

EIS SUMMARY FOR THE PUBLIC (ESP)

**Expansion of the Silica Quarry of the Heirs of
Arturo Zayco (HAZ) under Mineral Production
Sharing Agreement No. 218-2005-VII**

BISAYA VERSION



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1 PROJECT FACT SHEET

Components	Existing	Proposed
MPSA	Covered by MPSA 218-05-VII	No change
Area Coverage	505.4626 hectares	No change
ECC Coverage	Existing ECC Coverage: 10 hectares ECC No. 0701-08-03-0135303-A	Expansion of ECC Coverage: 50 hectares
Production Capacity	125,316.84 MTPY of silica	625,000 MTPY of silica
Extraction Method	Surface Mining- Quarrying	No change
Commodity	Silica	No change
Quarry Operations	Silica quarry operation in 10 hectares	Silica quarry operation in 50 has
Quarry Equipment	The operation for the entire quarry is contracted out to SiO2 Resources Corporation. 1 Bulldozer 2 Excavators 3 Payloaders 20 Dump Trucks 1 Road Grader 1 Vibratory Roller 2 Water Trucks 1 Mobile Crusher 1 Fuel Truck 1 Service Truck 1 Service Vehicle 1 Breaker Attachment	The operation for the entire quarry is still to be contracted out. Below are the proposed equipment's for safer and efficient operation; Loading: 1-units Volvo L150H 4.2cum Payloader 2-units Volvo EC300DL 1.76cum Excavator Hauling: 3-units Volvo FMX420 Off Highway Trucks (Quarry) 20 Howo (15 MT) on road Hauling units Auxiliary: 1-unit Rock Breaker Attachment Rammer 3T 2-units Komatsu D155A-6R Bulldozer 2-units MotorGrader 1-unit Vibratory Roller 2 units Isuzu Forward Water Trucks (10,000lts) 1-unit Fuel Truck 1-unit Service Truck 1-unit Service Vehicle 1 set of Mobile Crusher – 1 Grizzly Feeder for LT106 – 1 Primary Jaw Crusher – Metso LT106 – 1 Secondary Cone Crusher –Metso HP200 – 1 Screening Unit Deck Screen – 1 Radial Stacket – 3 decker Vibrating Screen ST4.8 1 Lube truck Isuzu 6BG1 for mobile crusher/HE 1 Book Truck Isuzu Elf 1 Road Grader SDLG 9190 1-unit Komatsu Eccentric Ripper for ripping hard silica materials 1 Back Hoe Kom PC200 for Xcentic 1 Back Hoe Volvo EC300DL for crusher loading and stockpile maintenance
Auxiliary Operations	None. There is no processing of raw silica at the quarry site.	Primary and secondary crushing, screening and washing using the mobile units on site

2 DESCRIPSIYON SA PROYEKTO

2.1 Klase sa Proyekto ug Proseso

Tungod kay wala’y mga pagbag-o sa lugar, desinyo sa pagpalambo, pagpili sa proseso / teknolohiya ug paggamit sa kapanguhaan, wala’y bag-ong sakdanan alang sa gipaila nga mga hinungdan. Magpabilin ug pareho gihapon ang pag pag dumala ug pamaagi sa pagmina sa sulod sa mga utlanan sa MPSA. Walay pagbag-o sa proseso.

Ang pagkuha sa silica misunod sa estandard nga pamaagi sa pag mina o ginatawag ug “*open-cut pitt mining procedure*”:

- Migamit usab sa buldoser nga dunay mekanismo sa pagbuak. Gamiton ang backho na dunay pangalumpag sa napili nga lugar;
- Migamit ug buldoser pagduso sa natipon nga mga materyal paduong sa mga lugar kargahan;
- Migamit usab sa bakho pagdala sa materyales ngadto sa mga *dump trucks* alang sa pagdala sa pantalan pinaagi sa naugmad nga mga quarry padulong sa pantalan paagi sa mga *barangay road*.

Pagmina sa ibabaw ang proseso nga nag-apil ug yano nga pamaagi sa pagbuak ug paghakot nga wala’y nahilambigit nga laing pagproseso, walay paggamit sa mga kemikal o wala’y mga pasilidad nga ibutang. Wala usab maapil ang mga pasilidad sa pantalan tungod kay wala kini sa sulod sa MPSA o sa nahimtangan sa proyekto. Ang operasyon sa *quarry* dili pud mogamit ug bisan unsang korente ug tubig tungod kay ang proseso sa pagmina nga nahilambigit mao ang pamaagi sa pagbuak ug paghakot ra.

Ang pagmina kay gidumala sa SiO₂ Resources Corporation usa ka kompanya sa Rock Energy International Corporation. Ang SiO₂ Resources ang responsable sa pagpangita, pag-import, pagtipig ug paghatag transportasyon aron makab-ot ang oras nga pagpadala sa mga maayong klase nga silica *sand* (balas nga silica) sa daghang mga planta sa ilaha nga mga kostumer. Kini nga kasabutan sa pag suplay (*supply chain agreement*) sa mga lahi lahi nga mga pabrika nagpadayun na sa sulod sa katorse ka tuig.

Dili kinahanglan ang pagtipig sa sulod sa quarry area tungod kay ang mga gihakot nga mga materyales diretso nga isakay sa mga trak alang sa transportasyon ngadto sa temporaryo nga lugar sa pagtipig nga gawas sa sakop sa MPSA ug bag-o kini e-karga sa *barge*. Ang temporaryong tapiganan gawas sa MPSA kay nahimutang sa Calagcalag Pier, sa Calagcalag, Ayungon, Negros Oriental. Ang maong lugar kay nagkalay-on ug 13 kilometros gikan sa lugar sa quarry. Ang maong katigayonan kay pinag-iya sa Silica Resources, nga nanag-iya osab sa pier.

Ang dagway sa ubos naghigot sa proseso sa operasyon sa pagmina sa silica:

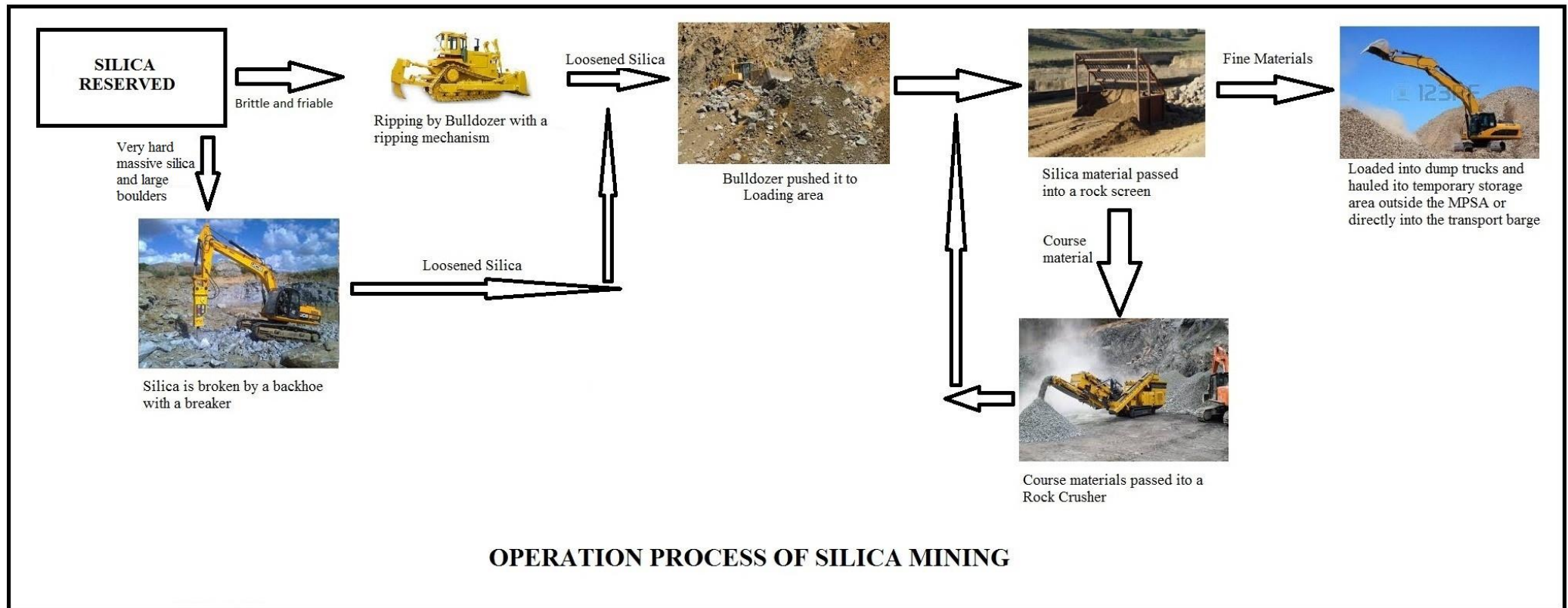


Figure 2-1. Operation Process of Silica Mining (Source: HRDC, 2016)

2.2 Project Components and Capacity

Table 2-1. Summary of Major Project Components

Components	Existing	Proposed
Quarry	Covered by MPSA 218-05-VII: 505.4626 hectares Quarry operation area: 10 hectares	No change Quarry operation area for expansion: 50 hectares
Total Project Area	Within 505.4626 has covering MPSA 218-05-VII: - Allowed operations area: 10 has	No change - Expansion of operations area to 50 has
Maximum allowable extraction rate:	Extraction volume:125,316.84 MTPY silica	Increase in extraction volume: 625,000 MTPY silica
Quarry Equipment	The operation for the entire quarry is contracted out. 1 Bulldozer 2 Excavators 3 Payloaders 20 Dump trucks 1 Road Grader 1 Vibratory Roller 2 Water Trucks 1 Mobile Crusher 1 Fuel Truck 1 Service Truck 1 Service Vehicle 1 Breaker Attachment	<u>Loading:</u> 1-units Volvo L150H 4.2cum Payloader 2-units Volvo EC300DL 1.76cum Excavator <u>Hauling:</u> 3-units Volvo FMX420 Off Highway Trucks (Quarry) 20 Howo (15 MT) on road Hauling units <u>Auxiliary:</u> 1-unit Rock Breaker Attachment Rammer 3T 2-units Komatsu D155A-6R Bulldozer 2-units Motor Grader 1-unit Vibratory Roller 2 units Isuzu Forward Water Trucks (10,000lts) 1-unit Fuel Truck 1-unit Service Truck 1-unit Service Vehicle 1 set of Mobile Crusher – 1 Grizzly Feeder for LT106 – 1 Primary Jaw Crusher – Metso LT106 – 1 Secondary Cone Crusher –Metso HP200 – 1 Screening Unit Deck Screen – 1 Radial Stacket – 3 decker Vibrating Screen ST4.8 1 Lube truck Isuzu 6BG1 for mobile crusher/HE 1 Book Truck Isuzu Elf 1 Road Grader SDLG 9190 1-unit Komatsu Eccentric Ripper for ripping hard silica materials 1 Back Hoe Kom PC200 for Xcentic 1 Back Hoe Volvo EC300DL for crusher loading and stockpile maintenance
Extraction Method	Surface Mining- Quarrying	No change
Commodity	Silica	No change
Auxiliary Operations	None. There is no processing of raw silica at the quarry site.	Primary and secondary crushing, screening and washing using the mobile units on site

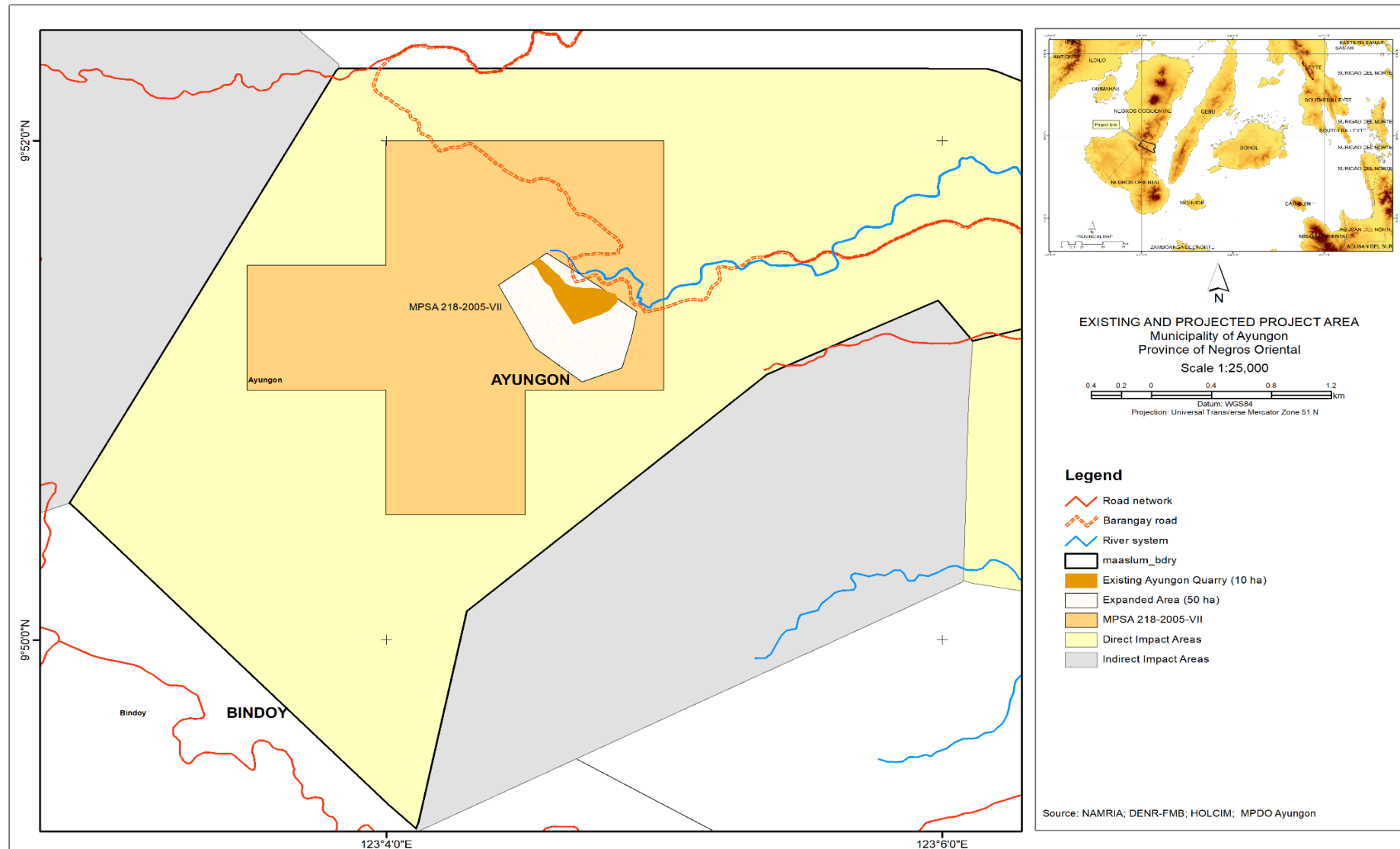


Figure 2-2. Map Showing the Existing Quarry Area and the Proposed 50 has Expansion of Quarry Area (Source: NAMRIA, HOLCIM, DENR-FMB, BSWM, MPDO Ayungon)

2.3 Paggamit sa Kapanguhaan ug Mga Alternatibo sa Proyekto

Ang gisugyot nga pagpalapad sa *silica quarry* migamit sa mosunod nga mga kapanguhaan:

- Ang gisugyot nga pagpalad sa silica quarry mosakup sa 50 ektarya sa tibuuk nga lugar sa MPSA. Ang gipalapdan nga lugar nahulog pa sa sulod sa MPSA-218-05-VII.
- Gibana-bana nga 2,500 metriko ka tonelada kada adlaw (*Metric Ton Per Day [MTPD]*) o mga 625,000 Metriko Tonelada (*Metric Ton [MT]*) matag tuig alang sa kinatibuk-an nga 250 ka adlaw sa pagtrabaho matag tuig.
- Ang operasyon sa quarry dili pud mogamit ug bisan unsang korente ug tubig tungud kay ang proseso sa pagmina nga nahilambigit sama sa gihisgutan, mao ang pamaagi ra sa pagbuak ug paghakot.
- Ang operasyon sa quarry naga kinahalan 70 ka mga hanas ug dili hanas nga mga trabahante, samtang ang 6 kabuok nga trabahante sa panahon sa pag-undang (*abandonment phase*).

2.4 Alternatibo sa Lugar

Wala’y mga alternatibo sa gawas sa site nga lugar sa MPSA tungod natino na ang lokasyon sa proyekto, hangtod karon, kini ang pinakadako nga deposito sa bato nga silica (*silica rock*) nga nakit-an sa Pilipinas.

2.5 Pagpili sa Teknolohiya

Sa pagkakaran, ang kinatibuk-ang pamaagi sa pagmina nga migamit mao ang proseso nga pagmina sa ibabaw o mao ang ginatawag nga “*surface open cut pitt mining*.” Ang pamaagi sa niining klase nga pagmina nabahin sa duha (2) ka yugto; (a) pagpalambo sa lugar ug b) pagkuha (produksiyon). Ang pagpalambo sa lugar mao ang yugto diin gihimo ang pagpangandam alang sa pag buak sa kapanguhaan. Naglambigit kini sa paglangkat, pagtangtang sa mga tanum, ug pagkuha sa mga yuta ug pag-ayo sa mga basura ibabaw aron makit-an ang hilaw nga materyal nga silica ug mapadali ang pagkuha sa niini. Kini nga hugna naglangkit usab sa pagtukod sa kanal ug agianan sa deposito sa silica. Ang topograpiya pagaputlon sa usa ka serye nga mga hiwa nga adunay gitas-on nga lima ka metro ug usa ka 80 *degrees* nga bakilid. Magsugod ang paglaksi sa pinakataas nga bahin (B+570) sa topograpiya ug mouswag sa ubos. Inig kahuman sa paghawan og pagpatag sa yuta, usa ka bag-ong lebel ang himoon sa ubos (5m paubos) aron maporma ang usa ka bangko nga adunay labing menos 15m nga gilapdon nga igo sa pagtugot sa pagkargada ug pagdala sa mga armada nga maka-maniobra. Kasagaran, ang mga panudlo nga sukdanan sa quarry mao ang mga musunod: Bangko nga bakilid 75-85 *degrees*, taas sa bangko 5 metro, lapad sa bangko 15-metro labing gamay, bakilid sa lungag 20-50 metro.

Sa yugto sa pagkuha, ang gibutyag nga silica igawas gamit ang bulldozer nga adunay mekanismo sa pagbuak. Ang backhoe nga adunay pampalumpag magamit sa mga napili nga lugar diin ang materyal dili ma-buak. Ang nabuak nga silica dayon itulod sa bulldozer padulong sa mga lugar sa pagkarga. Gikarga kini dayon gamit ang backhoe ngadto sa mga dump truck. Unya, dad-on kini sa pantalan nga moagi sa nahimo nga dalan sa quarry padulong sa dalan sa barangay.

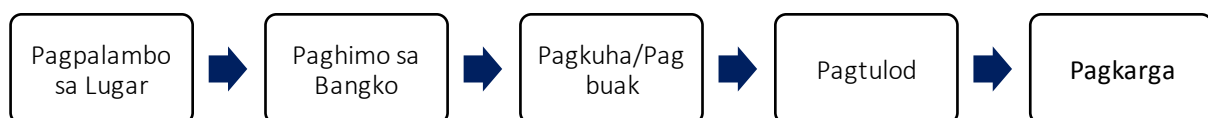


Figure 2-3. Silica Extraction Process

3 LOKASYON, LUGAR UG PAGKA-ABOT SA PROYEKTO

Ang lugar sa proyekto nahimutang sa Barangay Maaslum sa Munisipyo sa Ayungon, Probinsya sa Negros Oriental. Ang lugar sa proyekto naa sa sulod sa unom (6) nga pag-angkon sa pagmina ubos sa MPSA No. 28-205-VII nga nagsakup sa lugar nga 505.4626 hektaryas sa Arturo Zayco. Gipakita sa Dagway 3-1 ang lokasyon sa proyekto.

Ang munisipyo sa Ayungon mahimong ma-abot gikan sa Dumaguete City, ang kapital sa probinsya sa Negros Oriental pinaagi sa nasyonal nga agianan nga naglibot sa silangang baybayon sa isla sa Negros, nga moagi sa mga Munisipyo sa Sibulan, San Jose, Amlan, Tanjay City, Bais City, Majuyod ug Bindoy. Ang oras sa pagbiyahe pinaagi sa pribadong mga awto kay naa sa hapit mga 1.5-2 ka oras. Gikan sa sentro sa Ayungon nga duol sa Tampocon Bridge, ang usa ka kongkretong bahin nga dalan sa barangay nga mga walo (8) ka kilometros and nagpadulong sa lugar sa proyekto. Sa mismong sulod nga lugar sa proyekto, ang nag-unang paagi sa pagbiyahe mao ang mga konektar nga mga agianan, dili cementado/aspaltado nga dalan ug mga agianan sa sapa. Ang pag-abot sa labi ka layo ug lisud nga mga bahin kay makab-ot pinaagi sa paghimo ug agianan gamit ang pagputol sa kasagarang manipis hangtod sa maigo-igoon nga katanuman.

Wala'y mahinungdanong inprastruktura sa sulod sa lugar sang MPSA gawas sa walo (8) km nga dalan sa barangay nga nagsugod sa sentro sa Ayungon nga natapos sa lokasyon sa quarry. Wala usay inprastruktura sa sulod sa quarry gawas sa gamay nga *guard outpost*. Ang mga balay ug mga lugar nga gipuy-an nahimutang sa amihanang bahin sa Maaslum River, amihanansang dapit sa quarry. Wala'y plano ang HAZ nga magtukod ug bisan unsang dagkong mga inprastruktura sa lugar sa proyekto.

Ang Amihanang, silangan ug kasadpan sa lokasyon sa quarry karon gigamit alang sa agrikultura ug tugwayanan, samtang ang habagatan sa quarry sagad nga ikaduha nga lasang. Ang lugar sa MPSA giklasipika sa Munisipyo sa Ayungon ingon usa ka quarry ug lugar sa *mineral deposit* (dagway 3-2). Ang hulagway 3-3 ug 3-4, gipakita sa ubos nga naghulagway mao ang nag-una ug sekondaryang lugar nga maapektohan sa operasyon sa quarry sa silica ug ang pinakaduol nga komunidad nga tandi sa proyekto.

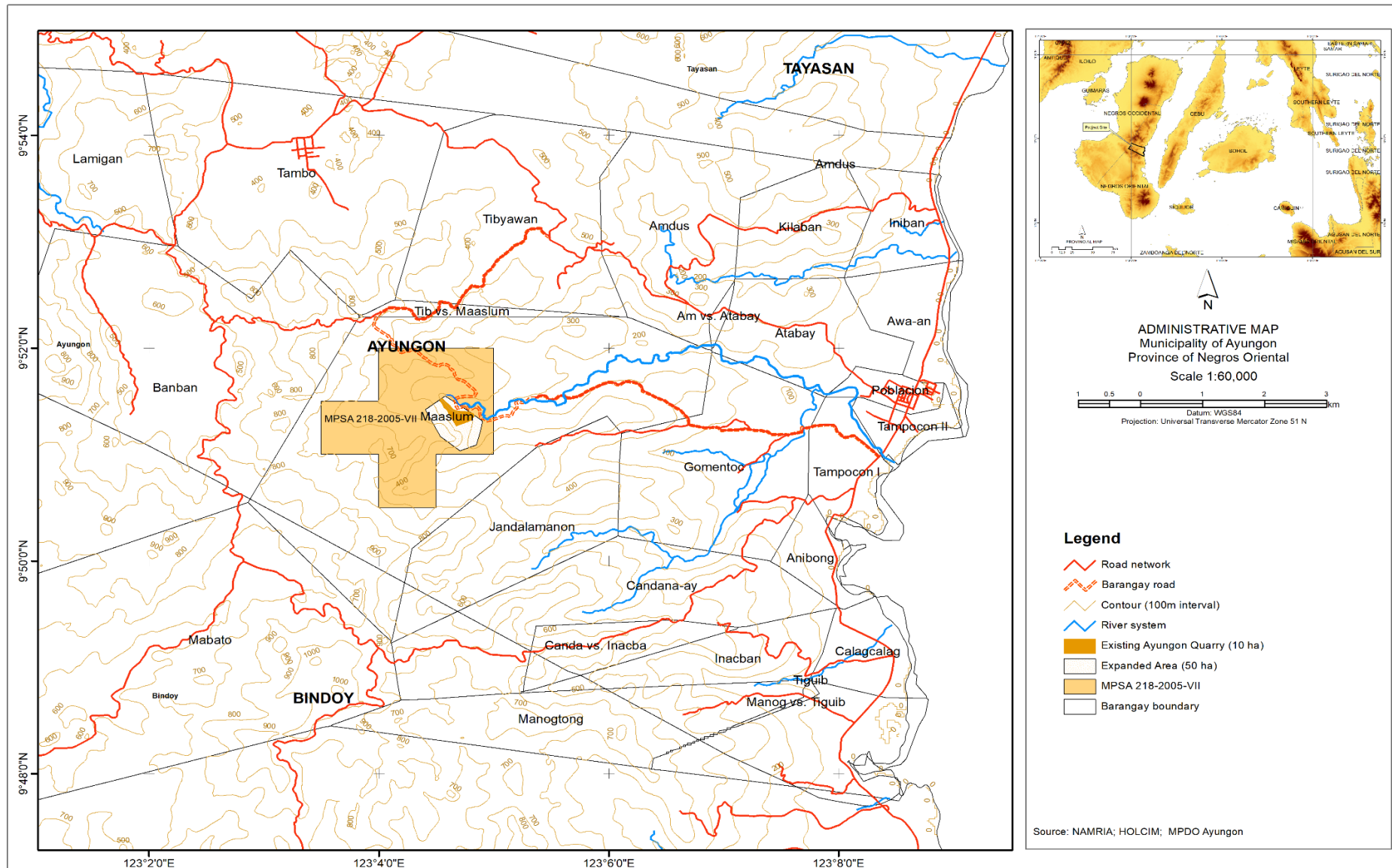


Figure 3-1. Location Map of the Project (Source: NAMRIA, HOLCIM, MPDO Ayungon)

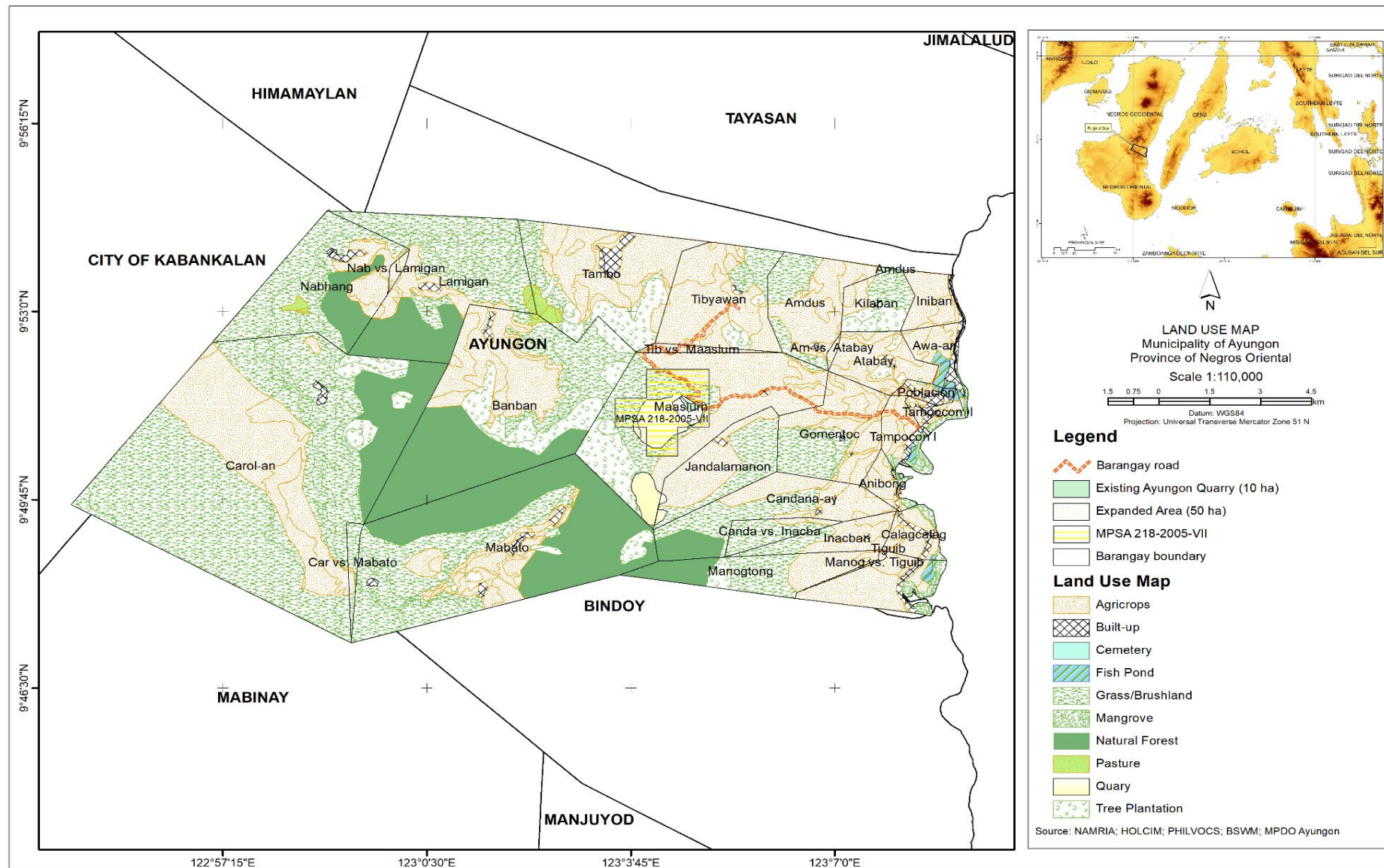


Figure 3-2. Land Use Map of the Municipality of Ayungon (Source: NAMRIA, HOLCIM, PHILVOLCS, BSWM, MPDO Ayungon)

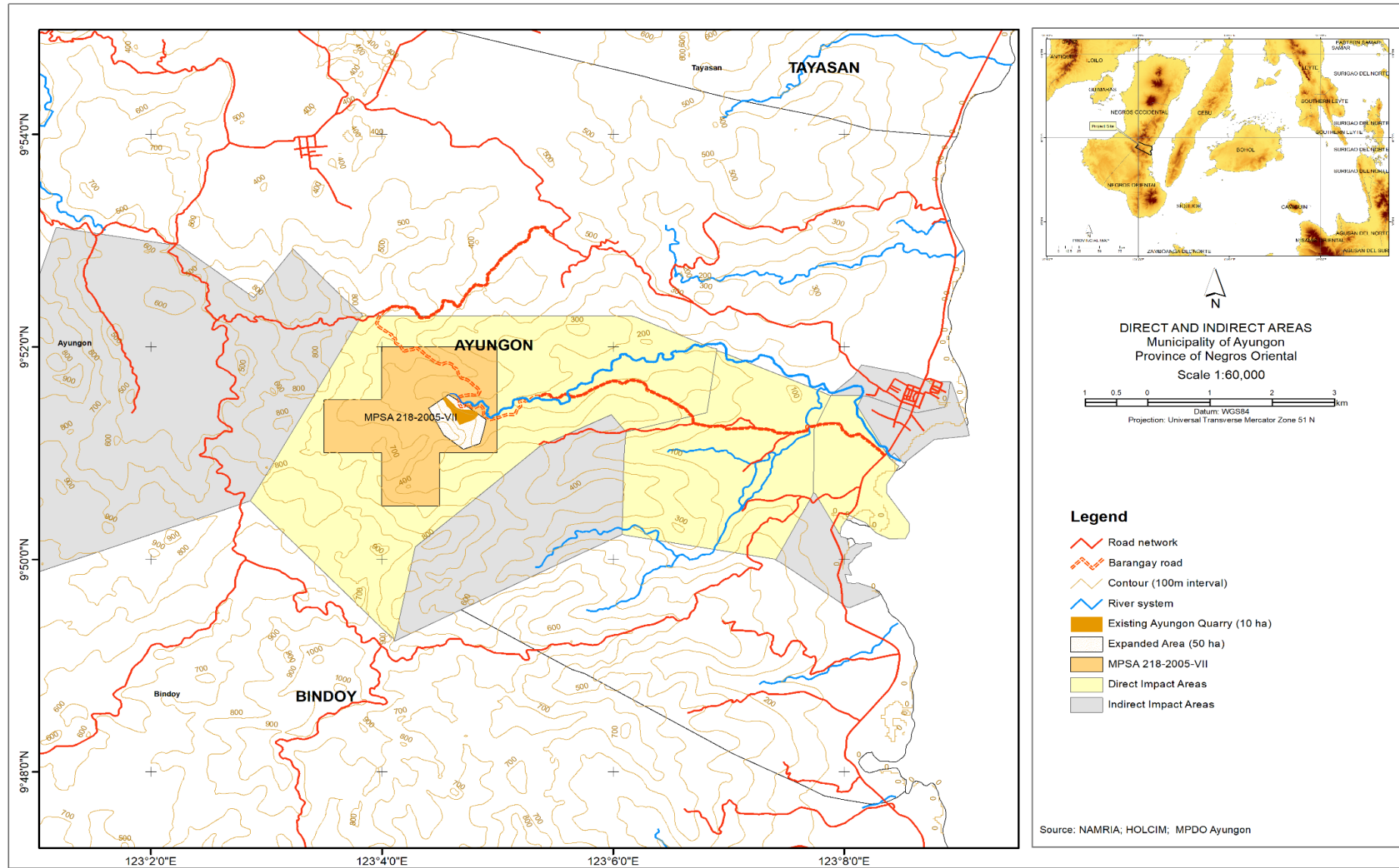


Figure 3-3. Map Showing Direct and Indirect Impact Areas of the Project (Source: NAMRIA, HOLCIM, DENR-FMB, BSWM, MPDO Ayungon)

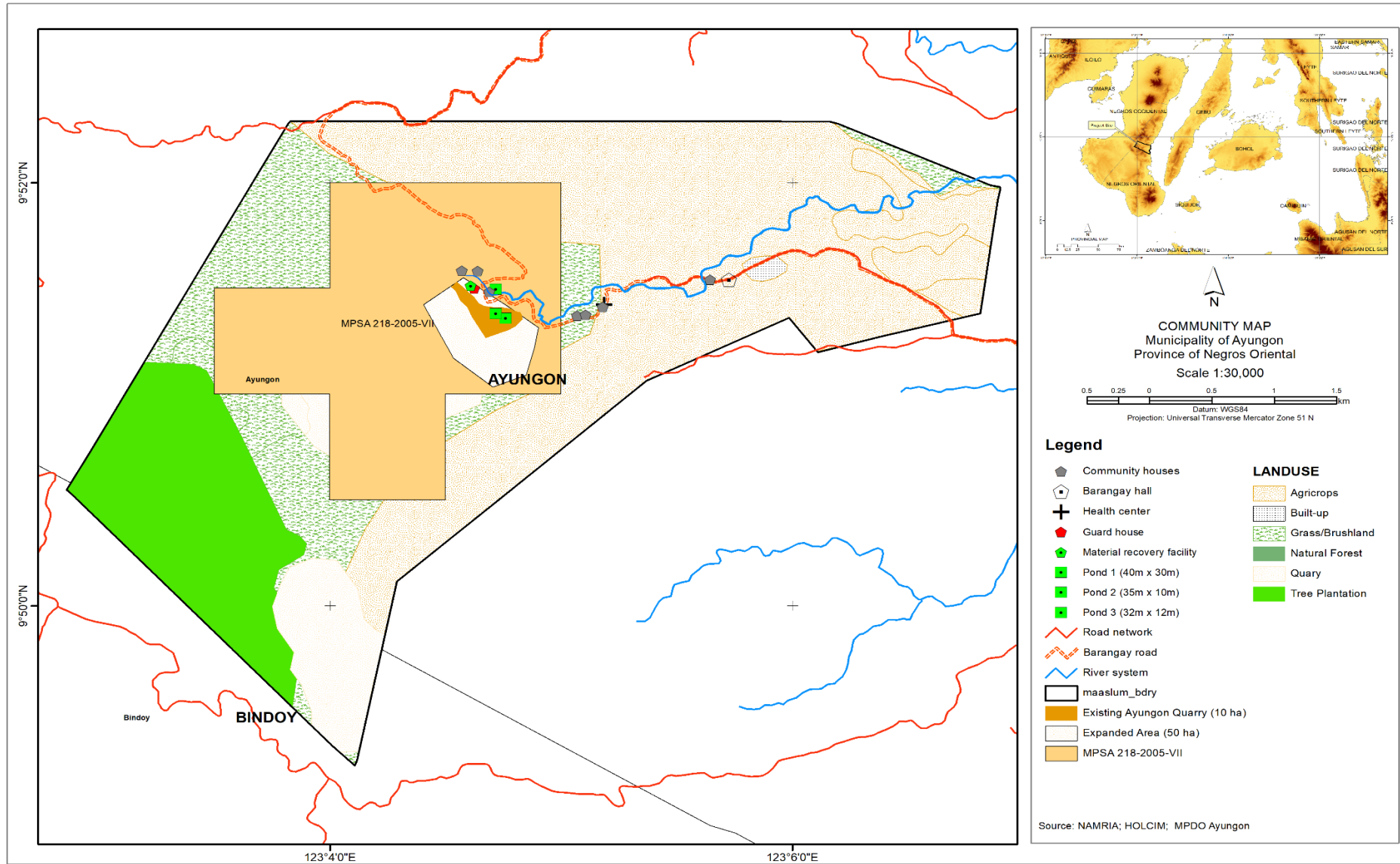


Figure 3-4. Map Showing the Nearest Community to the Project (Source: NAMRIA, HOLCIM, MPDO Ayungon)

4 TANGTUNGOD SA PROYEKTO

Ang mga tagtungod sa gisugyot nga pagpadako sa Silica Quarry mao ang mga manununod (Heirs) ni Arturo Zayco (HAZ) ubos sa Mineral Production Sharing Agreement (MPSA) No. 218-2005-VII. Niadtong 2001, ang mga manununod ni Arturo Zayco nakigsabot sa usa ka kasabutan sa operasyon kauban ang Calamba Aggregates Co, Inc. (CACI), usa ka kompanya sa Alsons Cement Corporation (ACC) nga gi-aprubahan sa DENR kaniadtong 2003. Ang ACC (nga sa ulahi nahimong bahin sa Holcim Philippines, Inc.) mikuha sa operasyon sa quarry kaniadtong 2001.

Niadtong Marso 31, 2017, usa ka bag-ong kasabutan sa operasyon ang gipirmahan tali sa Holcim Resources and Development Corporation (HRDC) ug sa:

- Mga manununod ni Arturo Zayco Sr. (Grupo A) nga girepresenta ni Alfredo F. San Miguel Jr., ug
- Mga manununod ni Arturo Zayco Sr., (Grupo B) nga girepresenta nilang Jose Maria Z. Cuenca, ug Alfredo San Miguel, Jr.

Sa pagkakaron, ang operasyon sa quarry nga nasakup sa napulo ka (10) ektaryang lugar nga naapil sa deklarasyon sa nahimong “*feasibility*” sa proyekto sa pagmina gikan sa kinatibuk-an nga 505.4626 ektarya nga nasakup sa MPSA 218-2005-VII.

Ang operasyon alang sa pagkubkob gikontrata sa SiO2 Resources Corporation, usa ka kontraktor nga nakabase sa Manila gikan kaniadtong tuig 2014.

5 ISKEDYUL SA PAG-IMPLEMENTAR SA PROYEKTO

Ang pagpalapad nga proyekto mahimong usa ka pagpadayon sa kalihokan sa pagkubkob gikan sa 10 ektaryas molungtad hangtod sa 50 ektarya sa tibuuk nga MPSA nga lugar. Ang pagpatuman sa proyekto kinahanglan magsugod sa pagpagawas sa ECC tungod kay naa na kini nga proyekto.

6 ANG LUGAR NGA MA EPEKTOHAN SA PROYEKTO UG PAGTUKI SA MGA MAHINUNG DAN NGA EPEKTO SA KALIKOPAN

Ang mga lugar nga ma epektohan sa proyekto gipiho ngadto sa direkta ug dili direkta nga mga maapektohan nga lugar. Ang Lugar nga direkta maapektohan sa proyekto o *Direct Impact Area (DIA)* alang sa gisugyot nga proyekto mao ang Barangay Maaslum, Barangay Gomentoc ug Barangay Tampocon I, samtang ang mga ikaduhang ma epektohan nga lugar (*Secondary Impact Areas*) naglakip sa mga barangay Ban-ban, Jandalamanon, Anibong, Poblacion ug Tampocon II tanan nahamtang sa Ayungon, Negros Oriental.

Sa pagrebyo sa *quarterly CMVRs* alang sa duha (2) ka nag-una nga quarter sa 2016-2017 nagpakita nga ang *quarry* nagsunod sa mga kondisyon sa ECC 7-1-08-23-0135303 nga gipagawas kaniadtong Agosto 23, 2001. Gipakita sa mga report nga husto nga pagtuman ang gi-aprubahan nga mga lakang aron mapakunhod ang nailhan nga mga epekto sa proyekto. Ang talaan 6-1 sa ubos ug nagpasundayag sa mga hinungdan nga epekto sa proyekto ug ang ilang nahabilin nga mga epekto pagkahuman sa paggamit sa mga lakang sa pagpanindot.

Table 6-1. Matrix of Major Impact, Mitigation/ Enhancement Measures and Residual Effects

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
1. Site Preparation, Establishment of Haul Roads, Topsoil Stockpiling			
a. Land	- Loss of topsoil due to ground/site preparation activities - Induced landslides and mass wasting due to preparation activities on high angle slopes.	- Mix the stockpiled topsoil layer with limestone gravel and re-spread in disturbed areas/quarried out areas to prevent erosion and allow reestablishment of vegetation - Conserve and stockpile removed topsoil in a predetermined area to be used later in rehabilitation and backfilling activities - Grade the topsoil stockpile to a stable relief on flat ground lined out with retaining rocks to prevent it eroding out when it rains. - Continue to implement established safe working slopes. A slope angle of 40 degrees is the safe working slope for the project. This was the minimum stable slope angle from the Engineering Geologic Investigation of Ayungon Silica Quarry by Cabria et. al. in 2012.	- Possible rockslides and rockfall may occur during intense rainfall and or during earthquake. - Possible landslide and mass wasting during intense rainfall and or during earthquake.
b. Flora and Fauna	Reduction of vegetative cover; fauna disturbance and/or displacement	- To enhance nearby riparian ecosystems, enrichment planting can be employed using water loving plants in a sparse section of the riparian. Combination of indicator species in the area to include vine, shrub, forbs, and trees, among others can be the choice plants. - Replant the surrounding area after construction, preferably with indigenous plants from the site - Keep to a minimum vegetation removal, ensuring that only necessary/planned clearings are undertaken	Possible loss of biodiversity

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
		- Replace with the same species, preferably with nursery-raised seedlings, tree and other plant species that are removed during site preparation - Utilize felled trees as construction materials at the site; cleared vegetation parts as compost materials to fertilize seedlings in the nursery and during seedling out planting and field maintenance. - Establish voluntary conservation zones and biological corridors within the Project area	
c. Groundwater Flow	- Inflow of groundwater to excavated areas could result to drawdown in ground water levels - Reduction in the spring discharge and ground water baseflow components of the streamflow of nearby water catchments - Depletion of ground water flow which affects to the distribution and availability of surface flow - Affect its potential use as a drinking water or irrigation source.	- Replace and relocate downstream affected existing ground water wells with new ones if significant loss of water yield is experienced - Provision of shallow ground water wells when necessary	Possible reduction in groundwater flow due to earthquake.

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
d. Groundwater Quality	- Contamination with biological agents (e.g. fecal coliforms) from domestic and animal wastes carried by runoffs - Contamination with oil and grease from hydrocarbon leaks and spills from vehicles and heavy equipment, fuel and oil storage	- Provide access roads with drainage system to contain and limit run offs - Progressive rehabilitation and revegetation of mined out quarries and planting barren lots to prevent soil erosion - Proper management of domestic solid and liquid wastes (provision of enough toilets with appropriate septic tanks for workers); - Training for workers good housekeeping practices; - Motorpool, fuel and oil storage and maintenance areas are provided with impervious surface and well-maintained oil-water separator facility.	Possible contamination from oil and grease from vehicles and domestic waste by runoffs during heavy rainfall and or occurrence of earthquake.
e. Surface Water Quality	- Siltation and organic loading of streams from erosion of exposed soil and overburden materials; - Contamination with oil and grease from hydrocarbon leaks, spills from vehicles and heavy equipment - Increased susceptibility to contaminated water and water borne diseases - Decrease water quality due to washing of	- Continue to implement sediment and erosion control plan - Regular maintenance of drainage systems along access roads to contain and limit downstream runoffs from quarries and roads - Proper piling and management of quarry overburden; - Continue to implement progressive rehabilitation and reforestation of mined out areas to lessen the impacts of soil erosion; revegetate exposed plots and areas - Strict implementation of sanitary practices among workers; provision of adequate toilet facilities with proper septic tanks; - Continue to implement proper waste management (segregation, collection, minimization, reuse, recycle, treatment and disposal);	Possible siltation that may occur during heavy rainfall and/ or occurrence of earthquake

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
	equipment and leakage and spills from carried by runoff to the water resources. Acceleration of the aging process of surface water ecosystem which can lead to an imbalance in the nutrient and material cycling process.	- Continue to train and orient all workers on proper waste management, good housekeeping, and proper chemical handling - Regular monitoring of water quality in water quality monitoring stations; - Proper storage provisions for fuel oil, used oil and other oily wastes; provide fuel oil storage tanks with appropriate bunding with concrete/impervious flooring - Motorpool, fuel and oil storage and maintenance areas are provided with oil and water separator facility. - Regular water testing	
f. Air Quality	Air pollution due to fugitive dust from ground clearing operations.	- A buffer zone of different species combination of plants including shrubs, small and medium sized trees should be established around the quarry sites. At least 20-meter buffer zone width is recommended. High density planting should be employed to assure capture of dust particulates around the extraction sites. - Regular water spraying in areas where land development activities are concentrated - Replacement of vegetation in non-structure areas. - Compact exposed soil - Cover with tarpaulin trucks loaded with construction materials, which may give off airborne dusts - Immediate hauling of spoils and wastes - Strictly implement vehicle speed limits - Install off-site ambient air quality monitors	Possible air pollution that may come from other sources such as industries operating around the area.

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
	Air pollution due to SO_x, NO_x, TSP and PM₁₀ emissions from heavy equipment and vehicles	- Regular maintenance of heavy equipment and motor vehicles - Install off-site ambient air quality monitors	Possible air pollution that may come from other sources such as industries operating around the area.
g. Sound Levels	Noise from construction activities	- Regular maintenance of motor vehicle mufflers - Provide noisy, stationary vibrating equipment with barriers and shielding - Provide workers with free hearing PPE's (e.g. ear mufflers, ear plugs) - Schedule "noisy" activities during daytime	None. The quarry site is situated far from the nearest inhabited community.
h. People/ Community	<u>Psycho-social</u> - Fear of air and noise pollution due to quarrying activities - Fear of landslides and flooding due to quarrying activities	- IEC on the nature and operation of the quarry project and mitigating measures - Orientation and training of affected residents on Disaster Risk Reduction Management, particularly on landslides and flooding	Possible complaints coming from the people/ community on landslides and flooding that may occur during heavy rainfall or earthquake.
	<u>Economic</u> - Generation of employment - Generation of livelihood opportunities	- Local hiring priority for qualified barangay residents (LGU R.A. 7160) - Barangay consultation on job requirements and qualification - Training to upgrade skills of residents who can be hired by the Project	None
	<u>Health and Safety</u> Entry of migrant workers with families may result to health problems due to diseases; overuse of public	- Health certificate for workers prior to hiring into the project - Partner with the LGU on the implementation of the Social Development Program - Management of entry of migrant workers - Increase and train Barangay tanods to be deployed in areas where migrant workers reside	None

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
	utilities/services; competition for resources; social conflicts; peace and order; increase in pollution Increase in traffic volume causing air and noise pollution	- Implementation of a Traffic Management Plan - IEC on proper scheduling of quarry vehicle operations (avoid late hours) - Water sprinkling of dusty roads during dry seasons	
	<u>Peace and Order</u> Population congestion, peace and order problems and security breaches	Coordination with the Barangay LGU to control of the entry of outsiders and to manage peace and order problems	None
	<u>Cultural and Historical</u> Possible unearthing of historical artifacts and/or fossil remains	Safeguard possible archaeological site and immediately inform the National Museum in case of finds	None
2. Quarrying Operations			
a. Land	Landslides and mass wasting maybe induced by activities at high angle slopes	- Grade stockpile to a stable relief - Implement established safe working slopes - Install landslide control structures	- Possible rockslides and rockfall may occur during intense rainfall and or during earthquake. - Possible landslide and mass wasting during intense rainfall and or during earthquake.
	<u>Flooding Potential</u> Potential for downstream flooding	- Flood management schemes - Rainwater reservoir constructed and maintained according to design by a structural engineer, taking into account peak flood regimes	Possible landslide and mass wasting during intense rainfall and or during earthquake.
	Contamination of soil from diesel, motorpool	Continue to implement procedures for proper handling, storage, disposal and transport of	Possible contamination from vehicle runoffs during heavy rainfall and or occurrence of earthquake.

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
		hazardous materials (e.g. diesel, motor oil, used batteries, used oil, etc.); - Continue use and maintenance of pollution control devices; - Continue training of all involved personnel and contractors; and - Continue to implement emergency containment and clean-up program to handle oil and other hazardous material spills.	
b.1 Surface Hydrology and Hydrogeology	- Siltation from increased erosion, surface runoff and down slope sedimentation - Decline in river carrying capacity due to siltation - Lowering of groundwater table	- Properly installed and maintained erosion/ sedimentation controls; - Rainwater and runoff collecting systems at the toe of work areas; “Vengeering” (i.e. planting of vegetation with high rainfall intercepting capacity and high transpiration rates); - Drainage systems in access roads; - Strengthened water monitoring system (i.e. install water meters at source points; keeping a daily record of water extraction and consumption). - Development of rainwater impoundment facilities in abandoned quarry areas	Possible siltation that may occur during heavy rainfall and/ or occurrence of earthquake
b.2 Groundwater Quality	- Contamination with biological agents (e.g. fecal coliforms) from domestic and animal wastes carried by runoffs - Contamination with oil and grease from hydrocarbon leaks and spills	- Provide access roads with drainage system to contain and limit run offs - Progressive rehabilitation and revegetation of mined out quarries and planting barren lots to prevent soil erosion - Proper management of domestic solid and liquid wastes (provision of enough toilets with appropriate septic tanks for workers); - Training for workers good housekeeping practices;	Possible contamination from oil and grease from vehicles and domestic waste by runoffs during heavy rainfall and or occurrence of earthquake.

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
		Motorpool, fuel and oil storage and maintenance areas are provided with impervious surface and well-maintained oil-water separator facility.	
b.3. Surface Water Quality	- Siltation and organic loading of streams from erosion of exposed soil and overburden materials; - Contamination with oil and grease from hydrocarbon leaks, spills from vehicles, heavy equipment, fuel and oil storage, motorpoo - Increased susceptibility to contaminated water and water borne diseases - Decrease water quality due to washing of equipment and leakage and spills from carried by runoff to the water resources. - Acceleration of the aging process of surface water ecosystem which can	- Continue to implement sediment and erosion control plan - Regular maintenance of drainage systems along access roads to contain and limit downstream runoffs from quarries and roads - Proper piling and management of quarry overburden; - Continue to implement progressive rehabilitation and reforestation of mined out areas to lessen the impacts of soil erosion; revegetate exposed plots and areas - Strict implementation of sanitary practices among workers; provision of adequate toilet facilities with proper septic tanks; - Continue to implement proper waste management (segregation, collection, minimization, reuse, recycle, treatment and disposal); - Continue to train and orient all workers on proper waste management, good housekeeping, and proper chemical handling - Regular monitoring of water quality in water quality monitoring stations; - Proper storage provisions for fuel oil, used oil and other oily wastes; provide fuel oil storage tanks with appropriate bunding with concrete/impervious flooring - Motorpool, fuel and oil storage and maintenance areas are provided with oil and water separator facility.	Possible siltation that may occur during heavy rainfall and/ or occurrence of earthquake

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
	lead to an imbalance in the nutrient and material cycling process.	Regular water testing	
c. Ambient Air Quality	Fugitive particulate pollution	- Proper operation and maintenance of appropriate air pollution control devices in heavy equipment and vehicles - Provide adequate and appropriate PPEs for workers free of charge - Water spraying of exposed dusty areas during high winds - Optimize active extraction areas at the quarry - Control options for stockpile wind erosion 50% reduction from water sprays 30% reduction from wind breaks and rock armor 40% reduction from vegetation (exposed surfaces)	Possible air pollution that may come from other sources such as industries operating around the area.
	Fugitive particulate pollution from quarry haul roads	- Vehicle restrictions that limit the speed, weight or number of vehicles on the road. - Surface improvement by (a) paving or (b) adding gravel or other surfacing materials - Surface treatment such as water sprinkling	Possible air pollution that may come from other sources such as industries operating around the area.
	Air pollution in terms of SO_x, NO_x, TSP and PM₁₀ from heavy quarry equipment and motor vehicles	Continue to implement appropriate maintenance program for quarry equipment and vehicles, including emissions testing	Possible air pollution that may come from other sources such as industries operating around the area.
	Very minimal contribution to climate change due to CO₂ gas emissions from fuel	Continue implementation of greening program and reforestation to serve as carbon sink, primarily to help offset the impact of greenhouse gas emissions from the operations of vehicle	None

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
	combustion in quarry equipment and motor vehicles		
d. Ambient Sound Levels	Generation of noise from quarrying equipment and activities	- Incorporate noise criteria in the specifications and selection of equipment - Regularly maintain quarry vehicles and equipment; - Provide free hearing PPE's (ear plugs, mufflers) to workers as appropriate; and - Plant appropriate vegetation as noise buffer	None
e. People/ Community	Safety and health risks to workers from domestic solid and liquid wastes (from guard post)	- Continue to implement procedures for proper handling, storage, disposal and transport of hazardous materials - Continue to provide appropriate free PPE's - Continue to implement proper housekeeping - Continue to implement established domestic waste handling and disposal; - Continue to provide workers with enough and well-maintained sanitary facilities (toilets, washrooms, etc.); - Segregate, collect and dispose combustible materials (e.g. plastics) through the recovery facility	Possible contamination from oil and grease from vehicles and domestic waste by runoffs during heavy rainfall and or occurrence of earthquake.
	<u>Economic</u> - Local government generation of revenues from taxes, permits and LGU share in the quarrying of limestone - Taxes paid locally and shared by	- Benefits from development programs through Social Development Management Plan (equivalent to 1.5% of operating costs) - Excise Tax: 60% goes to national government; 40%, to the local government (20% for host Provinces; 45% for host Municipalities; 35% for host Barangays) - Real Property Tax to province and municipalities - IEC on nature of jobs the proponents	None

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
	municipality and barangays • Generation of employment • Generation of livelihood opportunities (e.g. food stalls, variety stores and other services) • Problems of congestion, peace and order and security breaches	• Coordination on job requirements and qualifications • Local hiring priority for qualified barangay residents • Skills training to upgrade local skills of residents • Coordination with the Barangay LGU to ensure authorized establishments and control of unauthorized entry of outsiders as well as the management of waste	
	<u>Health & Safety</u> • Diseases due to influx of migrants and overuse of public utilities /services; • Increased competition for resources, • social conflicts, peace and order problems, • increase in solid and liquid wastes pollution • Increase in traffic volume causing air and noise pollution	• Management of entry of migrant workers. • Tap the auxiliary services of barangay tanods; provide trainings if needed • Provide health clinic with a doctor/nurse and health workers in the quarry area. Alternatively, coordinate jointly with the health facility of HRDC • Health certificate for workers prior to hiring into the project. • Continue to partner with the LGU in implementing the Social Development and Mgt. Program • IEC on proper scheduling of quarry vehicle and delivery trucks operations (avoid late hours). • Proper management of traffic (quarry vehicles, delivery trucks and visitors) within the quarry area • Water spraying of roads during dry seasons	• None
	<u>Climate Change</u>		• None

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
	Impact of Climate Change: La Niña and El Niño phenomena and possible consequential disasters	- Assist impact barangays on gender sensitive capability building on Disaster Risk Reduction and Management; - Continue IEC on the project's mitigating measures to protect water aquifers; identification of areas most vulnerable to natural hazards; and on strengthening the protection of ecosystems	
3. Decommissioning of Equipment, Rehabilitation of Disturbed Areas, Dismantling of Structures			
a. Land Use/ Topography	Permanent land use change in areas occupied by the quarry and its facilities	- Rehabilitate quarry areas based on agreed upon final land use plan and design upon abandonment; - Ensure that the final perimeter and cover of the quarry area will have an undulating profile to facilitate drainage and future land use	Possible landslide and mass wasting during intense rainfall and or during earthquake.
b. Water	- Failure of rainwater reservoirs - Flooding of areas downstream of the quarry	- Monitor structural integrity of the reservoirs for the duration of operation and beyond project closure; - Develop an Emergency Response Plan to handle possible water reservoir failure accidents. - Identify vulnerable areas and possible scenarios of flooding and the necessary preventive measures	Possible flooding during intense rainfall.
c. Land	Generation of solid wastes and hazardous wastes	- Sell recyclable materials; - Dispose residual wastes to municipal garbage collectors; dispose hazardous waste through accredited treaters; segregate and dispose combustible materials and plastics	None
d. Ambient Air Quality	Air pollution due to fugitive dust	- Regular water spraying in areas where dismantling activities are concentrated - Replacement of vegetation in non-structure areas.	Possible air pollution that may come from other sources such as industries operating around the area.

Environmental Aspect/ Component Likely to be Affected	Potential Impacts	Prevention or Mitigation or Enhancement	Residual Effects
		• Compact exposed soil • Cover with tarpaulin trucks loaded with debris • Impose vehicle speed restrictions	
e. People/ Community	• Loss of LGU revenues from proponent's taxes, permits and share when mining operations ceases	• Timely announcement and preparation of decommissioning/ abandonment	• None
	• Cumulative health impacts on the community brought about by air pollution and contaminated water	• Conduct barangay-wide medical check-up and compare results during the construction phase and before decommissioning	• None

7 IDENTIFIED STAKEHOLDERS

The complete list of stakeholders invited for the public hearing are found below:

Potential Impact Areas	Basis for Selection	Sector/ Sub-sectors to be likely Stakeholders	Specific Organizations / Entities likely to be Invited to IEC / Public Scoping / Public Hearing
A. Direct Impact Areas			
1. Brgy. Maaslum	Barangay is where the quarry site is found	Brgy. Officials, RHU, PTC, PTA rep, Coop, Farmers Association, Senior Citizen, Women's Association, SK	- Brgy. Captains - Brgy. Kagawads - School Principals / Head Teacher - RHU Officer - PTA / PTC Head - Coop Manager - Irrigator's Association Manager - President, Senior Citizen
2. Brgy. Gomentoc	Adjacent barangay. Brgy road leads to Brgy. Maaslum		
3. Brgy. Tampocon I	Gateway to Brgy. Maaslum. Brgy road leading to Maaslum		
B. Indirect Impact Areas			
1. Brgy. Jandalamanon		Brgy. Officials	- Brgy. Captains - Brgy. Kagawads
2. Brgy. Ban Ban			
3. Brgy. Anibong			
4. Brgy. Poblacion			
5. Brgy. Tampocon II			
C. LGUs with political jurisdiction over the project area (listed in A&B)			
1. Municipality of Ayungon	Ayungon has political jurisdiction over the 3 DIA & 2 IIA barangays	Municipal Officials	- Municipal Mayor - Mun Planning & Devt Officer - Mun Agriculture Officer - Mun Environment and Natural Resource Office - Mun Engineer - Mun DRRM Officer
2. Province of Negros Oriental	The province has jurisdiction over Ayungon	Provincial Officials	- Provincial Governor - Vice-Governor - Chair, Environment -Sanguinang Panlalawigan - Provl Engineer - Provl Agricultural Officer - Provl Tourism Officer - Provl DRRM Officer

Potential Impact Areas	Basis for Selection	Sector/ Sub-sectors to be likely Stakeholders	Specific Organizations / Entities likely to be Invited to IEC / Public Scoping / Public Hearing
D. Others			
1. Implementing Partner/s			
<i>a. Holcim Mining and Development Corporation</i>	The Operator	Holcim HQ	• Holcim President • Holcim Vice President • Holcim Site Manager • Holcim Site Staff
<i>b. Heirs of Arturo Zayco</i>	The Proponent		• HAZ Legal representative
2. Contractors in the area			
<i>a. Silica Resources Corp (SI)</i>	SI does the hauling of silica sand deposits; water the roadside		• SI Manager
3. NGOs			
<i>a. Ayungon Ministers Association</i>	Signatory to the CLRF Memorandum of Agreement	• Social Action Center • Cooperatives • Associations	• Executive Directors • Managers • Association Presidents
4. Government agencies	Issuing departments; with programs and projects in the area	MGB, DENR, DA, NIA, DPWH	• Regional Directors • Provincial Directors

8 KASAYURAN KUNG ASA MAKAKUHA OG KOPYA SA EIS ALANG SA DUGANG NGA KASAYURAN.

Ang balaud nga *Environmental Performance Report ug Management Plan (EPRMP)* ug kini nga *ESP* i-gabutang sa EMB website (www.eia.emb.gov.ph) labing menos 20 ka adlaw nga nagpamati sa publiko. Pagkahuman sa pagrebyo, adunay kopya sa katapusang *EPRMP* nga magamit sa publiko gikan sa mosunud nga yunit sa gobyerno ug ahensya:

- 1. Environmental Impact Assessment Division, Environmental Management Bureau**
DENR Compound, Visayas Avenue, Diliman, 1100 Quezon City, Philippines
- 2. Ayungon Municipal Planning and Development Office**
Municipal Hall, Poblacion, Ayungon, Negros Oriental
- 3. DENR-EMB Region 7**
Mandaue City, Cebu