



PROJECT DESCRIPTION FOR SCOPING (PDS)

NAGAPI RIVER MAINTENANCE AND RESTORATION PROJECT

Ovada Development Phils. Inc.
4 th Floor, Unit 409 Peninsula Court, Paseo de Roxas,
Salcedo Village, Makati City 1200



PROJECT DESCRIPTION FOR SCOPING (PDS)
NAGAPI RIVER MAINTENANCE AND RESTORATION PROJECT

PROJECT DESCRIPTION FOR SCOPING (PDS)

1. Basic Project Information

Name of Project	Nagapi River Maintenance and Restoration
Location	Brgy. Iriron, Brgy. Malpalon, Calintaan, Occidental Mindoro, Philippines
Nature of Project	<p>River Restoration and Rehabilitation Project in pursuit of DAO 2020-12</p> <p>The proponent intends to implement the following:</p> <ul style="list-style-type: none"> • Creation of a channel through the river delta to encourage the free flow of river water to the sea. • Deepening of the river channels in specified areas. • Removal of materials that hamper the natural flow of water via the river channels and river delta. • Installation of riverbank protection measures.
Authorization	<ul style="list-style-type: none"> • Resolution No. 1 (dated November 11, 2020) – There is a great heed to address the flooding in the Province. • Resolution No. 3 (dated November 11, 2020) – The IAC procedures are defined • Resolution No. 5 (dated November 11, 2020) – An Initial list of heavily Silted Rivers within the Province is issued. • Resolution No. 7 (dated November 11, 2020) – The Governor is authorized to issue an open invitation to contractors to file then intent to dredge and desilt 18 rivers.
Project Owner	Province of Occidental Mindoro IAC to DPWH for Processing on June 27, 2022
Project Proponent	<p>OVADA DEVELOPMENT PHILS., INC. 5th Floor, Unit 409 Peninsula Court, Paseo De Roxas, Salcedo Village, Makati City 1200</p>
Contact Person(s)	<p>CATHERINE Q. ARGEL Director - Operations email: ovadadevphilsinc@yahoo.com</p>



PROJECT DESCRIPTION FOR SCOPING (PDS) NAGAPI RIVER MAINTENANCE AND RESTORATION PROJECT

Republic of the Philippines
Inter-Agency Committee
Provincial Capitol, Mamburao
Occidental Mindoro

RESOLUTION NO. 1 Series of 2020

WHEREAS, the Department of Environment and Natural Resources (DENR) issued DENR Administrative Order No. 2020-12 with the subject of Rationalizing Dredging Activities in Heavily-Silted River Channels within the Province of Occidental Mindoro pursuant to the DENR-DPWH-DILG-DOTC Joint Memorandum Circular No. 1 Series of 2019;

WHEREAS, Section 2 Title II of the above-mentioned Administrative Order states that "applicants must possess the financial capacity prescribed by the Inter-Agency Committee to undertake dredging operations";

WHEREAS, to provide immediate and adequate assistance to our countrymen affected by floods due to the heavily-silted river systems in the Province of Occidental Mindoro, it becomes imperative for this Committee to issue resolutions that will create an operating structure for dredging operations in said Province;

WHEREAS, Article 2, Section 2, of DAO No. 2020-12 provides that "Applicants must possess the financial capacity prescribed by the Inter-Agency Committee to undertake dredging operations";

NOW, THEREFORE, on motion of DPWH Regional Director IV-B Engr. Yolanda L. Tangco, duly seconded by other members present, **BE IT RESOLVED**, as this body hereby resolves to set the following minimum financial and technical capacity to undertake dredging operations in the Province of Occidental Mindoro in accordance with DENR Administrative Order No. 2020-12:

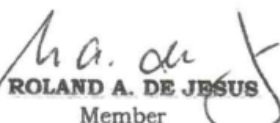
- For Large Rivers / 3rd Order Stream – ONE BILLION PESOS (PhP1,000,000,000.00) Authorized Capital Stock, 25% of which is subscribed and paid up.
- For Medium Rivers / 2nd Order Stream – THREE HUNDRED MILLION PESOS (PhP300,000,000.00) Authorized Capital Stock, 25% of which is subscribed and paid up.
- For Small Rivers / 1st Order Stream – ONE HUNDRED MILLION PESOS (PhP100,000,000.00) Authorized Capital Stock, 25% of which is subscribed and paid up.

APPROVED AND SIGNED this 11th day of November 2020 at the Luxent Hotel, 51 Timog Avenue, Quezon City.


EDUARDO B. GADIANO
Chairperson


MA. LOURDES G. FERRER
Vice-Chairperson


YOLANDA L. TANGCO
Member


ROLAND A. DE JESUS
Member


FOR: MICHAEL DRAKE P. MATIAS
Member



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*Republic of the Philippines
Inter-Agency Committee
Provincial Capitol, Mamburao
Occidental Mindoro*

RESOLUTION NO. 3
Series of 2020

WHEREAS, the Department of Environment and Natural Resources (DENR) issued DENR Administrative Order No. 2020-12 with the subject of Rationalizing Dredging Activities in Heavily-Silted River Channels within the Province of Occidental Mindoro pursuant to the DENR-DPWH-DILG-DOTC Joint Memorandum Circular No. 1 Series of 2019;

WHEREAS, Section 2 (b) Title VII of the above-mentioned Administrative Order states that "the inter-agency committee shall have the following powers and functions.. shall propose policies and programs to rationalize the dredging operations";

WHEREAS, to provide immediate and adequate assistance to our countrymen affected by floods due to the heavily-silted river systems in the Province of Occidental Mindoro, it becomes imperative for this Committee to issue resolutions that will create an operating structure for dredging operations in said Province;

NOW THEREFORE, on motion of DPWH Regional Director IV-B Engr. Yolanda L. Tangco, duly seconded by other members present, **BE IT RESOLVED**, as this body hereby resolves "to set the added responsibility of the application to include in its Dredging Plan the construction, formation, and maintenance of access roads and complimentary structures in relation to its proposed dredging operations in the Province of Occidental Mindoro in accordance with DENR Administrative Order No 2020-12".

APPROVED AND SIGNED this 11th day of November 2020 at the Luxent Hotel, 51 Timog Avenue, Quezon City.


EDUARDO B. GADIANO
Chairperson


MA. LOURDES G. FERRER
Vice-Chairperson


ROLAND A. DE JESUS
Member


YOLANDA L. TANGCO
Member

For:

MICHAEL DRAKE P. MATIAS
Member



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Republic of the Philippines
Inter-Agency Committee
Provincial Capitol, Mamburao
Occidental Mindoro

RESOLUTION NO. 5
Series of 2020

WHEREAS, the Department of Environment and Natural Resources (DENR) issued DENR Administrative Order No. 2020-12 with the objective of Rationalizing Dredging Activities in Heavily-Silted River Channels within the Province of Occidental Mindoro pursuant to the DENR-DPWH-DILG-DOTC Joint Memorandum Circular No. 1 Series of 2019;

WHEREAS, Section 2 (b) Title VII of the above-mentioned Administrative Order states that "The inter-agency committee shall have the following powers and functions.. shall propose policies and programs to rationalize the dredging operations ";


WHEREAS, to provide immediate and adequate assistance to our countrymen affected by floods due to the heavily-silted river systems in the Province of Occidental Mindoro, it becomes imperative for this Body to issue resolutions that will create an operating structure for dredging operations in said province;


NOW, THEREFORE, on motion of MGB Regional Director IV-B Engr. Roland A. de Jesus, duly seconded by other members present, **BE IT RESOLVED**, as this body hereby resolves to approve the eighteen (18) rivers in Occidental Mindoro considered as heavily silted rivers primed for dredging. Dredging zone shall be one (1) kilometer up from the Delta stopping at one (1) kilometer from the bridge.

RESOLVED FURTHER, that the DPWH shall be primarily responsible for undertaking activities within the prohibited/protected zone to ensure that the objective for which the dredging operation is allowed shall be realized.


APPROVED AND SIGNED this 11th day of November 2020 at the Luxent Hotel, 51 Timog Avenue, Quezon City.


EDUARDO B. GADIANO
Chairperson


MA. LOURDES G. FERRER
Vice-Chairperson


ROLAND A. DE JESUS
Member


YOLANDA L. TANGCO
Member

For: 
MICHAEL DRAKE P. MATIAS
Member



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*Republic of the Philippines
Inter-Agency Committee
Provincial Capitol, Mamburao
Occidental Mindoro*

RESOLUTION NO. 7
Series of 2020

WHEREAS, the Department of Environment and Natural Resources (DENR) issued DENR Administrative Order No. 2020-12 with the subject of Rationalizing Dredging Activities in Heavily-Silted River Channels within the Province of Occidental Mindoro pursuant to the DENR-DPWH-DILG-DOTC Joint Memorandum Circular No. 1 Series of 2019;

WHEREAS, Section 2 (b) Title VII of the above-mentioned Administrative Order states that “the inter-agency committee shall have the following powers and functions.. shall propose policies and programs to rationalize the dredging operations”;

WHEREAS, to provide immediate and adequate assistance to our countrymen affected by floods due to the heavily-silted river systems in the Province of Occidental Mindoro, it becomes imperative for this Body to issue resolutions that will create an operating structure for dredging operations in said Province;

NOW, THEREFORE, on motion of MGB Regional Director IV-B Engr. Roland A. de Jesus, duly seconded by other members present, **BE IT RESOLVED**, as this body hereby resolves in its meeting duly assembled “to authorize Governor Eduardo B. Gadiano of Occidental Mindoro to publish a Notice to Public allowing the sending of Letters of Intent for only fifteen (15) calendar days by proponents of dredging activities for the following rivers located in Occidental Mindoro:

RIVER	LOCATION	RIVER CLASSIFICATION
1. Tubili River	Barangay Tubili, Paluan	Small River
2. Paluan River	Barangay 6, Paluan	Small River
3. Abra de Ilog River	Barangay Wawa, Abra de Ilog	Large River
4. Pagbahan River	Barangay Talabaan, Mamburao	Medium River
5. Mamburao River	Barangay 7, Mamburao	Large River
6. Sta. Cruz River	Barangay Poblacion, Sta. Cruz	Medium River
7. Salagan River	Barangay Lumangbayan, Sta. Cruz	Large River
8. Annay River	Barangay Pag-asa Sablayan	Large River
9. Patrick/Viga River	Barangay San Agustin, Sablayan	Large River
10. Baclaran River	Barangay Pinagturian, Sta. Cruz	Large River
11. Mompong River	Barangay Sta. Lucia/San Nicolas, Sablayan	Large River
12. Anahawin River	Barangay Poypoy, Calintaan	Medium River
13. Nagapi River	Barangay Iriron, Calintaan	Small River




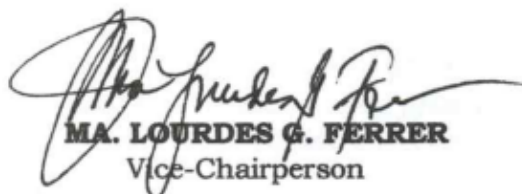
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Provincial Capitol, Mamburao
Occidental Mindoro

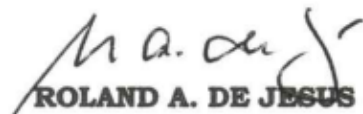
14. Lumintao River	Barangay Malawaan, Rizal	Large River
15. Busuanga River	Barangay Central/Adela, San Jose	Large River
16. Labangan River	Barangay Mangarin, San Jose	Medium River
17. Caguray River	Barangay Caguray Poblacion, Magsaysay	Large River
18. Tuguilan River	Barangay Tayamaan, Mamburao	Small River

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EDUARDO B. GADIANO
Chairperson


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YOLANDA L. TANGCO
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ROLAND A. DE JESUS
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FOR: 
MICHAEL DRAKE P. MATIAS
Member



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Republic of the Philippines
MIMAROPA Region
Province of Occidental Mindoro
OFFICE OF THE GOVERNOR

RECORDS SECTION
EMB-MIMAROPA REGION

6/29/22

RECEIVED BY

Andi. [Signature]

June 27, 2022

TO : **LORMELYN E. CLAUDIO, CESO IV** -- ABRAHAM
Regional Executive Director
DENR, Region IV-B

ENGR. GERALD A. PACANAN, CESO III
Regional Director
DPWH, Region IV-B

EDWIN M. MOJARES, Ph.D
Regional Director
MGB, Region IV-B

JOE AMIL M. SALINO
Regional Director
EMB, Region IV-B



SUBJECT: **Endorsement of Ovada Development Philippines Inc. in Joint Venture with Newcrest Marine Resources Inc. for the Issuance of Dredging Clearance and Environmental Compliance Certificate (ECC) for River Restoration Program through dredging and desilting activities of Anahawin River located in Barangay Poypoy Calintaan, Occidental Mindoro and Nagapi River located in Barangay Iriron, Calintaan, Occidental Mindoro**

This is to respectfully endorse Ovada Development Philippines Inc. in Joint Venture with Newcrest Marine Resources Inc. for the Issuance of Dredging Clearance and Environmental Compliance Certificate (ECC) for its proposed river restoration program through dredging / desilting of Anahawin River located in Barangay Poypoy Calintaan, Occidental Mindoro and Nagapi River located in Barangay Iriron, Calintaan, Occidental Mindoro.

Ovada Development Philippines Inc. in Joint Venture with Newcrest Marine Resources Inc. has complied with the mandatory requirements set forth in the policies issued by the inter-Agency Committee and under DENR Administrative Order No. 2020-12 dated October 7, 2020, based on the initial evaluation and assessment conducted by the Provincial Government Secretariat for the IAC.

Thank you.

HON. EDUARDO B. GADIANO
IAC Chairperson / Governor



"Ganado sa serbisyo. Ganado sa Pagbabago!"

Address: Provincial Capitol Compound, Barangay Pavombon, Mamburao, Occidental Mindoro



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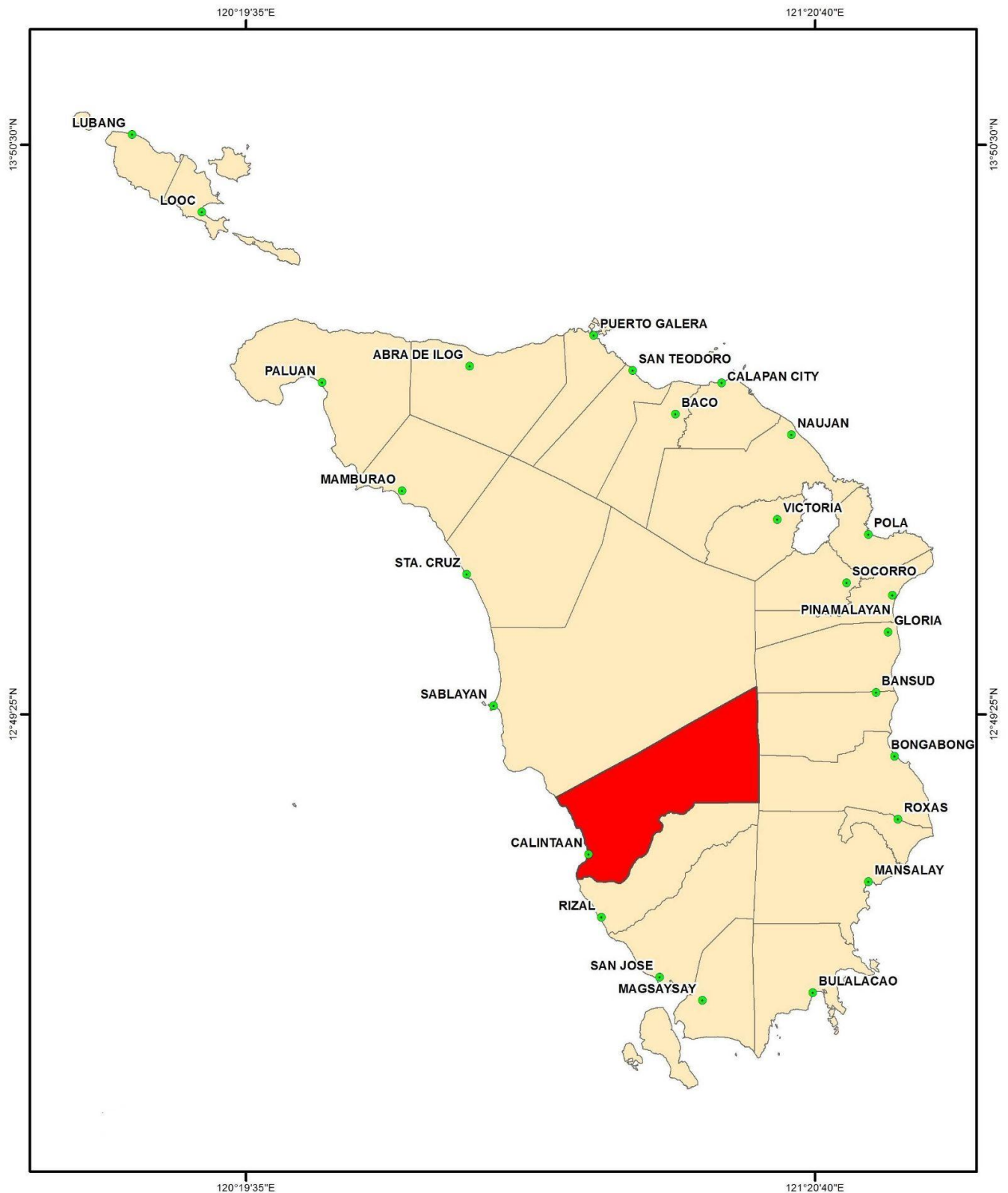
2. Project Description

2.1. Project Location

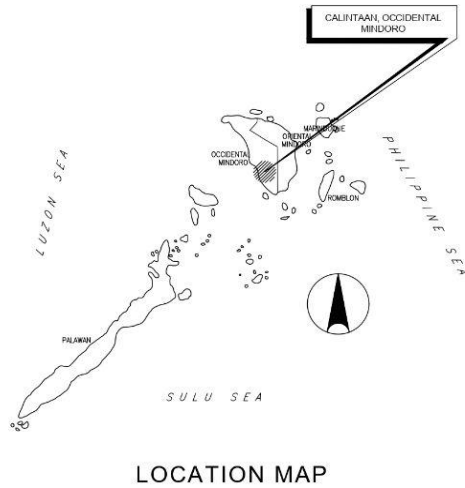




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A. BENCHMARKS

Benchmarks for the project site.

BENCHMARK	ELEVATION
BM-1	2.612m
BM-2	1.556m
BM-3	3.133m
BM-4	3.580m



	PROJECT NAME AND LOCATION: PROPOSED NAGAPI RIVER MAINTENANCE AND RESTORATION PROJECT DREDGING PLAN STA. 0+00 TO STA. 9+318 LENGTH = 9.318 KM BARANGAY: RINTEL, BARANGAY: MALPALON CALINTAAN, OCCIDENTAL MINDORO	SHEET CONTENTS: PROJECT DESIGN & LOCATION MAP	SUBMITTED: ENGR. RIMGO V. MASAMIGAY REGIONAL ENGINEER	RECOMMENDING APPROVAL: HON. EDUARDO B. GABIANO PROVINCIAL GOVERNOR	VERIFIED: ENGR. GERALD A. PACANAN, CESO III REGIONAL ENGINEER DIVISION ENGINEER V-B	REVIEWED: EDWIN C. MATANGIPIHAN SC. ENGINEER BUREAU OF DESIGN	ERIC A. AYAPANA, CESO IV ASSISTANT SECRETARY FOR TECHNICAL SERVICES	APPROVED: MAXIMO L. CAIRAJAL SUPERINTENDENT FOR TECHNICAL SERVICES	SHEET NO. G 02/02	SHEET NO. 02 72
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ELEMENTS OF CURVE											
PI #	PI STATION	PI NORTHING	PI EASTING	I	D	Radius	T	E	LC	PC STATION	PT STATION
PI: 1	0+072.22	1394381.8798	275305.9387	73° 15' 03.9"	29° 20' 41.5"	39.05	29.03	9.607	49.92	0+043.20	0+093.12
PI: 2	0+241.45	1394212.1891	275357.5252	44° 27' 42.6"	6° 12' 25.7"	184.61	75.46	14.825	143.26	0+166.00	0+309.26



HYDRAULIC DESIGN DATA :

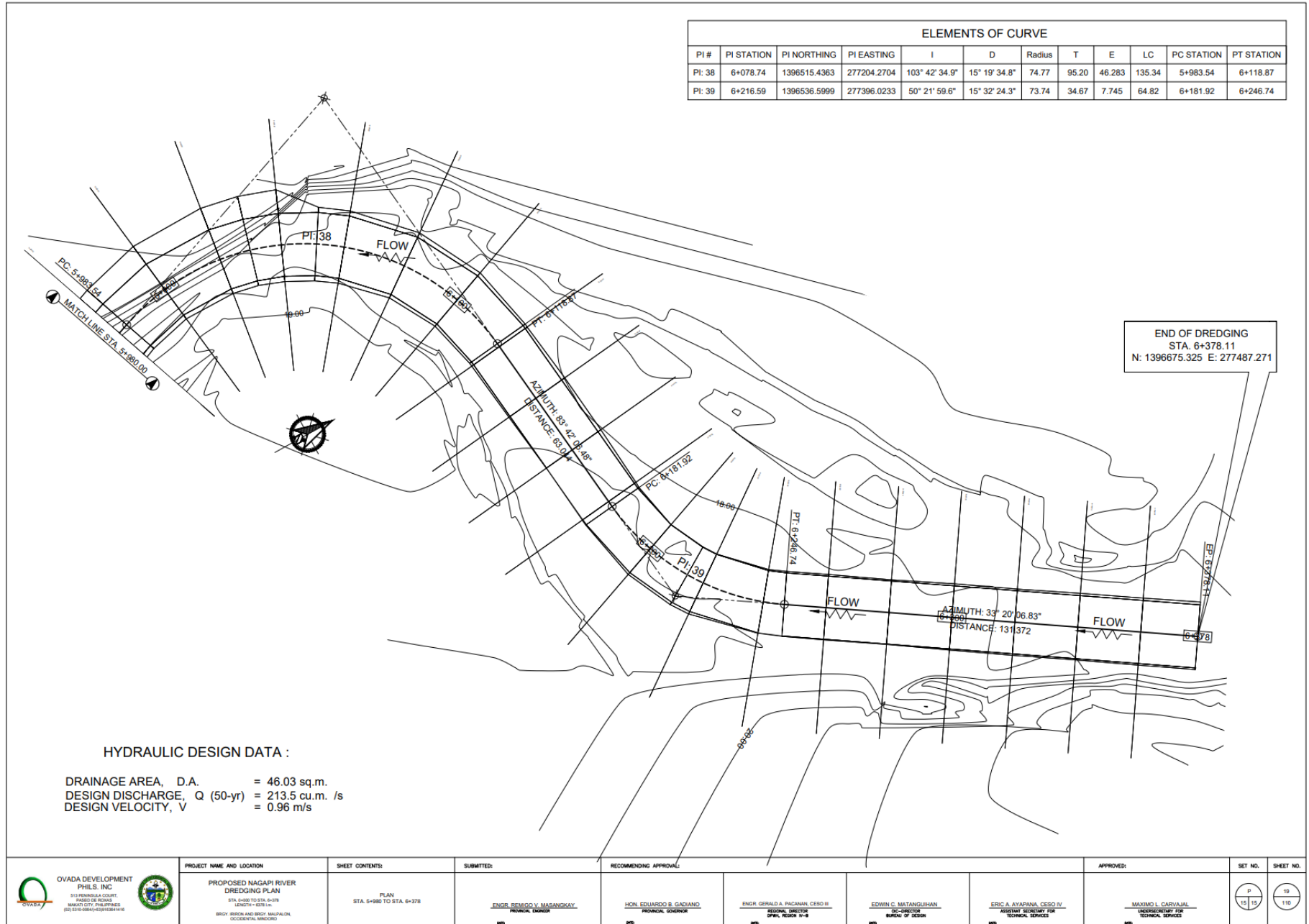
DRAINAGE AREA, D.A. = 46.03 sq.m.
DESIGN DISCHARGE, Q (50-yr) = 213.5 cu.m. /s
DESIGN VELOCITY, V = 0.96 m/s



PROJECT NAME AND LOCATION	SHEET CONTENTS:	SUBMITTED:	RECOMMENDING APPROVAL:				APPROVED:	SET NO.	SHEET NO.
PROPOSED NAGAPI RIVER DREDGING PLAN STA. 0+000 TO STA. 0+309 LIBERTY - 0001-0001-00 BIDYI, PAMPANGA AND BIDYI, SAMPALAN, COCOA, MINDORO	PLAN STA. 0+000 TO STA. 0+309	<u>ENGR. REMIGIO V. MASANGKAY</u> PROVINCIAL ENGINEER	<u>HON. EDUARDO B. GADIANO</u> PROVINCIAL GOVERNOR	<u>ENGR. GERALD A. PACANAN, CESO II</u> REGIONAL DIRECTOR BPHS, REGION IV-B	<u>EDWIN C. MATANGULAN</u> DC-ENGINEER BUREAU OF HIGHWAYS	<u>ERIC A. AYAPANA, CESO IV</u> ASSISTANT REGIONAL ENGINEER FOR TECHNICAL SERVICES	<u>MAXIMO L. CARVAJAL</u> UNDERSECRETARY FOR TECHNICAL SERVICES	<div><div>P</div><div>1</div><div>15</div></div>	<div><div>5</div><div>110</div></div>



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PROJECT DESCRIPTION FOR SCOPING (PDS) NAGAPI RIVER MAINTENANCE AND RESTORATION PROJECT

LMB Form no. GSD C-3

TECHNICAL DESCRIPTIONS		
LINES	BEARINGS	DISTANCES
BOUNDARY		
1 2	S 36°24' W	13.94 m.
2 3	N 50°21' W	137.60 m.
3 4	S 65°13' W	214.74 m.
4 5	S 14°27' E	498.87 m.
5 6	S 75°11' W	1531.26 m.
6 7	N 14°29' W	833.31 m.
7 8	N 64°56' E	1542.35 m.
8 9	S 17°07' E	428.54 m.
9 10	N 81°29' E	185.33 m.
10 11	S 72°11' E	96.07 m.
11 1	S 25°11' E	177.53 m.

VICINITY MAP
(NOT DRAWN TO SCALE)

SKETCH PLAN
OF
NAGAPI DELTA CLEARING SITE
AS PREPARED FOR
OVADA DEVELOPMENT PHILS INC.

SITUATED IN THE

RURBAN CODE: 047501
BARANGAY OF: IRIRON
MUN./CITY OF: CALINTAAN
PROVINCE OF: OCCIDENTAL MINDORO
ISLAND OF: MINDORO
CONTAINING AN AREA OF 1,528,212 SQ.M.

ZONE NO.
PPCS-PTM/PRS 92
BEARINGS : GRID/
SCALE 1: 8000

0 50 100 200 300 400 500 600 700 800

CERTIFICATION

I hereby certify that this is a true and correct plan of Nagapi Delta Clearing site situated on Mindoro Strait, plotted as per coordinate data provided by the company.

Issued upon request of the interested party for records and reference purposes only.

03-01-2023
Date prepared

CLIFFORD M. ARIMADO
GEODETIC ENGINEER
Reg. Cert. No. 2280843 Date 01/03/2023
License No. 0010863 Date 11/19/2019

Republic of the Philippines
Department of Environment and Natural Resources

VERIFICATION

I certify that this survey plan is verified and found to conform with survey returns/records on file in this office. THIS PLAN SHALL NOT BE USED FOR LAND REGISTRATION

DATE: _____
PURPOSE: _____

CHIEF, REGIONAL SURVEYS DIVISION

Date Submitted: _____

ADDITIONAL INFORMATION AFTER DATE OF APPROVAL

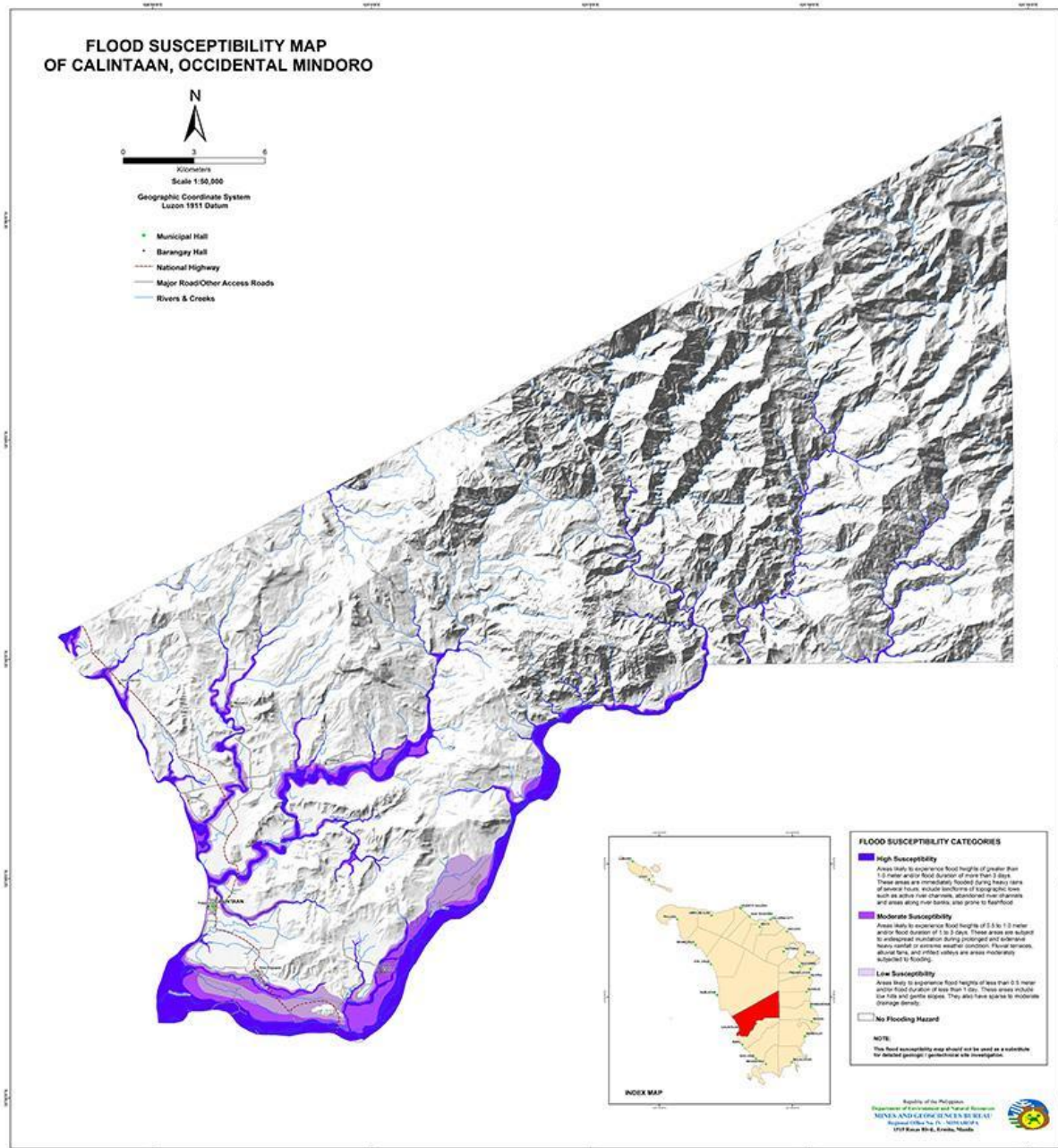
VERIFICATION FEE
Paid Under _____
O.R. No. _____
Date: _____
Lot/s _____ Corners _____



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POINT	NAGAPI DELTA CLEARING	
	LATITUDE	LONGITUDE
1	12.6040020103704	120.932284746782
2	12.6054485667606	120.931578136939
3	12.605707815842	120.930734416848
4	12.6054466740693	120.929049857865
5	12.6091389553077	120.927859971072
6	12.6031341667584	120.915052557194
7	12.5958580452336	120.917029833898
8	12.5995021349753	120.930621857251
9	12.6038588084649	120.929440867342
10	12.6046860153409	120.93122827718
11	12.6040020103704	120932284746782

PROJECT DESCRIPTION FOR SCOPING (PDS) NAGAPI RIVER MAINTENANCE AND RESTORATION PROJECT





PROJECT DESCRIPTION FOR SCOPING (PDS) NAGAPI RIVER MAINTENANCE AND RESTORATION PROJECT

2.2. Project Rationale

- The Province of Occidental Mindoro is one of the “Most Flood Prone” provinces in the country.

Being of mountainous terrain and host to 56 Rivers, 22 of which are heavily silted and the exits on blocked by a significant delta thus cause massive flooding during the rainy season. This exacts a heavy toll on communities' agricultural sectors which is the primary source of livelihood of its communities.

- To address this perennial threat, the Provincial Government Office (PGO) has convened its Inter-Agency Committee (IAC) based on the Guidelines provided by DENR Administrative Order 2020-12.
- The IAC consists of the Region Directors of the MGB, EMB and DPWH and the Governor of the Province as the Chairman.
- The IAC has issued Resolutions to cover the following:
 - Resolution No. 1 (dated November 11, 2020) – There is a great heed to address the flooding in the Province.
 - Resolution No. 3 (dated November 11, 2020) – The IAC procedures are defined
 - Resolution No. 5 (dated November 11, 2020) – An Initial list of heavily Silted Rivers within the Province is issued.
 - Resolution No. 7 (dated November 11, 2020) – The Governor is authorized to issue an open invitation to contractors to file then intent to dredge and desilt 18 rivers.
- The IAC also issued an additional list of small, medium and large size heavily silted rivers in a number of Municipalities.
- The Province of Occidental Mindoro has the MGB to evaluate these rivers as heavily silted and are in need of desilting and declogging. The province declared over and above “social acceptability” that there is dire need to take immediate action to alleviate this threat of floods. The Province has emphasized that it is its social responsibility to act on these perennial issues.



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NAGAPI RIVER MAINTENANCE AND RESTORATION PROJECT

- In April 2022 Ovada Development Phils. Inc. filed with the PGO and IAC its intent to conduct study and plan to implement a River Maintenance and Restoration Project at the Nagapi River, located at the Municipality of Calintaan in Occidental Mindoro.

As defined in the Proposed Activities, the River Maintenance and Restoration Project is the project of the Province of Occidental Mindoro, the project will involve the following:

- a. The conduct of environmental, social and Technical Studies to establish the actual conditions of the river, the hydrodynamics between the river and the sea, the quality of the materials that must be removed in order to define the methodologies for the safe and proper conduct of work.
 - b. The design of a River Maintenance and Restoration Program to unclog the river and encourage the free flow of water to the sea and an applicable where extracted materials can be used to recover their beachfront and to dispose of excess materials.
 - c. Where applicable and feasible to define and create water impoundment sites to store water for use by the farmers during the dry season.
- This Environmental Impact Study is prepared based on the surveys conducted at the Nagapi River in the Municipality of Calintaan.
 - The Municipality of Calintaan is located at the Southern part of Occidental Mindoro about 136 km from the capital town of Mamburao. 143 km from the sea part in Abra de Ilog and 36 km from the new airport in San Jose.
 - Traveling from Manila requires a 100 km trip to Batangas City Port and a 2.5 hours trip via RORO to Abra de Ilog.
 - The terrain is primarily mountainous with a wide strip of land immediately at the foothills.
 - The plains are cultivated primarily from rice farming.
 - Being un-irrigated, the farmers are only able to plant and harvest cropping per year.
 - It is noted that during the dry season, the farms are largely barren while during the rainy season the farms tend to be flooded, seriously limiting the livelihood activities. It is the wish of the communities there for water impounding facilities.



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- Calintaan is a third class municipality. It has a population of 30,190. It is politically subdivided into seven (7) barangays occupying a land area of 38,250 hectares. The economy of Calintaan is mainly agricultural and its major crop is rice. Other crops produced and sold in the Municipality include corn, legumes, coconuts and bananas. Industries such as fishing, livestock, poultry, banana processing, and buri craft are also important to the economy.

2.3. Project Components

The primary considerations in the selection of the site for the Proposed River Maintenance and Restoration Project at Nagapi River in the Municipality of Calintaan, Occidental Mindoro are the following:

- The area's need for river rehabilitation and improvement against climate change related disasters such as flooding
- Comprehensive measures that address the flooding issues cover the following:
 - a. the source at the upstream;
 - b. downstream where water exits and;
 - c. at various points in the mid-stream to enable a pragmatic and real solution to the province's flooding issues.
- Considering the current concerns on:
 - a. rising sea levels
 - b. the changing weather patterns where there is extreme heat and extreme rains
 - c. the change in the trajectory of recent typhoons where they now tend to exit via the MIMAROPA (Region 4B), flooding risks are expected to worsen if corrective actions are not taken immediately.
- The following is a summary of the results of the Initial Survey:
 - a. The river mouth is blocked by a wide river delta consisting of soil, rocks and mud and the river channel is only a few inches deep due to heavy siltation.
 - b. The Channel is literally dry in summer and flooded in the rainy season.



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- c. Barangay Iriron is host to 2 river mouths (Nagapi and Anahawin River) which are both heavily silted, the river exit of Nagapi River in the north portion of the barangay is totally blocked by soil and virtually at the ground level.

The Anahawin river mouth at the south has a meandering channel that has caused the proximity of the river bank and nearby farms to erode. It tends to open a new exit towards the sea.

- d. The coastline is receding towards the farmlands and residential areas.
 - e. As there is no riverbank to hold the water in place, the overflow of water finds its way to sea via the farmlands and residential areas. Hence, the inland barangays are all affected by the overflow of water from the abovementioned major river channels which are almost all heavily silted to be at the same level of the ground.
- The following mitigating measures are proposed in view of the need to implement urgent measures considering immediate relief from the threat of floods may be achieved.
 - a. Creation of exit channels through the river deltas to facilitate the free flow of water to the sea.
 - b. Deepening of the river channels to increase the water holding capacity and complemented by bank protection measures.
 - c. Coastal protection measures to dissipate the energy of waves hitting the coastline and minimize coastal erosion.

Foreshore recovery and enhancement procedures will likewise be investigated for Barangay Iriron to protect the coastline, the residences and the access road.
 - As for the inland barangays, a number of options are being investigated and will be the subject of further studies. A separate application for ECC shall be subsequently filed for the identified mitigating measures.

This River maintenance and restoration measures include the deepening of river channels to increase their water holding capacity as well as creation of catch basins water impounds areas at strategic areas to temporarily hold excess water flow or better yet to store these surface water to complement the Municipality's



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irrigation resources instead of letting this valuable resource simply flow out to sea. As mentioned above, these will be the subject of further studies.

- Considering the scope and scale of the flooding concerns of the Provincial, the project will be implemented in Phases as follows:

Phase 1 (this study):

- a. The conduct of studies and surveys at the coastal areas which are the most susceptible to flooding and coastal erosion
- b. The coordination and clearance of the planned activities with the relevant regulatory agencies
- c. The creation of exit channels through the river deltas at Barangay Iriron.
- d. Deepening of the river channels and riverbank protection measures.
- e. The deepening of river channels at the head of the River at the upstream barangays and at selected sites throughout upstream to increase their water holding capacity to contain the water flow within the channels and mitigate their unwanted exit via the farmlands and residential areas

Phase 2:

- a. Identification of areas that may be converted into catchment basins and phased implementation of the catch basins
- b. Design and implementation of water impounding facilities for irrigation purposes

Phase 3:

- a. Identification and implementation of long-term solutions in the coastal areas and at the up-stream
- b. Maintenance of measures implemented in Phase 1 and 2



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2.4. Summary of Project Phases, Key Environmental Aspects, Waste, Issues, Built-in Measures

Table 3. Summary of Project Phases, Key Environmental Aspects, Waste, Issues, Built-in Measures

Environmental Component	Potential Impact	Prevention/Mitigation/Enhancement Measures	Target Performance/ Efficiency
PRE-OPERATION PHASE			
Pre-construction phase covers activities like planning, feasibility study, drawing of plans and permit procurement.			Non-commencement of construction phase until compliance and completion of required permits.
OPERATION PHASE			
Employment and Economic Opportunities	Increase income for the residents	Positive impact: No mitigation measure required.	100% priority hiring of qualified residents
	Spread of communicable diseases from migrant workers (e.g., COVID-19)	Conduct of medical examination of workers prior to hiring Provision of medical services to employees and nearby communities	100% compliant with the COVID-19-related policies and guidelines of the DOH
Opening of river delta and portions of the coastal, river line and stretch of Nagapi River and some agricultural area, other government project sites	Land Tenure Land Acquisition	Implement cadastral surveys or RAP in coordination with IACs, LGUs, PGOs, MPDOs, lot owners and other concerned agencies to address the issue on land acquisition and relocation of informal settlers.	100% efficient implementation of proposed mitigations.
	Potential conflict with other government infrastructure projects	Close coordination with DPWH, LGU and other relevant agencies	



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Environmental Component	Potential Impact	Prevention/Mitigation/ Enhancement Measures	Target Performance/ Efficiency
	Potential conflict with ferry operation	<p>Close coordination with the affected ferry companies to align and ensure that the proposed dredging schedule and activities shall be accommodated in their operation plan;</p> <p>Plan appropriate method and schedule of dredging, hauling and transport to minimize the impact to existing ferry or maritime operation;</p> <p>Strictly implement approved dredging master plan and clearance from DPWH</p>	<p>100% coordination and cooperation with commercial vessel companies;</p> <p>100% efficient implementation of proposed mitigations.</p>
Generation and improper handling and disposal of domestic and hazardous solid waste.	Increase generation of hazardous wastes	Regular collection of wastes by hired/contracted hazardous wastes treaters	100% efficient implementation of proposed mitigations.
Clearing and removal of vegetation, stripping of soil cover, excavation and other pre-dredging and dredging operations	Pedology Soil erosion	<p>Design and install of appropriate designed measures to prevent or minimize slope failure during part construction and operation based on the results of the geohazard assessment and geotechnical investigations.</p> <p>Scheduling of clearing and dredging activities in speedy manner during dry season if possible.</p>	100% efficient implementation of proposed mitigations.



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Environmental Component	Potential Impact	Prevention/Mitigation/Enhancement Measures	Target Performance/ Efficiency
		<p>Placement of unsuitable dredge materials on appropriate staging site or spoils area and with adequate containment.</p> <p>Limit stockpile height up to 5 m high only.</p> <p>Utilize heavy equipment for transporting, hauling and excavating material from one area to another so as to avoid spills into drainage system</p>	
Generation and improper handling and disposal of dredged materials, unusable materials, etc.)	Pedology Soil erosion	<p>Plan and implement recycling and reuse of excavated soil to be utilised for the project/ other project as much as possible. In case of excessive soil to be generated, identify the final spoil disposal site.</p> <p>Place excavated materials on appropriate dump sites or spoils area and with adequate containment.</p>	100% efficient implementation of proposed mitigations.
Accidental spills of fuels/lubricants from construction vehicles & machineries/ hazardous chemicals. Generation and improper handling/disposal of construction/ domestic/ hazardous wastes.	Pedology Degradation of soil quality (soil contamination)	<p>Proper inspection and maintenance of machines and equipment.</p> <p>Conduct soil fertility monitoring in case any possible contamination events occur.</p>	100% efficient implementation of proposed mitigations.



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Environmental Component	Potential Impact	Prevention/Mitigation/Enhancement Measures	Target Performance/ Efficiency
Damage of subsurface structures during filtering and dredging at previously service area sites (catchment basin, stock pile)	Pedology Exposure to contaminated soil	Identify a potential contaminated site and conduct of soil sampling survey at a potential contained site, if necessary.	100% efficient implementation of proposed mitigations.
Removal of vegetation along the proposed dredging area (if any occurrence)	Terrestrial Ecology Loss of Habitat	<p>Greening of the area and replacement of the loss vegetative cover shall be undertaken which will be part of the rehabilitation plan.</p> <p>For tree replanting, areas not part of the development within the project site, around the stations and depot will be prioritize for replanting activity to create buffer zone to improve wildlife. For those that cannot be replanted within the project area, coordination with the DENR and LGUs on the identification of relocation area for the potential trees that will be relocated</p> <p>Secure tree cutting permit in compliance with DENR Memorandum Order No. 2012-02.</p>	100% efficient implementation of proposed mitigations.
Terrestrial Ecology Threat to Existence and/or Loss of Important Local Species	Removal of vegetation along the proposed dredge area	Design, plan and implement that will minimize vegetation clearing, alteration of landform, generation of noise,	100% efficient implementation of proposed mitigations.



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Environmental Component	Potential Impact	Prevention/Mitigation/Enhancement Measures	Target Performance/ Efficiency
Threat to Abundance, Frequency and Distribution of Important Species Hindrance to Wildlife Access	Dredging and vehicle movement Generation of dust and noise, vibration, and illumination pollution.	vibration, illumination, and vehicular movement particularly in areas adjacent to flora of higher conservation significance (i.e., Is-is, Narra) and in the vicinity of ecological significant areas. Wildlings of the endangered and threatened species, if any, will be collected before construction, placed in the nursery, and give priority during nursery operation to be used for rehabilitation of areas that will be affected by project.	
Potential Geologic-related and other natural events impacts	Land	Cut and Fill Method shall be undertaken in order not to cause severe changes in the terrestrial physiographic features of the site	100% efficient implementation of proposed mitigations.
Water Quality	Increase clogging of waterways which may affect water quality	Dredging design and Methodology Enhancement of drainage and flow discharge of the river to maintain its water quality and stabilize sediments	100% efficient implementation of proposed mitigations.
Visual aesthetics	Presence of the proposed dredging project equipment and vessels (dredgers, vehicles, etc.) Visual impact	Established and maintain tree planting to minimize the visual impact by the project and harmonise to the surrounding environments in open areas within the dredge site, stockpile and around the Plant, to create green corridor. Create tree nursery area for endemic and	100% efficient implementation of proposed mitigations.



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Environmental Component	Potential Impact	Prevention/Mitigation/Enhancement Measures	Target Performance/Efficiency
		endangered/indigenous tree species for supply of planting materials to project site and rehabilitation area	
Water	<p>Generation and improper handling of domestic and hazardous wastes including accidental oil and lubricant spills from dredging areas and Plant</p> <p>Degradation of land value</p> <p>Change in water quality</p>	<p>Conduct proper inspection and prompt maintenance of machines and equipment, and facilities.</p> <p>Strictly implement solid waste management plan in accordance to RA 9003, and treatment of hazardous chemicals and contaminated soil in accordance with RA 6969.</p> <p>Conduct of soil quality monitoring when necessary.</p>	100% efficient implementation of proposed mitigations;
Terrestrial Ecology	<p>Support facility, Office areas, Operation of service vehicle, stockpile, catchment basin</p> <p>Loss of Habitat</p> <p>Threat to Existence and/or Loss of Important Local Species</p> <p>Hindrance to Wildlife Access</p>	<p>Continuous planting of replacement trees.</p> <p>Conduct monitoring on survival of replanted trees and replant if required.</p> <p>Implement vegetation management plan considering significant fauna (local bird species) to minimize the use of herbicide and machinery as much as possible.</p> <p>Minimized noise, vibration, illumination, and vehicular movement in faunal sites</p>	Terrestrial Ecology
Freshwater Ecology	Loss of Habbitat	Dredging is most likely to affect fish when a vulnerable life-history stage	100% efficient Implementation of proposed mitigations.



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Environmental Component	Potential Impact	Prevention/Mitigation/Enhancement Measures	Target Performance/Efficiency
	Threat to Existence and/or Loss of Important Local Species Hindrance to Wildlife Access	of a species is confined largely to the area being dredged; Raising of fish native to the area and nursery	100% compliant with DAO 2016-08 General Effluent Standards
Surface water quality	Dredging operation on river beds and coastal sections near the delta	It should be controlled by increasing the length of travel of water, to maximise settlement of solids within the discharge area, and, when necessary, by use of silt screens or curtains. The turbidity of the discharge should be monitored.	100% efficient implementation of proposed mitigations. 100% compliant with DAO 2016-08 General Effluent Standards
ABANDONMENT PHASE			
Decommissioning	Soil contamination with heavy metals	Abandonment Plan of the Project will be strictly followed with emphasis on the strategy of sustaining erosion/ sedimentation control within and adjacent vicinity of the Project and rendering the Project area free of soil contamination	100% efficient implementation of proposed mitigations;
	Disposal of wastes may lead to possible impacts from spills and discharges of contaminants	The management ensures that the workers follow the formulated rules and regulations on solid and domestic wastes management within the	Watering during dismantling to minimize dust. Proper maintenance of vehicles and equipment.



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Environmental Component	Potential Impact	Prevention/Mitigation/ Enhancement Measures	Target Performance/ Efficiency
	affecting water quality and marine ecology	Ovada Development Phils Inc. area	



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2.4. Project Cost and Duration

The estimated capital cost for the project operation is approximately PhP 146,761,856.34 broken down as follows:

Parameter	Costs (PhP) (@ 720 Days Operations)
A. On-Shore	
Excavators, Loaders, Trucks	58,400,000
Maintenance	8,760,000
Fuel, Oil	284,700,000
B. Off-Shore	
Cutter Suction Dredger	82,620,000
Suction Dredger	153,000,000
Crane, Tug And Barge	108,000,000
Fuel, Oil	234,000,000
Subcon And Materials For Underwater Works	
C. Administrative	
Salaries	2,000,000
Environmental Health And Safety	15,000,000
Social Development Programs	75,000,000
Taxes, Statutory Fees	189,000,000
Capital Expenses	1,210,480,000



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K) SURVEY STREET LIGHT INSTALLATION AREAS

[illegible]



U) INSPECTION AND SIGN-OFF

[illegible]



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ANNEX A

Occidental Mindoro Protected Areas

MT. IGLIT-BACO National Park

The Mts. Iglit-Baco National Park (MIBNP) was proclaimed by virtue R.A. No. 6148 dated Nov. 11, 1970. As such, it is an initial components of National Integrated Protected Areas System under. Mts. Iglit-Baco NP encompasses at least eight (8) major river systems and has a rugged terrain composed of slopes, river gorgers and plateaus.

Portions of the Park are covered by upland hardwoods, such as *Anthocephalus chinensis*, *Artocarpus blancoi*, *Ficus nota*, *Hawili*, *Alibangbang* and *Balinghasai*. The larger plants indigenous to the site which are rarely seen in some other regions are *Kalantas* tree, *Tindalo*, *Almaciga* and *Kamagong*. The Park also harbors the endangered Jade vine.

The Park is the habitat of the endemic Tamaraw (*Bubalus mindorensis*), which is one of the most seriously endangered large mammals. Because of the endangered Tamaraw, the Park was initially established as "game refuge and bird sanctuary". The Park has been declared as an ASEAN Heritage site. Other forms of wildlife can also be found in the Park like the Phil. Deer, Wild Pig and Mindoro Cloud Rat as well as a number of bird species which are endemic to the island such as Mindoro Imperial Pigeon, Mindoro Scops Owl, Black-hooped Coucal, Scarlet-collared Flowerpecker and Heart Pigeon.

Mount Iglit-Baco National Park covers large areas of the central part of the island of Mindoro on the Philippines. It is situated near Mt. Baco (2,488 m a.s.l.) and Mt. Iglit, the latter reaching 2,364 m a.s.l.

MOUNT CALAVITE WILDLIFE SANCTUARY

The Mount Calavite Wildlife Sanctuary, located in Paluan municipality, Occidental Mindoro province, was formerly declared as a game refuge and bird sanctuary, by virtue of Executive Order No. 9 on 28 January 1920. This declaration became the main basis of the Department of Environment and Natural Resources to work out for the proclamation of the MCWS as a protected area, under the wildlife sanctuary category, in accordance with the National Integrated Protected Areas Systems Act, or RA 7586. Presidential Proclamation No. 292, issued on 23 April 2000, declared the MCWS covering a total land area of 18,016.19 hectares. The Congress has still to enact a law that would finally establish MCWS as a final component of the NIPAS.



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APO REEF

Apo Reef is the second largest contiguous coral reef in the world and the largest one in the Philippines. The Apo Reef Natural Park consists of the three islands. Apo Reef is the largest among the three islands. It has a shallow lagoon with a depth of 2 meters to 10 meters surrounded by mangrove forest which serves as source of food, nursery and spawning ground of several coastal and marine species of fauna and sanctuary of birds. Its diverse corals are approximately 34 sq. km. of reef where different species of fish, marine mammals and invertebrates thrive.

Apo Reef, the largest atoll like reef in the Philippines, is a submerged platform that is a submerged of a 34 sqkm sub triangular northern m and southern atoll like reefs separated by a 30-m deep channel that is open to the west The channel runs east to west from 1.8 m to 30 m deep with a fine white sand bottom numerous mounds and patches of branching corals under the deep blue water.

The main geographical features of Apo Reef is submerged. There are three islands that mark it on the surface, the Apo Island, Apo Menor (Binangaan'; and Cayos del Bajo Tinangkapang). The largest is Apo Island (22.0) hectares which harbors mangroves and beach vegetations, whereas Binangaan is rocky limestone island with relatively few vegetation and Cayos del Bajo (200-300 sq.m.) is a coralline rock formation with no vegetation.

Name	Legal Basis	Legal Status	Proximate Distance from Project Area
Mts. Iglit-Baco National Park	Proclamation No. 557, s. 1969	Legislated	25km
Apo Reef Natural Park	Proclamation No. 868, s. 1996	Legislated	50km
Mt. Calavite Wildlife Sanctuary	Proclamation No. 292, s. 2000	Legislated	111km
Calavite & F.B. Harrison Game Refuge and Bird Sanctuary	E.O. 9, s. 1920	Initial Component	111km



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