list-style-type: none">Air quality and noise shall adhere to the limits specified in M-7 Air Quality and Noise Management Plan.Storage, use and disposal of hazardous materials shall comply with P-13 Hazardous Materials Management Plan and P-14 Spill Prevention and Emergency Response Plan.	During gravel extraction	HEC Construction Manager	
C-5-9.	Aggregate processing	<ul style="list-style-type: none">Screening and crushing of aggregate shall be located within Core Land well away from sensitive receptors (villages, churches, water sources).Crusher plants and stockpiles shall be screened using vegetation, bunding and/or dust fencing to minimise the impacts of noise, vibration and dust.	During gravel extraction	HEC HSE Manager	
C-5-10.	Site Rehabilitation	<ul style="list-style-type: none">At the completion of aggregate extraction, aggregate sources and stockpile sites shall be spread with topsoil and revegetated in according to the measures detailed in C-4 Rehabilitation and Revegetation Plan. For gravel sites that were formerly bare and did not support vegetation (such as gravel beaches), sites shall be rehabilitated and recontoured to mimic adjacent ground as much as possible.	Upon completion of aggregate extraction	HEC HSE Manager	
C-5-11.	Commercial supplies	<ul style="list-style-type: none">Commercial supplies shall be subject to the same environmental and social standards as discussed above.All commercial suppliers of aggregate to the Project (including both existing and new facilities) will subject to a Compliance Audit to ensure adherence to Project safeguard requirements prior to supply to the Project, and annually thereafter. If required, a Performance Action Plan will be prepared to promote compliance.Should new aggregate sources be created for the Project outside of Core Land, this is considered an Associated Facility. Preparation of a supplementary Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) will be required prior to supply to the Project.	Prior to and during aggregate extraction	HEC EHS Manager Aggregate supplier	
Monitoring Requirements					
#	Title	Description	Target / Performance Indicator	Timing / Frequency	Responsibility
C-5-A.	Regulatory Permits and Approvals	All regulatory approvals obtained: <ul style="list-style-type: none">Preparation of a Public Environment Report and granting of Development Consent under the Environment Act (MECDM).Licensing under the Mines and Minerals Act (MMERE), including granting of a Building Materials Permit. All approvals obtained under CFP safeguards: <ul style="list-style-type: none">Should additional aggregate source(s) be required outside of Core Land, an ESIA and associated ESMP will be prepared. Approved documents shall be appended to the QMP.	BMP, DC, PER, ESIA and ESMP documents to be saved in Annex C-5-II Regulatory Approvals BMP to be renewed upon expiry.	Prior to aggregate extraction	HEC EHS Manager THL/OE (review)
C-5-B.	Aggregate Extraction Plan	<ul style="list-style-type: none">Aggregate Extraction Plan (AEP) prepared and complied with for each sourceMonitoring of implementation through weekly site visits.	AEP prepared and saved in Annex C-5-III Aggregate Extraction Plans	Prior to aggregate extraction	HEC EHS Manager THL/OE (review)
C-5-C.	Audits of Commercial Suppliers	<ul style="list-style-type: none">Safeguards Compliance Audit completed, covering environmental, social, health and safety issues including compliance with the Project CESMPs. If required, a Performance Action Plan will be prepared to promote compliance.Annual Compliance Audits completed.	Full compliance with Project safeguard requirements	Prior to aggregate extraction Annually thereafter	THL E&S Manager
C-5-D.	Environmental monitoring.	Monitoring of potential impacts from aggregate extraction and processing is be undertaken in accordance with P-2 Biodiversity Management Plan, M-1 Suspended Sediment Monitoring Plan, M-2 Water Quality Monitoring Plan, M-3 Fish, Algae, and Macro-invertebrate Monitoring, M-5 Flora and Fauna Monitoring Plan and M-7 Air Quality and Noise Monitoring Plan			As detailed in the respective management plans.
Supporting Documents					
Annex	Name		Description		
C-5-I.	Aggregate Source Plan		Detail of the required amount of aggregate for all of Project construction		
C-5-II.	Regulatory Approvals		Copies of Building Material Permits, Development Consents, Public Environment Reports, ESIAs and/or ESMPs for proposed aggregate sources.		
C-5-III.	Aggregate Extraction Plans		Site specific plans for each aggregate source with a description of source, extraction details, consultation details, environmental and social management (also refer C-5-2).		

ANNEX C 5-I AGGREGATE SOURCE PLAN



Aggregate Source Plan

| 19 July 2022

TINA RIVER HYDROPOWER DEVELOPMENT PROJECT (TRHDP)



Contents

- 1. The requiring quantity of aggregate**
- 2. Final aggregate source candidates**
- 3. The aggregate balance table**

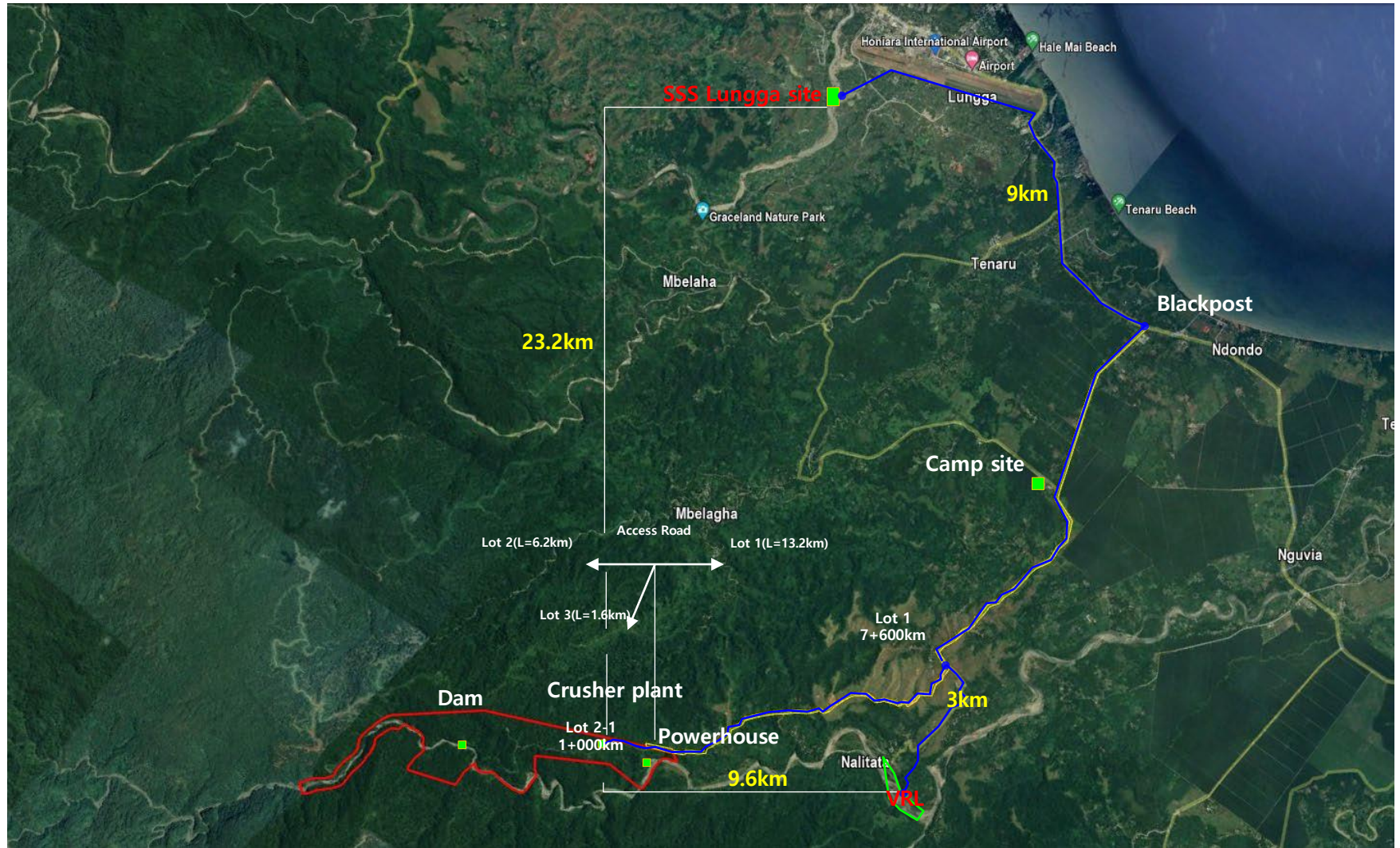
1. The requiring quantity of aggregate

■ Demanding volume of each structure

Structure		Required Strength (Mpa)	Demanding volume of aggregate(m3)			Remark
			Fine	Coarse	Total	
Blast rock	RCC Dam	15.0~18.0	55,400	87,900	143,300	
	Lean con'c	18.0	5,800	9,250	15,050	
	Temporary Rip-rap and filter stone	-	-	6,850	6,850	
	Sub sum		61,200	103,940	165,140	
River Alluvium	RCC Dam	15~18.0	13,850	21,970	35,820	
	CVC structures	21~60.0	57,350	108,110	165,460	
	Access road maintenance	-	4,000	6,000	10,000	
	Sub sum		75,200	136,080	211,280	
Total sum			136,400	240,020	376,420	※Net volume

2. Final aggregate source candidates

2-1. General map of location



2. Final aggregate source candidates

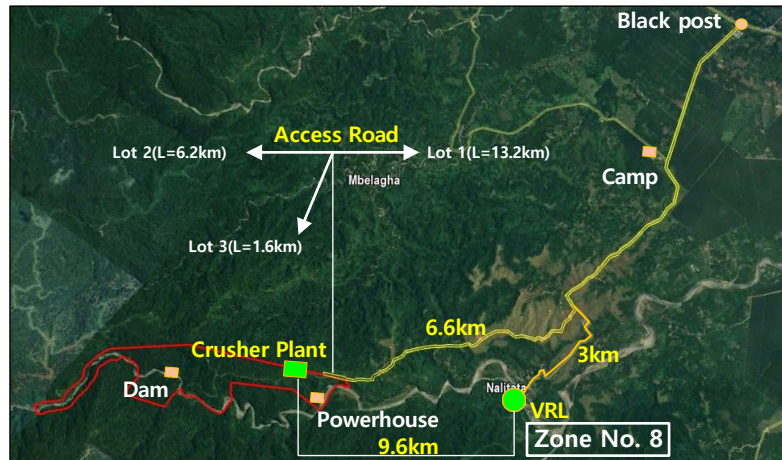
2-2. The detail map for within core boundary



Aggregate source		Fine(m3)	Coarse(m3)	Remark
Blast Rock	Dam & Plunge pool	25,350	31,000	Loss rate 18% reflected
	Lot 2-2, 2-3	46,640	57,000	
	120BP, Temporary road	36,030	44,030	
Sub sum		108,020 (+46,820)	132,030 (+28,090)	Suppliable amount(Surplus amount)
River alluvium	Dam upstream	17,028	24,650	-Loss rate, fine 14% and coarse 17% reflected
	Dam foundation & Plunge pool	10,300	14,940	-Zone-1 needed to get impact assessment
Sub sum		27,328 (-47,872)	39,590 (-96,490)	Suppliable amount(Shortfall amount)

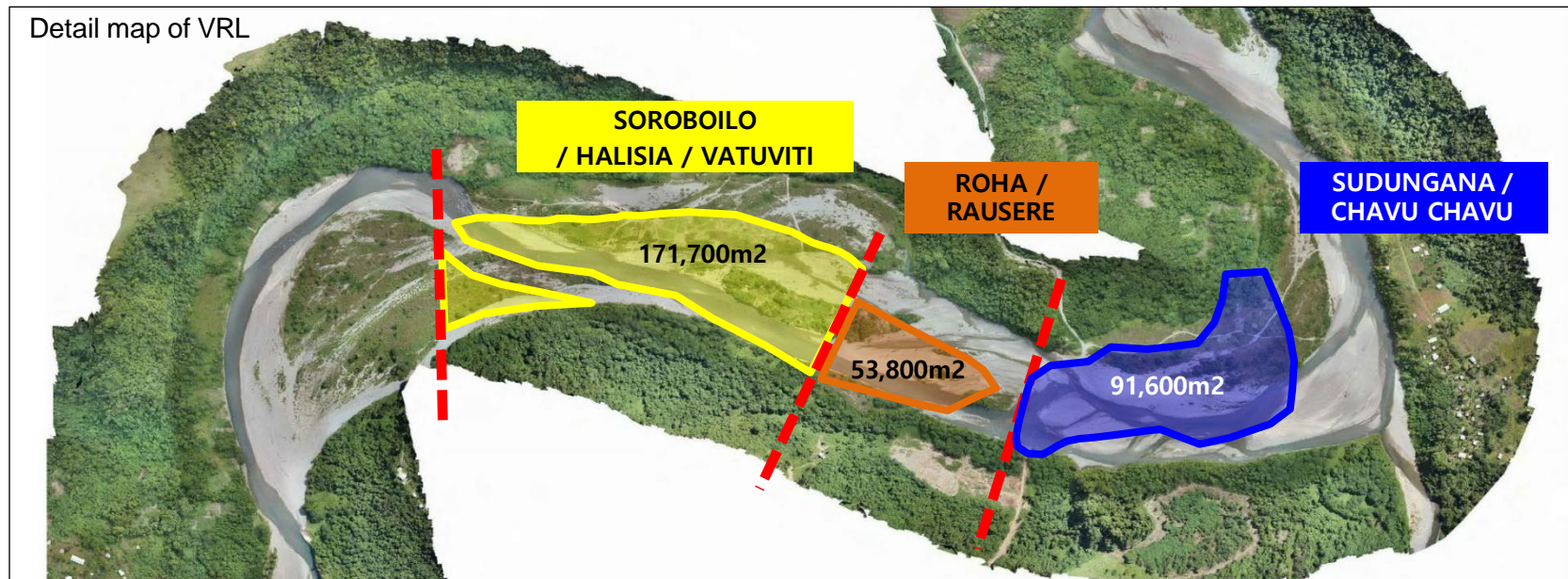
2. Final aggregate source candidates

2-3. The detail map for Vatumarasa Resource Limited(VRL)



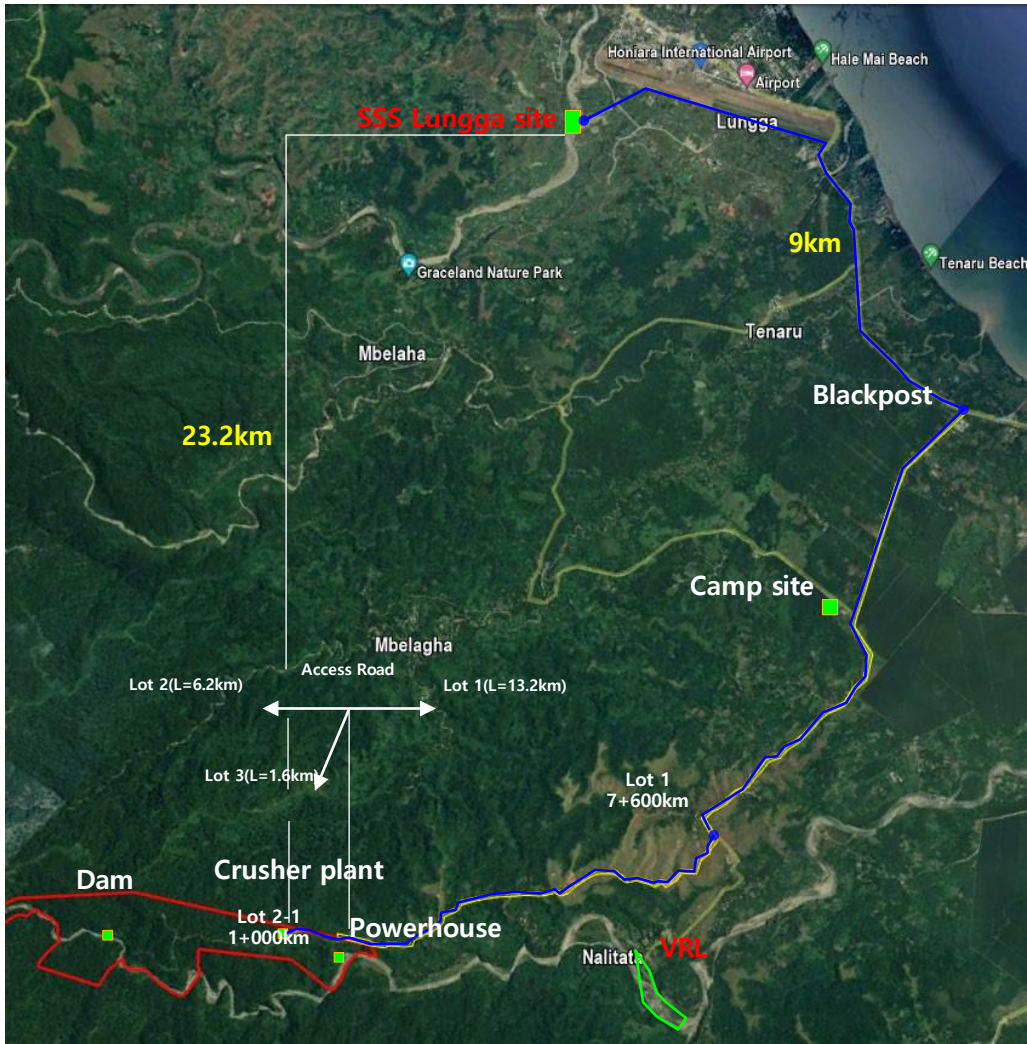
Aggregate source		Fine (m3)	Coarse (m3)	Remark
River alluvium	Commercial _ VRL	38,112	81,850	-Loss rate included

Detail map of VRL



2. Final aggregate source candidates

2-4. The detail map of Solomon Sheet Steel(SSS)



Aggregate source		Fine(m3)	Coarse(m3)	Remark
River alluvium	Commercial _ SSS	9,760	14,640	-Loss rate included

2. Final aggregate source candidates

2-5. The final aggregate source candidates

Aggregate source	Zone No.	Location	Available quantity(m3) (before including loss rate)			Available quantity(m3) (after including loss rate)		
			Total	Fine	Coarse	Total	Fine	Coarse
River Alluvium	1	Upstream Dam	49,500	19,800	29,700	41,678	17,028	24,650
	6	Dam foundation & Plunge pool	30,000	12,000	18,000	25,240	10,300	14,940
	8	VRL(outside of core boundary)	142,931	44,316	98,614	119,962	38,112	81,850
	-	Commercial_SSS	-	-	-	24,400	9,760	14,640
Sub sum			222,431	76,116	146,314	211,280	75,200	136,080
Blast Rock	7	Dam & Plunge pool	68,702	30,907	37,795	56,350	25,350	31,000
	7	Lot 2-2, 2-3	126,358	56,863	69,494	103,640	46,640	57,000
	7	120BP, Temporary road	97,609	43,928	53,681	80,060	36,030	44,030
Sub sum			292,669	131,698	160,970	240,050	108,020	132,030
Total sum			515,100	207,814	307,284	451,330	183,220	268,110

3. The aggregate balance table

Structure		Required Strength (Mpa)	Demanding volume of aggregate(m ³)			Available quantity(m ³) (after including loss rate)			
			Total	Fine	Coarse	Source	Total	Fine	Coarse
River Alluvium	RCC Dam	15~18.0	35,820	13,850	21,970	Dam upstream	41,678	17,028	24,650
	CVC structures	18.0	165,460	57,350	108,110	Dam foundation & Plunge pool	25,240	10,300	14,940
	Access road maintenance	-	10,000	4,000	6,000	Commercial _ VRL	119,962	38,112	81,850
						Commercial _ SSS	24,400	9,760	14,640
Sub sum			211,280	75,200	136,080	Sub sum	211,280	75,200	136,080
Blast Rock	RCC Dam	15~18.0	143,300	55,400	87,900	Dam & Plunge pool	56,350	25,350	31,000
	Lean con'c	21~60.0	15,050	5,800	9,250	Lot2-2/2-3	103,640	46,640	57,000
	Temporary Rip-rap and filter stone	-	6,850	-	6,850	BP for RCC Temporary road	80,060	36,030	44,030
Sub sum			165,140	61,200	103,940	Sub sum	240,050 (+74,910)	108,020 (+46,820)	132,030 (+28,090)
Total sum			376,420	136,400	240,020	Total sum	451,330	183,220	268,110

※ The quantity of blast rock is over than demanding volume of aggregate(+74,910m³), surplus quantity will be disposed to disposal site.

ANNEX c-5-II REGULATORY APPROVALS

SOLOMON ISLANDS GOVERNMENT



BUILDING MATERIALS PERMIT

(Regulation 3, Mines and Minerals Regulation 1996)

No: **BMP.Q.7Ji2**

The exclusive right, subject of the provisions of the Mines and Minerals Act 1990 and all regulations made thereunder now in force or which may come into force during the continuance of this permit or any extension thereof is hereby granted to:

Name/s	Address	Share or Issued capital
TINA HYDRO POWER COMPANY LTD	P.O BOX419 HONIARA SOLOMON ISLANDS	

To mine for building materials mentioned in the first schedule hereto, within the area of land described in the second schedule hereto for a term from the **f.U:J.H.L !.)** day of **...,MJgJ.I,\$.I iQi** , until **theJ:QJl.RIH.(1!.. }** day of **AY.gJl,\$.I.iQ .,** subject to the special conditions in the Third schedule hereto.

Dated at Honiara this...**FIEFH(STM)** ..**DAYOF AUGUST 2022**

Honorable Minister BradleyTovosia
Minister of Mines, Energy & Rural Electrification

FIRST SCHEDULE

(Building materials which may be mined for on the area the subject of this permit)

..... (AGGREGATE) - SAND AND GRAVEL

SECOND SCHEDULE

(Situation and description of the area the subject of this permit)

UPPER TINA RIVER, CENTRAL GUADALCANAL..... {See map attachedL ..

THIRD SCHEDULE

(Special conditions)

1. That the subject area of BMP 07/22 is bound on the condition that the application has been referred to the Mines and Mineral Board for its endorsement
2. That BMP 07/22 is granted subject to the approval of the Minister and the Landowners having jurisdiction in the area.
3. Tenure of this permit shall be that outlined in your application for the permit and your proposed work programme for the mining of building materials and environmental protection intentions.

4. That the permit does not confer whatsoever in the holder nor his agents or servant
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on any area or which no surface access compensation agreement has been reached
with landowners.
5. That the surface access and compensation agreement shall guide all relationships with
landowners during fu -t D:t:IX_Qf_W_QajJg_iP.g_t !.i?.l_permit.
6. That mining operation within the area shall commence within one month of the date
of issue of BMP 07/22 or such further period as the Director may allow.
7. That_D.9.t_J g; fu@_hY.9._wg - --D.Qtif_Qf_4)_t_D.t!QD_tQc;;g_ Df_?.gg_r g?.t - g
within the area of BMP 07/22 shall be given in writing to the Director.
8. That the area the subject of BMP 07/22 be energetically mined and that the work
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9. That the area the subject of BMP07/22 shall be mined within a distance of one hundred
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10. That the holder of BMP 07/22 shall adhere to good and environmental friendly
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iv. p_i: Dt _ Qf_<i?.N_4?. g_JQ_tr_ { _C::!9.P.J Q1:l:U4M1:g @._<i_ -9_fu_r_ -tr_1:l:c;:_w.r_ -l] ?fJ?Y
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vi. avoid harm to fresh water and river water] aquatic and animal life.

11. That the holder of BMP 07/22 shall adhere to best practice guideline for sustainable
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12. That the holder of BMP 07/22 _s hall keep. to the.satisfaction of the Director full and
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to the Director of Mines stating the quantity of the building materials mined and its
disposition, including the names of any purchasers and sales prices. Annual reP.orts
shall be submitted in duplicate hard COP.ies and must be professionally bind as well as
on an electronic version/format in a readable CD copies.
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area should in any way object the P.resence or the OP.erations of the holders of this
permit, he and his emP.loyee shall not enter, mine or carryout operations in the area,
until amicable relationshiP. have been first been restored. The period of the permit may
be extended at the discretion of the Director to make good time so lost.
14. The holder of the permit shall unless the Director otherwise stipulates, remove within
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occasioned by such.removal, to the satisfaction of the Director.
15. The holder of the permit shall backfill or otherwise makes safe any excavation made
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of the Director.1 presents as particular hazard'-shall be fenced throughout the period of
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APPENDIX A

ANNUAL COMPANY REPORTS

FORMS

1. A suitable and accessible format should usually conform to the following requirements.
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3. Metric Unit should be used throughout all documentation.
4. The title of the report should include the building materials permit number and the
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the date and the same title if any accurately labeled.
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7. AJJ.fi !. J_pl?.t J_t_9.l 1?,ill: P ,_gtfl. .h9.µJ4_9. _c::Q.:mP.l tgJy_4- _c:: µ;i:: _t JY-.l R l g.
8. There should be complete and accurate content pagesJ which should also list figures
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prevents additional loose-leaf copy should be submitted.
10. Computer printout should be reduced to A4 format.

APPENDIX B

AGGREGATE MINING PROGRAMME & ENVIRONMENTAL PROTECTION

INTENTIONS

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(TO BE PRODUCED IN TRIPLICATE)

SECTIONS 22(3)(a) and 24(3)(a)
DEVELOPMENT CONSENT

Pursuant to an application for development dated 17 May 2019, this DEVELOPMENT CONSENT is issued to TINA HYDROPOWER LIMITED {Holder or Developer} to undertake the approved prescribed development in terms of section 22 of the Environment Act.

The approved prescribed development is HYDROPOWER SCHEME and is located in CENTRAL GUADALCANAL, Guadalcanal Province/Honiara City.

The following conditions shall **APPLY** in addition to the conditions prescribed in these Regulations and in the Act.

1. This Development Consent is valid until such time as the abovementioned approved prescribed development remains operational.
2. The holder of this Development Consent shall not undertake or cause to be undertaken any other development other than the approved prescribed development and associated activities.
3. This Development Consent is non-transferable.
4. The holder of this Development Consent, its agent, servants or officers shall permit the Director or Inspectors or any Independent Environmental Auditor(s) appointed by the Solomon Islands Government unhindered entry to any premises or location in which the prescribed development and associated activities are situated and shall provide any assistance as the Director or Inspector or Auditor may require.
5. Without exception, this Development Consent is binding on any contractual obligations made by the holder for purposes of constructing and operating the hydropower project.
6. The Director may at any time, vary on reasonable basis or remove any conditions or restriction to this consent by prior notice in writing served on the holder of this consent.
7. The Director may at time, as deemed reasonable and with immediate effect, by prior notice in writing suspend the development consent for any breach of the consent or non-compliance with its environmental and social management plan (ESMP) or other related plans by the holder or any entity under contractual obligations with the holder.

8. The development proponent shall pay the prescribed consent fee on being granted the development consent.
9. The holder shall construct and operate the approved scheme and associated activities including ancillary facilities under the development consent only within the areas of land as specified and represented as Figure 0-2 in the environment impact statement (EIS).
10. The holder shall construct and operate the approved scheme under the consent in a manner that complies with the conditions of this consent and the Act and subsidiary legislation made under the Act, in particular Regulation 15 of The Environment Regulations 2008.
11. The holder shall amend the proposed mitigation measures or strategies identified in the EIS or the environment and social management plan (ESMP) in light of the detailed engineering investigations, design and specifications, compatible with acceptable engineering practice and applicable safety guidelines and standards.
12. The holder shall ensure the engineering design, data analyses and construction details of the project components satisfactorily address the geologic and hydrological conditions of the proposed sites considering the need to ensure project infrastructures are designed to make them resilient to change in climate conditions.
13. The holder shall provide the Director, for review and approval, with copies of the engineering reports produced subsequent to the detailed engineering investigations, design and specifications on the basis of the geologic or geotechnical and hydrological or hydraulic analyses.
14. The holder shall construct and operate the approved scheme under the consent in a manner that complies with the revised ESMP including all environmental safeguards and commitments identified therein.
15. The holder shall provide the Director with copies of all plans, whether generic or specific, covering dam safety, water quality, ambient environment, biodiversity conservation, emergency response, waste management, health and safety, greenhouse gas emissions, community grievances, and other such plans developed or being developed to mitigate and manage the potential impacts of the construction, operations and decommissioning of the scheme and associated activities.
16. The holder of the consent shall not commence construction of the hydropower dam and associated works subject to the submission, review and approval of the engineering reports and Construction and Quality Assurance Plans and specifications by the Director.

17. The holder of the consent shall not commence operations of the hydropower scheme subject to the submission, review and approval of the Operation and Management or Maintenance Plan and Emergency Preparedness or Action Plan by the Director. An Operation and Maintenance Manual must be submitted to the Director providing detailed information on how the project is to be operated, monitored, inspected, and maintained.
18. The holder of the consent must submit for review and approval a Reservoir Preparation Plan to the Director in addition to the Reservoir Operation and Management plan prior to construction of the reservoir.
19. The holder of the consent must not commence operations of the hydropower scheme subject to the submission, review and approval of the various and other detailed management plans specified in Condition 15 and the plans listed in Table 13.3.1 (Table of Management and Monitoring Plans) in the EIS, by the Director.
20. The holder of the consent must install all plant and equipment in compliance with the conditions of this consent, maintain them in a proper and efficient condition, operate them in a proper and efficient manner and ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this consent are properly calibrated.
21. The holder of the consent must engage with the communities, resource owners and landowning groups, both within and immediately outside of the project area, through appropriate grievance redress mechanisms such as Tina Community Benefit Sharing Project (CBSP) to address concerns about their social and economic livelihoods and wellbeing.
22. The holder of the consent must engage with the communities downstream of the project area through appropriate grievance mechanisms and arrangements to address concerns about their social and economic livelihoods and wellbeing.
23. The holder of the consent must ensure any proposed activities with potentials to cause adverse impacts to areas of high conservation values or ecologically fragile areas and affect the livelihood of resource owners must have an appropriate management plan, as specified in section 10 (7) (d) of the Protected Areas Act 2010.
24. The holder of the consent continues to undertake and collect data, as necessary, on the physical, biological, social-economic and cultural variables or parameters for which the assessment methodologies have been deficient or baseline data were not so well established, to further augment its environmental protection work.
25. The holder of the consent must develop detailed monitoring programs for those environmental parameters expected to be significantly affected and for those

parameters for which basic data were not so well established and submit to the Director for approval prior to their being implemented.

26. The holder of the consent must provide monthly reports to Environment and Conservation Division of its monitoring activities and except where specified otherwise in this consent all monitoring reports or records required by this consent must be kept by the holder for the duration of the project.
27. The holder of the consent must through an appropriately qualified person within 1 year of the commencement of the project undertake an environmental impact auditing of the project to ensure compliance with and commitment to the conditions of the consent and relevance of the ESMP. This exercise must be carried out and findings reported to the Director at regular intervals, not exceeding 2 yearly intervals from the completion of the first audit.
28. Unless otherwise permitted by the conditions of this consent or with prior approval of the Director and in accordance with a relevant standard operating procedure, hazardous, toxic waste must not be burned and that the only contaminants permitted to be released to land is treated sewerage effluent and biodegradable garbage in compliance with applicable release limits and standards.
29. The holder must rehabilitate land disturbed by any activities associated with the scheme in accordance with rehabilitation requirements, rehabilitation goal and rehabilitation objectives..
30. This approval does not detract from other conditions imposed by other regulatory authorities for specific aspects of the approved scheme but must be construed as mutually reinforcing, where relevant.

Issued at HONIARA this 25 day of JULY 2019

Seal



Director
Environment and Conservation Division

ANNEX C-5-III AGGREGATE EXTRACTION PLANS

- a) SOLOMON SHEET STEEL
- b) OTHER SOURCES (TO BE PREPARED
PRIOR TO USE)

Aggregate Extraction Plan for Temporary Access Road

November 2020

1 INTRODUCTION

The Hyundai Engineering Corporation Limited (HEC) proposes a staged extraction plan for the extraction of aggregates required for the construction of the temporary access road. This includes:

- Purchase of aggregates for temporary road surface from Solomon Sheet Steel (SSS) which is a local supplier based in Honiara. These will provide a temporary surface for machinery and equipment to reach a location within the Project Direct Impact Area where rock is available and can be extracted via blasting for further construction.
- A mobile crusher will be used to increase the rate of aggregate supply from SSS, for the temporary road surface.
- HEC will then use the material generated by blasting to develop a further temporary access road up to the quarry.

2 DESCRIPTION OF AGGREGATE SOURCE AND EXTRACTION ARRANGEMENTS

Solomon Sheet Steel has an existing gravel extraction operation located on the Lungga River near Henderson Airport (shown in Figure 2-3, in relation to the access road and Project Direct Impact Area (DIA)). HEC will source at least 10,333 m³ of road aggregate from SSS for the temporary Access Road, and a further 14,400 m³ by winning material through blasting which is planned for road excavation. HEC will utilise SSS's mobile crusher to increase the rate of production of gravel to meet demand for the Project (in addition to the stationary/permanent crusher used by SSS).

The best location to win material for temporary road surface is within Access Road Lots 2 and 3.

HEC has obtained a provisional written agreement from SSS to supply the aggregate as described in this AEP (refer to letter in Annex A). Figure 2-1 below provides a conceptual representation of the arrangements made by HEC to obtain aggregate for the temporary access road surface.

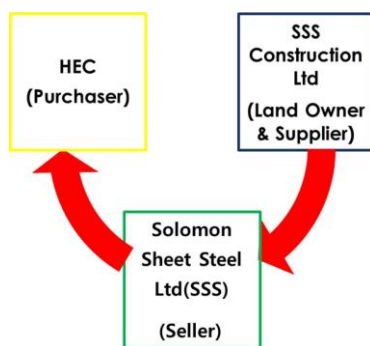


Figure 2-1 Relationship between HEC and SSS, to procure aggregate

2.1 SUMMARY OF SSS OPERATIONS

SSS currently have a development consent (Annex E) and a Building Materials Permit (Annex D) to extract aggregate materials from the river bed of Lungga River, at a location adjacent to the New Zealand Camp, south of Henderson Airfield. This is currently one of the largest active sources of aggregate on Guadalcanal. SSS purchased the land in October 2019 and have held the required

permits since April 2020. However the site has been previously mined for aggregate by prior owners/operators.

SSS extract aggregate using excavators at the river location; the aggregate is then loaded into haul trucks and transported to another property owned by SSS at Ranadi, Honiara, where it is processed through a fixed crushing plant. This property is located close to the Ranadi Landfill operated by Honiara City Council, and is adjacent to (to the west of) the mouth of the Lungga River. Both locations are shown in Figure 2-4.

2.2 COMMERCIAL STRUCTURE OF SSS LIMITED

The SSS aggregate extraction operation involves four business entities, the primary businesses relevant to this arrangement being the three entities shown (along with several major shareholders and company officers) in Figure 2-2 below. The fourth entity is Solfish Limited, owned solely by Mr Antonio Lee. Figure 2-2 was developed by THL during the due diligence process (October 2020) to ensure that SSS would fulfil the commercial and safeguards criteria as a subcontractor for this Project.

	SOLOMON SHEET STEEL LIMITED	LEE KWOK KUEN & COMPANY LIMITED	SSS CONSTRUCTION LIMITED
Share Holders	Bun Ying LEE LAM (30%) <u>Kwok Kuen LEE</u> (70%)	Bun Ying LEE LAM (60%) <u>Kwok Kuen LEE</u> (40%)	Bassanio LEE (100%)
Board Members	<u>Kwok Kuen LEE</u> Antonio LEE Bassanio LEE Bun Ying LEE LAM	<u>Kwok Kuen LEE</u> Antonio LEE Bassanio LEE Bun Ying LEE LAM	<u>Mrs Cheau Yann KHO</u> Bassanio LEE Antonio LEE

Figure 2-2 Commercial structure of SSS

Both SSS Limited and SSS Construction Limited have current Business Licences issued by Honiara City Council as follows:

- SSS Limited – Licence issued for sales of aggregates, gravel, sand and coral fill; machinery and equipment hire; manufacturing – L/O; infrastructure development; and side life hire (20 foot per Unit) (expires 31 December 2020)
- SSS Construction Limited – Licence issued for sales of aggregates, gravel, sand and coral fill, and as engineering contractors – L/O (expires 31 December 2020).

SSS Construction Limited also holds a business licence issued by Guadalcanal Province for gravel extraction in the Lungga area (issued 28 October 2020; valid for the period 1 April 2020 to 31 March 2021).

HEC are committed to ensuring that SSS Limited and SSS Construction Limited operate with a current business licence (suitable for the purpose of the contract) at all times while engaged as subcontractor for this Project. This is especially important given the short remaining period of validity of the licences listed.

Annex B contains copies of all licences described above. The business structure, permits held, and role of each entity associated with SSS Limited are summarised in the table below.



Figure 2-3 Overview of SSS' Lungga aggregate source location



Figure 2-4 Location of Lungga aggregate source in relation to SSS crushing operation site

Table 2-1 Summary of licences and permits held by SSS entities

Classification	Solomon Sheet Steel Limited	SSS Construction Limited	Lee Kwok Kuen & Company Limited	Solfish Limited
Share Holders	Bun Ying Lee Lam (31.2%) Kwok Kuen Lee(68.8%)	Basino Lee(100%)	Bun Ying Lee Lam (60%) Kwok Kuen Lee(40%)	Antonio Lee(100%)
Board Members	Kwok Kuen Lee Antonio Lee Basino Lee Bun Ying Lee Lam	Mrs Cheau Yann Kho Antonio Lee Basino Lee	Kwok Kuen Lee Antonio Lee Basino Lee Bun Ying Lee Lam	Antonio Lee
Business License Honiara City Council	License Expire Date: 31 Dec 2020 Business Registration Number 1000051	License Expire Date: 31 Dec 2020 Business Registration Number 20128825	License Expire Date: 31 Dec 2020 Business Registration Number 1000050	License Expire Date: 31 Dec 2020 Business Registration Number 1000049

Classification	Solomon Sheet Steel Limited	SSS Construction Limited	Lee Kwok Kuen & Company Limited	Solfish Limited
Business License Guadalcanal Province	N/A	Gravel Extraction 1 APR 2020 ~ 31 MAR 2021 Lungga Area	N/A	Gravel Extraction 1 APR 2020 ~ 31 MAR 2021 Lungga Area
Gravel Extraction Area	N/A	Lungga Parcel No. 192-017-147	N/A	Ngalimbiu Parcel No. 192-005-25
Development Consent	N/A	18 Jun 2020	N/A	2017 Expired
BMP	N/A	8 Oct 2020 (Conditional Approval)	N/A	2018 Expired
Adoption	©(Seller)	©(Supplier)	N/A	Non-Compliance

2.3 DESCRIPTION OF PHYSICAL ENVIRONMENT AT LUNGA RIVER SITE

The aggregate source site at Lungga River is situated in the river's accumulation zone, approximately 5 km upstream of the river mouth. The exposed gravel beds appear to have formed when part of a meander has been cut-off (oxbow) from the main river channel in the past. This has created an open area up to 400 metres wide (including the current main channel) suitable for gravel extraction activities.

The Lungga River has a catchment area of 377 km², extending across central Guadalcanal and towards the west; this makes it one of the largest catchments on the island. The river originates in the central-western highland terrain, and flows down towards Lungga in the north where it discharges into Iron Bottom Sound. The river has the characteristics of a meandering gravel-bed river, with significant alluvial deposits of large diameter gravels (cobbles and boulders). Bank material is typically comprised of sandstone (on outer bends) with extensive gravel lateral bars on inner bends.

The middle and lower reaches of the Lungga River, where the aggregate source and crushing sites are located (respectively) have been subject to historic devegetation and intensive agricultural/subsistence land use (including oil palm plantations). Industrial inputs are likely in the downstream reaches closer to the river mouth, particularly with the close proximity of Henderson airport and associated operations (e.g. logistics, cartage, manufacturing) on the river's right bank. A Public Environment Report (PER) completed for SSS by Hawk's Eye Consulting (Oct 2020; see Annex F) also noted that there is no waste collection service in the Lungga area, so a lot of waste is dumped near or directly into the river (Hawk's Eye Consulting, 2020).

Natural riverine wetlands exist immediately downstream of the aggregate extraction site, and also further inland from the left bank of the river (to the west; as shown in Figure 2-5 below). The riverine wetland was formed as a result of the meander cutoff (oxbow) at the extraction site. The inland wetlands (Mbetikama wetlands) are identified as being critically important in the PER, and have recently been under threat by the expansion of human settlements at Kobito – Burnscreek. The PER identifies that the wetlands downstream of the aggregate source may contain acid sulphate soils; disturbance of these soils could result in a detrimental effect on the aquatic ecosystem as sulphides and heavy metals such as arsenic could be released into the water column. Through oxidation, compounds such as iron oxide and sulphuric acid can form and have toxic effects on aquatic organisms.

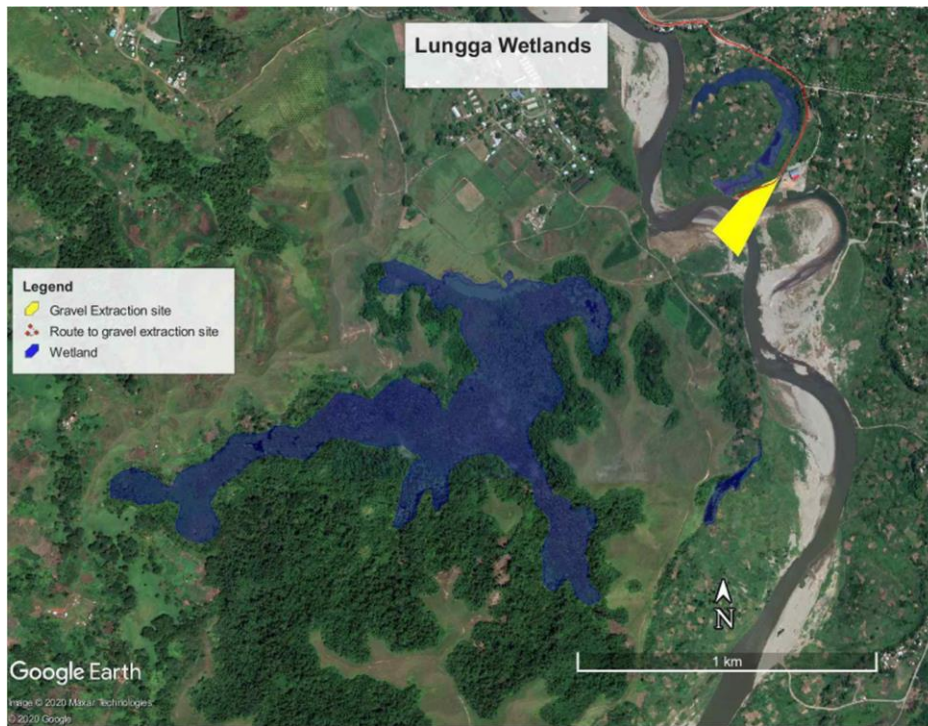


Figure 2-5 Location of identified natural wetlands in relation to Lungga extraction site (from Fig 29, PER, Hawk's Eye Consulting, Oct 2020)

2.4 ASSESSMENT OF FLOOD RISK AT LUNGGA EXTRACTION SITE

While SSS did include a brief qualitative assessment of flood risk to the extraction site in the 2020 PER (Annex F), the scope and detail of the assessment was limited. It was determined that the maximum flood water level ever recorded at the location was 7.23 metres, in 1986. The extraction site was described as being 'moderately exposed' to flooding; in areas of highest risk, the river could rise up to 1 metre above ground level. Figure 2-6 illustrates the interpreted comparative levels of risk in the immediate vicinity of the extraction site.

Mitigation of flood risk

The following controls will be implemented to mitigate the risks of flooding at the Lungga extraction site:

1. The Project Spill Prevention and Emergency Response Plan (SPERP; P14) will be followed if the extraction area is anticipated to be seriously impacted by a flood event. HEC shall appoint a Committee to have a check over any disaster to warn workers well before for the safety of the workers. An emergency helpline number will be displayed in a prominent location on site.
2. Gravel extraction will not be undertaken for more than one month at any one segment of the river to minimise bank erosion and allow time for sand replenishment.
3. No stream should be diverted for the purpose of aggregate mining. No natural water course
4. and/ or water resources are to be obstructed due to aggregate mining operations. Any changes to natural water course must require separate development consent from ECD and MMERE Water Resources Division. This must be notified immediately to these relevant authorities.

5. Ultimate working depth shall be up to 3.0 m from Riverbed level and not less than one meter from the water level of the River channel whichever is reached earlier. In hilly terrain this depth will be preferably restricted to one meter.
6. The safety and stability of river banks will be maintained i.e. 3 meter or 10% of the width of the River, whichever is more, will be left intact as a no quarrying zone.
7. A replenishment report must be submitted annually to ECD for certification. In case the replenishment is lower than the approved rate of production, then the quarrying activity / production levels shall be decreased / stopped accordingly till the replenishment is completed.

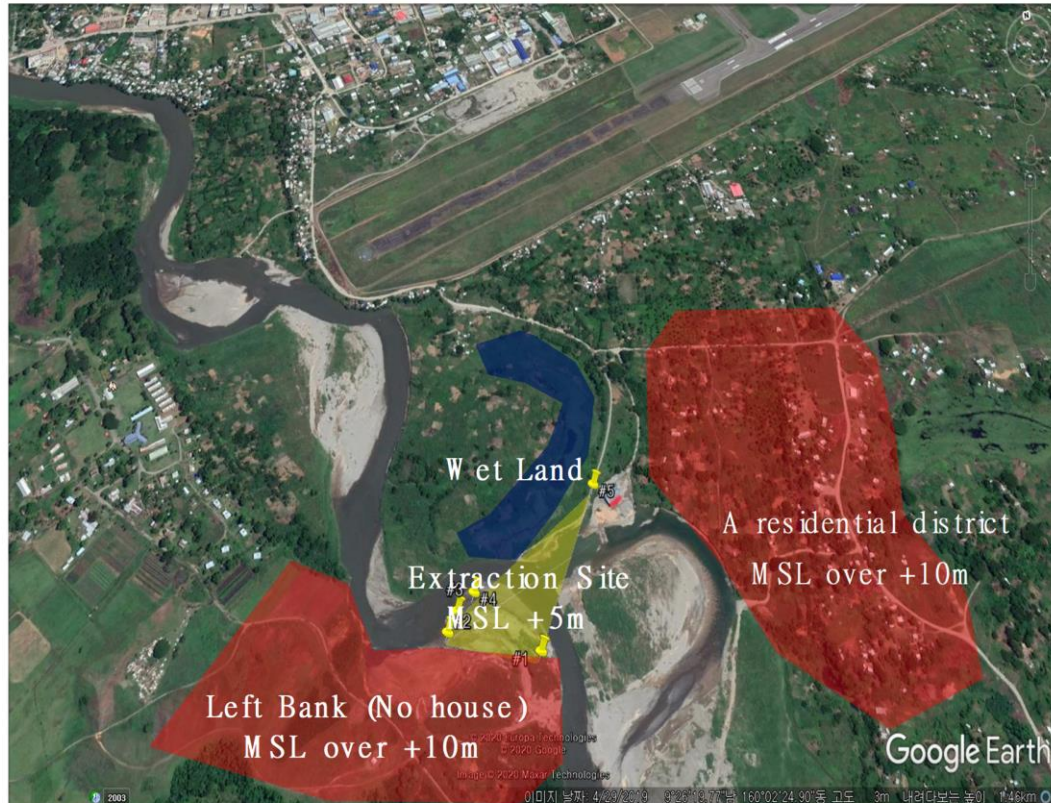


Figure 2-6 Assessment of flood inundation risk areas/existing wetland at Lungga extraction site (by HEC)

2.5 DESCRIPTION OF SSS CRUSHER PLANT LOCATION, RANADI

The existing crusher plant operated by SSS is located at Ranadi, approximately 6.7 km from the Lungga aggregate source site by road. It is situated near the mouth of Lungga River. The current assets on the site are shown in the following photos. It was observed during a site visit by the OE Site Engineer on 7 November 2020 that the wash water from the plant drained into the Lungga River with very little pre-treatment.



Figure 2-7 Existing crusher plant at SSS: View of whole plant with washer/screening and conveyors (left) and view of conveyor leading to top of washer plant (right); photos courtesy of Vilive Anise (OE), 7 November 2020



Figure 2-8 Newly installed concrete batch plant at SSS crushing site (~100 m³/day capacity); photo by Vilive Anise, 7 November 2020

Following completion of the OE Site Engineer's inspection, HEC worked with SSS to install additional sedimentation basins to manage site drainage, and discharges from the crusher plant. SSS had one existing pond installed close to the washer plant, however this did not appear to have been well maintained. In addition to this pond, as of 20 November 2020 HEC have now also installed two further sedimentation basins (including one as a final polishing step for any residual silt, closest to the river) in accordance with the requirements of the Project Drainage, Erosion and Sediment Control Plan (DESCP; C10). Sizing calculations for the basins are included in Annex H (in addition to the initial site inspection report prepared by OE). HEC will monitor the function of these structures in accordance with that plan, and perform maintenance as required.



Figure 2-9 Drainage layout (with additional sedimentation basins installed by HEC) at SSS crusher site, Ranadi

2.6 EXPECTED TIME FOR MOBILIZATION OF MOBILE CRUSH PLANT

SSS currently has a mobile crusher available which they have been using for existing operations, as shown in Plate 1 below.



Plate 1 Mobile crusher operating at SSS site (photo taken August 2020)

SSS have confirmed that HEC can lease this mobile crusher from them until 30th of June, 2021. This period might be extended depending on Access road construction progress against the estimated schedule.

Specifications for the mobile crusher to be used are provided in Annex D of the Quarry Management Plan.

Table 2-2 shows the list of all the machinery equipment that will be used for aggregate extraction operations at SSS.

Table 2-2 Extraction equipment list

Item	Quantity
Dump Truck	8
Front-end Loader	1
Excavator	2

3 LAND AND RESOURCE OWNERSHIP

The aggregate source is located in an area termed “alienated land”, which is a local term meaning that the ownership of the land has been historically unclear, and it has not been claimed directly by a specific tribal owner.

The parcel number for this location on the Lungga River is 192-017-047, and the parcel has a legal status as Fixed-Term Estate (FTE); ownership was transferred to SSS Construction Limited from the previous owner, Douglas Concrete, on 21 October 2019 via a High Court enforcement order. Documentation for this process, including copies of the Land Title and purchase agreement, is attached in Annex C. A letter from MMERE to HEC (dated 19 November 2020), confirming the status of this land, is also included in Annex C.

4 MATERIAL REQUIREMENT

The estimated aggregate quantity required for Project construction (total) is provided in [Table 4-1](#).

Table 4-1 Required Aggregate Quantity (Total Project)

Type of material	Unit	Required aggregate quantity (Include Loss rate)				Sum
		Coarse (5mm~10mm)	Aggregate (Below 25mm)	Mixed stone (Below 75mm)	Mixed stone (40~100mm)	
Access road	m ³	8,586	5,755	48,497	31,288	94,126
Structure	m ³	28,990	32,703		1,842	63,535
RCCD	m ³			252,824		252,824
Shotcrete	m ³	1,067				1,067
Sum	m ³	38,643	38,458	301,321	33,130	411,552

The volume of material required to construct a temporary surface for the Access Road has been calculated (Table 4-2). The calculations show that an initial 10,333 m³ will be sourced from a local supplier (Solomon Sheet Steel), and the remainder (to make up a total of 24,733m³) will be won from locations along the infrastructure corridor where blasting has already been planned.

A total of 14,400 m³ is required during construction of the temporary access road surface to produce concrete for the construction of small scale concrete structures (such as culverts) and for use as shotcrete. This aggregate will be processed at SSS’ Ranadi plant. The aggregate used for concrete production will be tested by HEC and approved by THL prior to use. SSS’ current production of aggregate suitable for concrete (sand, 10mm and 25mm grade aggregate) is approximately 3,000 m³ per month; this is sufficient to meet the requirements for initial Access Road construction.

Table 4-2 Quantification of Aggregate Material required for Construction of Temporary Road

Item	Location (chainage)	For concrete producing(m3)	Temporary road usage before blasting				Total(m³)
			Width(m)	Length(m)	Thickness(m)	Volume(m³)	
LOT 1	STA. 12+000 ~ STA.13+237	For small scale structure and shotcrete for Access road Aggregate size is under 25mm	6	1,237	0.3	2,226	
LOT 2-1	STA. 0+000 ~ STA. 2+504		6	2,504	0.3	4,507	
LOT 2-2	STA. 0+000 ~ STA.1+500		6	1,500	0.3	2,700	
LOT 3	LOT 3-1 STA. 0+000 ~ 0+500		6	500	0.3	900	
Total		14,400				10,333	24,733

The estimated volume of material that will be won through blasting and excavation for the Access Road (**for Lots 2 and 3 only**, where blasting will occur) is provided in Table 4-3 (refer to IFC design drawing 17 JUL 2020).

Table 4-3 Estimated volume of material excavated for Temporary Access Road

Excavation	LOT 2-1	LOT 2-2	LOT 2-3	LOT 3	Total excavated (m³)
Soil	141,699	344,143	17,949	259,865	763,656
Removable rock		81,862			81,862
Solid rock(blasting)	432	116,071	64,494	141,362	322,359

The dimensions of the temporary road, and the anticipated volume of aggregates required for its construction, are provided in Table 4-4.

Table 4-4 Aggregate Material Required for the Construction of the Temporary Access Road

Access road	Location (chainage)	Road Width(m)	Road Length(m)	Road Thickness(m)	Volume(m³)
LOT 2-1	STA. 0+000 ~ STA. 2+504	7.0	2,504	0.5	8,764
LOT 2-2	STA. 0+000 ~ STA. 2+732	6.0	2,732	0.5	8,196
LOT 2-3	STA. 2+260 ~ 2+696	6.0	436	0.5	1,308
LOT 3	LOT 3-1 STA. 0+000 ~ 1+509	6.0	1,509	0.5	4,527
Total		-	7,181	-	22,795

5 QUANTITATIVE ESTIMATE OF MATERIAL AVAILABLE FROM SSS LUNGA SITE

According to the investigation of Lungga extraction site, the amount of aggregate available from the site is estimated to be around 20,477 m³ assuming:

- Maximum excavation depth to 1 metre below water level
- Allowing for five metre buffer along river bank bordering the extraction area (as per PER)
- Surface area (collectible aggregate) = approximately 1,255 m².

Calculations of 'collectible aggregate', prepared by HEC, are contained in Annex G. The calculations were informed by a topographic quantity survey conducted at the site on 7 November 2020.

The PER (Annex F) submitted by SSS stated a requirement that the "ultimate working depth shall be up to 3.0 m from Riverbed level and not less than one meter from the water level of the River channel whichever is reached earlier" (Annex F, p58). This requirement is ambiguous as it does not clarify whether the maximum working depth should be 1 metre **above**, or 1 metre **below** water level. Excavating to 1 metre above water level would result in less sedimentation and disturbance of the river substrate.

To seek clarity, HEC has confirmed the amount of available aggregate (and the method used to complete the calculations) with MECDM, and it was confirmed in a letter from MECDM on 19 November 2020 that "the aggregate extraction can be undertaken sustainably with minimal damage to the environment, within the vicinity of the aggregate site" (Annex J).

HEC found that SSS Construction LTD has extracted 12,450 m³ as of 31 October 2020 through their business records.

From the available estimates (resources) and extraction records, it is found that the available volume of aggregate at the Lungga Site can meet the Access Road requirements of around 10,333m³ (as estimated in Table 4-2 above).

6 PREVIOUS ASSESSMENT OF SOURCE OPTIONS

Table 1.5 provides details of the various extraction options which have been considered to date by HEC.

Table 1.5 Quarry Location Options Assessment

Aspect	Option 1 (Quarry 1, identified in QMP)	Option 2	Option 3 (Existing source, mobile crusher)
Location	Right bank, upstream of dam site	Riverbed from downstream of dam site to powerstation within core boundary	Local supplier (Solomon Sheet Steel)
Assessment background	Detailed in ESIA (2017 and 2019)	Considered as part of Feasibility study (Entura, 2014)	New option considered in 2020, for temporary Access Road only
Developable volume	Sufficient for use (if type of rock is suitable for quality spec)	250,000m ³ (approx. 6km)	3,000 m ³ per month

Aspect	Option 1 (Quarry 1, identified in QMP)	Option 2	Option 3 (Existing source, mobile crusher)
	2,500 m ³ (ESIA report) 2,500,000 m ³ (initial Feasibility study, Entura 2014)		
Advantage	<ul style="list-style-type: none"> • Sufficient amount for project • Recommended by DSAP • Short distance to Dam site 	<ul style="list-style-type: none"> • Short distance to Dam site • Developable without blasting 	<ul style="list-style-type: none"> • No additional cost and effort for the development of quarry
Disadvantage	<ul style="list-style-type: none"> • Accessible after LOT2-2 road opening • High cost for extraction due to blasting and need vibration impact assessment for dam structure • Access Road will be on a steep slope • Difficulty to approach in the flood season; no space to temporarily store aggregates above flood level 	<ul style="list-style-type: none"> • Concerns that there may be disputes with local community; grievances • Additional access is require to reach the source • Need mobile crusher 	<ul style="list-style-type: none"> • Not Sufficient resource (with current operation) • Aggregate size not suitable for permanent surface and not sufficient volume for specific size (40mm above) for paving and RCC dam due to location of extraction location (downstream of the river) • High cost
Conclusion	<ul style="list-style-type: none"> • Acceptable 	<ul style="list-style-type: none"> • Reviewable 	<ul style="list-style-type: none"> • Before opening quarry

In addition, HEC has identified a contingency in case the resource available via SSS and blasting is not sufficient, not of adequate quality, or fails to meet the requirements accountable to SSS Construction or/and Solomon Sheet Steel. In this event, HEC shall explore the other suppliers that can meet the requirements and also hold the relevant licences and permits (in accordance with the Project QMP). Potential alternative local suppliers identified are Chengs Company Ltd and Solfish Ltd. The effectiveness, legality, land issue and feasibility for contracts with these suppliers are currently uncertain, but can be investigated further by HEC as required.

7 CONCLUSIONS

- Material available through blasting in Lots 2 and 3 is sufficient for use in constructing the temporary road surface.
- Total volume of material required for temporary road use may increase depending on weather and construction condition (e.g. in wet weather/if underlying soil is mostly mud/clay, more rock would be needed)
- Blasting rock can be used for permanent paving aggregate if the quality of blasting rock in Access Road is suitable for specification. Suitability will be determined once temporary access to Lots 2 and 3 is established.

***ANNEX H – CRUSHER PLANT SITE INSPECTION REPORT FROM OE SITE ENGINEER (7 NOVEMBER 2020)
AND SEDIMENTATION BASIN DESIGN***