

## **ANNEX XI – TRANSPORTATION - RAILWAYS**

### **A. INTRODUCTION**

1. The mission met with officials of Sri Lanka Railways (SLR) and performed a joint field survey with SLR staff of the southern rail corridor, which extends approximately 170 km from Maradana in Colombo to Matara, to determine the extent of the damage caused by the events of December 26, 2004, and review SLR's plans for repairing and redeveloping the corridor.

### **B. DAMAGE OVERVIEW**

2. Operational rail corridors in Sri Lanka extend from Colombo to Vavuniya in the north, Trincomalee in the northeast, and Batticaloa in the east, and Matara in the south. The events of 26 December caused disruption to rail services in the northeastern, eastern and southern corridors.

3. The tracks were damaged in the northeastern corridor between China Bay and Trincomalee; tracks and a bridge were damaged in the eastern corridor between Valachchanai and Batticaloa. The damages in these corridors were repaired and full services restored during the week of 10 January 2005.

4. In the southern corridor the dual track portion between Maradana in Colombo and Kalutara suffered minor damage that was quickly repaired. Beyond Kalutara on the single-track section an approximately 20 km length has suffered severe damage to embankments, track work, bridges and culverts, signaling and communication systems, buildings and rolling stock. Services remain suspended beyond Kalutara and full resumption of service is not anticipated until May 2005 with partial services possibly resuming at the end of February. The damaged rolling stock will remain out of service for some time, as it cannot be returned to the Colombo workshops for repair until the track is restored.

### **C. RECONSTRUCTION AND RECOVERY NEEDS**

#### ***Short Term Needs***

5. SLR's survey and the Mission's field visit revealed that the following rail system components need to be repaired to enable services to be restored to the pre-tsunami levels:

1. Track-bed, rails and sleepers
2. Bridges and culverts
3. Railway stations and substations
4. Railway employees quarters, dwelling and relay houses
5. Automated signaling system
6. Advance communication system
7. Locomotives
8. Power Sets (Multiple Train Units)
9. Coaches (passenger carriages)
10. Construction equipment

6. The estimated cost of these short term needs is summarized in Table C1. A four month program for reconstruction and procurement is required. This repair work commenced on December 27, 2004 and is on-going. Partial services between Kalutara and Ambalangoda, and Galle to Weligama are expected to resume by the end of February 2005. This initial work is expected to permit the disabled locomotives and rolling stock to be hauled to the maintenance depot for repairs.

7. It should be noted that new locomotives and rolling stock may be required to replace the damaged and isolated equipment. A minimum of three months from firm order to delivery is required to procure new locomotives and rolling stock.

### ***Medium Term Needs***

8. While the above short term repairs and replacements will enable services to be resumed to pre-tsunami levels, the SLR consider that operational, economic and social benefits would accrue if the above short term repairs, on the 20km long damaged section, were combined with rehabilitation of the whole 160 km long southern rail corridor. These rehabilitations would include track work, stations, building, signaling and communications systems, procurement of locomotives, multiple train units (MTUs) and passenger carriages.

9. The estimated cost of the medium term needs – including the costs of the short term needs – is summarized in Table C1. SLR considers that these works and procurements could be accomplished over a 12 month period.

### ***Long Term Needs***

10. In the long term the capacity of the Southern Rail Corridor would be considerably increased by constructing a second track from Kalutara to Galle. There is significant demand over this section. This demand is restrained by the capacity of the existing single track. The second track can be constructed within the existing right of way and would require additional rolling stock as well as expansion of, and improvements to, stations, signaling and communication systems. There is also a long term plan to extend the Southern Rail Corridor by 110 kms from Matara to Kataragama and to construct a new twin track electrified railway from Colombo to Matara. These long term developments and extensions are not being considered in this current needs assessment as they are related to national strategic transport planning and not to the tsunami.

## **D. OTHER OBSERVED IMPACTS**

11. SLR operates 102 trains per day in the southern corridor, which carry about 78,000 passengers (28 million passengers annually) and bulk freight. The passengers are mostly commuters, while freight traffic largely comprises petroleum products to and from the Port of Galle.

12. Over half the regular rail passengers are now enduring severe hardships due to the absence of rail services in the corridor. Alternative public transport in the corridor is constrained due to the significant losses of the regional bus fleets. Although freight traffic in

the corridor is not significant, service cancellations are reportedly causing shortages in fuel and food items.

**Table 1: Summary of Estimated Costs  
(Millions)**

Item	Short Term		Medium Term	
	LKR	US\$	LKR	US\$
Civil Works	700		2,000	
Signaling and Communications	250		1,800	
Locomotives + Multiple Train Units	100		1,450	
Passenger Wagons	60		1,125	
Locomotive spares	135		270	
Station equipment	15		40	
Construction equipment	100		100	
Contingencies	272		1,018	
<b>Rounded Totals</b>	<b>1,600</b>	<b>15.0</b>	<b>7800</b>	<b>71.0</b>

13. Given the traditional reliance of many commuters in southern cities on rail transport and the lack of alternatives modes of transport, SLR and the Government have set restoration of basic services within 60 days as its highest priority. SLR is also examining the feasibility of combining restoration to normalcy with strategies to enhance rail services and increase the economic benefits of re-building the southern coastal belt.

14. The short-term loss of rail service will occasion travel time and travel cost losses to passengers, economic loss to Government and commercial losses to the rail operator and freight users.

#### **E. ENVIRONMENTAL AND SOCIAL ASPECTS**

15. Adverse environmental impacts are not anticipated for the short or medium term works. SLR report that sections of the Southern Corridor right of way are occupied by squatters. Their presence affects train speeds and safety and a resettlement program is indicated. Resettlement is not an essential prelude to the short and medium term works. The installation of automated signaled level crossings in the Southern Corridor would greatly enhance both road and rail safety.

#### ***Implementation***

16. SLR would implement the works using their direct labour force and specialist contractors and suppliers. Rolling stock would be procured from India, which country has a similar broad rail gauge.

<b>Attachment 1</b>		
<b>Estimated Cost of Restoration –Short Term</b>		
<b>Item</b>	<b>Quantity</b>	<b>Restoration Cost (LKR Million)</b>
1. Relaying of track on reconstructed or rehabilitated embankments and track/sleeper replacement	Approximately 20 km	600
2. Bridges	10 including 2 which have to be reconstructed due to the widening of the span from severe abutment erosion and scouring	50
3. Buildings	35 railways stations, 34 substations, and 32 railway employees quarters, dwellings and relay houses	50
4. Automated signaling system	Southern corridor	
5. Signal & telecom system repair	Southern corridor	250
6. Advance communication system	Southern corridor	
7. Diesel locomotives (maximum 18 ton, 1800-2000 horsepower)	2 units	50
8. Diesel-electric 1000-1100 horsepower Power Sets (Multiple Train Units)	2 units	50
9. 5 ft 2 <sup>nd</sup> class carriages (capacity 56 passengers)	5 units to be repaired	20
10. 55 ft 3 <sup>rd</sup> class carriages (capacity 80- passengers)	10 units to be repaired	40
11. Spare locomotive engines	1 new unit	75
12. Spare MTU engines	1 new unit	60
13. Railway station equipment (Generators, trolleys, etc)	30 each	15
14. Construction equipment	Backhoes and trucks	100
Contingencies	20%	272
<b>Total Cost</b>		<b>1,632</b> US\$ 15 million

**Attachment 2**  
**Estimated Cost of Repair /Rehabilitation – Medium Term**

Item	Quantity	Restoration Cost (Rs.Million)
1. Relaying of track on reconstructed or rehabilitated embankments and track/sleeper replacement, bridge replacement/rehabilitation	Approximately 160 km	1600
2. Buildings	Stations, substations, and railway employees quarters, dwellings and relay houses	400
3. Automated signaling system	Southern corridor	800
4. Signal system repair	Southern corridor	200
5. Advance communication system	Southern corridor	800
6. Diesel locomotives (maximum 18 ton, 1800-2000 horsepower)	4 new and 1 rehab	1000
7. Diesel-electric 1000-1100 horsepower Power Sets (Multiple Train Units)	3 new and 1 rehab	450
8. 55 ft 2 <sup>nd</sup> class carriages (capacity 56 passengers)	20 new + 5 rehab	450
9. 55 ft 3 <sup>rd</sup> class carriages (capacity 80- passengers)	30 new + 10 rehab	675
10. Spare locomotive engines	2	150
11. Spare MTU engines	2	120
12. Railway station equipment (Generators, trolleys, etc)	40 each	40
13. Construction equipment	Backhoes and trucks	100
Contingencies		1018
<b>Total Cost</b>		<b>7803</b> US\$ 71 million