

Quaternary Report No. 3

2016 (January, February and March)

**New Bohol Airport Construction
And
Sustainable Environmental Protection Project**

Quaternary Environmental Monitoring Report

April 2016

Department of Transportation and Communications (DOTC)

The Monitoring Form is prepared based on Attachment 8 (1) of the Appraisal MD.

1. Responses/Actions to Comments and Guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during Report Period
Water Quality, Air Quality, Noise level, Dust and Solid Waste	The environmental monitoring is carried out once a month during Construction/Operation Phase. The total number of monitoring is 42 times. The Quaternary Environmental Monitoring Report (QEMR) will be submitted to JICA quarterly by DOTC.

DOTC prepared Quaternary Environmental Monitoring Report (April 2016) based on the field survey report is carried out by Chiyoda-Mitsubishi JV.

2. Mitigation Measures

(A) Pre-Construction/Construction Phase

-Sampling/Measurement Points

Sampling Points of Water

Sta. ID No.	GPS Reading		Description of Sampling Stations
	Longitude	Latitude	
GW-1	N 09°35'05.7"	E 123°46'14.5"	It is located at Airport Site Brgy. Tawala, Panglao, Bohol. Owned by deceased Mr. Leoncio Boncaron.
GW-2	N 09°33'30.6"	E 123°45'28.4"	It is located inside the compound of former Brgy. Captain Mr. Avito Arcay which is in front of the Brgy. Hall of Brgy. Danao crossing the municipal road in the municipality of Panglao, Bohol.
SW-1	N 09°32'51.1"	E 123°46'22.2"	This is situated about 100 meters away from the seashore which is in front of the Alona Kew Beach in Brgy. Tawal, Panglao, Bohol.
SW-2	N 09°34'05.0"	E 123°45'03.1"	This is located inside mangrove trees about 150 meters away from seashore in Brgy. Danao, Panglao, Bohol

Air Quality, Noise Level and Dust

Sta. ID No.	GPS Readings		Description of Sampling Station
	Longitude	Latitude	
Sta-1	N 09o33'42.3"	E 123o46'40.1"	It is located in front of Tawala Elementary School in Brgy. Tawala, Panglao, Bohol. It is situated about 10 meters away from center of the municipal road and about 35 meters from the classrooms.
Sta-2	N 09o33'32.9"	E 123o45'27.0"	It is situated almost in front of the Brgy Hall of Brgy Danao, Panglao, Bohol. It is about 7 meters away from the center of the municipal road.
Sta-3	N 09o34'50.4"	E 123o45'08.4"	It is about 30 meters away in front of the municipal hall building of Panglao and about 25 meters from center of the municipal road.
Sta-4	N 09o34'19.9"	E 123o46'28.9"	It is located along access road of the proposed new Bohol airport in Brgy Tawala, Panglao, Bohol.
Sta-5	N 09o34'10.4"	E 123o47'14.5"	It is located in front of Bohol Elementary School in Brgy Bolod, Panglao. It is about 2 meters away from the perimeter fence of the school and 5 meters away from center of the municipal road.

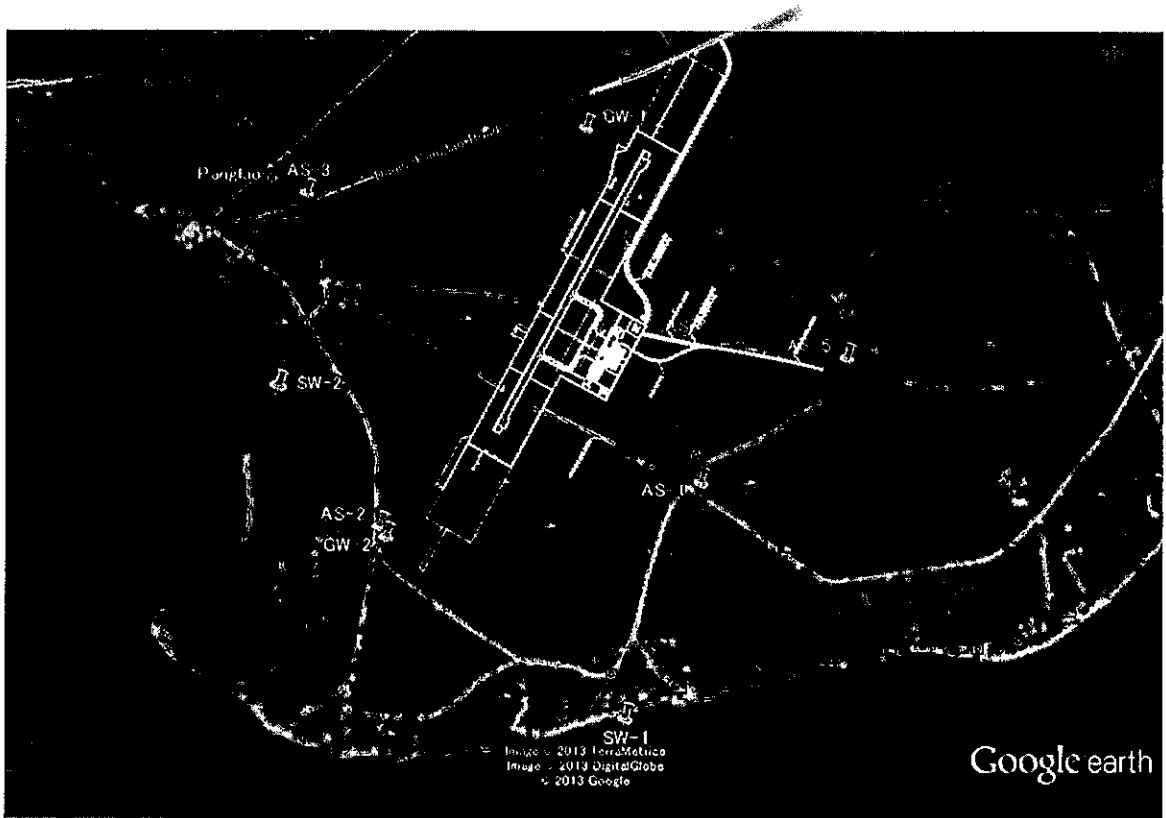


Figure 1. Location of Samplings and Measurement

- Air Quality (Ambient Air Quality)

Remarks: Measurement Point-shown in Figure 1, Frequency – once a month, Method-High Volume Sampler/Gravimetric Method

Item	Point	Month	Measured Value	Measured Value (Mean)	Measured Value (Max.)	*1) Country's Standards
TSP/Fugitive Dust (ug/m3)	Sta.1	January	98.0	33.3	98.0	230
		February	<0.17			
		March	<1.6			
	Sta.2	January	62.8	52.7	76.5	
		February	18.9			
		March	76.5			
	Sta.3	January	133.8	252.5	545.2	
		February	78.6			
		March	545.2			
	Sta.4	January	92.1	69.9	117.3	
		February	<0.17			
		March	117.3			

Item	Point	Month	Measured Value	Measured Value (Mean)	Measured Value (Max.)	*1) Country's Standards
	Sta.5	January	189.1	164.0	275.0	
		February	275.0			
		March	28.0			
TSP/Fugitive Dust-(Visual)	Sta.1, 2, 3, 5	January - March	Weekly inspection: Negative			
	Sta.4	January	(1)*: 3 rd and 4 th week: Dust from Construction work			
		February	(2)*: 1 st , 3 rd , 4 th week: Small Dust			
		March	(3)*: 1 st , 2 nd , 3 rd , 4 th , 5 th week: Small Dust			

*1) Standard: DAO 14/DAO2000-81 National Ambient Air Quality Guideline Values

Note:

(1)*: 3rd week: Wind Direction ENE, 4th week: N-NE-E, the directions shows that the dust did NOT come from the construction work of the project.

(2)*: 1st week: Wind Direction NE-NNE-NE, 3rd week: N-NE and 4th week: N-E, the directions show that the dust did NOT come from the construction work of the project.

(3)*: 1st week: Wind Direction N, 2nd week: NW-NNW-N and 4th week NNW, the directions show that the dust did NOT come from the construction work of the project. 3rd week: Wind direction ENE-NE-E and 5th week N-NE-E, the directions show that the dust did NOT come from the construction work of the project.

- Water Quality (Ambient Water Quality)

Remarks: Measurement Point-shown in Figure 1 (there is no water in soaking area), Frequency – once a month

Well Water Quality

Point	Parameter	Month	Measured Value	Measured Value (Mean)	Measured Value (Max.)	*1) Country's Standards
GW.1	PH	January	8.4	8.2	8.4	6-9
		February	7.9			
		March	(A) *10.3			
	SS (mg/L)	January	<0.1	<0.1	<0.1	No more than 60 mg/L increase
		February	<0.1			
		March	<0.1			
	BOD (mg/L)	January	2	2.3	4	15
		February	<1			
		March	4			
	COD (mg/L)	January	12	6.0	12	-
		February	<1			
		March	5			
	Nitrogen (mg/L)	January	0.8	0.82	1.05	10
		February	1.05			
		March	0.61			
	Phosphorus (mg/L)	January	0.021	0.01	0.021	0.4
		February	<0.003			
		March	0.005			
	Oil/Grease (mg/L)	January	<1	<1	<1	5
		February	<1			
		March	<1			

Point	Parameter	Month	Measured Value	Measured Value (Mean)	Measured Value (Max.)	*(2) Country's Standards
GW.2	PH	January	8.2	8.1	8.2	6 - 9
		February	7.9			
		March	(B) *9.90			
	SS (mg/L)	January	<0.1	<0.1	<0.1	No more than 60 mg/L increase
		February	<0.1			
		March	<0.1			
	BOD (mg/L)	January	2	2.3	4	15
		February	<1			
		March	4			
	COD (mg/L)	January	8	4.7	8	-
		February	<1			
		March	5			
	Nitrogen (mg/L)	January	0.75	1.48	1.92	10
		February	1.77			
		March	1.92			
	Phosphorus (mg/L)	January	0.010	0.005	0.01	0.4
		February	<0.003			
		March	<0.003			
Oil/Grease (mg/L)	January	<1	<1	<1	5	
	February	<1				
	March	<1				

*(1) Standard: DAO34 (Class C/D)

*(A) and (B) are abnormal value: the value does not exist in natural water; it was conducted from miss-analysis.

Note: Phenols is excluded from monitoring parameters, because Phenols come from industrial activities. The industrial activities do not exist in this area.

Sea Water Quality

Parameter	Point	Month	Measured Value	Measured Value (Mean)	Measured Value (Max.)	*(4) Country's Standards
Color	SW-1	January	20	17	20	No abnormal discoloration from unnatural causes
		February	10			
		March	20			
	SW-2	January	30	30	40	
		February	40			
		March	20			

*(4) Standard: DAO34 (Class SB)

- Waste

The generated waste amount in January, February and March 2016 is shown in Attachment-1

- Noise

Item	Point	Month	Measured Value	Measured Value (Mean)	Measured Value (Max.)	*(5) Country's Standards
db(A)	Sta.1	January	64	61	64	50
		February	61			

Item	Point	Month	Measured Value	Measured Value (Mean)	Measured Value (Max.)	*(5) Country's Standards
	Sta.2	March	59	64	68	65
		January	67			
		February	61			
	Sta.3	March	68	60	62	65
		January	59			
		February	60			
	Sta.4	March	62	53	54	55
		January	54			
		February	54			
	Sta.5	March	52	63	66	50
		January	63			
		February	59			
		March	66			
Hearing	Sta.1-Sta.5	July-September	Weekly hearing: no complain			

*(5) Standard: PD984

Area Classification: Sta. 1 – Class AA; Sta. 2 – Class B; Sta. 3 – Class B; Sta. 4 – Class A; Sta. 5 – Class AA

3. Natural Environment

- Ecosystem

Monitoring Item	Monitoring Results during Report Period
The two endangered species (<i>molave [Vitex parviflora Juss.]</i> and <i>bolong-eta [diospyros pilosathera]</i>) listed in the Biodiversity Assessment Report of the Bohol New Airport site	<p>The Reforestation Project for New Bohol Airport is not yet implemented since it is still subject for bidding. The bidding documents were already submitted to DOTC-Bids and Awards Committee (BAC) and will be bid as soon as the additional requirements of BAC have been completed.</p> <p>The two identified endangered species will be planted in the Municipalities of Loay, Guindulman, Daus and Dimiao.</p>

-Tree Planting (Revised ECC requirements is 572,500 seedlings)

Monitoring Item	Monitoring Results during Report period
Number of trees planted	Not yet implemented, subject for bidding
Number of species	Not yet implemented, subject for bidding
Number of locations	Not yet implemented, subject for bidding

Information on tree species to be planted and those species are selected.

The species/seedlings considered in the reforestation project for NBACSEPP is consists of the following: 572,000 seedlings as condition in the ECC issued by DENR-EMB7; 5,104 seedlings as ECC condition for the resettlement site; and, 46,500 seedlings as replacement to the other trees

identified by DENR-CENRO in Tagbilaran City. The total number of seedlings is 624,104. In the Terms of Reference (TOR) for the procurement of seedlings, 20% of mortality was considered.

The list of trees identified for planting is shown below.

Plantation Site	Fruit Assorte	Timber Indign's	Mangrove	Beach Forest	Coffee	Cacao	Bamboo	Rattan	Orname ntals	Coconu t	Total
Dimiao	25,750	61,750	54,000								141,500
Guindulman		10,000			18,333	5,000					33,333
Loay	5,246	3,497	70,000	7,500							86,243
San Miguel	38,900	42,500			18,750	18,750			1,400		120,300
Daus	2,445	2,444	14,000	1,500							20,389
Panglao	4,238	889	179	179					1,342		6,827
Tagbilaran	1,144										1,144
Cortes		7,778	70,000	10,833							88,611
Bilar	4,556	9,333					1,389	1,389			16,667
Baclayon	3,333	833		833						557	5,556
Loon	14,000			6,000							20,000
Maribojoc			30,000	7,500							37,500
Pilar	1,333	12,500			445	445	510	510			15,743
Alburquerque		5,000									5,000
Sikatuna	2,666				890	889					4,445
Sevilla	1,333				445	444					2,222
Alicia	3,750	8,750					510	510			13,520
Resettlement Site	3,573	510							511	510	5,104
GRAND TOTAL											624,104

Information on the location for planting.

There are 16 municipalities and 1 city identified as the locations for planting. The total area needed is 374.92 hectares. All the identified planting sites are government-owned lands. A Memorandum of Understanding will be signed between DOTC and LGU before the implementation of the reforestation project. The Table below shows the plantation sites and the required land area.

Plantation Site	Area (Has.)
Dimiao	84.57
Guindulman	28.5
Loay	29
San Miguel	103
Daus	13
Panglao	16.82
Tagbilaran	1.03
Cortes	18
Bilar	17
Baclayon	5
Loon	14
Maribojoc	8
Pilar	12
Alburquerque	3
Sikatuna	4
Sevilla	2
Alicia	11
Resettlement Site	5
GRAND TOTAL	374.92

4. Results of Environmental Monitoring

Item	Evaluation	Mitigation/Remediation Measures taken
Air Quality	<input type="checkbox"/> within set standards <input checked="" type="checkbox"/> exceeding set standards	Continuous monitoring
Water Quality	<input checked="" type="checkbox"/> within set standards <input type="checkbox"/> exceeding set standards	Continuous monitoring
Noise	<input type="checkbox"/> within set standards <input checked="" type="checkbox"/> exceeding set standards	Continuous monitoring. The access route for the deliveries of the construction materials shall also be considered once the deliveries will start.
Waste	<input checked="" type="checkbox"/> within set standards <input type="checkbox"/> exceeding set standards	Continuous monitoring
Odor	<input checked="" type="checkbox"/> within set standards <input type="checkbox"/> exceeding set standards	Continuous monitoring
Natural Environment	<input checked="" type="checkbox"/> impacts properly mitigated <input type="checkbox"/> mitigation measures need to be followed	Continuous monitoring
Heritage	<input checked="" type="checkbox"/> impacts properly mitigated <input type="checkbox"/> mitigation measures need to be followed	Continuous monitoring
Others	<input checked="" type="checkbox"/> within set standards <input type="checkbox"/> exceeding set standards	Continuous monitoring

The value of TSP/Fugitive Dust (ug/m³) at station No.3 last March 10, 2016 is more than the standard value. The wind direction shows that the dust did NOT come from the construction work of the project. However, the contractor shall conduct monitoring continuously and carefully.

Noise level of the measurement points exceeded the Country's Standards, the major reason is due to the vehicles (PUV's, private cars and tricycle) passing the area and not due to the activities at project site. In addition, the numbers of motor bikes used by the residents are also increasing. Noise level sampling station 1 and station 5 are located near the elementary school and near the main road of Panglao, Bohol. The noise level from the construction works shall be observed closely in the near future.

Attachment 1: Waste Management

1.1 January, 2016

Type of Waste	Generation Point	Category	Responsibility and methodology of Waste Management					Remark
			Collection on Site	Storage on site	Transportation to outside storage site	Collection	Dumping site/Recycling	
Domestic Waste	Working area at the Site	Residual waste (Package of lunch and snacks)	471kg	0	0	471kg	471kg	The landfill site is at Panglao Municipality
	Area of Temporary Facilities	Residual waste (Package of lunch and snacks)	65kg	0	0	65kg	65 kg	
Waste from Construction work	Area of Temporary Facilities	Metal	0 kg	0	0	0kg	0kg	Recycled
		Wood	596 kg	0	0	596 kg	596 kg	Recycled
		Cartons/Papers	191 kg	0	0	191 kg	191 kg	Recycled
		Plastic/Tin/Glass	58 kg	0	0	58 kg	58 kg	
	Working area at the Site	Excavated soil	0	0	0	0	0	Recycled

1.2 February, 2016

Type of Waste	Generation Point	Category	Responsibility and methodology of Waste Management					Remark
			Collection on Site	Storage on site	Transportation to outside storage site	Collection	Dumping site/Recycling	
Domestic Waste	Project site	Residual waste (Package of lunch and snacks)	873kg	0	0	873 kg	873kg	The landfill site is at Panglao Municipality
		Compostable	418kg	0	0	418kg	418kg	Recycled
		Plastic bottles	18 kg	0	0	18 kg	18 kg	Recycled
		Cartons	15 kg	0	0	15 kg	15 kg	Recycled
		Tin Cans	12 kg	0	0	12 kg	12 kg	Recycled
		Mixed hard Plastic	4 kg	0	0	4 kg	4 kg	Recycled

1.3 March, 2016

Type of Waste	Generation Point	Category	Responsibility and methodology of Waste Management					Remark
			Collection on Site	Storage on site	Transportation to outside storage site	Collection	Dumping site/Recycling	
Domestic Waste	Project site	Residual waste (Package of lunch and snacks)	1,439kg	0	0	1,439 kg	1,439 kg	The landfill site is at Panglao Municipality
		Compostable	680kg	0	0	680kg	680kg	Recycled
		Plastic bottles	16kg	0	0	16kg	16kg	Recycled
		Cartons	29kg	0	0	29kg	29kg	Recycled
		Tin Cans	8kg	0	0	8kg	8kg	Recycled
		Mixed hard Plastic	5kg	0	0	5kg	5kg	Recycled
Construction Waste	Project site	Used oil	2-drums	2-drums	0	0	0	
		Used Lead-Acid Battery	4 pcs	4 pcs	0	0	0	
		Busted Fluorescent Bulb	1 pcs	1 pcs	0	0	0	