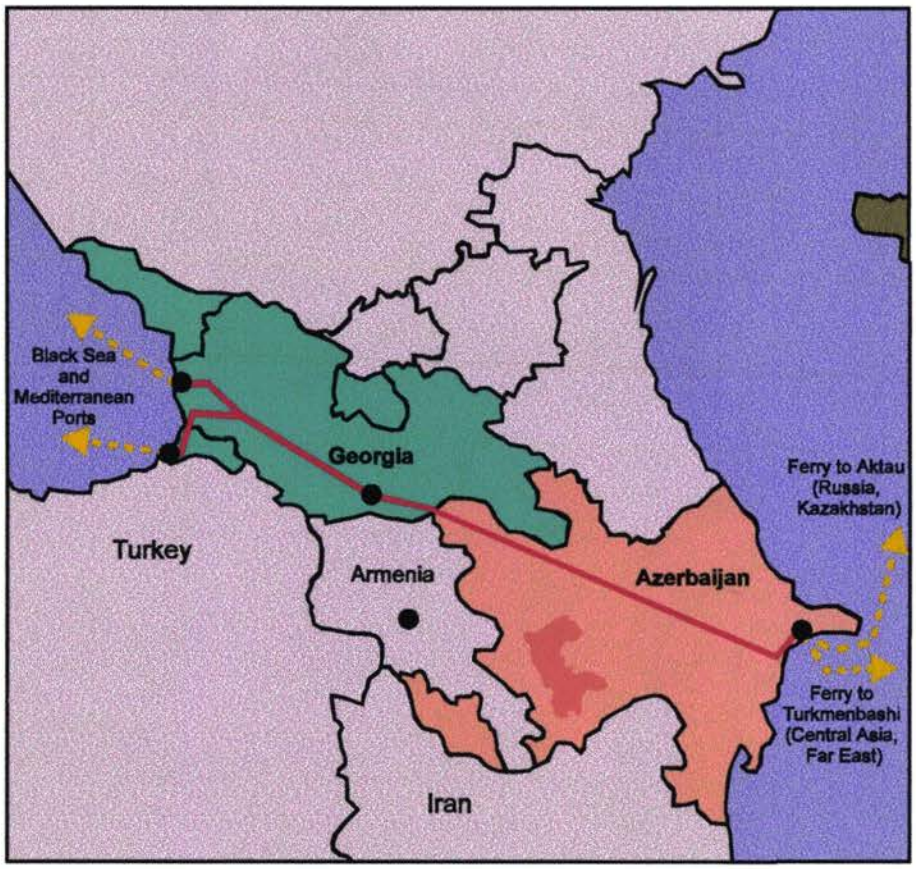
TRACECA

Infrastructure Maintenance 1
-
Railways
Pre-Investment study and Pilot train
Baku - Tbilisi - Batumi/Poti



Draft Final Report

Modul A

Volume II (Annexes)

May 1997

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2.1 Institutional and organisational pre-feasibility

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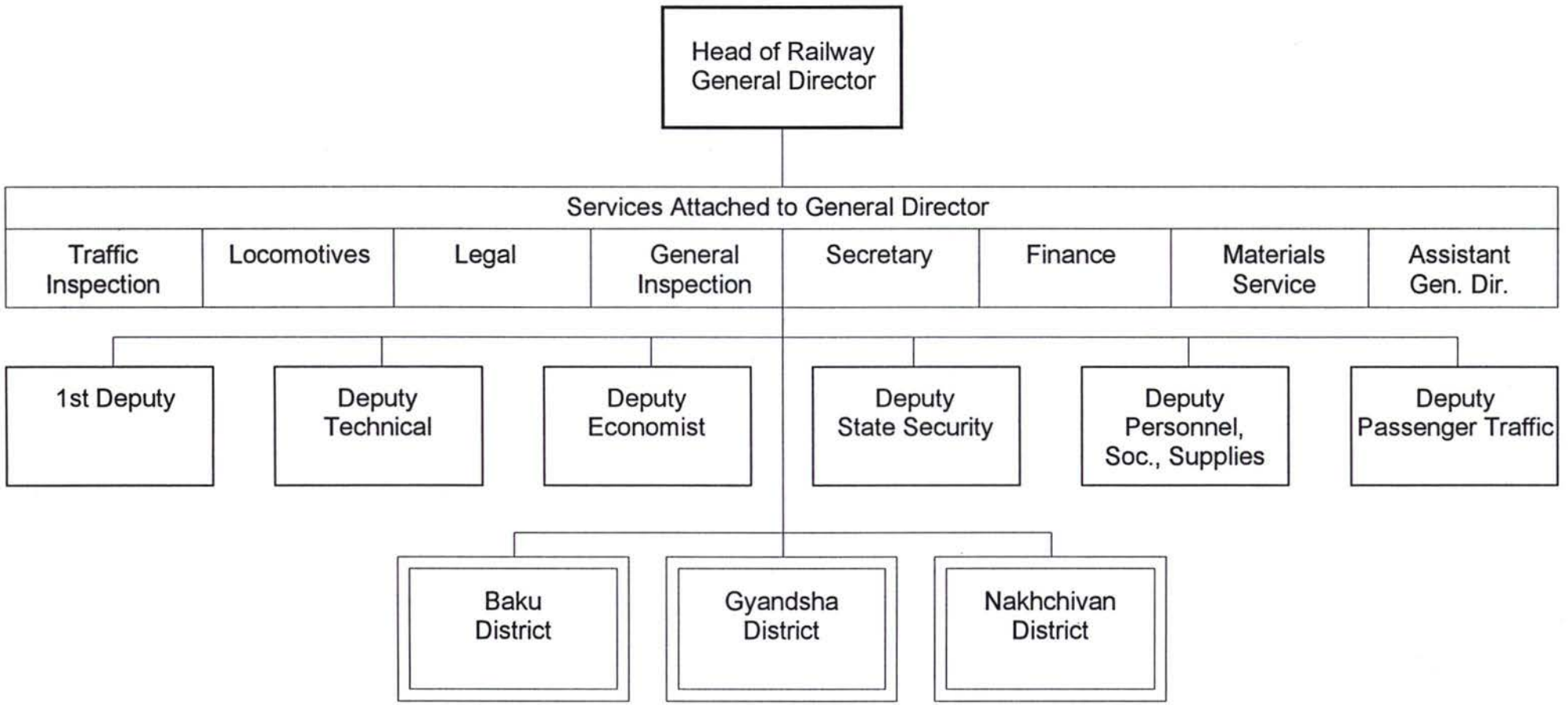
Azerbaijan State Railway Management Structure



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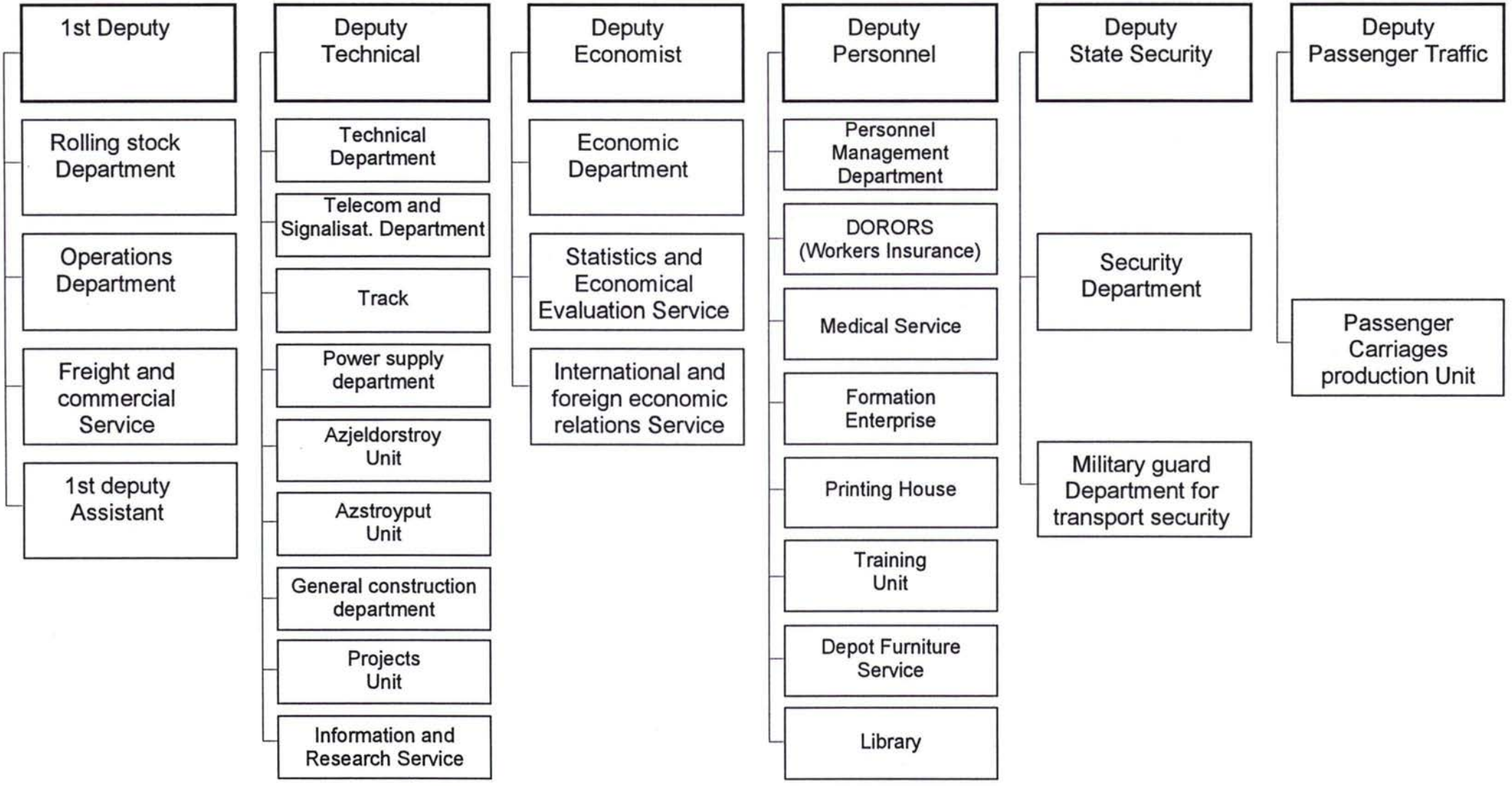
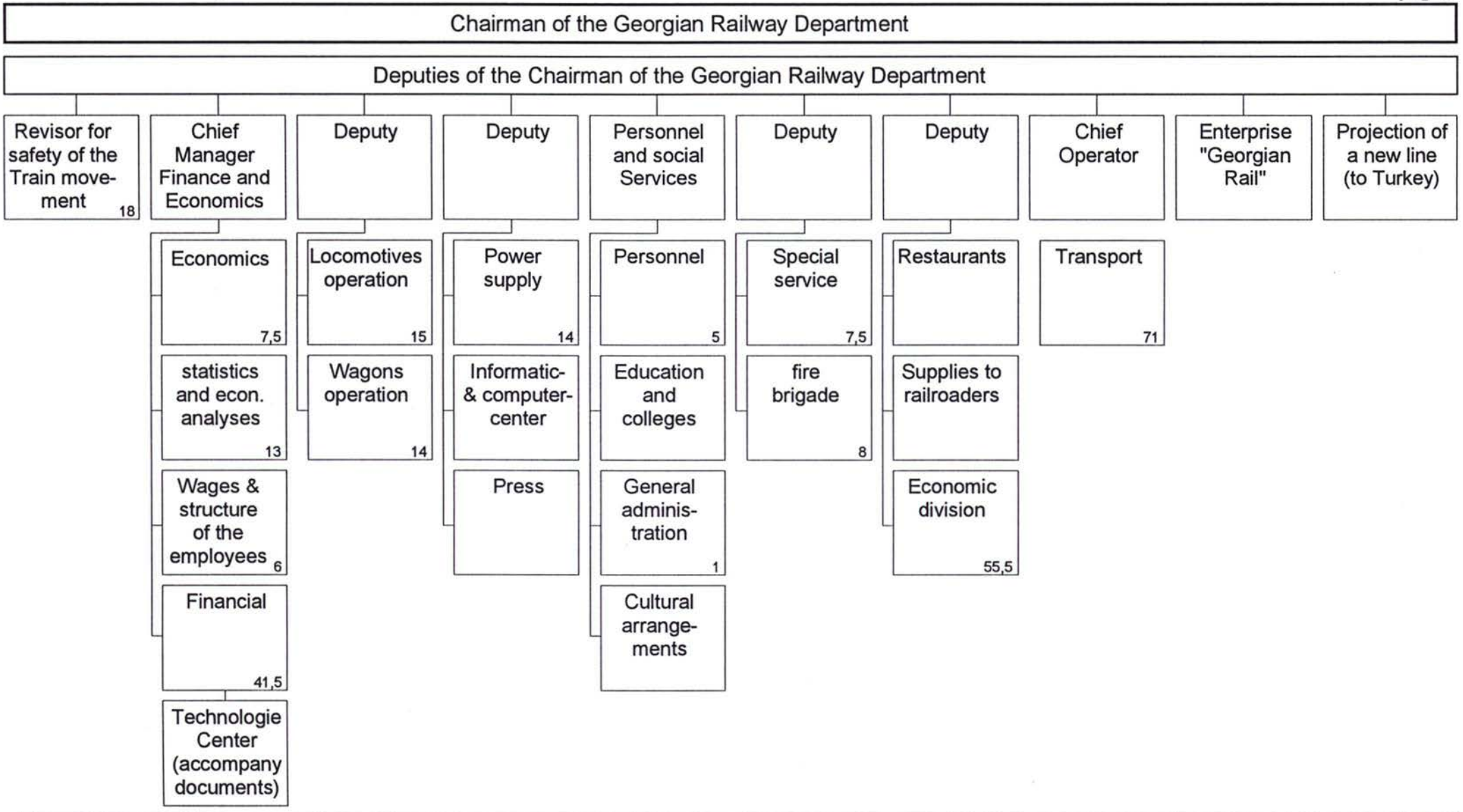
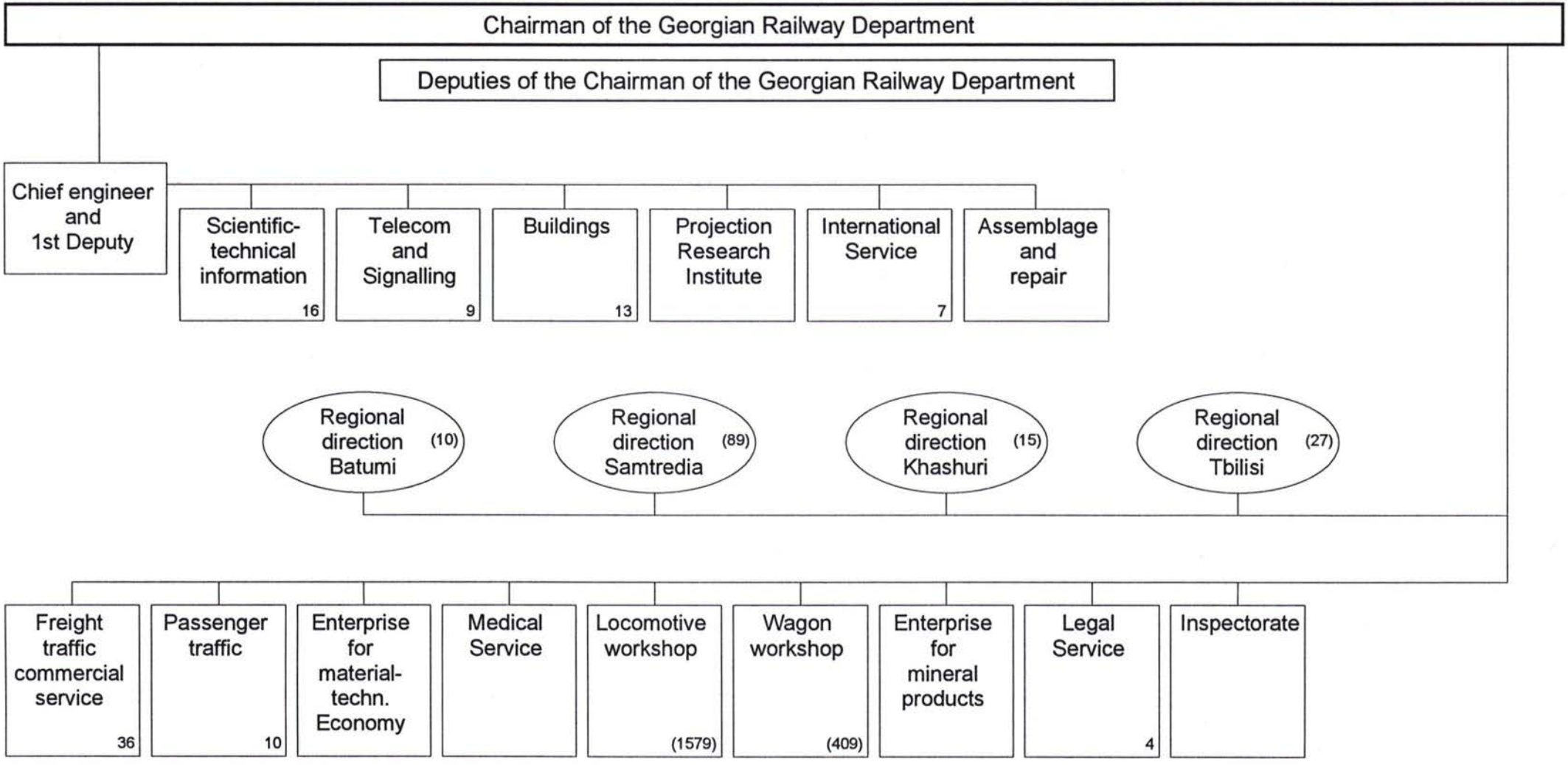
A.G.Z.D. - Headquarters Structure



Structure of the Georgian Railway Administration



Structure of the Georgian Railway Administration



The figures refer to the number of staff. - means that the resp. unit ist not part of the Georgian Railway Department

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2.2 Commercial pre-feasibility

2.2.1 Traffic volume forecast

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Goods structure of Azerbaijans´s foreign trade

Export

(in % of total value)

Groups of goods	1994			1995		
	total	FSU	Non-FSU	total	FSU	Non-FSU
live animals, animal products	0.1	0.2	0.0	0.1	0.2	0.1
plant products	2.3	5.0	0.2	2.4	5.5	0.3
animals or vegetable oil and fat	0.0	0.0	0.0	0.1	0.1	0.0
food, beverages, tobacco	7.7	17.1	0.5	4.5	8.5	1.8
mineral products (oil, ore, build. mater.)	34.2	25.2	41.0	51.8	49.3	53.4
chemical products	3.6	6.7	1.3	3.6	7.7	0.8
plastic, rubber, rubber products	1.6	2.9	0.6	2.5	4.5	1.1
hides, furs and products thereof	0.1	0.1	0.1	0.3	0.0	0.4
timber, timber products	0.1	0.0	0.1	0.0	0.0	0.1
pulp, paper, cardboard	0.6	0.1	0.9	0.1	0.1	0.1
textiles	18.0	8.4	25.2	22.8	5.0	34.5
shoes and oth. prod. of ligth industry	0.1	0.3	0.0	0.1	0.0	0.0
prod. of stone, ceramics, cement, glass	0.2	0.4	0.0	0.3	0.7	0.0
precious metals and stones	0.0	0.0	0.0	0.0	0.0	0.0
metal, metal products	16.5	1.4	28.0	3.2	1.4	4.4
machines, electrical appliances	14.0	30.4	1.7	7.2	14.8	2.2
means of transport	0.7	1.2	0.3	0.8	1.2	0.6
other equip., watches, musical instr.	0.2	0.4	0.0	0.3	0.8	0.0
other finished industrial products	0.1	0.2	0.0	0.0	0.1	0.0

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Goods structure of Azerbaijans´s foreign trade

Import

(in % of total value)

Groups of goods	1994			1995		
	Gesamt	FSU	Non-FSU	Gesamt	FSU	Non-FSU
live animals, animal products	5.4	4.2	7.5	11.1	6.9	13.3
plant products	10.1	9.6	10.8	7.7	6.8	8.2
animals or vegetable oil and fat	3.0	0.2	7.5	8.2	0.3	12.3
food, beverages, tobacco	7.9	4.4	13.7	14.5	6.2	18.8
minaral products (oil, ore, build. mater.)	33.3	49.0	7.3	15.1	32.2	6.2
chemical products	4.9	2.5	8.8	9.2	6.3	10.7
plastic, rubber, rubber products	1.9	2.6	0.6	1.7	3.3	0.9
hides, furs and products thereof	0.2	0.1	0.4	0.4	0.0	0.6
timber, timber products	0.8	1.1	0.2	0.8	1.3	0.5
pulp, paper, cardboard	0.9	1.0	0.7	2.3	3.7	1.5
textiles	2.3	1.2	4.2	1.7	1.5	1.8
shoes and oth. prod. of ligth industry	0.9	0.3	1.9	0.3	0.1	0.4
prod. of stone, ceramics, cement, glass	0.9	1.0	0.8	1.2	1.9	0.8
precious metals and stones	0.0	0.0	0.1	0.0	0.0	0.0
metal, metal products	12.5	15.0	8.4	6.3	12.9	2.9
machines, electrical appliances	10.1	4.6	19.4	12.4	12.3	12.5
means of transport	2.9	2.4	3.7	5.5	3.2	6.7
other equip., watches, musical instr.	0.5	0.1	1.2	0.6	0.7	0.5
other finished industrial products	1.5	0.7	2.8	1.1	0.6	1.3

Structure of trade with FSU countries

Azerbaijan

	1991		1992		1993	
	'000 000 $	%	'000 000 $	%	'000 000 $	%
Exports total	1146	100.00	10217	100.0	34197	100.0
Industry	1119	97.64	8040	78.7	26872	78.6
Electric power	12	1.05	296	2.9	810	2.4
Oil and gas	125	10.91	1884	18.4	5618	16.4
Ferrous metals	27	2.36	392	3.8	2141	6.3
Nonferrous metals	38	3.32	1148	11.2	998	2.9
Chemicals a. petroch.	113	9.86	994	9.7	3185	9.3
Machines, metalwork	206	17.98	1032	10.1	5609	16.4
Timber, pulp, paper	1	0.09	4	0.0	12	0.0
Construct. materials	4	0.35	33	0.3	147	0.4
Light industry	186	16.23	277	2.7	2192	6.4
Food	388	33.86	1946	19.0	5882	17.2
other	18	1.57	35	0.3	278	0.8
Agricultural products	27	2.36	1191	11.7	2976	8.7
Consumer goods		0.00	987	9.7	4351	12.7
Imports total	884	100.00	8503	100.0	28264	100.0
Industry	875	98.98	7340	86.3	22590	79.9
Electric power		0.00		0.0		0.0
Oil and gas	78	8.82	735	8.6	7395	26.2
Coal	1	0.11	1	0.0	13	0.0
Ferrous metals	81	9.16	2396	28.2	5390	19.1
Nonferrous metals	123	13.91	336	4.0	1548	5.5
Chemicals a. petroch.	60	6.79	1165	13.7	3030	10.7
Machines, metalwork	194	21.95	1525	17.9	3088	10.9
Timber, pulp, paper	29	3.28	320	3.8	506	1.8
Construction material	14	1.58	142	1.7	421	1.5
Light industry	91	10.29	256	3.0	122	0.4
Food	186	21.04	404	4.8	973	3.4
other	18	2.04	60	0.7	104	0.4
Agricultural prod.	8	0.90	567	6.7	5032	17.8
Consumer goods		0.00	595	7.0	641	2.3

Structure of trade with Non-FSU countries

Azerbaijan

	1991		1992		1993	
	'000 000 $	%	'000 000 $	%	'000 000 $	%
Exports total	50.7	100.0	754.1	100.0	350.6	100.0
Industry	45.1	89.0	711.3	94.3	337.7	96.3
Electric power		0.0		0.0		0.0
Oil and gas	12.5	24.7	555.0	73.6	139.1	39.7
Ferrous metals	0.1	0.2	17.4	2.3	107.0	30.5
Nonferrous metals	0.2	0.4	35.4	4.7	20.8	5.9
Chemicals a. petroch.		0.0	7.2	1.0	10.4	3.0
Machines, metalwork	0.4	0.8	25.0	3.3	5.1	1.5
Timber, pulp, paper		0.0	8.0	1.1	8.5	2.4
Construct. materials		0.0	1.9	0.3	1.2	0.3
Light industry	31.8	62.7	60.9	8.1	44.5	12.7
Food		0.0	0.5	0.1	1.2	0.3
other		0.0		0.0		0.0
Agricultural products	1.4	2.8	7.5	1.0	4.4	1.3
Consumer goods	4.2	8.3	35.3	4.7	8.5	2.4
Imports total	119.3	100.0	332.5	100.0	241.0	100.0
Industry	54.2	45.4	143.7	43.2	124.6	51.7
Electric power		0.0		0.0		0.0
Oil and gas	8.1	6.8	15.5	4.7	1.7	0.7
Coal		0.0		0.0	0.2	0.1
Ferrous metals	5.8	4.9	1.5	0.5	6.3	2.6
Nonferrous metals	4.2	3.5	1.4	0.4	5.0	2.1
Chemicals a. petroch.	2.3	1.9	12.1	3.6	38.0	15.8
Machines, metalwork	2.6	2.2	61.7	18.6	47.7	19.8
Timber, pulp, paper	0.8	0.7	0.3	0.1	0.5	0.2
Construction material	0.2	0.2	5.4	1.6	0.8	0.3
Light industry	7.4	6.2	2.4	0.7	1.6	0.7
Food	22.8	19.1	39.1	11.8	17.0	7.1
other		0.0	4.4	1.3	5.8	2.4
Agricultural products	49.5	41.5	126.3	38.0	78.5	32.6
Consumer goods	15.6	13.1	62.5	18.8	38.0	15.8

Main Export Items of Azerbaijan

(in Tons)

Type of goods	1994	1995
fish (fresh, processed)	1,878	998
fruit, vegetable	31,985	8,492
citrus fruit	415	149
tea	1,972	1,274
cotton products	1,927	19,158
food, preserve	1,721	3,778
tomato pulp	10,064	6,463
fruit juices	6,804	5,648
beverages (alc., non-alc.)	1,100	790
champagne	2,026	1,401
tobacco	12,918	8,952
betonit	147,488	68,258
heavy spare	13,264	5,945
natural stone (unprocessed)	3,826	331
cement		180
iron ore	4,225	
petrol	412	89,192
kerosene	132,190	188,718
diesel	1,507,093	1,625,216
mazout	58,322	125,621
lubricants	100,618	119,557
other petrochem. products	5,411	22,824
liquid gas	15,150	8,762
petrol coke	15,010	4,817
bitumen	52	14,536
chem. products	74,590	45,427
aluminium oxide	14,488	17,980
hydrocarbone	39,007	10,108
mineral fertiliser	7,836	5,824
tyres	767	250
timber, chipboards	2,195	875
paper	12,826	2,188
cotton	78,286	75,992
metallurgical products	348,783	45,073
non-ferrous metals	9,983	4,277
air conditioning	3,940	2,407
compressors	8,467	1,893
refrigerators	3,555	644
electric motors	990	821
tractors	800	3,570
busses	250	90
cars	21	5
lorries	880	60
motorcycles	263	76
Total	**2,683,798**	**2,548,620**

Main Import Items of Azerbaijan

(in Tons)

Type of goods	1994	1995
food	93,535	207,874
fruit, vegetables	78,188	64,770
potatoes	41,116	19,054
cereals	291,993	112,553
flower	248,800	69,891
sugar	46,495	104,186
beverages	3,420	738
salt	21,629	23,771
minerals	18,559	28,975
cement	83,007	91,295
bauxite	37,395	32,420
coal, coke	1,600	1,059
oil	852,567	61,936
petrochemical products	145,632	2,006
chemical products	60,869	34,813
mineral fertiliser	4,147	36,062
tyres	1,918	1,255
timer, timber products	44,830	28,862
paper	8,325	26,189
building materials	9,766	153,049
metallurgical products	334,432	55,772
non.ferrous metals	1,605	1,116
tractors	2,830	270
busses	850	1,970
cars	1,091	2,864
lorries	4,960	2,064
Total	**2,439,559**	**1,164,814**

Annex 2.2.1-3

Geographical structure of foreign trade

Azerbaijan

1. Exports

(% of total value)

	1989	1990	1991	1992	1993	1994	1995
FSU	**93.7**	**94.9**	**93.3**	**40.8**	**51.6**	**43.1**	**39.6**
Russia			56.1		25.6	21.9	18.1
Ukraine			12.3		6.7	9.1	6.1
Belarus			4.7		2.1	1.2	0.5
Kazakhstan			3.9		4.2	2.6	3.1
Turkmenistan			4.2		5.4	2.7	2.4
Uzbekistan			2.4		0.6	0.4	0.7
Georgia			5.7		4.2	2.6	7.6
Non-FSU	**6.3**	**5.1**	**6.1**	**59.2**	**48.4**	**56.9**	**60.4**
European Union					6.3	11.0	17.1
Turkey					8.4	2.6	4.8
Iran					26.6	38.0	29.8

2. Imports

(% of total value)

	1989	1990	1991	1992	1993	1994	1995
FSU	**73.1**	**73.8**	**80.3**	**56.0**	**56.2**	**62.5**	**34.2**
Russia			45.0		23.1	15.1	13.2
Ukraine			22.7		9.7	11.1	5.0
Belarus			2.3		1.5	1.0	0.7
Kazakhstan			4.2		6.4	6.7	2.6
Turkmenistan			0.2		9.9	25.1	7.7
Uzbekistan			1.7		0.3	0.3	1.2
Georgia			1.6		3.3	1.0	2.8
Non-FSU	**26.9**	**26.2**	**19.7**	**44.0**	**43.8**	**37.5**	**65.8**
European Union					7.1	7.6	11.7
Turkey					11.5	9.8	21.0
Iran					7.6	8.6	12.0

Annex 2.2.1-4

Geographical structure of Azerbaijan´s foreign trade

Exports

Destination	1994		1995	
	Tons	%	Tons	%
Total	**2,683,798**		**2,548,620**	
Russia	255,015	9.5	208,145	8.2
Ukraine	273,424	10.2	98,563	3.9
Belarus	14,124	0.5	4,341	0.2
Georgia	91,724	3.4	397,616	15.6
Total	*379,272*	*14.1*	*500,520*	*19.6*
Uzbekistan	2,822	0.1	2,349	0.1
Kazakhstan	29,391	1.1	45,266	1.8
Kirgiztan	21,612	0.8	7,628	0.3
Tadshikistan	16,842	0.6	19,783	0.8
Turkmenistan	159,427	5.9	26,535	1.0
Total	*230,094*	*8.6*	*101,561*	*4.0*
Turkey	16,994	0.6	36,288	1.4
Iran	1,405,866	52.4	1,040,194	40.8

Imports

Destination	1994		1995	
	Tons	%	Tons	%
Total	**2,439,559**		**1,164,814**	
Russia	497,778	20.4	108,782	9.3
Ukraine	301,080	12.3	42,219	3.6
Belarus	8,102	0.3	4,159	0.4
Georgia	33,516	1.4	65,233	5.6
Total	*342,698*	*14.0*	*111,611*	*9.6*
Uzbekistan	5,866	0.2	56,033	4.8
Kazakhstan	979,985	40.2	157,258	13.5
Kirgiztan	42,385	1.7	2,031	0.2
Tadshikistan	330	0.0	137	0.0
Turkmenistan	144,367	5.9	40,674	3.5
Total	*1,172,933*	*48.1*	*256,133*	*22.0*
Turkey	142,344	5.8	102,280	8.8
Iran	171,059	7.0	351,141	30.1

Annex 2.2.1-5

Azerbaijan's Export of Oil Products

Destination	1994		1995	
	Tons	%	Tons	%
Total	***1,819,108***		***2,190,481***	
Russia	11,056	0.6	102,068	4.7
Ukraine	219,739	12.1	82,608	3.8
Belarus	7,500	0.4	177	0.0
Uzbekistan	110	0.0	108	0.0
Moldova	112,933	6.2	39,480	1.8
Kazakhstan	22,976	1.3	41,201	1.9
Georgia	59,280	3.3	364,393	16.6
Kirgiztan	20,600	1.1	5,669	0.3
Tadzhikistan	2,524	0.1	3,931	0.2
Turkmenistan	146,635	8.1	20,177	0.9
FSU	**603,353**	33.2	**659,812**	30.1
Afghanistan	1,591	0.1		
Lithuania	12,744	0.7	47,756	2.2
Latvia	35,683	2.0	13,464	0.6
Austria	52,998	2.9	22,355	1.0
Gibraltar		0.0	45,421	2.1
Greece	10,303	0.6	101,988	4.7
Iran	1,045,326	57.5	976,324	44.6
Italy		0.0	277,138	12.7
Poland	22,695	1.2		
UK	32,745	1.8	46,071	2.1
Non FSU	**1,214,085**	66.7	**1,530,517**	69.9

Annex 2.2.1-6

Geographical structure of foreign trade

Georgia

1. Exports

(% of total value)

	1989	1990	1991	1992	1994	1995
FSU	**94.0**	**95.7**	**99.1**	**96.3**	**...**	**...**
Russia			66.6	54.7	33.7	30.8
Ukraine			10.3	12.4	2.1	...
Belarus			2.0	3.2	...	...
Kazakhstan			6.2	3.6	2.0	...
Turkmenistan			1.5	10.2	10.0	4.5
Uzbekistan			2.9	2.4	...	...
Azerbaijan			1.7	6.4	9.4	6.6
Armenia			2.3	0.6	8.3	12.4
Non FSU	**6.0**	**4.3**	**0.9**	**3.7**	**...**	**...**
Europe			0.4	3.3	...	17.2
Turkey			0.0	0.2	14.6	22.8
Iran			-	-	1.1	...

2. Imports

(% of total value)

	1989	1990	1991	1992	1994	1995
FSU	**75.6**	**72.3**	**84.5**	**96.8**	**...**	**...**
Russia			50.7	10.3	8.4	13.6
Ukraine			16.9	10.1	...	...
Belarus			2.4	1.8	...	...
Kazakhstan			1.4	0.9	...	...
Turkmenistan			0.0	64.9	65.0	13.7
Uzbekistan			1.2	1.1	...	...
Azerbaijan			6.0	1.2	4.9	11.1
Armenia			1.5	0.6	0.3	0.6
Non-FSU	**24.4**	**27.7**	**15.5**	**3.2**	**...**	**...**
Europe			4.1	0.5	...	...
Turkey			6.8	0.4	10.8	21.0
Bulgaria			...	...	0.6	7.0
Romania			...	...	1.0	7.7

Annex 2.2.1-7

Commodity structure of foreign trade of Georgia

(in % of total value)

Commodity group	Export		Import	
	1994	1995	1994	1995
Electric power	-	-	2.8	2.3
Crude oil	5.0	7.7	11.1	30.9
Natural gas	-	-	64.4	13.8
Coal, coke	0.3	0.3	0.4	0.4
Ferrous metallurgy	30.1	33.9	0.4	0.4
Non-ferrous metallurgy	0.9	3.0	0.2	0.2
Chemical and petrol prod.	11.4	9.8	2.4	4.2
Machinery and metal works	14.1	7.2	4.1	6.5
Wood, pulp, paper products	1.8	2.0	0.3	0.6
Building materials	3.7	4.4	1.2	1.3
Light industry products	10.2	4.1	0.9	2.0
Agricultural and food prod.	21.6	27.3	10.8	34.4
Others	1.1	0.2	1.1	3.1

Annex 2.2.1-8

Foreign trade between Azerbaijan and Georgia

(in Tons)

Type of goods	Export Georgia		Export Azerbaijan	
	1994	1995	1994	1995
food		281	513	932
tea	108	34		
tobacco			41	411
fruit and vegetable juice	785			
sugar	20			
minerals	70	11,808		6
petroleum			11,325	84,521
diesel			25,894	188,448
petrol			51	4,684
mazout	17,000		20,262	51,498
lubricants		8	1,739	12,154
gas			1,304	8,762
chemistry	277	2,975	1,956	26,964
acids	62	65	17,585	7,734
carbide	139	105		
caustic soda			2,619	1,121
hydrocarbon			7,277	10,108
ammonia	671	1,537		
spirit		1,950		
phenol	2,021	7,921		
nitrogen fertiliser	1,904	21,113		
paper	338	153	259	266
stone	294	124		
metal and metal products	8,879	17,159	285	
Total	***32,568***	***65,233***	***91,110***	***397,609***

Annex 2.2.1-9

Development of rail freight traffic - Azerbaijan

		1988	1995	1997		2000		2010		2015	
				opt.	pess.	opt.	pess.	opt.	pess.	opt.	pess.
Total amount	,000 t	**91,363**	**9,073**	**10,863**	**10,173**	**20,102**	**14,512**	**29,690**	**24,757**	**34,825**	**29,046**
Total perform.	Mio tkm	**41,895**	**2,409**	**2,879**	**2,696**	**8,805**	**6,109**	**13,004**	**10,423**	**15,253**	**12,229**
Export, amount	,000 t	15,859	1,277	1,270	1,251	6,454	3,572	10,668	9,008	11,201	9,458
Import, amount	,000 t	15,477	815	894	885	1,162	1,151	1,743	1,611	2,265	2,014
Transit, amount	,000 t	37,082	219	881	608	4,187	2,005	5,150	3,810	6,438	4,763
Domestic traffic		*22,945*	*6,762*	*7,817*	*7,429*	*8,462*	*7,784*	*12,129*	*10,328*	*14,921*	12,812
Freight dispatch		*39,466*	*8,429*	*9,087*	*8,680*	*14,916*	*11,356*	*22,797*	*19,336*	*26,123*	22,270
Oil products	,000 t	10,692	6,416	7,342	6,987	11,880	8,640	18,611	15,721	21,403	18,079
Building materials	,000 t	13,044	1,031	812	796	1,827	1,593	2,466	2,071	2,713	2,381
Iron ore	,000 t	697	4	10	4	22	5	30	5	33	6
Cement	,000 t	835	141	126	122	145	141	195	183	215	210
Cereals	,000 t	725	241	251	248	276	273	345	335	379	368
others	,000 t	8,294	596	548	522	767	704	1,150	1,021	1,380	1,226
Transport distance	km		265	265	265	438	421	438	421	438	421

Annex 2.2.1-10

Development of rail freight traffic - Georgia

		1988	1995	1997		2000		2010		2015	
				opt.	pess.	opt.	pess.	opt.	pess.	opt.	pess.
Total amount	,000 t	**36,190**	**4,700**	**4,886**	**4,390**	**9,525**	**6,086**	**15,268**	**11,605**	**17,470**	**13,700**
Total perform.	Mio tkm	**12,591**	**1,246**	**1,319**	**1,185**	**3,238**	**2,069**	**5,191**	**3,946**	**5,940**	**4,658**
Export, amount	,000 t		330	353	306	494	367	815	606	1,019	787
Import, amount	,000 t		1,225	820	603	943	724	1,179	905	1,267	995
Transit, amount	,000 t		1,775	2,245	2,050	6,011	3,263	10,525	7,995	12,104	9,595
Domestic traffic			1,370	*1,467*	*1,430*	*2,076*	*1,732*	*2,748*	*2,099*	*3,079*	2,323
Freight dispatch			1,600	*1,820*	*1,736*	*2,570*	*2,099*	*3,564*	*2,704*	*4,098*	3,110
Coal	,000 t	2,352	41	50	44	87	62	130	74	149	86
Oil products	,000 t	1,332	271	297	290	371	334	483	434	555	499
Building materials	,000 t	10,329	218	252	247	441	309	661	463	760	533
Iron ore	,000 t	5,467	80	88	86	110	103	132	123	151	142
Cement	,000 t	882	20	22	22	39	26	58	38	66	43
Cereals	,000 t	2,624	157	177	170	222	204	266	255	306	293
Metal	,000 t	1996	161	199	172	309	216	494	302	568	347
Others	,000 t		652	736	705	994	846	1,341	1,015	1,542	1,168
Transport distance	km		268	270		340		340		340	

Westbound traffic in Baku - Tbilisi - Poti / Batumi corridor (optimistic scenario)

	1995	1996	1997	2000	2010	2015
1 Baku - Gyandsha						
Domestic	3299	3,283	3,529	3,793	5,311	6,373
Azeri exports	952	928	947	4,734	7,811	8,358
Georgian imports	26	27	28	35	53	66
Transit	134	335	469	1,759	2,198	2,748
Azeri imports	30	30	32	33	36	38
Total	*4441*	*4,602*	*5,004*	*10,354*	*15,409*	*17,583*
2 Gyandsha - Tbilisi						
Domestic	0	0	0	0	0	0
Azeri exports	964	940	959	4,793	7,909	8,463
Georgian imports	26	27	28	35	53	66
Transit	134	335	469	1,759	2,198	2,748
Total	*1124*	*1,302*	*1,456*	*6,587*	*10,160*	*11,277*
3 Tbilisi - Batumi						
Domestic	380	399	429	515	643	740
Azeri exports	615	600	612	3,609	6,568	6,962
Georgian imports	11	11	12	14	18	19
Transit	126	315	410	942	1,224	1,592
Georgian exports	30	30	32	45	74	93
Total	*1162*	*1,355*	*1,494*	*5,124*	*8,527*	*9,405*
4 Tbilisi - Poti						
Domestic	310	326	350	420	567	652
Azeri exports	109	106	108	867	1,041	1,093
Georgian imports	3	3	3	4	5	5
Transit	28	70	151	828	952	1,047
Georgian exports	60	60	64	90	148	185
Total	*510*	*565*	*676*	*2,209*	*2,712*	*2,982*

Westbound traffic in Baku - Tbilisi - Poti / Batumi corridor (pessimistic scenario)

	1995	1996	1997	2000	2010	2015
1 Baku - Gyandsha						
Domestic	3299	3,283	3,447	3,481	4,525	5,431
Azeri exports	952	928	944	2,597	6,493	7,012
Georgian imports	26	27	28	31	37	43
Transit	134	335	352	1,354	1,693	2,065
Azeri imports	30	30	30	31	34	36
Total	*4441*	*4,602*	*4,801*	*7,494*	*12,782*	*14,587*
2 Gyandsha - Tbilisi						
Domestic	0	0	0	0	0	0
Azeri exports	964	940	956	2,630	6,575	7,101
Georgian imports	26	27	28	31	37	43
Transit	134	335	352	1,354	1,693	2,065
Total	*1124*	*1,302*	*1,336*	*4,015*	*8,305*	*9,209*
3 Tbilisi - Batumi						
Domestic	380	399	409	458	490	564
Azeri exports	615	600	510	1,784	5,405	5,757
Georgian imports	11	11	12	13	16	18
Transit	126	315	372	743	870	1,218
Georgian exports	30	30	32	39	64	79
Total	*1162*	*1,355*	*1,335*	*3,037*	*6,845*	*7,635*
4 Tbilisi - Poti						
Domestic	310	326	335	349	436	501
Azeri exports	109	106	98	629	768	806
Georgian imports	3	3	3	4	5	5
Transit	28	70	63	677	792	990
Georgian exports	60	60	61	80	119	149
Total	*510*	*565*	*561*	*1,738*	*2,120*	*2,452*

Eastbound traffic in Baku - Tbilisi - Poti / Batumi corridor (optimistic scenario)

	1995	1996	1997	2000	2010	2015
1 Gyandsha - Baku						
Domestic	676	592	621	932	1,165	1,339
Azeri imports	265	270	291	378	567	737
Georgian exports	155	154	166	224	336	403
Transit	54	55	96	386	675	843
Azeri exports	30	29	30	90	107	113
Total	*1180*	*1,100*	*1,204*	*2,008*	*2,849*	*3,435*
2 Tbilisi - Gyandsha						
Domestic	0	0	0	0	0	0
Azeri imports	293	299	321	418	626	814
Georgian exports	160	159	171	231	347	416
Transit	54	55	96	386	675	843
Total	*507*	*513*	*589*	*1,034*	*1,648*	*2,074*
3 Batumi - Tbilisi						
Domestic	195	205	220	275	371	427
Azeri imports	53	54	58	76	113	147
Georgian exports	45	45	48	67	104	125
Transit	195	191	196	245	306	367
Georgian imports	290	276	282	325	406	436
Total	*778*	*770*	*805*	*988*	*1,301*	*1,503*
4 Poti - Tbilisi						
Domestic	143	150	161	202	272	313
Azeri imports	240	245	263	342	513	667
Georgian exports	10	10	10	13	17	20
Transit	350	348	357	446	558	669
Georgian imports	610	580	377	433	541	582
Total	*1353*	*1,333*	*1,169*	*1,436*	*1,902*	*2,252*

Eastbound traffic in Baku - Tbilisi - Poti / Batumi corridor (pessimistic scenario)

	1995	1996	1997	2000	2010	2015
1 Gyandsha - Baku						
Domestic	676	592	603	845	1,014	1,135
Azeri imports	265	270	284	355	522	654
Georgian exports	155	154	148	170	272	327
Transit	54	55	83	323	581	726
Azeri exports	30	29	29	64	74	77
Total	*1180*	*1,099*	*1,146*	*1,757*	*2,463*	*2,919*
2 Tbilisi - Gyandsha						
Domestic	0	0	0	0	0	0
Azeri imports	293	297	312	391	574	719
Georgian exports	160	160	154	177	283	339
Transit	54	55	83	323	581	726
Total	*507*	*512*	*549*	*890*	*1,438*	*1,784*
3 Batumi - Tbilisi						
Domestic	195	196	206	237	308	345
Azeri imports	53	54	56	71	102	130
Georgian exports	45	45	46	48	63	72
Transit	195	195	198	238	285	333
Georgian imports	290	261	144	165	198	232
Total	*778*	*751*	*650*	*758*	*956*	*1,112*
4 Poti - Tbilisi						
Domestic	143	144	151	174	226	253
Azeri imports	240	244	256	320	464	589
Georgian exports	10	10	10	11	14	16
Transit	350	341	346	416	499	584
Georgian imports	610	549	302	347	417	488
Total	*1353*	*1,288*	*1,065*	*1,267*	*1,619*	*1,929*

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Annexes

Chapter 2 Institutional, organisational and commercial pre-feasibility

2.2 Commercial pre-feasibility

2.2.2 Revenue forecast

Annex 2.2.2-1

Structure of the Azerbaijan State Railways' original cost Year 1995 divided according to functional structure

Functional structure	Share of total cost	Amount 1995 '000 000 manats/year
I. Sum of expenditure at stations for passenger transport, container transport and commercial work	14.5 %	18,982.0
II. Sum of expenditure for tractive units	41.8 %	54,480.1
III. Sum of expenditure for wagons	13.6 %	17,682.2
IV. Sum of expenditure for route costs	15.2 %	19,781.9
V. Sum of expenditure for building construction	2.3 %	2,988.7
VI. Sum of expenditure for security and telecommunication technology	4.4 %	5,725.6
VII. Sum of cost for energy supply	3.1 %	4,085.0
VIII. Transit cost		-
IX. Cost for breakdown trains	0.2 %	240.4
X. Remaining overheads for the three areas	0.7 %	888.1
XI. Railway administration cost	4.2 %	5,531.5
Total cost	**100 %**	**130.385.5**
out of it for passenger transport	21.2 %	27.641.7
out of it for goods transport	78.8 %	102,743.8.

Annex 2.2.2-2

Structure of the Azerbaijan State Railways' original cost Year 1995 divided according to selected cost types

Selected cost types	Amount 1995 '000 000 manats/year	Share of total cost
Personnel cost		
Wage fund	6,214.8	
Social contribution	+ 11,431.5	
Sum of personnel cost	17,646.3	13.5 %
Cost for driving fuel traction		
fuel	7,728.8	
electrical energy	+ 32,795.1	
Sum of cost for driving fuel	40,523.9	31.1 %
Cost for repairs (repair fund)	24,688.7	18.9 %
Cost for other energy consumption		
fuel	4,788.1	
electrical energy	+ 15,201.9	
Sum of cost for other energy consumption	19,990.0	15.3 %
Other costs	27,536.6	21.2 %
including amortisation	(7,565.2)	(5.8 %)
Total cost	**130,385.5** = $ 29.63 million	**100 %**

Annex 2.2.2-3

Structure of the Azerbaijan State Railways' revenue Year 1995

Item	Amount 1995 '000 000 manats/year	Share of total revenue
Revenue from goods transport		
Revenue from transportation services	237,018.2	82.9 %
Revenue from additional charges	40,729.1	14.3 %
Sum of revenue from goods transport	*277,747.3*	*97.2 %*
Revenue from passenger transport		
Revenue from transportation services	5,265.8	1.8 %
Revenue from seat reservation	2,678.2	1.0 %
Revenue from luggage	47.1	(0.0 %)
Revenue from mail transportation	-	
Sum of revenue from passenger transport	*7,991.1*	*2.8 %*
Total revenue	**285,738.4**	**100 %**

Estimation of the future financial situation of Azerbaijan Railways (optimistic case)

Annex 2.2.2-4

Item	Time						
	1994	1995	1995 norm.	1997	2000	2010	2015
Development of Transportation Output							
No. of passengers (millions)	10.6	8.9	8.9	4.3	5.2	9.4	10.7
Passenger-kms (millions)	1,104	787	787	427	563	1,153	1,330
Average travel distance (km)	104	88	88	99	108	123	124
Tonnes originating (1000 t)	12,952	9,073	9,073	10,863	20,102	29,690	34,825
Net tonne-kms (milions)	3,276	2,409	2,409	2,879	8,805	13,004	15,253
Average lead (km)	253	265	265	265	438	438	438
Revenue from Passenger and Freight Transport							
Revenue from passenger transport (1000 US$)	2,542.2	1,816.2	1,816.2	1,280.4	8,449.5	57,655.0	133,000.0
Revenue from freight transport (1000 US$)	86,081.4	63,124.4	63,124.4	86,370.0	352,200.0	650,200.0	838,915.0
Total revenue (1000 US$)	88,623.6	64,940.6	64,940.6	87,650.4	360,649.5	707,855.0	971,915.0
Unit revenue in passenger transport (US$/passkm)	0.0023	0.0023	0.0023	0.0030	0.0150	0.0500	0.1000
Unit revenue in freight transport (US$/tkm)	0.0263	0.0262	0.0262	0.0300	0.0400	0.0500	0.0550
Prime Costs of Transport							
Prime costs of freight transport (1000 US$)	31,763.2	23,350.9	35,891.4	61,387.6	209,439.7	375,703.3	510,763.8
Prime costs of passenger transport (1000 US$)	8,812.3	6,282.2	9,540.8	10,833.1	23,271.1	41,744.8	56,751.5
Total prime costs (1000 US$)	40,575.5	29,633.1	45,432.2	72,220.7	232,710.8	417,448.1	567,515.3
Proportional coefficient prime costs freight transport of total costs	0.78	0.79	0.79	0.85	0.90	0.90	0.90
Proportional coefficient prime costs passenger transport of total costs	0.22	0.21	0.21	0.15	0.10	0.10	0.10
Unit cost freight transport (US$/tkm)	0.0097	0.0097	0.0149	0.0213	0.0238	0.0289	0.0335
Unit cost passenger transport (US$/passkm)	0.0080	0.0080	0.0121	0.0254	0.0413	0.0362	0.0427
DIfference unit revenue vs. unit cost passenger transport	-0.0057	-0.0057	-0.0098	-0.0224	-0.0263	0.0138	0.0573
Difference unit revenue vs. unit cost freight transport	0.0166	0.0165	0.0113	0.0087	0.0162	0.0211	0.0215
Selected Cost Components							
Personnel costs (1000 US$)		4,010.5	10,059.6	10,560.0	80,000.0	175,000.0	280,000.0
Percentage of total costs (%)		13.53	22.14	14.62	34.38	41.92	49.34
of which personnel costs for freight transport (1000 US$)		3,160.3	7,947.1	8,976.0	72,000.0	157,500.0	252,000.0
of which personnel costs for passenger transport (1000 US$)		850.2	2,112.5	1,584.0	8,000.0	17,500.0	28,000.0

Estimation of the future financial situation of Azerbaijan Railways (optimistic case)

Annex 2.2.2-4

Item	Time						
	1994	1995	1995 norm.	1997	2000	2010	2015
costs for traction energy (1000 US$)		9,210.0	9,210.0	10,637.5	24,141.7	40,523.9	50,631.9
Percentage of total costs (%)		31.08	20.27	14.73	10.37	9.71	8.92
of which costs for freight transport (1000 US$)		7,257.5	7,275.9	9,041.9	21,727.5	36,471.5	45,568.7
of which costs for passenger transport (1000 US$)		1,952.5	1,934.1	1,595.6	2,414.2	4,052.4	5,063.2
of which fuel (1000 US$)		1,756.5	1,756.5	2,028.8	4,604.3	7,728.8	9,656.6
of which electric power (1000 US$)		7,453.4	7,453.4	8,608.7	19,537.3	32,795.1	40,975.2
Repair costs (1000 US$)		5,611.1	11,222.2	26,136.4	52,272.7	79,545.5	90,909.1
Percentage of total costs (%)		18.94	24.70	36.19	22.46	19.06	16.02
of which costs for freight transport (1000 US$)		4,421.5	8,865.5	22,215.9	47,045.5	71,590.9	81,818.2
of which costs for passenger transport (1000 US$)		1,189.5	2,356.7	3,920.5	5,227.3	7,954.5	9,090.9
costs for other energy usage (1000 US$)		4,543.2	4,543.2	4,785.5	9,642.9	15,409.0	18,922.4
Percentage of total costs (%)		15.33	10.00	6.63	4.14	3.69	3.33
of which fuel (1000 US$)		1,088.2	1,088.2	1,146.2	2,309.7	3,690.8	4,532.4
of which electric power (1000 US$)		3,455.0	3,455.0	3,639.2	7,333.2	11,718.1	14,390.0
Other costs (1000 US$)		6,258.3	10,397.3	20,101.4	66,653.5	106,969.8	127,052.0
Percentage of total costs (%)		21.12	22.89	27.83	28.64	25.62	22.39
of which costs for material (1000 US$)		1,274.0	3,822.1	8,790.9	35,500.0	45,454.5	53,636.4
Percentage of total costs (%)		4.30	8.41	12.17	15.25	10.89	9.45
of which amortisation (1000 US$)		1,719.4	3,310.3	7,882.3	27,480.5	57,026.0	68,518.3
Percentage of total costs (%)		5.80	7.29	10.91	11.81	13.66	12.07
of which other costs (1000 US$)		3,264.9	3,264.9	3,428.2	3,673.0	4,489.3	4,897.4
Percentage of total costs (%)		11.02	7.19	4.75	1.58	1.08	0.86
Sum prime costs (1000 US$)		29,633.1	45,432.2	72,220.7	232,710.8	417,448.1	567,515.3

Estimation of the future financial situation of Azerbaijan Railways (optimistic case)

Annex 2.2.2-4

Item	Time						
	1994	1995	1995 norm.	1997	2000	2010	2015
Cost Coverage							
Cost coverage passenger transport (1000 US$)		-4,466.0	-7,724.6	-9,552.7	-14,821.6	15,910.2	76,248.5
Cost coverage freight transport (1000 US$)		39,773.5	27,233.0	24,982.4	142,760.3	274,496.7	328,151.2
Cost coverage total transport (1000 US$)		35,307.5	19,508.4	15,429.7	127,938.7	290,406.9	404,399.7
Profit Calculation							
Net profit before tax requ. depreciation, interest and tax (1000 US$)		34,773.6	19,508.4	15,429.7	127,938.7	290,406.9	404,399.7
Tax required depreciation (1000 US$)		1,719.4	3,310.3	7,882.3	27,480.5	57,026.0	68,518.3
Net profit before interest and tax (1000 US$)		33,054.3	16,198.1	7,547.4	100,458.2	233,380.9	335,881.4
Interest for (additional) loans (1000 US$)							
Net profit before tax (1000 US$)		33,054.3	16,198.1	7,547.4	100,458.2	233,380.9	335,881.4
Taxes (1000 US$)		12,397.3	5,669.3	2,641.6	35,160.4	81,683.3	117,558.5
Net profit after tax (1000 US$)		20,657.0	10,528.8	4,905.8	65,297.8	151,697.6	218,322.9
Financial Resources							
Own resources							
net profit after tax (1000 US$)		20,657.0	10,528.8	4,905.8	65,297.8	151,697.6	218,322.9
tax required depreciation (1000 US$)		1,719.4	3,310.3	7,882.3	27,480.5	57,026.0	68,518.3
Sum of own resources (1000 US$)		22,376.3	13,839.0	12,788.1	92,778.3	208,723.6	286,841.2

Estimation of the future financial situation of Azerbaijan Railways (pessimistic case)

Annex 2.2.2-5

Item	Time						
	1994	1995	1995 norm.	1997	2000	2010	2015
Development of Transportation Output							
No. of passengers (millions)	10.6	8.9	8.9	3.6	3.3	4.5	4.7
Passenger-kms (millions)	1,104	787	787	393	381	591	629
Average travel distance (km)	104	88	88	109	115	131	134
Tonnes originating (1000 t)	12,952	9,073	9,073	10,173	14,512	24,757	29,047
Net tonne-kms (milions)	3,276	2,409	2,409	2,696	6,109	10,423	12,229
Average lead (km)	253	265	265	265	421	421	421
Revenue from Passenger and Freight Transport							
Revenue from passenger transport (1000 US$)	2,542.2	1,816.2	1,816.2	1,100.1	5,138.1	29,545.0	62,860.0
Revenue from freight transport (1000 US$)	86,081.4	63,124.4	63,124.4	75,488.0	213,815.0	521,150.0	672,595.0
Total revenue (1000 US$)	88,623.6	64,940.6	64,940.6	76,588.1	218,953.1	550,695.0	735,455.0
Unit revenue in passenger transport (US$/passkm)	0.0023	0.0023	0.0023	0.0028	0.0135	0.0500	0.1000
Unit revenue in freight transport (US$/tkm)	0.0263	0.0262	0.0262	0.0280	0.0350	0.0500	0.0550
Prime Costs of Transport							
Prime costs of freight transport (1000 US$)	31,763.2	23,350.9	35,891.4	58,768.5	167,452.8	337,155.9	458,247.9
Prime costs of passenger transport (1000 US$)	8,812.3	6,282.2	9,540.8	10,370.9	10,688.5	21,520.6	29,249.9
Total prime costs (1000 US$)	40,575.5	29,633.1	45,432.2	69,139.4	178,141.3	358,676.4	487,497.8
Proportional coefficient prime costs freight transport of total costs	0.78	0.79	0.79	0.85	0.94	0.94	0.94
Proportional coefficient prime costs passenger transport of total costs	0.22	0.21	0.21	0.15	0.06	0.06	0.06
Unit cost freight transport (US$/tkm)	0.0097	0.0097	0.0149	0.0218	0.0274	0.0323	0.0375
Unit cost passenger transport (US$/passkm)	0.0080	0.0080	0.0121	0.0264	0.0281	0.0364	0.0465
DIfference unit revenue vs. unit cost passenger transport	-0.0057	-0.0057	-0.0098	-0.0236	-0.0146	0.0136	0.0535
Difference unit revenue vs. unit cost freight transport	0.0166	0.0165	0.0113	0.0062	0.0076	0.0177	0.0175
Selected Cost Components							
Personnel costs (1000 US$)		4,010.5	10,059.6	10,200.0	60,000.0	150,000.0	240,000.0
Percentage of total costs (%)		13.53	22.14	14.75	33.68	41.82	49.23
of which personnel costs for freight transport (1000 US$)		3,160.3	7,947.1	8,670.0	56,400.0	141,000.0	225,600.0
of which personnel costs for passenger transport (1000 US$)		850.2	2,112.5	1,530.0	3,600.0	9,000.0	14,400.0

Estimation of the future financial situation of Azerbaijan Railways (pessimistic case)

Annex 2.2.2-5

Item	Time						
	1994	1995	1995 ber.	1997	2000	2010	2015
costs for traction energy (1000 US$)		9,210.0	9,210.0	10,250.7	18,339.4	33,748.8	41,997.5
Percentage of total costs (%)		31.08	20.27	14.83	10.29	9.41	8.61
of which costs for freight transport (1000 US$)		7,257.5	7,275.9	8,713.1	17,239.0	31,723.9	39,477.6
of which costs for passenger transport (1000 US$)		1,952.5	1,934.1	1,537.6	1,100.4	2,024.9	2,519.8
of which fuel (1000 US$)		1,756.5	1,756.5	1,955.0	3,497.7	6,436.6	8,009.8
of which electric power (1000 US$)		7,453.4	7,453.4	8,295.7	14,841.6	27,312.2	33,987.6
Repair costs (1000 US$)		5,611.1	11,222.2	24,394.0	36,276.7	63,783.7	72,957.1
Percentage of total costs (%)		18.94	24.70	35.28	20.36	17.78	14.97
of which costs for freight transport (1000 US$)		4,421.5	8,865.5	20,734.9	34,100.1	59,956.7	68,579.6
of which costs for passenger transport (1000 US$)		1,189.5	2,356.7	3,659.1	2,176.6	3,827.0	4,377.4
costs for other energy usage (1000 US$)		4,543.2	4,543.2	4,779.4	7,734.8	13,180.9	16,082.9
Percentage of total costs (%)		15.33	10.00	6.91	4.34	3.67	3.30
of which fuel (1000 US$)		1,088.2	1,088.2	1,144.8	1,852.7	3,157.2	3,852.2
of which electric power (1000 US$)		3,455.0	3,455.0	3,634.6	5,882.1	10,023.8	12,230.6
Other costs (1000 US$)		6,258.3	10,397.3	19,515.3	55,790.5	97,963.0	116,460.4
Percentage of total costs (%)		21.12	22.89	28.23	31.32	27.31	23.89
of which costs for material (1000 US$)		1,274.0	3,822.1	8,204.8	24,637.0	36,447.8	43,044.7
Percentage of total costs (%)		4.30	8.41	11.87	13.83	10.16	8.83
of which amortisation (1000 US$)		1,719.4	3,310.3	7,882.3	27,480.5	57,026.0	68,518.3
Percentage of total costs (%)		5.80	7.29	11.40	15.43	15.90	14.06
of which other costs (1000 US$)		3,264.9	3,264.9	3,428.2	3,673.0	4,489.3	4,897.4
Percentage of total costs (%)		11.02	7.19	4.96	2.06	1.25	1.00
Sum prime costs (1000 US$)		29,633.1	45,432.2	69,139.4	178,141.3	358,676.4	487,497.8

Estimation of the future financial situation of Azerbaijan Railways (pessimistic case)

Annex 2.2.2-5

Item	Time						
	1994	1995	1995 ber.	1997	2000	2010	2015
Cost Coverage							
Cost coverage passenger transport (1000 US$)		-4,466.0	-7,724.6	-9,270.8	-5,550.4	8,024.4	33,610.1
Cost coverage freight transport (1000 US$)		39,773.5	27,233.0	16,719.5	46,362.2	183,994.1	214,347.1
Cost coverage total transport (1000 US$)		35,307.5	19,508.4	7,448.7	40,811.8	192,018.6	247,957.2
Profit Calculation							
Net profit before tax requ. depreciation, interest and tax (1000 US$)		34,773.6	19,508.4	7,448.7	40,811.8	192,018.6	247,957.2
Tax required depreciation (1000 US$)		1,719.4	3,310.3	7,882.3	27,480.5	57,026.0	68,518.3
Net profit before interest and tax (1000 US$)		33,054.3	16,198.1	-433.6	13,331.3	134,992.6	179,438.9
Interest for (additional) loans (1000 US$)							
Net profit before tax (1000 US$)		33,054.3	16,198.1	-433.6	13,331.3	134,992.6	179,438.9
Taxes (1000 US$)		12,397.3	5,669.3	0.0	4,666.0	47,247.4	62,803.6
Net profit after tax (1000 US$)		20,657.0	10,528.8	-433.6	8,665.3	87,745.2	116,635.3
Financial Resources							
Own resources							
net profit after tax (1000 US$)		20,657.0	10,528.8	-433.6	8,665.3	87,745.2	116,635.3
tax required depreciation (1000 US$)		1,719.4	3,310.3	7,882.3	27,480.5	57,026.0	68,518.3
Sum of own resources (1000 US$)		22,376.3	13,839.0	7,448.7	36,145.8	144,771.2	185,153.6

Annex 2.2.2-6

Structure of the Georgian State Railways' original cost Year 1995 divided according to functional structure

Functional structure	Share of total cost	Amount 1995 '000 lari/year
I. Sum of expenditure at stations for passenger transport, container transport and commercial work	17.3 %	5,639.1
II. Sum of expenditure for tractive units	32.4 %	10,580.8
III. Sum of expenditure for wagons	7.3 %	2,388.8
IV. Sum of expenditure for route costs	26.8 %	8,749.5
V. Sum of expenditure for building construction	3.4 %	1,120.3
VI. Sum of expenditure for security and telecommunication technology	4.2 %	1,352.6
VII. Sum of the cost for energy supply	4.6 %	1,501.8
VIII. Transit cost		-
IX. Cost for breakdown trains	0.5 %	164.2
X. Remaining overheads for the two areas	1.3 %	430.3
XI. Railway administration cost	2.2 %	720.0
Total cost	**100 %**	**32.647.4**
out of it for passenger transport	38.1 %	12.426.5
out of it for goods transport	62.9 %	20.220.9

Annex 2.2.2-7

Structure of the Georgian State Railways' original cost Year 1995 divided according to selected cost types

Selected cost types	Amount 1995 '000 lari/year	Share of total cost
Personnel cost		
Wage fund	5,881.5	
Social contribution	+ 2,589.1	
Sum of personnel cost	8,470.6	25.9 %
Cost for driving fuel traction		
fuel	1,954.8	
electrical energy	+ 3,879.8	
Sum of cost for driving fuel	5,834.6	17.9 %
Cost for repairs (repair fund)	7,495.6	23.0 %
Cost for other energy consumption		
fuel	1,252.4	
electrical energy	+ 697.8	
Sum of cost for other energy consumption	1,950.2	6.0 %
Other costs	8,896.4	27.2 %
including amortisation	(1,767.2)	(5.4 %)
Total cost	**32,647.4** = $26.12 million	**100 %**

Annex 2.2.2-8

Structure of the Georgian State Railways' revenue Year 1995

Item	Amount 1995 '000 lari/year	Share of total revenue
Revenue from goods transport		
Revenue from transportation services	43,425.6	93.0 %
Revenue from additional charges	2,659.0	5.7 %
Sum of revenue from goods transport	*46,084.6*	*98.7 %*
Revenue from passenger transport		
Revenue from transportation services	605.4	1.3 %
Revenue from seat reservation	6.4	(0.0 %)
Revenue from luggage	9.9	(0.0 %)
Revenue from mail transportation	3.4	(0.0 %)
Sum of revenue from passenger transport	*625.1*	*1.3 %*
Total revenue	**46,709.7**	**100 %**

Estimation of the future financial situation of Georgian Railways (optimistic case)

Annex 2.2.2-9

Item	Time						
	1994	1995	1995 norm.	1997	2000	2010	2015
Development of Transportation Output							
No. of passengers (millions)	10.8	3.7	3.7	3.2	3.6	5.7	6.9
Passenger-kms (millions)	1,164	371	371	348	412	716	897
Average travel distance (km)	95	101	101	109	115	126	130
Tonnes originating (1000 t)	5,656	4,655	4,655	4,886	9,525	15,268	17,469
Net tonne-kms (milions)	955	1,246	1,246	1,319	3,238	5,191	5,940
Average lead (km)	182	268	268	270	340	340	340
Revenue from Passenger and Freight Transport							
Revenue from passenger transport (1000 US$)	372.4	520.9	520.9	1,045.2	6,186.0	35,780.0	89,730.0
Revenue from freight transport (1000 US$)	24,143.3	38,403.8	38,403.8	46,165.0	129,520.0	311,460.0	386,100.0
Total revenue (1000 US$)	24,515.7	38,924.7	38,924.7	47,210.2	135,706.0	347,240.0	475,830.0
Unit revenue in passenger transport (US$/passkm)	0.0003	0.0014	0.0014	0.0030	0.0150	0.0500	0.1000
Unit revenue in freight transport (US$/tkm)	0.0253	0.0308	0.0308	0.0350	0.0400	0.0600	0.0650
Prime Costs of Transport							
Prime costs of freight transport (1000 US$)	5,756.1	16,863.3	21,153.1	30,346.4	99,028.5	220,708.8	293,610.2
Prime costs of passenger transport (1000 US$)	3,660.3	10,355.3	12,964.8	10,662.2	17,475.6	38,948.6	51,813.6
Total prime costs (1000 US$)	9,416.3	27,218.7	34,117.8	41,008.6	116,504.1	259,657.4	345,423.7
Proportional coefficient prime costs freight transport of total costs	0.61	0.62	0.62	0.74	0.85	0.85	0.85
Proportional coefficient prime costs passenger transport of total costs	0.39	0.38	0.38	0.26	0.15	0.15	0.15
Unit cost freight transport (US$/tkm)	0.0060	0.0135	0.0170	0.0230	0.0306	0.0425	0.0494
Unit cost passenger transport (US$/passkm)	0.0031	0.0279	0.0349	0.0306	0.0424	0.0544	0.0577
DIfference unit revenue vs. unit cost passenger transport	-0.0028	-0.0265	-0.0335	-0.0276	-0.0274	-0.0044	0.0423
Difference unit revenue vs. unit cost freight transport	0.0193	0.0173	0.0138	0.0120	0.0094	0.0175	0.0156
Selected Cost Components							
Personnel costs (1000 US$)	2,125.4	6,731.9	8,265.7	8,600.0	35,000.0	100,000.0	150,000.0
Percentage of total costs (%)	22.6	24.7	24.2	21.0	30.0	38.5	43.4
of which personnel costs for freight transport (1000 US$)	1,299.2	4,170.8	5,124.7	6,364.0	29,750.0	85,000.0	127,500.0
of which personnel costs for passenger transport (1000 US$)	826.2	2,561.2	3,141.0	2,236.0	5,250.0	15,000.0	22,500.0

Estimation of the future financial situation of Georgian Railways (optimistic case)

Annex 2.2.2-9

Item	Time						
	1994	1995	1995 ber.	1997	2000	2010	2015
costs for traction energy (1000 US$)	2,661.8	4,862.3	4,862.3	5,411.7	9,682.0	17,282.3	21,041.4
Percentage of total costs (%)	28.3	17.9	14.3	13.2	8.3	6.7	6.1
of which costs for freight transport (1000 US$)	1,627.1	3,012.4	3,014.6	4,004.6	8,229.7	14,689.9	17,885.2
of which costs for passenger transport (1000 US$)	1,034.7	1,849.8	1,847.7	1,407.0	1,452.3	2,592.3	3,156.2
of which fuel (1000 US$)	701.8	1,629.0	1,629.0	1,813.1	3,243.7	5,790.1	7,049.5
of which electric power (1000 US$)	1,960.1	3,233.3	3,233.3	3,598.6	6,438.2	11,492.2	13,991.9
Repair costs (1000 US$)	2,493.7	8,522.1	10,000.0	13,000.0	32,000.0	62,000.0	75,000.0
Percentage of total costs (%)	26.5	31.3	29.3	31.7	27.5	23.9	21.7
of which costs for freight transport (1000 US$)	1,524.3	5,279.9	6,200.0	9,620.0	27,200.0	52,700.0	63,750.0
of which costs for passenger transport (1000 US$)	969.3	3,242.2	3,800.0	3,380.0	4,800.0	9,300.0	11,250.0
costs for other energy usage (1000 US$)	823.9	1,625.2	1,625.2	1,706.4	2,766.8	4,715.0	5,753.1
Percentage of total costs (%)	8.7	6.0	4.8	4.2	2.4	1.8	1.7
of which fuel (1000 US$)	300.8	581.5	581.5	610.6	990.0	1,687.1	2,058.5
of which electric power (1000 US$)	523.1	1,043.7	1,043.7	1,095.9	1,776.8	3,027.9	3,694.6
Other costs (1000 US$)	1,311.3	5,477.3	9,364.6	12,290.5	37,055.3	75,660.1	93,629.3
Percentage of total costs (%)	13.9	20.1	27.4	30.0	31.8	29.1	27.1
of which costs for material (1000 US$)	243.1	1,585.3	3,300.8	3,750.0	8,333.3	13,333.3	20,000.0
Percentage of total costs (%)	2.6	5.8	9.7	9.1	7.2	5.1	5.8
of which amortisation (1000 US$)	498.2	1,472.5	3,644.3	6,000.0	26,000.0	59,000.0	70,000.0
Percentage of total costs (%)	5.3	5.4	10.7	14.6	22.3	22.7	20.3
of which other costs (1000 US$)	570.1	2,419.5	2,419.5	2,540.5	2,721.9	3,326.8	3,629.3
Percentage of total costs (%)	6.1	8.9	7.1	6.2	2.3	1.3	1.1
Sum prime costs (1000 US$)	9,416.2	27,218.7	34,117.7	41,008.6	116,504.1	259,657.4	345,423.7

Estimation of the future financial situation of Georgian Railways (optimistic case)

Annex 2.2.2-9

Item	Time						
	1994	1995	1995 ber.	1997	2000	2010	2015
Cost Coverage							
Cost coverage passenger transport (1000 US$)	-3,287.9	-9,834.4	-12,443.9	-9,617.0	-11,289.6	-3,168.6	37,916.4
Cost coverage freight transport (1000 US$)	18,387.2	21,540.5	17,250.8	15,818.6	30,491.5	90,751.2	92,489.8
Cost coverage total transport (1000 US$)	15,099.3	11,706.1	4,806.9	6,201.6	19,201.9	87,582.6	130,406.3
Profit Calculation							
Net profit before tax requ. depreciation, interest and tax (1000 US$)		13,413.8	4,807.1	6,201.6	19,201.9	87,582.6	130,406.3
Tax required depreciation (1000 US$)		1,472.5	3,644.3	6,000.0	26,000.0	59,000.0	70,000.0
Net profit before interest and tax (1000 US$)		11,941.3	1,162.8	201.6	-6,798.1	28,582.6	60,406.3
Interest for (additional) loans (1000 US$)							
Net profit before tax (1000 US$)		11,941.3	1,162.8	201.6	-6,798.1	28,582.6	60,406.3
Taxes (1000 US$)		1,723.5	232.6	40.3	0.0	5,716.5	12,081.3
Net profit after tax (1000 US$)		10,217.8	930.2	161.3	-6,798.1	22,866.1	48,325.0
Financial Resources							
Own resources							
net profit after tax (1000 US$)		10,217.8	930.2	161.3	-6,798.1	22,866.1	48,325.0
tax required depreciation (1000 US$)		1,472.5	3,644.3	6,000.0	26,000.0	59,000.0	70,000.0
Sum of own resources (1000 US$)		11,690.3	4,574.5	6,161.3	19,201.9	81,866.1	118,325.0

Estimation of the future financial situation of Georgian Railways (pessimistic case)

Annex 2.2.2-10

Item	Time						
	1994	1995	1995 norm.	1997	2000	2010	2015
Development of Transportation Output							
No. of passengers (millions)	10.8	3.7	3.7	3.1	2.9	4.3	4.8
Passenger-kms (millions)	1,164	371	371	338	321	550	620
Average travel distance (km)	95	101	101	109	111	129	129
Tonnes originating (1000 t)	5,656	4,655	4,655	4,390	6,086	11,605	13,700
Net tonne-kms (milions)	955	1,246	1,246	1,185	2,069	3,946	4,658
Average lead (km)	182	268	268	270	340	340	340
Revenue from Passenger and Freight Transport							
Revenue from passenger transport (1000 US$)	372.4	520.9	520.9	844.3	3,205.0	27,505.0	62,020.0
Revenue from freight transport (1000 US$)	24,143.3	38,403.8	38,403.8	41,475.0	82,760.0	236,760.0	302,770.0
Total revenue (1000 US$)	24,515.7	38,924.7	38,924.7	42,319.3	85,965.0	264,265.0	364,790.0
Unit revenue in passenger transport (US$/passkm)	0.0003	0.0014	0.0014	0.0025	0.0100	0.0500	0.1000
Unit revenue in freight transport (US$/tkm)	0.0253	0.0308	0.0308	0.0350	0.0400	0.0600	0.0650
Prime Costs of Transport							
Prime costs of freight transport (1000 US$)	5,756.1	16,863.3	21,153.1	26,970.2	68,512.8	177,977.3	255,039.2
Prime costs of passenger transport (1000 US$)	3,660.3	10,355.3	12,964.8	11,016.0	12,090.5	31,407.8	38,109.3
Total prime costs (1000 US$)	9,416.3	27,218.7	34,117.8	37,986.2	80,603.2	209,385.0	293,148.5
Proportional coefficient prime costs freight transport of total costs	0.61	0.62	0.62	0.71	0.85	0.85	0.87
Proportional coefficient prime costs passenger transport of total costs	0.39	0.38	0.38	0.29	0.15	0.15	0.13
Unit cost freight transport (US$/tkm)	0.0060	0.0135	0.0170	0.0228	0.0331	0.0451	0.0548
Unit cost passenger transport (US$/passkm)	0.0031	0.0279	0.0349	0.0326	0.0377	0.0571	0.0614
DIfference unit revenue vs. unit cost passenger transport	-0.0028	-0.0265	-0.0335	-0.0301	-0.0277	-0.0071	0.0386
Difference unit revenue vs. unit cost freight transport	0.0193	0.0173	0.0138	0.0122	0.0069	0.0149	0.0102
Selected Cost Components							
Personnel costs (1000 US$)	2,125.4	6,731.9	8,265.7	8,200.0	20,000.0	80,000.0	135,000.0
Percentage of total costs (%)	22.6	24.7	24.2	21.6	24.8	38.2	46.1
of which personnel costs for freight transport (1000 US$)	1,299.2	4,170.8	5,124.7	5,822.0	17,000.0	68,000.0	117,450.0
of which personnel costs for passenger transport (1000 US$)	826.2	2,561.2	3,141.0	2,378.0	3,000.0	12,000.0	17,550.0

Estimation of the future financial situation of Georgian Railways (pessimistic case)

Annex 2.2.2-10

Item	Time						
	1994	1995	1995 ber.	1997	2000	2010	2015
costs for traction energy (1000 US$)	2,661.8	4,862.3	4,862.3	4,977.7	7,275.1	13,939.5	17,285.3
Percentage of total costs (%)	28.3	17.9	14.3	13.1	9.0	6.7	5.9
of which costs for freight transport (1000 US$)	1,627.1	3,012.4	3,014.6	3,534.2	6,183.9	11,848.5	15,038.2
of which costs for passenger transport (1000 US$)	1,034.7	1,849.8	1,847.7	1,443.5	1,091.3	2,090.9	2,247.1
of which fuel (1000 US$)	701.8	1,629.0	1,629.0	1,667.7	2,437.4	4,670.1	5,791.1
of which electric power (1000 US$)	1,960.1	3,233.3	3,233.3	3,310.0	4,837.8	9,269.3	11,494.2
Repair costs (1000 US$)	2,493.7	8,522.1	10,000.0	10,850.9	17,430.8	47,131.9	58,805.0
Percentage of total costs (%)	26.5	31.3	29.3	28.6	21.6	22.5	20.1
of which costs for freight transport (1000 US$)	1,524.3	5,279.9	6,200.0	7,704.2	14,816.2	40,062.1	51,160.4
of which costs for passenger transport (1000 US$)	969.3	3,242.2	3,800.0	3,146.8	2,614.6	7,069.8	7,644.7
costs for other energy usage (1000 US$)	823.9	1,625.2	1,625.2	1,694.1	1,980.5	3,851.0	4,664.2
Percentage of total costs (%)	8.7	6.0	4.8	4.5	2.5	1.8	1.6
of which fuel (1000 US$)	300.8	581.5	581.5	599.1	548.1	1,377.9	1,668.9
of which electric power (1000 US$)	523.1	1,043.7	1,043.7	1,095.0	1,432.4	2,473.1	2,995.3
Other costs (1000 US$)	1,311.3	5,477.3	9,364.6	12,263.5	33,916.8	64,462.7	77,393.9
Percentage of total costs (%)	13.9	20.1	27.4	32.3	42.1	30.8	26.4
of which costs for material (1000 US$)	243.1	1,585.3	3,300.8	3,350.8	4,828.2	10,135.9	15,681.3
Percentage of total costs (%)	2.6	5.8	9.7	8.8	6.0	4.8	5.3
of which amortisation (1000 US$)	498.2	1,472.5	3,644.3	6,372.1	26,666.7	51,000.0	58,083.3
Percentage of total costs (%)	5.3	5.4	10.7	16.8	33.1	24.4	19.8
of which other costs (1000 US$)	570.1	2,419.5	2,419.5	2,540.5	2,421.9	3,326.8	3,629.3
Percentage of total costs (%)	6.1	8.9	7.1	6.7	3.0	1.6	1.2
Sum prime costs (1000 US$)	9,416.2	27,218.7	34,117.7	37,986.2	80,603.2	209,385.0	293,148.5

Estimation of the future financial situation of Georgian Railways (pessimistic case)

Annex 2.2.2-10

Item	Time						
	1994	1995	1995 ber.	1997	2000	2010	2015
Cost Coverage							
Cost coverage passenger transport (1000 US$)	-3,287.9	-9,834.4	-12,443.9	-10,171.7	-8,885.5	-3,902.8	23,910.7
Cost coverage freight transport (1000 US$)	18,387.2	21,540.5	17,250.8	14,504.8	14,247.2	58,782.7	47,730.8
Cost coverage total transport (1000 US$)	15,099.3	11,706.1	4,806.9	4,333.1	5,361.8	54,880.0	71,641.5
Profit Calculation							
Net profit before tax requ. depreciation, interest and tax (1000 US$)		13,413.8	4,807.1	4,333.1	5,361.8	54,880.0	71,641.5
Tax required depreciation (1000 US$)		1,472.5	3,644.3	6,372.1	26,666.7	51,000.0	58,083.3
Net profit before interest and tax (1000 US$)		11,941.3	1,162.8	-2,039.1	-21,304.9	3,880.0	13,558.2
Interest for (additional) loans (1000 US$)							
Net profit before tax (1000 US$)		11,941.3	1,162.8	-2,039.1	-21,304.9	3,880.0	13,558.2
Taxes (1000 US$)		1,723.5	232.6	0.0	0.0	776.0	2,711.6
Net profit after tax (1000 US$)		10,217.8	930.2	-2,039.1	-21,304.9	3,104.0	10,846.5
Financial Resources							
Own resources							
net profit after tax (1000 US$)		10,217.8	930.2	-2,039.1	-21,304.9	3,104.0	10,846.5
tax required depreciation (1000 US$)		1,472.5	3,644.3	6,372.1	26,666.7	51,000.0	58,083.3
Sum of own resources (1000 US$)		11,690.3	4,574.5	4,333.1	5,361.8	54,104.0	68,929.9

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Annexes

Chapter 3 Technical Pre-feasibility

3.1 Track and Constructional works
3.2 Rolling stock
3.3 Signalling and Telecommunication

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Final Report Modul A

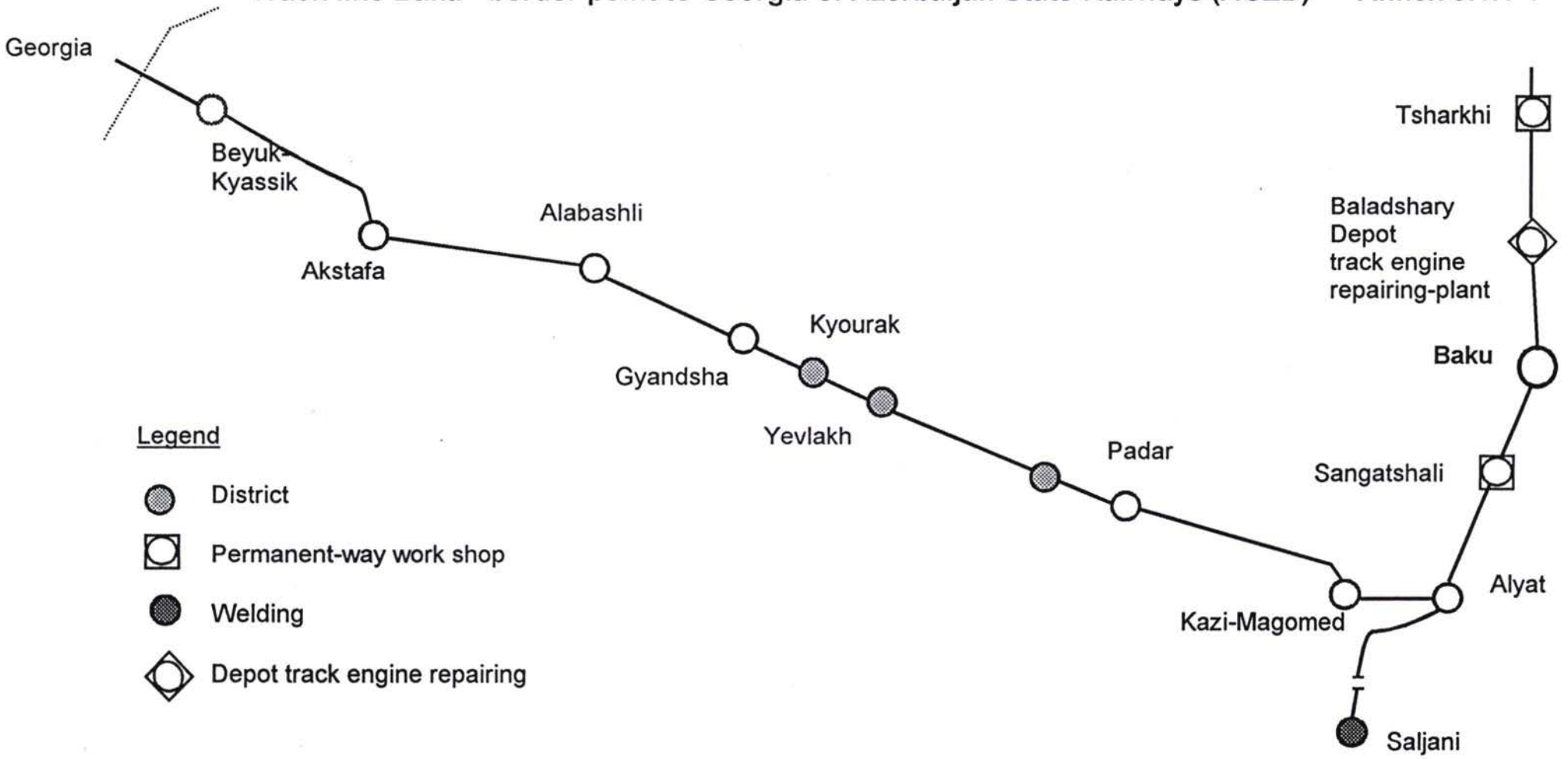
Annexes

Chapter 3 Technical Pre-feasibility

3.1 Track and Constructional works

3.1.1 Azerbaijan

Track line Baku - border point to Georgia of Azerbaijan State Railways (AGZD) Annex 3.1.1-1



List of bridges located on the investigated line

Annex 3.1.1-2

No.	Bridge km	Name of bridge	crossing river valley	length	Span	Needs	remarks
1	61 +800 le	Metallbr.	Kaza-su	51.20	4 x 10,66	Maintenance	
2	61 +800 ri	Fer.concrete	"	51,65	4 x 11,50	Maintenance	
3	66 +500 le	"	Feeder	27,65	1 x 10,68	Maintenance	
4	66 +500 ri	"	"	32,50	3 x 9,30	Maintenance	
5	72 +300	Metal-bridge	Kuza	208,36	11,52+34,00+87,00+55,00+11,52	Maintenance	single track
6	88 +000	Pedestrian	St.Akstafa	60,10	12,30+18,60+8,50+19,20	Maintenance	
7	88 +900	Fer.concrete	Irrig.canal	36,10	2x10,00+16,00	Maintenance	
8	93 +700 le	Metal-bridge	Cassan-su	37,53	1x22,76	Maintenance	
9	" ri	"	"	36,55	1x23,00	Maintenance	
10	111 +200 le	"	Achindshats.	110,87	56,23+2x22,76		Openings in
11	" ri	"	" "	114,50	53,40+13,60		construction
12	112 +800le	"	Aseik-tschai	25,16	1x21,34	Maintenance	
13	130 +100le	"	Dsegyam-tsch	53,24	2x22,36	Maintenance	
14	130 +100ri	"	" "	44,38	4x10,70	Maintenance	
15	145 +100le	Fer.concrete	Irrig.canal	25,18	1x11,60	Maintenance	
16	145 +100ri	"	" "	25,18	1+11,60	Maintenance	
17	147 +500le	"	" "	32,50	2x11,88	Maintenance	
18	147 +500ri	"	" "	34,17	2x11,80	Maintenance	
19	157 +700le	Metal-bridge	Shamkirtsch	53,85	2x22,70	Riverdraining urgent	
20	157 +700ri	"	" "	53,90	2x21,30	Riverdraining urgent	
21	174 +800le	"	Koshkastsc	28,10	1x21,19	Maintenance	
22	174 +800ri	"	" "	29,14	1x22,36	Maintenance	
23	179 +700	Fer.concrete	Chan-asch	25,21	2x8,70	Maintenance	
24	182 +000	Footbridge	St.Gyandsha	114,00	1x63,30	Maintenance	
25	186 +200le	Metalbridge	Gyandshats.	56,95	2x22,36	Maintenance	
26	186 +200ri	"	" "	51,30	4x10,66	Maintenance	
27	208 +300le	Fer.concrete	Kjusaktschai	28,20	1x23,00	Maintenance	
28	208 +300ri	"	" "	26,32	1x6,5+1x13,98	Maintenance	
29	221,+900le	Metal-bridge	Gerantschai	27,18	1x14,44+1x7,55	Maintenance	
30	221 +900ri	"	" "	37,00	1x23,60	Maintenance	

List of bridges located on the investigated line

No.	Bridge km	Name of bridge	crossing river valley	length	Span	Needs	remarks
31	234 +600	Fer.concrete	Obes.Kasca.	34,20	2x3,65+2x3,60	bridge openings to small	
32	249 +800	Footbridge	St Yewlach	66,10	1x18,00+1x21,00+1x27,00	Maintenance	
33	252 +800le	Metalbridge	Kura	262,77	2x11,50+3x76,80	heavy repair	
34	252 +800ri	"	"	262,77	11,50+77,00+2x76,80+11,50	heavy repair	
35	275 +900le	Fer.concrete	Turiantschai	46,35	1x10,80+1x15,80+1x10,80	Maintenance	
36	275 +900ri	Metal-bridge	" "	44,68	1x33,60	Maintenance	
37	294 +900	Footbridge	St.Udshary	54,06	1x26,77+1x26,78	maintenance	
38	300 +900le	Fer.concrete	Geoktschai	43,30	3x10,80	Maintenance	
39	300 +900ri	Metalbridge	" "	41,40	3x10,67	Maintenance	
40	341 +300	Footbridge	Kjurdamic	57,10	1x20,87+1x12,05+1x22,40	Maintenance	
41	360 +200le	Fer.concrete	Canal	38,96	4x6,00	Maintenance	
42	360 +200ri	" "	Canal	38,96	4x6,00	Maintenance	
43	368 +400le	Fer.concrete	Irrig.canal	30,18	3x7,13	Maintenance	
44	368 +400ri	Fer.concrete	Irrig.canal	28,15	3x7,62	Maintenance	
45	418 +100	Fer.concrete		26,20	1x10,80	Maintenance	
46	475 +000	Metalbridge		33,90	1x18,00	Maintenance	
47	475 +000ri	Metalbridge		33,90	1x18,00	Maintenance	
48	475 +000	Fer.concrete		35,75	1x19,40	Maintenance	
49	482 +600le	Metalbridge		38,40	1x22,36	heavy repair	
50	482 +600	Metalbridge		38,40	1x22,36	heavy repair	
51	531 +200ri	Metallbridge		31,20	1x21,36	Maintenance	
52	532 +600le	Fer.concrete	Binagad	53,16	2x10,61	Maintenance	
53	532 +600ri	Fer.concrete	Binagad	53,16	2x10,61	Maintenance	
54	538 +000	Fer.concrete	Bagis-bridge	33,01	1x18,00	Maintenance	
55	540 +700	Footbridge	St.Montino	27,71	1x6,31+1x10,10	Maintenance	
56	541 +500	Fer.concrete	Moskowskiy	48,40	1x19,05	renewing,damaged	
57	543 +000	Metalbridge	St.Fioletowo	61,30		Maintenance	

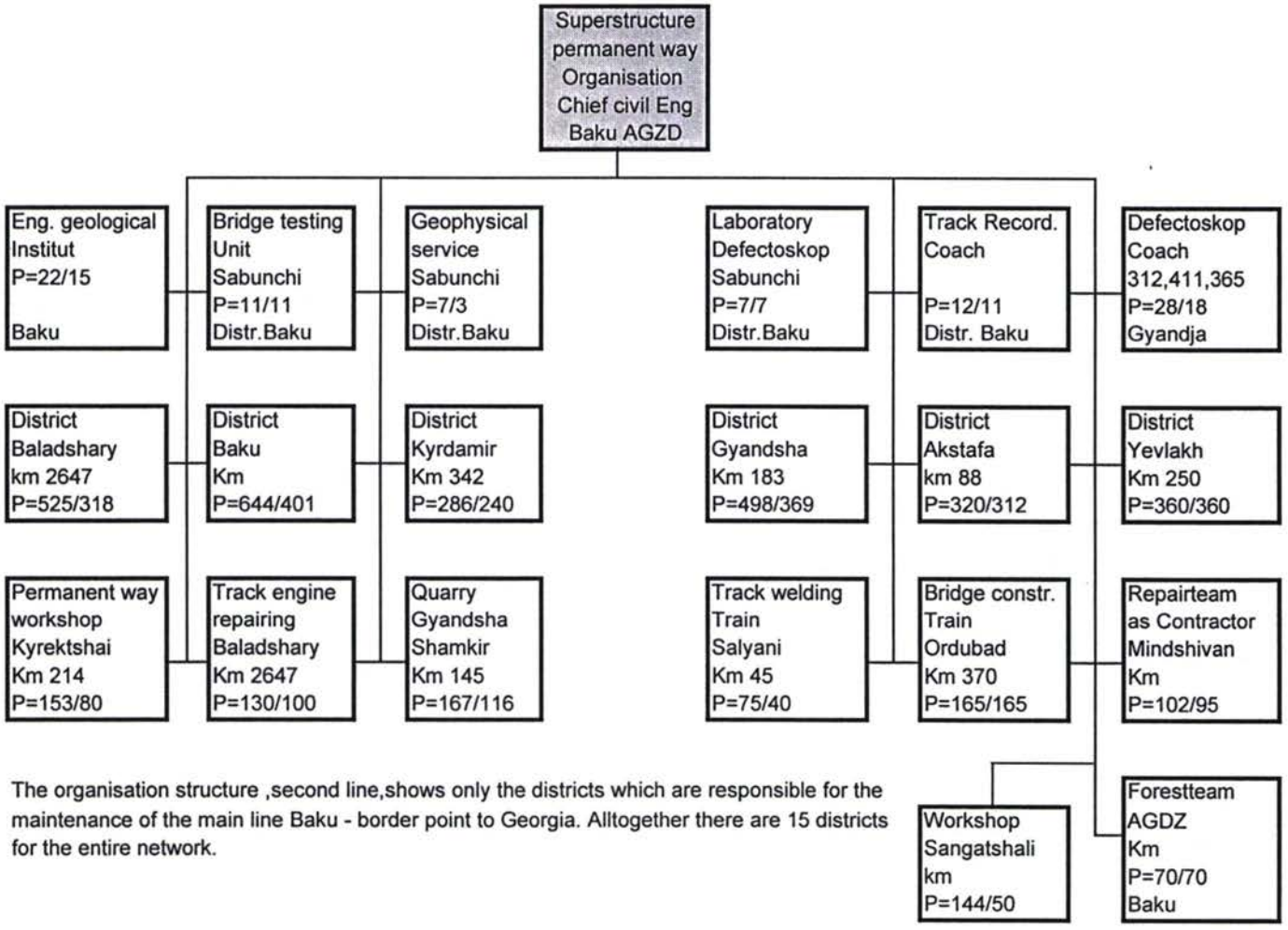
Annex 3.1.1-3

Worst track sections on the investigated line

No.	section	site start km	site end km	site length km	actual speed restriction km/h	ranking list	remarks
1	2	3	4	5	6	7	8
1	Yevlakh-Mingetshaur	236	246	10	5km 25km/h 4km 40km/h	**7**	2km (-6)
2	Yjaki-Malai	262	266	4	2km 25km/h	**10**	
3	Udshary-Alikend	286	294	8	3km 60km/h 4km 40km/h	**11**	
4	Gadjshievo-Padar	384	392	8	1km 40km/h	**4**	3km(-6)
5	Karabudshag-Mysysly	320	330	10		**3**	5km(-6)
6	Atbulak-Navagi	433	446	13		**5**	2km(-6)
7	Aliat-Atbulak	446	460	14	3km 25km/h	**1**	11km(-6)
8	Duvanni-Aliat	460	473	13	10km 40km/h	**2**	5km(-6)
9	Sangatshaly-Duvanni	473	484	11	1km 15km/h	**6**	2km(-6)
10	Karadag-Sangatshaly	488	497	9		**8**	1km(-6)
11	Baladshary-Eibat	517	527	10	1km 40km/h 2km 60km/h	**9**	1km(-6)
12	Baku-gr.Kishli	2654	2660	6		**12**	
Track border point-Baku				**116**			**50km(-6)**
13	Karabudshag-Kyrdamir	328	341	13	1km 25km/h	**3**	4km(-6)
14	Kerar-Sgiri-Padar	352	378	26	14km 60km/h	**1**	12km(-6)
15	Mugan-Gadjshievo	391	404	13	13km 60km/h	**2**	11km(-6)
16	Sangatshaly-Karadag	484	496	14	1km 25km/h	**4**	2km(-6)
17	Eibat-Baladshary	515	525	10		**5**	1km(-6)
18	Puta-Eibat	509	517	8		**7**	
Track Baku -border point				**84**			**30km(-6)**

Annex 3.1.1-4

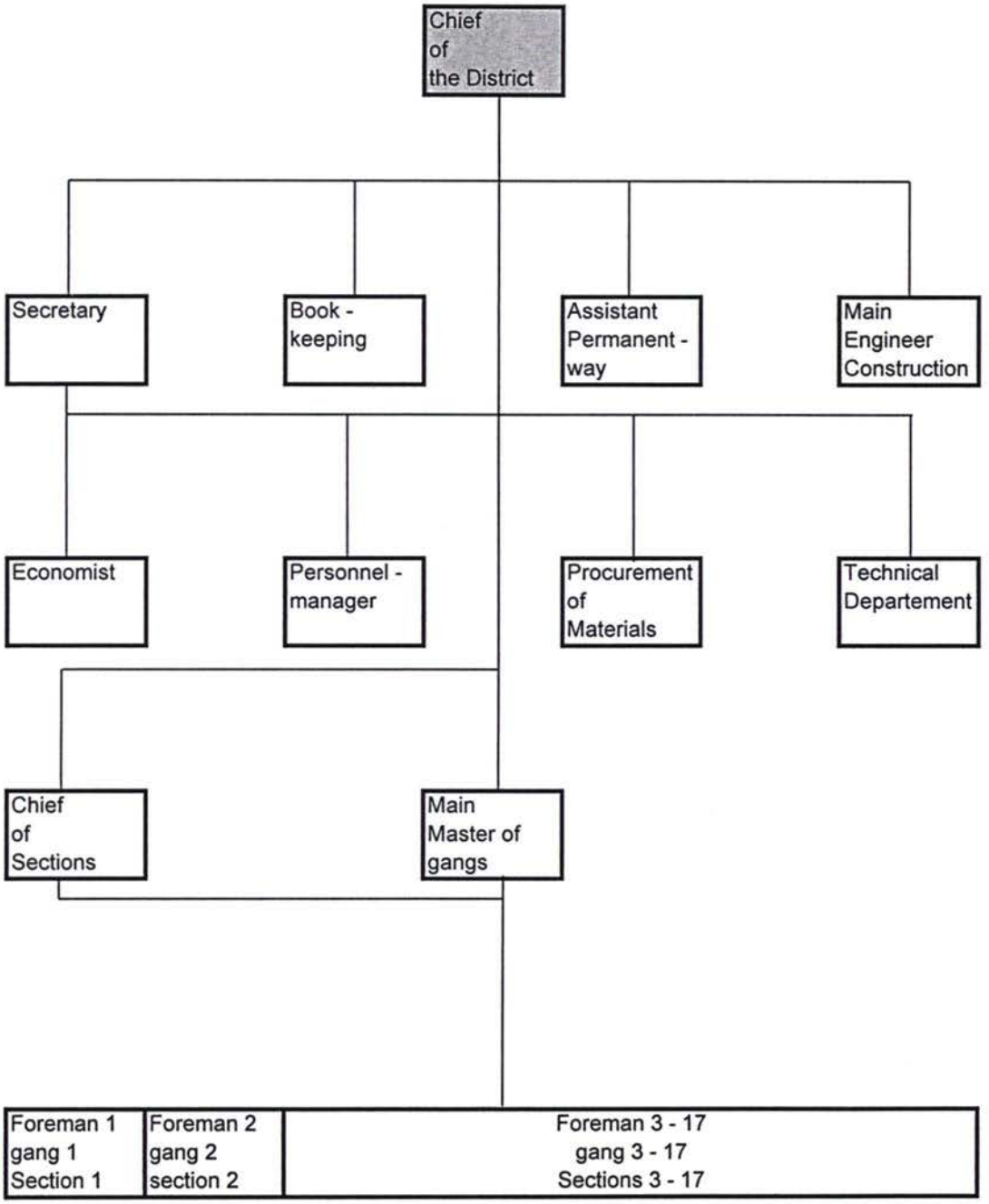
Organisational structure of permanent-way General management



The organisation structure ,second line,shows only the districts which are responsible for the maintenance of the main line Baku - border point to Georgia. Alltogether there are 15 districts for the entire network.

Annex 3.1.1-5

Organisational structure of the Baku district



Annex 3.1.1-6

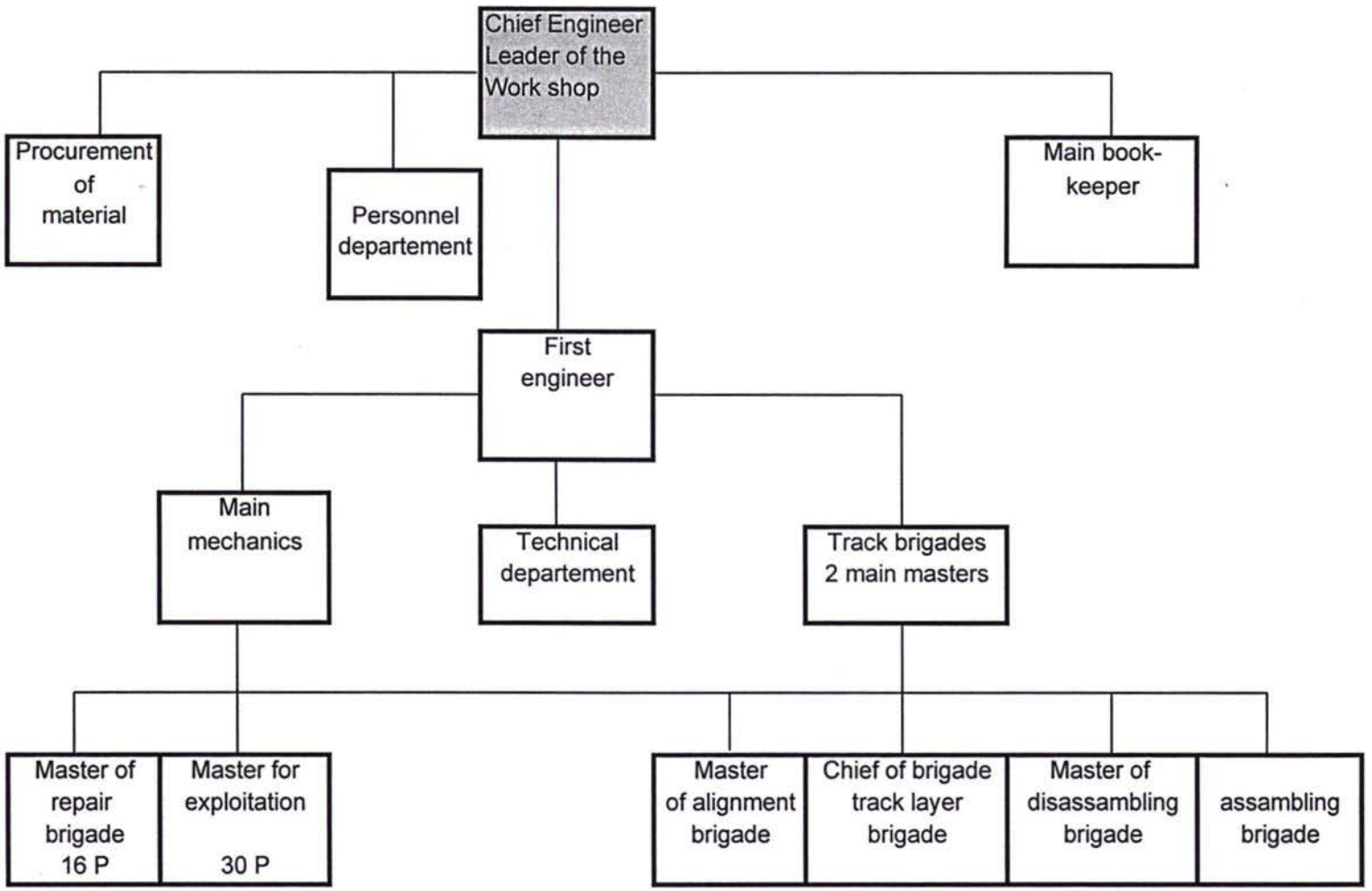
Inventory of small track maintenance engines and track tools

District BAKU						
Equipment of small track maintenance machines and track tools						
No.	Designation	Basic requirement of one gang	Stock and shortage of essential equipment for 17 track gangs of Baku - District			
			required	available	shortage	remarks
1	packing of sleepers (el)	10	170	36	134	
2	rail saw (el) RM 2	1	17	12	5	
3	rail drilling machine (el)	1	17	15	2	
	1024 B					
4	rail grindingmachine (el)					
	MRSh 3	1	17	2	15	
5	rail screwmachine (el)					
	EK 1	2	34	3	31	
6	screwmachine ShV - 1	2	34	0	34	
7	hydraulic rail pinch	1	17	15	2	
8	hydraulic track-lifter	6	102	67	35	
9	hydraulic					
	track-straightening-set					
	one set consists of 5 pieces	1	17	2	15	
10	tongs for concrete sleepers.	2	34	0	34	
11	rail puller for long rails	2	34	0	34	
12	generator AB - 2 kw	1	17	9	8	
	AB - 4 kw	1	17	15	2	
13	signallamps	8	136	7	129	
14	personnel transport truck	12	12	0	12	per district
15	leadership car	2	2	0	2	per district

The Annex shows the stock and the shortage of the equipment with regard of one gang and extrapolated of the 17 gangs which exist at Baku district.

Annex 3.1.1-7

Organisational structure of permanent-way-work-shop Sangatshali



Annex 3.1.1-8

Inventory of AGZD track engines

No.	Type of engine	Performance	Quantity	operating	out of order	needs		Remarks
						repair	replace	
1	2	3	4	5	6	7	8	9
1	VPO 3000 Tamper ing & levelling	3 km/h	3	1	2	1	1	
2	ELB leveling grader with ballast brush & plough	2.8 m/s	3	3	0	0	0	managed by permanent way work shop
3	VPRS - 02 tamping,levelling straitening,track & switches	270 m/h	1	0	1	1	0	
4	VPR, tamping, levelling track only	650 m/h	1	0	1	1	0	
5	ROM rail cleaner by high pressure water jets	2000 m/h	1	1	0	0	0	
6	Shom ballast cleaner	2000 m^3/h or 750 m/h track	1	1	0	0	0	seen 29.05.96 only shunting cleaning unsufficient only 60 cm f. rail head
7	PRSM, butt welding & rail grinding machine	10 welds per h	2	1	1	0	1	managed by rail welding plant at Saliani
8	PMG,bold screw-ing machine	800m/h	4	4	0	0	0	
9	R 2000 track liner	2000 m/h	1	0	0	0	1	
10	ZOuB,snow &waste-plough	74.2 t/h	2	1	1	1	0	Balaschenko
11	Cranes,with hori-zontal swinging jib	4 t at 5.8m	33	16	17	14	3	2 -3 per distrct type DGKU
12	ballast hoppers	35 m^3	338	0	0	0	0	pneumatik command
13	Snowplough unit	750 t/h	5	4	1	1	0	type SM-2
14	Snowplough unit	25 km/h	10	5	5	0	5	type SDP
15	Snowplough unit	25 km/h	3	3	0	0	0	type TARAN
16	Snowplough unit	25 km/h	3	1	2	0	2	type UDPM
17	Trackmotorcar	5 t	4	4	0	0	0	type MPT
18	Motorcranwagon	45 t	13	10	3	3	0	type MPD
19	UK-25/18	1000 m/h	8	6	2	2	0	
20	Planningmachine	40 kN	3	2	1	1	0	
21	Railwaycran	170 kN	17	12	5	3	2	
22	Dieselengine	100 kN	11	10	1	1	0	type TGM-2
23	Dieselengine	1000 kN	1	1	0	0	0	type TEM

Annex 3.1.1-9

Cost estimation of track renewal and connected equipment

No	Designation and short description	quantity	price per unit in million US$	to realise till year 2000 million US$	to realise till year 2005 million US$
1	2	3	4	5	6
	Track and switch renewals				
1	track-b p G-Baku the worst parts				
	unit km	116	0.300	34.800	
2	track-Baku-b p G,				
	unit km	84	0.300	25.200	
3	track Baku-b p G and vice versa, difference 366-200				
	unit km	166	0.300		49.800
4	switch renewals				
	200 p R65 1:11,unit piece	200	0.040	8.000	
5	crossing timber sets, unit set	140	0.010	1.400	
	Annual renewal program start year 2001				
6	on the investigated line 50 km/year, unit km				
	50 x 5 =	250	0.300		75.000
7	switch renewal, 50/year				
	50 x 5 =	250	0.040		10.000
	total till year 2000			**69.400**	
	total till year 2005				**134.800**
	District equipment				
8	small engines and tools				
	page 21, 6x2.5 million US$	6	2.500	15.000	
9	bridge inspection vehicle	1	1.170	1.170	
10	track vehicle model VMT 850	6	0.570	3.420	
11	rail/road loader excavator	6	0.335	2.01	
	total till year 2000			**21.600**	

No	Designation and short description	quantity	price per unit in million US$	to realise till year 2000 million US$	to realise till year 2005 million US$
1	2	3	4	5	6
	Equipment for permanent -way-work-shop				
12	RM 80 ballast cleaning machine, universal application, unit piece	2	4.380	4.380	4.380
	spare parts to no 12		0.438	0.438	0.438
13	Unimat 08-475-4S unit piece	2	2.860	2.860	2.860
	spare parts to no 13		0.286	0.286	0.286
14	high performance ballast re-gulating machine,	2	1.400	1.400	1.400
	spare parts to no. 14		0.160	0.160	0.160
15	hydraulic rail threater type				
	MPR	3	0.550	1.100	0.550
16	diesel motors for UK - crane				
	UK 18/25	4	0.020	0.080	
17	set spare parts for UK system	4	0.010	0.040	
	total till year 2000			**10.744**	
	total till year 2005				**10.074**
	Bridge renewal and major repair				
18	bridge 56, km 541+500	1	1.000	1.000	
19	bridge 19+20, km 157+700	2	0.433	0.866	
20	bridge 10+11, km 111+200	2	0.477	0.954	
21	bridge 31, km 204+600	1	0.100	0.100	
22	bridge 33+34, km 252+800	2	1.475	2.950	
23	bridge 41+42, km 360+200	2	0.100	0.200	
24	bridge 5, km 72+300	1	4.545		4.545
	total till year2000			**6.070**	
	total till year 2005				**4.545**
	Quarry equipment				
25	**total till year 2000 lumpsum**			**0.600**	

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Annexes

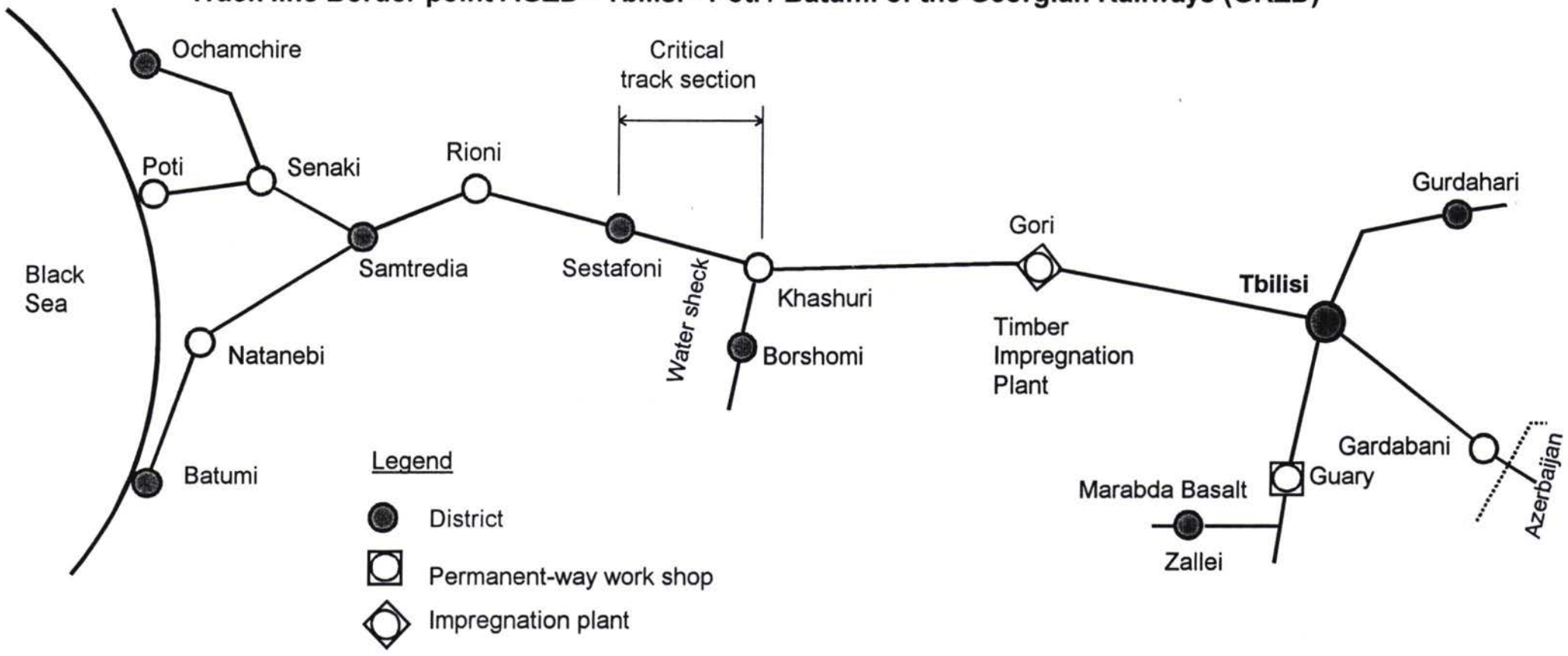
Chapter 3 Technical Pre-feasibility

3.1 Track and Constructional works

3.1.2 Georgia

Annex 3.1.2-1

Track line Border point AGZD - Tbilisi - Poti / Batumi of the Georgian Railways (GRZD)



List of bridges located on the investigated line

Annex 3.1.2-2

No.	Bridge km	crossing river valley	length m	Needs of major or minor repair	missing	remarks
1	31 + 849	Rioni	413	400 bridge sleepers renewal		Poti - Senaki
2	29 + 700	Korathi	41	20 bridge sleepers renewal		Poti - Senaki
3	21 + 791	Korathi	40	20 bridge sleepers renewal		Poti - Senaki
4	18 + 657	Korathi	59	25 bridge sleepers renewal		Poti - Senaki
5	3 + 678	Ziwi	103		Maintenance	Poti - Senaki
6	2 + 915	Gortali	26		Maintenance	Poti - Senaki
7	2234 + 383	Techuri	183	renewal of bridge support		Senaki - Samtredia
8	2235 + 491	Galitscha	34		Maintenance	Senaki - Samtredia
9	2238 +043	Skuria	34		Maintenance	Senaki - Samtredia
10	2241 + 529	Abascha	116	100 bridge sleepers renewal		Senaki - Samtredia
11	2248 + 179	Nochela	118	100 as above and corrosion prot.		Senaki - Samtredia
12	2248 + 179	Nochela	119		Maintenance	Senaki - Samtredia
13	2255 + 143	Zchenisskaro	118	400 bridge sleepers renewal		Senaki - Samtredia
14	2255 + 143	Zchenisskaro	129		Maintenance	Senaki - Samtredia
15	2261 + 963	Estakade	175		Maintenance	Senaki - Samtredia
16	2266 + 528	Gubitzwali	111		Maintenance	Samtredia - Sestafoni
17	2266 + 528	Gubitzwali	115		Maintenance	Samtredia - Sestafoni
18	2289 + 216	Lioni	185	needs renewal, year of constr. 1896		Samtredia - Sestafoni
19	2290 + 850		28		Maintenance	Samtredia - Sestafoni
20	2291 + 887	Zkazitela	57		Maintenance	Samtredia - Sestafoni
21	2291 + 887	Zkazitela	61		Maintenance	Samtredia - Sestafoni
22	2295 + 801	Kwirila	208		Maintenance	Samtredia - Sestafoni
23	2295 + 801	Kwirila	210		Maintenance	Samtredia - Sestafoni
24	2304 + 578	Lehuti	27		Maintenance	Samtredia - Sestafoni
25	2308 + 214	Kwrila	162		Maintenance	Samtredia - Sestafoni
26	2308 + 214	Kwrila	170		Maintenance	Samtredia - Sestafoni
27	2324 + 239	Kwrila	93	needs renewal, year of constr.1907		Samtredia - Sestafoni
28	2324 + 239	Kwrila	87		Maintenance	Sestafoni - Khashuri
29	2327 + 428	Dzirula	157		Maintenance	Sestafoni - Khashuri

List of bridges located on the investigated line

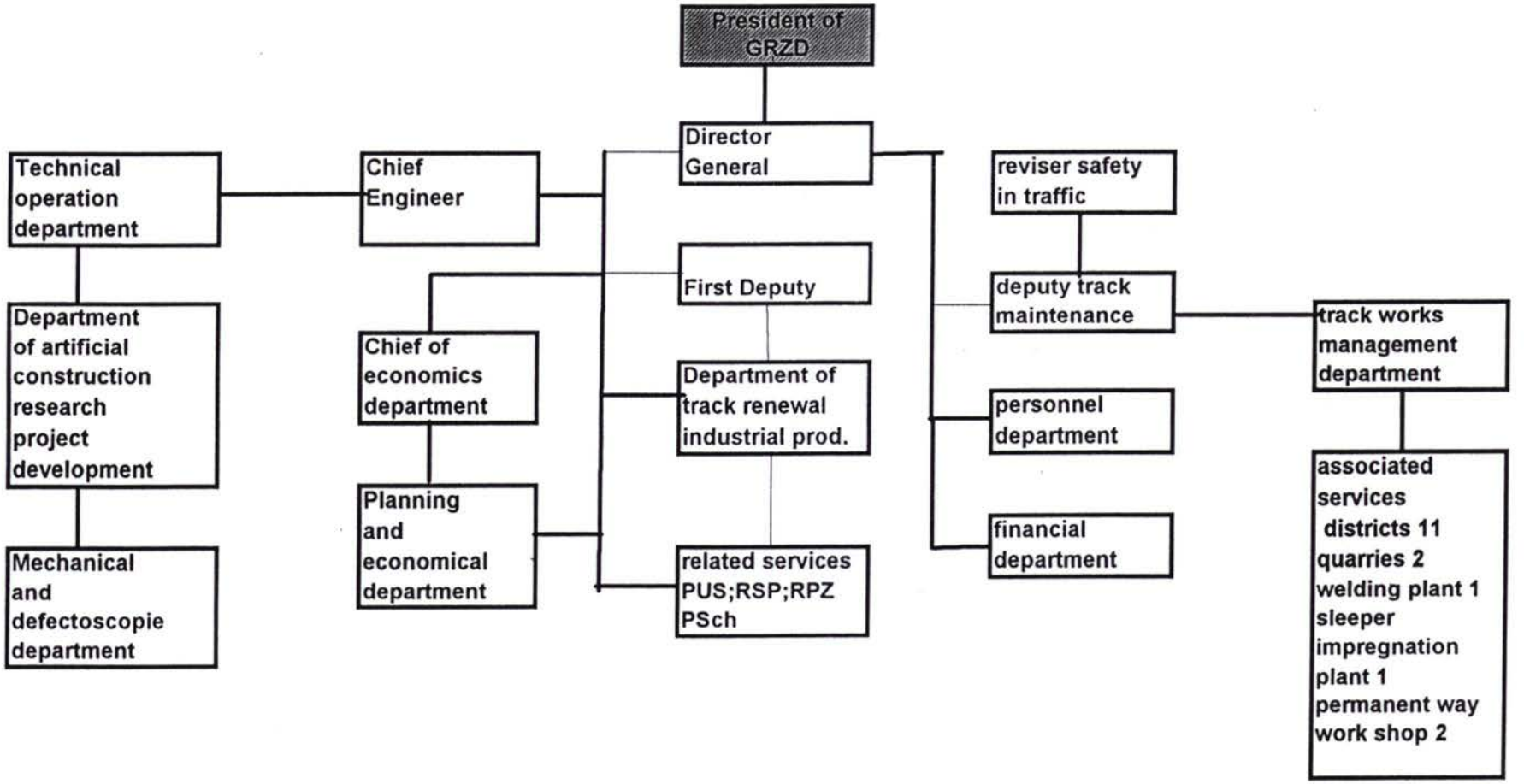
No.	Bridge km	crossing river valley	length m	Needs of major or minor repair	missing	remarks
30	2327 +895	Dzirula	120		Maintenance	Sestafoni - Khashuri
31	2388 + 100	Dzirula	126		Maintenance	Sestafoni - Khashuri
32	2328 + 132	Dzirula	117		Maintenance	Sestafoni - Khashuri
33	2332 + 999	Dzirula	97		Maintenance	Sestafoni - Khashuri
34	2336 + 648	Korneba	46		Maintenance	Sestafoni - Khashuri
35	2337 + 234	Tshherimela	47		Maintenance	Sestafoni - Khashuri
36	2338 + 104	Tshherimela	55		Maintenance	Sestafoni - Khashuri
37	2344 + 251	Tshherimela	94		maintenance	Sestafoni - Khashuri
38	2344 + 567	Tshherimela	75		Maintenance	Sestafoni - Khashuri
39	2344 + 742i	Tshherimela	52		Maintenance	Sestafoni - Khashuri
40	2345 + 659	Tshherimela	53		Maintenance	Sestafoni - Khashuri
41	2345 + 659	Tshherimela	57		Maintenance	Sestafoni - Khashuri
42	2358 + 366	Molta	47		Maintenance	Sestafoni - Khashuri
43	2358 + 892	Molta	43		Maintenance	Sestafoni - Khashuri
44	2358 + 892	Molta	55		Maintenance	Sestafoni - Khashuri
45	2361 + 528	Wiaduki	88		Maintenance	Sestafoni - Khashuri
46	2362 + 100	Wiaduki	172		Maintenance	Sestafoni - Khashuri
47	2362 + 075	Eskada	236		Maintenance	Sestafoni - Khashuri
48	2363 + 092	Chercheulis	92		Maintenance	Sestafoni - Khashuri
49	2363 + 868	Torolis chewi	87		Maintenance	Sestafoni - Khashuri
50	2363 + 868	Torolis chewi	75		Maintenance	Sestafoni - Khashuri
51	2365 + 661	Tarabela	39		Maintenance	Sestafoni - Khashuri
52	2365 + 661	Tarabela	59		Maintenance	Sestafoni - Khashuri
53	2382 + 784	Suramula	53		Maintenance	Sestafoni - Khashuri
54	2385 + 880	Suramula	38		Maintenance	Khashuri - Tbilisi
55	2385 + 880	Suramula	40		Maintenance	Khashuri - Tbilisi
56	2404 + 790	Mtkwari	169	needs renewal, year of constr.1896		Khashuri - Tbilisi
57	2404 + 790	Mtkwari	178		Maintenance	Khashuri - Tbilisi
58	2442 + 260	Mtkwari	219		Maintenance	Khashuri - Tbilisi

List of bridges located on the investigated line

No.	Bridge km	crossing river valley	length m	Needs of major or minor repair	missing	remarks
59	2450 + 089	Kotzachuri	68		Maintenance	Khashuri - Tbilisi
60	2450 + 089	Kotzachuri	61		Maintenance	Khashuri - Tbilisi
61	2454 + 970	Lechura	65		Maintenance	Khashuri - Tbilisi
62	2454 + 970	Lechura	73		Maintenance	Khashuri - Tbilisi
63	2468 + 667	Ksani	80		Maintenance	Khashuri - Tbilisi
64	2468 + 667	Ksani	83		Maintenance	Khashuri - Tbilisi
65	2472 + 759	Mtkwari	123	needs renewal, constr. year 1896		Khashuri - Tbilisi
66	2472 + 759	Mtkwari	137	40 bridge sleepers renewal		Khashuri - Tbilisi
67	2483 + 357	underbridge	29		Maintenance	Khashuri - Tbilisi
68	2486 + 446	underbridge	27		Maintenance	Khashuri - Tbilisi
69	2488 + 642	Mtkwari	208		Maintenance	Khashuri - Tbilisi
70	2494 + 600	underbridge	50		Maintenance	Khashuri - Tbilisi
71	2499 + 529	underbridge	37		Maintenance	Khashuri - Tbilisi
72	2503 + 229	underbridge	50		Maintenance	Khashuri - Tbilisi
73	2503 + 927	underbridge	29		Maintenance	Khashuri - Tbilisi
74	2507 + 383	underbridge	35		Maintenance	Khashuri - Tbilisi
75	2508 + 135	underbridge	26		Maintenance	Khashuri - Tbilisi
76	1 + 642	underbridge	101		Maintenance	Tbilisi - Baku
77	2 + 755	underbridge	28		Maintenance	Tbilisi - Baku
78	6 + 110	underbridge	43		Maintenance	Tbilisi - Baku
79	10 + 144	Lotchino	81	needs renewal, constr. year 1896		Tbilisi - Baku
80	1044 + 144	Lotchino	88		Maintenance	Tbilisi - Baku
Total length of the main bridges			**7530**			

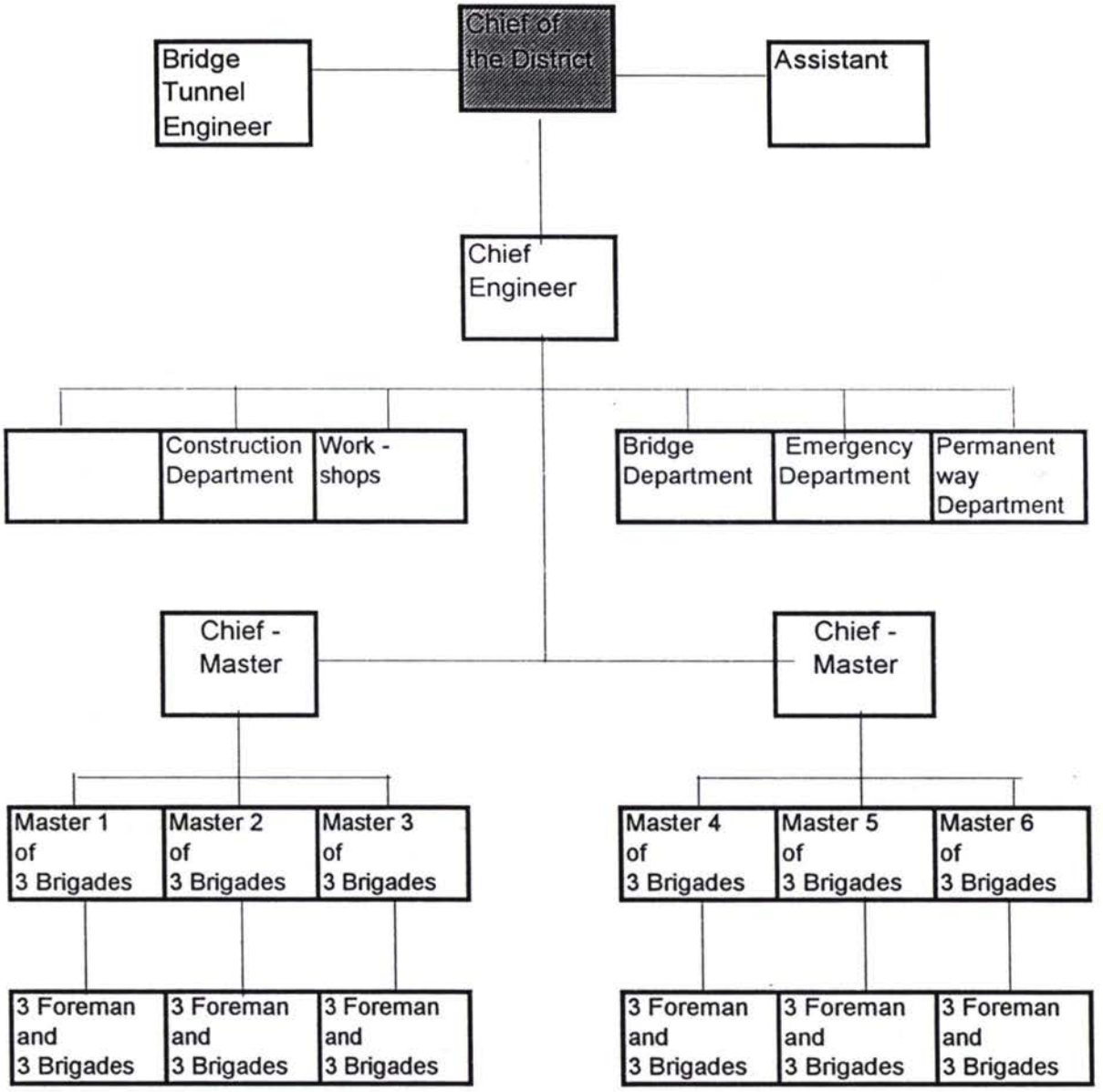
Annex 3.1.2-3

Organisational structure of the permanent-way General management



Annex 3.1.2-4

Organisational structure of the Tbilisi district



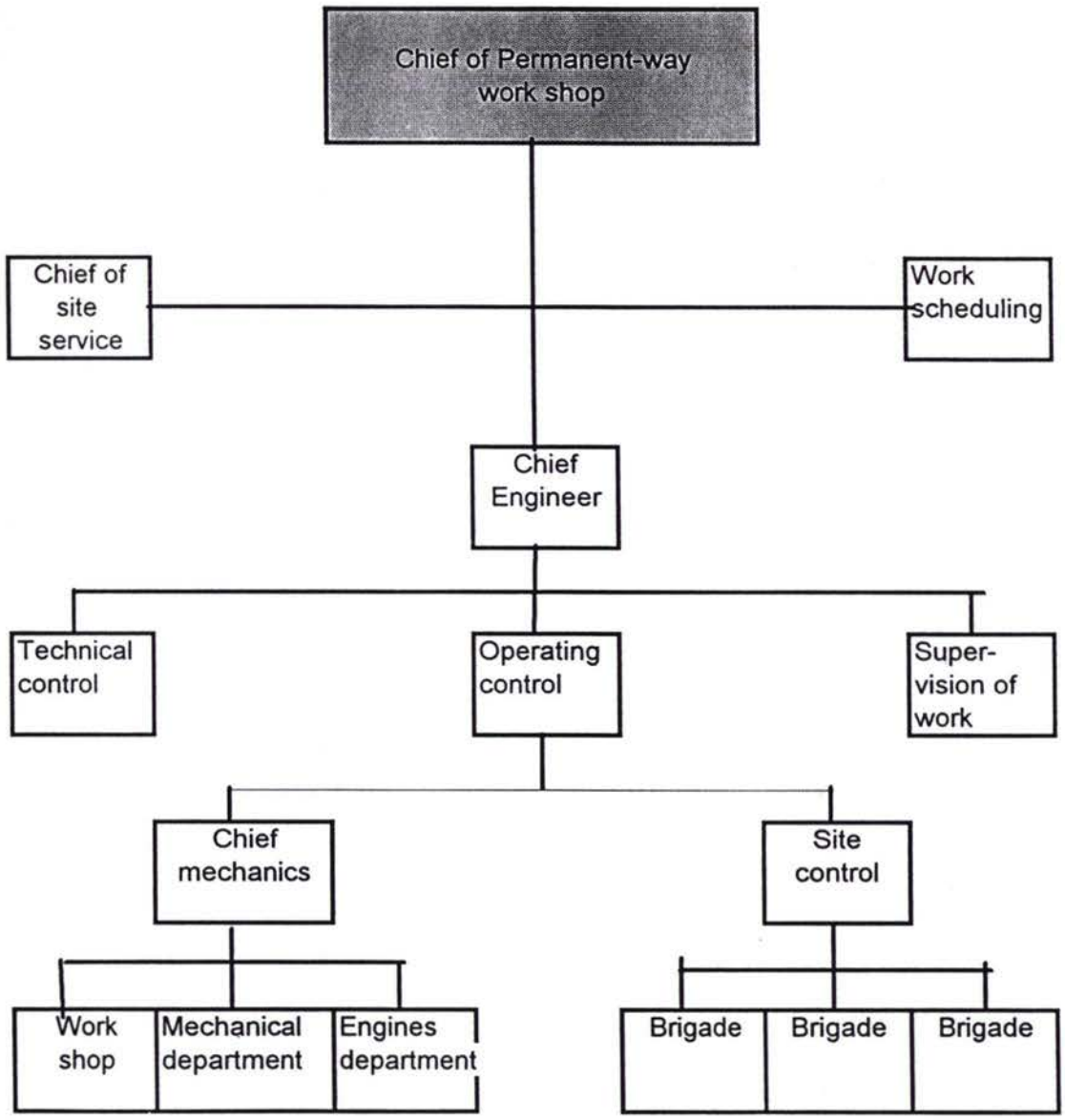
Annex 3.1.2-5

Stock and shortage of essential equipment of all districts

Equipment of small track - maintenance mashines and track tools						
item	Designation	Basic requirement of one gang	Stock and shortage of essential equipment for 200 track gangs of all GRZD - Districts			
			required	available	shortage	remarks
1	2	3	4	5	6	7
1	packing of sleepers (el)	1 set	200	125	75	1.0/ brigade
2	rail saw (el) RM 2	0,5	100	50	50	0,5 /brigade
3	rail drilling machine (el)	0,5	100	50	50	0.5/ brigade
	1024 B					
4	rail grindingmachine (el)					
	MRSh 3	0,5	100	30	70	0.5/ brigade
5	rail screwmachine (el)					
	EK 1	0,5	100	40	60	0.5/ brigade
6	screwmachine ShV - 1	0,5	100	50	50	0.5 /brigade
7	hydraulik rail pinch	0,5	100	60	40	0.5/ brigade
8	hydraulik track-lifter	4	800	200	600	4.0/ brigade
9	hydraulik					
	track-straightening-set					
	one set consists of 5 pieces	0,5	100	50	50	0.5/ brigade
10	tongs for concrete sleepers.	2	400	0	400	2.0/ brigade
11	rail puller for long rails	0,5	100	0	100	0,5/ brigade
12	rail lifting and slewing mach.					
	Type RV 100	1	11	0	11	1.0/ district
13	generator AB - 2 kw	1	200	55	145	1.0/ brigade
	AB - 4 kw	1	200	50	150	1.0/ brigade
14	signallamps	5	1000	140	860	5.0/ brigade
15	personal transport truck	0,5	100	55	45	0.5/brigade
16	leadership car/per district	2	22	0	22	2/ district
17	hammer sleeper spikes	4	800	500	300	4/ brigade
18	slewing bars different kinds	8	1600	1100	500	8/brigade
19	adjustable wrench	1,5	300	0	300	1.5/brigade.
20	wrench sets track works	4	800	240	560	4/brigade
21	abrasive discs		10000	2000	8000	
22	rail thermometers		120	70	50	
23	rail pulling rollers		240	140	100	
24	tamping pick		2200	1000	1200	
25	wooden sleeper drilling mach.		120	60	60	
26	ballast forks OMV 111				1200	

Annex 3.1.2-6

Organisation structure of permanent-way work-shop Tbilisi



Annex 3.1.2-7

List of permanent speed restriction sections

N°	Section	Length of speed restriction from - to km		km	actual speed km/h	load by Miot/km	quality coefficient
1	Tscheladidi Poti	29	37	9	25	346	656
2	Senaki-Abasche	2235+600	2235+700	0,1	15	222	277
3	Abasche-Samtredia	2246+300	2260+400	15	25	461	1550
4	Adshamrti-Swiri right	2298	2307	8,5	25	617	433
5	Argweta-Sestafoni left	2313	2318	6	25	513	1058
6	Schorgpani-Dzirula left	2325	2325	0,1	25	859	33
7	Gomi-Agarz	2399	2402	4	25	621,4	878
8	Agarz-Kareli right	2405	2405	0,1	15	621,8	29
9	Agarz-Kareli right	2406	2408	3	25	621,4	1120
10	Kareli-Skea right	2410	2420	11	25	576,4	4321
11	Ckia-Gori right	2424	2427	4	25	570,9	1225
12	Gozi-Upliszi-che right	2429	2434	6	25	561,8	965
13	Metechi-Kaspi right	2449	2454	6	25	688,2	2347
14	Kaspi right Kaspi right	2449 100	2449 500	0,4	25	684,1	304
15	Metechi-Kaspi right	2452 500	2452 900	0,4	25	684,1	292
16	Ksani-Dzeg-wi left	2473 700	2473 800	0,1	15	588,4	67
17	Ksani-Dzeg-wi right	2472	2474	3	25	529,1	1057
18	Dzegwi-Mzchete right	2477	2481	5,5	25	684,8	472

Average of permanent speed restriction right direction (even track)=.**24 km/h**
Average of permanent speed restriction left direction(odd track) = **22 km/h**
Reduction of speed from **100(80)km/h up to 25 - 15 km/h**
average load/km of the above mentioned sections **580 Miot/km**
track length of speed restriction right direction(even track) =**76.0 km**
track length of speed restriction left direction(odd track) =**6.2 km**
quality coefficient > 500 is assessed as very bad track condition and needs track renewal

Annex 3.1.2-8

Inventory of Track Engines of GRZD permanent-way work-shop

No.	Type of engine	Performance per h	Quantity	operating	out of order	needs		Remarks
						repair	replace	
1	2	3	4	5	6	7	8	9
1	UK-25/9-18	18 t	4	4	0	0	0	called platow crane
2	UK-25/9	9 t	4	0	4		4	called platow crane
3	Ballast cleaner	3,000 m3	2	2	0	0	0	Type Shom-4
4	Track tamping and levelling unit	3,000 m/h	2	1	1	1	0	VPO-3000
5	lelling unit	1,200 m/h	1	1	0	0	0	VPR-1200
6	levelling unit	500 m/h	2	1	1	0	1	VPRS-500
7	Straigthening machine el.	3,000 m/h	2	1	1	0	1	ELBR-1
8	Straigthening machine	4,000 m/h	1	1	0	0	0	PRB-10
9	Draisine platforme wagon		6	2	4	2	2	MPD
10	Motor planning machine		2	0	2	0	2	
11	Bulldozer		4	3	1	1	0	T-130
12	Mobil workshop car (road)		7	4		3	0	GAZ-53
13	motor lorry	6 t	2	2	0	0	0	KAZ-4540
14	crane railroad	16 t	4	3	1	0	1	KZhDE-16
15	Hoppers		5	4	1	0	1	DVZ
16	Diesel engine		2	2	0	0	0	ChME-3
17	Diesel motors D6 D12						6 14	
	Engines for subsoil and artificial construction							
1	Caterpillar excavator	1.5 m3	8	6	0	0	2	Eo-4124
2	as above	0.5 m3	2	2	0	0	0	Eo-3322
3	as above	0.25 m3	6	2	0	0	4	Eo-2621
4	Bulldozer		6	3	0	3	0	T-130
5	Crawler tractor with welding unit		2	0	0	0	2	DT-75
6	Bulldozer		8	6	0	0	2	DT-75
7	Scraper	9 m3	4	4	0	0	0	
8	Motor lorry	6-8 t	20	12	0	0	8	GAZ,GAL
9	Lorry		24	14	10	0	10	GAZ,ZIL
10	Mobil workshop car		34	24	10	0	10	GAZ-53
11	Draisine with crane	6 t	12	6	6	0	6	DGKU
12	Motor Lorry		3	2	1	0	1	VS-60

Annex 3.1.2-9

Cost estimation of track renewal and connected equipment

No	Designation and short description	quantity	price per unit in million US$	to realise till year	
				2000 million US$	2005 million US$
1	2	3	4	5	6
	Part 1				
	Track and switch renewals				
1	track - b p AGZD - Tbilisi - Poti the first priority parts				
	unit km	261	0.300	78.300	
2	track - b.p.AGZD - Tbilisi - Poti second priority				
	unit km	303	0.300		90.900
3	switch renewals in two sections,				
	first 200 R65 1: 11 unit piece, second 200 R65 1: 11 piece				
	400 p R65 1:11,unit piece	400	0.040	8.000	8.000
4	crossing timber sets, unit set	150	0.010	1.500	
	Annual renewal program start year 2001				
5	on the investigated line 35 km/year, unit km				
	35 x 5 = 175 km in fife years	175	0.300		52.500
6	switch renewal, 45/year				
	45 x 5 = 225 p in fife years	225	0.040		9.000
	total till year 2000			87.800	
	total till year 2005				160.400
	Part 2				
	District equipment				
7	small engines and tools				
	5 districts	5	1.000	5.000	
8	bridge inspection vehicle	1	1.170	1.170	
9	track vehicle model				
	VMT 850	5	0.570	2.850	
10	rail/road loader excavator	5	0.335	1.675	
	total till year 2000			10.695	

No	Designation and short description	quantity	price per unit in million US$	to realise till year 2000 million US$	to realise till year 2005 million US$
1	2	3	4	5	6
	Part 3				
	Equipment for permanent -way-work-shop				
11	RM 80 ballast cleaning machine, universal application, unit piece	2	4.380	4.380	4.380
	spare parts to no 12 - 10%		0.438	0.438	0.438
12	Unimat 08-475-4S unit piece	2	2.860	2.860	2.860
	spare parts to no 13 - 10%		0.286	0.286	0.286
13	high performance ballast re-gulating machine,	2	1.240	1.240	1.240
	spare parts to no. 14		0.160	0.160	0.160
14	hydraulic rail threater type				
	MPR	2	0.550	0.550	0.550
15	diesel motors for UK - crane				
	UK 18/25	4	0.020	0.080	
16	set spare parts for UK system	4	0.010	0.040	
	total till year 2000			10.034	
	total till year 2005				9.914
	Part 4				
	Bridge renewal and major repair				
17	bridge 18, km 2289+216	1	5.000	5.000	
18	bridge 27, km 2324+239	1	2.000	2.000	
19	bridge 56, km 2404+790	1	2.000	2.000	
20	bridge 65, km 2472+759	1	2.000	2.000	
21	bridge 79, km 10+144	1	1.000	1.000	
22	bridge 1-4, 10, 11,and 13	7		0.140	
	total till year2000			12.140	
	total till year 2005				
	Part 5				
	Durnuki Plant				
23	Quarry equipment			1.000	
24	Sleeper impregnation plant			0.200	
	Total till year 2000			1.200	
	Part 6				
	Training needs			**0.500**	
	Total till year 2000			0.500	

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Final Report Modul A

Annexes

Chapter 3 Technical Pre-feasibility

3.2 Rolling stock

3.2.1 Azerbaijan

Annex 3.2.1-1

Survey of AGZD electric locomotives
May 1996

Depot	Type of locomotive	amount			Problems		
		in total	in operation	**out of order** in total/in the depot/ in the work shop	waiting for rejection	waiting for repair TR 3	waiting for repair KR1/KR2
Baladshary	VL-8	86	50	36/26/10 6(JAERS)/4(KRL)	70	24	45/12
Baladshary	VL-11M	35	30	5/3/2(TEVRS)	2	31	0/0
Beyuk-Shtshor	VL-8	30	15	15/14/1(JAERS)	18	13	9/2
Beyuk-Shtshor	VL23	2	2	0	2	0	0/2
Gyandsha	VL-8	67	43	24/20/4 2(JAERS)/1(KRL)/ 1(TEVRS)	48	20	32/10
Gyandsha	VL-11M	8	5	3/3/0	0	6	0/0
Gyandsha	VL-22	1	1	0	1	0	0/1
Total	**VL-8**	**183**	**108**	**75/60/15**	**136**	**57**	**86/24**
	VL-11M	**43**	**35**	**8/6/2**	**2**	**37**	**0/0**
	VL-22	**1**	**1**	**0**	**1**	**0**	**0/1**
	VL-23	**2**	**2**	**0**	**2**	**0**	**0/2**

JAERS - Jaroslavskij Elektro Remontnij Savod **TEVRS**- Tbiliskij Elektro Vagono Remontnij Savod **KRL** - Krasno-Liman Locomotive Depot

Annex 3.2.1-2

Age structure of the AGZD-electric locomotives - 1996 -

type of locomotive	age	number
VL-8		
	38	6
	37	32
	36	25
	35	29
	34	16
	33	34
	32	27
	31	14
VL-11		
	7	9
	6	28
	5	6

Annex 3.2.1-3

Brief technical description of the most important electric locomotives of the Transcaucasian Railways

type of locomotive	VL-8	VL-10	VL-11
service weight	184 tons	184 tons	180 tons
number of axles	8	8	8
axle-load	23 tons	23 tons	22.5 tons
number of traction engines	8	8	8
installed power per traction engine	525 kW	650 kW	670 kW
power per hour	4,200 kW	5,200 kW	5,360 kW
constant power	3,660 kW	4,530 kW	4,600 kW
traction per hour	352 kN	397.6 kN	387 kN
constant traction	303 kN	324.8 kN	314 kN
designed speed	80 km/h	100 km/h	100 km/h
speed at constant power	44.3 km/h	51.2 km/h	51.2 km/h
speed at power per hour	42.6 km/h	48.7 km/h	48.7 km/h
length	27.52 m	32.84 m	32.88 m
diameter of driving wheel	1,200 mm	1,250 mm	1,250 mm

Annex 3.2.1-4

Inventory of freight wagon stock of AGZD

May 1996

type of wagon	number
covered wagons	6,453
open wagons	5,860
tank wagons	4,948
platforms	4,942
refrigerators	2,280
bulk cement wagons	834
bulk grain wagons	1,285
container wagons	551
others	1,965
Subtotal	**29,118**
private wagons	1,453
Total	**30,571**

Annex 3.2.1-5

Present number of wagons repaired by AGZD
May 1996

Work shop	Monthly repair of wagons
Baladshary VTshD - 3	specialisation: tank wagons and coal wagons **DR: 329+31(private) / TR: 753**
DR:	213 tank wagons; 14 covered wagons; 16 platforms; 36 coal wagons; 2 bulk grain wagons; 48 others
TR:	684 tank wagons; 16 covered wagons; 14 platforms; 21 coal wagons; 18 others
remarks:	a bridge crane is out of order
Kasi-Magomed VTshD - 5	specialisation: coal wagons and platforms **DR: 81 / TR: 8**
DR:	63 covered wagons; 15 coal wagons; 3 others
TR:	1 covered wagon; 6 coal wagons; 1 tank wagon
remarks:	
Kishli VTshD - 2	specialisation: containers **DR: 0 / TR: 364**
DR:	0
TR:	58 covered wagons; 2 platforms; 166 coal wagons; 133 tank wagons; 5 others
remarks:	
Gyandsha VTshD - 6	specialisation: covered wagons **DR: 213 / TR: 263**
DR:	62 covered wagons; 9 platforms; 98 coal wagons; 4 tank wagons; 40 others
TR:	18 covered wagons; 27 platforms; 90 coal wagons; 23 tank wagons; 105 others
remarks:	
Aliat VTshD - 4	specialisation: refrigerators **DR: 70 / TR: 32**
DR:	70 refrigerators
TR:	32 refrigerators
remarks:	
WRS Baku present output:	specialisation: tank wagons **500 tank wagons per annum**
designed for:	2,500 tank wagons per annum
remarks:	500 wheelsets per annum for other work shops
WWSS Baku present output:	specialisation: tank wagons **80 tank wagons per day**
designed for:	170 tank wagons per day
remarks:	

DR	Annual Repair
TR	unplanned Repair
VTshD	Wagon Repair Depot
WRS	Wagon Repair Work Shop
WWSS	Wagon Washing and Steaming Station

Annex 3.2.1-6

Occurred damages on AGZD electric locomotives in operation
1st quarter 1996

main components	concerned details	cases	per cent
traction motor		**22**	**29**
	insulation ruptures of the armatures	12	
	damaged bearing of the armatures	7	
	damaged bandages of the armatures	2	
	damaged cables	1	
auxiliary engines		**11**	**14**
	insulation ruptures of the armatures of the compressor's engine	9	
	insulation ruptures of the armatures of the motor for the ventilator	2	
electric equipment		**26**	**34**
	fuse switch	4	
	launching rheostat	6	
	broken down the sliding contacts	16	
mechanic components		**8**	**10**
	operating limiting size of the axles bandages	1	
	oil consumption of the train of toothed gears	1	
	wear of the motor bearings	6	
automatic brake		**1**	**1**
	damaged compressors	1	
others		**9**	**12**
Total		**77**	100

Annex 3.2.1-7

Damaged Freight Wagon Stock of AGZD per day
April 1996

type of wagon	damaged per day	average for the four last months
covered wagons	6,272	6,379
platforms	4,305	4,194
open/coal wagons	2,584	2,739
tank wagons	2,081	2,200
refrigerators	611	2,006
others	2,818	2,776
bulk cement w.	508	521
special container wagons for 20'-containers	519	526
other container wagons	199	208
bulk grain wagons	728	380
Total	**18,671**	**18,901**

(1) during the last 5 months

Annex 3.2.1-8

Comparison of the inventory freight wagon stock with the average damaged stock of AGZD per day

April 1996

type of wagon	inventory stock	damaged wagons in average for the four last month	proportion in percent
covered wagons	6,453	6,379	99
platforms	4,942	4,194	85
coal wagons	5,860	2,739	47
tank wagons	4,948	2,200	44
refrigerators	2,280	2,006	88
others	4,635	2,776	60
container wagons	551	208	38
bulk cement wagons	834	521	62
bulk grain wagons	1,285	380	30
Total	**29,118**	**18,901**	**65**

(1) during the last 5 months

Annex 3.2.1-9

Volume of maintenance work for the freight wagon stock of AGZD

Type of wagon	inventory stock	stock in operation	Main-tenance period for DR, years	Volume of DR-work related to inventory stock	Volume of DR-work related to stock in operation	Main-tenance period for KR, years	Volume of KR-work related to inventory stock	Volume of KR-work related to stock in operation
covered wagons	6,453	65	2	2,904	29	10	645	7
open wagons	5,860	741	1	2,198	278	8	733	93
tank wagons	4,948	3,106	1	2,024	1,271	11	450	282
platforms/flats	4,942	2,771	1	2,180	1,223	17	291	163
refrigerators	2,280	274	1	2,052	247	10	228	27
bulk cement wagons	834	317	2	379	144	11	76	29
bulk grain wagons	1,285	900	2	584	409	11	117	82
container wagons	551	342	1	551	342	0	0	0
Subtotal	**27,153**			**12,872**	**3,942**		**2,539**	**683**

Annex 3.2.1-10

Development of the daily volume of freight train service of AGZD

		type of wagons	1997	2000	2010	2015
daily stock		tank wagons	453	732	1,147	1,319
	trains		**10**	**16**	**25**	**29**
		platforms	52	100	149	175
	trains		**1**	**3**	**4**	**5**
		dumpcars	33	73	99	109
	trains		**1**	**2**	**3**	**3**
		open wagons	28	46	72	63
	trains		**0.6**	**1.0**	**1.6**	**1.4**
		hopper wagons for fertilizer	24	53	94	79
	trains		**0,5**	**1,2**	**2,1**	**1,8**
		bulk cement w.	8	9	12	13
	trains		**0.2**	**0.2**	**0.3**	**0.3**
		bulk grain w.	26	29	36	39
	trains		**0.6**	**0.6**	**0.8**	**0.8**
		refriges	9	16	26	32
	trains		**0.2**	**0.4**	**0.6**	**0.7**
		covered w.	7	12	20	24
	trains		**0.2**	**0.3**	**0.4**	**0.5**
total forwarding trains			**15**	**25**	**38**	**43**
import freight		million t	894	1,162	1,743	2,265
freight per day		t	3,548	4,611	6,917	8,988
total trains with import freight			**3**	**4**	**6**	**7**
transit freight		million t	881	4,187	5,150	6,438
freight per day		t	2,824	13,420	16,506	20,635
total trains with transit freight			**3**	**13**	**17**	**21**
total freight trains per day			**20**	**42**	**60**	**70**

Annex 3.2.1-11

Development of the daily volume of freight train service on the Transcaucasian corridor - westbound traffic -

westbound traffic	1997	2000	2010	2015
trunk line Baku - Gyandsha				
freight volume per year in million tons	5,004	10,354	15,409	17,583
freight per day in tons	16,038	33,186	49,388	56,356
trains per day	**16**	**28**	**33**	**38**
trunk line Gyandsha - Border				
freight volume per year in million tons	1,456	6,587	10,160	11,277
freight per day in tons	4,667	21,112	32,564	36,144
trains per day	**5**	**18**	**27**	**30**

Annex 3.2.1-12

Development of the daily volume of freight train service on the Transcaucasian corridor - eastbound traffic -

eastbound traffic	1997	2000	2010	2015
trunk line Border - Gyandsha				
freight volume per year in million tons	589	1,034	1,648	2,074
freight per day in tons	1,888	3,314	5,282	6,647
trains per day	**2**	**3**	**4**	**6**
trunk line Gyandsha - Baku				
freight volume per year in million tons	1,204	2,008	2,849	3,435
freight per day in tons	3,859	6,435	9,131	11,010
trains per day	**4**	**5**	**8**	**9**

Annex 3.2.1-13

Demand for main components and spare parts for repair of AGZD locomotives

specification	units	price per unit (USD)	total amount (USD)
traction motor HB 406	50	10,000	500,000
motor for the compressor HB 431	50	3,000	150,000
motor for the ventilator HB 430	50	2,500	125,000
wheelsets for VL-8	100	4,000	400,000

Annex 3.2.1-14

List of urgently required spare parts for AGZD locomotive repair

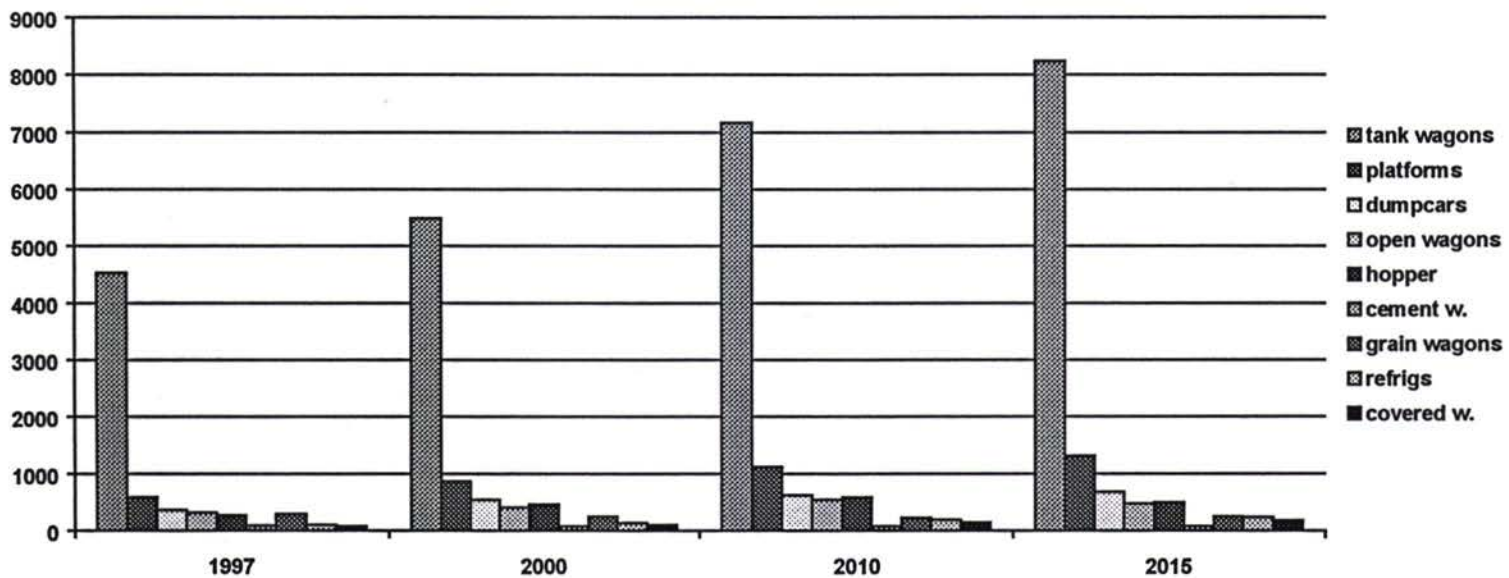
specification	units
brake shoes for locomotives	25,000
brake shoes for wagons	30,000
working cylinders bush	30
bearing shell main- 1,2,3,5,6 rest, 0,1,2,3,4 degree	180
bearing shell main - 4-5 rest, 0,1,2,3,4 degree	40
bearing shell main - 7 rest	40
bearing shell of stick 0,1,2,3,4,6,9 degree	180
piston of the working cylinder	30
sealing	100
blow pipe	50
cleaner for blow pipe	240
cylinder with socket	30
middle bearing shell	20
basic bearing shell	40
disc connector	800
long cross-beam connector	10
short cross-beam connector	10
cardan GAS-51 vertical	10
cardan GAS-51 horizontal	20
bearing shell MOP under ED118A	30
main bearing shell 4,5,6,7 degree	200
main bearing shell	100
main bearing shell	200
main bearing shell	200
main bearing shell	400
main bearing shell	400
main bearing shell	400

blow pipe	160
needle cleaner	200
plunger with socket	100
pinion	100
pinion	50
disc connector	600
head of cardan	120
vee belt GOST 1284-68	100
vee belt GOST 1284-68	100
flap	60
flap	60
diaphragma	400
little flap plate	200
big flap plate	200
flap spring	600
carbon brush 2(12,5x32x50) ТЕ-006	1,000
carbon brush 2(12,5x50x52) ЭГТ-200Б	1,600
carbon brush 12,5x44x40	600
carbon brush 12,5x32x64	1,000
carbon brush 2(12,5x32x65,5)	2,000
carbon brush 10x25x40	5,000
carbon brush 2(10x50x60)	16,000
carbon brush 10x25x50	6,000
carbon for sliding contacts type A	10 tons
alkali accumulators	100 compl.
bearing shell for engine axles	240 compl.
retaining frame for sliding bows compl.	250
conical pipe for sliding contacts	800
sliding contacts	800
profile for contact bar	500
babbit Б - 16	3,000
toothed gear	100
toothed gear	100
quick operating switch БВП - 3А	30

spark quencher chamber	50
electric oven ПЭТ	200
heating element ТЭН-44	2,000
spark quencher chamber	50
spark quencher chamber	200
spark quencher chamber	50
spark quencher chamber	50
power leading-in wire СЛ ТЭМ2 (flexible with protection) Type B-124-2000	150
brush 8x25x50	3,000
brush 16x32x32	2,000
brush 16x32x50	3,000
brush 2(8x50x60)	3,000

Annex 3.2.1-15

Future wagon stock requirements
of the AGZD 1997 - 2015



Annex 3.2.1-16

Required wagon stock of AGZD in total in 1997

goods			splitting of load and load per wagon							wagon stock				
kind of goods	total load per year in million tons	total volume per day in tons	splitting of load in tons	Factor 1)	type of wagon	use of wagon capacity in tons		wagon demand for goods traffic		wagon stock required for loading		turn-round	required operational stock	required stock in total
						min	max	max	min	min	max	d	max	max
										tank wagons				
oil	7,342	23,532	23,532	1	tank w.	52	57	453	413	**413**	**453**	8	**3,620**	**4,525**
building m.	812	2,603	1,041	1	flat w.	43	50	24	21	**flat wagons**				
			1,562	1	dumpcar	48	55	33	28	**43**	**52**	9	**467**	**584**
iron ore	10	32	13	60	open w.	51	63	15	12	**dumpcars**				
			19	60	hopper f. fer.	48	55	24	21	**28**	**33**	9	**293**	**366**
cement	126	404	404	1	cement w.	52	62	8	7	**open wagons**				
grain	251	804	804	1	grain w.	31	42	26	19	**23**	**28**	9	**255**	**319**
others	548	1,756	650	1	open w.	49	61	13	11	**hopper f. fer.**				
			553	1	flat w.	20	25	28	22	**21**	**24**	9	**216**	**270**
			332	1	refrigerator	35	40	9	8	**cement w.**				
			221	1	covered w.	31	42	7	5	**7**	**8**	9	**70**	**87**
										grain w.				
										19	**26**	9	**234**	**292**
										refriges				
										8	**9**	9	**85**	**107**
										covered w.				
										5	**7**	9	**64**	**80**

1) 1=daily
60= every 2 month

Annex 3.2.1-17

Required wagon stock of AGZD in total in 2000

goods			splitting of load and load per wagon							wagon stock				
kind of goods	total load per year in million tons	total volume per day in tons	splitting of load in tons	Factor 1)	type of wagon	use of wagon capacity in tons		wagon demand for goods traffic		wagon stock required for loading min	max	turn-round	required operational stock	required stock in total
						min	max	max	min			d	max	max
										tank wagons				
oil	11,880	38,077	38,077	1	tank w.	52	57	732	668	668	732	6	4,393	5,492
building m.	1,827	5,856	2,342	1	flat w.	43	50	54	47	flat wagons				
			3,513	1	dumpcar	48	55	73	64	83	100	7	698	872
iron ore	22	71	28	60	open w.	51	63	33	27	dumpcars				
			42	60	hopper	48	55	53	46	64	73	6	439	549
cement	145	465	465	1	cement w.	52	62	9	7	open wagons				
grain	276	885	885	1	grain w.	31	42	29	21	38	46	7	325	406
others	767	2,458	650	1	open w.	49	61	13	11	hoppers				
			904	1	flat w.	20	25	45	35	46	53	7	370	463
			543	1	refrigerators	35	40	16	14	cement w.				
			362	1	covered w.	31	42	12	9	7	9	7	63	78
										grain wagons				
										21	29	7	200	250
										refriges				
										14	16	7	109	136
										covered w.				
										9	12	7	82	102

1) 1 = daily
60 = every 2 month

Annex 3.2.1-18

Required wagon stock of AGZD in total in 2010

goods			splitting of load and load per wagon							wagon stock				
kind of goods	total load per year in million tons	total volume per day in tons	splitting of load in tons	Factor 1)	type of wagon	use of wagon capacity in tons		wagon demand for goods traffic		wagon stock required for loading min	max	turn-round	required operational stock	required stock in total
						min	max	max	min			d	max	max
										tank wagons				
oil	18,611	59,651	59,651	1	tank w.	52	57	1,147	1,047	1,047	1,147	5	5,736	7,170
building	2,466	7,904	3,162	1	flat w.	43	50	74	63	flat wagons				
	30		4,742	1	dumpcars	48	55	99	86	124	149	6	897	1,121
iron ore	39	125	50	60	open w.	51	63	59	48	dumpcars				
			75	60	hoppers	48	55	94	82	86	99	5	494	617
cement	195	625	625	1	cement w.	52	62	12	10	open wagons				
grain	345	1,106	1,106	1	grain w.	31	42	36	26	58	72	6	433	541
others	1,150	3,686	650	1	open w.	49	61	13	11	hoppers				
			1,518	1	flat w.	20	25	76	61	82	94	5	469	586
			911	1	refrigerator	35	40	26	23	cement w.				
			607	1	covered w.	31	42	20	14	10	12	5	60	75
										grain wagons				
										26	36	5	178	223
										refriges				
										23	26	6	156	195
										covered w.				
										14	20	6	118	147

1) 1 = daily
60 = every 2 month

Annex 3.2.1-19

Required wagon stock of AGZD in total in 2015

goods			splitting of load and load per wagon							wagon stock				
kind of goods	total load per year in million tons	total volume per day in tons	splitting of load in tons	Factor 1)	type of wagon	use of wagon capacity in tons		wagon demand for goods traffic		wagon stock required for loading min	max	turn-round	required operational stock	required stock in total
						min	max	max	min			d	max	max
										tank wagons				
oil	21,403	68,599	68,599	1	tank w.	52	57	1,319	1,203	1,203	1,319	5	6,598	8,245
building m.	2,713	8,696	3,478	1	flat w.	43	50	81	70	flat wagons				
			5,217	1	dumpcars	48	55	109	95	145	175	6	1,051	1,314
iron ore	33	106	42	60	open w.	51	63	50	40	dumpcars				
			63	60	hoppers	48	55	79	69	95	109	5	543	679
cement	215	689	689	1	cement w.	52	62	13	11	open wagons				
grain	379	1,215	1,215	1	grain w.	31	42	39	29	51	63	6	378	473
others	1,380	4,423	650	1	open w.	49	61	13	11	hoppers				
			1,887	1	flat w.	20	25	94	75	69	79	5	397	496
			1,132	1	refrigerators	35	40	32	28	cement w.				
			755	1	covered w.	31	42	24	18	11	13	5	66	83
										grain wagons				
										29	39	5	196	245
										refriges				
										28	32	6	194	243
										covered w.				
										18	24	6	146	183

1) 1 = daily
60 = every 2 month

Annex 3.2.1-20

AGZD - Freight wagon stock available and future demand

1997

type	inventory stock	stock in operation, in %	stock in operation, in wagons	demand in 1997	need to repair	to rent or to procure
covered	6,453	1	65	80	***15***	
platforms	4,942	15	741	584	***-157***	
open w.	5,860	53	3,106	319	-2,787	
tank w.	4,948	56	2,771	4,525	***2,177***	***2,328***
refriges	2,280	12	274	107	-167	
cement	834	38	317	87	-230	
grain w.	1,285	70	900	292	-608	
others	4,635	40	1,854	788	-1,066	

2000

type	inventory stock	stock in operation, in %	stock in operation, in wagons	demand in 2000	need to repair	to rent or to procure
covered	6,453	1	65	102	***37***	
platforms	4,942	15	741	872	***131***	
open w.	5,860	53	3,106	406	-2,700	
tank w.	4,948	56	2,771	5,492	***2,177***	***3,315***
refriges	2,280	12	274	136	-138	
cement	834	38	317	78	-239	
grain w.	1,285	70	900	250	-650	
others	4,635	40	1,854	1,253	-601	

2010

type	inventory stock	stock in operation, in %	stock in operation, in wagons	demand in 2010	need to repair	to rent or to procure
covered	6,453	1	65	147	***82***	
platforms	4,942	15	741	1,121	***380***	
open w.	5,860	53	3,106	541	-2,565	
tank w.	4,948	56	2,771	7,170	***2,177***	***4,993***
refriges	2,280	12	274	195	-79	
cement	834	38	317	75	-242	
grain w.	1,285	70	900	223	-677	
others	4,635	40	1,854	1,490	-364	

2015

type	inventory stock	stock in operation, in %	stock in operation, in wagons	demand in 2015	need to repair	to rent or to procure
covered	6,453	1	65	183	***118***	
platforms	4,942	15	741	1,314	***573***	
open w.	5,860	53	3,106	473	-2,633	
tank w.	4,948	56	2,771	8,245	***2,177***	***6,068***
refriges	2,280	12	274	243	-31	
cement	834	38	317	83	-234	
grain w.	1,285	70	900	245	-655	
others	4,635	40	1,854	1,455	-399	

Annex 3.2.1-21

Finance needs of AGZD in total

activity / year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2010	2015
payment for locomotive repair in Georgia and Russia	4	16	16	16	16	16	16	16	16	16		
costs (million USD)	1.2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
scrapping of locomotives	6	16	16	14+8	14+8	13+17	13+17					
costs (million USD)	0.3	0.8	0.8	1.1	1.1	1.5	1.5					
procurement of locomotives				8	8	17	17	17	17	7		
costs (million USD)				40	40	85	85	85	85	35		
procurement of lifting jacks for the Locomotive depot in Baladshary	16											
costs (million USD)	0.16											
equip the traction motor work shop												
costs (million USD)	0.15	0.15	0.15	0.15	0.15							
procurement of main elements for Locomotive repair												
costs (million USD)	0.36	0.36	0.36	0.12								

activity / year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2010	2015
procurement of spare parts for locomotive repair												
costs (million USD)	2.045	2.045	2.045	2.045	2.045	1.0	1.0	1.0	1.0	1.0		
equip the BWRS												
costs (million USD)	1.214											
reconstruction of the BWRS												
costs (million USD)		4.0	4.0	4.0	4.0							
equip the depot Baladshary with overhead crane												
costs (million USD)	0.03											
upgrading 5 wagon depots												
costs (million USD)	0.5	0.5	0.5	0.5	0.5							
procurement of tanks	1,000											
costs (million USD)	90											
procurement of spare parts for wagon repair												
costs (million USD)	2.5	1.9	1.9	1.9	1.9							
Training course	2											
costs (million USD)	0.06											
Total costs (million USD)	98.52	13.75	13.75	53.82	53.70	91.5	91.5	90	90	40		

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Annexes

Chapter 3 Technical Pre-feasibility

3.2 Rolling stock

3.2.2 Georgia

Annex 3.2.2-1

Survey of GRZD electric locomotives
June 1996

Depot	Type of locomotive	amount		Problems			
		in total	in operation / in reserve	out of order	waiting for rejection	waiting for repair TR 3	waiting for repair KR1/KR2
Samtredia	VL-8	54	14/5	35	24	10	1
Khashuri	VL-8	1	1/0	0	0	0	0
Khashuri	VL-10	56	7/4	45	39	5	1
Khashuri	VL-11	8.5	1/1	6.5	0	2	4.5
Tbilisi-Sortir.	VL-10	41	9/2	30	22	8	0
Tbilisi-Sortir.	VL-11	21	6/3	12	0	1	11
Total GRZD (including locomotives from other depots)	**VL-8**	**85**	**29/8**	**48**	**28+4**	**15**	**1**
	VL10	**103**	**17/7**	**79**	**62**	**16**	**1**
	VL-11	**42.5**	**9/6**	**27.5**	**0**	**3**	**24.5**

Remarks: Among all 83.5 electric locomotives of the types VL 10 + VL 11, being in operation and in reserve as well as waiting for repair, 68.5 locomotives (82%) need for main repair (KR-1, KR-2) for covering the rules of exploitation cycles of locomotives.

Annex 3.2.2-2

Age structure of the GRZD-electric locomotives - 1996 -

type of locomotive	age	number
VL-8		
	38 ... 35	11
	34 ... 33	36
	32 ... 31	22
	30	23
	29	8
VL-10		
	29 ... 26	41
	24 ... 22	44
VL-10^{u}		
	15	4
	14	6
	13	8
VL-11		
	16	5
	13	2
	12	5
	10	11
	7	12.5
	6	6
	1	1

Annex 3.2.2-3

Brief technical description of the most important electric locomotives of the Transcaucasian Railways

type of locomotive	VL-8	VL-10	VL-11
service weight	184 tons	184 tons	180 tons
number of axles	8	8	8
axle-load	23 tons	23 tons	22.5 tons
number of traction engines	8	8	8
installed power per traction engine	525 kW	650 kW	670 kW
power per hour	4,200 kW	5,200 kW	5,360 kW
constant power	3,660 kW	4,530 kW	4,600 kW
traction per hour	352 kN	397.6 kN	387 kN
constant traction	303 kN	324.8 kN	314 kN
designed speed	80 km/h	100 km/h	100 km/h
speed at constant power	44.3 km/h	51.2 km/h	51.2 km/h
speed at power per hour	42.6 km/h	48.7 km/h	48.7 km/h
length	27.52 m	32.84 m	32.88 m
diameter of driving wheel	1,200 mm	1,250 mm	1,250 mm

Annex 3.2.2-4

Freight wagon stock of GRZD

17, June 1996

type of wagon	number
covered wagons	4,982
open wagons	6,076
tank wagons	2,243
platforms	2,303
refrigerators	549
bulk cement wagons	961
bulk grain wagons	1,693
container wagons	440
others	1,848
Total	**21,095**

Annex 3.2.2-5

Present number of wagons repaired by GRZD
May 1996

Work shop	Monthly repair of wagons
Batumi VTshD - 1	specialisation: tank wagons **DR: 83 / TR: 25**
DR:	2 covered wagons, 2 open wagons, 22 tank wagons, 57 bulk grain wagons
TR:	7 covered wagons, 7 tank wagons , 1 platform, 10 bulk grain wagons
Remarks:	5 places for repair
Samtredia VTchD - 2	specialisation: **DR: 154 / TR: 15**
DR:	33 covered wagons, 47 open wagons, 2 tank wagons, 30 platforms, 42 bulk grain wagons
TR:	2 covered wagons, 8 tank wagons, 5 bulk grain wagons
Remarks:	8 places for repair
Khashuri VTchD - 3	specialisation: **DR: 164 / TR: 18**
DR:	30 covered wagons, 111 open wagons, 10 tank wagons, 5 platforms, 2 bulk cement wagons 4 bulk grain wagons, 2 others
TR:	2 covered wagons, 1 open wagon, 11 tank wagons, 4 bulk grain wagons
Remarks:	12 places for repair
Tbilisi VTchD - 4	specialisation: containers **DR: 0 / TR: 423**
DR:	0
TR:	66 covered wagons, 115 open wagons, 130 tank wagons, 48 platforms, 64 bulk grain wagons
Remarks:	unplanned repairs only
WWP Poti present output:	specialisation:
designed for:	
Remarks:	
EVRS Tbilisi present output:	specialisation: passenger coaches, EMU's, covered wagons for World Food Programme
designed for:	
Remarks:	

DR	Annual Repair
TR	unplanned Repair
VTchD	Wagon Repair Work Shop
EVRS	Electro-Wagon Repair Work Shop
WWP	Wagon Washing Station

Annex 3.2.2-6

Occurred damages on GRZD electric locomotives in operation
- first sixth months of 1996 -

main components	cases	per cent
traction motor	70	17
auxiliary engines	76	19
electric equipment	112	27
mechanic components	106	26
others	46	11
Total	408	100

Annex 3.2.2-7

Damaged Freight Wagon Stock of GRZD per Day June 1996

type of wagon	damaged per day
covered wagons	4,372
platforms	1,984
open/coal wagons	4,986
tank wagons	1,211
refrigerators	444
others	1,482
container wagons	353
bulk cement w.	836
bulk grain wagons	781
Total	**16,449**

Annex 3.2.2-8

Comparison of the inventory freight wagon stock with the average damaged stock of GRZD per day

June 1996

type of wagon	inventory stock	damaged wagons per day	proportion in percent
covered wagons	4,982	4,372	88
platforms	2,303	1,984	86
open/coal wagons	6,076	4,968	82
tank wagons	2,243	1,211	54
refrigerators	549	444	81
others	1,848	1,482	81
container wagons	440	353	80
bulk cement w.	961	836	87
bulk grain wagons	1,693	781	46
Total	**21,095**	**16,449**	**77**

Annex 3.2.2-9

Volume of maintenance work for the freight wagon stock of GRZD

Type of wagon	inventory stock	stock in operation	Main-tenance period for DR, years	Volume of DR-work related to inventory stock	Volume of DR-work related to stock in operation	Main-tenance period for KR, years	Volume of KR-work related to inventory stock	Volume of KR-work related to stock in operation
covered wagons	4,982	610	2	2,242	271	10	498	60
open wagons	6,076	1,108	1	2,279	409	8	760	136
tank wagons	2,243	1,032	1	918	421	11	204	94
platforms/flats	2,303	319	1	1,016	61	17	135	8
refrigerators	549	105	1	494	95	10	55	11
bulk cement wagons	961	125	2	437	57	11	87	11
bulk grain wagons	1,693	912	2	770	415	11	154	83
container wagons	440	87	1	440	87	0	0	0
Subtotal	**19,247**			**8,594**	**1,815**		**1,893**	**403**

Annex 3.2.2-10

Development of the daily volume of freight train service of GRZD

	type of wagons	1997	2000	2010	2015
daily stock	tank wagons	18	23	30	34
trains		**1**	**1**	**1**	**1**
	platforms	49	76	113	131
trains		**1**	**2**	**3**	**4**
	dumpcars	10	18	26	30
trains		**0.3**	**0.4**	**1**	**1**
	open wagons	66	91	118	134
trains		**1.7**	**2.3**	**3**	**3.4**
	hopper wagons for fertilizer	53	66	79	91
trains		**1.3**	**1.7**	**2**	**2.3**
	bulk cement wagons	1	2	4	4
trains		**0.3**	**0.3**	**0.3**	**0.3**
	bulk grain wagons	18	23	28	32
trains		**0.5**	**0.6**	**0.7**	**0.8**
	refriges	26	38	54	63
trains		**0.7**	**1**	**1.4**	**1.6**
	covered w.	12	17	24	29
trains		**0.3**	**0.4**	**0.6**	**0.7**
total forwarding trains		**7**	**9**	**12**	**14**
import freight	million t	820	943	1,179	1,267
freight per day	t	2,628	3,022	3,779	4,061
total trains with import freight		**3**	**3**	**4**	**4**
transit freight	million t	2,245	6,110	10,525	12,104
freight per day	t	7,196	19,266	33,734	38,795
total trains with transit freight		**7**	**19**	**34**	**39**
total freight trains per day		**17**	**32**	**50**	**57**

Annex 3.2.2-11

Development of the daily volume of freight train service of the GRZD on the Transcaucasian corridor - westbound traffic -

westbound traffic	1997	2000	2010	2015
trunk line Border - Tbilisi				
freight volume per year in million tons	1,456	6,587	10,304	11,277
freight per day in tons	4,667	21,112	33,026	36,144
trains per day	**5**	**18**	**28**	**30**
trunk line Tbilisi - Samtredia				
freight volume per year in million tons	2,170	7,333	11,239	12,387
freight per day in tons	6,955	23,503	36,022	39,702
trains per day	**7**	**20**	**30**	**33**
trunk line Samtredia - Batumi				
freight volume per year in million tons	1,494	5,124	8,527	9,405
freight per day in tons	4,788	16,423	27,330	30,144
trains per day	**5**	**14**	**23**	**25**
trunk line Samtredia - Poti				
freight volume per year in million tons	676	2,209	2,712	2,982
freight per day in tons	2,167	7,080	8,692	9,558
trains per day	**2**	**6**	**7**	**8**

Annex 3.2.2-12

Development of the daily volume of freight train service of the GRZD on the Transcaucasian corridor - eastbound traffic -

eastbound traffic	1997	2000	2010	2015
trunk line Border - Tbilisi				
freight volume per year in million tons	589	1,034	1,648	2,074
freight per day in tons	1,888	3,314	5,282	6,647
trains per day	**2**	**3**	**4**	**6**
trunk line Tbilisi - Samtredia				
freight volume per year in million tons	1,974	2,424	3,203	3,755
freight per day in tons	6,327	7,769	10,266	12,035
trains per day	**6**	**6**	**9**	**10**
trunk line Samtredia - Batumi				
freight volume per year in million tons	805	988	1,301	1,503
freight per day in tons	2,580	3,167	4,170	4,817
trains per day	**3**	**3**	**3**	**4**
trunk line Samtredia - Poti				
freight volume per year in million tons	1,169	1,436	1.902	2.252
freight per day in tons	3,747	4,603	6,096	7,218
trains per day	**4**	**4**	**5**	**6**

Annex 3.2.2-13

Demand for main components and spare parts for repair of GRZD locomotives

specification	units	price per unit (USD)	total price (USD)
lubricating device for pantographs	6	3,500	21,000
electric still A468	8	2,500	125,000
inspection detector for wheelsets A1370	2	3,000	6,000
lifting jacks, 40 t	8	10,000	80,000
lifting jacks, 35 t	10	15,000	150,000
lifting jacks, 25 t	10	3,000	30,000
electric truck, 2 t	6	10,000	60,000
electric truck, 5 t	2	15,000	30,000
electrolift, 0.5 t	4	3,000	12,000
electrolift, 1 t	4	4,500	18,000
electrolift, 3 t	5	7,500	37,500
electrolift, 5 t	5	10,000	50,000
oil pump A-1326	6	3,500	21,000
welding rectifier VDM-1001	4	4,000	16,000
welding transformer TDM-401	7	3,500	24,500
electric loader, 1 t	4	20,000	80,000

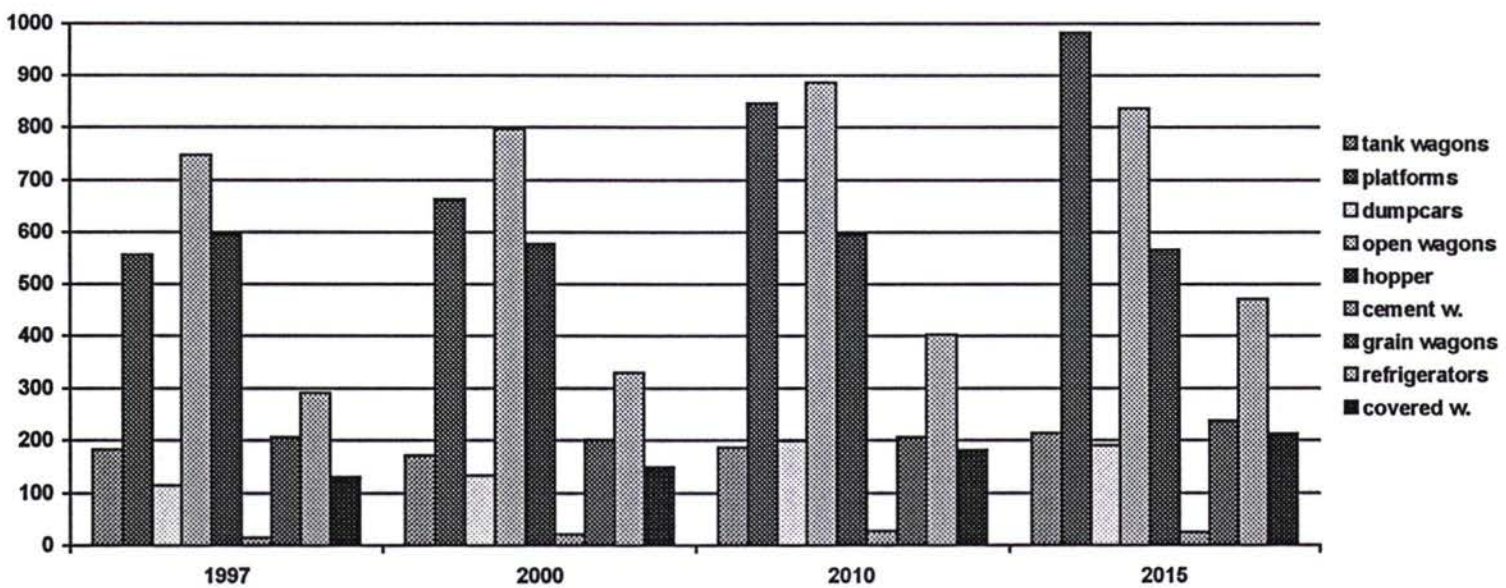
Annex 3.2.2-14

List of urgently required spare parts for GRZD locomotive repair

specification	units
compressor NB-431	100
wheelset VL-10	100
wheelset VL-8	40
wheel tire	200
accumulators NK-120	10
sliding contacts P 5	50
traction motors TL-2k, NB-406	40
brake shoes	10,000
electropneumatic contactors	25
electromagnetic contactors	25
carbon brushes	2,500
ventilators NB-430, TL-110	10
quick circuit switch BWP-5, BWP-3a	15
profiled coppering device for contactors 10x34x41	200 kg
plating for sliding contacts	1,000
trolley for sliding contacts	each per 60
inductive rheostat Isch-2k, Isch-406	100
group switch PKG-4a, PKF-6b	10
insulating paint NU - 929	150 kg
spring VL-8	40
coupling gears VL-8	10
spark quencher chamber BWP-5, BWP-3a	10
suspension of cradle, complete	3
safety fuse PK 6/75	120
babbit B-16, B-83	1,500 kg
electric oven PET-IUZ	150

Annex 3.2.2-15

Development of the wagons stock of the GRZD 1997 - 2015



Annex 3.2.2-16

Required wagon stock of GRZD in total in 1997

goods			splitting of load and load per wagon							wagon stock				
kind of goods	total load per year in million tons	total volume per day in tons	splitting of load in tons	Factor 1)	type of wagon	use of wagon capacity in tons		wagon demand for goods traffic		wagon stock required for loading min	max	turn-round	required operational stock	**required stock in total**
						min	max	max	min			d	max	max
coal	50	160	160	7	open w.	51	63	22	18	**tank wagons**				
oil	297	952	952	1	tank w.	52	57	18	17	**17**	**18**	8	**146**	**183**
building m.	252	808	323	1	flat w.	43	50	8	6	**flat wagons**				
			485	1	dumpcar	48	55	10	9	**41**	**49**	9	**445**	**557**
iron ore	88	282	113	15	open w.	51	63	33	27	**dumpcars**				
			169	15	hopper f. fert.	48	55	53	46	**9**	**10**	9	**91**	**114**
cement	22	71	71	1	cement w.	52	62	1	1	**open wagons**				
grain	177	567	567	1	grain w.	31	42	18	14	**54**	**66**	9	**598**	**747**
metals	199	638	638	1	flaz w.	43	50	15	13	**hopper f. fer.**				
others	736	2,359	550	1	open w.	49	61	11	9	**46**	**53**	9	**476**	**595**
			543	1	flat w.	20	25	27	22	**cements**				
			904	1	refrigerator	35	40	26	23	**1**	**1**	9	**12**	**15**
			362	1	covered w.	31	42	12	9	**grain w.**				
										14	**18**	9	**165**	**206**
										refriges				
										23	**26**	9	**233**	**291**
										covered w.				
										9	**12**	9	**105**	**131**

1) 1 = daily
15=every two weeks
7=weekly

Annex 3.2.2-17

Required wagon stock of GRZD in total in 2000

goods			splitting of load and load per wagon							wagon stock				
kind of goods	total load per year in million tons	total volume per day in tons	splitting of load in tons	Factor 1)	type of wagon	use of wagon capacity in tons		wagon demand for goods traffic		wagon stock required for loading		turn-round	required operational stock	**required stock in total**
						min	max	max	min	min	max	d	max	max
coal	87	279	279	7	open w.	51	63	38	31	**tank wagons**				
oil	371	1,189	1,189	1	tank w.	52	57	23	21	**21**	**23**	6	**137**	**172**
building m.	441	1,413	565	1	flat w.	43	50	13	11	**flat wagons**				
			848	1	dumpcar	48	55	18	15	**63**	**76**	7	**530**	**663**
iron ore	110	353	141	15	open w.	51	63	41	34	**dumpcars**				
			212	15	hopper f. fer.	48	55	66	58	**15**	**18**	6	**106**	**133**
cement	39	125	125	1	cement w.	52	62	2	2	**open wagons**				
grain	222	712	712	1	grain w.	31	42	23	17	**74**	**91**	9	**637**	**796**
others	994	3,186	550	1	open w.	49	61	11	9	**hoppers**				
			791	1	flat w.	20	25	40	32	**58**	**66**	9	**463**	**578**
			1,318	1	refriges	35	40	38	33	**cement w.**				
			527	1	covered w.	31	42	17	13	**2**	**2**	9	**17**	**21**
metal	309	990	990	1	platforms	43	50	23	20	**grain w.**				
										17	**23**	9	**161**	**201**
										refriges				
										33	**38**	9	**264**	**329**
										covered w.				
										13	**17**	9	**119**	**149**

1) 1=daily
15=every two weeks
7=weekly

Annex 3.2.2-18

Required wagon stock of GRZD in total in 2010

goods			splitting of load and load per wagon							wagon stock				
kind of goods	total load per year in million tons	total volume per day in tons	splitting of load in tons	Factor 1)	type of wagon	use of wagon capacity in tons		wagon demand for goods traffic		wagon stock required for loading min	max	turn-round	required operational stock	**required stock in total**
						min	max	max	min			d	max	max
coal	130	417	417	7	open w.	51	63	57	46	**tank wagons**				
oil	483	1,548	1,548	1	tank w.	52	57	30	27	**27**	**30**	5	**149**	**186**
building m.	661	2,119	847	1	flat w.	43	50	20	17	**flat wagons**				
			1,271	1	dumpcars	48	55	26	23	**94**	**113**	6	**677**	**846**
iron ore	132	423	169	15	open w.	51	63	50	40	**dumpcars**				
			254	15	hoppers	48	55	79	69	**23**	**26**	6	**159**	**199**
cement	58	186	186	1	cement w.	52	62	4	3	**open wagons**				
grain	266	853	853	1	grain w.	31	42	28	20	**96**	**118**	6	**709**	**886**
others	1,341	4,298	550	1	open w.	49	61	11	9	**hoppers**				
			1,124	1	flat w.	20	25	56	45	**69**	**79**	6	**476**	**595**
			1,874	1	refriges	35	40	54	47	**cement w.**				
			750	1	covered w.	31	42	24	18	**3**	**4**	6	**21**	**27**
metal	494	1,583	1,583	1	platforms	43	50	37	32	**grain w.**				
										20	**28**	6	**165**	**206**
			1) 1=daily							**refriges**				
			15=every two weeks							**47**	**54**	6	**321**	**402**
			7=weekly							**covered w.**				
										18	**24**	6	**145**	**181**

Annex 3.2.2-19

Required wagon stock of GRZD in total in 2015

goods			splitting of load and load per wagon							wagon stock				
kind of goods	total load per year in million tons	total volume per day in tons	splitting of load in tons	Factor 1)	type of wagon	use of wagon capacity in tons		wagon demand for goods traffic		wagon stock required for loading min	max	turn-round	required operational stock	**required stock in total**
						min	max	max	min			d	max	max
coal	149	478	478	7	open w.	51	63	66	53	**tank wagons**				
oil	555	1,779	1,779	1	tank w.	52	57	34	31	**31**	**34**	5	**171**	**214**
building m.	760	2,436	974	1	flat w.	43	50	23	19	**flat wagons**				
			1,462	1	dumpcars	48	55	30	27	**109**	**131**	6	**785**	**982**
iron ore	151	484	194	15	open w.	51	63	57	46	**dumpcars**				
			290	15	hoppers	48	55	91	79	**27**	**30**	5	**152**	**190**
cement	66	212	212	1	cement w.	52	62	4	3	**open wagons**				
grain	306	981	981	1	grain w.	31	42	32	23	**108**	**134**	5	**669**	**836**
others	1,542	4,942	550	1	open w.	49	61	11	9	**hoppers**				
			1,318	1	flat w.	20	25	66	3	**79**	**91**	5	**454**	**567**
			2,196	1	refriges	35	40	63	55	**cement w.**				
			878	1	covered w.	31	42	28	21	**3**	**4**	5	**20**	**25**
metal	568	1,821	1,821	1	platforms	43	50	42	36	**grain w.**				
										23	**32**	6	**190**	**237**
										refriges				
										55	**63**	6	**376**	**471**
										covered w.				
										21	**28**	6	**170**	**213**

1) 1=daily
15=every two weeks
7=weekly

Annex 3.2.2-20

GRZD - Freight wagon stock available and future demand

1997

type	inventory stock	stock in operation, in %	stock in operation, in wagons	demand in 1997	need to repair	to rent or to procure
covered	4,982	12	598	131	-467	
platforms	6,076	14	851	557	-294	
open w.	2,243	18	404	747	***343***	
tank w.	2,303	46	1,059	183	-876	
refrig.	549	19	104	291	***187***	
cement	961	13	125	15	-110	
grain w.	1,693	54	914	206	-708	
others	1,848	20	370	878	***508***	

2000

type	inventory stock	stock in operation, in %	stock in operation, in wagons	demand in 1997	need to repair	to rent or to procure
covered	4,982	12	598	149	-449	
platforms	6,076	14	851	663	-188	
open w.	2,243	18	404	796	***392***	
tank w.	2,303	46	1,059	172	-887	
refrig.	549	19	104	329	***225***	
cement	961	13	125	21	-104	
grain w.	1,693	54	914	201	-713	
others	1,848	20	370	880	***510***	

2010

type	inventory stock	stock in operation, in %	stock in operation, in wagons	demand in 1997	need to repair	to rent or to procure
covered	4,982	12	598	181	-417	
platforms	6,076	14	851	846	-5	
open w.	2,243	18	404	886	***482***	
tank w.	2,303	46	1,059	186	-873	
refrig.	549	19	104	402	***298***	
cement	961	13	125	27	-98	
grain w.	1,693	54	914	206	-708	
others	1,848	20	370	981	***611***	

2015

type	inventory stock	stock in operation, in %	stock in operation, in wagons	demand in 1997	need to repair	to rent or to procure
covered	4,982	12	598	213	-385	
platforms	6,076	14	851	982	***131***	
open w.	2,243	18	404	836	***432***	
tank w.	2,303	46	1,059	214	-845	
refrig.	549	19	104	471	***445***	***26***
cement	961	13	125	25	-100	
grain w.	1,693	54	914	237	-677	
others	1,848	20	370	938	***568***	

Annex 3.2.2-21

List of required equipment for wagon repair in GRZD depots

specification	remarks	units	price per unit (USD)	demand	total price (USD)
bridge cranes, width of crane track -22,5 m	10 tons				
	VTshD Samtredia	1	30,000	1	30,000
	VTshD Khashuri			1	30,000
bridge cranes, width of crane track -19,5 m	10 tons				
	VTshD Batumi	1	30,000	1	30,000
gantry crane width 12,5 m	5 - 10 tons				
	VTshD Tbilisi	1	10,000	2	20,000
wheel lathe					
	VTshD Samtredia	1	1.2 million	1	1.2 million
planing machine	quadrilateral				
	VTshD Samtredia	1	65,000	1	65,000
	VTshD Khashuri			1	65,000
	VTshD Tbilisi			1	65,000
air presser 8 atm	10 m^3/min				
	VTshD Samtredia	1	65,000	1	65,000
	VTshD Khashuri			1	65,000
	VTshD Tbilisi			1	65,000

electric hoist block	2 tons				
	VTshD Samtredia	1	1,000	2	2,000
	VTshD Khashuri			2	2,000
	VTshD Tbilisi			2	2,000
	VTshD Batumi			2	2,000
electric hoist block	5 tons				
	VTshD Samtredia	1		1	1,000
	VTshD Khashuri			1	1,000
	VTshD Tbilisi			1	1,000
	VTshD Batumi			1	1,000
electric hoist block	10 tons				
	VTshD Samtredia	1		1	1,000
	VTshD Khashuri			1	1,000
	VTshD Tbilisi			1	1,000
	VTshD Batumi			1	1,000
electrical lifting jacks					
	VTshD Samtredia	1 compl.	30,000	2 compl.	60,000
	VTshD Khashuri			2 compl.	60,000
	VTshD Tbilisi			2 compl.	60,000
	VTshD Batumi			2 compl.	60,000

hydraulic lifting jack	20 - 25 tons				
	VTshD Samtredia	1	100	8	800
	VTshD Khashuri			8	800
	VTshD Tbilisi			8	800
	VTshD Batumi			8	800
shop for repairing axle roller-bearings					
	VTshD Samtredia	1	200,000	1	200,000
	VTshD Khashuri			1	200,000
centrifugal pump 10 - 20 m³/h	for washing machines	1	1,200	10	12,000
mechanic lifting jack	15 tons				
	VTshD Khashuri	1	7,500	4	30,000

Annex 3.2.2-22

List of urgently required spare parts for GRZD wagon repair

specification	unit	price, in USD	demand 1997	total amount 1997, in USD	demand per year	costs per year
wooden material	m²	150	3,000	450,000	1,200	180,000
wheelsets	pieces	3,200	500	1,600,000	500	1,600,000
bogies type ZNII-H3	ditto	2,285	200	457,000	100	228,500
composed brake shoe inserts	ditto	5	18,000	90,000	60,000	300,000
lubricating grease for axle boxes	tons	311	25	7,775	20	6,220
lubricating grease for brakes	tons	309	1	309	1	309
lubricating grease for slide bearing	tons	295	60	17,700	120	35,400
corner bracings 50x50	tons	556	5	2,780	5	2,780
corner bracings 63x45	tons	556	10	5,560	10	5,560
auxiliary reservoir	pieces	30	50	1,500	50	1,500
distributor valve 483, bracket	ditto	150	800	120,000	100	15,000
distributor valve 483	ditto	150	200	30,000	100	15,000
air brake hose	ditto	28	1,000	28,000	300	8,400
pins M12x50	tons	1,000	5	5,000	3	3,000
pins M12x70	tons	1,000	10	10,000	5	5,000
pins M12x100	tons	1,000	10	10,000	5	5,000
doors for covered wagons	pieces	274	500	137,000	50	13,700

doors for open wagons	ditto	260	120	31,200	15	3,900
auto coupler with draft gear	pieces	205	20	4,100	50	10,250
brake slack adjuster	ditto	80	50	4,000	50	4,000
automatic brake position device	ditto	85	50	4,250	50	4,250
welding electrode	tons	1,270	5	6,350	5	6,350
miner's lamp	pieces	40	300	12,000	30	1,200
diesel fuel	tons	187	200	37,400	1,110	207,570
diesel lubrication	tons	792	50	39,600	200	158,400
freon (cooling liquid)	tons	8,730	10	87,300	5	43,650
special for 8-axle tank wagons						
automatic coupler	pieces	215	100	215,000		
auxiliary reservoir	ditto	35	50	1,750		

Annex 3.2.2-23

Gross finance needs of GRZD

activity / year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2010	2015
scrapping of locos	4	10	10	8	8	17	17	11				
costs (mio USD)	0.2	0.5	0.5	0.4	0.4	0.85	0.85	0.55				
procurement of locos (replacement programme)					8	17	17	11				
costs (mio USD)					40	85	85	55				
procurement of locos (extension programme)				2	2	2	2	2	2	2	6	40
costs (mio USD)				10	10	10	10	10	10	10	30	200
procurement of equipment for the Tbilisi Electro Locomotive Construction Workshop	wheel-set shop	traction motor	electric components									
costs (mio USD)	2.65	5	5									
equip the loco depot Khashuri												
costs (mio USD)	0.16											
procurement of main equipment for different loco depots												
costs (mio USD)	0.36	0.36										

activity / year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2010	2015
procurement of spareparts for loco repair												
costs (mio USD)	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0		
equip the TEWRS												
costs (mio USD)				2	2	2	2	2	2	2	6	
equip the wagon depot Khashuri												
costs (mio USD)	0.06											
upgrading the 5 wagon depots												
costs (mio USD)	1.0	1.0	0.28									
procurement of spareparts for wagon repair												
costs (mio USD)	3.42	2.87	2.87	2.87	1.0	1.0	1.0	1.0	1.0			
Training course	2											
costs (mio USD)	0.06											
Total costs (mio USD)	9.91	11.73	10.65	17.27	54.4	99.85	99.85	69.55	14.0	42	36.0	200.0

Annex 3.2.2-24

Total demand of locomotives into the Transcaucasus region and the respective maintenance in 2005

type	TO-3	TR-1	TR-2	TR-3	KR-1	KR-2
424 Locos	2473	2226	141	**71**	**35**	**35**

Annex 3.2.2-25

Maintenance place types for electric locomotives operating stock and operating reserve stock

in 2005

	2005	TO-3	TR-1	TR-2	TR-3	KR-1	KR-2
locos	424	0,083	0,16	1,5	3	6	12
	12	70	63	4	2	1	1
	35,33	**2.473**	**2.226**	**141**	**71**	**35**	**35**
	h	**4**	**8**	**16**	**80**	**264**	**352**
		9.893	**17.808**	**2.261**	**5.653**	**9.328**	**12.437**
	Places Total	**5**	**9**	**1**	**3**	**4**	**6**
	Total in groups				**17**		**10**
	General Total						**28**

Result:	Total needed length of tracks (m) in the TECF
KR-1 places 4	132
KR-2 places 6	198

Annex 3.2.2-26

Establishment of a wheelset repair shop in the Tbilisi Electro-Locomotive-Factory (Production workshop) TECF

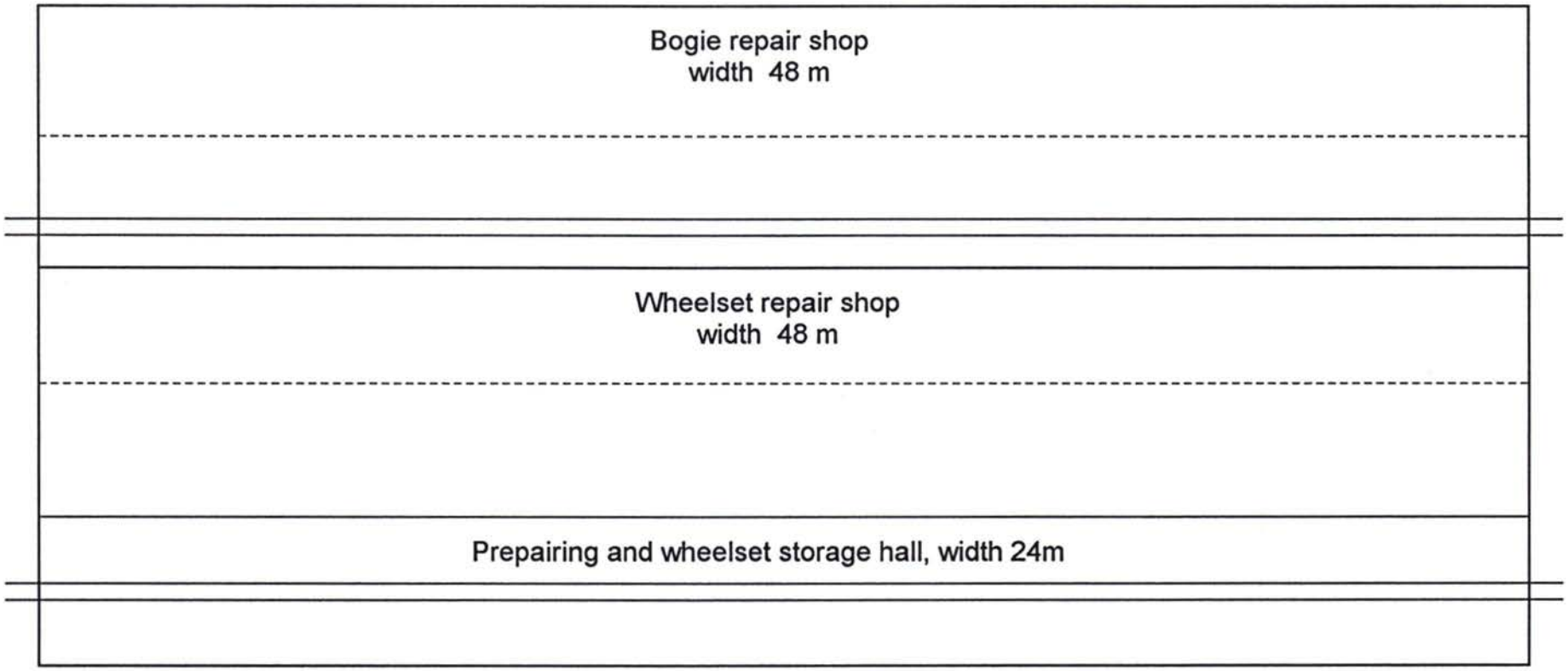
Equipment needed for loco repair inside the loco production workshop with costs

Nr.	type	number	price (USD)
1	gear wheel burnishing lathe	1	200,000.00
2	wheel centre press	1	160,000.00
3	axle roller press machine	1	100,000.00
4	axle planing machine	1	150,000.00
5	wheelset counterbalancing machine	1	250,000.00
6	wheelset borer	1	200,000.00
7	wheelset adzing lathe	1	100,000.00
8	washing cabin for electro-locomotives	1	1,000,000.00
9	planning and preparation work	1	500,000.00
	Total costs		2,650,000.00

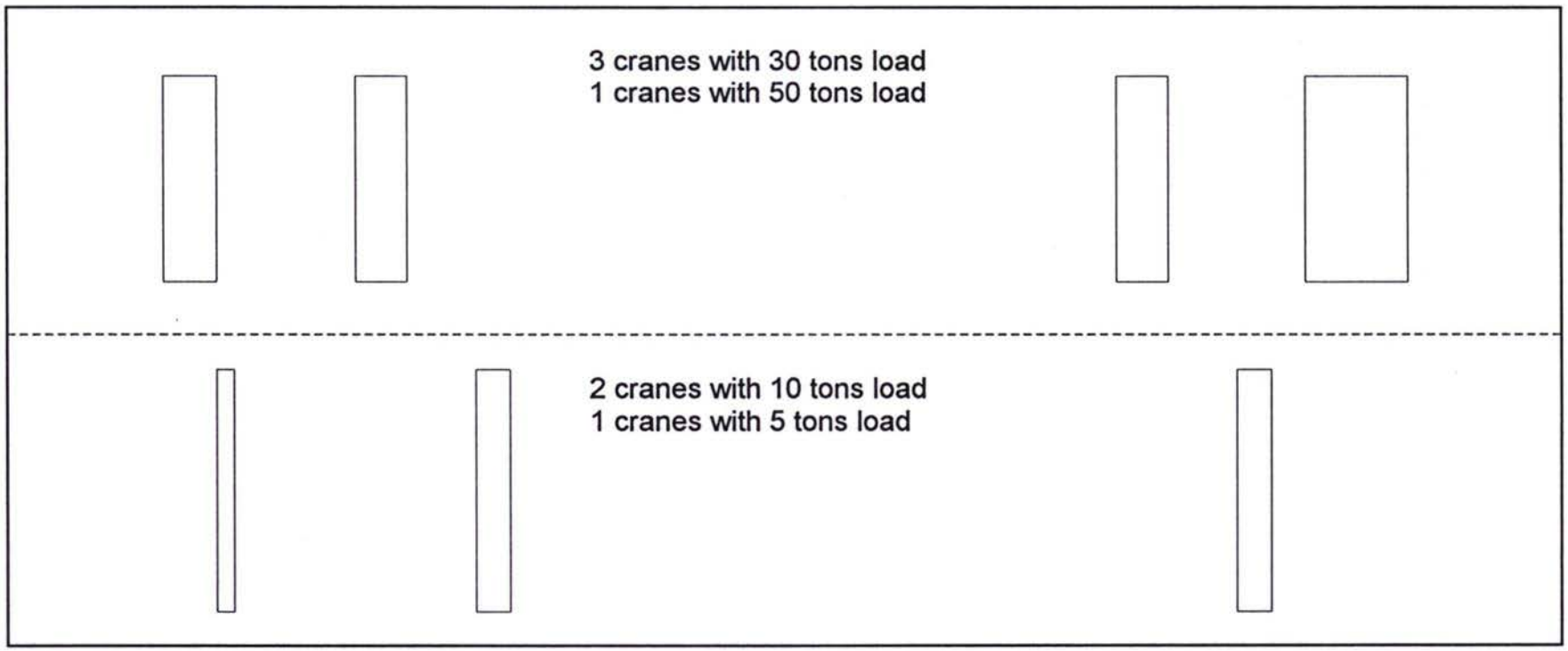
Annex 3.2.2-27

TECF - Bogie and wheelset repair hall
(within the corpus No. 3)

lenght 216 m

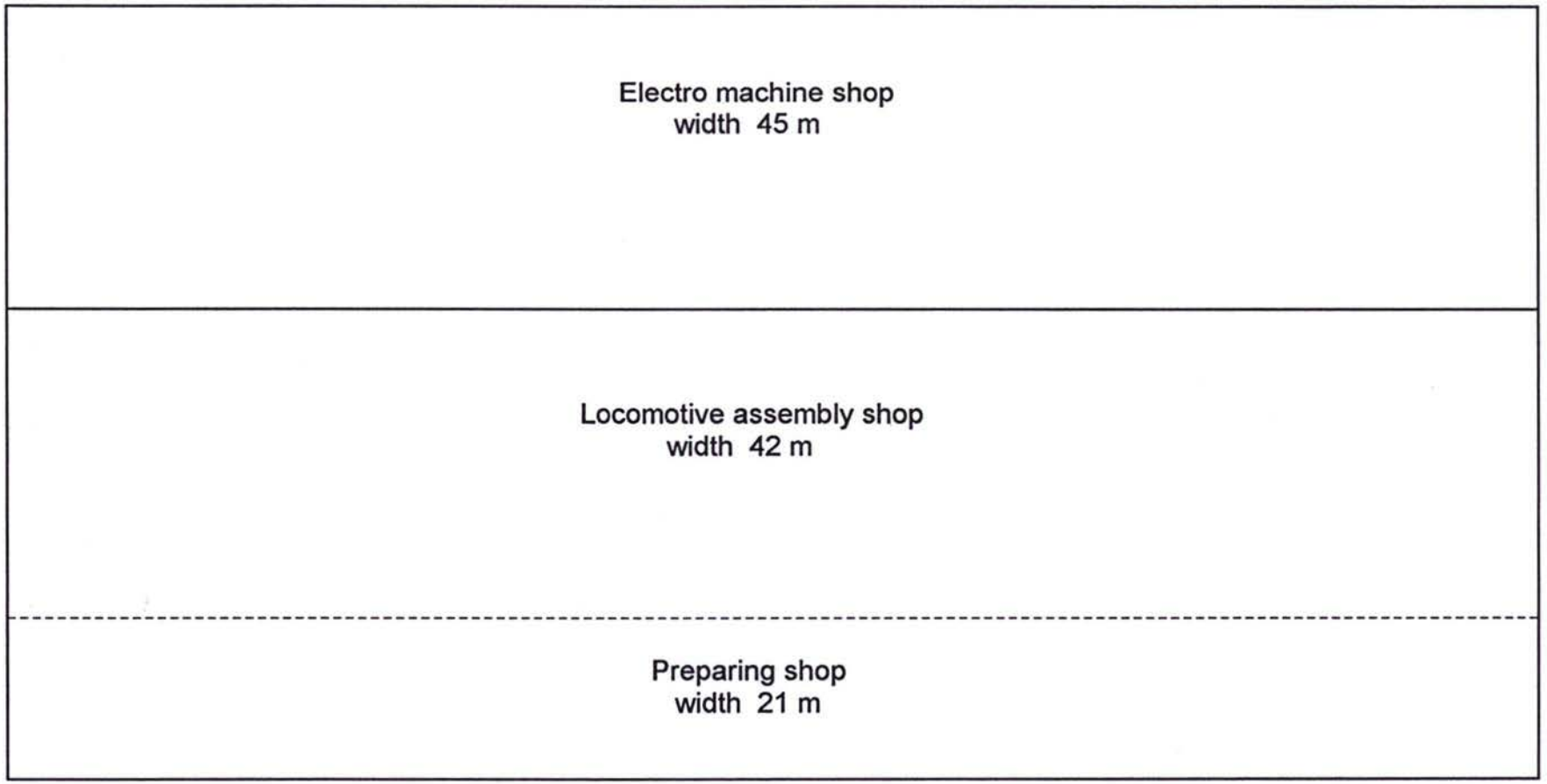


Wheelset repair shop
width 48 m

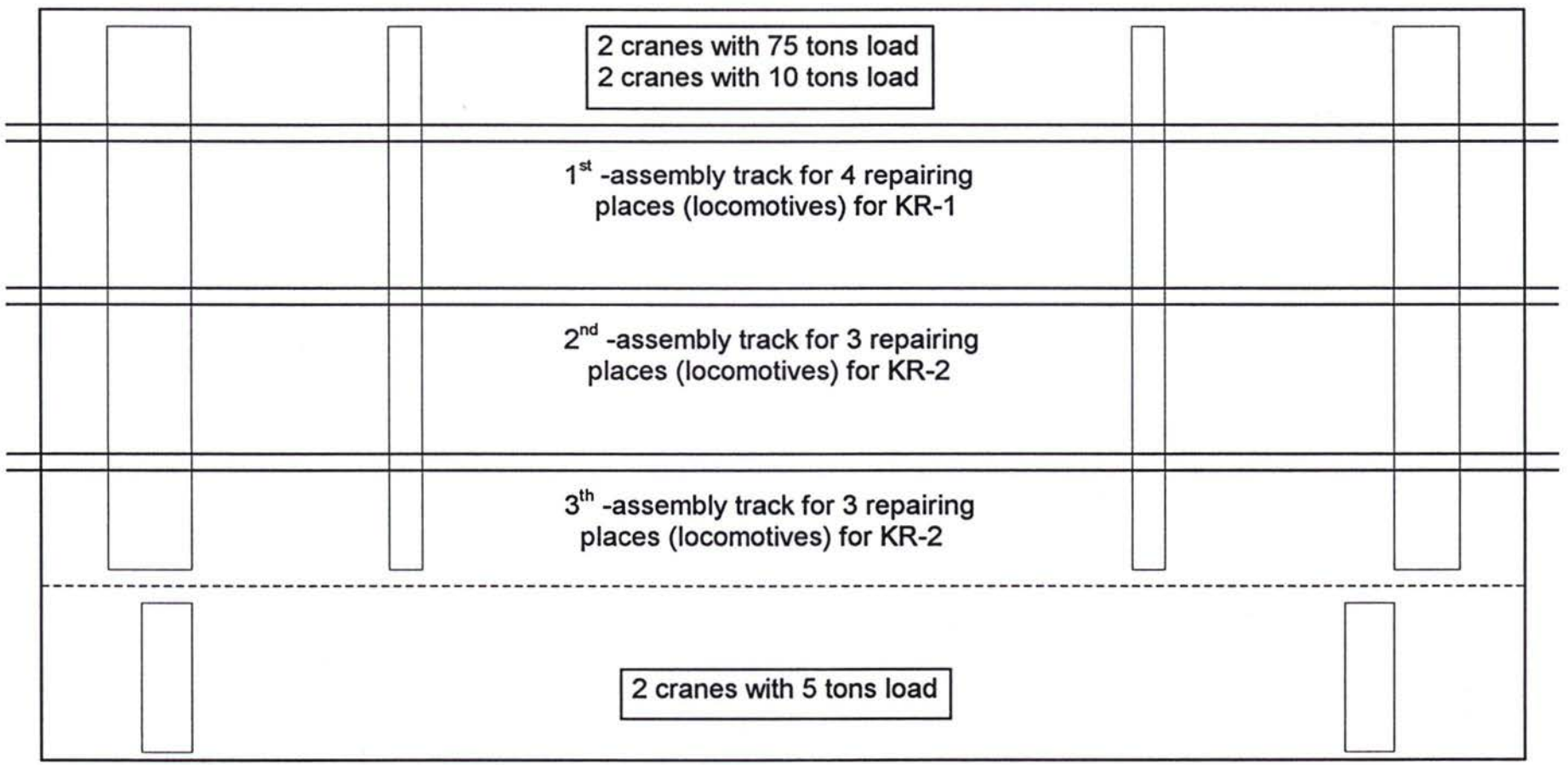


Annex 3.2.2-28

TECF - Locomotive repair hall
(within the corpus No. 1)
lenght 150 m

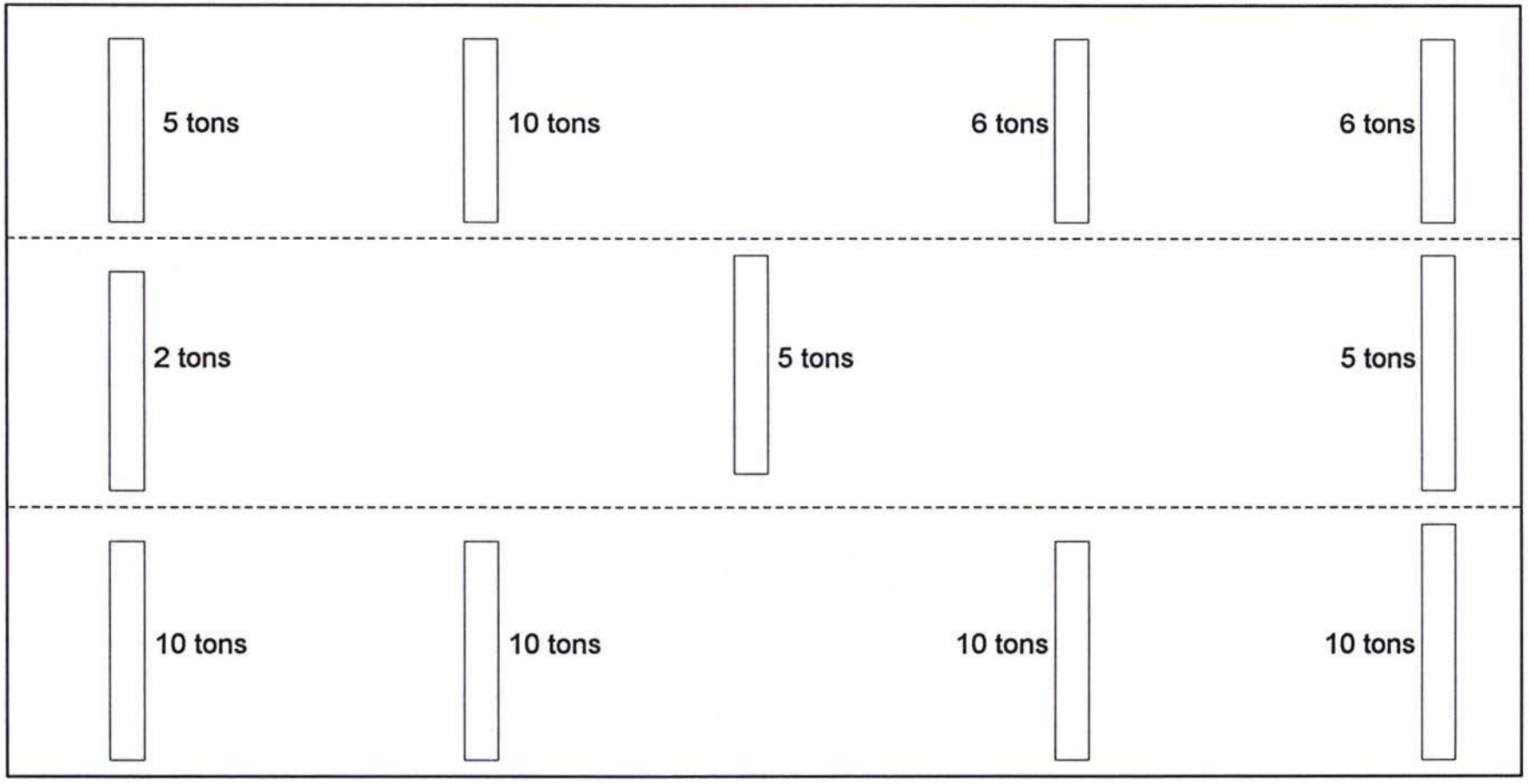


Locomotive assembly shop
width 42 m



Electro machine shop

width 45 m



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Final Report Modul A

Annexes

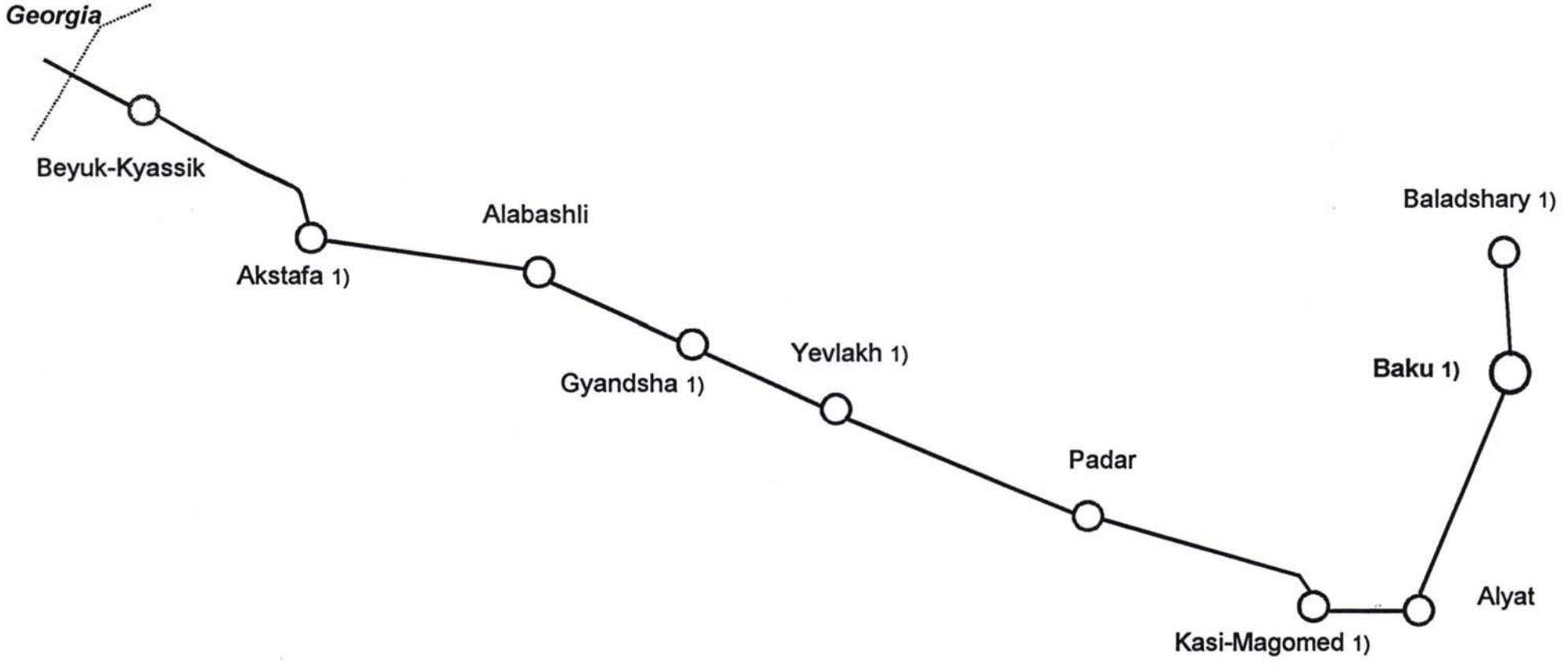
Chapter 3 Technical Pre-feasibility

3.3 Signalling and Telecommunication

3.3.1 Azerbaijan

Annex 3.3.1-1

Line section Baku - Beyuk-Kyassik of AGZD



1) Location of maintenance facilities for signalling and telecommunication equipment

Annex 3.3.1-2

Stations of AGZD section Baku - Beyuk-Kyassik

N°	station	km	interlocking system	number of switches	year of installation	condition
1	Baku - storage sidings	2661	BMRZ	51	1987	sufficient
2	Baku - goods station	2659	BMRZ	65	1963	sufficient
3	Kishli - main station	2654	BMRZ	66	1963	sufficient
4	Kishli - station part „A“	2654	BSZ	24	1976	sufficient
5	Baladshary	2646	BMRZ	193	1994	sufficient
6	Baladshary - hump yard	530	BMRZ	36	1993	sufficient
7	Eybat	518	SZ	15	1965	sufficient
8	Puta	510	SZ	12	1965	sufficient
9	Karadag	498	BMRZ	24	1963	sufficient
10	Sangatshali	484	SZ	20	1965	sufficient
11	Duvanni	475	SZ	20	1965	sufficient
12	Alyat - main station	461	BMRZ	65	1975	sufficient
13	Atbulak	447	SZ	14	1975	sufficient
14	Navagi	436	SZ	16	1965	sufficient

Annex 3.3.1-2

N°	station	km	interlocking system	number of switches	year of installation	condition
15	Pirsagat	427	SZ	15	1965	sufficient
16	Kasi-Magomed	417	MRZ	69	1961	poor
17	Mugan	405	SZ	12	1967	poor
18	Gadshievo	391	SZ	11	1967	poor
19	Padar	379	SZ	24	1978	good
20	Sagiri	366	SZ	12	1967	good
21	Kerar	352	SZ	13	1964	good
22	Kyrdamir	342	MRZ	30	1968	poor (switches operated by hand)
23	Karabudshak	331	SZ	12	1967	good
24	Mysysli	321	SZ	15	1969	good
25	Bargusheti	308	SZ	15	1971	sufficient
26	Udshary	295	MRZ	44	1971	good
27	Alikent	286	SZ	12	1965	good
28	Yjaki	275	SZ	18	1965	good

Annex 3.3.1-2

N°	station	km	interlocking system	number of switches	year of installation	condition
29	Malai	264	SZ	14	1972	good
30	Yevlakh	250	MRZ	53	1966	poor
31	Mingetshaur - main station	238	SZ	19	1966	good
32	Geran	225	SZ	12	1969	poor
33	Kyrektshai	214	SZ	14	1966	poor
34	Dalimamedli	200	SZ	11	1966	good
35	Sasali	193	SZ	19	1966	good
36	Gyandsha	183	BMRZ	108	1987	good
37	Alabashli	170	MRZ	30	1963	switches operated by hand
38	Shamkir	159	MRZ	16	1962	switches operated by hand
39	Dallyar	149	MRZ	21	1962	switches operated by hand
40	Dsegam	136	MRZ	13	1961	switches operated by hand

Annex 3.3.1-2

N°	station	km	interlocking system	number of switches	year of installation	condition
41	Kovlyar	122	MRZ	17	1961	switches operated by hand
42	Taus	109	SZ	27	1982	good
43	Tatlu	98	SZ	10	1975	good
44	Akstafa	88	MRZ	47	1969	good
45	Poili - main station	74	SZ	24	1966	good
46	Salogli	65	SZ	23	1975	good
47	Soyuk-Bulak	56	SZ	27	1975	good
48	Beyuk-Kyassik	45	MRZ	47	1975	poor

Annex 3.3.1-3

Number of failures on the AGZD signalling installations

year	signals	electric points	track circuits	automatic level crossings
1995	23	15	413 *1)/78 *2)	- *3)
until April 1996	7	1	18	- *3)

*1) total failures occurred on track circuits

*2) of them failures in responsibility of the signalling department

*3) no data available

Annex 3.3.1-4

Schedule of costs for signalling equipment and installations for AGZD

installations / year	until 2000	2001	2002	2003	2004	2005	2006	2007	2008	lump sum
signals	4.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	***7.6***
electric point machines	5.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	***8.6***
track circuits	2.5	2.0	1.0	0.5	0.5	0.5	0.4	0.4	0.4	***8.2***
automatic level crossings	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	***13.0***
spare parts, cables	2.0	1.0	0.5	0.5	0.5	0.4	0.4	0.4	0.4	***6.1***
complete signal boxes 1)	0	14.0	4.0	4.0	7.0	11.0	4.5	5.0	7.0	***56.5***
replacement of manual systems	0	7.0	7.0	5.0	5.5	4.0	5.0	0	0	***33.5***
lumpsum of technical installations	*15.5*	*26.5*	*15.0*	*12.3*	*15.8*	*18.2*	*12.4*	*7.9*	*9.9*	***133.5***
equipment for the central repair shops	0.5	0.5	0.5	0.5	0.2	0.2	0.2	0.1	0.1	***2.8***
renewal of the rolling stock for maintenance and fault clearing	0.5	0.5	0.3	0.3	0.2	0.2	0.1	0.1	0.1	***2.3***
Total [in USD]	***16.5***	***27.5***	***15.8***	***13.1***	***16.2***	***18.6***	***12.7***	***8.1***	***10.1***	***138.6***

1) replacement of the worn signalling equipment

all figures in million USD

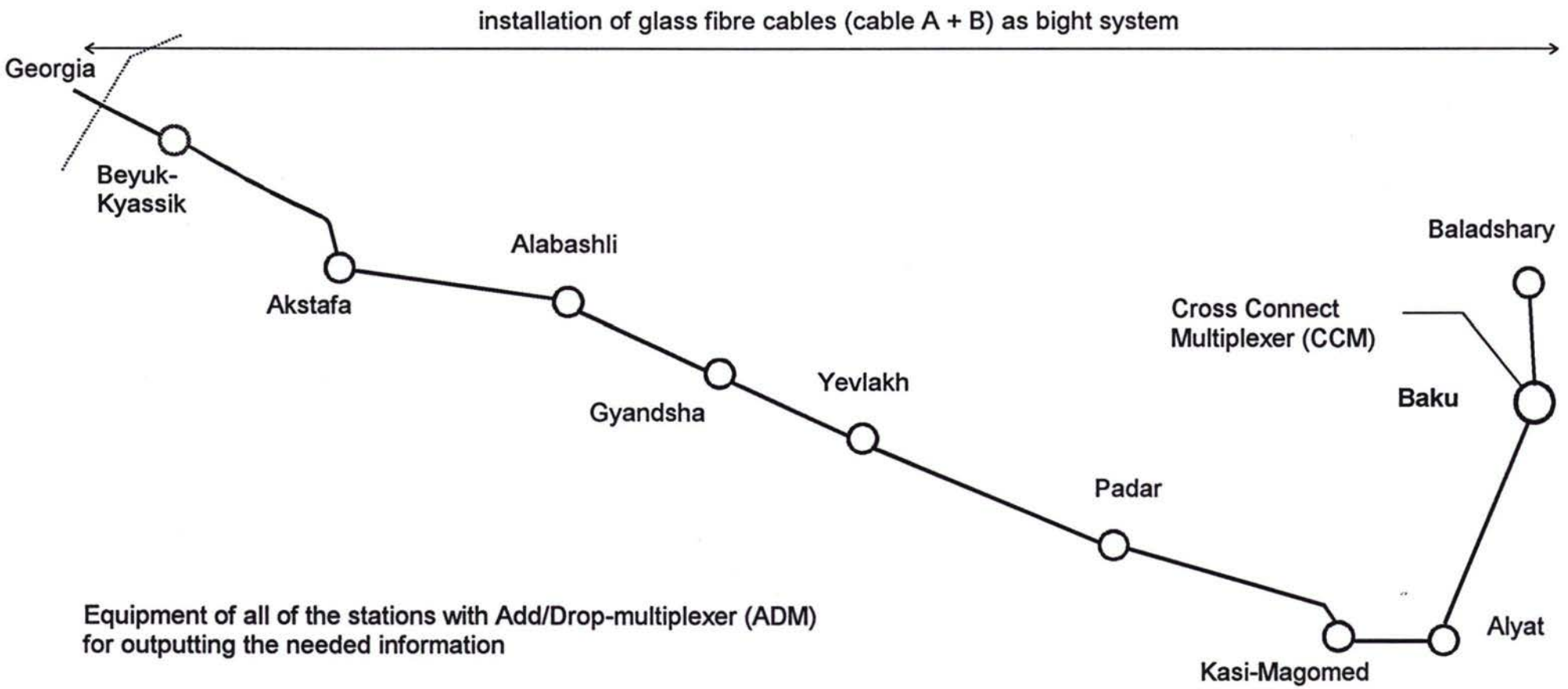
Annex 3.3.1-5

Number of failures on the AGZD telecommunication installations

year	cable installations	dispatching network	teletypes	telephone installations	radio installations
1995	18	74	4	33	16
until April 1996	9	14	2	8	4

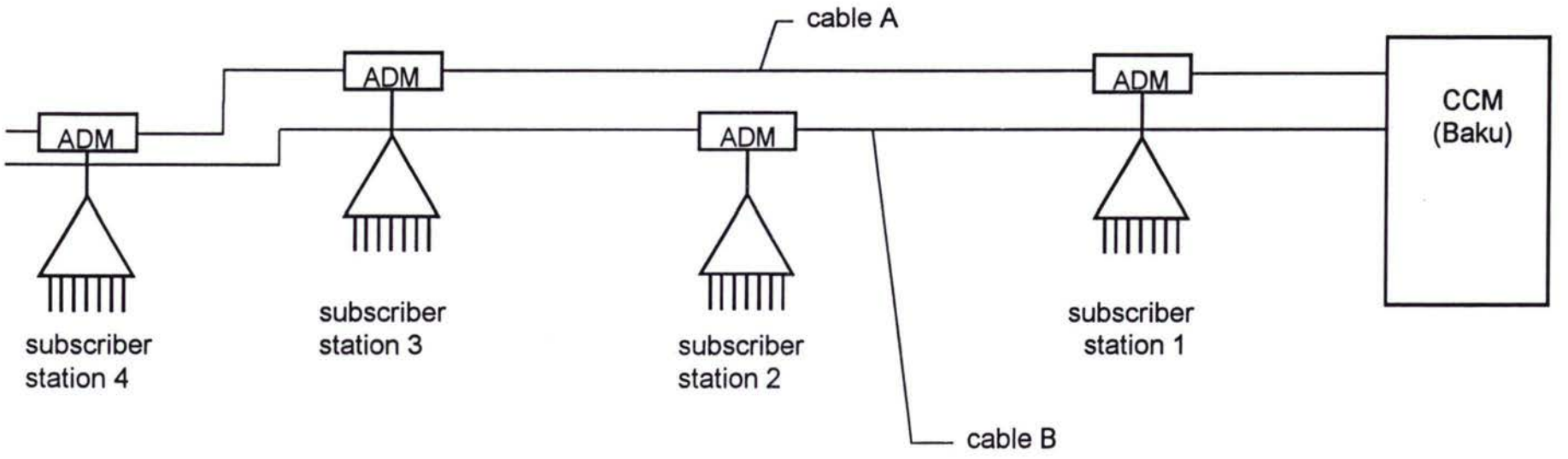
Annex 3.3.1-6

Survey of AGZD lines with telecom installations



Annex 3.3.1-7

Survey of AGZD systems of telecommunication installations



ADM - Add/Drop-Multiplexer
CCM - Cross Connection Multiplexer

Annex 3.3.1-8

Schedule of costs for telecommunication installations for AGZD

installations / year	until 2000	2001	2002	2003	2004	2005	2006	2007	2008	lump sum
glass fibre cables	5.0	2.0	2.0	2.0	1.5	1.5	1.0	1,0	1.0	***17.0***
communication installations	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0,5	0.5	***5.0***
exchange installations	1.0	0.5	0.5	0.5	0.5	0.4	0.4	0,4	0.3	***4.5***
radio installations	2.5	1.5	1.0	0.8	0.8	0.5	0.5	0,5	0.5	***8.6***
other equipment	1.0	0.4	0.4	0.4	0.4	0.3	0.2	0,2	0.2	***3.5***
lump sum of technical installations	*10.5*	*4.9*	*4.4*	*4.2*	*3.7*	*3.2*	*2.6*	*2.6*	*2.5*	***38.6***
equipment for the central repair shops	1.0	0.4	0.4	0.2	0.1	0.1	0.1	0.1	0.1	***2.5***
renewal of the rolling stock for maintenance and fault clearing	0.5	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	***2.0***
Total [in USD]	***12.0***	***5.6***	***5.1***	***4.6***	***4.0***	***3.5***	***2.8***	***2.8***	***2.7***	***43.1***

all figures in million USD

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Annexes

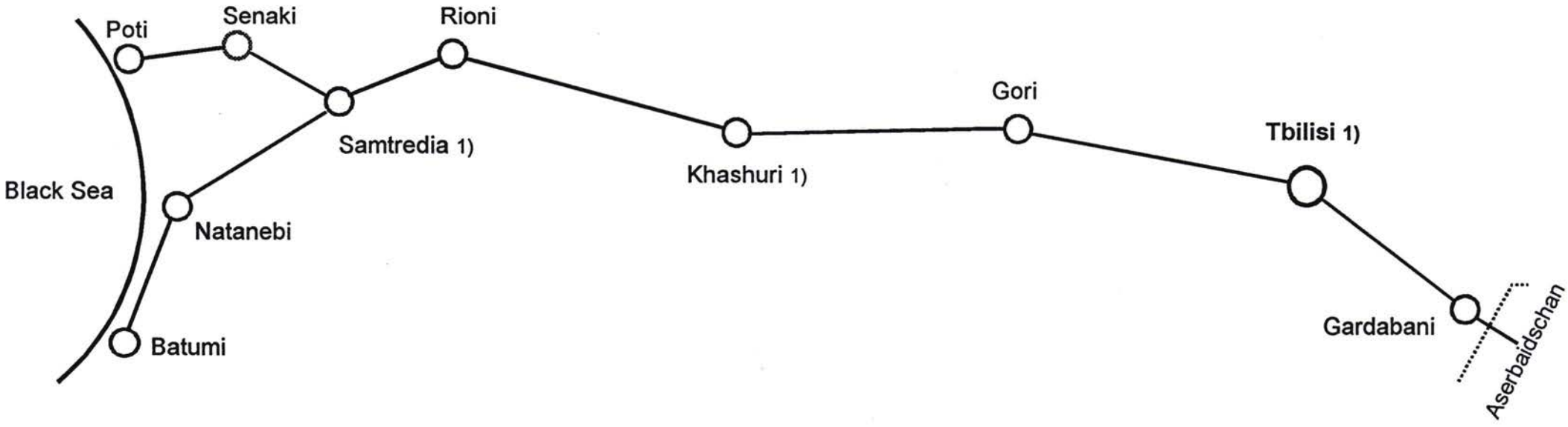
Chapter 3 Technical Pre-feasibility

3.3 Signalling and Telecommunication

3.3.2 Georgia

Annex 3.3.2-1

Line section Tbilisi - Poti/Batumi of GRZD



1) Location of maintenance facilities for signalling and telecommunication equipment

Annex 3.3.2-2

Stations of GRZD section Gardabani - Poti/Batumi

N°	station	km	interlocking system	number of switches	year of installation	condition [2]
1	Gardabani	32.9	MRZ-13	36	1973	24 reactors / 8 light signals
2	Rustavi - goods station	24.6	MRZ-13	46	1973	10 reactors / 14 light signals
3	Rustavi - passenger station	21.5	EZ-9	19	1967	2 reactors / 2 light signals
4	Gatshiani	15.1	MRZ-13	33	1976	31 reactors / 12 light signals
5	Veli	9.6	EZ-9	22	1970	6 reactors / 4 light signals
6	Tbilisi - marshalling yard		MRZ-13	76	1990	40 reactors / 6 light signals
7	Tbilisi - marshalling sidings		-	-	1978	- reactors / 6 light signals
8	Tbilisi - uzlovaya	2509.2	MRZ-13	75	1964	12 reactors / 12 light signals
9	Tbilisi - passenger station	2502.9	MRZ-13	78	1976	1 reactors / 3 light signals
10	Tbilisi - goods station	2500.6	TP-47	47	1963	3 reactors / 7 light signals
11	Didube	2499.0	EZ-9	14	1977	4 reactors / 2 light signals
12	Avtshala	2492.5	EZ-9	12	1957	24 reactors / 4 light signals
13	Sages	2489.4	EZ-9	19	1977	4 reactors / 4 light signals
14	Mzkheta	2481.5	EZ-9	15	1976	1 reactors / - light signals

Annex 3.3.2-2

N°	station	km	interlocking system	number of switches	year of installation	condition [2]
15	Dsegvi	2475.0	EZ-9	23	1978	13 reactors / 6 light signals
16	Ksani	2469.9	EZ-9	19	1979	7 reactors / 3 light signals
17	Kavtiskhevi	2459.8	EZ-9	21	1980	7 reactors / 3 light signals
18	Kaspi	2454.3	EZ-9	30	1980	1 reactors / - light signals
19	Metekhi	2447.2	EZ-9	19	1981	24 reactors / 6 light signals
20	Grakali	2441.8	EZ-9	19	1981	16 reactors / 3 light signals
21	Upliszikhe	2434.5	EZ-9	16	1978	35 reactors / 4 light signals
22	Gori	2427.3	MRZ-13	35	1978	23 reactors / 3 light signals
23	Skra	2419.2	EZ-9	14	1974	7 reactors / 2 light signals
24	Kareli	2409.1	EZ-9	18	1980	7 reactors / 2 light signals
25	Agara	2402.7	EZ-9	29	1981	33 reactors / 2 light signals
26	Gomi	2394.0	EZ-9	17	1965	19 reactors / 2 light signals
27	Khashuri	2383.2	TP-47	59	1968	28 reactors / 4 light signals
28	Likhi	2375.0	EZ-2	14	1975	14 reactors / 2 light signals

Annex 3.3.2-2

N°	station	km	interlocking system	number of switches	year of installation	condition [2]
29	Zipa	2366.7	EZ-9	11	1979	21 reactors / 2 light signals
30	Moliti	2359.6	EZ-2	8	1969	18 reactors / 2 light signals
31	Marelisi	2352.6	EZ-2	11	1969	13 reactors / 4 light signals
32	passing point 2347 km	2347.0	EZ-9	-	1969	4 reactors / 1 light signals
33	Kharagauli	2343.1	EZ-9	12	1969	9 reactors / 2 light signals
34	passing point 2338 km	2338.1	EZ-9	-	1970	9 reactors / 2 light signals
35	Dsirula	2333.4	EZ-2	10	1974	13 reactors / 2 light signals
36	passing point 2328 km	2328.5	EZ-9	-	1969	12 reactors / 2 light signals
37	Schoropani	2323.9	EZ-9	12	1969	13 reactors / 3 light signals
38	Sestafoni	2320.1	MRZ-13	52	1990	50 reactors / 7 light signals
39	Argveta	2313.3	EZ-9	29	1980	20 reactors / 6 light signals
40	Sviri	2306.9	EZ-9	16	1978	43 reactors / 2 light signals
41	Adshameti	2297.1	EZ-9	21	1978	53 reactors / 6 light signals
42	Rioni	2289.9	EZ-9	25	1991	29 reactors / 6 light signals

Annex 3.3.2-2

N°	station	km	interlocking system	number of switches	year of installation	condition [2]
43	Brozeula	2285.7	EZ-9	22	1960	40 reactors / 7 light signals
44	Mukhiani	2280.1	EZ-9	20	1978	34 reactors / 2 light signals
45	Kopitnari	2271.5	EZ-9	19	1978	45 reactors / 6 light signals
46	Samtredia II	2262.4	MRZ-13	106	1988	92 reactors / 11 light signals
47	Samtredia I	2259.1	TP-43	58	1975	8 reactors / 2 light signals
48	Kolobani	2251.4	EZ-9	12	1988	4 reactors / 2 light signals
49	Abasha	2245.6	EZ-9	4	1963	9 reactors / 2 light signals
50	Agur- Kakhana	2238.9	EZ-2	6	1963	9 reactors / 3 light signals
51	Senaki	2232.2	EZ-9	15	1964	24 reactors / 10 light signals
52	Kvaloni	10.1	EZ-9	8	1969	16 reactors / 4 light signals
53	Tshaladidi	23.2	EZ-2	4	1968	16 reactors / 3 light signals
54	Poti	38.3	EZ-9	2		4 reactors / 2 light signals
55	Sadshevakho	96.0	EZ-2	12	1966	4 reactors / 3 light signals
56	passing point 2256 km	-	-	-	-	[1]

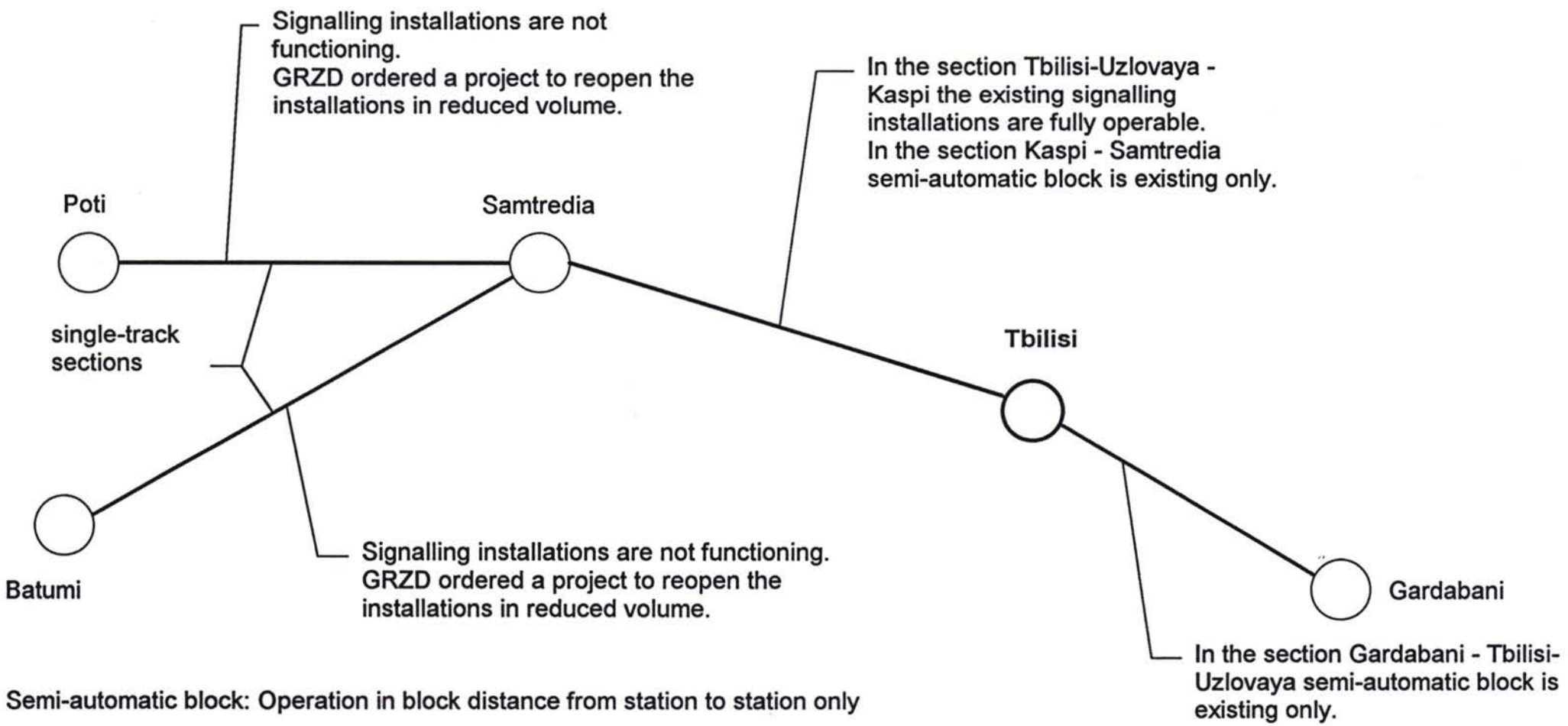
Annex 3.3.2-2

N°	station	km	interlocking system	number of switches	year of installation	condition [2]
57	passing point 101 km	-	-	-	1987	[1]
58	Dshapani	88.1	EZ-9	3	1987	8 reactors / 2 light signals
59	Nigoiti	81.8	EZ-2	5	1987	4 reactors / 2 light signals
60	Lantshkhuti	75.1	EZ-2	6	1980	5 reactors / 2 light signals
61	Dshumati	63.4	EZ-2	6	1980	5 reactors / 2 light signals
62	Supsa	54.5	EZ-2	5	1966	4 reactors / 3 light signals
63	Ureki	48.0	EZ-9	7	1966	2 reactors / 3 light signals
64	Natanebi	39.5	EZ-2	8	1966	2 reactors / 2 light signals
65	Otshkhamuri	30.3	EZ-2	9	1967	2 reactors / 3 light signals
66	Kobuleti	23.5	EZ-2	11	1965	4 reactors / 2 light signals
67	Tshakva	13.9	EZ-2	11	1965	2 reactors / 2 light signals
68	Makhindshauri	6.9	EZ-9	4	1965	13 reactors / 1 light signals
69	Batumi	1.6	EZ-9	35	1965	6 reactors / 8 light signals

[1] The operating points in km 101 and 2256 are out of operation because of stolen equipment.
[2] Listed are all installations that were dismantled by theft.

Annex 3.3.2-3

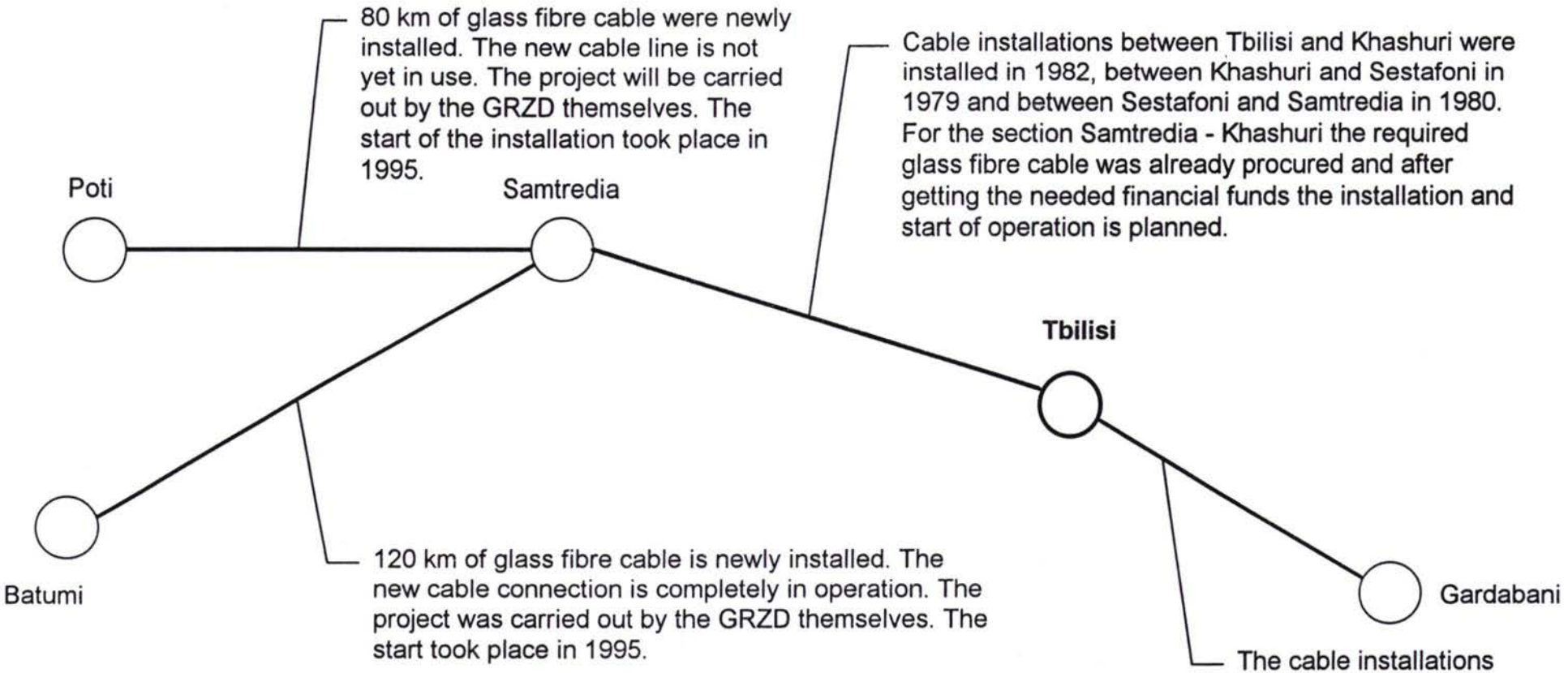
Survey of GRZD lines with signalling installations



Semi-automatic block: Operation in block distance from station to station only

Annex 3.3.2-4

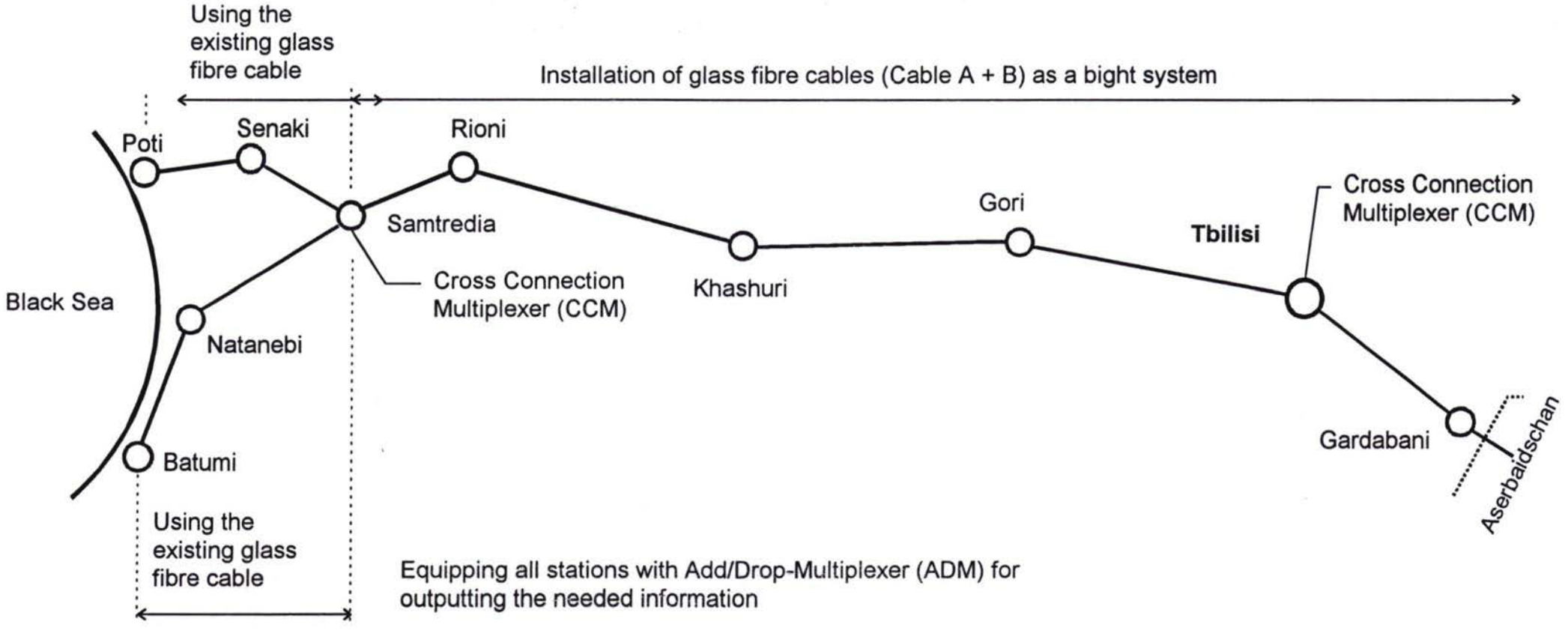
Survey of GRZD lines with telecommunication installations



Installed cable type for telecommunication installations: MKPAB-7*4*1,2+5*0,9+1*0,7

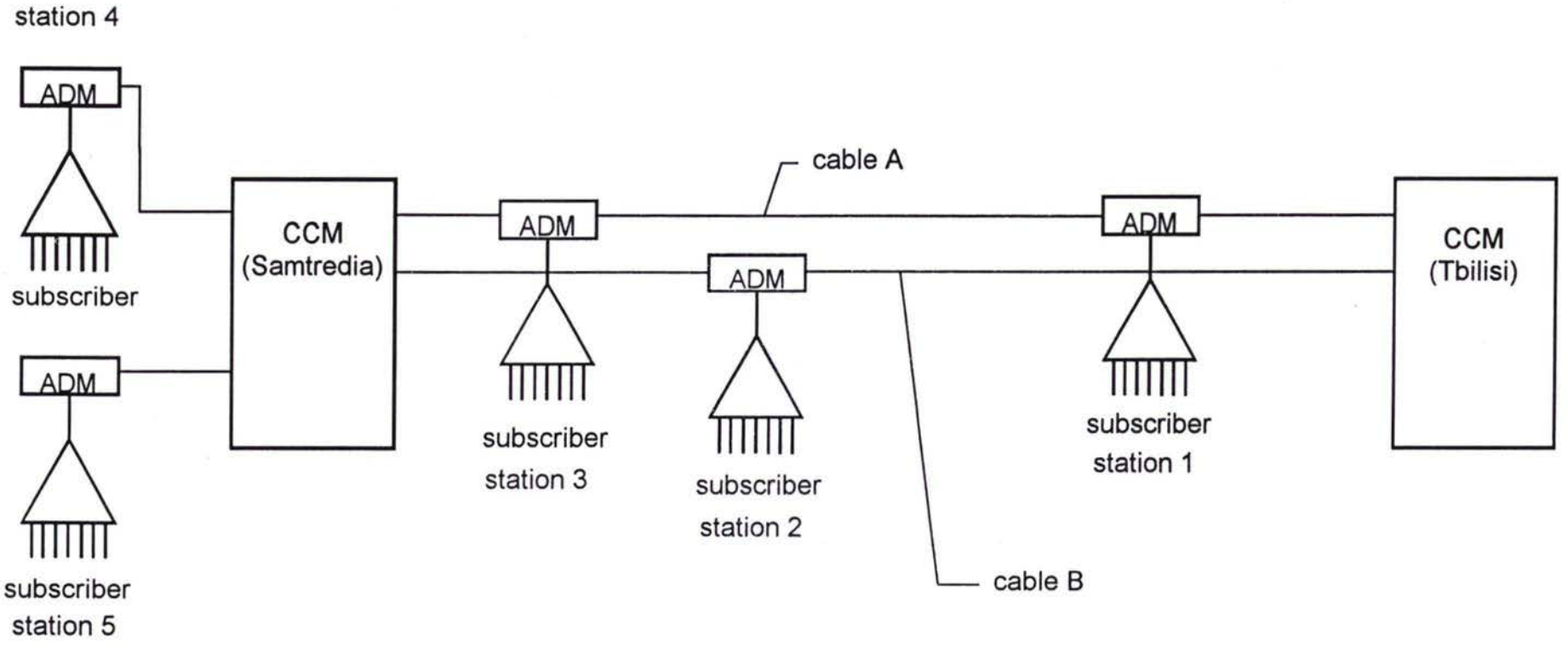
Annex 3.3.2-5

Survey of GRZD lines with telecommunication equipment



Annex 3.3.2-6

Survey of GRZD systems of telecommunication installations



ADM - Add/Drop-Multiplexer
CCM - Cross Connection Multiplexer

Annex 3.3.2-7

Schedule of costs of signalling equipment and installations for GRZD

installations / year	until 2000	2001	2002	2003	2004	2005	2006	2007	2008	lump sum
signals	5.0	2.5	1.0	0.4	0.4	0.4	0.3	0.3	0.3	***10.6***
electric point machines	3.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	***6.6***
track circuits	4.5	2.0	1.5	1.0	0.5	0.5	0.4	0.4	0.4	***11.2***
automatic level crossings	4.8	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0	***21.8***
spare parts, cables	3.0	2.0	1.5	1.0	0.5	0.5	0.4	0.4	0.4	***9.7***
complete signal boxes 1)	0	14.0	5.0	5.0	8.0	10.0	5.0	5.0	5.0	**57.0**
equipment for Samtredia - Poti/Batumi section 2)	2.0	0	0	0	0	0	0	0	0	***2.0***
lump sum of technical installations	*22.8*	*23.5*	*12.0*	*9.8*	*1.8*	*13.8*	*8.4*	*8.4*	*8.4*	***118.9***
equipment for the central repair shops	0.5	0.5	0.5	0.5	0.2	0.2	0.2	0.1	0.1	***2.8***
renewal of the stock for maintenance and fault clearing	0.5	0.5	0.3	0.3	0.2	0.2	0.1	0.1	0.1	***2.3***
Total [in USD]	***23.8***	***24.5***	***12.8***	***10.6***	***12.2***	***14.2***	***8.7***	***8.6***	***8.6***	***124.0***

1) replacement of the worn signalling equipment

2) Projects of procurement of minimum equipment requirements have already been ordered by the Georgian Railways.

All figures in million USD

Annex 3.3.2-8

Schedule of costs of telecommunication installations for GRZD

installations / year	until 2000	2001	2002	2003	2004	2005	2006	2007	2008	lump sum
glass fibre cables	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	***10.0***
communication installations	1.0	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	***4.5***
exchange installations	1.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	***5.3***
radio installations	1.5	1.5	1.0	0.6	0.6	0.6	0.5	0.4	0.4	***7.1***
other equipment	1.0	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	***3.0***
lump sum of technical installations	*6.8*	*3.8*	*3.3*	*2.9*	*2.8*	*2.7*	*2.6*	*2.5*	*2.5*	***29.9***
equipment for the central repair shops	1.0	0.4	0.4	0.2	0.1	0.1	0.1	0.1	0.1	***2.5***
renewal of the rolling stock for maintenance and fault clearing	0.5	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	***2.0***
Total [in USD]	***8.3***	***4.5***	***4.0***	***3.3***	***3.1***	***3.0***	***2.8***	***2.7***	***2.7***	***34.4***

All figures in million USD

Draft

Final Report Modul A

Annexes

Chapter 4 Financial Pre-feasibility

4.1 Azerbaijan

Annex 4.1-1

Forecast Requirements -Bridges: Azerbaijan

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments or Major Repairs:																				
Bridge No. 56 - Baku	0,25	0,25	0,25	0,25	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00
Bridges 19 & 20 - Km 157 & 70	0,22	0,22	0,22	0,22	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,87
Bridges 10 & 11 - Km 111 & 20	0,24	0,24	0,24	0,24	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,95
Bridge 31 - Km 234 & 600	0,03	0,03	0,03	0,03	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,10
Bridges 33 & 34 - Km 252 & 80	0,74	0,74	0,74	0,74	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,95
Bridges 41 & 42 - Km 360 & 20	0,05	0,05	0,05	0,05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,20
Bridge No.5 - Km 72 & 300	0,00	0,00	0,00	0,00	0,91	0,91	0,91	0,91	0,91	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,55
Quarry Equipt.	0,15	0,15	0,15	0,15	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,60
Total New Investments	1,67	1,67	1,67	1,67	0,91	0,91	0,91	0,91	0,91	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	11,22
Maintenance Requirements:																				
Bridge No. 56 - Baku	0,01	0,03	0,04	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,88
Bridges 19 & 20 - Km 157 & 70	0,01	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,76
Bridges 10 & 11 - Km 111 & 20	0,01	0,02	0,04	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,83
Bridge 31 - Km 234 & 600	0,00	0,00	0,00	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,09
Bridges 33 & 34 - Km 252 & 80	0,04	0,07	0,11	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	2,58
Bridges 41 & 42 - Km 360 & 20	0,00	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,18
Bridge No.5 - Km 72 & 300	0,00	0,00	0,00	0,00	0,05	0,09	0,14	0,18	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,23	2,95
Quarry Equipt.	0,01	0,02	0,02	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,53
Total Maintenance	0,08	0,17	0,25	0,33	0,38	0,42	0,47	0,52	0,56	0,56	0,56	0,56	0,56	0,56	0,56	0,56	0,56	0,56	0,56	8,79

Forecast Requirements -Bridges: Azerbaijan

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Depreciation:																				
Bridge No. 56 - Baku	0,01	0,01	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,35
Bridges 19 & 20 - Km 157 & 70	0,00	0,01	0,01	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,30
Bridges 10 & 11 - Km 111 & 20	0,00	0,01	0,01	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,33
Bridge 31 - Km 234 & 600	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,04
Bridges 33 & 34 - Km 252 & 80	0,01	0,03	0,04	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	1,03
Bridges 41 & 42 - Km 360 & 20	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,07
Bridge No.5 - Km 72 & 300	0,00	0,00	0,00	0,00	0,02	0,04	0,05	0,07	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09	1,18
Quarry Equipt.	0,02	0,03	0,05	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,00	0,00	0,00	0,00	0,00	0,75
Total Depreciation	0,05	0,09	0,14	0,18	0,20	0,22	0,24	0,25	0,27	0,27	0,27	0,27	0,27	0,27	0,21	0,21	0,21	0,21	0,21	4,06

Forecast Requirements - Permanent Way: Azerbaijan

Annex 4.1-2

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments:																				
Line: Tbilisi - Baku:-Item 1 -12: 116km	8,7	8,7	8,7	8,7	17,5	17,5	17,5	17,5	17,5	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	122,1
Line: Baku - Tbilisi:-Item 1 - 7: 84km	6,3	6,3	6,3	6,3	7,5	7,5	7,5	7,5	7,5	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	62,7
Changeover Points - Both Directions	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	18,0
Crossing Timber Sets	0,4	0,4	0,4	0,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,4
Total New Investments	17,4	17,4	17,4	17,4	27,0	27,0	27,0	27,0	27,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	204,2
Maintenance Requirements:																				
Line: Tbilisi - Baku:-Item 1 -12: 116km	0,9	1,7	2,6	3,5	5,2	7,0	8,7	10,5	12,2	12,2	12,2	12,2	12,2	12,2	12,2	12,2	12,2	12,2	12,2	174,4
Line: Baku - Tbilisi:-Item 1 - 7: 84km	0,6	1,3	1,9	2,5	3,3	4,0	4,8	5,5	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	6,3	92,9
Changeover Points - Both Directions	0,2	0,4	0,6	0,8	1,0	1,2	1,4	1,6	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	27,0
Crossing Timber Sets	0,0	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	2,5
Total Maintenance	1,7	3,5	5,2	6,9	9,6	12,3	15,0	17,7	20,4	20,4	20,4	20,4	20,4	20,4	20,4	20,4	20,4	20,4	20,4	296,7
Depreciation:																				
Line: Tbilisi - Baku:-Item 1 -12: 116km	0,3	0,7	1,0	1,4	2,1	2,8	3,5	4,2	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	69,8
Line: Baku - Tbilisi:-Item 1 - 7: 84km	0,3	0,5	0,8	1,0	1,3	1,6	1,9	2,2	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	37,1
Changeover Points - Both Directions	0,1	0,2	0,2	0,3	0,4	0,5	0,6	0,6	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	10,8
Crossing Timber Sets	0,0	0,0	0,0	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	1,0
Total Depreciation	0,7	1,4	2,0	2,7	3,8	4,9	6,0	7,0	8,1	8,1	8,1	8,1	8,1	8,1	8,1	8,1	8,1	8,1	8,1	117,7

Forecast Requirements -Permanent Way Maintenance Equipt.: Azerbaijan

Annex 4.1-3

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments:																				
Misc. Machinery & Equipt.	3,75	3,75	3,75	3,75	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	15,00
Track Engines	0,86	0,86	0,86	0,86	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,42
Ballast Regulating Machine	0,00	1,40	0,00	0,00	0,00	0,00	0,00	1,40	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,80
Trolley for Bridge Inspection	0,00	1,17	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,17
Excavators	0,50	0,50	0,50	0,50	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,01
Work Trolley	0,00	4,38	0,00	0,00	0,00	0,00	0,00	4,38	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	8,76
Sleeper Positioner	0,00	0,00	2,86	0,00	0,00	0,00	0,00	2,86	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,72
Hydraulic Rail Treater	0,00	0,55	0,55	0,00	0,00	0,00	0,55	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,65
Diesel Motors for UK Crane	0,02	0,02	0,02	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,08
Total New Investments	5,13	12,63	8,54	5,13	0,00	0,00	0,55	8,64	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	40,61
Maintenance Requirements:																				
Misc. Machinery & Equipt.	0,38	0,75	1,13	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	26,25
Track Engines	0,09	0,17	0,26	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	0,34	5,99
Ballast Regulating Machine	0,00	0,14	0,14	0,14	0,14	0,14	0,14	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	4,20
Trolley for Bridge Inspection	0,00	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	2,11
Excavators	0,05	0,10	0,15	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	3,52
Work Trolley	0,00	0,44	0,44	0,44	0,44	0,44	0,44	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	13,14
Sleeper Positioner	0,00	0,00	0,29	0,29	0,29	0,29	0,29	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	8,29
Hydraulic Rail Treater	0,00	0,06	0,11	0,11	0,11	0,11	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	2,64
Diesel Motors for UK Crane	0,00	0,00	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,14
Spare Parts for UK System	0,01	0,01	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,04
Spare Parts for Sleeper Positioner	0,00	0,00	0,29	0,00	0,00	0,00	0,00	0,29	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,57
Spare Parts for Ballast Machine	0,00	0,16	0,00	0,00	0,00	0,00	0,00	0,16	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,32
Spare Parts for Work Trolleys	0,00	0,44	0,00	0,00	0,00	0,00	0,00	0,44	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,88
Total Maintenance	0,52	1,79	2,93	3,15	3,14	3,14	3,20	4,35	4,06	4,06	4,06	4,06	4,06	4,06	4,06	4,06	4,06	4,06	4,06	66,88

Forecast Requirements -Permanent Way Maintenance Equipt.: Azerbaijan

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Depreciation:																				
Misc. Machinery & Equipt.	0,38	0,75	1,13	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,13	0,38	0,38	0,38	0,00	0,00	0,00	0,00	0,00	15,00
Track Engines	0,03	0,07	0,10	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	2,39
Ballast Regulating Machine	0,00	0,14	0,14	0,14	0,14	0,14	0,14	0,28	0,28	0,28	0,28	0,28	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,24
Trolley for Bridge Inspection	0,00	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	1,05
Excavators	0,03	0,05	0,08	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	1,76
Work Trolley	0,00	0,22	0,22	0,22	0,22	0,22	0,22	0,44	0,44	0,44	0,44	0,44	0,44	0,44	0,44	0,44	0,44	0,44	0,44	6,57
Sleeper Positioner	0,00	0,00	0,14	0,14	0,14	0,14	0,14	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	4,15
Hydraulic Rail Treater	0,00	0,03	0,06	0,06	0,06	0,06	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	1,32
Diesel Motors for UK Crane	0,00	0,00	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,14
Total Depreciation	0,44	1,32	1,92	2,36	2,36	2,36	2,39	2,89	2,89	2,89	2,52	1,77	1,49	1,49	1,11	1,11	1,11	1,11	1,11	34,62

Annex 4.1-4

Forecast Requirements -Rolling Stock: Azerbaijan

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments:																				
4 Overhauled Locomotives	1,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	37,00
Scrapping of locs.	0,30	0,80	0,80	1,10	1,10	1,50	1,50	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	7,10
New Locomotives	0,00	0,00	0,00	40,00	40,00	85,00	85,00	85,00	85,00	35,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	455,00
16 Mechanical Lifting Jacks	0,16	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,16
1000 Tank Wagons	22,50	22,50	22,50	22,50	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	90,00
Wagon Repair Shop Rehab.	1,21	4,00	4,00	4,00	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	17,21
Spare Parts:Wagon Repair	2,50	1,90	1,90	1,90	1,90	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	10,10
Upgrading 5 Wagon Depots	0,50	0,50	0,50	0,50	0,50	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,50
Traction Motor Shop Equipt.	0,15	0,15	0,15	0,15	0,15	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,75
Main Elements for Loc. Reprs	0,35	0,35	0,35	0,12	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,18
Overhead Crane: Baladshari	0,03	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03
Training	0,06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,06
Total New Investments	28,77	34,20	34,20	74,27	51,65	90,50	90,50	89,00	89,00	39,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	621,09

Forecast Requirements -Rolling Stock: Azerbaijan

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Maintenance Requiremnts:																				
4 Overhauled Locomotives	0,10	0,50	0,90	1,30	1,70	2,10	2,50	2,90	3,30	3,70	3,70	3,70	3,70	3,70	3,70	3,70	3,70	3,70	3,70	52,30
New Locomotives	0,00	0,00	0,00	3,20	6,40	13,20	20,00	26,80	33,60	36,40	36,40	36,40	36,40	36,40	36,40	36,40	36,40	36,40	36,40	467,20
16 Mechanical Lifting Jacks	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,61
1000 Tank Wagons	1,13	2,25	3,38	4,50	4,50	4,50	4,50	4,50	4,50	4,50	4,50	4,50	4,50	4,50	4,50	4,50	4,50	4,50	4,50	78,75
Wagon Repair Shop Rehab.	0,06	0,26	0,46	0,66	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	14,35
Traction Motor Shop Equipt.	0,01	0,02	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,64
Main Elements for Loc. Reprs	0,02	0,04	0,05	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	0,06	1,05
Overhead Crane: Baladshari	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01
Loc.Components & Spares	2,05	2,05	2,05	2,05	2,05	1,00	1,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	15,23
Wagon Spare Parts	2,50	1,90	1,90	1,90	1,90	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	10,10
Total Maintenance	5,89	7,04	8,79	13,73	17,53	21,79	28,99	36,19	43,39	46,59	45,59	45,59	45,59	45,59	45,59	45,59	45,59	45,59	45,59	640,23

Forecast Requirements -Rolling Stock: Azerbaijan

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Depreciation:																				
4 Overhauled Locomotives	0,03	0,15	0,27	0,39	0,52	0,64	0,76	0,88	1,00	1,12	1,12	1,12	1,12	1,12	1,12	1,12	1,12	1,12	1,12	15,85
New Locomotives	0,00	0,00	0,00	1,21	2,42	5,00	7,58	10,15	12,73	13,79	13,79	13,79	13,79	13,79	13,79	13,79	13,79	13,79	13,79	176,97
16 Mechanical Lifting Jacks	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,15
1000 Tank Wagons	0,68	1,36	2,05	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73	47,73
Wagon Repair Shop Rehab.	0,06	0,26	0,46	0,66	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	0,86	14,35
Traction Motor Shop Equipt.	0,01	0,02	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,64
Main Elements for Loc. Reprs	0,04	0,07	0,11	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,08	0,05	0,01	0,00	0,00	0,00	0,00	0,00	0,00	1,18
Overhead Crane: Baladshari	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03
Total Depreciation	0,83	1,87	2,92	5,15	6,69	9,39	12,09	14,78	17,48	18,66	18,63	18,59	18,56	18,54	18,54	18,54	18,54	18,54	18,54	256,89

Annex 4.1-5

Forecast Requirements - Telecommunications: Azerbaijan

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments:																				
Cable Equipment	1,0	1,0	1,0	1,0	1,6	1,6	1,6	1,2	1,2	0,8	0,8	0,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0	13,6
Transmitting Equipment	0,2	0,2	0,2	0,2	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	4,0
Telecommunication Exchange Equipt	0,2	0,2	0,2	0,2	0,4	0,4	0,4	0,4	0,3	0,3	0,3	0,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,6
Radio Transmitting Equipment	0,5	0,5	0,5	0,5	1,2	0,8	0,6	0,6	0,4	0,4	0,4	0,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	6,9
Other Installations	0,2	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,2	0,2	0,2	0,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,8
Equipment for Central Repair Workshops	0,2	0,2	0,2	0,2	0,3	0,3	0,2	0,1	0,1	0,1	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,0
Renewal of Rolling Stock for Maintenance and Fault Clearing	1,0	1,0	1,0	1,0	0,2	0,2	0,2	0,2	0,2	0,1	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,2
Total New Investments	3,3	3,3	3,3	3,3	4,5	4,1	3,7	3,2	2,8	2,2	2,2	2,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	38,1
Maintenance Requirements:																				
Cable Equipment	0,3	0,5	0,8	1,0	1,4	1,8	2,2	2,5	2,8	3,0	3,2	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	46,6
Transmitting Equipment	0,1	0,1	0,2	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	12,7
Telecommunication Exchange Equipt	0,1	0,1	0,2	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,8	0,9	0,9	0,9	0,9	0,9	0,9	0,9	0,9	11,8
Radio Transmitting Equipment	0,1	0,3	0,4	0,5	0,8	1,0	1,2	1,3	1,4	1,5	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	23,9
Other Installations	0,1	0,1	0,2	0,2	0,3	0,4	0,4	0,5	0,6	0,6	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	9,6
Equipment for Central Repair Workshops	0,1	0,1	0,2	0,2	0,3	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	7,3
Renewal of Rolling Stock for Maintenance and Fault Clearing	0,1	0,0 0,3	0,0 0,6	0,0 0,8	0,0 0,9	0,0 0,9	0,0 1,0	0,0 1,0	0,0 1,1	0,0 1,1	0,0 1,1	0,0 1,1	0,0 1,1	0,0 1,1	0,0 1,1	0,0 1,1	0,0 1,1	0,0 1,1	0,0 1,1	17,7
Total Maintenance	0,6	1,5	2,3	3,1	4,2	5,3	6,2	7,0	7,7	8,2	8,8	9,3	9,3	9,3	9,3	9,3	9,3	9,3	9,3	129,5

Forecast Requirements - Telecommunications: Azerbaijan

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Depreciation:																				
Cable Equipment	0,0	0,1	0,1	0,1	0,2	0,2	0,3	0,3	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	6,2
Transmitting Equipment	0,0	0,0	0,0	0,0	0,1	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	2,5
Telecommunication Exchange Equipt	0,0	0,0	0,0	0,0	0,1	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	2,4
Radio Transmitting Equipment	0,0	0,1	0,1	0,1	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	4,8
Other Installations	0,0	0,0	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,1	0,1	0,1	0,0	2,8
Equipment for Central Repair Workshops	0,0	0,0	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,1	0,1	0,1	0,1	0,0	0,0	0,0	2,0
Renewal of Rolling Stock for Maintenance and Fault Clearing	0,2	0,4	0,6	0,8	0,8	0,9	0,9	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	17,0
Total Depreciation	0,3	0,6	1,0	1,3	1,5	1,8	2,0	2,2	2,3	2,5	2,5	2,6	2,6	2,5	2,5	2,4	2,4	2,3	2,3	37,6

Annex 4.1-6

Forecast Requirements - Signalling: Azerbaijan

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments:																				
Complete Signal Interlocking Locations	0,0	0,0	0,0	0,0	11,2	3,2	3,2	5,6	8,8	3,6	4,0	5,6	3,2	3,2	5,6	3,2	3,2	5,6	3,2	72,4
Replacement of Manual Signal Boxes	0,0	0,0	0,0	0,0	5,6	5,6	4,0	4,4	3,2	4,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	26,8
Signals	1,2	1,2	0,8	0,4	0,4	0,4	0,3	0,3	0,3	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	7,8
Electric Points Systems	1,2	1,2	1,2	0,8	0,4	0,4	0,3	0,3	0,3	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	8,6
Direct Current Circuits	0,4	0,4	0,4	0,8	1,6	0,8	0,4	0,4	0,4	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	8,8
Automatic Level Crossings	0,2	0,2	0,2	0,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	18,8
Cable Equipment	0,4	0,4	0,4	0,4	0,8	0,4	0,4	0,4	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	7,1
Equipment for Central Repair Workshops	0,1	0,1	0,1	0,1	0,4	0,4	0,4	0,2	0,2	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	2,8
Renewal of Rolling Stock for Maintenance and Fault Clearing	0,1	0,1	0,1	0,1	0,4	0,2	0,2	0,2	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	2,4
Total New Investments	3,6	3,6	3,2	2,8	22,0	12,6	10,5	13,0	14,9	10,2	6,5	8,1	5,7	5,7	8,1	5,7	5,7	8,1	5,7	155,4

Forecast Requirements - Signalling: Azerbaijan

Figures in $USMio

Maintenance Requirements:																					
Complete Signal Interlocking Locations	0,0	0,0	0,0	0,0	2,8	0,8	0,8	1,4	2,2	0,9	1,0	1,4	0,8	0,8	1,4	0,8	0,8	1,4	0,8	18,1
Replacement of Manual Signal Boxes	0,0	0,0	0,0	0,0	1,4	1,4	1,0	1,1	0,8	1,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	6,7
Signals	0,3	0,3	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	1,9
Electric Points Systems	0,3	0,3	0,3	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	2,1
Direct Current Circuits	0,1	0,1	0,1	0,2	0,4	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	2,2
Automatic Level Crossings	0,1	0,1	0,1	0,1	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	4,7
Cable Spare Parts	0,1	0,1	0,1	0,1	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	1,8
Equipment for Central Repair Workshops	0,0	0,0	0,0	0,0	0,1	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,7
Renewal of Rolling Stock for Maintenance and Fault Clearing	0,0	0,0	0,0	0,0	0,1	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,6
Total Maintenance	0,9	0,9	0,8	0,7	5,5	3,2	2,6	3,2	3,7	2,5	1,6	2,0	1,4	1,4	2,0	1,4	1,4	2,0	1,4	38,9

Forecast Requirements - Signalling: Azerbaijan

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Depreciation:																				
Complete Signal Interlocking Locations	0,0	0,0	0,0	0,0	0,7	1,0	1,2	1,5	2,1	2,4	2,6	3,0	3,2	3,4	3,8	4,0	4,2	4,6	4,8	42,8
Replacement of Manual Signal Boxes	0,0	0,0	0,0	0,0	0,4	0,7	1,0	1,3	1,5	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	22,8
Signals	0,1	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,4	0,4	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,5	6,7
Electric Points Systems	0,1	0,2	0,2	0,3	0,3	0,3	0,4	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,5	0,5	0,6	0,6	7,6
Direct Current Circuits	0,0	0,0	0,1	0,1	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,3	0,3	0,4	0,4	0,4	0,4	0,4	0,4	5,1
Automatic Level Crossings	0,0	0,0	0,0	0,1	0,1	0,2	0,3	0,4	0,5	0,5	0,6	0,7	0,8	0,9	0,9	1,0	1,1	1,2	1,3	10,5
Cable Equipment	0,0	0,0	0,0	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	2,6
Equipment for Central Repair Workshops	0,0	0,0	0,0	0,0	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,1	0,1	0,1	0,1	2,4
Renewal of Rolling Stock for Maintenance and Fault Clearing	0,0	0,0	0,0	0,0	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	2,8
Total Depreciation	0,2	0,5	0,7	0,8	2,3	3,1	3,8	4,7	5,6	6,3	6,7	7,2	7,6	8,0	8,4	8,8	9,1	9,6	10,0	103,3

Draft

Final Report Modul A

Annexes

Chapter 4 Financial Pre-feasibility

4.2 Georgia

Annex 4.2-1

Forecast Requirements -Bridges:Georgia

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments or Major Repairs:																				
Bridge No.18 - km 2289 & 216	1.25	1.25	1.25	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Bridge No. 27 - Km 2324 & 239	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Bridge No. 56 - Km 2494 & 790	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Bridge No. 65 - Km 2472 & 759	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Bridge No. 79 - Km 10 & 144	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Bridges Nos. 1, 4, 10, 11 & 13	0.04	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
Total New Investments	3.04	3.04	3.04	3.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.14
Maintenance Requirements:																				
Bridge No.18 - km 2289 & 216	0.06	0.13	0.19	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	4.38
Bridge No. 27 - Km 2324 & 239	0.03	0.05	0.08	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	1.75
Bridge No. 56 - Km 2494 & 790	0.03	0.05	0.08	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	1.75
Bridge No. 65 - Km 2472 & 759	0.03	0.05	0.08	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	1.75
Bridge No. 79 - Km 10 & 144	0.01	0.03	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.88
Bridges Nos. 1, 4, 10, 11 & 13	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.12
Total Maintenance	0.15	0.30	0.46	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	10.62

Forecast Requirements -Bridges:Georgia

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Depreciation:																				
Bridge No.18 - km 2289 & 216	0,03	0,05	0,08	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	1,75
Bridge No. 27 - Km 2324 & 239	0,01	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,70
Bridge No. 56 - Km 2494 & 790	0,01	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,70
Bridge No. 65 - Km 2472 & 759	0,01	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,70
Bridge No. 79 - Km 10 & 144	0,01	0,01	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,35
Bridges Nos. 1, 4, 10, 11 & 13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,05
Total Depreciation	0,06	0,12	0,18	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	4,25

Forecast Requirements - Permanent Way: Georgia

Annex 4.2-2

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments:																				
Line: Tbilisi - Poti: 1st Priority	19,6	19,6	19,6	19,6	10,5	10,5	10,5	10,5	10,5	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	130,8
Line: Tbilisi - Poti: 2nd Priority	0,0	0,0	0,0	0,0	18,2	18,2	18,2	18,2	18,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	90,9
Line: Tbilisi - Poti: Crossovers	2,0	2,0	2,0	2,0	3,4	3,4	3,4	3,4	3,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	25,0
Cross Timber Sets	0,4	0,4	0,4	0,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,5
Total New Investments	22,0	22,0	22,0	22,0	32,1	32,1	32,1	32,1	32,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	248,2
Maintenance Requirements:																				
Line: Tbilisi - Poti: 1st Priority	2,0	3,9	5,9	7,8	8,9	9,9	11,0	12,0	13,1	13,1	13,1	13,1	13,1	13,1	13,1	13,1	13,1	13,1	13,1	205,3
Line: Tbilisi - Poti: 2nd Priority	0,0	0,0	0,0	0,0	1,8	3,6	5,5	7,3	9,1	9,1	9,1	9,1	9,1	9,1	9,1	9,1	9,1	9,1	9,1	118,2
Line: Tbilisi - Poti: Crossovers	0,2	0,4	0,6	0,8	1,1	1,5	1,8	2,2	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	36,1
Cross Timber Sets	0,0	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	2,6
Total Maintenance	2,2	4,4	6,6	8,8	12,0	15,2	18,4	21,6	24,8	24,8	24,8	24,8	24,8	24,8	24,8	24,8	24,8	24,8	24,8	362,2
Depreciation:																				
Line: Tbilisi - Poti: 1st Priority	0,8	1,6	2,3	3,1	3,6	4,0	4,4	4,8	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	82,1
Line: Tbilisi - Poti: 2nd Priority	0,0	0,0	0,0	0,0	0,7	1,5	2,2	2,9	3,6	3,6	3,6	3,6	3,6	3,6	3,6	3,6	3,6	3,6	3,6	47,3
Line: Tbilisi - Poti: Crossovers	0,1	0,2	0,2	0,3	0,5	0,6	0,7	0,9	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	14,4
Cross Timber Sets	0,0	0,0	0,0	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	1,1
Total Depreciation	0,9	1,8	2,6	3,5	4,8	6,1	7,4	8,6	9,9	9,9	9,9	9,9	9,9	9,9	9,9	9,9	9,9	9,9	9,9	144,9

Annex 4.2-3

Forecast Requirements -Permanent Way Maintenance Equipt.: Georgia

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments:																				
Misc. Machinery & Equipt.	1,25	1,25	1,25	1,25	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,00
Bridge Inspection Vehicle	0,00	0,00	0,00	1,17	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,17
Track Vehicle	0,71	0,71	0,71	0,71	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,85
Loader Excavator	0,42	0,42	0,42	0,42	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,68
Ballast Cleaning Machine	0,00	0,00	4,38	0,00	0,00	0,00	0,00	4,38	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	8,76
Unimat	0,00	0,00	2,86	0,00	0,00	0,00	0,00	2,86	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,72
Ballast Regulating Machine	0,00	0,00	1,24	0,00	0,00	0,00	0,00	1,24	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,48
Hydraulic Rail Treater	0,00	0,55	0,00	0,00	0,00	0,00	0,55	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,10
Diesel Motors for UK Crane	0,02	0,02	0,02	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,08
Quarry Equipt.	0,25	0,25	0,25	0,25	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00
Sleeper Impregnation Plant	0,05	0,05	0,05	0,05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,20
Training	0,13	0,13	0,13	0,13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,50
Total New Investments	2,83	3,38	11,31	4,00	0,00	0,00	0,55	8,48	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	30,54

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Maintenance Requirements:																				
Misc. Machinery & Equipt.	0,13	0,25	0,38	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	8,75
Bridge Inspection Vehicle	0,00	0,00	0,00	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	1,87
Track Vehicle	0,07	0,14	0,21	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	4,99
Loader Excavator	0,04	0,08	0,13	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	2,93
Ballast Cleaning Machine	0,00	0,00	0,44	0,44	0,44	0,44	0,44	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	12,70
Unimat	0,00	0,00	0,29	0,29	0,29	0,29	0,29	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	8,29
Ballast Regulating Machine	0,00	0,00	0,12	0,12	0,12	0,12	0,12	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	3,60
Hydraulic Rail Treater	0,00	0,06	0,06	0,06	0,06	0,06	0,11	0,11	0,11	0,11	0,11	0,11	0,11	0,11	0,11	0,11	0,11	0,11	0,11	1,71
Diesel Motors for UK Crane	0,00	0,00	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,14
Quarry Equipt.	0,03	0,05	0,08	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	1,75
Sleeper Impregnation Plant	0,01	0,01	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,35
Spares: Ballast Cleaning Machine	0,11	0,11	0,11	0,11	0,11	0,09	0,09	0,09	0,09	0,09	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,99
Spares: Unimat	0,07	0,07	0,07	0,07	0,06	0,06	0,06	0,06	0,06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,57
Spares: Ballast Regulating Machine	0,04	0,04	0,04	0,04	0,03	0,03	0,03	0,03	0,03	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,32
Spares: UK System	0,01	0,01	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,04
Total Maintenance	0,50	0,83	1,94	2,33	2,30	2,28	2,33	3,18	3,18	3,09	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	49,00

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Depreciation:																				
Misc. Machinery & Equipt.	0,13	0,25	0,38	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,38	0,13	0,13	0,13	0,00	0,00	0,00	0,00	0,00	5,00
Bridge Inspection Vehicle	0,00	0,00	0,00	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,00	0,00	0,00	0,00	0,00	0,00	1,17
Track Vehicle	0,07	0,14	0,21	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,21	0,07	0,07	0,00	0,00	0,00	0,00	0,00	0,00	2,78
Loader Excavator	0,04	0,08	0,13	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,13	0,04	0,04	0,00	0,00	0,00	0,00	0,00	0,00	1,63
Ballast Cleaning Machine	0,00	0,00	0,44	0,44	0,44	0,44	0,44	0,88	0,88	0,88	0,88	0,88	0,44	0,44	0,44	0,44	0,44	0,00	0,00	8,76
Unimat	0,00	0,00	0,29	0,29	0,29	0,29	0,29	0,57	0,57	0,57	0,57	0,57	0,29	0,29	0,29	0,29	0,29	0,00	0,00	5,72
Ballast Regulating Machine	0,00	0,00	0,12	0,12	0,12	0,12	0,12	0,25	0,25	0,25	0,25	0,25	0,12	0,12	0,12	0,12	0,12	0,00	0,00	2,48
Hydraulic Rail Treater	0,00	0,06	0,06	0,06	0,06	0,06	0,11	0,11	0,11	0,11	0,11	0,06	0,06	0,06	0,06	0,06	0,00	0,00	0,00	1,10
Diesel Motors for UK Crane	0,00	0,00	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,09
Quarry Equipt.	0,00	0,00	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,14
Sleeper Impregnation Plant	0,01	0,01	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,35
Total Depreciation	0,25	0,55	1,64	2,01	2,01	2,01	2,06	2,91	2,91	2,91	2,67	2,14	1,29	1,06	0,93	0,93	0,88	0,03	0,03	29,22

Annex 4.2-4

Forecast Requirements -Rolling Stock: Georgia

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments:																				
Scrapping of Locomotives	0,20	0,50	0,50	0,40	0,40	0,85	0,85	0,55	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,25
New Locomotives	0,00	0,00	0,00	10,00	50,00	95,00	95,00	65,00	10,00	10,00	10,00	10,00	10,00	10,00	35,00	35,00	40,00	40,00	40,00	565,00
Eq.Tbilisi Wheel Set Rep. Wks	2,65	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,65
Traction Motor Equipt.	0,00	5,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,00
Repair Wks f. Elect. Comp.	0,00	0,00	5,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,00
Equipt.for Khashuri Loc.Depot	0,16	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,16
Eq.for Khashuri Wagon Depot	0,06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,06
Tbilisi Electrowagon Rep. Wks	0,00	0,00	0,00	0,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	0,00	0,00	0,00	0,00	0,00	20,00
Main Equipt.for Loc.Depots	0,36	0,36	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,71
Upgrade 5 Wagon Depots	1,00	1,00	0,28	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,28
Training	0,06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,06
Total New Investments	4,49	6,86	5,78	10,40	52,40	97,85	97,85	67,55	12,00	12,00	12,00	12,00	12,00	12,00	35,00	35,00	40,00	40,00	40,00	605,17

Forecast Requirements -Rolling Stock: Georgia

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Maintenance Requirements:																				
New Locomotives	0,00	0,00	0,00	1,00	6,00	15,50	25,00	31,50	32,50	33,50	34,50	35,50	36,50	37,50	41,00	44,50	48,50	52,50	56,50	532,00
Eq.Tbilisi Wheel Set Rep. Wks	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	2,52
Traction Motor Equipt.	0,00	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	4,50
Repair Wks f. Elect. Comp.	0,00	0,00	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	4,25
Equipt.for Khashuri Loc.Depot	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,15
Eq.for Khashuri Wagon Depot	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,06
Tbilisi Electrowagon Rep. Wks	0,00	0,00	0,00	0,00	0,20	0,40	0,60	0,80	1,00	1,20	1,40	1,60	1,80	2,00	2,00	2,00	2,00	2,00	2,00	21,00
Main Equipt.for Loc.Depots	0,04	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	1,31
Locomotive Spares	2,00	2,00	2,00	2,00	1,00	1,00	1,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	14,00
Wagon Spares	3,42	2,87	2,87	2,87	1,00	1,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	17,03
Total Maintenance	5,60	5,33	5,58	6,58	8,91	18,61	28,31	35,01	36,21	36,41	36,61	37,81	39,01	40,21	43,71	47,21	51,21	55,21	59,21	596,82

Forecast Requirements -Rolling Stock: Georgia

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Depreciation:																				
New Locomotives	0,00	0,00	0,00	0,30	1,82	4,70	7,58	9,55	9,85	10,15	10,45	10,76	11,06	11,36	12,42	13,48	14,70	15,91	17,12	161,21
Tbilisi Wheel Set Rep. Wks	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	1,53
Traction Motor Equipt.	0,00	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,00
Repair Wks f. Elect. Comp.	0,00	0,00	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	2,58
Equipt.for Khashuri Loc.Depot	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,16
Eq.for Khashuri Wagon Depot	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,06
Tbilisi Electrowagon Rep. Wks	0,00	0,00	0,00	0,00	0,06	0,12	0,18	0,24	0,30	0,36	0,42	0,48	0,55	0,61	0,61	0,61	0,61	0,61	0,61	6,36
Main Equipt.for Loc.Depots	0,04	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,04	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,71
Upgrade 5 Wagon Depots	0,03	0,06	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	1,27
Total Depreciation	0,17	0,73	0,89	1,20	2,77	5,71	8,65	10,68	11,05	11,41	11,72	11,54	11,91	12,27	13,33	14,39	15,60	16,82	18,03	178,87

Forecast Requirements - Signalling: Georgia

Annex 4.2-5

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments:																				
Complete Signal Interlocking Locations	0,0	0,0	0,0	0,0	11,2	4,0	4,0	6,4	8,0	4,0	4,0	4,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	45,6
Installations Samtredia - Poti - Batumi 2	0,4	0,4	0,4	0,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,6
Signals	1,0	1,0	1,0	1,0	2,0	0,8	0,3	0,3	0,3	0,2	0,2	0,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	8,5
Electric Points Systems	0,7	0,7	0,7	0,7	0,4	0,4	0,3	0,3	0,3	0,2	0,2	0,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,3
Direct Current Circuits	0,9	0,9	0,9	0,9	1,6	1,2	0,8	0,4	0,4	0,3	0,3	0,3	0,0	0,0	0,0	0,0	0,0	0,0	0,0	9,0
Automatic Level Crossings	1,0	1,0	1,0	1,0	2,0	2,0	1,6	1,6	1,6	1,6	1,6	1,6	0,0	0,0	0,0	0,0	0,0	0,0	0,0	17,4
Cable Equipment	0,6	0,6	0,6	0,6	1,6	1,2	0,8	0,4	0,4	0,3	0,3	0,3	0,0	0,0	0,0	0,0	0,0	0,0	0,0	7,8
Equipment for Central Repair Workshops	0,1	0,1	0,1	0,1	0,4	0,4	0,4	0,2	0,2	0,2	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,2
Renewal of Vehicles for Maintenance and Fault Clearing	0,1	0,1	0,1	0,1	0,4	0,2	0,2	0,2	0,2	0,1	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,8
Total New Investments	4,8	4,8	4,8	4,8	19,6	10,2	8,5	9,8	11,4	7,0	6,9	6,9	0,0	0,0	0,0	0,0	0,0	0,0	0,0	99,2
Maintenance Requirements:																				
Complete Signal Interlocking Locations	0,0	0,0	0,0	0,0	2,8	3,8	4,8	6,4	8,4	9,4	10,4	11,4	11,4	11,4	11,4	11,4	11,4	11,4	11,4	137,2
Installations Samtredia - Poti - Batumi 2	0,1	0,2	0,3	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	7,0
Signals	0,3	0,5	0,8	1,0	1,5	1,7	1,8	1,9	1,9	2,0	2,1	2,1	2,1	2,1	2,1	2,1	2,1	2,1	2,1	32,3
Electric Points Systems	0,2	0,4	0,5	0,7	0,8	0,9	1,0	1,1	1,1	1,2	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	19,7
Direct Current Circuits	0,2	0,5	0,7	0,9	1,3	1,6	1,8	1,9	2,0	2,1	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	33,0
Automatic Level Crossings	0,2	0,5	0,7	1,0	1,5	2,0	2,4	2,8	3,2	3,6	4,0	4,4	4,4	4,4	4,4	4,4	4,4	4,4	4,4	56,5
Cable Spare Parts	0,2	0,3	0,5	0,6	1,0	1,3	1,5	1,6	1,7	1,8	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	27,8
Equipment for Central Repair Workshops	0,0	0,1	0,1	0,1	0,2	0,3	0,4	0,4	0,5	0,5	0,5	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	7,6
Renewal of Vehicles for Maintenance and Fault Clearing	0,0	0,0 0,1	0,0 0,1	0,0 0,1	0,0 0,2	0,0 0,3	0,0 0,3	0,0 0,4	0,0 0,4	0,0 0,4	0,0 0,4	0,0 0,5	0,0 0,5	0,0 0,5	0,0 0,5	0,0 0,5	0,0 0,5	0,0 0,5	0,0 0,5	6,3
Total Maintenance	1,2	2,4	3,6	4,8	9,7	12,2	14,3	16,8	19,6	21,4	23,1	24,8	24,8	24,8	24,8	24,8	24,8	24,8	24,8	327,4

Forecast Requirements - Signalling: Georgia

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Depreciation:																				
Complete Signal Interlocking Locations	0,0	0,0	0,0	0,0	0,7	1,0	1,3	1,7	2,2	2,5	2,8	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	36,6
Installations Samtredia - Poti - Batumi 2	0,0	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	1,9
Signals	0,1	0,1	0,2	0,3	0,4	0,5	0,5	0,5	0,5	0,5	0,5	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	8,6
Electric Points Systems	0,0	0,1	0,1	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,3	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	5,2
Direct Current Circuits	0,0	0,1	0,1	0,2	0,3	0,3	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	6,6
Automatic Level Crossings	0,1	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,1	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	15,1
Cable Equipment	0,0	0,0	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	3,7
Equipment for Central Repair Workshops	0,0	0,0	0,0	0,0	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,1	0,1	0,1	0,0	0,0	2,2
Renewal of Vehicles for Maintenance and Fault Clearing	0,0	0,0	0,1	0,1	0,2	0,2	0,3	0,3	0,3	0,3	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	5,1
Total Depreciation	0,3	0,6	0,9	1,2	2,5	3,2	3,7	4,4	5,1	5,6	6,1	6,5	6,5	6,5	6,4	6,4	6,4	6,3	6,3	85,0

Annex 4.2-6

Forecast Requirements - Telecommunications Georgia

Figures in $USMio

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
New Investments:																				
Cable Equipment	0,4	0,4	0,4	0,4	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0	8,0
Transmitting Equipment	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,3	0,3	0,3	0,3	0,3	0,0	0,0	0,0	0,0	0,0	0,0	0,0	4,4
Telecommunication Exchange Equipt	0,3	0,3	0,3	0,3	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	4,2
Radio Transmitting Equipment	0,3	0,3	0,3	0,3	1,2	0,8	0,5	0,5	0,5	0,4	0,3	0,3	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,7
Other Installations	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,4
Equipment for Central Repair Workshops	0,2	0,2	0,2	0,2	0,3	0,3	0,2	0,1	0,1	0,1	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,0
Renewal of Rolling Stock for Maintenance and Fault Clearing	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,1	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,6
Total New Investments	1,9	1,9	1,9	1,9	3,6	3,2	2,6	2,5	2,4	2,2	2,2	2,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	28,3
Maintenance Requirements:																				
Cable Equipment	0,1	0,2	0,3	0,4	0,6	0,8	1,0	1,2	1,4	1,6	1,8	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	25,4
Transmitting Equipment	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	0,9	1,0	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1	15,2
Telecommunication Exchange Equipt	0,1	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1	13,8
Radio Transmitting Equipment	0,1	0,2	0,2	0,3	0,6	0,8	0,9	1,0	1,2	1,3	1,3	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	19,2
Other Installations	0,1	0,1	0,2	0,2	0,3	0,3	0,4	0,4	0,5	0,5	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	8,3
Equipment for Central Repair Workshops	0,1	0,1	0,2	0,2	0,3	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	7,3
New Rolling Stock for Maintenance and Fault Clearing	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,1
Total Maintenance	0,4	0,9	1,4	1,8	2,7	3,5	4,2	4,8	5,4	6,0	6,5	7,1	7,1	7,1	7,1	7,1	7,1	7,1	7,1	94,3

Forecast Requirements - Telecommunications Georgia

Description	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Depreciation:																				
Cable Equipment	0,0	0,0	0,0	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	3,4
Transmitting Equipment	0,0	0,0	0,1	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	3,0
Telecommunication Exchange Equipt	0,0	0,0	0,0	0,1	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	2,8
Radio Transmitting Equipment	0,0	0,0	0,0	0,1	0,1	0,2	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	3,8
Other Installations	0,0	0,0	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,1	0,1	0,1	0,1	0,0	2,4
Equipment for Central Repair Workshops	0,0	0,0	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,1	0,1	0,1	0,1	0,0	0,0	0,0	2,0
New Rolling Stock for Maintenance and Fault Clearing	0,0	0,0	0,1	0,1	0,1	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	4,4
Total Depreciation	0,1	0,2	0,4	0,5	0,7	0,9	1,1	1,2	1,4	1,5	1,6	1,7	1,6	1,6	1,5	1,5	1,4	1,4	1,4	21,7