



Appraisal Environmental and Social Review Summary

Appraisal Stage

(ESRS Appraisal Stage)

Date Prepared/Updated: 10/20/2025 | Report No: ESRSA04524

**I. BASIC INFORMATION****A. Basic Operation Data**

Operation ID	Product	Operation Acronym	Approval Fiscal Year
P509460	Investment Project Financing (IPF)	TRIP	2026
Operation Name	Thailand Resilient Transport Connectivity and Irrawaddy Dolphin Conservation Project		
Country/Region Code	Beneficiary country/countries (borrower, recipient)	Region	Practice Area (Lead)
Thailand	Thailand	EAST ASIA AND PACIFIC	Transport
Borrower(s)	Implementing Agency(ies)	Estimated Appraisal Date	Estimated Board Date
Kingdom of Thailand	Department of Marine and Coastal Resources, Department of Rural Roads	22-Oct-2025	22-Dec-2025
Estimated Decision Review Date	Total Project Cost		
08-Oct-2025	214,853,775.00		

Proposed Development Objective

To improve resilient transport connectivity to Lanta Island and across Songkhla Lake, and to strengthen the Government's capacity to implement the Dolphin Conservation Plan in Thale Luang

B. Is the operation being prepared in a Situation of Urgent Need of Assistance or Capacity Constraints, as per Bank IPF Policy, para. 12?

No

C. Summary Description of Proposed Project Activities

The proposed project aims to improve transport connectivity and its contribution to climate resiliency for the access to Lanta Island (or Koh Lanta) and across Songkhla Lake. The proposed Lanta Island bridge is a new 2-km bridge across the Chong Lat canal, connecting Koh Lanta (consisting of Lanta Noi Island and Lanta Yai Island) with the Krabi province's mainland. The two-lane bridge will have 3.75m traffic lane width, with 2.50m shoulder width, and a 1m wide colored median. The estimated project cost is 1,849.50 THB million (US\$ 51.4 million). The bridge will also serve as the infrastructure to carry other utilities, such as waster, electricity, and fiber optic internet – which will require collaborations with corresponding utility agencies. The Lanta Island bridge is expected to primarily reduce travel time



and transport costs and allow readier access to the mainland for the 35,000 people who live on Koh Lanta and for the 350,000 tourists who visit the islands each year. Farmers and fisherfolk who sell their produce to the mainland will be particularly benefited by lower marketing costs. The dominant mode of transportation to Koh Lanta from the mainland and vice versa is by ferry, an essential service that is operated by a private company through a concession contract that is renewed every three (3) years with the local government of Koh Lanta District. The ferry service has the physical limitations of the small pier account for long queues during the peak season (October-April). Ferry operations are also not coordinated with land and air travel in the mainland. The demand for ready transport to the mainland, in case of medical emergency, for instance, is unmet especially during off-hours (approx. 10pm-6am). The cost to hire the ferry for exclusive use is high at about 2,000 THB (US\$ 55) per trip. In addition, the ferry service gets disrupted during low tide or strong wind conditions. Based on stakeholder meetings during the mission, the absence of alternative modes of transportation to the ferry services is the main concern of the locals in Koh Lanta. The proposed Songkhla Lake bridge is a new 7-km bridge across Songkhla Lake. The two-lane bridge will connect the Chong Thanon District of Patthalung Province with the Krasae Sin District of Songkhla Province. The estimated project cost is 4,829.25 THB million (US\$ 134.1 million). The Songkhla Lake Bridge is expected to primarily reduce the travel time and transportation cost for the 308,000 local beneficiaries who live on both sides of the lake. The bridge can save up to 2 hours (or 80 km) of travel by road around the lake. This facilitates trade and reduces logistics costs between two sides of the lake (seafood from the east side; fruits and vegetables from the west side). A transport network modeling has been conducted to demonstrate the improvement of road network efficiency in Songkhla and Patthalung provinces. The bridge also establishes the emergency evacuation route in case of natural disaster, especially along the east shoreline (Krasae Sin District and Sathing Phra District of Songkhla Province) to rapidly evacuate to the area of Phattalung Province in case of disaster events. It also allows local population access to better healthcare facilities and universities in Songkhla City. Regarding the Irrawaddy dolphin in Songkhla Lake, a robust conservation program that combines enforcement (of effective dolphin protection measures and appropriate fishing regulations), incentives (through the provision of livelihood alternatives to fishing communities around Thale Luang), and research (to better understand the population and its ecology) is urgently needed to arrest and overturn the declining trend observed in the population over recent decades. Existing information and research on the dolphins is very limited and the risk of additional, human-induced dolphin mortalities at any given time is significant. The Government has prepared a long-term strategy in 2023 for the conservation of Irrawaddy dolphins in Thale Luang, as a tool to coordinate and align efforts. The strategy, prepared jointly by the three agencies, includes short-, medium-, and long-term measures, focusing on minimizing threats to the dolphins and their habitat, promoting alternative livelihoods, conducting biological and ecological research, and community engagement and outreach. An action plan for the initial five years of implementation has also been prepared, the Conservation Plan for Irrawaddy Dolphins in Songkhla Lake 2024-2028, or “Dolphin Conservation Plan” (DCP). The proposed project will support the implementation of the parts of the DCP. The project will achieve its objectives through the implementation of the following Components: Component 1: Transport Infrastructure Connectivity Improvement in Southern Thailand Component 2: Irrawaddy Dolphin Conservation and Ecosystem Management in Thale Luang Component 3: Institutional Development and Project Management The Government of Thailand (GoT) has conducted the feasibility studies and detailed designs of the two bridges. The Environmental Impact Assessments (EIAs) for the two bridges have also been completed and approved by the Environmental Impact Assessment Review Expert Panel under the Ministry of Natural Resources and Environment (MoNRE) and the National Environmental Board (NEB).

D. Environmental and Social Overview

D.1 Overview of Environmental and Social Project Settings



The two project locations – Songkhla Lake and Lanta Island – are in Southern Thailand, about 100 km and 160 km, respectively, from the Thai-Malay border. The Songkhla site in Phatthalung and Songkhla Provinces is in the coastal lagoon system of the western gulf of Thailand, while the Lanta site in the Krabi Province is on the eastern coast of the Andaman Sea. They are about 120 km apart (200 km by road). Both locations are in the wet, tropical monsoon climate zone (Köppen-Geiger climate classification) with mean annual temperatures of about 28 degrees C (WB Climate Portal) and total annual precipitation near 2,000 mm (weatherspark.com), both greater than the national averages of about 26 degrees C and 1,500mm. The provinces are lithologically composed of sedimentary rock, mainly limestone and the landscape is dominated by rubber, palm oil and other plantations and fields.

There are five protected areas in the project area of influence. Potentially affected directly are two Non-Hunting Areas (one at each bridge location), one mangrove forest designated by a Cabinet Resolution and one reserve forest. Indirectly affected are the Mu Koh Lanta National Park on Koh Lanta Yai and adjacent islands and seascape. The whole area of Lanta district is also under the Krabi Environmental Protection Zone designated by MONRE. Based on IBAT screening, the Na Muang Krabi Key Biodiversity Area (KBA) is within 20 km of Lanta Island Bridge, and the Thale Sap Songkhla KBA is within 20 km of Songkhla Lake Bridge. Songkhla Lake is also internationally recognized as a Birdlife Important Bird Area (IBA).

The Non-Hunting Area in Songkhla lake (Thale Luang Non-Hunting Area) is home to a small and declining critically endangered sub-population of Irrawaddy dolphins occupying an area of deeper water (dolphin core zone) about 8 km north of the proposed bridge. This sub-population has declined sharply from more than 100 dolphins in the 1990s to an estimated 14-20 and is thought to have continued to decline since. The sub-population has been classified as critically endangered on the IUCN Red List of Threatened Species.

Administratively, the Songkhla project is under the Phatthalung and Songkhla Provincial Administration Offices (PAO) while the Lanta project is under authority of the Krabi PAO. The Songkhla Lake Bridge links the Khao Chaison district in Phatthalung with the Krasae Sin district in Songkhla. The Lanta Island Bridge will connect the Koh Klang and Koh Lanta Noi sub-districts in the Koh Lanta district of Krabi.

Of the three provinces hosting the bridge projects, Songkhla has the largest population at 1.431 million inhabitants in 2021, compared to Phatthalung which had 0.522 million. Population growth rates in Songkhla and Phatthalung tend to be lower than the regional growth rate (0.23 percent) at 0.20 percent and -0.10 percent, respectively. In 2021, population density estimates stood as follows: Songkhla (194.53 persons/sq. km) and Phatthalung (152.59 persons/sq. km). Krabi population density in 2019 reached 101.24 persons/sq. km. Employment rates were pegged at 91 percent and 78 percent of the labor force for Songkhla and Phatthalung in 2021, respectively versus the regional rate of 80 percent. Songkhla, Phatthalung and Krabi provinces ranked 30th, 56th, and 66th out of 77 Thai provinces in the UNDP composite Human Achievement Index in 2017.

D.2 Overview of Borrower's Institutional Capacity for Managing Environmental and Social Risks and Impacts

The key Borrower institution and main Executing Agency (EA) for the project is the Department of Rural Roads (DRR) of the Ministry of Transport. They will collaborate on environmental and social issues, particularly dolphin conservation and fisherfolks livelihoods with the Department of Marine and Coastal Resources (DMCR), the Department of National Parks, Wildlife and Plant Conservation (DNP) of the Ministry of Natural Resources and Environment (MONRE), and the Department of Fisheries (DoF) of the Ministry of Agriculture and Cooperatives. A Memorandum of Understanding (MOU) was signed in November 2023 to govern the departments' collaboration and remains in effect.



Interdepartmental coordination on the cross-cutting issue of dolphin conservation has been historically insufficient due to lack of a shared planning platform and severely limited resources.

All departments are well established with permanent presence at the provincial levels. DRR has an extensive track record of developing similar large infrastructure projects throughout the country in compliance with national environmental and social regulations. DRR does not have dedicated ES staff or an ES unit, however, the ES aspects of the project have been closely and directly addressed by senior technical leadership. DRR has also cultivated a group of dynamic engineers with detailed understanding of the environmental and social mitigation measures and ESF documentation required for the project. For detailed ES work, DRR relies on international and national external experts and national environmental authorities.

DMCR, DNP and DOF are well experienced in delivering government programs within their respective coastal resources, protected areas, and fisheries management programs in compliance with the relevant national requirements for environmental and social management and engagement of stakeholders. However, all Departments are new to the Bank's ESF and will require capacity strengthening and incremental E&S staffing.

For Component 1, the DRR Project Management Unit (PMU) will have one part-time senior ES specialist to be based in Bangkok to integrate inputs from the bridge sites and provide overall guidance, while one ES specialist will be recruited for Lanta Island Bridge and one ES specialist will be recruited for Songkhla Lake Bridge. The Thai Engineering Institute will be consulted by DRR to seek support on Occupational Health and Safety (OHS) specialist for the bridges construction. DRR is also considering adding an ES Consultant to the Construction Supervision Acceptance Committee.

For Component 2, the ES specialists will need to have a social or community development profile for the community-based engagements. For the DMCR in Songkhla, the Director of the Songkhla Research Center will oversee ES risk management and serve as focal point for the component's Grievance Redress Mechanism (GRM) with support from one assigned or hired ES specialist. For the DNP-Thale Luang NHA, one ES specialist will be assigned or hired. For the DOF, given the project area covering two provinces, two ES specialists (one located in each province) will be required. Bank will support the implementing agencies in preparing the Terms of Reference (TOR) for ES staff. At this stage of project preparation, the Bank is working with ES focal persons assigned by each of the four agencies. All E&S staff are expected to be appointed within one month of the project effective date and thereafter maintain the staffing throughout Project implementation. For all staff responsible for E&S risk management, training and capacity building will be provided as part of the Bank implementation support.

There is well-developed and mainstreamed departmental technical capacity to carry out the environmental and social assessment (ESA) functions required by national regulations, including a robust engagement of stakeholders. Detailed EIAs including mitigation and monitoring measures as per applicable Thai EIA regulations have been prepared, consulted, disclosed, and approved, with approval conditions requiring specific mitigation measures, by the National EIA Expert Panel and the National Environment Board (NEB) prior to Project preparation. The ESA practices, however, vary in important respects from those under the ESF, e.g. regarding the consideration of indirect and cumulative impacts, approaches to land acquisition, or integration of environmental and social considerations into the bidding and project execution process.

II. SUMMARY OF ENVIRONMENTAL AND SOCIAL (ES) RISKS AND IMPACTS



A. Environmental and Social Risk Classification (ESRC)

High

A.1 Environmental Risk Rating

High

Environmental risk is High. Under Component 1, they arise from the construction and operation of both the Lanta and Songkhla Lake Bridges. The main potential environmental risks and impacts include (i) impacts to critically endangered sub-population of Irrawaddy dolphin (Thale Luang); (ii) clearing and converting areas of modified vegetation, shrimp ponds, mangroves, forest and wildlife habitat for bridge landings, connecting ramps, construction camps, and auxiliary structures; (iii) occupation of benthic habitat by bridge pilings; (iv) occupation of peri-urban land by disposed dredging material; (v) soil, lake and sea bed erosion; (vi) disturbances from aggregate extraction; (vii) construction and transportation machinery noise; (viii) aquatic noise; (ix) visual impacts; (x) pollution from disposal of construction and domestic waste; (xi) impacts to water quality and lake/marine aquatic life through piling, operation of construction barges and potential spills of fuel and lubricants; (xii) dust, noise and machinery emissions impacts on local air and noise quality; and (xiii) occupational and traffic accidents. Based on the EIAs, potential environmental impacts and risks are low to moderate and are readily avoided or mitigated through the bridge alignment avoiding sensitive environmental features (e.g. coral and seagrass at Lanta), construction methods (pile drilling rather than pile impact driving), and standard construction mitigation and monitoring measures as per the EIAs. However, potential construction impacts, if not carefully mitigated, can affect the critically endangered Irrawaddy dolphins sub-population and its habitat. This factor as well as the complexity of mitigating the extinction risks through community-based dolphin conservation drives the risk classification to High. There is a risk that misinformed or ineffective efforts at saving the sub-population of Irrawaddy dolphin will fail to create conditions for arresting the decline. There is also a risk that the conservation measures adversely affect local livelihoods by reducing access to fishing. The magnitude of risk arises primarily from the extremely small size of the dolphin sub-population that may become non-viable. Cumulative impact assessment (CIA) has been conducted as part of the Supplementary Lenders Information Package (SLIP) following the IFC Good Practice Handbook on Cumulative Impact Assessment. The CIA assessed and evaluated the project's contribution to cumulative impacts on selected Valued Environmental and Social Components (VECs) in combination with other projects and activities within defined spatial and temporal boundaries. For Lanta Island Bridge, seven VECs were considered, including Land Use, Coral Reef, Seagrass, Mangroves, Marine Mammals (Dolphin), Water Quality and Protected Areas. For Songkhla Lake Bridge, three VECs were considered including fisherfolk livelihood, water quality, and Irrawaddy Dolphin. Cumulative impacts were assessed to range from moderate to high, reflecting the baseline of pre-existing transport access, agriculture, fishery, and the importance of nature and culture-based tourism.

A.2 Social Risk Rating

Substantial

The social risk rating is substantial largely due to access restrictions, community and occupational health and safety and possible displacement of fishers from Component 1 and 2 activities. For Component 1, physical survey conducted along the bridge right-of-way (ROW) and construction safety zone for the Songkhla Lake Bridge project in July 2023 revealed key impacts within the ROW on fish-aggregating devices (FADs) totaling 58 traps and 32 single traps. Other affected persons are estimated at 40-50 fishers in the Phatthalung side as provided by the village leader and local fisheries officials interviewed during project preparation. Rapid assessment of fishing communities in Thale Luang conducted from July to September 2023 suggests use of gillnets, regardless of mesh size, by 40-76% of fishers surveyed in 12 of 15 survey locations. The exact number of affected fishers could not be determined and will be



further assessed during implementation prior to implementing the livelihood activities. Land process review conducted for three plots of land in the Lanta Island Bridge (1 plot) and Songkhla Lake Bridge (2 plots) completed in October 2023 as part of social due diligence assessment, showed the compliance of the land donation processes to national laws and ESS5 requirements. The plots are under the legal control of DRR. On the Lanta Island Bridge, the closure of ferry operations and the impact on the ferry operator and its 100-150 workers have been assessed. The existing ferry operations are expected to continue until the bridge is operational. The ferry operator has an existing concession contract with the Krabi Provincial Administrative Office, and this is expected to be renewed while the bridge is being built. In February 2023, dialogue among the EA, ferry operator and Koh Lanta and Krabi district offices initiated the process of developing transitional support and other mitigation measures when the ferry is discontinued. In the Stakeholder Engagement Plan (SEP), consultations during implementation will help determine appropriate and adequate transitional support to ferry workers in accordance with national laws. Structures added to the Lanta bridge design in April 2023 initially warranted the preparation of a Resettlement Plan (RP) due to impacts on shopkeepers and small businesses. By June 2023, DRR modified the design to avoid land acquisition and destruction to their livelihoods. A Resettlement Framework (RF) was prepared in October 2023 and disclosed prior to appraisal to address any potential land acquisition and involuntary resettlement during implementation. The risks associated with labor and working conditions are considered low, i.e., low labor influx and national occupational health and safety (OSH) regulations have been included in the LMP to govern land and water-based construction activities. Community health and safety risks are deemed low to moderate as risks associated with pollution are mitigable while sexual exploitation and abuse/sexual harassment (SEA/SH) risks are considered low using the Bank's SEA/SH screening tool and further assessed during the SLIP document preparation. The risk rating will be revisited before construction as reliable information is generated on the employment and size of migrant workers for both bridges, including the engagement of women and community workers in Component 2. There are no cultural heritage sites or indigenous groups directly affected by both bridge projects, including Component 2 activities. Although risks associated with the patrol and enforcement of the new zoning in Thale Luang are anticipated to be low, measures such as the preparation and implementation of a standard procedure for patrolling, improving existing codes of conduct, and providing training for rangers and patrol officers on those new standard procedures and codes, among others will be implemented to enhance the patrolling and enforcement of new dolphin zones in the Thale Luang NHA.

B. Environment and Social Standards (ESS) that Apply to the Activities Being Considered

B.1 Relevance of Environmental and Social Standards

ESS1 - Assessment and Management of Environmental and Social Risks and Impacts

Relevant

Environmental. The standard is relevant for assessing and managing a broad range of aforementioned potential environmental risks and impacts common to greenfield road bridge construction and operation in a modified rural in the wet tropics of Thailand. These risks are assessed in the detailed full EIAs of both bridges approved by the EIA Review Expert Panel and the NEB as largely low to moderate. This is due to the choice of design alternatives that avoid sensitive environmental features, the selection of construction methods that minimize impacts, and the inclusion of supplemental assessments and management and monitoring measures that stem from incremental ESF requirements, such as critical habitat, cumulative impacts, and underwater noise assessments. Key activities to mitigate bridge construction and operation impacts on the Irrawaddy dolphins include: (i) establishing real-time visual and acoustic detection of dolphins to provide early warning of dolphin presence near the construction site; (ii)



establishing a dolphin mitigation zone, comprising of an observation zone and a shutdown zone, and establishing a specific work stoppage protocol based on international best practices to protect dolphins present near construction activities; (iii) monitoring water quality and other key parameters during bridge construction; (iv) implementing all in-water bridge pier construction activities (piling, concreting) inside a silt curtain fully enclosing the work site from the surrounding water column to minimize turbidity and pollution, and (v) monitoring the implementation of the prescribed mitigation measures by an independent observer such as a local university or NGO (as per recommendations of the Dolphin Expert Roundtable). Management and monitoring of potential impacts is outlined in the costed Environmental Management Plans and Environmental Monitoring Plans included in the EIAs and refined with supplementary lenders information. Based on the planned management and monitoring measures, contractors will prepare detailed Contractor ESMPs as required by the 2021 Standard Procurement Documents for Works and emphasized with the use of E&S rated procurement criteria. To improve accessibility of the EIAs to stakeholders, address the gaps between the national and ESF requirements, and facilitate meaningful information disclosure and engagement of stakeholders, a Supplementary Lenders Information Package (SLIP) has been prepared for each bridge, consulted on and disclosed. SLIP includes (i) extended Non-Technical Summaries (NTSs), (ii) Critical Habitat Assessments, (iii) Cumulative Impact Assessments, (iv) Environmental and Social Management Plans, (v) Labor Management Procedure, (vi) Resettlement Framework, and (vii) Stakeholder Engagement Plans for both projects as well as (viii) Underwater Noise Assessment, (ix) Dolphin Conservation Plan and (x) Process Framework for the Songkhla project. The EIAs and SLIPs had been disclosed in May 2024 and re-disclosed locally and on the World Bank public website in May 2025 prior to appraisal. SLIP instruments, along with the national EIA are compliance documents as per the loan agreement. Cumulative impacts are considered high with respect to the dolphins at Songkhla lake and the marine environment, water quality and protected areas at Lanta island. Uncertainty in estimating and managing risks to dolphins translates into elevated residual risks and will require close monitoring and adaptive management. The local agriculture, fishery and tourism-based economy is not expected to shift towards rapid industrialization or urbanization because of project transport services improvement. The local authorities emphasize development of nature- and culture-based tourism which will motivate improved environmental protection. Minor disconnection and relocation of utility lines described in the EIAs in relation to bridge development constitutes Associated Facilities. Consistency with ESF requirements will be achieved through application of national OHS and stakeholder engagement measures. Social. Other than those studied in detail in the government EIAs, the nature and scale of major social risks and impacts assessed before appraisal are the land requirements for the bridge projects, the impact on existing ferry services in Lanta Island, the impact of bridge construction in Songkhla on fisherfolks using and traversing the bridge alignment, and for Component 2, the impacts to fisherfolk of rules introduced in the government's Thale Luang Non-Hunting Area (NHA) Management Plan and the Dolphin Conservation Plan that the Bank will be supporting. Social due diligence have been conducted on activities that could pose significant risks and impacts to project-affected parties, including reputational risks to the Bank. Private lands donated to the landing areas in Lanta Island and Songkhla Lake Bridge projects were subject to a land process review to assess compliance with national regulations and ESS5 requirements on land donation activities. The additional structures planned for the Lanta Island bridge project underwent a redesign by the DRR to avoid the removal of a multipurpose facility that currently houses several shop concessionaires contracted by the Krabi Provincial Administrative Office (PAO). Meanwhile, dialogues with the operator of existing ferry services have taken place around transitional support to cushion the impact to ferry services and workers of the Lanta Island Bridge opening. Physical survey of fish-aggregating devices (FADs) located along the alignment were conducted, including consultations made with fishing villages to determine how to manage temporary obstruction of access to fishing grounds during construction. The NHA-MP rules consisting of zoning adjustments and fishing gear restrictions have



been introduced only in February 2024 although the Bank already commissioned a rapid assessment in June 2023 of affected fishing communities to ascertain possible impacts to fishing practices and livelihoods. The results of the social due diligence activities completed, including the corresponding E&S instruments developed, are part of the SLIP except for the land process review which is an internal report. The Client has prepared a draft Environmental Social Commitment Plan (ESCP) that sets out measures and actions required for the project to achieve compliance with the ESSs over a specified timeframe. The ESCP can be adjusted during the project cycle in line with the evolution of environmental and social risk and impacts. Additional assessment of the risks associated with patrolling and enforcing access restrictions under the project have been conducted. Based on this assessment, risks associated with the enforcement of the new zoning in Thale Luang are anticipated to be low. Gaps filling measures provided include the development and implementation of a standard protocol for patrolling for both DOF and DNP, and adopt an updated code of conduct, additional training to patrol officers and improved reporting standards during patrols. These requirements have been included in the ESCP to be conducted during implementation. The relevant ES instruments (SEP, and PF) will be revised and re-disclosed three months after project effective date.

ESS10 - Stakeholder Engagement and Information Disclosure

Relevant

As part of the EIA approval process, extensive stakeholder consultations were conducted by the EA from July 2020 to February 2021. These consultations took place in accordance with the guidelines on public participation and EIA information disclosure set by the country's Office of Natural Resources and Environment Policy (ONEP) and the Department of Highways, and the Order of the Prime Minister Office Regarding Public Consultation. Based on the documentation presented in the EIAs, the EA applied a range of engagement strategies and approaches, from public hearings to focus group discussions (FGDs) to household surveys and the dissemination of project /EIA non-technical summary, brochures, exhibition boards, and videos. The consultations engaged seven categories of stakeholders, described as follows: (i) affected persons; (ii) persons responsible for development of the EIA report; (iii) persons responsible for considering the environmental impact assessment report; (iv) government agencies at various levels; (v) private organizations on environmental protection, non-governmental organizations (NGOs), academic institutions, and independent scholars; (vi) media; and (vii) the general public. The Bank convened a Dolphin Expert Roundtable Consultation Meeting January 23-24, 2023, in collaboration with the IUCN Cetacean Specialists Group, WCS, WWF, Thai Whales, US Marine Mammals Commission, the Songkhla, Kasetsart and Chulalongkorn Universities, Lake Chilika Development Authority as well as DMCR, DRR and independent marine biology experts to discuss the proposed Songkhla Lake Bridge in relation to the Irrawaddy dolphin. The conclusions from the meeting were that while the dolphins are vulnerable to extinction, there is considerable momentum and interest in saving them and the bridge project represents an opportunity to boost their conservation. Experts provided a set of detailed recommendations centered on addressing the information and data gaps about dolphin habitat and population, eliminating harmful fishing gear, and enhancing specific construction mitigation measures. Information on the bridge EIAs and results of the stakeholder consultations were disclosed on the Project websites during July 2020 – February 2021 (for Songkhla Bridge) and August 2020 – February 2021 (for Lanta Island Bridge) as part of the EIAs preparation and consultation processes. The Songkhla Lake Bridge and Lanta Island Bridge EIAs had been reviewed and approved by the National EIA Review Expert Panel on October 29, 2021, and March 4, 2022, and by the National Environmental Board (NEB) on August 25, 2021, and January 30, 2023, respectively. The final EIA reports were submitted to ONEP for disclosure on its EIA information Center (Smart EIA) per ONEP's Information disclosure guideline in March and April 2023 for Lanta Island Bridge and Songkhla Lake Bridge EIA, respectively. SEPs have been prepared for the Lanta Island bridge project (September 2023) by DRR, and the Songkhla Lake Bridge project (March 2024) by DRR and DMCR to



expand consultations with other project-affected groups that were not as extensively consulted as in the previous rounds of consultations. The SEPs contain appropriate communication and participatory strategies and corresponding consultation timetables, resources, and responsible parties for implementation. Stakeholder consultations led by DRR for Component 1 and DMCR for Component 2 have covered an extensive array of stakeholders, from provincial and district administrative offices, the ferry operator and ferry workers in Lanta, village leaders, fisherfolk associations, local business owners, structure owners and users, commuters, public health workers, the academia, mass media, community-based organizations and NGOs. The list of stakeholder groups engaged are in the respective Lanta and Songkhla SEPs. The DRR has prepared project-level grievance redress mechanisms (GRM) for both bridges while DMCR/DOF/DNP have designed a specific GRM for Component 2. For both bridge projects in Component 1, the budgets for operationalizing the GRM are included in the ESMP monitoring and implementation budget. ESF documents for the Songkhla Lake and Lanta Island bridge projects were disclosed in October 2023 on the DRR website. Related documents including the Dolphin Conservation Plan are also posted on the DMCR website. Public consultations on the ESF documents for the Songkhla Lake bridge project were completed on 21-22 November 2023. The consultation for the Lanta Island bridge project was held on May 1, 2024. The Final SLIPs, including the SEPs, and Thai EIAs had been disclosed in May 2024 and re-disclosed locally and on the World Bank public website in May and October 2025. The SEPs will be updated, as needed, three months after project effective date to enhance the patrolling and enforcement of new dolphin zones in the THL NHA.

ESS2 - Labor and Working Conditions

Relevant

ESS2 is relevant. Component 1 will have 514 project workers, consisting of 21 direct workers in the PMU that are shared between Lanta Island and Songkhla Lake bridges: 229 project workers in Lanta and 264 project workers in Songkhla. Contracted workers will be procured for construction work and construction supervision. Alternative livelihood activities under Component 2.2 will rely on community workers. Workers' health and safety in construction work areas on land and sea are key sources of risk. A construction camp will be built for Lanta Island Bridge, and construction workers for Songkhla Lake Bridge will be split evenly between camps located in Phatthalung and Songkhla Provinces. There will be substantial risks in occupational health and safety (OHS) such as working with heights and heavy machinery, sharp tools, electrical equipment, exposure water safety-related risks, and increased transmission of communicable diseases. These activities have the potential to cause occupational accidents and injuries to construction workers. Occupational health risks for both projects include air quality, noise, vibration, water quality, occupational health risk, influx of migrant workers, adequacy of personnel and medical and healthcare facilities, traffic accidents, waste management, water supply, and spread of communicable diseases. Water-related safety risks are relevant because the bridge projects will involve construction activities over water and underwater and some of these activities may involve labor contracted to third parties. Each of the above risks during the construction phase was individually assessed to be of moderate significance (pre-mitigation) to worker and health. For both projects, the health risk matrix and assessment will be updated, as needed, during construction to include emerging risks associated with construction related work at sea and the health risk matrix associated with COVID-19 and other communicable diseases. During the implementation phase, transportation, regular maintenance, scheduled and special maintenance, rehabilitation and/or emergency work will take place. These activities have the potential to cause accidents in a similar manner to construction, although each activity will be much smaller in extent and the significance of the impact is assessed as low. Comprehensive occupational health safety measures will be prepared and implemented by the contractor prior to commencement of site preparation to prevent and reduce the occurrence of accidents and incidents. PPE such as safety helmets, ear plugs, gloves, masks, and safety shoes will be



provided to construction workers and staff by the contractor. The use of PPE will be enforced throughout the construction period. Safety policies for inclusion into construction plans and safety control measures for each stage of construction will be established prior to commencement of the works. Safety training on the use of all equipment will be provided by the contractor. Occupational health and safety inspectors for all construction sites will be assigned by the DRR prior to commencement of the works. Contractors will take measures to prevent contamination of facilities and the environment by toxic substances. Information on disease prevention and emergency contact information will be provided to workers. Construction camps will be provided with adequate water supply and reserve capacity, handwashing stations or hand sanitizers at multiple locations throughout the construction site, and sufficient fire extinguishers in the worker's accommodation and office. Contractors will comply with hygiene and environmental sanitation guidelines for construction camps, implement health screenings such as temperature checks and symptoms of workers and visitors, and establish communication channels between workers, supervisors, and management to report concerns, ask questions, and share COVID-19 as needed, based on prevailing information. Camp accommodation will meet WBG group standards. The number of construction workers to be hired is small compared to the size of the local population and workers will be sourced mostly from the local communities and adjoining provinces. The risks of labor influx, therefore, are considered low. Thai labor laws contain specific provisions addressing risks associated with child and forced labor and these risks are therefore assessed as low. The minimum working age in Thailand is 15 years and a regulation exists prohibiting the employment of children under 18 years in hazardous work. Migrant workers in Thailand are subject to the same labor laws as Thai nationals. The EA is working to define a local hiring strategy to be included in contractual agreements to give priority employment to locals including ferry workers found eligible and qualified to support construction activities. Construction worker camps will be located in areas that are accessible to public transportation and basic services; namely, the Krabi mainland (Lanta Island bridge) and in the Songkhla and Phatthalung provinces (Songkhla Lake Bridge). As such, no major accessibility issues are foreseen as the workers' camps are near public health, commercial and institutional services. Despite the low risk of labor influx, the potential of the project still hiring migrant labor, especially in the Lanta Island Bridge project, has been considered as 'moderate risk' in the EIA. The risk rating was based on police reports of illegal activities associated with migrant laborers in the area although actual statistics or number of incidents were not presented. Several preventive actions were identified in the EIA to reduce the risk level from moderate to low. Taken collectively, these mitigation measures tend to lower the risk of labor influx as well as related risks to community health and safety inclusive of SEA/SH. These preventive actions consist of priority hiring of local labor, background checks during recruitment, strict regulation of workers' activities and management of workers' camps, information and education campaigns on disease and crime prevention, and the setting up of GRM desks in project construction sites. The project complies with all Thai labor laws covering labor relations, OSH, anti-child and forced labor, migrant and labor related grievances. The Department of Labor Protection has labor inspectors in most provinces, including the Southern region where the bridge projects are located. Labor Management Procedures (LMP) covering Component 1 have been prepared by the EA and cleared by the RSA in September 2023. Submitted as part of the SLIP, the LMP includes provisions to promote the hiring of local labor, and guidelines to mitigate any risk associated with OHS, child labor, forced labor and SEA/SH. The LMP will be reviewed and updated as a commitment of the EA under the ESCP. A more detailed LMP will be prepared as part of the contractor ESMP prior to the start of civil works for Component 1 after the project contractor has determined the total number and type of project workers, including primary supply and migrant workers, and the location of workers' camps have been finalized. Updates will include a workers' code of conduct and a detailed GRM for project workers. Component 2's labor requirements will be incorporated in the LMP. Labor requirements will likely yield direct, contracted and community workers although labor-related risks will not significantly differ from Component 1 and will be covered by the measures and actions



provided for the latter. The assessment of labor risks for Component 2, nevertheless, considered the context of the fishing communities including issues that communities may have on non-local labor. Mitigation measures to address key labor risks under component 2.2 on alternative livelihood activities will be developed by the concerned agencies and incorporated into the updated LMP following ESS2 guidance.

ESS3 - Resource Efficiency and Pollution Prevention and Management

Relevant

This standard is relevant. Construction activities have potential to affect local water quality through dredging, piling and operation of construction barges and platforms, to affect local air and noise quality through emissions from construction and transport machinery, and to generate construction waste and municipal waste from labor camps. There will also be a considerable volume of dredged and excavated material for disposal, and potentially hazardous waste of spent lubricants, fuels, and drilling liquids. The EIAs assessed these impacts for construction and implementation phases based on the methodology included in the EIA. For both Lanta Island and Songkhla Lake Bridges, negative impacts to air quality during construction were rated as low significance pre-mitigation. During the implementation phase, traffic volume is expected to increase each year with corresponding increases in emissions of pollutants such as, PM, CO and NO₂ from traffic on the bridge. However, emissions of each of these pollutants are expected to remain within the national air quality standards. The noise impact of construction activities was assessed as negative with a low significance pre-mitigation for the Songkhla project. It was assessed as moderate for the Lanta Island Bridge project. Baseline noise level in all locations monitored complied with the national noise standards. During the construction phase, solid waste production will amount to 0.17 tons per day. Solid waste and wastewater, if not appropriately treated or managed, can contaminate the environment, particularly water sources. The significance of waste management impacts is assessed as moderate. During implementation, the Lanta Island Bridge project will provide toilets and parking spaces for tourists to visit the viewpoints on the bridge, and the significance of this impact pre-mitigation is estimated as moderate. Considering extensive construction and transportation in and over water, particular attention will need to be paid to avoiding and managing potential spills in the aquatic environment. In the Lanta Island Bridge project, marine water quality could be impacted during the construction phase by increased turbidity resulting from the installation of bridge pier structures and approach slabs. Construction activities may lead to increased soil erosion and run-off into the sea. Drainage from the maintenance facility, construction sites and workers camp can also introduce oil and other contaminants into coastal water sources. The impacts will occur over a limited period and will be localized to specific areas in response to tidal sediment transport, based on the oceanography assessment. The significance of this impact pre-mitigation is assessed as moderate. For the Songkhla Project, water quality of Songkhla Lake will likely be affected during construction by increased turbidity and sediment buildup caused by soil erosion. The impact is temporary but highest during the rainy season when there is increased runoff. The water quality of Songkhla Lake could also be affected through contamination of oil from the cleaning of equipment and machinery but this will be mitigated, and no significant impacts are anticipated. Water quality could be affected by boats and barges using temporary harbors established on each side of the bridge, however no significant impacts are expected. During the implementation phase, impacts to both Lanta Island and Songkhla Lake Bridges may occur from dust or oil leaked from vehicles that washes into the sea. The bridge design will capture such contaminants. Most vehicles are regularly maintained and undergo annual checks, and the probability of oil leakage is low. No significant impact on marine and surface water quality for both Lanta Island and Songkhla Lake bridges is therefore expected during implementation. There is a need for use of natural resources (sand, concrete, laterite, and water) for construction which could adversely affect the local environment in the surrounding areas. The EIAs identified potential sources of raw materials, which are existing facilities already in



operations. Potential risks and impacts will be managed through the prepared mitigation measures included in the ESMPs included in the EIAs and the SLIP, and further detailed in Contractor ESMPs for both projects during construction and implementation. A 30-year GHG emissions assessment was conducted for both the with-project and without-project scenarios during project preparation. The project is expected to reduce fuel consumption and GHG emissions by shortening travel distances in Songkhla and eliminating idling and diesel-powered ferries at Lanta. However, over time, increased traffic volumes are may result in higher GHG emissions. Reporting of net GHG emissions during project implementation is included in the ESCP.

ESS4 - Community Health and Safety

Relevant

The standard is relevant. Community health risks have been assessed for both the Lanta Island and Songkhla Lake Bridge projects against the impacts identified within the EIA including air quality, noise, vibration, water quality, occupational health risk, influx of migrant workers, adequacy of personnel and medical and healthcare facilities, traffic accidents, waste management, water supply, and other communicable diseases. Air quality emissions do not exceed minimum standards, however air quality could impact the physical and mental health of residents within 500 m of project activities. Communities are unlikely to experience acute impacts from the vibration during construction, but communities within 500 m of construction activities such as Lam Yaang Village could be exposed to noise levels that exceed standards. Increased demands on health services due to use by project workers coupled with an insufficient capacity to manage patient needs can result in adverse consequences to the physical and mental health of adjacent communities. This risk is assessed as moderate. Workers may face a risk of contracting communicable diseases and could spread this in nearby communities. This risk is assessed as moderate significance to community health. The relocation of public utilities, development of access roads and transportation of heavy machinery and equipment could cause accidents resulting in injuries, deaths, and loss of assets for road users and pedestrians throughout construction. Other construction facilities such as worker's camps, concrete plant, asphalt plant, maintenance facility and land-based bridge components will be concentrated in the project area and will not impact the safety of road users or pedestrians. The risk is temporary, but the consequences are severe, and the negative impact is assessed as of moderate significance. Bridge construction could pose water and road-related safety risks to the community in the form of the following: (i) collisions at sea as floating construction work areas and materials sourcing by sea may impede on the routes of fishing boats and ferry operations; (ii) disruptions on ferry use patterns for vehicle users and commuters including water-related safety risks (e.g., falls, drowning) with the relocation of piers and mooring docks; and (iii) increased road traffic as construction- related transport (e.g., trucks conveying materials, workers, soil) will congest major roads, especially in the Lanta Island Bridge where alternative land routes are absent. During implementation, the Songkhla Lake Bridge will create connectivity, elevate the safety standard of the transport network and shorten the transportation distance and time between Phatthalung Province and Songkhla Province. This will reduce the likelihood of accidents from land transport for the public resulting in a positive impact. However, once the bridges are operational, major project-related risks will likely result due to the increased volume of vehicles and the exposure of the public to road-related accidents and hazards. With strong community support for both projects, the hiring of security personnel to watch over workers' camps, project equipment and construction work areas is expected to be low risk. The risk associated with the use of security personnel could range from increasing demand for accommodation and services to raising GBV risks and possible disputes with locals, village leaders or police in carrying out their functions. These risks could be mitigated through local hiring, training and through referrals, or from third-party service providers in the area. The number of security personnel to use will be determined by the IA during implementation if it becomes necessary. The EIAs for both projects include several road



safety improvement measures and activities that will be integrated in Components 1 and 3. The technical design will appropriately address road safety risks while the bridge design will consider universal accessibility principles. Detailed mitigation measures for water-related and road safety risks will be addressed in the C-ESMP.

ESS5 - Land Acquisition, Restrictions on Land Use and Involuntary Resettlement

Relevant

ESS5 is relevant. Due diligence on three land plots donated to the project have been completed in October 2023 through a land process review. The lands donated to the project total 12,172 sq. m (176 sq. m in Lanta, 1664 sq. m in Phatthalung, 10332 sq. m in Songkhla). The review determined that in accordance with national laws and ESS5, the land donations are valid and face no legal encumbrances. For both projects, land donations were done under “good faith negotiations” and in a manner free of coercion, with the landowners aware of the option for refusal. The activities also did not infringe on the rights of users and occupants, which were non-existent on all three land plots. All private lands required under the current alignment of the bridges and associated roadworks have already been acquired. Consequently, a Resettlement Plan (RP) will no longer be prepared for Lanta as originally envisaged. Additionally, an RF has been prepared as a precautionary measure in the event land acquisition will be required beyond what has been determined and acquired under the bridge projects’ current alignment and design. Likewise, the RF will govern land acquisition that will lead to unanticipated temporary or permanent restrictions of any person’s use of lands or requires the subsequent involuntary resettlement of any persons. One possible case that the Bank is closely monitoring is the impact on the land occupied by Thung Toh Yum Muslim Cemetery which is in proximity to the landing area of the Lanta Island Bridge. The cemetery is public property and is not a designated cultural heritage site by government authorities. Should there be unavoidable land acquisition in the future leading to physical and economic impacts, the EA will be required to prepare a suitable instrument such as a Resettlement Plan. This condition has also been set out in the project’s ESCP. A Process Framework (PF) has been prepared for access restrictions associated with Component 1 and 2 activities in Songkhla Lake. In the Songkhla Lake Bridge project, the access restrictions would affect two groups of fisherfolk: (i) owners of fish-aggregating devices (FADs) or fish/shrimp traps which are located along the bridge right-of-way and construction safety zone (30-40m from the bridge centerline) and (ii) fisherfolk casting nets and crossing through the bridge ROW to reach fishing grounds. For the first group, a cut-off-date was declared and a physical survey of the FADs on August 16, 2023, including photographs and GPS locations. Five (5) owners in Songkhla and four (4) owners in Phatthalung of affected FADs were identified with the help of village leaders. For the second group, communities identified were those whose fisherfolk will be most affected by any restrictions to access and casting of fishing nets during bridge construction. Consultations were held with fisherfolk from those communities, including the owners of the FADs, in both Songkhla and Phatthalung on September 11 and 12, 2023, to discuss plans for the bridge, understand what they felt the impacts would be on their livelihoods, and discuss mitigation measures. Agreements were reached by the affected fisherfolk with DRR on the following: (i) for sufficient notification before bridge construction to be provided for FAD owners for them to shift the FADs outside of the ROW and safety zone; and (ii) access paths be provided for fisherfolk to pass through during bridge construction. For Component 2, the Process Framework identified three access restrictions in the Dolphin Conservation Plan (DCP) most likely to affect fisherfolks including: (i) prohibition of fishing activities in the newly designated core zone; (ii) prohibition in the use of gillnets (with mesh sizes greater than 13cm) in the buffer zone around the core zone; and (iii) prohibition in the use of gillnets (with mesh sizes greater than 20cm) in the remainder of the Thale Luang north of the bridge. Three groups of fisherfolk will be affected: those with FADs in the core zone, those who fish in the non-fishing area, and those who fish with gillnets of the above prohibited sizes. Rapid assessment had been conducted in September 2023 but the exact numbers of these three groups are unknown and



will be further assessed during project implementation. The FAD owners are expected to move outside the core zone. Activities to address and mitigate potential impacts to fisherfolk affected by the fishing ban in the core zone and the ban on gillnets harmful to dolphins are included in the 5-year DCP, mainly as part of the livelihood restoration programs to be carried out by the DOF. Component 2 implementing agencies also plan to conduct socio-economic surveys and focus groups, before bridge construction commences and the NHA-TL restrictions are enforced. Component 2 design requires that special attention is given to any fisherfolks in the 60 communities around the THL NHA that are found adversely affected by the new regulations. A public hearing was conducted by TL-NHA on 18 August 2023 on the government's proposed 10-year DCP. For both components, the PF has set out administrative and legal procedures, and monitoring arrangements with what is available in the respective agencies concerned and is effective for its purposes. The project's GRM will be utilized to address any conflicts that may arise during implementation. The PF will be updated three months after project effective date to enhance the patrolling and enforcement of new dolphin zones in the THL NHA for Component 2.

ESS6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources

Relevant

The standard is relevant. Selection of bridge route alignment, landing locations and design at both sites integrate measures to avoid and minimize adverse impacts on sensitive receptors in both terrestrial and aquatic environments. These are presented in the EIA's alternatives analysis and summarized in the non-technical summary. Songkhla Lake Bridge is within the Thale Luang Non-Hunting Area (NHA), the lowest category in the Thai protected area (PA) system, (akin to IUCN category VI of PA), which covers the northern part of Lake Songkhla. Adjacent parts of the ecosystem (Thale Noi and Thale Saap) are also NHAs. The bridge site is about 8 km south of the core area inhabited by a sub-population of Irrawaddy dolphin (*Orcaella brevirostris*) which are marine mammals occurring in coastal habitats with a discontinuous distribution from eastern India to southern Indonesia. The small and unique sub-population in Thale Luang is estimated to number 14–20 individuals. The sub-population, listed as critically endangered (IUCN), is considered to be demographically isolated, and projected to be within 1–2 annual mortalities of becoming unstable (DMCR). Due to the size and high turbidity of the lake, the sub-population is difficult to study resulting in lack of information about the population age and sex structure, social structure, location, and movements. Most available data show a trend of long-term population decline, predominantly as a bycatch of gillnet fishing. Other threats, such as habitat degradation (sedimentation and pollution of the lake), disease and propeller strike compound the pressure on dolphin survival. Her Majesty Queen Sirikit has placed Irrawaddy dolphins living in Songkhla Lake under royal patronage conferring a special status that is recognized by the local community and the entire nation. Potential aquatic resource impacts during bridge construction include small scale loss of benthic organisms and adverse impacts on lake habitat due to dredging, drilling, bridge construction and materials transport. An assessment of the impact of underwater noise, using a precautionary approach, reveals that noise levels could exceed the thresholds within a limited zone (300 m) during piling activities. There is also a risk of dolphin collision with construction barges and other vessels. The overall impact to Irrawaddy Dolphins during the construction phase is rated as a substantial negative impact pre-mitigation based on a precautionary assessment. Potential adverse impacts on Irrawaddy dolphin during operation are assessed to be of low significance, also due to the distance of the bridge from the dolphin core habitat, although bridge operation will generate noise in the immediate vicinity. Based on the Critical Habitat Assessment, Irrawaddy Dolphins are a critical habitat feature and taking a precautionary approach, the project has been designed to meet ESS6 net gain requirements for Irrawaddy dolphins in the form of a Dolphin Conservation Plan implementation of which will be overseen by an independent panel of experts engaged for this



purpose. White Meranti tree (*Shorea gratissima*) is a large forest tree that qualifies as a another critical habitat feature but does not occur near the Songkhla Lake Bridge project footprint and will not be impacted by project activities. Net gain outcomes therefore do not apply to this species. Only a few planted trees in modified habitat will be affected by the Songkhla Lake Bridge construction. The area has low conservation value, and impacts are limited to compensable livelihood losses. The Songkhla Lake Bridge site is about 8km north from Ko Si and Koh Ha islands Pak Phayun Sub-district, Phatthalung Province. The limestone islands with various cliffs and caves are a habitat for Hirundinidae (swallow) and *Aerodramus fuciphagus* (Edible-nest Swiftlet), one of the important economic animal species in Phatthalung province. Construction activities will not impact the nesting habitat of the Edible-nest Swiftlet, nor will there be any impact to their foraging area or behavior. The EIA reports 145 wildlife species in the project area, all well adapted to the activities involved in bridge development. These include *Lutrogale perspicillata* (smooth-coated otter) and *Aonyx cinerea* (Asian small-clawed otter) which were anecdotally reported to occur in the NHA parts away from the bridge alignment. The EIA assessed potential project impacts on wildlife in all project phases as low. Potential construction impacts on the Irrawaddy dolphin and the NHA will be managed through a Contractor ESMP that will be prepared as a mandatory part of the Standard Procurement Documents. The ESMP will include a worker's code of conduct vis a vis wildlife and a Work Stoppage Protocol in case dolphins swim from their core habitat to the bridge construction site. The ESMP includes monitoring for dolphin and other wildlife. In addition, to enhance dolphin conservation, DMCR, DNP and DoF have prepared a Dolphin Conservation Plan based on the priority actions from the 2022 draft Dolphin Conservation Plan, the 2023 Dolphin Expert Roundtable recommendations, the draft Thale Luang NHA management plan (2023 – 2032), and the 10-year government dolphin conservation strategy. Implementation of the Dolphin Conservation Plan will be supported by a dedicated project sub-component that supports elimination of gillnet fishing, restoration of fishing livelihoods affected by restricted fishing access as per requirements of ESS5, research and monitoring, NHA zoning and management planning, enhanced SMART (Spatial Monitoring and Reporting Tool) patrolling and enforcement capacity in the NHA. The Dolphin Conservation Plan is complemented by a Process Framework as per ESS5 to guide involvement of fisherfolk in managing restricted fishing access. To secure continued access to international and national dolphin experts' consensus advice, the Project will institute the Dolphin Expert Roundtable as an annual forum. It will be advising, with annual periodicity and as needed, on dolphin issues during project implementation, reviewing reports from the third-party monitoring of construction mitigation measures, and reviewing implementation of the Dolphin Conservation Plan. The proposed Lanta Island Bridge is located immediately adjacent to and cutting through 0.45 km of the eastern corner of the Thung Thale NHA, and about 1 km from Mu Ko Lanta marine national park, one of the top 10 Thai national parks. The bridge landing on Lanta Noi side also crosses a small area of mangrove forest designated by the Cabinet Resolution (0.192 ha) and Pa Lang Sod National Reserved Forest/Kuan Ba Gan Koh National Reserved Forest (0.64 ha). The area supports a rich biodiversity including mangroves, bottlenose and Indo-Pacific humpbacked dolphins, dugong, corals, sea grass and smooth-coated otter (*Lutrogale perspicillata*). Key potential adverse impacts during construction phase include those related to localized loss of benthic resources and impact on the seabed, sediment dispersion, fuel or drilling fluid spills, construction of a temporary jetty and barge and vessel movements. These impacts are assessed to be moderate with set of mitigation and monitoring measures proposed. Other impacts on biodiversity include loss of small areas of mangrove and trees which will be replaced by 20 times (for mangrove) and 3 times (for forest) through the national forestry program to offset the loss. Based on the EIA and interviews with superintendents of both protected areas, no significant direct impacts on PAs are expected. Similar to the Songkhla Lake Bridge, impacts from Lanta Island Bridge construction will be managed through an ESMP and a C-ESMP, including monitoring of coastal dolphins near the construction site and implementation of a work stoppage protocol. A critical habitat assessment for Lanta Island Bridge revealed several critical habitat-qualifying endangered marine species including Dugong, Green



Hawksbill, Leatherback and Olive Ridley sea turtles. No significant impacts to these species are expected although mitigation and monitoring measures are included in the ESMP. Endangered Long-tailed Macaque monkeys are the only terrestrial species recognized as a critical habitat feature. These monkeys could be exposed to limited impacts through scavenging from the construction camp and some Macaque-tourist conflicts, and mitigation will be included in the ESMP to avoid significant impacts. Net Gain measures therefore do not need to be demonstrated for any of the critical habitat species. Potential impacts on Mu Ko Lanta marine National Park arise from the overtime increase of tourism and based on the discussions with the park management are not significant.

ESS7 - Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities

Not Currently Relevant

ESS7 is currently not relevant. There are indigenous communities located on Lanta Island. However, the Urak Lawoi, specifically Baan Sala-dan and Baan Sangga-U are 9 km and 29 km away from the proposed bridge construction site. There are no traditional hunting or fishing grounds and no areas of cultural or spiritual significance to these groups in the vicinity of the Lanta Island Bridge project. While they have made efforts to preserve their cultural heritage, the modern Urak Lawoi have gradually adapted to life in Koh Lanta, particularly in the tourism industry as tour guides, boat operators, and hotel staff.

ESS8 - Cultural Heritage

Relevant

The standard is relevant. In the Songkhla Lake Bridge project, cultural heritage sites such as temples are found close to designated spoil dumping areas. Adverse impacts are not likely because spoil dumping activities are site-specific and impacts to temples will be avoided. The mitigation measures found in the EIA report do not include chance find procedures for cultural heritage found on land or in water. To address this gap, chance-find procedures have been developed by the EA in July 2023 and are included in the ESMP. These procedures were prepared in consultation with the Department of Fine Arts, the lead government agency on cultural heritage, as well as district offices and other agencies with jurisdiction over areas where cultural heritage is detected. No impacts to intangible cultural heritage are expected for the Songkhla Lake Bridge project and the project has incorporated intangible cultural heritage into the Project design. In Lanta, the EIA had reported on the absence of historical and archaeological sites on land or underwater within a 1km buffer of the proposed bridge project. This finding was confirmed through formal communication and field surveys conducted by the EA with the Department of Fine Arts and its regional office in Krabi, the Underwater Archaeology Department, and interviews with community elders and local leaders. The Muslim cemetery in one project-affected area in Koh Lanta is a public property and does belong to cultural heritage sites found in the island. Chance find procedures will also be applied to the Lanta Island Bridge project in case cultural heritage resources are discovered during the construction phase.

ESS9 - Financial Intermediaries

Not Currently Relevant

Not currently relevant.

B.2 Legal Operational Policies that Apply

OP 7.50 Operations on International Waterways

No



OP 7.60 Operations in Disputed Areas

No

B.3 Other Salient Features

Use of Borrower Framework

In Part

Thai laws found applicable to the mitigation and management of relevant ESSs are elaborated in the SLIP documents in section C1.

Use of Common Approach

No

N/A

C. Overview of Required Environmental and Social Risk Management Activities

C.1 What Borrower environmental and social analyses, instruments, plans and/or frameworks are planned or required by implementation?

Extensive ESF documentation has been prepared, consulted on and disclosed. These include the original EIAs and their Approval Conditions and a Supplementary Lenders Information Package (SLIP).

In addition, the following key documents will be required for project implementation to manage environmental risks : (i) detailed Contractor ESMPs for both bridges, (ii) Work Stoppage Protocol activated by dolphin presence in the vicinity of the construction sites, (iii) monitoring plan for replanting of the mangroves cleared at Lanta (iv) TORs for the Panel of Experts, (v) TORs and institutional arrangements for the third-party monitoring. The later will be requested before the commencement of in-water works, and the remainder before the start of construction. Work Stoppage Protocol will be required at least 5 months before commencement of in-water works.

The following key documents will be correspondingly updated to enhance the patrolling and enforcement of new dolphin zones in the THL NHA three months after effective date: (i) SEP; and (ii) Process Framework for Component 2 of Songkhla Lake Bridge project based on project activities in dolphin conservation. The LMP will be updated three months after effective date to include labor requirements for the alternative livelihoods activities under Component 2.2. A comprehensive baseline survey of affected fishing communities in Thale Luang will have to be undertaken during project implementation, as part of the Component 2 activities.

The following measures will be implemented during Project implementation to manage risks associated with patrolling and enforcing access restrictions to NHA under the Project, in accordance with Terms of References acceptable to the Bank: (i) Preparation of standard operating procedures for patrols in the lake, with specific content related to the use of force, and application of the standard operating procedures for all patrols under the project; (ii) Update and improvement of existing code of conduct for rangers and officers involved in NHA management, and application of the updated code of conduct for all patrols under the project; (iii) Provide additional training to rangers on patrolling, community relations, issues like first aid, and others; and (iv) Improved communications and outreach with fishers communities.



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