

## **INSTITUTIONAL ANALYSIS AND ARRANGEMENTS FOR OPERATIONS AND MAINTENANCE OF PROJECT FACILITIES**

### **1. Institutional Analysis**

#### **1.1 Governance Overview**

1. The Kingdom of Cambodia is a constitutional monarchy whereby the Prime Minister is the head of government and the Monarch is the head of state. The Kingdom formally operates according to the Constitution (enacted in 1993) in a framework of a parliamentary, representative democracy. Executive power is exercised by the government. Legislative power is vested in the two chambers of parliament, the National Assembly and the Senate.

2. Below the central government, there are provincial and municipal administrations. The first-level administrative divisions are provinces and urban municipalities. Commune-level governments (commune councils) were formed in 2002, composed of members directly elected by commune residents every five years. In addition to these subdivisions, there are also cities and towns which take on some of the responsibilities of the districts and communes in municipal areas. These all have an elected board and an elected mayor.

3. There are three different levels of municipalities: (i) cities, with populations more than 50,000; (ii) towns, with populations more than 10,000; and (iii) provincial capitals. Kampot, Kep and Koh Kong are provincial capitals. In addition to the population numbers municipalities need to have enough tax revenues to support public administration functions.

#### **1.2 Provincial Government**

4. There are 24 provincial and municipal administrations in Cambodia (20 provincial and 4 municipal urban areas). These administrations fall under the auspices of the Ministry of Interior (MOI). Members of provincial governments are appointed by the central government and make submissions to the central authorities for inclusion in the national budget. In addition, they are responsible for the issuance of land titles and business permits in their area of jurisdiction. In terms of the political hierarchy, provincial governments essentially function at the ministerial level. However, whereas ministries are focused on development within their specific sectors, provincial governments cover broader multisector development within their areas of jurisdiction. In this sense they have a more balanced perspective, which in turn provides the basis for formation of provincial development goals and objectives. However, one issue in the project's participating provinces, particularly the urban area of Kep, is that comprehensive and up to date development plans to guide decision making processes are lacking.<sup>1</sup>

#### **1.3 Ministry of Tourism**

5. The Ministry of Tourism (MOT) is responsible for overseeing all aspects of tourism development in Cambodia. Tourism is identified as one of the priority sectors to support economic growth in the country, and the MOT therefore has a pivotal role to play in

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<sup>1</sup> A development strategy for Kampot was prepared as part of the 2010 JICA supported *Study on National Integrated Strategy of Coastal Area and Master Plan for Sihanoukville for Sustainable Development*.

development and progress. The MOT is organized into two main directorates: (i) Administration and Finance and (ii) Tourism Development (Figure 1). The range of tourism development activities covered by the MOT is reflected in the departmental structure of the Tourism Directorate (Figure 2). In addition to the Tourism Planning and Development Department (TPDD), the Directorate includes departments dealing with: (i) international cooperation; (ii) marketing and promotion; (iii) statistics and information; (iv) tourism industry regulation; (v) cultural development; and (vi) education and training. The Tourism Directorate was responsible for preparing the National Tourism Development Strategic Plan 2012-2020, which has been adopted by Government and provides a blueprint for sector development in the coming years.

6. Project preparation has been led by the Tourism Directorate's TPDD. The department is headed by a director and has seven internal divisions each with a director and two or three deputy directors. These divisions are: Tourism Planning and Development; Tourism Investment (dealing with private sector investment in the sector); Ecotourism and Environment; Community Based Development and Pro-poor Tourism; Cultural Tourism and Development Planning; Regional Tourism; and Tourism Research. The TPDD has a total of 40 staff of which 23 are professional or technical staff. MOT maintains provincial Departments of Tourism in all provinces. MOT and DOT staff has varying levels of experience managing internationally financed projects. While the MOT has successfully executed several projects, including two financed by ADB, DOTs have less experience and will require significant capacity building support to ensure project management meets ADB and government requirements.

#### **1.4 Ministry of Public Works and Transport**

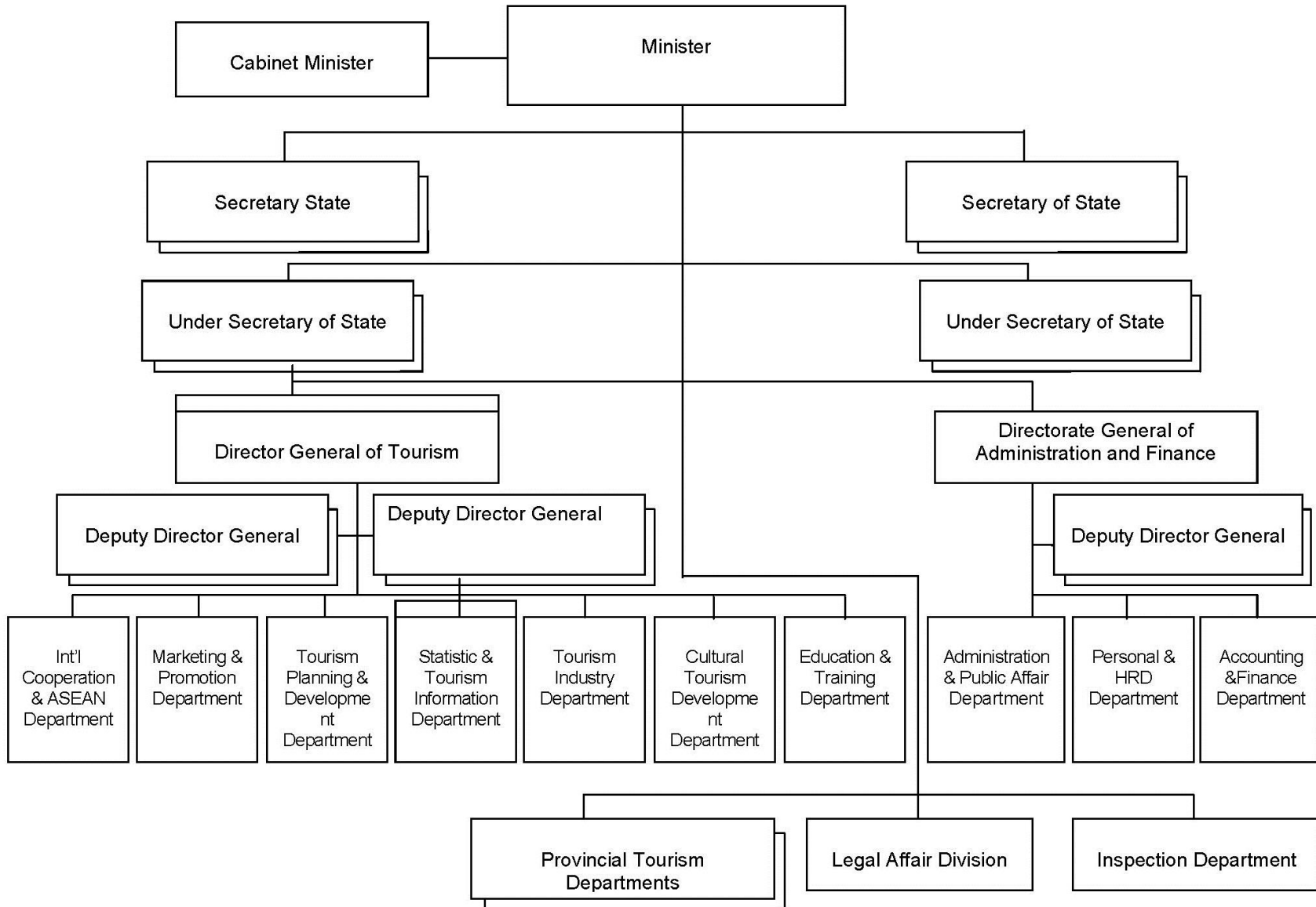
7. In accordance with its official mandate the Ministry of Public Works and Transport (MPWT) is the Government institution tasked to "*Build, maintain and manage all the transportation infrastructure such as roads, bridges, ports, railways, waterways and buildings*" in Cambodia. Below the Minister are the Secretary and the Under Secretary of State. The Ministry is organized into three general directorates of Administration, Transport and Public Works (Figure 3).

8. The General Directorate of Administration is headed by a Director General and two Deputy Directors, with a staffing complement of 173 persons spread over four departments: (i) Administration (82); (ii) Personnel and Human Resources (34); (iii) Accounting and Finance (32); and (iv) Planning (25).

9. The General Directorate of Public Works is led by a Director General and two Deputy Directors, with a total of almost 1,350 staff spread across five departments: (i) Roads (791); (ii) Heavy Equipment (410); (iii) Technical Research (59); (iv) Inland Waterways (47); and (v) Public Infrastructure Engineering (41).

10. The General Directorate of Transport is led by a Director General and two Deputy Directors with 245 staff in three departments: (i) Land Transport (184); (ii) Water Transport (47); and (iii) Merchant Marine Transport (14). The two main port authorities of Cambodia, the Port Authority of Sihanoukville and the Port Authority of Phnom Penh, are operated and maintained by MPWT.

**Figure1: Ministry of Tourism Organizational Structure**



**Figure 2: Ministry of Tourism's Tourism Planning Development Department Organizational Structure.**

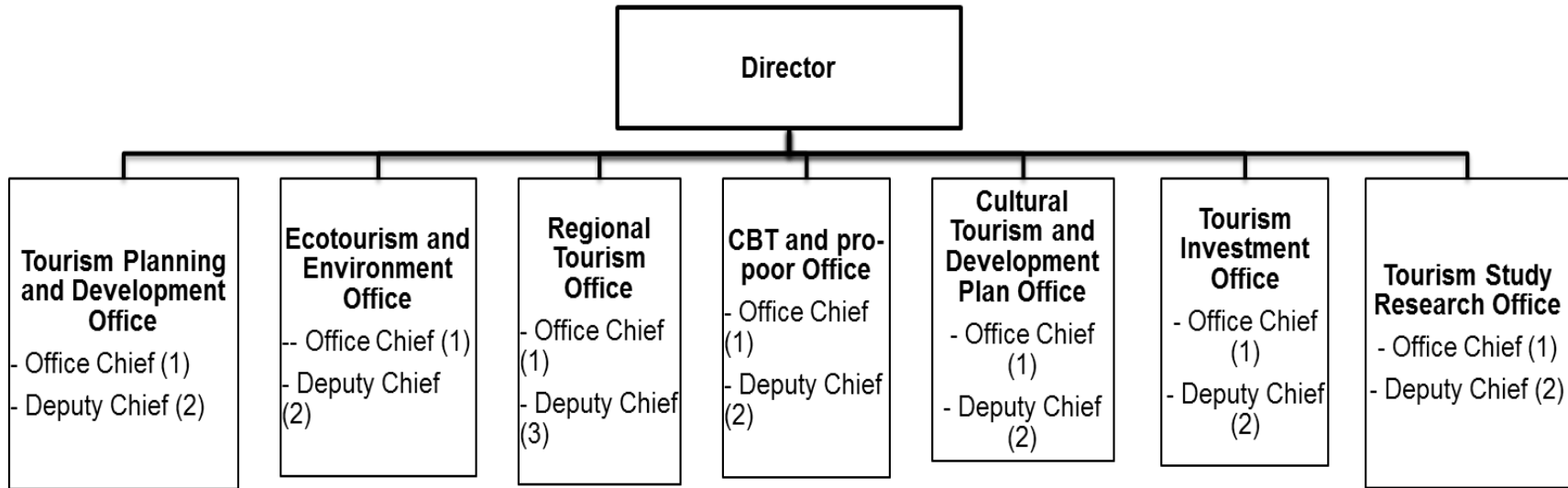
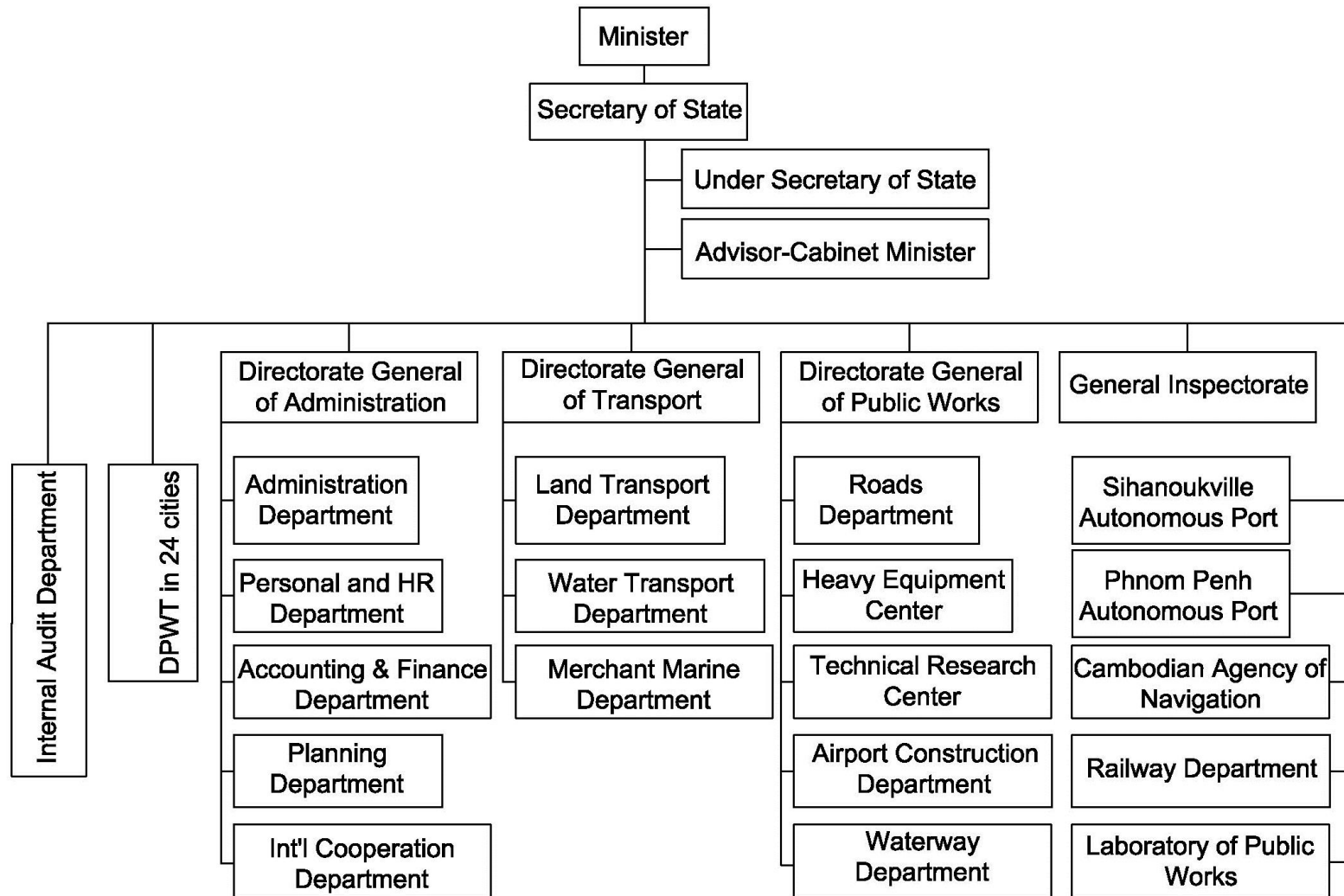


Figure 3: Ministry of Public Works and Transport Organizational Structure



11. In addition to the directorates listed above the Ministry has a General Inspectorate. It also maintains 24 municipal and provincial departments of public works and transport (DPWT) throughout the country, including those in the participating provinces of Kampot, Kep and Koh Kong. MPWT and DPWT have significant experience managing externally and internally financed public works projects and some experience directly providing services such as wastewater treatment, solid waste collection and management of landfill facilities, and port management. While MPWT staff has adequate capacity to backstop civil works design, procurement and supervision envisaged under the project, DPWTs in Kep and Kampot will require capacity building and training in procurement, contract management, environmental monitoring, and other functions of the PIU infrastructure team. In Kampot DPWT there are 4 technical staff in the roads and bridges unit and two in the drainage and wastewater treatment unit. DPWT staffing in Kep is similar.

## **2. Operations and Maintenance Arrangements for Project Facilities**

12. The following section outlines the proposed institutional responsibilities and financing mechanisms for operations and maintenance (O&M) of infrastructure subprojects. It is proposed that MPWT's Waterways Department plays a leading role managing the Kampot Passenger Pier. Kep and Kampot DPWT's, with the support of provincial governments, will assume O&M responsibilities for routine and periodic maintenance of road works and O&M of the anaerobic baffled reactor wastewater treatment system at the Kep crab market. Private sector involvement will be sought for (i) operating marine ferry services in Kampot, and (ii) garbage collections in Kep through a service contract with the DPWT. The detailed descriptions of all subprojects and outputs are in the Project Administration Manual (PAM).

### **2.1 Kampot Pier Development**

13. Under the direction of the PIU Director and Project Manager, and in close coordination with the PCU, the Kampot civil works team headed by a senior DPWT staff member, will be responsible for overseeing all aspects of the design and supervision of civil works and instalment of equipment for the Kampot Passenger Pier development subproject.

14. **Subproject Description.** Development of the passenger pier approximately 10 km south-east of Kampot Town linked to the southern coastal corridor will open up new multi-modal options for transporting passengers and light freight between Cambodia, Viet Nam, and other international/national coastal destinations. The pier will also be used as a staging point for local excursions. The subproject involves construction of a new passenger pier comprising (i) a 150 m embankment stabilization and 50 m jetty with 1,500m<sup>2</sup> landing area; (ii) arrival and departure halls with customs and immigration, administration offices, and commercial space; (iii) parking, public toilet blocks, and supporting infrastructure including power and water supply, solid waste storage, and an on-site waste water treatment system. The subproject will also upgrade the existing 6.5 km access road linking the pier with Kampot Town and install navigational aids and demarcate environmentally sensitive seagrass beds in the Teuk Chhu estuary and adjacent coastal area.

15. **Operations and Maintenance of the Pier.** The MOT as the EA will coordinate with the MPWT and Ministry of Economy and Finance (MEF) to establish a Kampot Pier Management Authority (KPMA) that would guide and direct operations of the pier in the period immediately after project completion and provide the management structure around which an autonomous State Owned Enterprise (SOE) could be formed. The board of the KPMA could be chaired by

the Director General of the MPWT General Directorate of Public Works responsible for the Inland Waterways Department (IWD). KPMA board members could include the Provincial Governor or Vice Governor of Kampot, the Department Head of the MPWT Department of Water Transport, and senior representatives of the MEF, MOT, Ministry of the Interior (MOI) and Ministry of the Environment (MOE), with representation also from concerned provincial departments such DOT, DPWT, Department of Economy and Finance (DEF), Department of Agriculture, Forestry and Fisheries (DAFF) and the Department of Land Management, Urban Planning and Construction (DLMUPC).

16. The KPMA will assume overall management responsibility for the pier complex including the activities of private companies operating passenger boat services, but excluding customs and immigration operations which would be the responsibility of MOI. With support from MPWT/IWD, KPMA responsibilities will extend to maintenance of navigational aids set in the Teuk Chhu estuary and river in accordance with an approved navigation plan. In order to ensure efficient management to support the growth and expansion of the pier as a recognized international tourist arrival/departure destination there is a need to recruit and train key KPMA staff including a general manager, deputy general manager and financial accountants. In this regard, Output 3 and 4 activities provide for institutional strengthening of the KPMA, including preparation of a management plan and facilitation of private sector service contracts for selected aspects of pier operations (e.g. ferry services, restaurants and local land transportation). In addition there is a need to conduct foreign language training for all personnel employed at the pier especially those that will interface with international visitors. Increased promotion and marketing of Kampot and its various tourist attractions will form part of the initiatives to be undertaken under Output 3 of the project.

17. Under Output 4, training will focus on preparing and implementing O&M plans. Subsequent project-supported training will focus on (i) preventive, regular and emergency maintenance procedures; (ii) maintenance of equipment; (iii) staffing and training; (iv) payment mechanisms; (v) facilities administration; (vi) monitoring; and (vii) sustainable income generation to finance O&M. Training will extend to MOI staff employed in customs and immigration activities. In addition to its permanent staff, KPMA will also employ local enterprises or individuals to carry out certain routine maintenance tasks. To the extent possible, these should be from the surrounding Chum Kreal commune. All contracts and temporary or short term work assignments will be monitored to ensure that they conform to the project's various safeguards.

18. Based on forecasts set out in Annex 1, annual passenger traffic at the pier is expected to be 360,000 in 2018 and 516,000 in 2025 and corresponding public revenue available to support O&M will be KR2.49 billion (\$622,500) to KR3.47 billion (\$869,500). This will be generated from (i) berthing fees for passenger boats levied at KR600 per seat (\$0.15) based initially on boats with a 170 seat capacity making a total of seven roundtrips to Phu Quoc Island every day; (ii) a passenger departure tax of KR6,000 (about \$1.50 per person); (iii) charges for vehicle parking based on an average of KR4,000 (\$1 per vehicle) for short term parking (10% of all car arrivals assuming an average of 3 persons/vehicle) and KR10,000 per vehicle, per day(\$2.50) for long term parking; (10% of all vehicle arrivals assuming an average of 3 persons/vehicle); and (iv) rental of stalls and kiosks at differential rates of: (i) KR40,000/m<sup>2</sup> for six stalls rented to formal business enterprises (i.e. banks, currency exchange dealers, tour companies and taxi and car hire firms); and (ii) KR 4,000/m<sup>2</sup> to local enterprises operating food, beverage, souvenir and handicraft stalls.

19. Operational expenditure to maintain the facilities over the same period (2018–2025) will increase from about KR725.76 million (\$181,440) in 2018 to about KR1.02 billion (approximately \$255,250) in 2025. Increases are based on an assumption of 2% per annum except for salaries which will rise by 3% per annum. Operational costs include: (i) staff salaries for 25 employees totalling KR417.6million in 2018 (Table 1); (ii) routine repair and maintenance of buildings, infrastructure, fixtures, fittings and equipment at KR8.0 million; (iii) routine annual maintenance of navigational buoys at \$750 per buoy for 20 buoys equivalent to KR60.0 million per year; (iv) routine maintenance of the pier (KR4.0 million per year); (v) provision for annual dredging of the passenger boat channel at KR60.0 million;<sup>2</sup> (vi) electricity supply including lighting for the pier, vehicle park, offices, stalls and internal/external public spaces 300Kw hours per day at KR1,200 per Kw hour, equivalent to KR129.6 million per; (vii) water supply at KR400,000 per year; (viii) waste water and solid waste management and treatment at KR400,000 per year; (viii) communications expenses at KR4.0 million per year; and (ix) miscellaneous charges including fuel for generator and transport, insurances, and contingencies calculated at 5% for KR34.56 million per year.

20. Annex 1 presents projections of revenue and expenditure for the pier during 2018–2025. Based on these projections it is clear that in terms of O&M costs the pier will be self-sustaining and will generate a surplus of approximately KR1.76 billion (\$441,000) in 2018 rising to KR2.45 billion in 2025 (\$614,100) in 2025. Funding for the operations and maintenance of MOI customs and immigration facilities in the complex will be derived from the MOI budget made up in part from tourist visa fees and customs charges. MOI will however contribute to the cost of utility charges for water, electricity, sanitation and solid waste services, either directly to the service provider or to the pier management authority.

**Table 1: Kampot Passenger Pier Staffing and Salary Estimates (2018)**

Position	No.	\$/month/year	\$ Total /year	Remarks
Pier complex general manager	1	1,200.00	14,400.00	
Pier complex deputy manager	1	1,000.00	12,000.00	
Financial manager / accountant	1	700.00	8,400.00	
Administrative assistant/secretary	1	500.00	6,000.00	
Ticketing clerk	2	350,00	8,400.00	
Technician	1	600.00	7,200.00	computers and IT maintenance
Parking attendants	2	200.00	4,800.00	vehicle park open 18 hours /day
Security guards	4	200.00	9,600.00	24 hours security
Cleaners	4	200.00	9,600.00	
Dockhands	4	250.00	12,000.00	
General maintenance staff	2	300.00	7,200.00	Electricians and plumbers (on call)
Gardeners	2	200.000	4,800.00	
<b>Total (\$)</b>			<b>104,400.00</b>	
<b>Total KR</b>			<b>417,600,000</b>	

IT = information technology  
Source: Kampot DPWT.

<sup>2</sup> While it is not expected it will be necessary to dredge the channel the estimate is included as a contingency.



21. **Maintenance of Roads and Associated Civil Works.** DPWT Kampot will be responsible for the maintenance of the 6.5 km main access road, including bridges, culverts, drainage systems, embankments and other related civil works. Funds for such maintenance will be drawn from DPWT's annual budget.

22. The historical income and expenditure statement provided by the Kampot DPWT shows that the annual budget of the department has been increasing steadily over the years and posting a moderate surplus each year. Assuming that revenue will increase by 6% annually and expenditures by 5%, Kampot DPWT will have sufficient funds to maintain the new 6.5-kilometer access road when the department takes responsibility for the routine and periodic maintenance starting in fiscal year 2018 (Annex 2).

23. **Public Utilities and Services.** O&M of the power supply to the pier and all associated facilities will be the responsibility of Electricite du Cambodge.

### **2.3 Kep Crab Market Environmental Improvements.**

24. Under the direction of the PIU Director and Project Manager, and in close coordination with the PCU, the Kep civil works team headed by a senior DPWT staff member, will be responsible for overseeing all aspects of the design and supervision of civil works and instalment of equipment for the Kep Crab Market Environmental Improvements subproject.

25. The Kep crab market and the adjacent beachfront hotel zone provide the focus of both domestic and international tourist activity, receiving nearly 800,000 annual visitors. Intensive use, compounded by inadequate wastewater treatment and solid waste management is degrading the environment along the foreshore, threatens the health and well-being of tourists and local residents, and is becoming a deterrent to visit the area. The subproject proposes to (i) install an anaerobic baffle reactor (ABR) tank with 500m<sup>3</sup> per day capacity and connect the shops and restaurants to this unit; (ii) expand the crab market structure in the adjacent dry goods area and upgrade internal drainage, paving, parking, and public toilets; (iii) provide an area for future installation of cold storage facilities in the crab market; (iv) provide for routine de-sludging of the ABR tank; (v) upgrade the power supply and install improved lighting to the market and all adjacent public areas; and (vii) install signage in key locations.

26. **Maintenance of the Waste Water Treatment System.** Upon completion of the subproject the Kep DPWT will maintain the of the wastewater treatment system. Maintenance operations will include de-sludging of the ABR tank and all other elements of the system including periodic clearance of the grease traps at restaurants and stalls. Vacuum and utility trucks to carry out de-sludging operations will be provided by the project. The DPWT will be responsible for the routine maintenance and repair of the vehicles and equipment subject to regular inspection by provincial government to ensure they are in good working condition. The cost of the wastewater treatment and septage collection and disposal service, to be fully recovered from the environmental fee charged to businesses operating at the crab market (as described in the financial analysis) is set out in Annex 3. In 2018, the estimated cost will be KR93.2 million (\$23,300) rising to KR131.1 million (\$32,785) in 2025.

27. **Operations and Maintenance of Crab Market Facilities.** All maintenance and repairs to the crab market structure, adjacent structures, and associated small public facilities will be undertaken and funded by the Crab Market Association (CMA), which includes the restaurant owners and vendors. The provincial government will provide additional support as required with funds from its annual budget allocation made up in part of fees collected for the rental of market

stalls, from the issuance of business licences for market vendors and privately owned businesses, and entry fees to the Sea Festival and public beach area. In all instances the Provincial Government and DOT will ensure that maintenance contracts incorporate social and environmental safeguards.

28. **Public Utilities and Services.** O&M of the power supply to the crab market will be the responsibility of Electricite du Cambodge.

**Annex 1: Kampot Passenger Pier Income and Expenditure 2018-2025**  
Riel (thousands)

Item	Year							
	2018	2019	2020	2021	2022	2023	2024	2025
International Passengers	16,081	18,011	19,992	21,992	24,191	26,610	29,271	32,198
Excursionists from Phu Quoc	30,388	31,907	33,502	35,178	36,936	38,783	40,722	42,758
Domestic Passengers	313,432	329,104	345,559	362,837	380,979	400,028	420,029	441,030
<b>Total Passengers</b>	<b>359,901</b>	<b>379,022</b>	<b>399,054</b>	<b>420,006</b>	<b>442,106</b>	<b>465,421</b>	<b>490,022</b>	<b>515,987</b>
<b>Receipts</b>								
Passenger Terminal Fee	2,159,407	2,274,131	2,394,322	2,520,036	2,652,635	2,792,524	2,940,133	3,095,921
Berthing Fee	789	831	875	921	969	1,020	1,074	1,131
Rental Income	204,480	204,480	204,480	204,480	204,480	204,480	204,480	204,480
Income from Parking fees	125,373	131,641	138,224	145,135	152,391	160,011	168,012	176,412
<b>Total Receipts</b>	<b>2,490,048</b>	<b>2,611,083</b>	<b>2,737,900</b>	<b>2,870,571</b>	<b>3,010,475</b>	<b>3,158,035</b>	<b>3,313,699</b>	<b>3,477,944</b>
<b>Operating and Maintenance Expenses</b>								
Salaries	417,600	438,480	460,404	483,424	507,595	532,975	559,624	587,605
Power	129,600	136,080	142,884	150,028	157,530	165,406	173,676	182,360
Communications	4,000	4,200	4,410	4,631	4,862	5,105	5,360	5,628
Terminal Building Maintenance	8,000	8,400	8,820	9,261	9,724	10,210	10,721	11,257
Pier Maintenance	4,000	4,200	4,410	4,631	4,862	5,105	5,360	5,628
Dredging	60,000	63,000	66,150	69,458	72,930	76,577	80,406	84,426
Navigation Maintenance	60,000	63,000	66,150	69,458	72,930	76,577	80,406	84,426
Water	4,000	4,200	4,410	4,631	4,862	5,105	5,360	5,628
Solid Waste Management	4,000	4,200	4,410	4,631	4,862	5,105	5,360	5,628
Miscellaneous	34,560	36,288	38,102	40,008	42,008	44,108	46,314	48,629
<b>Total Operating and Maintenance Expenses</b>	<b>725,760</b>	<b>762,048</b>	<b>800,150</b>	<b>840,158</b>	<b>882,166</b>	<b>926,274</b>	<b>972,588</b>	<b>1,021,217</b>
<b>Net Cash flow from operation</b>	<b>1,764,288</b>	<b>1,849,035</b>	<b>1,937,750</b>	<b>2,030,413</b>	<b>2,128,309</b>	<b>2,231,761</b>	<b>2,341,111</b>	<b>2,456,727</b>

Source: Kampot DPWT.

Asian Development Bank estimates.

**Annex 2: DPWT Kampot Income and Expenditure 2012-2025**  
Riel (million)

Item	Actual		Projection												
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
<b>Income</b>															
Provincial government	1,433	1,519	1,611	1,707	1,810	1,918	2,033	2,155	2,285	2,422	2,567	2,721	2,884	3,057	
Tax income	49	52.36	27.75	29.41	31.18	33.05	35.03	37.13	39.36	41.72	44.23	46.88	49.69	52.68	
<b>Total Income</b>	<b>1,483</b>	<b>1,572</b>	<b>1,638</b>	<b>1,737</b>	<b>1,841</b>	<b>1,951</b>	<b>2,068</b>	<b>2,192</b>	<b>2,324</b>	<b>2,463</b>	<b>2,611</b>	<b>2,768</b>	<b>2,934</b>	<b>3,110</b>	
<b>Expenditure</b>															
Salary	437	459	482	506	532	558	586	616	646	679	713	748	786	825	
Fuel/equipment/office															
Supplies/electricity	92	96	101	106	112	117	123	129	136	142	150	157	165	173	
Local travel and meetings	24	25	27	28	29	31	33	34	36	38	40	41	44	46	
Maintenance (equipment & buildings)	249	262	275	288	303	318	334	350	368	386	406	426	447	470	
Taxes (DPWT vehicles)	4	4	5	5	5	5	6	6	6	7	7	7	8	8	
<b>Total Expenditure</b>	<b>807</b>	<b>847</b>	<b>890</b>	<b>934</b>	<b>981</b>	<b>1,030</b>	<b>1,081</b>	<b>1,135</b>	<b>1,192</b>	<b>1,252</b>	<b>1,314</b>	<b>1,380</b>	<b>1,449</b>	<b>1,521</b>	
<b>Initial Surplus</b>	<b>627</b>	<b>672</b>	<b>721</b>	<b>773</b>	<b>829</b>	<b>888</b>	<b>952</b>	<b>1,020</b>	<b>1,093</b>	<b>1,170</b>	<b>1,253</b>	<b>1,341</b>	<b>1,435</b>	<b>1,536</b>	
<b>Maintenance</b>															
Existing roads	627	658	691	725	762	800	840	882	926	972	1,021	1,072	1,125	1,181	
Kampot pier access road							4.1	4.1	4.1	4.1	50.6	4.1	4.1	4.1	
<b>Total Maintenance</b>	<b>627</b>	<b>658</b>	<b>691</b>	<b>725</b>	<b>762</b>	<b>800</b>	<b>843.7</b>	<b>885.7</b>	<b>929.8</b>	<b>976.1</b>	<b>1,071.3</b>	<b>1,075.7</b>	<b>1,129.3</b>	<b>1,185.5</b>	
<b>Surplus</b>	<b>-</b>	<b>14</b>	<b>30</b>	<b>48</b>	<b>67</b>	<b>89</b>	<b>108</b>	<b>134</b>	<b>163</b>	<b>194</b>	<b>181</b>	<b>265</b>	<b>306</b>	<b>350</b>	

Source: Kampot DPWT.  
Asian Development Bank estimates.

### Annex 3: Kep Crab Market Wastewater Treatment O&M Costs

Cost Item	Riel (thousands)								
	2018	2019	2020	2021	2022	2023	2024	2025	
<b>Operating and Maintenance Cost</b>									
Anaerobic Baffle Reactor	6,000	6,300	6,615	6,946	7,293	7,658	8,041	8,443	
Anaerobic filter maintenance	2,400	2,520	2,646	2,778	2,917	3,063	3,216	3,377	
Planted horizontal filter maintenance	1,200	1,260	1,323	1,389	1,459	1,532	1,608	1,689	
De-sludging Contract Fee	6,000	6,300	6,615	6,946	7,293	7,658	8,041	8,443	
Filtration and UV disinfection replacement modules	8,000	8,400	8,820	9,261	9,724	10,210	10,721	11,257	
Pipe materials maintenance	6,000	6,300	6,615	6,946	7,293	7,658	8,041	8,443	
Trade waste units maintenance and cleaning	20,000	21,000	22,050	23,153	24,310	25,526	26,802	28,142	
Connection to customer	8,000	8,400	8,820	9,261	9,724	10,210	10,721	11,257	
Operator	2,400	2,520	2,646	2,778	2,917	3,063	3,216	3,377	
Power	12,000	12,600	13,230	13,892	14,586	15,315	16,081	16,885	
Sludge Disposal	6,000	6,300	6,615	6,946	7,293	7,658	8,041	8,443	
Solid Waste Disposal	8,000	8,400	8,820	9,261	9,724	10,210	10,721	11,257	
Miscellaneous	7,200	7,560	7,938	8,335	8,752	9,189	9,649	10,131	
<b>Total Operating and Maintenance Expenses</b>	<b>93,200</b>	<b>97,860</b>	<b>102,753</b>	<b>107,891</b>	<b>113,285</b>	<b>118,949</b>	<b>124,897</b>	<b>131,142</b>	

Source: Kep DPWT.

Asian Development Bank estimates.

Note: Costs shown include labor but exclude equipment depreciation that will form part of user charges.