

Environmental Monitoring Report of Formosa II

Construction Phase (2021 July to September)

Monitoring & Improvement Summary

Monitoring Item		Monitoring Site	Monitoring Result Summary	Measures & Effects
Under construction-Bird Ecology	Offshore Bird	Wind farm and its periphery	<p>1. Species composition: 5 families, 6 species and 36 individuals were recorded in this quarter.</p> <p>2. Protected species: 1 protected species was recorded, including Greater crested tern (II).</p> <p>3. Flying Altitude: 100% of recordings were below 25m, which is not within the sweeping zone.</p>	—
	Coastal birds	<p>1. Xihu National Wetland</p> <p>2. Periphery coast</p>	<p>1. 5 orders, 11 families, 33 species and 3,669 individuals were recorded.</p> <p>2. Protected species: 5 protected species were recorded, including Little tern (II), Greater crested tern (II), Chinese egret (II), Tern (III) and Chestnut munia (III).</p>	—
	Nighttime Radar	Wind farm located at Chunan (north coast of Chunggang estuary) and Houlong (Haowang Cape)	<p>1. Flying direction: The main flying direction is S.</p> <p>2. Activity mode: Overall, activity frequency for most time periods had less than 10 records. Max frequency occurred at the 0500 time period and had more than 10 records. 25.8% of the tracks pass the wind farm area.</p>	—

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Under construction-Fishery	3 survey lines in wind farm area	<ol style="list-style-type: none"> 1. Fish: 10 families, 10 species and 34 individuals. Thread-sail filefish takes the majority. 2. Fish egg: 10 families, 11 genera, and 726 eggs. Bumpnose trevally of Carangidae family takes the majority. 3. Fish larva: 17 families and 22 genera, 64 individuals. Oriental bonito of Scombridae family takes the majority. 	—
Under construction-Underwater Noise (including cetacean acoustic survey)	2 stations within wind farm area	<ol style="list-style-type: none"> 1. Whistles: No whistles were recorded this quarter. 2. Clicks: No clicks were recorded this quarter. 	—
Under construction-Marine Water Quality	10 stations within wind farm area	pH value is 8.1-8.2, water temperature is between 27.7-28.5°C, dissolved oxygen is 6.5 mg/L, salinity is between 33.4-33.6 psu, transparency is between 50-60 cm, Coliform group is between 10-95 mg/L, Chlorophyll a is between 0.5-1.8 mg/L, BOD is between 0.6-0.8 mg/L, SS is between 2.4-9.2 mg/L, fat is between ND.-0.9 mg/L.	
Under construction-Marine and intertidal ecology	10 stations within wind farm area	<ol style="list-style-type: none"> 1. Marine ecology: phytoplankton: 5 phylum, 35 genus, 72 species; Chlorophyll a is between 0.05-2.59 µg/L, zooplankton: 13 phylum, 35 genre; benthic organism: 9 orders, 11 families, 12 species. 2. Intertidal ecology: Benthic organism: 6 orders, 8 families and 10 species 	

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<p style="text-align: center;">Under construction- Terrestrial Ecology</p>	<p style="text-align: center;">Terrestrial power transmission system (including step-down station, land cable and its periphery)</p>	<ol style="list-style-type: none"> 1. Plantation: 97 families, 273 genera and 363 species were recorded. 6 rare species were recorded, including Lanyu Podocarp, Common garcinia, Myoporum bontioides, Seremban, Fan palm and Kandelia obovata, all are cultivated. 2. Mammal: 2 orders, 4 families, 7 species and 28 individuals of mammals; 1 order, 2 family, 7 species of bats were recorded. No protected species were recorded. 3. Amphibian: 5 families, 5 species and 92 individuals were recorded. No protected species were recorded. 4. Reptile: 6 families, 10 species and 84 individuals were recorded. No protected species were recorded. 5. Butterfly: 5 families, 12 subfamilies, 36 species and 391 individuals were recorded. No protected species were recorded. 6. Bird: 24 families, 41 species, and 924 individuals were recorded. 1 protected species Black-winged kite (II) was recorded. 	—
<p style="text-align: center;">Under construction- Intertidal Ecology</p>	<p style="text-align: center;">Planned important wetland in Chunan</p>	<ol style="list-style-type: none"> 1. Plantation: 8 families, 9 genera and 10 species were recorded. No rare species were recorded. 2. Fish: 5 families, 6 species and 186 individuals were recorded. No protected species were recorded. 3. Crabs and Shrimps: 5 families, 7 species and 179 individuals were recorded. No protected species were recorded. 4. Conch: 4 families, 4 species and 211 individuals were recorded. No protected species were recorded. 5. Aquatic insects (including Odonata): for Odonata, 4 families, 11 species and 77 individuals were recorded; for aquatic insects, 3 orders, 6 families, and 262 individuals were recorded. No protected species were recorded. 	—

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Under construction-Cultural Heritage (Archeology monitoring during onshore construction)	Excavation area	Archeology monitoring for this project has been completed as of December 11 th , 2020. In the future, archeology monitoring will be conducted during excavation when conducted.	—	
Under construction-Air Quality	1 station in residency around booster station	Day average value for TSP is 49 µg/m ³ , Day average value for PM ₁₀ is 23 µg/m ³ , Day average value for PM _{2.5} is 15 µg/m ³ , Hourly max average value for SO ₂ is 2 ppb, and day average value is 2 ppb. Hourly max average value for NO is 14 ppb, and day average value is 4 ppb. Hourly max average value for NO ₂ is 24 ppb, and day average value is 9 ppb. Hourly max average value for CO is 0.3 ppm, and average value in 8 hours is 0.3 ppm. Hourly max average value for O ₃ is 39 ppb, and average value in 8 hours is 36 ppb. Major wind direction is WNW, day average wind speed is 1.4 m/s. This quarter, all monitoring items comply with air quality standards. No abnormal issue is observed.	—	
Under construction-Noise Vibration	Noise Vibration	<ol style="list-style-type: none"> 1. 1 station in residency around booster station 2. 1 station in residency along land cable 3. Zhonggang Cihyu Temple 	<ol style="list-style-type: none"> 1. Noise: In all stations (residency around booster station, residency along land cable and Zhonggang Cihyu Temple), L_{day}, L_{night} and L_{midnight} are between 50.3-60.3 dB(A), 53.8-58.2dB(A) and 48.9-61.8dB(A), respectively. Value of each station/time section comply to Second Type of Construction Noise Control Standards near roads wider than 8m wide. 2. Vibration: In all stations (residency around booster station, residency along land cable and Zhonggang Cihyu Temple), L_{v10} day and L_{v10} night are between 30.1-37.5dB dB and 30.0-37.0dB, respectively. Value of each station/time section comply to Japanese Control Standards of First Type of Zone. 	—

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Construction Noise	1 station in booster station periphery (1m)	<p>The booster station for this project acquired an use permit in March 26th, 2021 (府商建字 No. 110046365). As there is no longer any construction activity for the booster station, personnel were sent to confirm that data for construction noise (in booster station periphery (1m), including normal and low frequency) cannot be recorded in this quarter (July-September 2021). The current condition of the booster station is as shown in Figure 1.2-1. The project will continue to send personnel to confirm the conditions.</p>	—
Under construction-Groundwater Quality	<p>1. Water output location</p> <p>2. Planned important wetland in Chunan</p>	<p>1. Water output location: The booster station for this project acquired an use permit in March 26th, 2021 (府商建字 No. 110046365). As there is no longer any construction activity for the booster station there is also no longer any wastewater discharge. Personnel was sent to confirm that data for groundwater (water output location) in July, August, and September cannot be recorded. The project will continue to send personnel to confirm the conditions.</p> <p>2. Planned important wetland in Chunan: pH value is between 7.8-8.4; BOD is between 24.1-55.5 mg/L; COD is between 94.3-196.0 mg/L, SS is between 17.3-40.0 mg/L, Ammonia nitrogen is between 0.10-0.13 mg/L, ADMI is between 71-91 g/L, fat is between 4.0-4.4 mg/L, water temperature is between 29.8-32.3°C, NO3-N is between 0.01-0.015, TP is between 0.086-0.115 mg/L, Dissolved oxygen is between 4.0-6.4mg/L. This quarter, BOD has exceeded class IV water body quality standards. All other monitoring items comply to class IV water body quality standard.</p>	<p>BOD measured in EIA and DA phases is also higher than class IV water body quality standard (referring to Protection Project of National Important Wetlands: https://wetland-tw.tcd.gov.tw/). It is inferred that the value is affected by organic pollutants in water from agriculture, water cultural, household and industry discharged into the wetland, which belongs to background value and is not caused by the construction of the Project.</p> <p>Monitoring will be continued to clarify the changes.</p>