

HAZARD RECORD

Railway Project, Pre-engineering phase 2

DATE 23.10.2017

VERSION 3.0

SECRET

HAZARD ID	HAZARD IDENTIFIED AT	HAZARD	HAZARDOUS SITUATION AND CONSEQUENCES	LIFE CYCLE PHASE				HAZARD TYPE	DISCIPLINE	EXISTING MEASURES AND ASSUMPTIONS	FREQUENCY	SEVERITY	RISK LEVEL	MEASURES	FREQ. RES.	SEV. RES.	RESIDUAL RISK LEVEL	PERSON/ORGANIZATION IN CHARGE	IMPLEMENTED SAFETY MEASURES /REQUIREMENTS	STATE OF MEASURES	STATE OF HAZARD	UPDATE
				DESIGN	CONSTRUCTION	COMMISSIONING	OPERATION															
001	Risk workshop 1 21.10.2016	Removing existing level crossings	Congestion of the other level crossings and detours. Impact on local communities and traffic. Approval will be reduced, effects on timetable and costs.		X		X	ENVIRONMENT AND SOCIAL	ROAD AND STREET	Simulations has been made in southern rural areas Many level crossings are preserved.	5	1	Minor	List of railway level crossings' properties and measures. Environment Impact Assessment and permitting Public meetings, education and information of the railway	4	1	Negligible	LKSur GoU CSI	List of railway level crossings' properties and measures and type designs has been done. (VR Track Oy) EIA in progress Simulations of traffic has been done	PARTIALLY IMPLEMENTED	CONTROLLED	1.9.2017
002	Risk workshop 1 21.10.2016	Conflict between area planning and railway area	New railway tracks limits the use of land near railway area in the future Impact on regional planning. Approval will be reduced, effects on timetable and costs	X				ENVIRONMENT AND SOCIAL	RAIL	Reserved railway area is quite large and the need for new land is minimal.	4	2	Minor	Environment Impact Assessment and permitting	2	2	Negligible	LKSur	Reginal planning zones are known.	PARTIALLY IMPLEMENTED	CONTROLLED	24.8.2017
003	Risk workshop 1 21.10.2016	Buildings and structures in railway area.	Removing buildings and structures causes opposition and administrative process is slow Approval will be reduced, effects on timetable and costs	X	X			ENVIRONMENT AND SOCIAL	RAIL		5	3	Significant	List of identified buildings in railway area. Environment Impact Assessment and permitting Public meetings, education and information of	2	3	Minor	LKSur GoU	Lazer scanning by air has been done.	PARTIALLY IMPLEMENTED	OPEN	24.8.2017
004	Risk workshop 1 21.10.2016	Train traffic 24 hours a day, heavier axle load and higher speeds	Noise and vibration from rolling stock and level crossing's alarm systems during night time. Health and environment issues during operation.				X	ENVIRONMENT AND SOCIAL	ENVIRONMENT		5	2	Moderate	Environment Impact Assessment and permitting	5	2	Moderate	LKSur	EIA in progress	PARTIALLY IMPLEMENTED	OPEN	24.8.2017
005	Risk workshop 1 21.10.2016	Building near protected buildings, monuments and other structures	Protected buildings, monuments and other structures are damaged during construction or has to be moved. Approval will be reduced, effects on timetable and costs		X			ENVIRONMENT AND SOCIAL	ENVIRONMENT	Map of landscape and culture objects in Uruguay is available online Reserved railway area is quite large and the need for new land is minimal.	4	2	Minor	Environment Impact Assessment and permitting	4	2	Minor	LKSur	EIA in progress	PARTIALLY IMPLEMENTED	CONTROLLED	24.8.2017
006	Risk workshop 1 21.10.2016	Building near nature reserve or reserved species	Impact on nature reserve or reserved species during construction Approval will be reduced, effects on timetable and costs		X			ENVIRONMENT AND SOCIAL	ENVIRONMENT	Reserved railway area is quite large, need for new land is minimal	4	2	Minor	Environment Impact Assessment and permitting	4	2	Minor	LKSur	EIA in progress	PARTIALLY IMPLEMENTED	CONTROLLED	24.8.2017
007	Risk workshop 1 21.10.2016	Building near surface water and groudwater area	Impact on ground water level, contamination or guiding the water flow Approval will be reduced, effects on timetable and costs, maintenance problems		X		X	ENVIRONMENT AND SOCIAL	ENVIRONMENT		4	4	Significant	Environment Impact Assessment and permitting	4	4	Significant	LKSur	EIA in progress	PARTIALLY IMPLEMENTED	OPEN	24.8.2017
008	Risk workshop 2 3.11.2016	Heavy rain and insufficient drainage	Flood on the tracks or on the roads/streets (underpass especially). Effects on track structures and devices or underpasses. Traffic delays and maintenance problems		X		X	RAILWAY SYSTEM	RAIL		5	2	Moderate	Study of the current situation, list of the critical flood areas and measures.	5	1	Minor	Railway Contractor	Some flood areas are know, not fully implemented (VR Track Oy).	PARTIALLY IMPLEMENTED	OPEN	1.9.2017
009	Risk workshop 1 21.10.2016	New land mass has to be transported from a far or the existing land mass has to be stored/processed far away	Impact on environment, costs and safety		X			TIMETABLE AND COST	ENVIRONMENT		5	3	Significant	Mass balance analysis (input and output). Survey of locations, transportation and amount. Environment Impact Assessment and permitting.	5	3	Significant	Railway Contractor LKSur		OPEN	OPEN	24.8.2017
010	Risk workshop 1 21.10.2016	Existing contaminated soil	Handling contaminated soil in the construction or maintenance. Processing contaminated soil is expensive. Work safety and health issues and environment impact.		X		X	ENVIRONMENT AND SOCIAL	ENVIRONMENT		5	2	Moderate	Environment Impact Assessment and permitting	5	2	Moderate	LKSur	EIA in progress	PARTIALLY IMPLEMENTED	OPEN	24.8.2017
011	Risk workshop 1 21.10.2016	Environment assessment and measures are not monitored during the process	Requirements and promises are not fulfilled. Approval will be reduced, effects on timetable and costs	X	X	X	X	ENVIRONMENT AND SOCIAL	ENVIRONMENT		2	4	Moderate	Environment Impact Assessment and permitting	2	4	Moderate	LKSur	EIA in progress	PARTIALLY IMPLEMENTED	OPEN	24.8.2017
012	Risk workshop 1 21.10.2016	Railway accident (collision or derailment)	Leakage on the rolling stock, track soil is contaminated. Impact on maintenance cost and work safety and health issues				X	ENVIRONMENT AND SOCIAL	ENVIRONMENT		5	3	Significant	Defining maintenance standards Operation rules for dangerous goods accidents	4	2	Minor	GoU	First draft of the maintenance standards has been done (VR Track Oy)	IMPLEMENTED	CONTROLLED	24.8.2017

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				DESIGN	CONSTRUCTION	COMMISSIONING	OPERATION															
013	Risk workshop 2 3.11.2016	Walking on the tracks Stations and platforms in rural areas are used for accommodation, parking and other activities Railway area is not physically or visually separated from surrounding area	Unauthorized personel on the rail tracks. Accidents to persons caused by rolling stock in motion.				X	RAILWAY SYSTEM	RAIL	It is common to be on tracks because traffic is predictable, slow and quite rare. Railway tracks are not considered to be dangerous. Increase in freight train traffic and higher speeds increases the propability for accident.	5	4	Critical	List of railway level crossings' properties and measures. Fencing, tracks on a higher/lower level, dikes and other structural means Defining regulation and rules for moving in railway area Public meetings, education and information of the railway	4	4	Significant	GoU	List of railway level crossings' properties and measures and type designs has been done. (VR Track Oy) Fencing almost all the along track	PARTIALLY IMPLEMENTED	OPEN	1.9.2017
016	Risk workshop 2 3.11.2017	Behaviour in level crossings, safety culture	Stopping at the level crossing on the tracks / going over the tracks at last moments possible / ignoring stop signs, speed limits Accidents to persons caused by rolling stock in motion				X	RAILWAY SYSTEM	ROAD AND STREET	Speed limit 60 km/h for train traffic in city area. Almost 240 level crossings	5	4	Critical	List of railway level crossings' properties and measures. Defining regulation and rules for moving in railway area Public meetings, education and information of the railway Alarm time of the signaling device has to be optimized	4	4	Significant	GoU	List of railway level crossings' properties and measures and type designs has been done. (VR Track Oy)	PARTIALLY IMPLEMENTED	OPEN	1.9.2017
018	Risk workshop 2 3.11.2016	Railway bridge is used by pedestrians	Unauthorized persons on the railway. Accidents to persons caused by rolling stock in motion				X	RAILWAY SYSTEM	BRIDGE		2	4	Moderate	Passage for pedestrians on the bridge Defining regulation and rules for moving in railway area Public meetings, education and information of Work area plan	2	4	Moderate	GoU	Passages for pedestrians planned	PARTIALLY IMPLEMENTED	OPEN	24.8.2017
019	Risk workshop 2 3.11.2016	Vandalism	Breaking, demolishing or stealing construction equipment or material or track equipment Impact on cost and timetable		X		X	RAILWAY SYSTEM	SIGNALLING		5	2	Moderate	Covering signaling cables (heavy cover, cover openable only with special tools etc) Camera surveillance as needed	5	2	Moderate	Railway Contractor GoU		OPEN	OPEN	24.8.2017
021	Risk workshop 2 3.11.2016	Level crossing area is not defined and clearly separtared	Accident to persons caused by rolling stock in motion				X	RAILWAY SYSTEM	ROAD AND STREET	Speed limit 60 km/h for train traffic in city area.	5	4	Critical	List of railway level crossings' properties and measures.	2	4	Moderate		List of railway level crossings' properties and measures and type designs has been done. (VR Track Oy)	IMPLEMENTED	CONTROLLED	1.9.2017
022	Risk workshop 2 3.11.2016	Line of sight is poor to none and/or the angle of the railway and road is significantly less or more then 90 degrees	Pedestrian or vehicle can't detect incoming train Accidents to persons caused by rolling stock in motion				X	RAILWAY SYSTEM	ROAD AND STREET	Speed limit 60 km/h for train traffic in city area. Almost 240 level crossings	5	4	Critical	List of railway level crossings' properties and measures. Measures for fault situations Maintenance plan	4	4	Significant	GoU	List of railway level crossings' properties and measures and type designs has been done. (VR Track Oy)	PARTIALLY IMPLEMENTED	OPEN	1.9.2017
024	Risk workshop 2 3.11.2016	Operation rules and training in normal situation and in contingency situation are insufficient for the operation of the new train control system	Collions accidents, derailments and accidents to persons caused by rolling stock in motion and level-crossing accidents				X	RAILWAY SYSTEM	SIGNALLING		4	5	Critical	Defining roles, responsibilities and competence for all parties in railway system Safety management system for Infrastructure Manager and Railway Operator	1	5	Moderate	GoU, Railway Operator and Infrastructure Manager GoU, Railway Operator and Infrastructure Manager		OPEN	OPEN	24.8.2017
025	Risk workshop 2 3.11.2016	Maintenance of the track is insufficient	Damage to infrastructure (rail or point) --> delay in train traffic, derailment				X	RAILWAY SYSTEM	RAIL		4	5	Critical	Defining maintenance standards Defining roles, responsibilities and competence for all parties in railway system	3	5	Significant	VR Track Oy GoU, Railway Operator and Infrastructure Manager	First draft of the maintenance standards has been done (VR Track Oy)	PARTIALLY IMPLEMENTED	OPEN	1.9.2017
026	Risk workshop 2 3.11.2016	Management of contingency / deviation situations is not planned (broken infrastruckture, broken rolling stock, accidents etc.)	Recovery time is increased and safety is compromised Delay to train traffic				X	RAILWAY SYSTEM	OPERATION		5	3	Significant	Defining roles, responsibilities and competence for all parties in railway system Safety management system for Infrastructure Manager and Railway Operator	5	2	Moderate	GoU, Railway Operator and Infrastructure Manager		OPEN	OPEN	1.9.2017
027	Risk workshop 2 3.11.2016	Broken or worn out rolling stock	Damage to infrastructure or rolling stock can't operate at the speed of 80 km/h Derailment and/or traffic delays for other rolling stock				X	RAILWAY SYSTEM	OPERATION		4	4	Significant	Defining roles, responsibilities and competence for all parties in railway system Safety management system for Infrastructure Manager and Railway Operator Inspection guideline for rolling stock	3	4	Moderate	GoU, Railway Operator and Infrastructure Manager		OPEN	OPEN	24.8.2017

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028	Field trip in Uruguay, Toni Hytönen 1.12.2016	Railway work without proper guidelines and rules	Locating errors, missing safeguard for railway traffic Derailment, collision				X	RAILWAY SYSTEM	OPERATION		4	5	Critical	Defining roles, responsibilities and competence for all parties in railway system Safety management system for Infrastructure Manager and Railway Operator	1	5	Moderate	GoU, Railway Operator and Infrastructure Manager		OPEN	OPEN	24.8.2017
029	Field trip in Uruguay, Toni Hytönen 1.12.2016	Critical railway markings are missing	Unit speeding / locating errors Derailment				X	RAILWAY SYSTEM	SIGNALLING		3	5	Significant	Defining principles of railway marking Defining maintenance standards	3	5	Significant	Infrastructure Manager	First draft of the maintenance standards has been done (VR Track Oy)	PARTIALLY IMPLEMENTED	OPEN	1.9.2017
030	Design, Saara Vihma / Toni Hytönen 14.12.2016	Tracks running in the trench below ground level	Pedestrian or animals on the tracks inside the trench. Accidents to persons caused by rolling stock in motion				X	RAILWAY SYSTEM	TRENCH AND TRACK	Speed at most 50 km/h	5	4	Critical	Width of the trench should allow avoidance of the rolling stock in an emergency	3	4	Moderate			OPEN	OPEN	24.8.2017
031	Design, Saara Vihma / Toni Hytönen 14.12.2016	Tracks running in the trench below ground level	Pedestrian or animals falls into the trench. Personal casualty / accidents to persons caused by rolling stock in motion				X	RAILWAY SYSTEM	TRENCH AND TRACK	Speed at most 50 km/h	3	4	Moderate	Fall protection along the trench Design of the support beam / fencing the support beam reaching over the trench to prevent people from crossing trench	2	4	Moderate			OPEN	OPEN	24.8.2017
032	Design, Saara Vihma / Toni Hytönen 14.12.2016	Tracks running in the trench below ground level	Flooding of the trench during heavy rain Work accident during construction, traffic delays in operation		X		X	RAILWAY SYSTEM	TRENCH		5	3	Significant	Draining with gravity Draining with pumps if gravity is not applicable. Ensuring constant power output for pumps and redundancy Draining with pumps or gravity during construction	3	3	Moderate			OPEN	OPEN	24.8.2017
033	Design, Saara Vihma / Toni Hytönen 14.12.2016	Tracks running in the trench below ground level	Throwing rocks and other objects onto the tracks Damage to rolling stock				X	RAILWAY SYSTEM	TRENCH AND TRACK	Speed at most 50 km/h	5	2	Moderate	Fall protection along the trench	4	2	Minor			OPEN	OPEN	24.8.2017
034	Appendix C comments 7.1.2017	Conflict with Departmental and Local authorities	Effects on project timetable and costs	X	X	X		TIMETABLE AND COST	PROJECT	MTOP and AFE have had conversations and cooperation with Montevideo and Canelones municipalities especially concerning Metropolitan area			TBD	Maintain cooperation with municipalities and other authorities during the whole project			TBD			OPEN	OPEN	27.6.2017
035	Appendix C comments 7.1.2017	Project polarization on political terms	Effects on project timetable and costs	X	X	X		TIMETABLE AND COST	PROJECT				TBD	Maintain a coordinated work with the Government, work with a communication plan			TBD			OPEN	OPEN	27.6.2017
036	Appendix C comments 7.1.2017	Over cost of the Project due financing issues	Effects on project costs	X	X	X		TIMETABLE AND COST	PROJECT				TBD	Design a good financing frame solution promoting provisional local funds			TBD			OPEN	OPEN	27.6.2017
037	Appendix C comments 7.1.2017	Over cost due lacks of suppliers that comply with the high quality requirements of the projects	Effects on project timetable and costs		X	X		TIMETABLE AND COST	PROJECT				TBD	Investigate, promote and incentive local and regional supply companies			TBD			OPEN	OPEN	27.6.2017
038	Appendix C comments 7.1.2017	Opposition of institutions and public persons to railway alignment or level crossing solutions	Effects on project timetable and costs	X				TIMETABLE AND COST	PROJECT				TBD	Establish a communication plan that include 3 level of Government and promote the benefits of project in the economy and local capacities			TBD			OPEN	OPEN	27.6.2017
039	Appendix C comments 7.1.2017	Project technical requirements over the local and regional construction companies capacities	Quality deviation, effects on project timetable and costs		X	X	X	TIMETABLE AND COST	PROJECT				TBD	Development engineering solution according local and regional capacity			TBD	EN-standards have been adopted.	PARTIALLY IMPLEMENTED	OPEN	1.9.2017	
040	Appendix C comments 7.1.2017	Technical projects delayed due AFE no capacity to analyze and approved the several Bridges, Level Crossing and all the rest of technical projects included on the project	Quality deviation, effects on project timetable and costs	X	X	X		TIMETABLE AND COST	PROJECT				TBD	Establish a program to allow AFE improve the capacity (own capacity or Railway Contractor support capacity) to comply with Infrastructure role issues and review – study – adjust and approve the technical projects according the general schedule of new pulp plant project			TBD			OPEN	OPEN	27.6.2017
041	Appendix C comments 7.1.2017	Delay or Block of Railway phase due incompatible procedure with national rules and laws for investing state funds	Effects on project timetable and costs	X	X	X		TIMETABLE AND COST	PROJECT				TBD	Establish a process for CREMA contact with a double approve process, guarantee the UPM and GOU approved process to implement and financing Railway Infrastructure project			TBD			OPEN	OPEN	27.6.2017
042	Road and street 6.6.2017	Working arrangements for road traffic during construction of the trench under the highway (Uruguay Yan)	Delays to road traffic		X			TIMETABLE AND COST	TRENCH		5	1	Minor				TBD			OPEN	24.8.2017	
043	Geo 6.6.2017	Embankment settlement is unbalanced (new embankment vs. current embankment settlement)	More need for maintenance Traffic delays because of speed limits				X	RAILWAY SYSTEM	GEOTECHNICS		5	2	Moderate	Embankment settlement test Using geogrid structure Defining maintenance standards	5	1	Minor	Railway Contractor	Some embankment settlement test have been done. Tests failed. First draft of the maintenance standards has been done. (VR Track Oy)	PARTIALLY IMPLEMENTED	CONTROLLED	1.9.2017

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044	Geo 6.6.2017	Not enough information from ground surveys	Insufficient ground surveys during design phase Designing with assumptions that could lead to false conclusions Effects on project timetable and costs	X	X			TIMETABLE AND COST	GEOTECHNICS		4	4	Significant	Additional ground surveys in construction design	2	4	Moderate	Railway Contractor	Some surveys have been done and more surveys and survey plans will be / is been done	PARTIALLY IMPLEMENTED	OPEN	24.8.2017
045	Geo 6.6.2017	Ground and perch water level unknown	Construction below ground water level can cause unstable structures Effects on project timetable and costs	X	X			TIMETABLE AND COST	GEOTECHNICS		4	2	Minor	Additional ground and perch water level surveys	3	2	Minor	Railway Contractor		OPEN	CONTROLLED	24.8.2017
047	Rail and operation 7.6.2017	Long and steep hills, over 2 km arise	Rolling stock can't accelerate on the hill side and worst case rolling stock gets stuck on the hill side. Traffic delays				X	RAILWAY SYSTEM	RAIL		5	2	Moderate	Safety management system for Infrastructure Manager and Railway Operator	5	1	Minor	GoU, Railway Operator and Infrastructure Manager	Geometry and traffic planning has considered the risk as much as possible.	PARTIALLY IMPLEMENTED	OPEN	24.8.2017
048	Bridge 14.6.2017	Insufficient ground surveys around bridge structures	Design is based on assumptions. Problems e.x.: collapse of casting mold. Effects on project timetable and costs	X	X			TIMETABLE AND COST	BRIDGE	Ground surveys of the pre-engineering phase II	5	2	Moderate	Additional ground surveys in construction design	5	1	Minor	Railway Contractor		OPEN	OPEN	24.8.2017
049	Bridge 14.6.2017	Constructing demanding / special skill structures in a narrow urban environment: - piling - transportation and lifting of elements	Damaging surrounding structures Traffic delays		X			TIMETABLE AND COST	BRIDGE		5	2	Moderate	Work area plan and safety plan	5	2	Moderate	Railway Contractor		OPEN	OPEN	1.9.2017
050	Bridge 14.6.2017	The number of bridge and skill structures in the project is significant	Demanding structures, it is likely that some problems occur Effects on project timetable and costs		X			TIMETABLE AND COST	BRIDGE	Element bridges are preferred and the number of bridge types are limited Level crossings are kept	3	4	Moderate	Ensuring enough resources for bridge and skill structures	2	4	Moderate	Railway Contractor		OPEN	OPEN	1.9.2017
051	Bridge 14.6.2017	Tensioned bridge structure	Know-how for tensioned bridge structures is limited or unavailable Effects on project timetable and costs		X			TIMETABLE AND COST	BRIDGE		4	3	Moderate	Ensuring enough expertise for tensioned bridge structures	3	3	Moderate	Railway Contractor		OPEN	OPEN	1.9.2017
052	Bridge 14.6.2017	Old track embankment can't be used to transport elements	Old track embankment is not stable enough or not available Effects on project timetable and costs		X			TIMETABLE AND COST	BRIDGE		5	1	Minor							CONTROLLED	24.8.2017	
053	Bridge 14.6.2017	A bridge that is difficult to reach	Elements or ready-mixed concrete can't be transported to construction site Effects on project timetable and costs		X			TIMETABLE AND COST	BRIDGE		4	2	Minor							CONTROLLED	24.8.2017	
054	Rail and operation 7.6.2017	Tracks running in the trench below ground level	Rolling stock in fire inside trench or tunnel section Combustion gases causes health issues				X	RAILWAY SYSTEM	RAIL		3	4	Moderate	Defining roles, responsibilities and competence for all parties in railway system Safety management system for Infrastructure Manager and Railway Operator	2	3	Minor	GoU, Railway Operator and Infrastructure Manager		OPEN	OPEN	24.8.2017
055	Rail and operation 7.6.2017	Passenger stations inside the tunnel section	Diesel powered locomotives causes exhaust gases Health issues				X	RAILWAY SYSTEM	TRENCH AND TRACK	No tunnel section for passenger station			TBD			TBD				REMOVED	24.8.2017	
057	Trench 15.6.2017	Cables, pipes, sewers and other structures below ground level	Cables, pipes, sewers and other structures are unknown, damage in construction Effects on project timetable and costs		X			ENVIRONMENT AND SOCIAL	TRENCH		5	3	Significant	Surveys of cables and other structures and cable scanning before digging	4	3	Moderate	Railway Contractor		OPEN	OPEN	24.8.2017
058	Trench 15.6.2017	Anchoring and constructing the support wall	Damage to structures / anchoring outside the railway area Effects on project timetable and costs		X			ENVIRONMENT AND SOCIAL	TRENCH		5	4	Critical	Environment Impact Assessment and permitting Surveys of cables and other structures and cable scanning before digging	3	4	Moderate	LKSur Railway Contractor		OPEN	OPEN	24.8.2017
060	Signalling 10.8.2017	Operation rulebook is not ready for the commissioning and for the training	Training for the new signalling system takes time and requires the final operation rulebook Impact on projects timetable			X	X	RAILWAY SYSTEM	SIGNALLING		5	3	Significant	Training plan and plan for the commissioning	2	3	Minor	GoU Railway Operator Infrastructure Manager Railway Contractor		OPEN	OPEN	24.8.2017
061	Signalling 10.8.2017	Some of the trains have ATP and some don't have ATP	Unit speed and signalling messages are not controlled by ATP Collision				X	RAILWAY SYSTEM	SIGNALLING		3	5	Significant	Operation rulebook Training plan and plan for the commissioning	1	5	Moderate	GoU Railway Operator Infrastructure Manager Railway Contractor		OPEN	OPEN	24.8.2017
062	Signalling 10.8.2017	Resources and competence for commissioning in multiple locations at the same time	Not enough resources for commissioning or not enough competence to check the system before use Impact on timetable and/or safety issues			X		RAILWAY SYSTEM	SIGNALLING		4	3	Moderate	Training plan and plan for the commissioning	2	3	Minor	GoU Railway Operator Infrastructure Manager Railway Contractor		OPEN	OPEN	24.8.2017

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063	Signalling 10.8.2017	Signalling system changes after commissioning	System changes are not managed for safety and functionally Safety and functional issues				X	RAILWAY SYSTEM	SIGNALLING		2	5	Significant	Procedures for the modification of the Signalling System	1	5	Moderate	Infrastructure Manager		OPEN	OPEN	24.8.2017
064	Bridge 15.8.2017	Current steel bridge materials	Material properties and corrosion levels are not known. Bridge collapses during use		X		X	RAILWAY SYSTEM	BRIDGE		1	5	Moderate	Samples of the bridge materials	1	5	Moderate	Railway Contractor		OPEN	OPEN	24.8.2017
064	Construction and Maintenance 16.7.2017	Quality requirements for design and construction are missing	National guideline for quality requirements (procedures, limits etc.) are missing Quality assurance or commissioning are not possible	X	X			TIMETABLE AND COST	PROJECT		3	5	Significant	Defining quality requirements for detail design and construction phase	2	3	Minor	GoU	Construction quality standards defined partly in pre-engineering (VR Track Oy).	OPEN	OPEN	1.9.2017
065	Bridge 15.8.2017	Current steel bridge rivet	Condition of the rivet connections are not known. Bridge collapses during use		X		X	RAILWAY SYSTEM	BRIDGE		2	5	Significant	Inspection of all rivet connections	1	5	Moderate	Railway Contractor		OPEN	OPEN	24.8.2017
065	Construction and Maintenance 16.7.2017	Availability, storage and quality of materials (eg rail, sleepers, points, signalling)	The materials required by the project are not available to the required extent or they do not meet the requirements Effects on project timetable and costs		X			TIMETABLE AND COST	PROJECT		3	5	Significant	Starting of material sourcing as soon as possible	1	5	Moderate	GoU		OPEN	OPEN	24.8.2017
066	Bridge 15.8.2017	Current steel bridges are founded on stone abutments	Condition of stone abutments are not known Damage to bridge structures		X		X	RAILWAY SYSTEM	BRIDGE		2	3	Minor		2	3	Minor			CONTROLLED	24.8.2017	
066	Construction and Maintenance 16.7.2017	Weather conditions (heavy rain, storms)	Damage to construction site road or support structure Effects on project timetable and costs		X			TIMETABLE AND COST	PROJECT		4	3	Moderate	Safety and operation plan Mapping of the risk areas	2	3	Minor	Railway Contractor		OPEN	OPEN	24.8.2017
067	Bridge 15.8.2017	Other old abutments	Condition of abutments are not known Bridge collapses during use		X		X	RAILWAY SYSTEM	BRIDGE		3	5	Significant	New abutments for small bridges	1	2	Negligible	Railway Contractor		OPEN	OPEN	24.8.2017
067	Construction and Maintenance 16.7.2017	Availability of manpower	Availability of local manpower and strong unions (strikes) Effects on project timetable and costs		X			TIMETABLE AND COST	PROJECT		5	3	Significant	Agreement of the Railway Contractor and GoU Dialogue with unions	4	3	Moderate	GoU		OPEN	OPEN	1.9.2017
068	Construction and Maintenance 16.7.2017	Competence of manpower	Competence of local manpower is not on the required level Effects on project timetable and costs, quality issues		X			TIMETABLE AND COST	PROJECT		3	2	Minor	Competence requirements for the used manpower of the critical components and structures (e.x. bridge, points, signalling)	2	2	Negligible	GoU		OPEN	CONTROLLED	1.9.2017
069	Road and street 23.8.2017	Number of level crossings especially in centre of Montevideo	Vaikutukset liikennöintiin häiriötilantEiAsa Accidents to persons caused by rolling stock in motion				X	RAILWAY SYSTEM	ROAD AND STREET	Almost 240 level crossings	4	4	Significant	List of railway level crossings' properties and measures. Measures for fault situations Maintenance plan	4	4	Significant	GoU	List of railway level crossings' properties and measures and type designs has been done. (VR Track Oy)	PARTIALLY IMPLEMENTED	OPEN	24.8.2017
070	Road and street 23.8.2017	Some special needs for level crossings maybe unknown	Animal routes, factory or other private needs Insufficient safety equipment for the level crossing	X			X	RAILWAY SYSTEM	ROAD AND STREET	Study of the current situation	1	4	Minor	Public meetings and additional surveys if needed	1	4	Minor	GoU		OPEN	CONTROLLED	24.8.2017
071	Road and street 23.8.2017	Double barriers on some level crossings	Vehicle gets stuck in between barriers Accidents to persons caused by rolling stock in motion				X	RAILWAY SYSTEM	ROAD AND STREET		3	4	Moderate	Type drawings of the level crossings includes middle platform between lanes.	2	4	Moderate	VR Track Oy	List of railway level crossings' properties and measures and type designs has been done. (VR Track Oy)	IMPLEMENTED	OPEN	24.8.2017
072	Road and street 23.8.2017	Vandalism	Damage to the level crossing markings or safety equipment Accidents to persons caused by rolling stock in motion				X	RAILWAY SYSTEM	ROAD AND STREET		3	4	Moderate	Measures for fault situations Maintenance plan	2	4	Moderate	GoU		OPEN	OPEN	24.8.2017
073	Geo 24.8.2017	Subground and material bearing capacity unknown	Structural layers are too thin, bearing capacity is insufficient Traffic delays because of speed limits and more need for maintenance. Ultimately derailment.				X	RAILWAY SYSTEM	GEOTECHNICS		5	3	Significant	Increasing thickness of the structural layers Stabilization of the subground Bearing capacity test Quality assurance for the material	3	3	Moderate	Railway Contractor		OPEN	OPEN	24.8.2017
074	Geo 24.8.2017	Ground and perch water level unknown	Construction below ground water level can cause unstable structures Effects on project timetable and costs		X			RAILWAY SYSTEM	TRENCH		5	2	Moderate	Water proof structure Additional ground and perch water level surveys	4	2	Minor	Railway Contractor		OPEN	OPEN	24.8.2017