

ALMATY-BISHKEK ECONOMIC CORRIDOR (ABEC)
REPORT ON THE TWO PRIORITY ROAD BORDER CROSSING
POINTS (BCPs)
KORDAY / AK-JHOL & **KARA-SUU** / AK-TILEK



KAZAKHSTAN REPORT

This Report should be read with Kazakhstan Report by Radomir Djuric of September 2018

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Table of Contents

1. ABBREVIATIONS	3
2. EXECUTIVE SUMMARY	4
2.1. SCOPE	4
2.2. THE PROPOSAL	4
2.3. SERVICES PROVIDED	4
2.4. SUMMARY	4
2.5. FURTHER RECOMMENDATIONS	5
2.5.1. ENVIRONMENTAL ISSUES	5
2.5.2. INFRASTRUCTURE SERVICES	5
2.5.3. COST ESTIMATE	5
2.5.4. SEISMIC CONDITIONS	5
3. EXISTING KORDAY BCP	6
3.1. OPERATIONAL SERVICES AT KORDAY	6
3.2. BCP FACILITIES CURRENT LAYOUT	6
4. PROPOSED KORDAY BCP IMPROVEMENTS	8
4.1. OPERATIONAL SERVICES AT KORDAY	8
4.2. BCP FACILITIES PROPOSED VEHICULAR MOVEMENTS ARRANGEMENT	8
4.3. BCP PROPOSED FACILITIES AND TRAFFIC ARRANGEMENT	8
4.3.1. MAIN BCP ADMINISTRATION AND PROCESSING BUILDING	8
4.3.2. PEDESTRIANS/PASSENGERS PROCESSING FACILITIES	9
4.3.3. VEHICULAR TRAFFIC	9
4.3.4. SECONDARY INSPECTION FACILITIES FOR BUSES	13
4.3.5. CANOPY OVER THE NEW CHECK BOOTHS	15
4.3.6. RADIATION PORTAL MONITORS	15
4.4. PROPOSED TRAFFIC TO THE BORDER LINE KYRGYZ REPUBLIC-KAZAKHSTAN ON THE BRIDGE	16
6. PRELIMINARY COST ESTIMATE KORDAY BCP IMPROVEMENTS	17
7. EXISTING KARA-SUU BCP	19
7.1. OPERATIONAL SERVICES AT KARA-SUU BCP	19
7.1.1. BCP FACILITIES CURRENT LAYOUT	19
8. PROPOSED KARA-SUU BCP IMPROVEMENTS	22
8.1. OPERATIONAL SERVICES AT KARA-SUU	22
8.2. BCP PROPOSED FACILITIES AND TRAFFIC ARRANGEMENT	22
8.2.1. PEDESTRIANS/PASSENGERS PROCESSING FACILITIES	22
8.2.2. VEHICULAR TRAFFIC WITH JOINT CHECK BOOTHS	22
8.2.3. CANOPY OVER THE MAIN PROCESSING FACILITIES	24
8.3. PROPOSED TRAFFIC TO THE BORDER LINE KYRGYZ REPUBLIC-KAZAKHSTAN ON THE BRIDGE	26
8.3.1. PROPOSED BRIDGE TO HAVE SIX VEHICULAR LANES	27
8.3.1.1. BRIDGE PREFERENCE 1	27
8.3.1.2. BRIDGE PREFERENCE 2	28
9. PRELIMINARY COST ESTIMATE KARA-SUU BCP IMPROVEMENTS	30
1. KORDAY & KARA-SUU BCP'S PROPOSED AUXILLIARY SUPPORT FACILITIES	33
1.1. WATER TANKS AND PUMPING STATION	33
1.2. BACK-UP GENERATOR	33
1.3. WATER TANKS AND PUMPING STATION	33
1.4. BACK-UP GENERATOR	33
1.5. OPTIONAL IMPACT ATTENUATORS FOR THE CHECK BOOTHS ISLANDS	34
2. APPENDIX 1	35
3. APPENDIX 2	36
4. APPENDIX 3	39

5. APPENDIX 4	41
6. APPENDIX 5	45
7. APPENDIX 6	46
8. APPENDIX 7	50
1. APPENDIX 8	52
1. APPENDIX 9	56

1. ABBREVIATIONS

ADB	Asian Development Bank
ALPR	Automatic Licence Plate Recognition
ANPR	Automatic Number Plate Recognition
BCP	Border Crossing Point
CAREC	Central Asia Regional Economic Cooperation
CIS	Commonwealth of Independent States
EAEU	Eurasian Economic Union
KG	Kyrgyz Republic
KGS	Kyrgyz Republici Som (currency)
KZ	Kazakhstan
KZT	Kazakhstani Tenge (currency)
MEDT	Ministry of Economic Development and Trade
MSR	Machine Readable Documents
MTC	Ministry of Transport and Communications
OSS	One-Stop-Shop
RPM	Radiation Portal Monitor
TIR	Transport Internationaux Routiers

2. EXECUTIVE SUMMARY

2.1. Scope

Kazakhstan is the world's ninth biggest country by size, and its more than twice the size of the other Central Asian states combined. It has borders with Russia, China, and the Central Asian countries of Kyrgyz Republic, Uzbekistan and Turkmenistan. Its Caspian Basin Province has the access to the Caspian Sea and Almaty Province and Kazakh Desert border with Kyrgyz Republic.

There are 8 Border Crossing Points along the border between Kazakhstan and Kyrgyz Republic and they cannot meet the rapidly increasing traffic capacity. Korday BCP is the busiest one between KZ and KG.

The Almaty Bishkek Economic Corridor under CAREC follows a multi-sector approach to create one economic space without barriers to allow exporting goods and services across and outside the region.

Part of this project is this proposal for the improvements to Korday and Kara-Suu BCP's. These two border crossings have their reciprocal equivalents on the Kyrgyz side across the Kara-Suu river that is the border between these two countries.

- Korday on the Kazakh side with Ak-Jol on the Kyrgyz side
- Kara-Suu on the Kazakh side with Ak-Tilek on the Kyrgyz side

The separate report addresses the Kazakh BCP's, but inevitably the overlapping parts are the linking roads and the bridges across the Chuy River (Suu/Shu River in Kazakhstan) and operational procedures are linked to the reciprocal BCP across the border, therefore facilities at both sides of the boundary are shown on presented site plans.

2.2. The proposal

The traffic analysis and its improvement proposal has been recently completed and it addressed all components such as:

- > Kara-Suu and Korday BCP operational processes
- > Existing traffic, both vehicular and pedestrian
- > Proposed traffic operation modes – inbound and outbound directions
- > Infrastructure improvements including the bridges

2.3. Services provided

This Report outlines the proposal to improve the BCP's functions with the level of information provided equal to the Project Preparatory Technical Assistance.

2.4. Summary

- The intention of this proposal is to improve the border crossing vehicular traffic and checking points, but to save the existing major BCP processing infrastructure.

This 'fit for purpose' approach will help to maintain the facility to remain operational during the construction period and allow for more funds to be spent on processing equipment that can optimize the speed of the clearance. This will improve the trade facilitation and border security.

- The proposal addresses:

- Provision for dedicated lanes for each type of vehicular traffic.
- Secondary Inspections for buses and cars located off the lane in order not to block the traffic.
- Additions/changes to the BCP's main infrastructure.

The functional arrangement for the proposed Secondary Inspection & Special Procedures premises - including staff and customers amenities - has not been shown at this stage.

2.5. Further recommendations

2.5.1. Environmental issues

Energy efficient appliances, water and waste management strategies are to be considered.

2.5.2. Infrastructure services

The water and power supply are from the local municipality network. The stand-by generator and underground water tanks are proposed for the supply shortages periods.

The sewage disposal has to be linked to the municipal sewer main and the coordination with the municipal public services departments are to be done at the design stage.

2.5.3. Cost estimate

At this stage only, the rates-based cost estimate is proposed. Consultant did not have access to the KZ construction cost rates therefore the KG rates are adopted and converted to KZ currency. Average exchange rate of 1 KZT = 0.19 KGS was applied.

2.5.4. Seismic conditions

Structural design would address the seismic conditions of the sites and select the most suitable solution according to the International Standards and in compliance with Kyrgyz Building Codes.

3. EXISTING KORDAY BCP

3.1. Operational services at Korday

Under the current set up Korday has 2 control lanes in each direction but can accommodate the doubling of lanes to 4 per direction, plus the pedestrian lane.

3.2. BCP facilities current layout





The main processing facilities are located under the large vaulted metal crisscross truss type canopy. See Appendix 1.

Pedestrians/passengers control facilities are placed at both sides of the canopy. Vehicular traffic is controlled on the four lanes – two in each direction. The middle part is reserved for the Secondary Inspection facilities with the bridge, weighbridges and pits for each traffic direction.

These facilities are currently not used as the pit on the inbound direction is covered with metal sheets. Pit on outbound direction is opened but access to it is not allowed.

Site plan shows photos of Korday BCP taken during the Field Work 23-30 Sept.2018



			
1. Single vehicular lane from Ak-Jol BCP	2. Outbound pedestrian processing facility	3. Roof windows for BCP offices below	4. Inbound traffic with Secondary Inspection pit
			
5. Approach road to Korday BCP – outbound restricted to one lane	6. Two lanes on outbound direction (to Ak-Jol)	7. Two lanes on inbound direction (to Kyrgyz Republic)	8. Outbound pedestrians (to Kyrgyz Republic)
			
9. Inbound drivers check point (processing Migration Cards and Routing Slips)	10. Pit for a Secondary Inspection on inbound direction is covered	11. Check booth for both directions. Pit for secondary Inspection is not operational	12. Check booth for outbound direction: vehicles and pedestrians
			
13. Secondary Inspection facilities – not operational	14. Wide approach area to Korday BCP	15. Approach area will allow for 8 lanes (4 each way) in the improvement proposal	16. Check booths and boom gates are slowing the traffic flow

Existing traffic diagram at the Korday BCP and its continuation through the bridge on the Kara-Suu River to the Ak-Jol BCP on the Kyrgyz side is shown at Appendix 2.

Korday's current location allows expansion towards the east, if necessary. However, by clearing obstacles and opening up the space between the current administrative buildings, the space would be sufficient for 4+4 lanes.

4. PROPOSED KORDAY BCP IMPROVEMENTS

4.1. Operational services at Korday

Both countries are members of the CIS and EAEU and contribute to the development of the big regional market that unites more than 180 million people.

In addition, both Kyrgyz Republic and Kazakhstan are contracting parties to the UNECE International Convention on the Harmonization of Frontier Controls of Goods (1982).

Logistics Report by Radomir Djuric addressed the proposed operational changes to the BCP procedures in order to eliminate the traffic congestion and slowing of the movement through the BCP processing. These changes will facilitate the introduction of the OSS Joint Integrated Road BCP. This would require a cooperation between MEDT and MTC of both countries.

4.2. BCP facilities proposed vehicular movements arrangement:

The major part of the proposed changes is to create dedicated lanes for each type of the vehicular traffic and separated pedestrian movements through the BCP.

Number of the lanes is based on the current traffic data and the anticipated growth of trade between these two countries and the transit cargo movement – see Report by Radomir Djuric for details.

‘Fit for purpose’ approach has been adopted in this proposal, therefore efforts are made to keep as many of the existing BCP facilities and building structures as possible.

4.3. BCP proposed facilities and traffic arrangement

The proposal will require including some additional space at the approach to the BCP from the Kazakh side. Therefore, two Options are presented for the operational modes addressing the main BCP processing facilities and the nearby petrol station with shops.

4.3.1. Main BCP Administration and processing building

Located under the large vaulted metal framed crisscross trusses.

Two Options have been proposed for the traffic improvements:

➤ OPTION 1

- Existing canopy and arch to remain.
- Outbound pedestrians processing unit and BCP offices below to remain.
- Inbound pedestrians processing unit to be removed and possibly assembled in the new location.
- New BCP control facility with check-booths at islands between traffic lanes to be constructed - located prior to the canopy- looking from the Kazakh side.

This Option would require demolition or resizing the existing petrol station and shops.

The control boom gates, has to be provided on the road to the east of the inbound vehicular traffic lanes to prevent the vehicles entering Kazakhstan territory without processing/checking. See Appendix 2.

➤ OPTION 2

- Existing BCP processing facilities including the canopy to be removed.

- New BCP processing facilities to be constructed and located further away from the border line

This Option would save the petrol station and shops. No boom gate would be required on the road to the east of the inbound vehicular traffic lanes.

For detail of the proposed traffic arrangement see Appendix 3

4.3.2. Pedestrians/passengers processing facilities.

- **Option 1** – processing facility for the outbound direction remain and the inbound facilities are located outside the canopy (possibly use the material from the existing one to be dismantled).
- **Option 2** – new processing facilities to be constructed adjacent to the pedestrian's passages.

See Appendix 4 for the proposed Korday BCP improvements - Option 1 and Option 2

4.3.3. Vehicular traffic

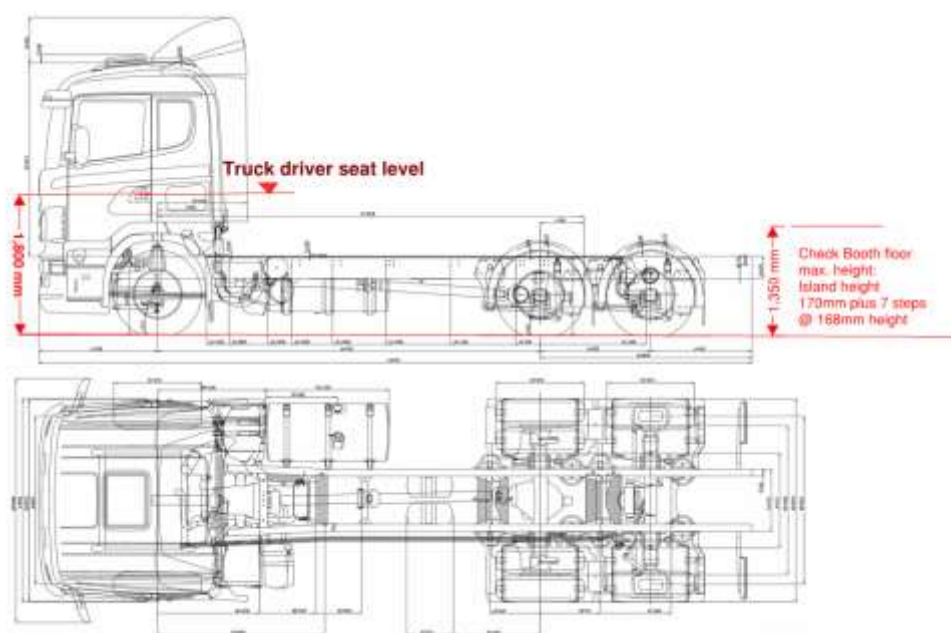
All existing check booths to be removed to clear the space for the dedicated vehicular lanes.

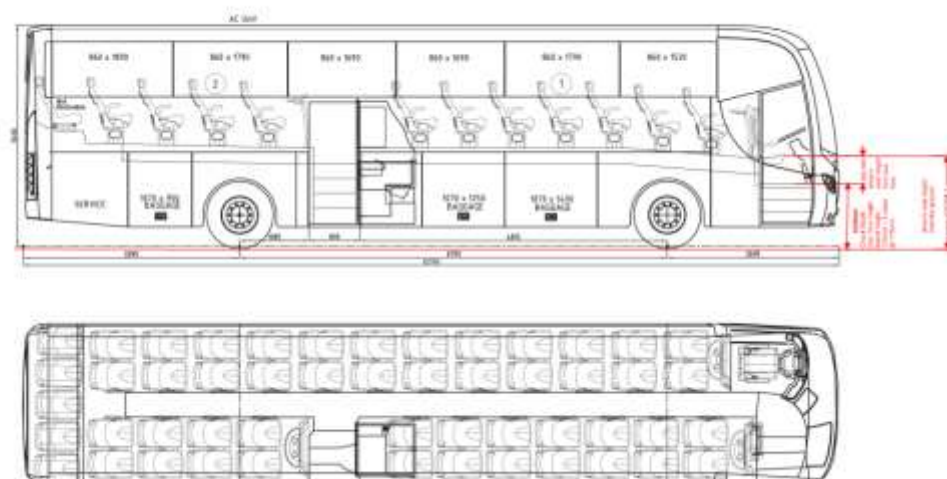
New double check booths to be provided on isles between the lanes.

The check booths are proposed to be large enough for two Border Officers – one Kyrgyz and one Kazakh. The check booths for cars to have windows on both sides for the reverse traffic.

• Check booths for buses/trucks lanes

To have the Border Officer seat at the level of the truck/bus driver seat. These two vehicles have drivers' seats at different levels; truck driver seat height @1.80 from the ground and bus/coach driver seat & 1.5m from the ground so an average Border Guard seat height of 1.65m from the ground is adopted. The check booth floor is 1.2m from the ground (deducting the chair height of 0.45m from the seat height).





Elevated check booths samples for trucks and buses.

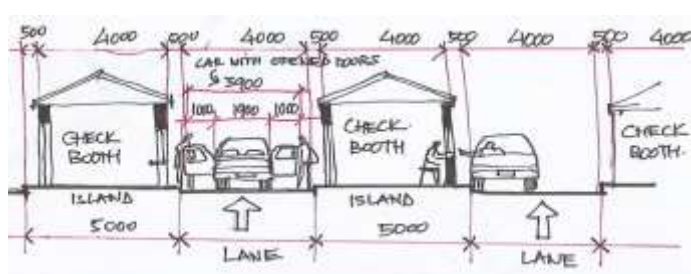
Check booth isles to be 5.0 m wide to allow for the angled car parking behind the check booth for cars requiring a secondary inspection. This way such cars will not be obstacles on the lane and guarantee a steady flow of vehicles.

Reverse traffic option created on the car's lanes. This requires the angled car parking on the opposite side of the check booths.

Proposed traffic arrangement shown in Appendices 3 & 4 uses colours to identify the traffic lanes and their direction. The angled car parking bays on lanes subject to the reverse traffic direction have the same colour as the possible reversed traffic direction on this lane.

Proposed documents control on the car lanes does not require the driver to step out of his vehicle. See Report by Radomir Djuric for detail description of these procedures.

The lane width between the check booths allows for a car with doors open at both sides to be inspected by the Border Officer and decide to release the vehicle, or direct to the angled parking space for a secondary inspection. Lane remains clear for the next car.



Prefabricated metal framed structures are proposed with thermal insulation provided to comply with the local health and buildings' standards requirements



Masonry options for the check-booths are also to be considered.

Using ALPR/ANPR and MSR (Mobile Passport Readers) will guarantee Border security and significantly increase the processing speed.

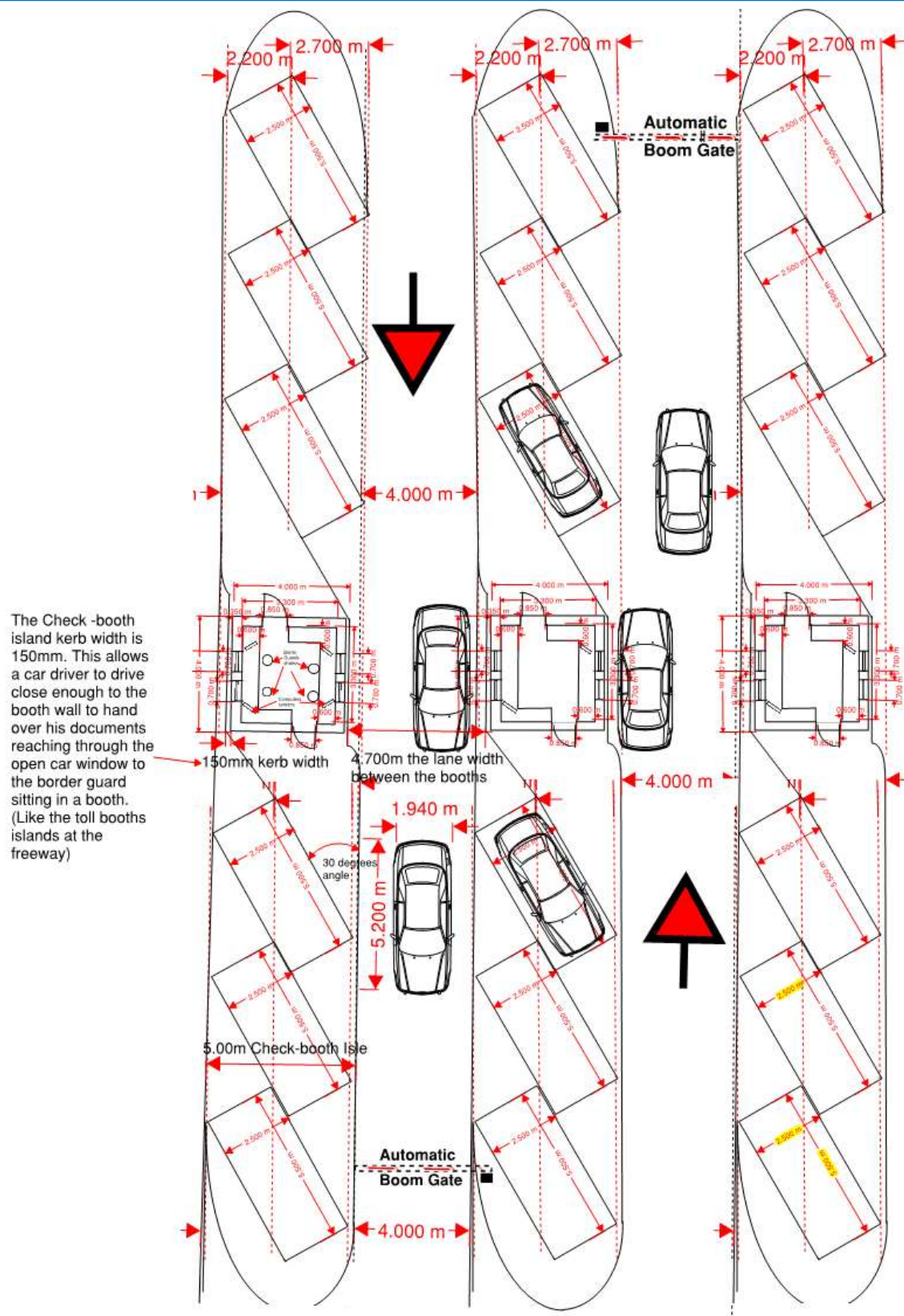


Mobile Passport Reader for bus passengers



Automatic Licence Plate Recognition

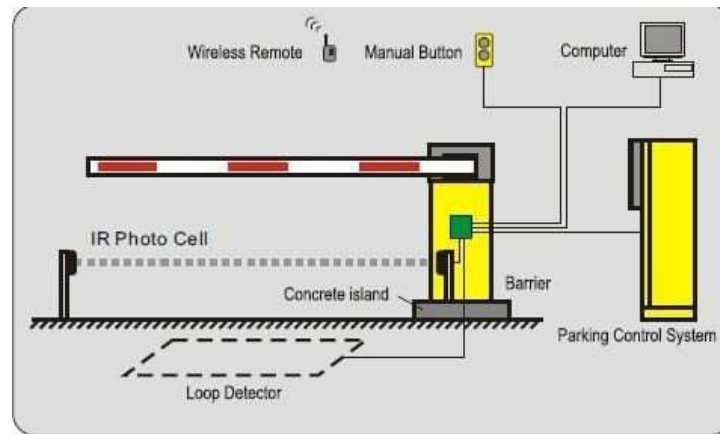
Traffic lanes and processing/checking islands arrangement for the improved traffic arrangement to all 4 BCP's (Ak-Jol & Korday and Ak-Tilek & Kara-Suu).



- **Boom gates.**

All existing boom gates are to be removed. New automatic ones to be located at the end of each car's secondary inspection angled parking bays – see page above. Upon

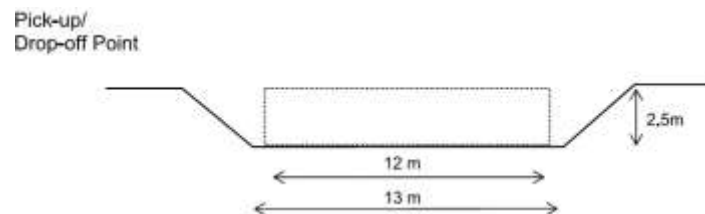
completion of the entry check the Border Officer of the entry country will open the automatic boom gate.



Automatic boom gate sample

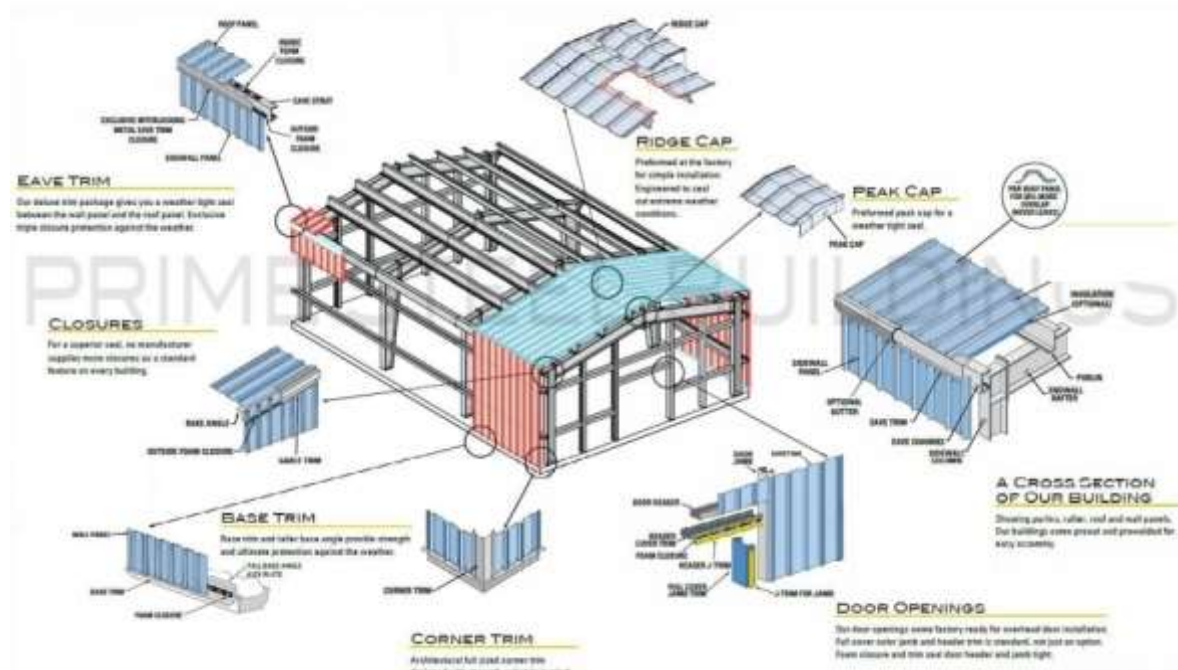
- **Bus bays**

To be located close to the Secondary Inspection warehouse to allow the passengers to disembark and take their luggage to the X-ray scanners.

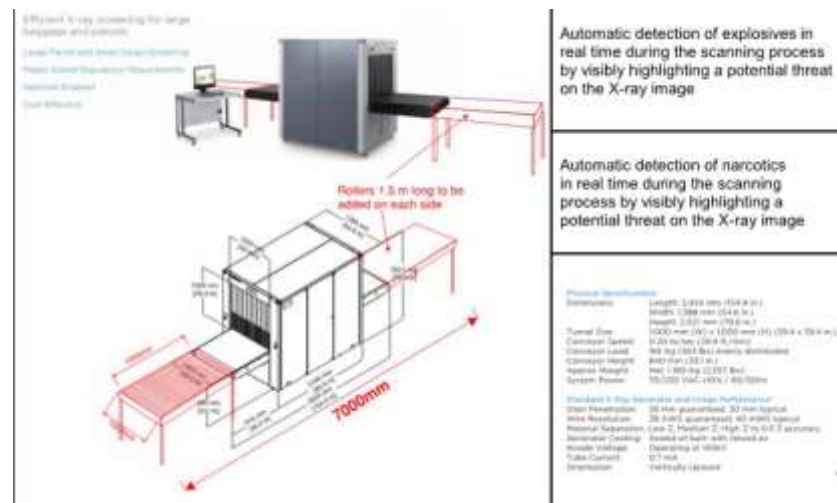


4.3.4. Secondary Inspection facilities for buses.

They are proposed to be located adjacent to the bus parking bays to facilitate the inspections. The large baggage X-Ray scanners and Cargo X-Ray conveyor for trucks (10T max) are to be installed in them. Staff and customers sanitary facilities are to be included as well. Metal framed and clad warehouse should be used for these facilities.



Cargo X-Ray Scanners inside the Secondary Inspection warehouse



- Cargo X-ray conveyor scanner for oversized bags up to 3000kg weight:



4.3.5. Canopy over the new check booths.

Limited protection against the weather conditions should be provided in the Primary Inspection area where the check booths are located. At least part of the Secondary Inspection angled car parking bays should also be under the canopy. It is proposed to use the standard galvanized metal space frame roofing – Kislovodsk, or equivalent.



The front of the canopy should contain the basic information for the drivers and indicate the lanes to select. This is important when during the peak traffic time a mutual decision of both BCP's traffic control officers is made to increase the number of lanes in one direction by reducing their number in the opposite direction. Above head signs on the canopy will update this changed traffic arrangement accordingly.

Trucks movement through BCP is controlled by the Passport check that is completed as with the cars. The control cabin should be at the same level as the truck cabin and on the left hand-side. No other documents are to be checked as the BCP is inside the Eurasian Customs Union, not at the external border and carnet system similar to TIR is to be applied.

4.3.6. Radiation Portal Monitors.

These are installed on the existing BCP on inbound and outbound direction. It is proposed to remove and re-install them where required.





4.4. Proposed traffic to the border line Kyrgyz Republic-Kazakhstan on the bridge

The area between the BCP facilities and the border line on the Kara-Suu River is large enough to accommodate the proposed 8 vehicular traffic and the pedestrian passages at the outside of external lanes for buses/trucks.

The existing reinforced concrete bridge carriageway has sufficient width for 8 vehicular lanes – 4 each way with the pedestrian passages alongside bridge side shoulders/edge.

6. PRELIMINARY COST ESTIMATE KORDAY BCP IMPROVEMENTS

Option 1

PROPOSED KORDAY BCP IMPROVEMENTS OPTION 1 - PRELIMINARY COST ESTIMATE TO BE VERIFIED AT THE DESIGN STAGE						
Item	Description	Unit	Quantity	Rate per Unit (KZT)	Total Cost (KZT)	Total Cost (US\$)
1	Demolition of existing Inbound Pedestrian Processing facilities	m2	150	7,950.00	1,192,500.00	3,239.49
2	Construction of the Inbound Pedestrian Processing facilities (framed and clad structure)	m2	50	18,550.00	927,500.00	2,519.61
3	Proposed approach area -8cm asphalt concrete on 15cm base and 30cm compacted subbase	m2	8,400	15,370.00	129,108,000.00	350,729.26
4	Repairs to existing asphalt concrete departure area - up to the boundary line	m2	3,600	40,730.50	146,629,800.00	398,328.23
5	Secondary Inspection warehouse for buses including heating, plumbing, electrical, fire protection	m2	160	21,200.00	3,392,000.00	9,214.56
6	Proposed check booths 4 x 4 m	m2	128	11,000.00	1,408,000.00	3,824.91
7	Proposed space framed canopy over the new processing area (Kislovodsk or equivalent) - incl.footing and supports	m2	1,520	53,000.00	80,560,000.00	218,845.84
8	Proposed Outbound Pedestrian passage 1.5 m wide - up to the boundary line (fenced and roofed)	m	472	10,600.00	5,003,200.00	13,591.48
9	Proposed Inbound Pedestrian passage 1.5m wide - up to the boundary line (fenced and roofed)	m	318	10,600.00	3,370,800.00	9,156.97
10	Pedestrian walkways for Inbound and Outbound direction 10cm thick r.c. slab on compacted base	m2	1,133	6,360.00	7,205,880.00	19,575.18
Total					KZT 378,797,680.00	USD 1,029,026.00
		1US\$	368.113	KZT		
		1 KGS	5.3000	KZT		

Option 2

PROPOSED KORDAY BCP IMPROVEMENTS OPTION 2 - PRELIMINARY COST ESTIMATE TO BE VERIFIED AT THE DESIGN STAGE						
Item	Description	Unit	Quantity	Rate per Unit (KZT)	Total Cost (KZT)	Total Cost (US\$)
1	Demolition of existing BCP vaulted canopy including all facilities	m2	1,820	26,500.00	48,230,000.00	131,019.55
2	Proposed Inbound & Outbound Pedestrian Processing Facilities	m2	64	18,550.00	1,187,200.00	3,225.10
3	Proposed BCP area - 8cm asphalt concrete on 15cm base and 30cm compacted subbase	m2	12,320	15,370.00	189,358,400.00	514,402.91
4	Secondary Inspection warehouse for buses including heating, plumbing, electrical, fire protection	m2	160	21,200.00	3,392,000.00	9,214.56
5	Proposed check booths 4 x 4 m	m2	128	11,000.00	1,408,000.00	3,824.91
6	Proposed space framed canopy over the new processing area (Kislovodsk or equivalent) - incl.footing and supports	m2	1,530	53,000.00	81,090,000.00	220,285.62
7	Proposed Outbound Pedestrian passage 1.5 m wide - up to the boundary line (fenced and roofed)	m	525	10,600.00	5,565,000.00	15,117.64
8	Proposed Inbound Pedestrian passage 1.5m wide - up to the boundary line (fenced and roofed)	m	332	10,600.00	3,519,200.00	9,560.11
9	Pedestrian walkways for Inbound and Outbound direction 10cm thick r.c. slab on compacted base	m2	1,175	6,360.00	7,473,000.00	20,300.83
Total					KZT 341,222,800.00	USD 926,952.00
		1US\$	368.113	KZT		
		1 KGS	5.3000	KZT		

These are preliminary cost estimates based on the conceptual layouts for the BCP improvements. The construction costs rates are based on the current construction costs in Bishkek. The costs have to be revised at the design stage.

Consultant did not have access to the KZ construction cost rates therefore the KG rates are adopted and converted to KZ currency. Average exchange rate of 1 KGS = 368.113 KZT was applied.

Road cost per sqm was adopted from the ADB source.

Kyrgyz Republic: CAREC Transport Corridor 1

(Bishkek -Torugart Road) Project

August 2008

KYRGYZ REPUBLIC - MINISTRY OF TRANSPORT AND COMMUNICATIONS
Bishkek-Naryn-Torugart Road Rehabilitation Project
Package 2: km 280 - km 400

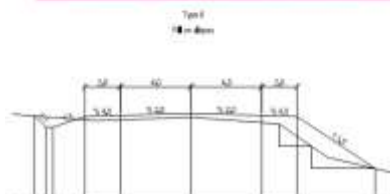
Item	Description	Amount US\$
1	General Items	2 625 680,00
2	Control of Works and Materials	119 123,44
3	Earth Works	5 533 995,10
4	Drainage Works	1 193 327,86
5	Pavement Works	19 219 950,56
6	Bridge Works	18 291,29
8	Road Furniture	2 635 874,99
9	Miscellaneous Works	71 704,00
10	Schedule of Dayworks	140 089,60
	Labour	5 785,00
	Materials	109 795,00
	Equipment	24 599,60
	SUBTOTAL	31 757 616,35
	Contingency 10 - %	3 175 761,64
	TOTAL	34 933 377,99

Cost Estimate for Package 2 (120 km)

Item	average cost per 1 km	Cost of all Road
General Items	2 625 680,00	2 625 680,00
Control of Works	1 832,67	219 920,20
Earth Works	85 132,23	10 215 867,88
Drainage Works	18 358,89	2 203 066,82
Pavement Works	295 601,54	35 482 984,76
Bridge Works	281,40	33 768,53
Road Furniture	43 628,85	5 235 461,51
Miscellaneous Works	1 103,14	132 376,62
Schedule of Dayworks		140 089,60
Labour		
Materials		
Equipment		
SUBTOTAL		56 289 195,91
Contingency 10 - %		5 628 919,59
TOTAL		61 918 115,50

Average cost per 1 km: 515 984,30

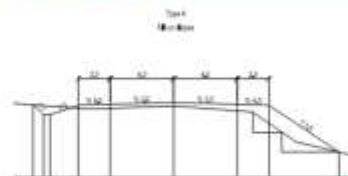
Road with including shoulders is 12m. 1km= 1000m
= 1000m x 12m =12,000m2
1m2 cost = \$ 515,985/12,000 = \$ 43/m2



KYRGYZ REPUBLIC - MINISTRY OF TRANSPORT AND COMMUNICATIONS
Bishkek-Naryn-Torugart Road Rehabilitation Project
Package 1: km 400 - km 419

N Items	Description	Amount US\$
1	General Items	831 260,00
2	Control of Works and Materials	65 974,00
3	Earth Works	1 827 283,30
4	Drainage Works	426 761,82
5	Pavement Works	11 184 224,20
6	Bridge Works	-
8	Road Furniture	479 897,30
9	Miscellaneous Works	-
10	Schedule of Dayworks	25 907,40
	Labour	200,50
	Materials	19 709,50
	Equipment	5 997,40
	SUBTOTAL	14 843 308,82
	Contingency 10 - %	1 484 330,80
	TOTAL	16 327 639,62

Average 1 km cost: 418 657,41



1 km=1,000m x 12m total road width = 12,000m2
1m2 = \$ 418,658/12,000 = \$ 34.9 /m2

The rate of US\$ 42/m2 is used in the Cost Estimate

7. EXISTING KARA-SUU BCP

7.1. Operational services at Kara-Suu BCP

7.1.1. BCP facilities current layout

The main Control Area is under the trussed steel frame canopy on steel columns located between two identical two storey BCP administration buildings.

There is a single check booth in the middle of this space with a single vehicular lane on each side. BCP buildings on each side of the canopy contain the drivers, passengers and pedestrians processing facilities on their ground floors. Each lane has its processing facilities in the building that is placed next to it. The check booth (control cabin) is located in the middle of the space under the canopy. It is capable of controlling both traffic directions.

Remaining BCP offices are on the first floor of these two buildings.

There are no separate pedestrians' passages from the boundary bridge to the BCP. This is because the pedestrian traffic is minimal on this border crossing and it should not be considered in the improvement's proposal.

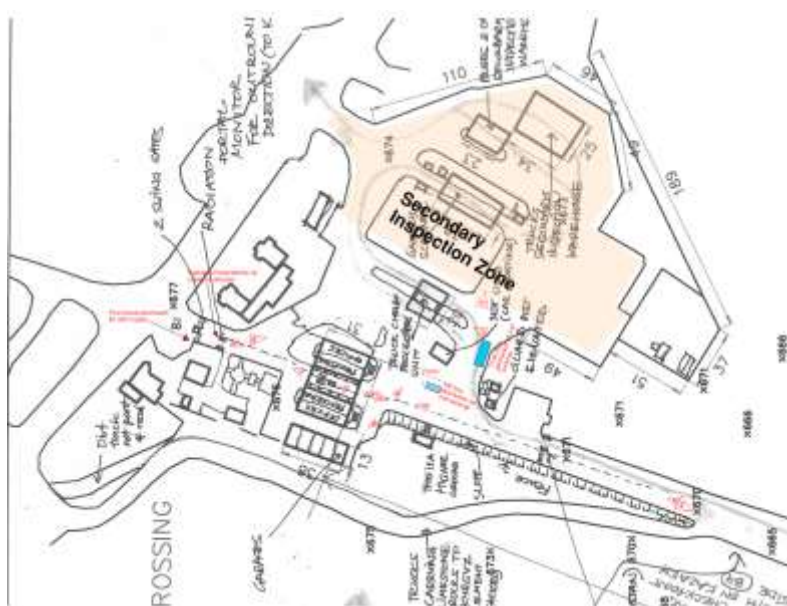
Pedestrian passage was kept in the Ak-Tilek BCP improvements proposal, but the KZ and KG Authorities may decide to eliminate it.













Trucks and buses are processed in the Primary Inspection facility located adjacent to the Secondary Inspection zone. A large unit where the Border Officers work is located on the island between inbound and outbound lane. The Gantry X-Ray scanning and the Secondary Inspection warehouses are nearby.



Trucks delivering the limestone rocks for the Kyrgyz cement factory are bypassing the BCP processing facilities. Returning empty trucks share the lane with buses and cargo trucks.

Photos marked in a site plan below were taken during the Field Work 23-30 Sept.2018

Notes under and on each photo describe the facilities and their operational procedures observed during the Field Work. Check booths (control stations) are marked with a letter **B** and the number.



			
<p>1. BCP entry gate allows for 2 traffic lanes each way.</p>	<p>2. BCP Admin. With the processing zone in the middle under the metal roof</p>	<p>3. Very few pedestrians go through this BCP. Distance from the processing facilities to the boundary bridge is approx. 450m</p>	<p>4 Check-booth (control cabin) for both directions.</p>
			
<p>5. Loaded trucks to Kyrgyz cement factory bypass the BCP main facilities.</p>	<p>6. BCP main facilities are on approx. 15 m higher level than the border bridge. The linking zone is approx. 24m - 36m wide.</p>	<p>7. Inbound traffic Lane with drivers, passengers and few pedestrians processing facilities in the building ground floor</p>	<p>8. These garages have to be accessed from behind to allow for the outbound (to Kyrgyz Republic) trucks and buses traffic lane.</p>
			
<p>9. Secondary Inspection zone. Undercarriage disinfection bath is not operational</p>	<p>10. Trucks & buses Primary Inspection facilities. Control facility on the island. One traffic lane at each side.</p>	<p>11. Secondary Inspection Zone. Gantry X-Ray warehouse in the front and Inspection warehouse at the back.</p>	<p>12. Vehicles undercarriage disinfection bath. Not operational.</p>

			
<p>13. Secondary Inspection zone-access for inbound cars after the preliminary inspection is not accepted.</p>	<p>14. Boundary narrow bridge approx. 9.0m wide. Pedestrian passage on one side only.</p>	<p>15. Abandoned construction of the second bridge. Kyrgyz side of the border.</p>	<p>16. Abandoned construction of the bridge. Kazakh side of the border.</p>

8. PROPOSED KARA-SUU BCP IMPROVEMENTS

8.1. Operational services at Kara-Suu

Both countries are members of the CIS and EAEU and contribute to the development of the big regional market that unites more than 180 million people.

In addition, both Kyrgyz Republic and Kazakhstan are contracting parties to the UNECE International Convention on the Harmonization of Frontier Controls of Goods (1982).

Logistics Report by Radomir Djuric addressed the proposed operational changes to the BCP procedures in order to eliminate the traffic congestion and slowing of the movement through the BCP processing. These changes will facilitate the introduction of the OSS Joint Integrated Road BCP. This would require a cooperation between MEDT and MTC of both countries.

BCP facilities proposed vehicular movements arrangement.

The major part of the proposed changes is to create dedicated lanes for each type of the vehicular traffic and separated pedestrian movements through the BCP.

Number of the lanes is based on the current traffic data and the anticipated growth of trade between these two countries and the transit cargo movement – see Report by Radomir Djuric for details.

Vehicle trucking software has been used to determine the lanes configurations. Trucks turning paths resulted in local lanes widening.

‘Fit for purpose’ approach has been adopted in this proposal, therefore efforts are made to keep as many of the existing BCP facilities and building structures as possible.

8.2. BCP proposed facilities and traffic arrangement

Existing BCP facilities will require small changes to comply with the proposed traffic arrangement.

8.2.1. Pedestrians/passengers processing facilities.

There is a very small number of outbound and inbound pedestrians, therefore it is proposed to allow them to walk to Ak-Tilek BCP until this traffic type is not allowed through this border crossing.

8.2.2. Vehicular traffic with joint check booths

All existing check booths to be removed to clear the space for the dedicated vehicular lanes.

Drivers processing will be done at the new check booths located on the islands between the lanes.

The check booths are proposed to be large enough for two Border Officers – one Kyrgyz and one Kazakh.

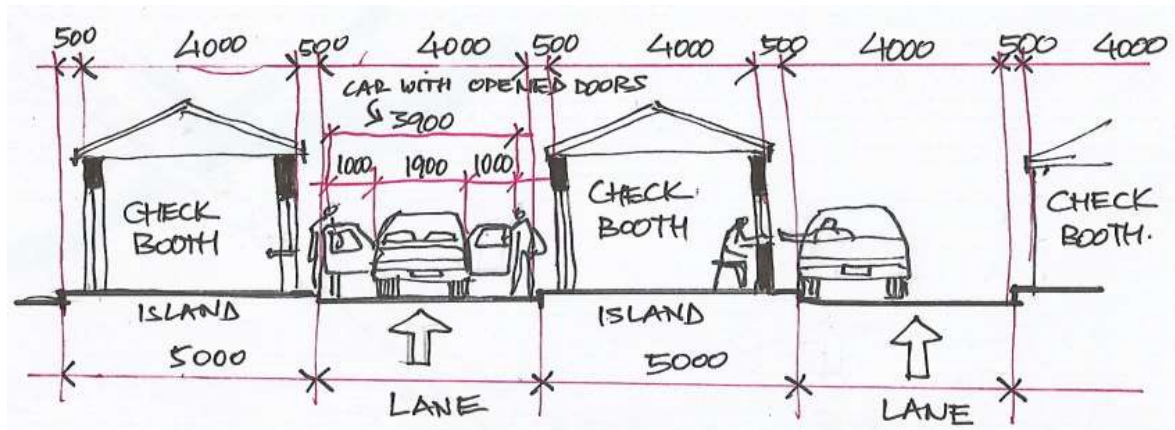
Check booths for buses/trucks to have the Border Officer seat at the level of the truck/bus driver seat. These two vehicles have drivers’ seats at different levels; truck driver seat height @1.80 from the ground and bus/coach driver seat & 1.5m from the ground so

an average Border Guard seat height of 1.65m from the ground is adopted. The check booth floor is 1.2m from the ground (deducting the chair height of 0.45m from the seat height).

For details see Korday BCP Clause 4.3.3

Check booth isles to be 5.0 m wide to allow for the angled car parking behind the check booth for cars requiring a secondary inspection. This way such cars will not be blocking the lane and guarantee a steady flow of vehicles.

Proposed documents control on the car lanes does not require the driver to step out of his vehicle. See Report by Radomir Djuric for detail description of these procedures.



Using ALPR/ANPR and MSR (Mobile Passport Readers) will guarantee Border security and significantly increase the processing speed.

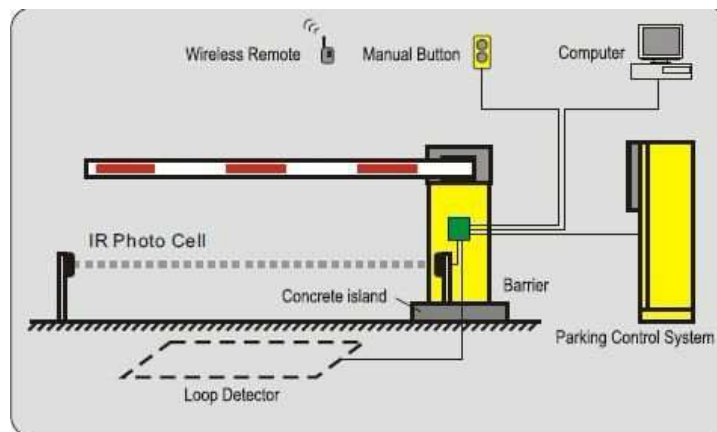


Mobile Passport Reader for bus passengers



Automatic Licence Plate Recognition

- **Boom gates.** All existing boom gates are to be removed. New ones to be located at the end of each car's secondary inspection angled parking bays – see page above. Upon completion of the entry check the Border Officer of the entry country will open the automated boom gate.



Automatic boom gate sample

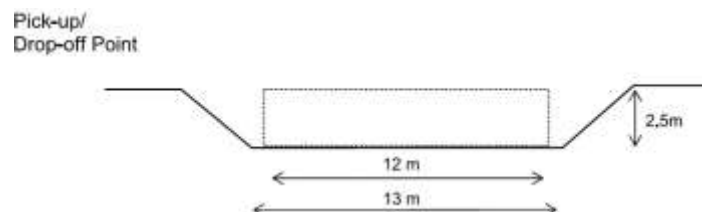
- **Radiation Portal Monitors.**

It is proposed to keep them on the outbound and inbound direction. Additional RPM's on selected lanes can be installed as required by the relevant security level and the risk management.



- **Bus bays**

To be located close to the Secondary Inspection warehouse to allow the passengers to disembark and take their luggage to the X-ray scanners.

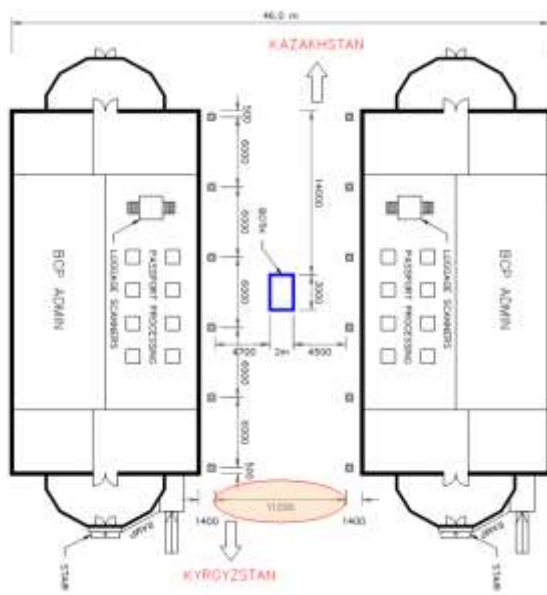


- **Secondary Inspection facilities for buses.** They are proposed to be located adjacent to the bus parking bays to facilitate the inspections. The large baggage X-Ray scanners and Cargo X-Ray conveyor for trucks (10T max) are to be installed in them. Staff and customers sanitary facilities are to be included as well. Metal framed and clad warehouse should be used for these facilities

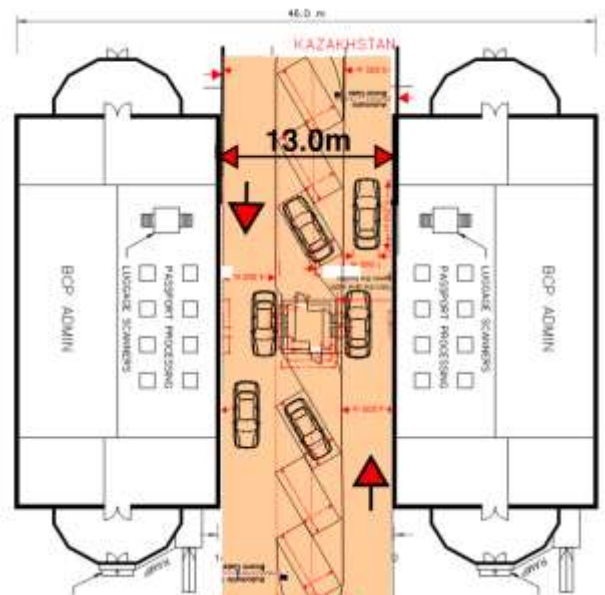
For details see Korday BCP Clause 4.3.4

8.2.3. Canopy over the main processing facilities.

This canopy has a trussed steel framed roof with metal sheet covering. The roof is supported on steel columns and they reduce the clear space under to 11.2m. The required width for two lanes and the island with the angled car parking for the secondary inspection is 13.0m. Therefore, it is proposed to eliminate the posts and support the canopy roof on beams spanned between the two buildings walls.



Current canopy with columns



Proposed canopy without columns

Trucks movement through BCP is controlled by the Passport check that is completed as with the cars. The control cabin should be at the same level as the truck cabin and on the left hand-side. No other documents are to be checked as the BCP is inside the Eurasian Customs Union, not at the external border and carnet system similar to TIR is to be applied.

Complete layout for the new Kara-Suu traffic arrangement -See Appendix 8

Two Options have been proposed:

Option 1

Three lanes in each direction:

- Lane 1 - Cement trucks
- Lane 2 - Trucks & Buses
- Lane 3 – Cars







Option 2

Three lanes in each direction:

- Lane 1 – Cement trucks
- Lane 2 – Trucks
- Lane 3 – Cars and Buses

Both Options occupy the same area, hence the Preliminary Cost Estimate is one with two bridge Preferences.

8.3. Proposed traffic to the border line Kyrgyz Republic-Kazakhstan on the bridge

	
<p>Narrow boundary bridge creates a major bottle-neck in the traffic flow</p>	<p>Widened bridge would allow for 6 lanes (3 lanes each direction) to continue to Ak-Tilek BCP</p>
	
<p>Bridge widening abutment and first span on the Kyrgyz side</p>	<p>Bridge widening abutment and first span on the Kazakh side</p>
	

Wide access from Kara-Suu BCP to the boundary narrow bridge and Ak-Tilek BCP

Trucks to Kyrgyz cement factory merge with main access to narrow bridge

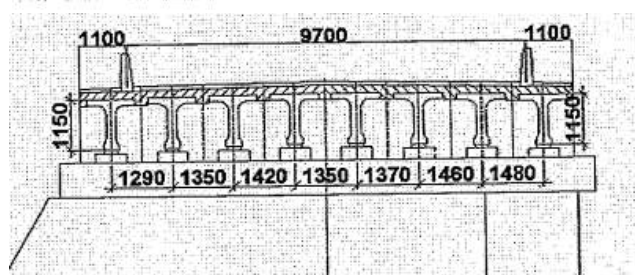
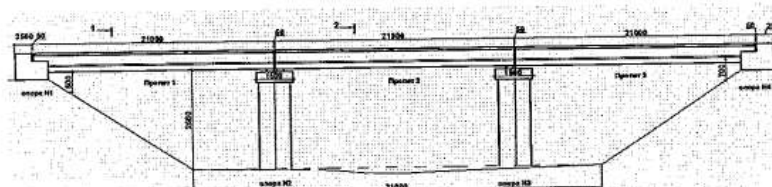
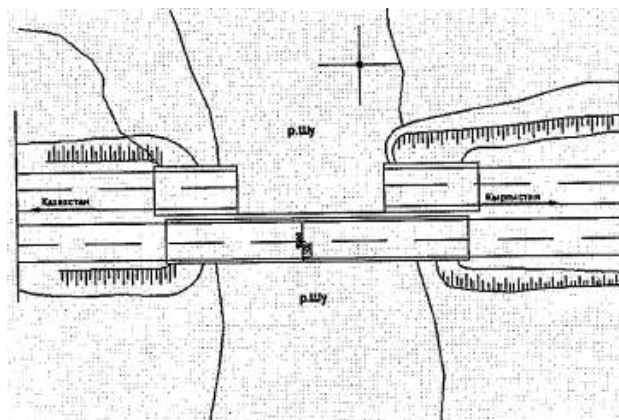
8.3.1. Proposed bridge to have six vehicular lanes.

See Appendix 9.

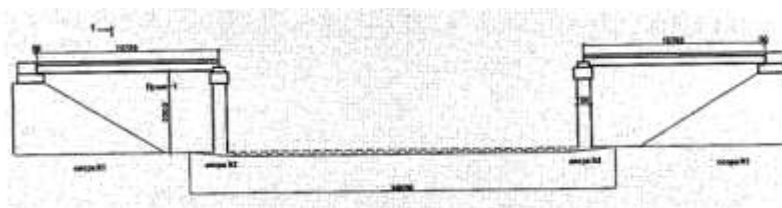
Two preferences are proposed for the new bridge:

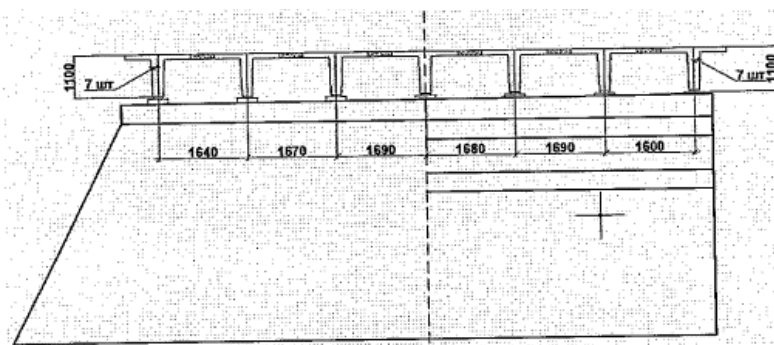
8.3.1.1. Bridge Preference 1

- Existing bridge 9.7m wide to remain subject to its technical appraisal. The bridge was designed by 'Kyrgyzdorotransproject' and constructed in 1962-1963



- Existing abutments and the first spans 16.76m long and 9.97m wide at each side of the unfinished bridge to be demolished. These bridge sections were constructed in 1983.





Completion of this bridge with 9.97m clear width would only allow for 3 lanes @ 3.3m wide. Such lane width is not suitable for the commercial semi-trailers.

- New bridge 68.2m long, with 16.0m clear width for 4 lanes @ 4.0m wide. Proposed cost-effective type is a bridge with steel truss girders and cast in situ deck slab. See Appendix 8.

Other bridge types should be considered for local conditions and technical capabilities:

- Concrete Deck and Pre-stressed Girders
- Concrete Deck and Steel Box Girders
- Segmented Concrete Box Girders

New bridge would have to be constructed where the abutments for the abandoned bridge are - for the two joint bridges to have 6 lanes:

2 lanes @ 4.85m wide on the old bridge and 6 lanes @ 4.0m wide on the new bridge.



Examples of similar bridge design concept.

8.3.1.2. Bridge Preference 2

- Existing bridge to remain during the construction of the new bridge and to be demolished when the new bridge passed the technical tests and become operational.
- Existing unfinished bridge to be demolished

- New bridge 68.2m long, with 24.0m clear width for 6 lanes @ 4.0m wide to be constructed. Proposed cost-effective type is a bridge with steel truss girders and cast in situ deck slab. See Appendix 8.

Both options are included in the Preliminary Cost Estimates.

- The area between the BCP facilities and the border line on the Chuy River is wide enough to accommodate the proposed 6 vehicular traffic and the combined pedestrian passage for both direction at the outside of external inbound (to Kyrgyz Republic) lane for cement trucks.

This number of lanes will continue through the new widened bridge to the Kyrgyz Ak-Tilek BCP. See Appendix 8.

9. PRELIMINARY COST ESTIMATE KARA-SUU BCP IMPROVEMENTS

This is a preliminary cost estimate based on the conceptual layouts for the BCP improvements.

The construction costs rates are based on the current construction costs in Bishkek. The costs have to be revised at the design stage.

Consultant did not have access to the KZ construction cost rates therefore the KG rates are adopted and converted to KZ currency. Average exchange rate of 1 KZT = 0.19 KGS was applied

Total cost of the new bridge construction is shown in these estimates. This cost is also included in the Kazakh Report. Relevant Authorities in both countries may decide about the cost sharing.

Road cost per sqm was adopted from the ADB source:

Kyrgyz Republic: CAREC Transport Corridor 1

(Bishkek -Torugart Road) Project

August 2008

KYRGYZ REPUBLIC - MINISTRY OF TRANSPORT AND COMMUNICATIONS
Bishkek-Naryn-Torugart Road Rehabilitation Project
Package 2: km 280 - km 480
Cost of 67 km

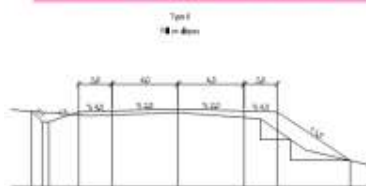
Item	Description	Amount US\$
1	General Items	2 625 980,00
2	Control of Works and Materials	119 123,44
3	Earth Works	5 533 995,10
4	Drainage Works	1 193 327,86
5	Pavement Works	19 219 950,00
6	Bridge Works	18 291,29
8	Road Furniture	2 635 874,99
9	Miscellaneous Works	71 754,00
10	Schedule of Dayworks	140 085,00
	Labour	5 785,00
	Materials	109 795,00
	Equipment	24 599,00
	SUBTOTAL	31 757 616,30
	Contingency 10 - %	3 175 761,64
	TOTAL	34 933 377,94

Cost Estimate for Package 2 (129 km)

Item	average cost per 1 km	Cost of all Road
General Items		2 625 980,00
Control of Works	1 832,67	239 920,20
Earth Works	85 132,23	10 215 967,88
Drainage Works	18 358,89	2 303 986,82
Pavement Works	295 691,54	35 482 984,76
Bridge Works	281,40	33 768,53
Road Furniture	43 628,85	5 235 461,51
Miscellaneous Works	1 103,14	132 376,62
Schedule of Dayworks		140 085,00
Labour		
Materials		
Equipment		
SUBTOTAL		56 289 595,91
Contingency 10 - %		5 628 919,59
TOTAL		61 918 515,50

Average cost per 1 km : 515 984,30

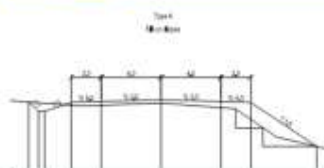
Road with including shoulders is 12m. 1km= 1000m
 $= 1000m \times 12m = 12,000m^2$
 1m2 cost = \$ 515,985/12,000 = \$ 43/m2



KYRGYZ REPUBLIC - MINISTRY OF TRANSPORT AND COMMUNICATIONS
Bishkek-Naryn-Torugart Road Rehabilitation Project
Package 1: km 480 - km 419

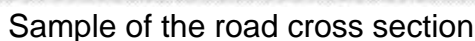
N Items	Description	Amount US\$
1	General Items	833 268,00
2	Control of Works and Materials	65 974,00
3	Earth Works	1 827 283,30
4	Drainage Works	426 761,82
5	Pavement Works	11 184 224,20
6	Bridge Works	-
8	Road Furniture	479 897,30
9	Miscellaneous Works	-
10	Schedule of Dayworks	25 907,40
	Labour	200,50
	Materials	19 709,50
	Equipment	5 997,40
	SUBTOTAL	14 843 308,82
	Contingency 10 - %	1 484 330,88
	TOTAL	16 327 639,70

Average 1 km cost : 418 657,41



1 km=1,000m x 12m total road width = 12,000m2
 1m2 = \$ 418,658/12,000 = \$ 34.9 /m2

The road construction cost rate of US\$ 42/m2 is used in the Cost Estimate



New Construction (2005 Cost Per Square Foot)		
Bridge Type	Low	High
Short Span Bridges:		
Reinforced Concrete Flat Slab Simple Span*	\$110	\$130
Precast Concrete Slab Simple Span*	\$125	\$175
Reinforced Concrete Flat Slab Continuous Span*	NA	
Medium Span Bridges:		
Concrete Deck/ Steel Girder • Simple Span*	\$95	\$125
Concrete Deck/ Steel Girder • Continuous Span*	\$105	\$170
Concrete Deck/ Prestressed Girder • Simple Span	\$85	\$125
Concrete Deck/ Prestressed Girder • Continuous Span	\$95	\$135
Concrete Deck/ Steel Box Girder – Span Range from 150' to 280' (for curvature, add a 15% premium)	\$125	\$175
Segmental Concrete Box Girders • Cantilever Construction, Span Range from 150' to 280'	\$130	\$180
Movable Bridge • Bascule Spans and Piers	\$1000	\$1,400
Demolition Cost:		
Typical	\$25	\$50
Bascule	\$50	\$65
Project Type	Low	High
Widening (Construction Only)	\$110.00	\$140.00
* Increase the cost by twenty percent for phased construction.		

US\$ 278/m² for the bridge demolition rate has been used in the Cost Estimate

Page 31 of 56

PROPOSED KARA-SUU BCP IMPROVEMENTS - PRELIMINARY COST ESTIMATE						
Preference 2 for the bridge						
Item	Description	Unit	Quantity	Rate per Unit (KZT)	Total Cost (KZT)	Total Cost (US\$)
1	Repair to existing asphalt concrete area between BCP entry and the boundary bridge	m2	9,150	7,950.00	72,742,500.00	197,132.18
2	New 8cm asphalt concrete on 15cm base and 30cm compacted subbase to current dirt track for cement factory trucks to Kyrgyzstan	m2	1,600	15,370.00	24,592,000.00	66,644.32
3	Secondary Inspection warehouse for buses including heating, plumbing, electrical, fire protection	m2	160	21,200.00	3,392,000.00	9,192.32
4	Proposed check booths 4 x 4 m	m2	48	58,300.00	2,798,400.00	7,583.66
5	Steel support beams to the canopy roof trusses	item	6	548,275.86	620,689.66	1,682.07
6	Remove steel columns supporting the canopy roof trusses	item	12	365,517.24	827,586.21	2,242.76
7	Demolition of existing uncompleted reinforced concrete bridge (abutments and first spans)	m2	167	101,613.79	16,979,380.31	46,014.12
8	Demolition of existing operational reinforced concrete bridge 9.7m wide x 68.2m long	m2	662	101,613.79	67,221,588.69	182,170.51
9	Proposed bridge - Preference 2 - with steel truss girders and reinforced concrete cast in situ slab: 24.0m wide x 68.2m long	m2	1,637	438,620.69	717,934,344.83	1,945,602.07
Total					KZT 907,108,490.00	USD 2,458,265.00
		1 KGS	0.0145	US\$		
		1 KGS	5.3	KZT		
		1 KZT	0.00271	US\$		

1. KORDAY & KARA-SUU BCP'S PROPOSED AUXILLIARY SUPPORT FACILITIES

These facilities may need to be upgraded with the increased traffic and are to be determined at the design stage.

1.1. Water tanks and Pumping Station

Underground reinforce concrete tank divided into two parts: for firefighting and potable water. Hydraulic engineer to determine the tank capacity at the next stage of the design development.

1.2. Back-up generator

Housed in a separate building for the sound attenuation and security.

1.3. Water Tanks and Pumping Station

Underground reinforced concrete tank divided into two parts:

- Water for fire fighting
- Potable water

Pumping Station located on top of the tank with submersible pumps

1.4. Back-up generator

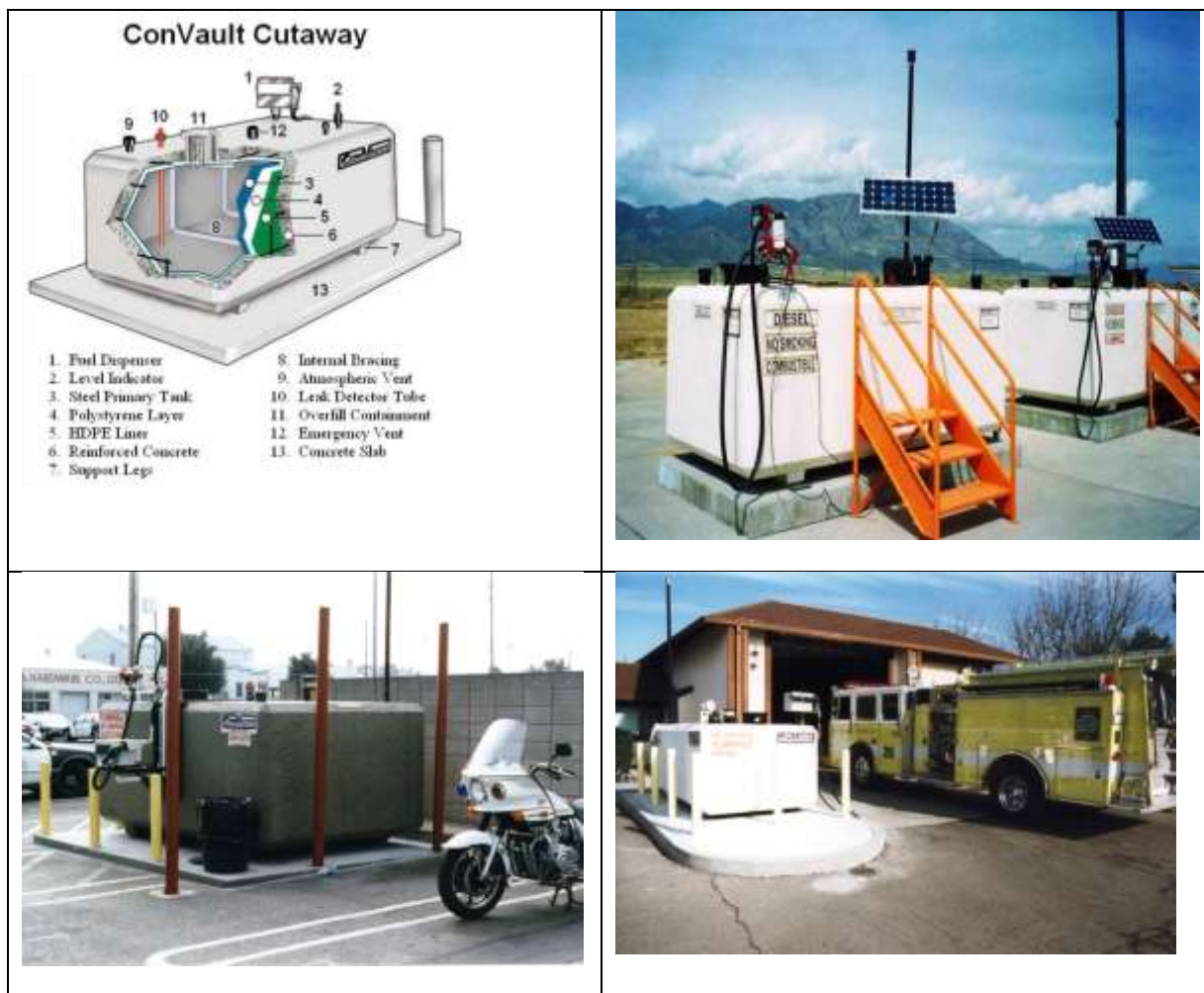
Diesel powered generator is located in a separate enclosure with masonry loadbearing walls and metal roof frame and sheeting. The provisional power demand estimate that I prepared (Appendix 1) has to be verified by the Electrical Engineer at the next stage of the design development.



Diesel tank is an on-ground reinforced concrete type - ConVault' or similar.

Tank capacity should provide fuel for the back-up generator.

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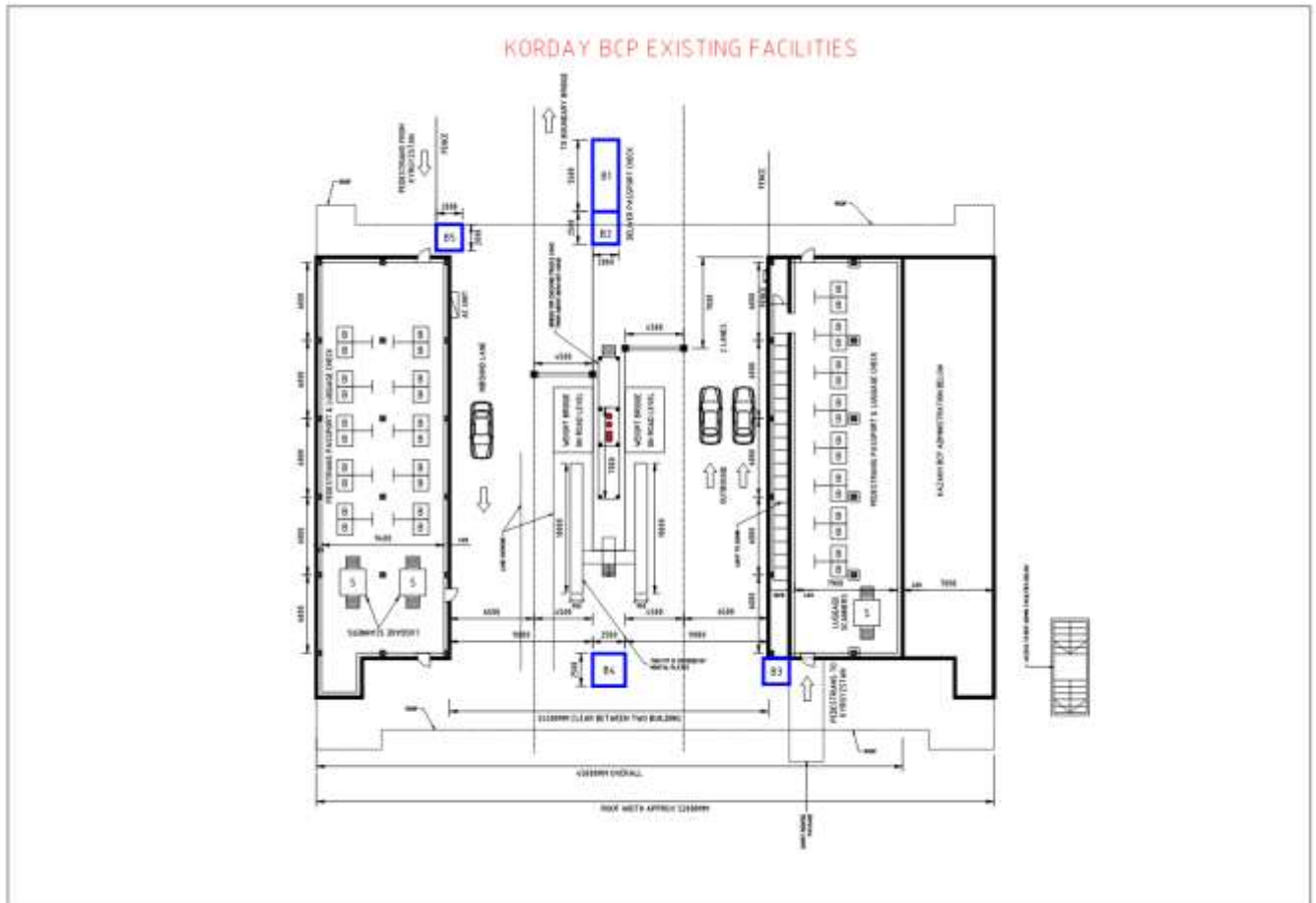
1.5. Optional impact attenuators for the check booths islands

Several options are available



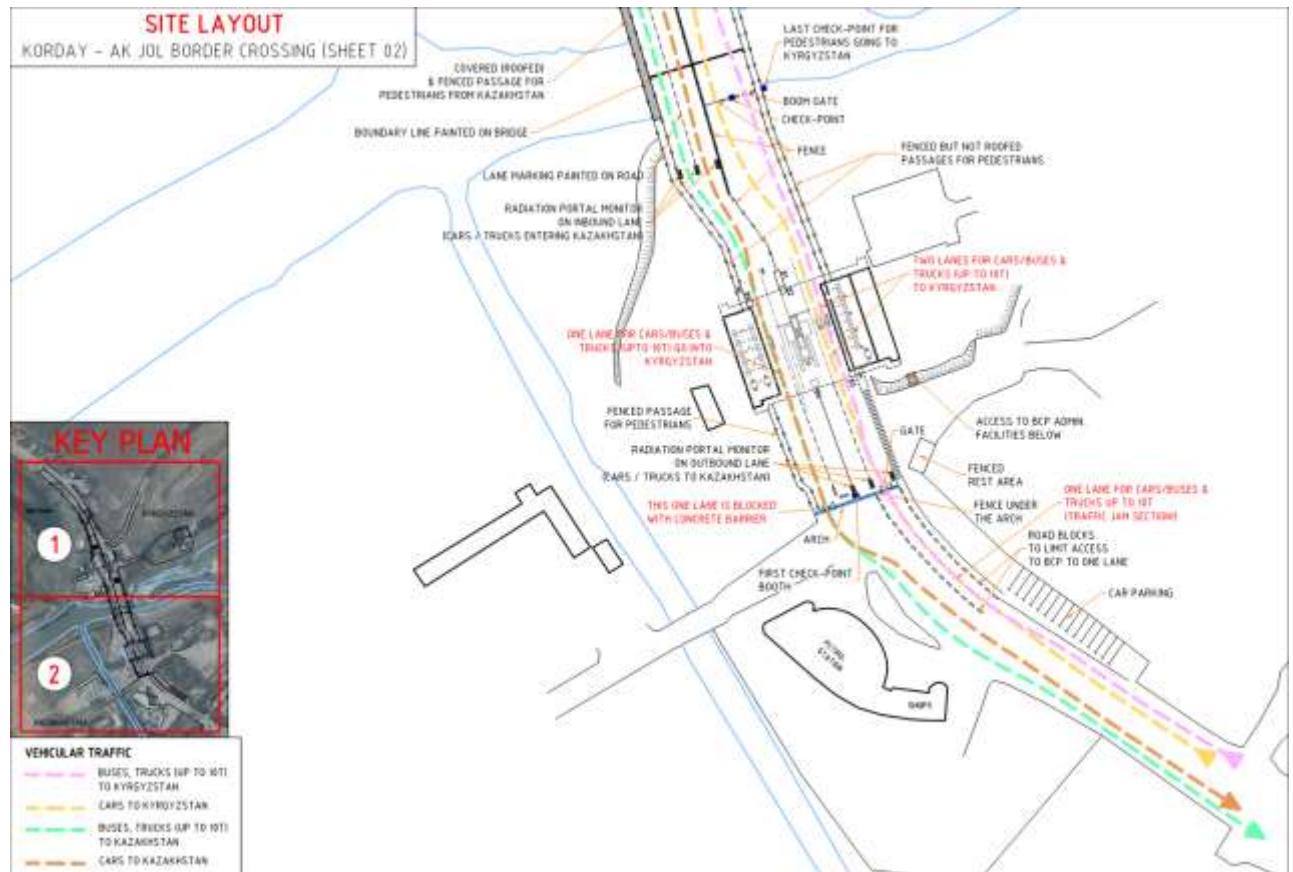
2. APPENDIX 1

Korday Border Crossing Point – Existing Administration and Processing Facilities (Ground Floor Level)

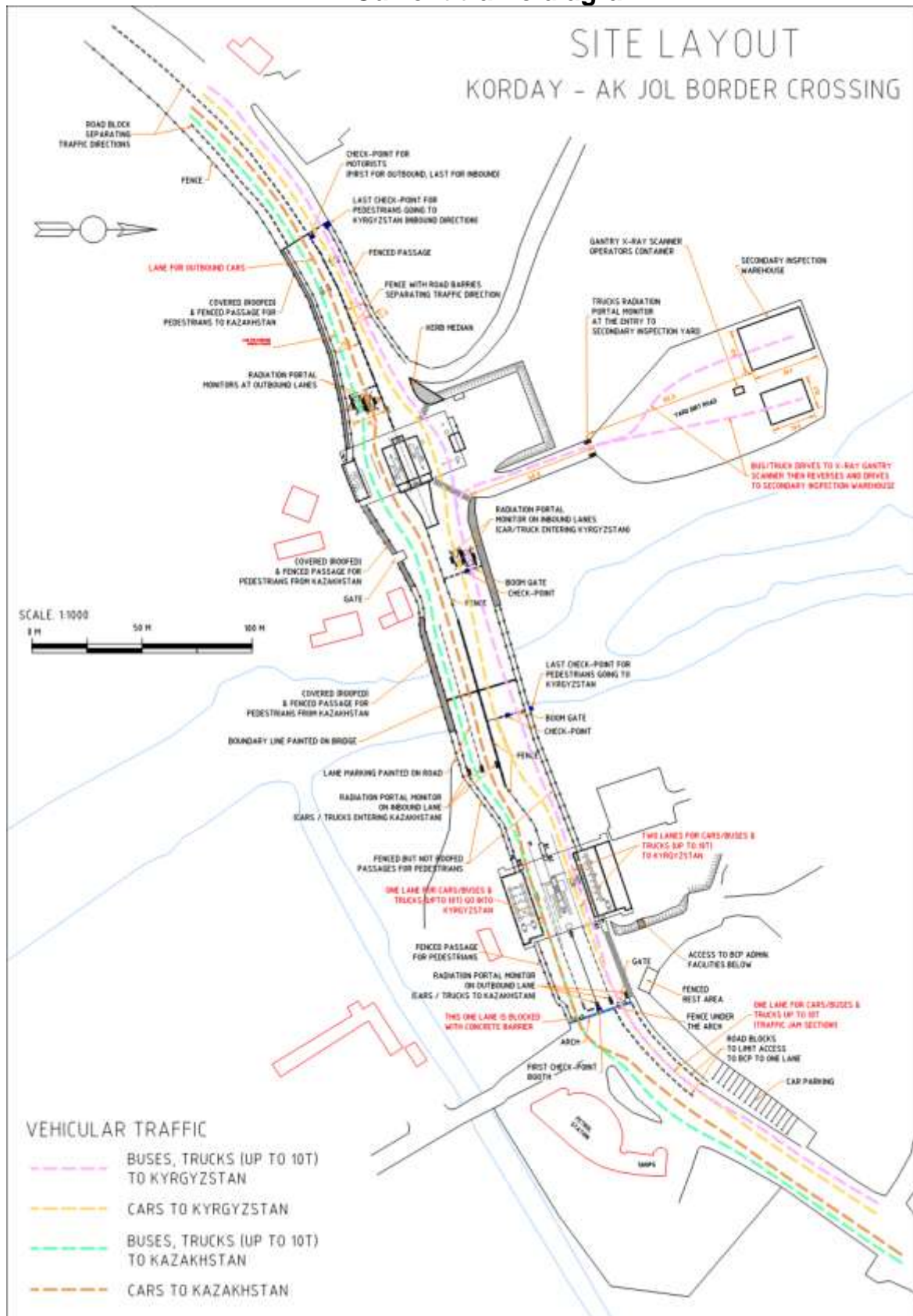


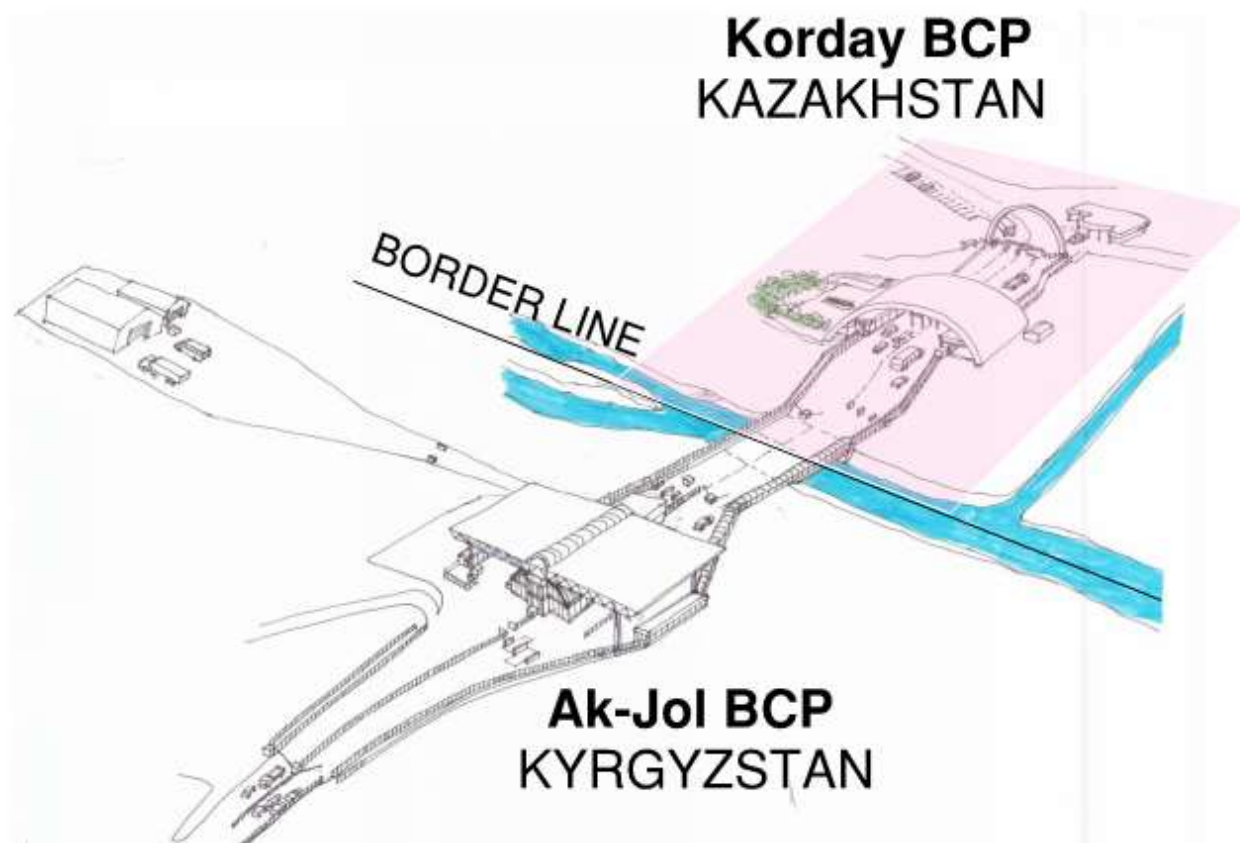
3. APPENDIX 2

Korday Border Crossing Point -current traffic diagram



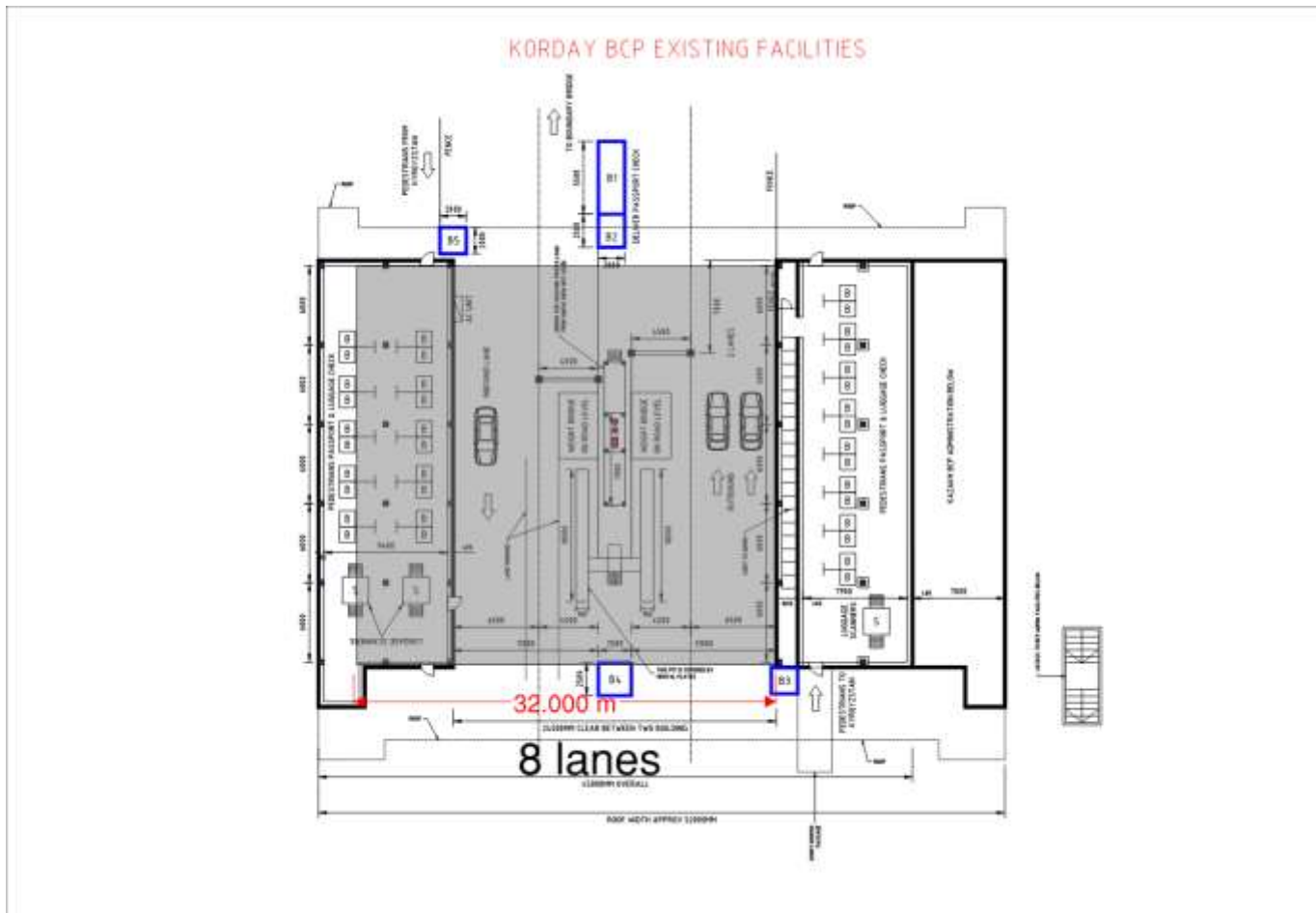
Complete site plan of border crossing area: Korday BCP on the Kazakh side and Ak-Jol BCP on the Kyrgyz side Current traffic diagram





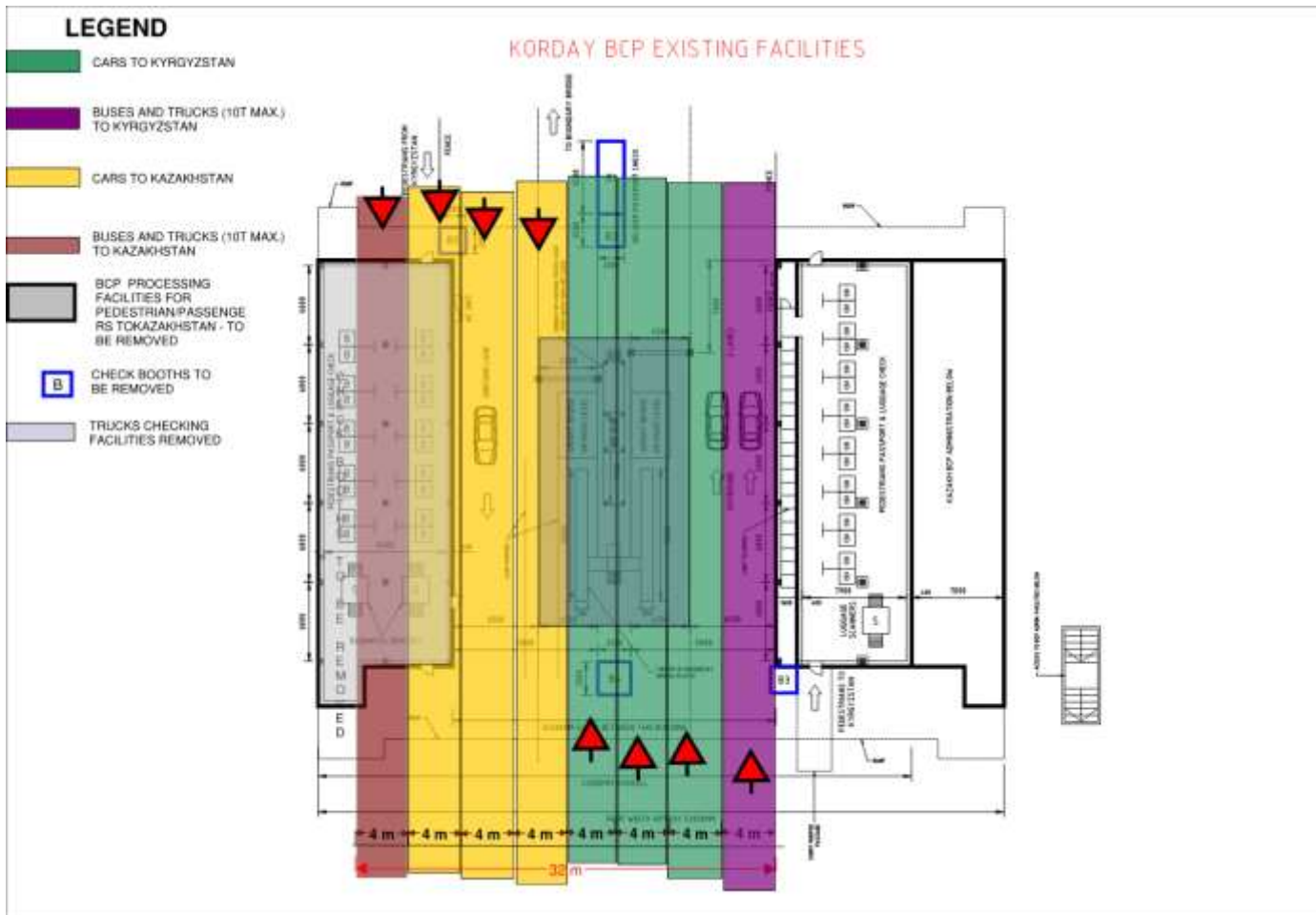
Aerial view of existing Korday and Ak-Jol BCP's

Proposed free space required under the existing vaulted canopy for 8 vehicular traffic lanes @ 4.0m wide each



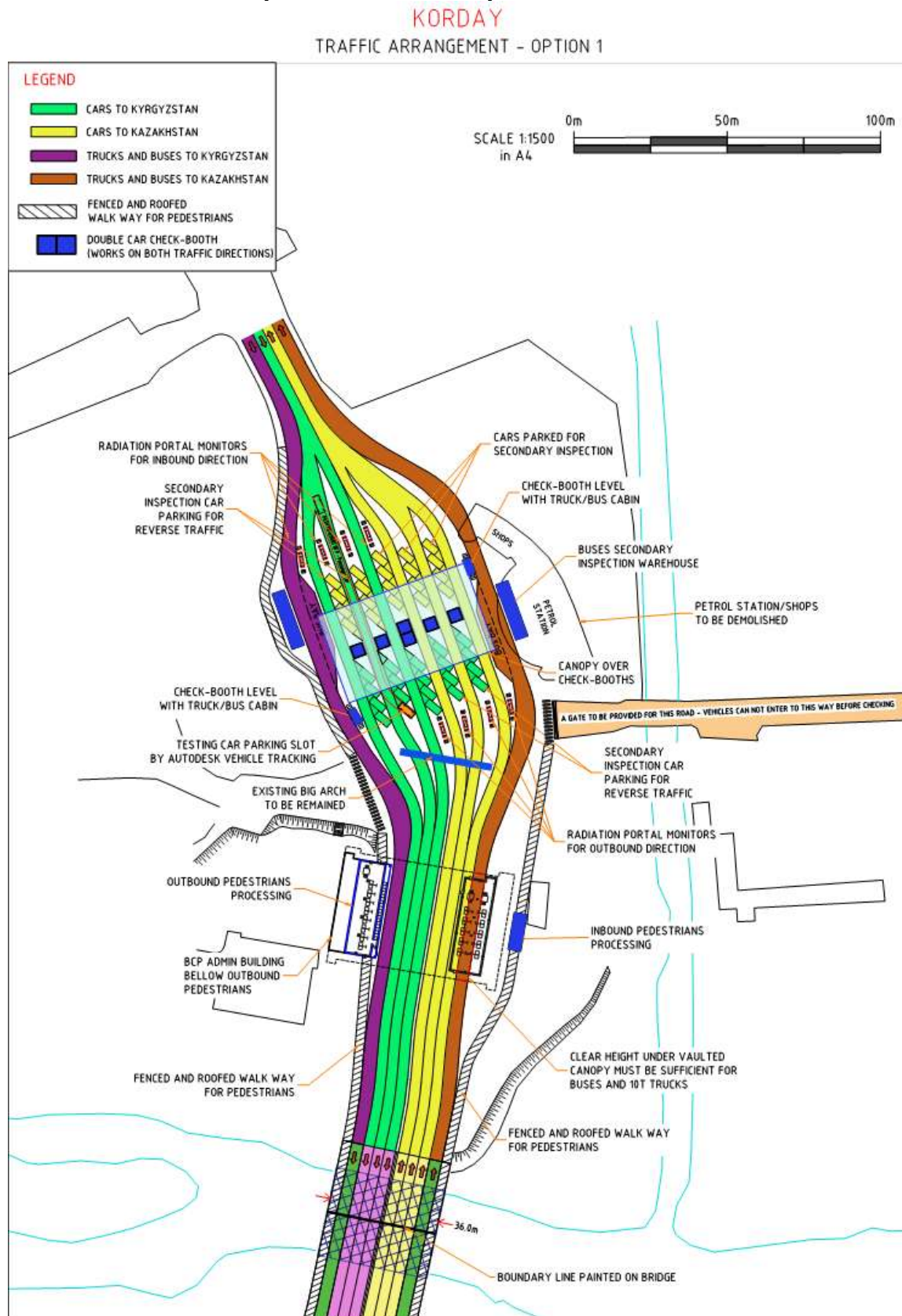
Korday BCP improvements – Option 1

Proposed vehicular traffic lanes under the existing vaulted canopy



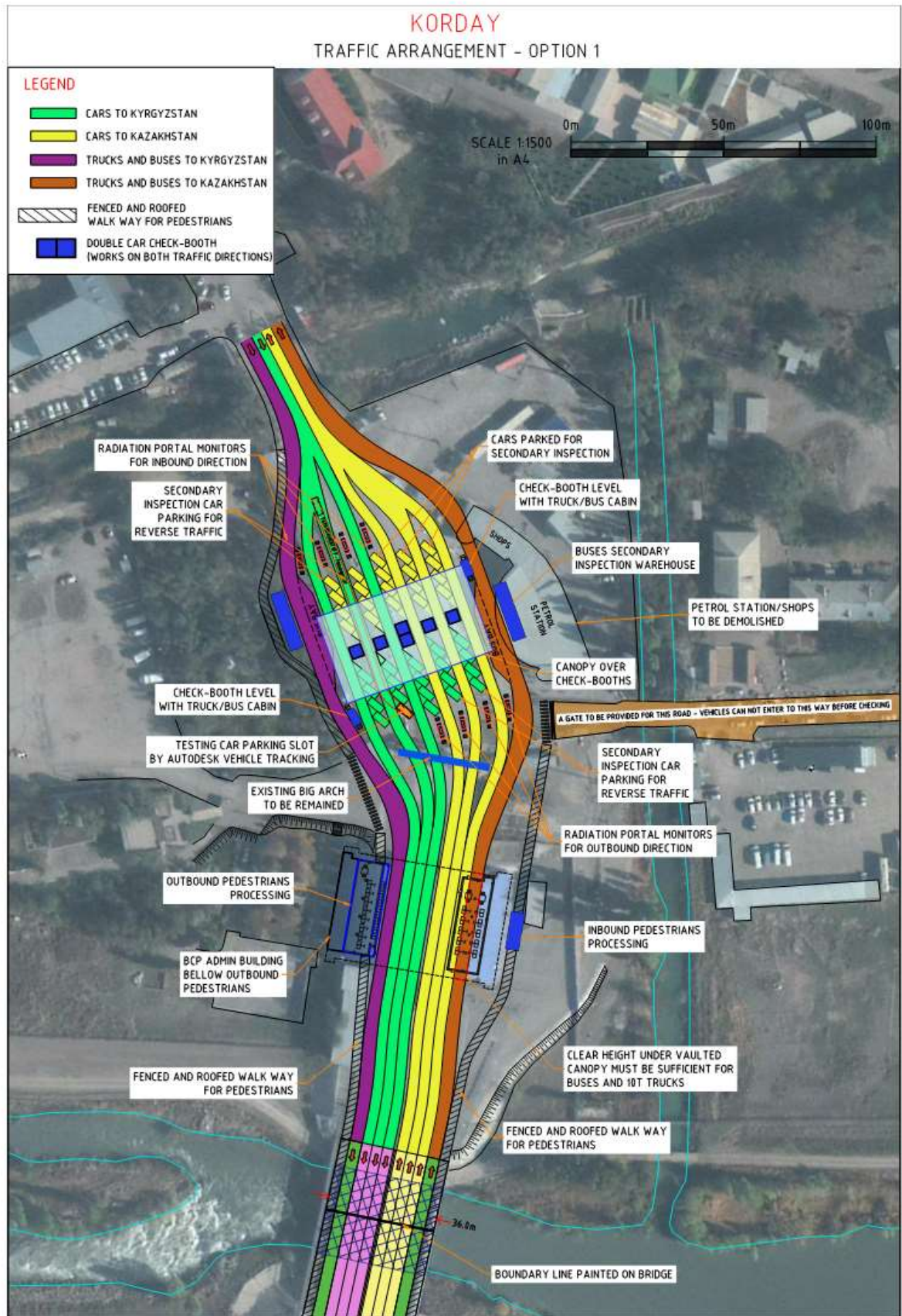
5. APPENDIX 4

Korday BCP – OPTION 1 Proposed vehicular & pedestrian traffic

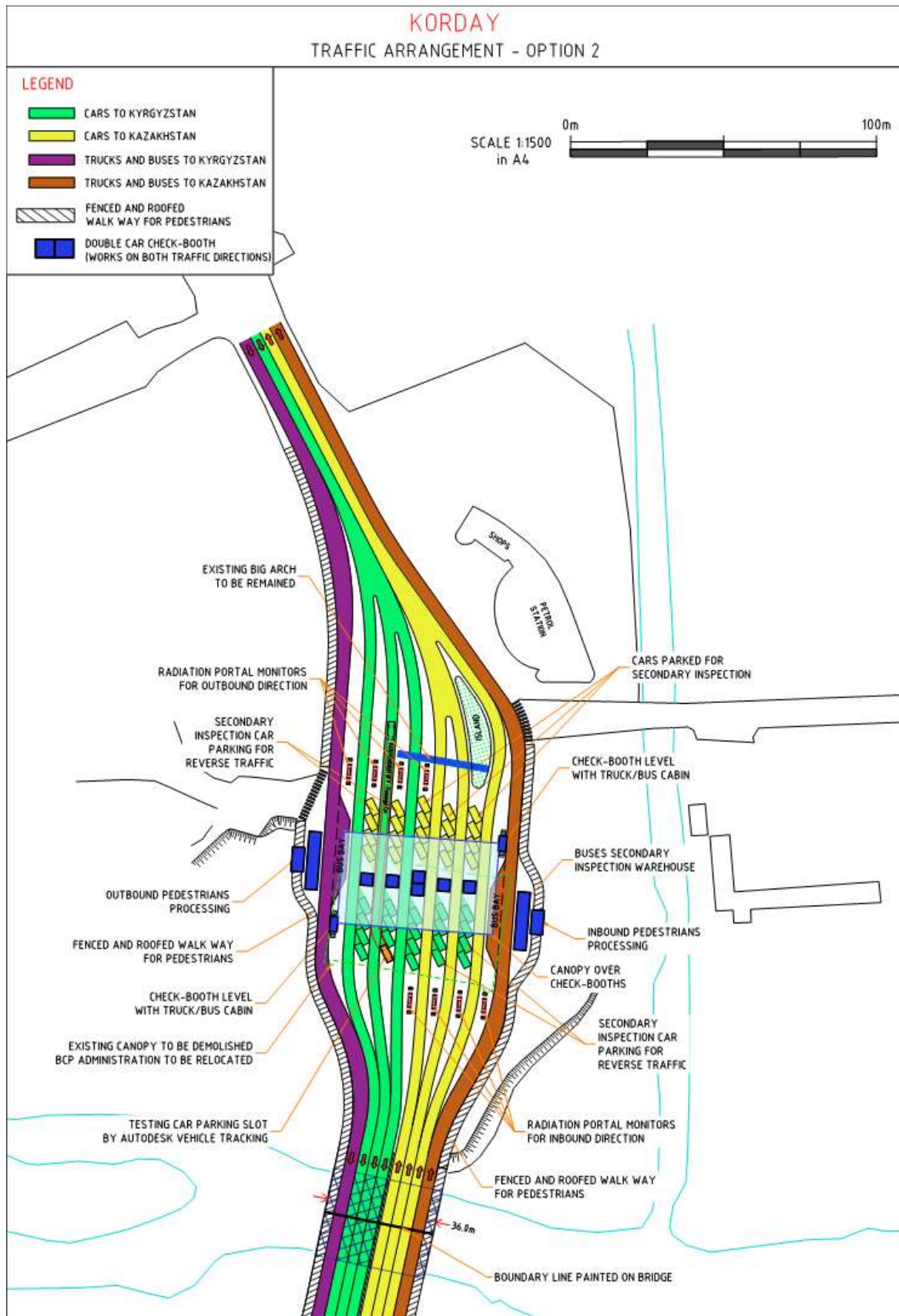


Korday BCP – OPTION 1

Proposed vehicular & pedestrian traffic - on Google Earth image

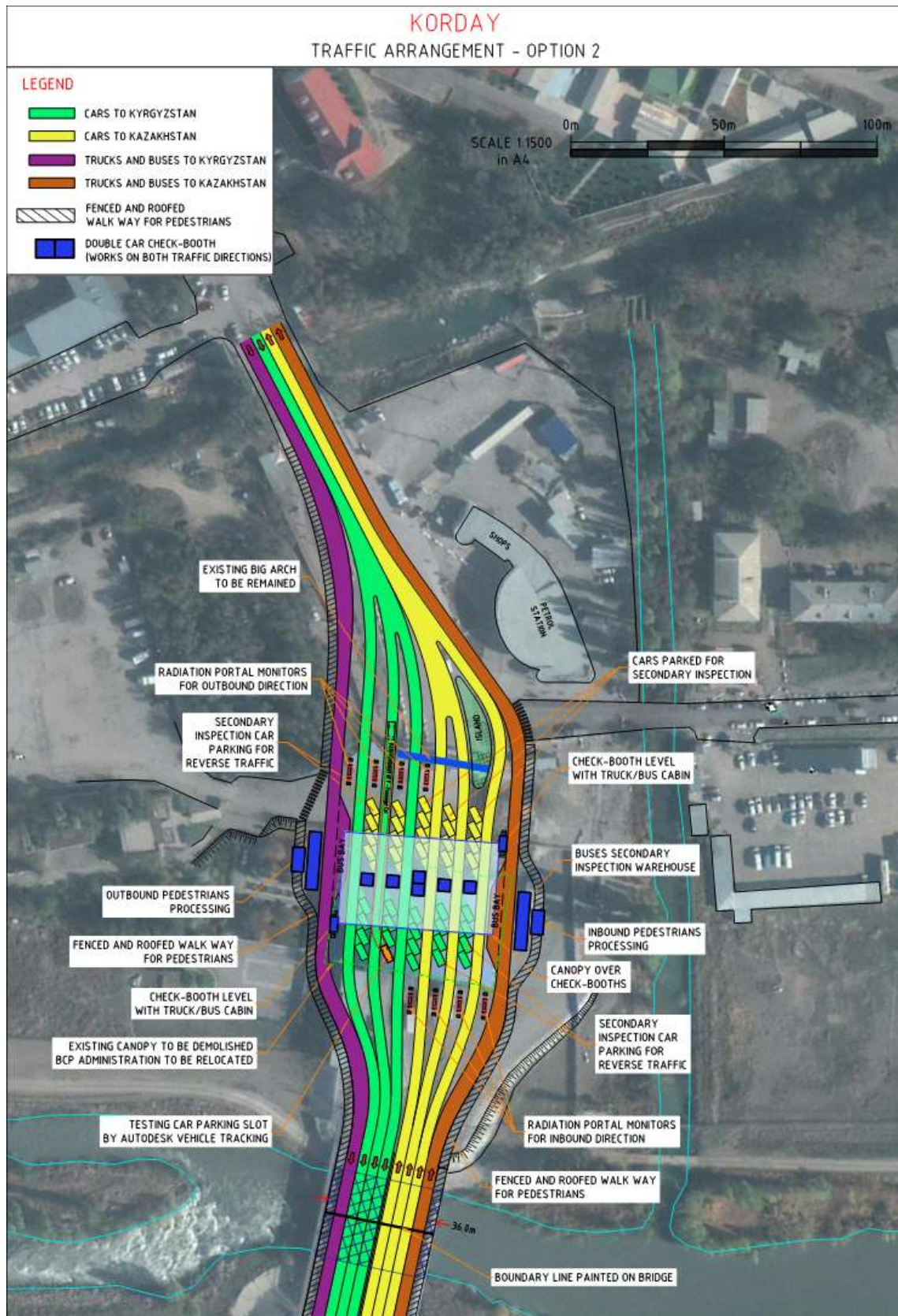


Korday BCP – OPTION 2 Proposed vehicular & pedestrian traffic



Korday BCP – OPTION 2

Proposed vehicular & pedestrian traffic - on Google Earth image

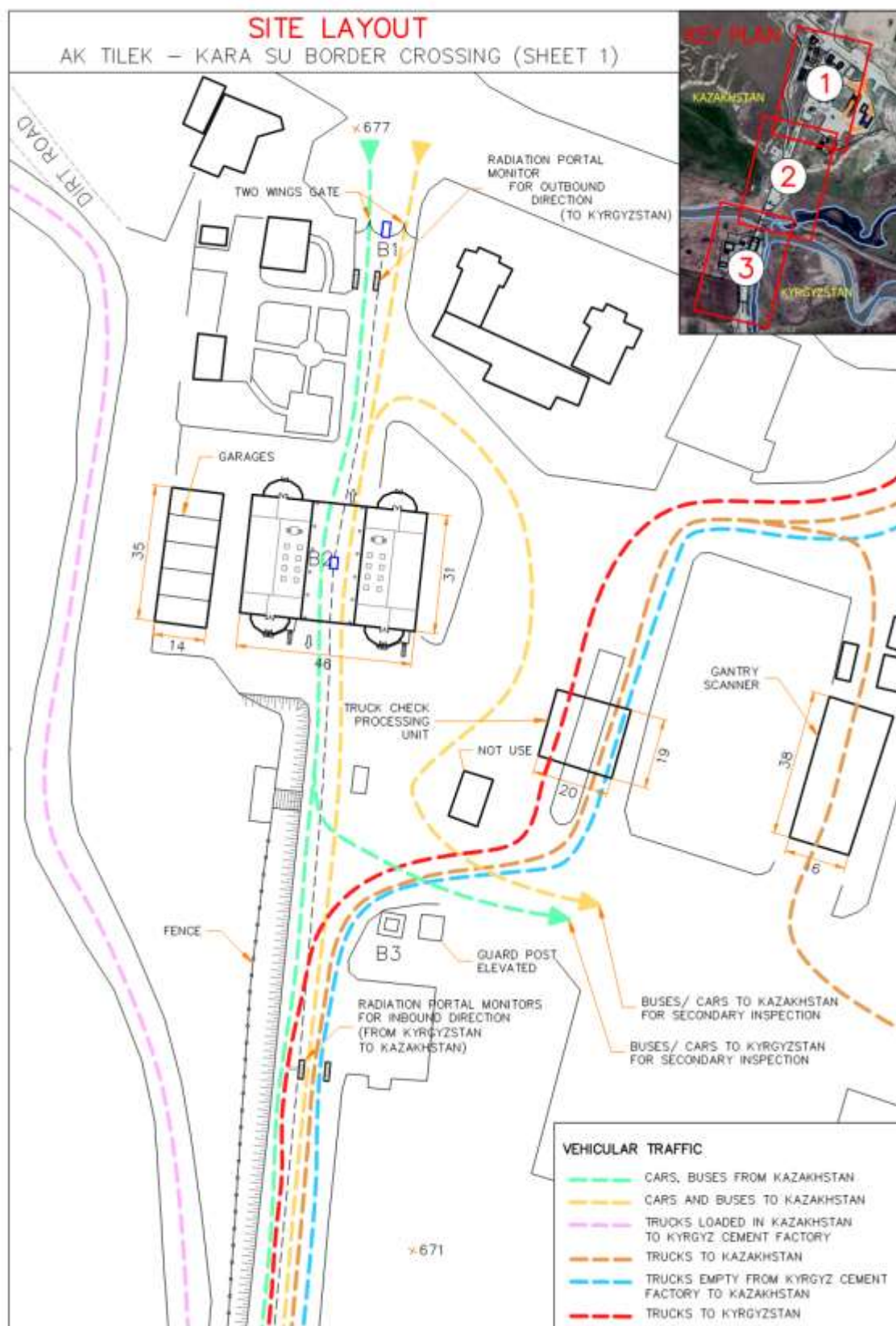


Kara-Suu BCP – existing main processing facilities under the metal roof truss framed canopy

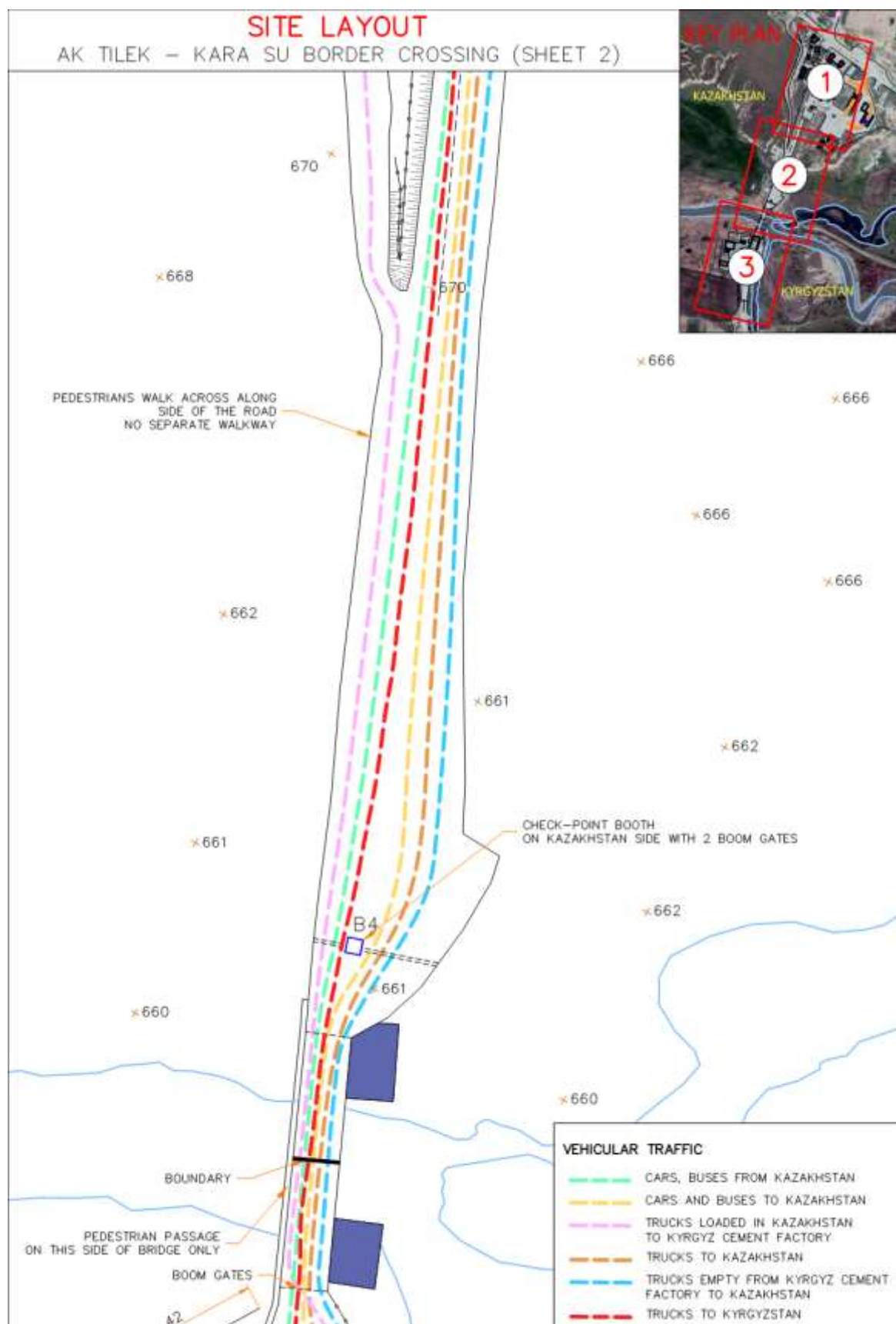


7. APPENDIX 6

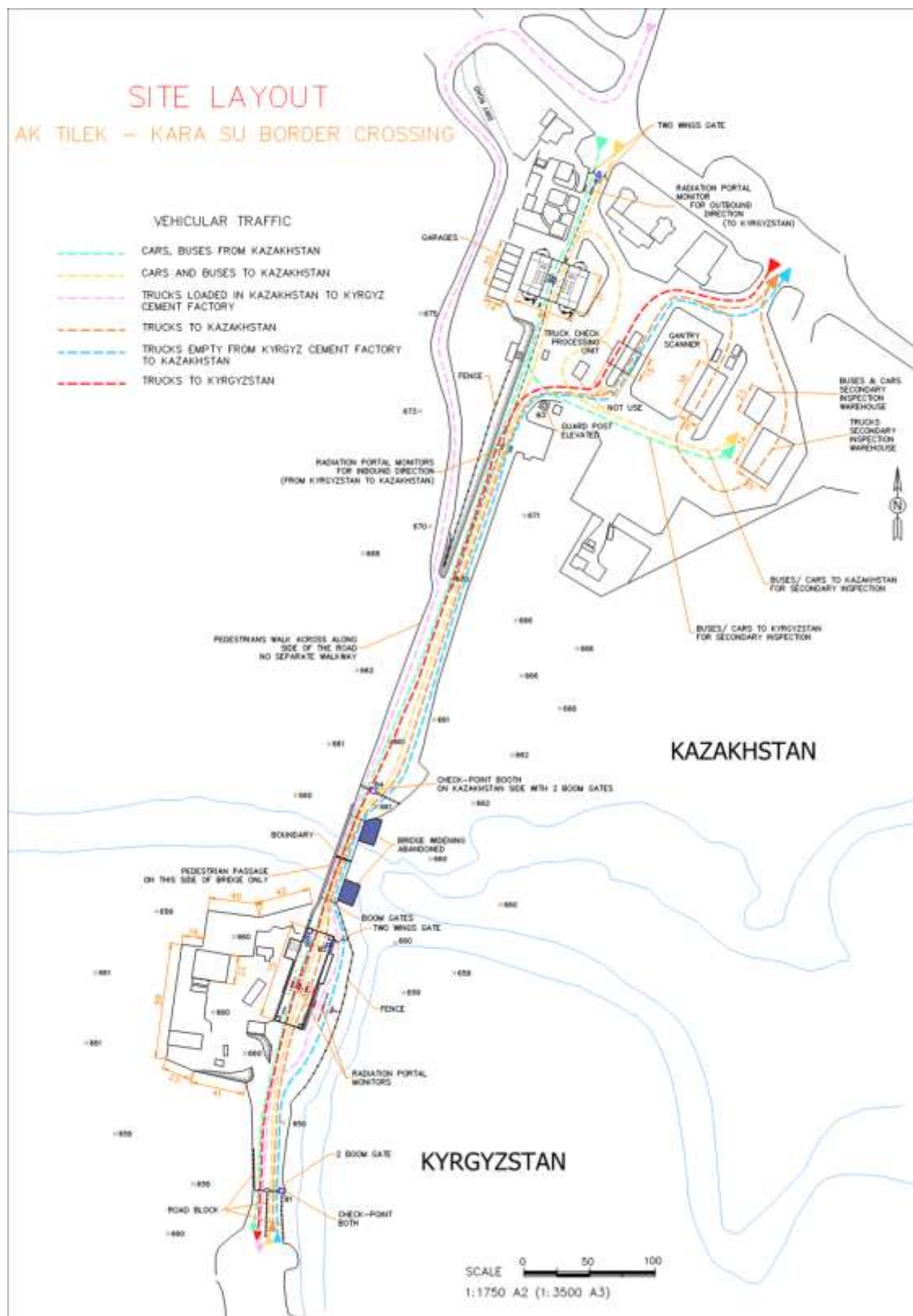
Kara-Suu BCP existing traffic diagram

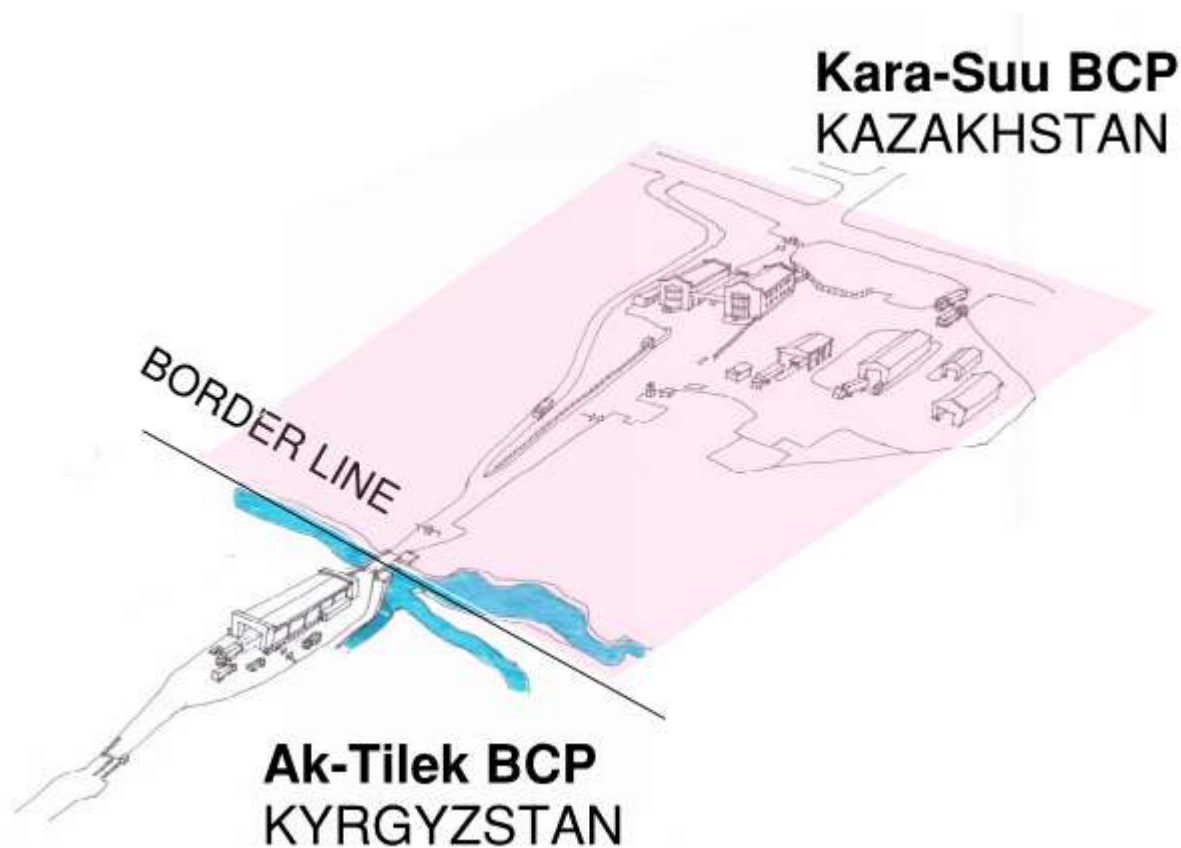


Existing traffic diagram on road to Kara-Suu BCP from Ak-Tilek BCP



Complete layout of Kara-Suu BCP and Ak-Tilek BCP Existing traffic diagram

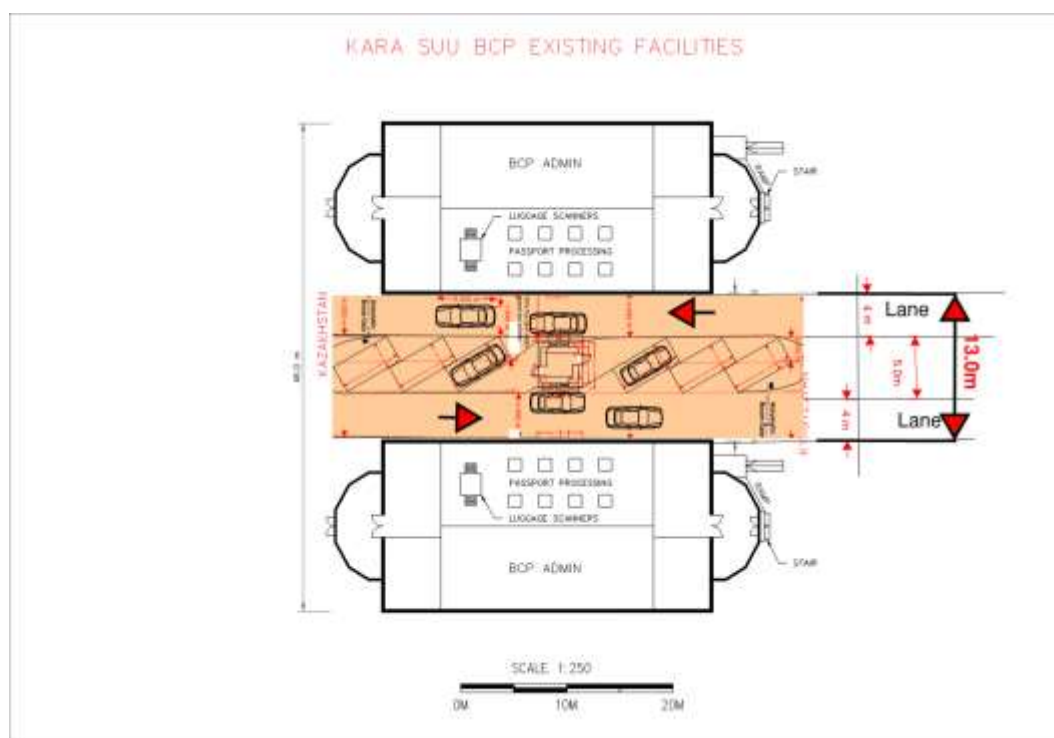
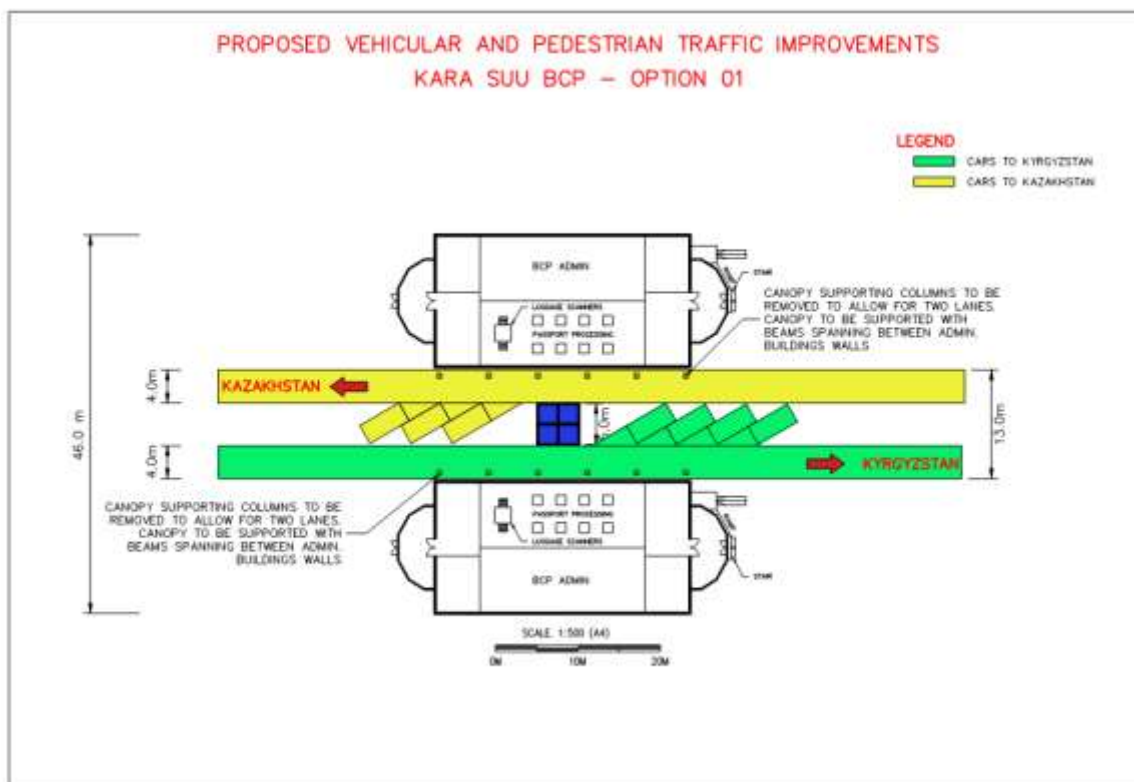




Aerial view of existing Kara-Suu and Ak-Tilek BCP's

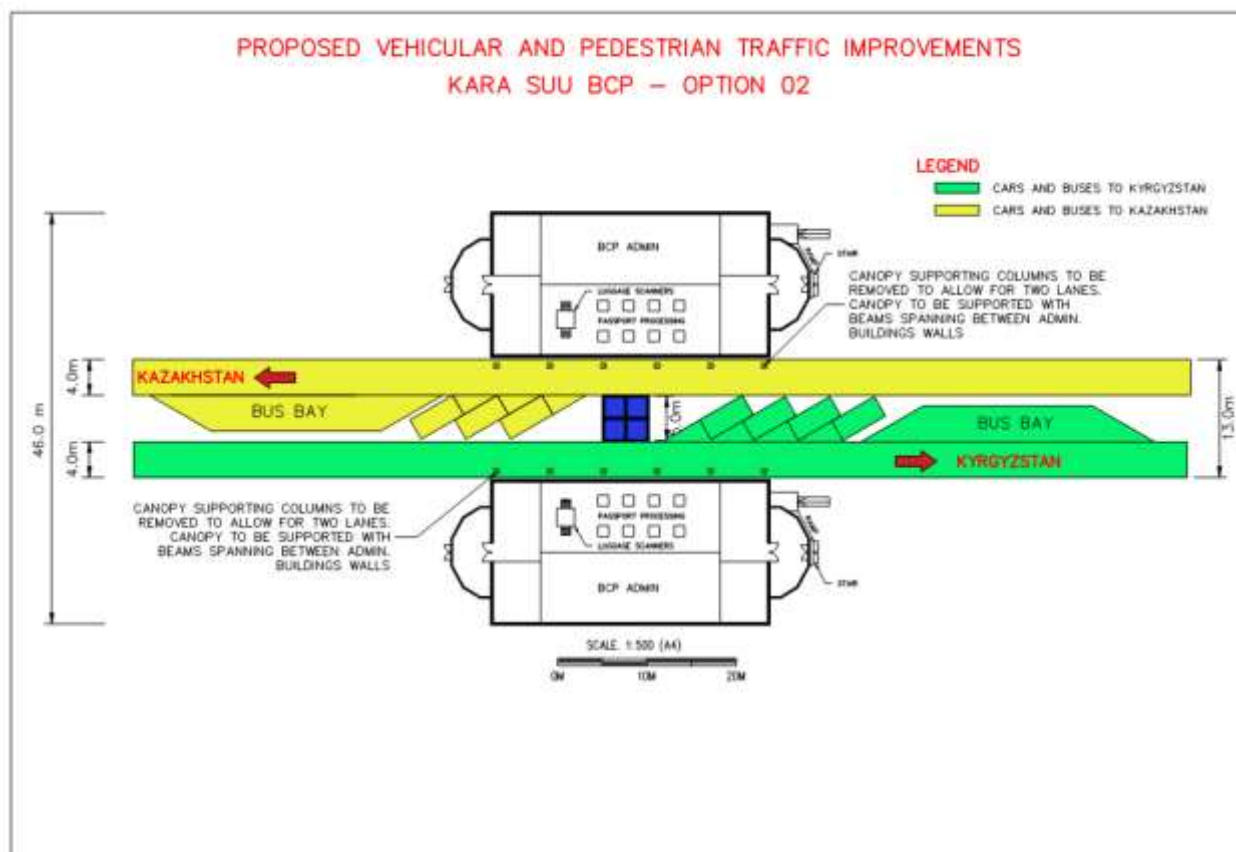
8. APPENDIX 7

Kara-Suu BCP improvements - Option 1 Proposed free space required under the existing vaulted canopy for 2 car traffic lanes @ 4.0m wide each



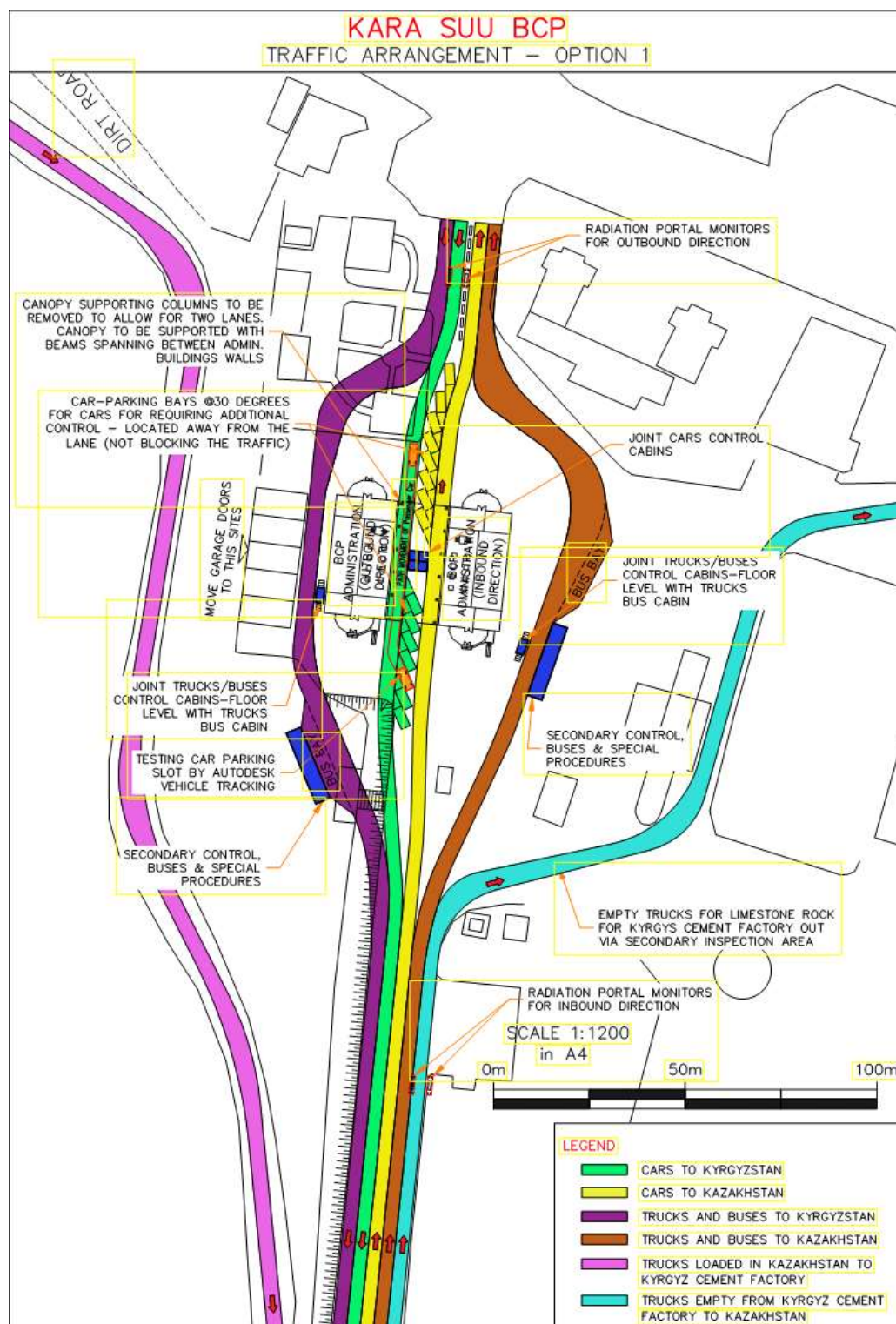
Kara-Suu BCP improvements - Option 2

Proposed free space required under the existing vaulted canopy for 2 cars/buses traffic lanes @ 4.0m wide each



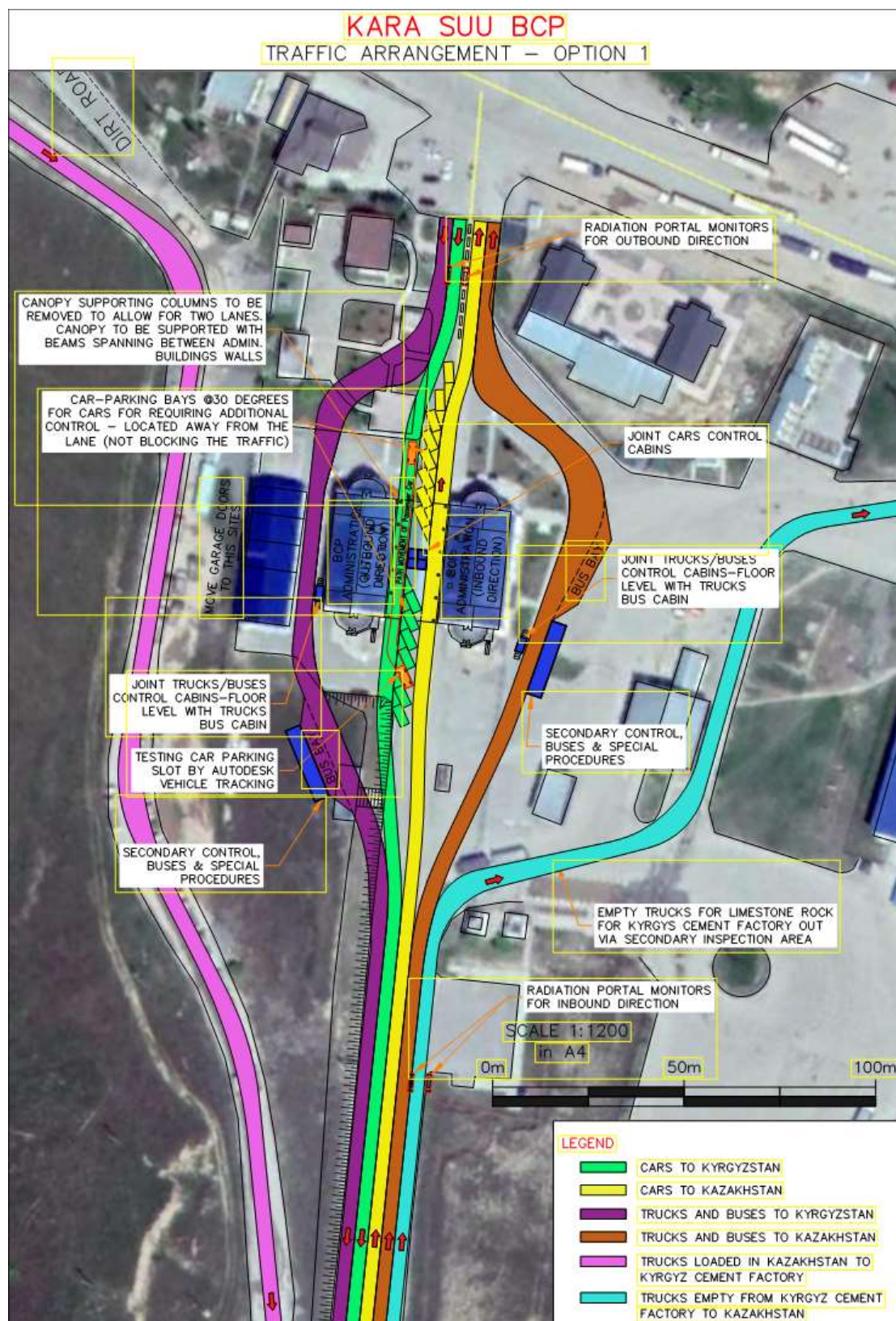
1. APPENDIX 8

Kara-Suu BCP – OPTION 1 Proposed vehicular traffic

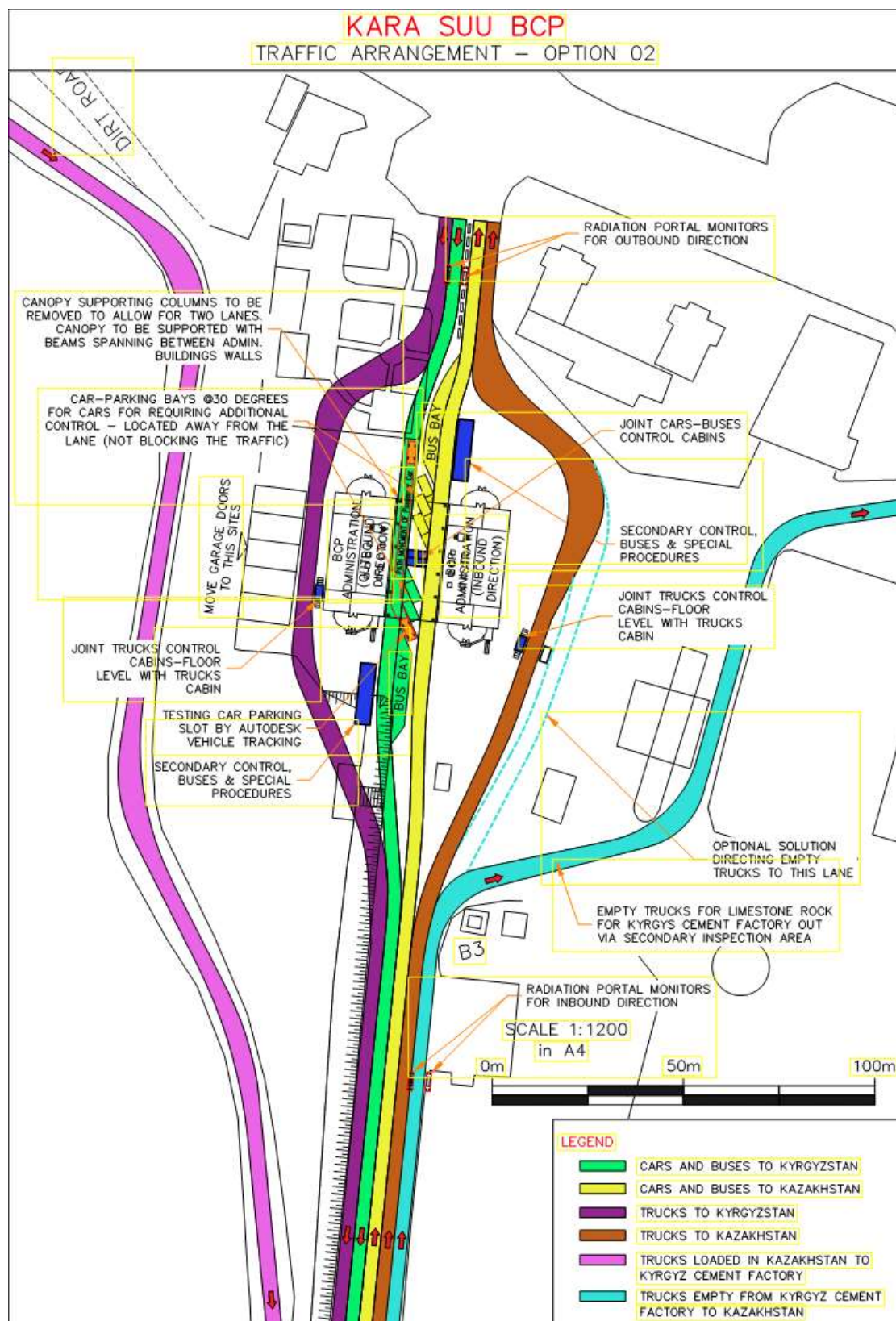


Kara-Suu BCP – OPTION 1

Proposed vehicular traffic - on Google Earth image

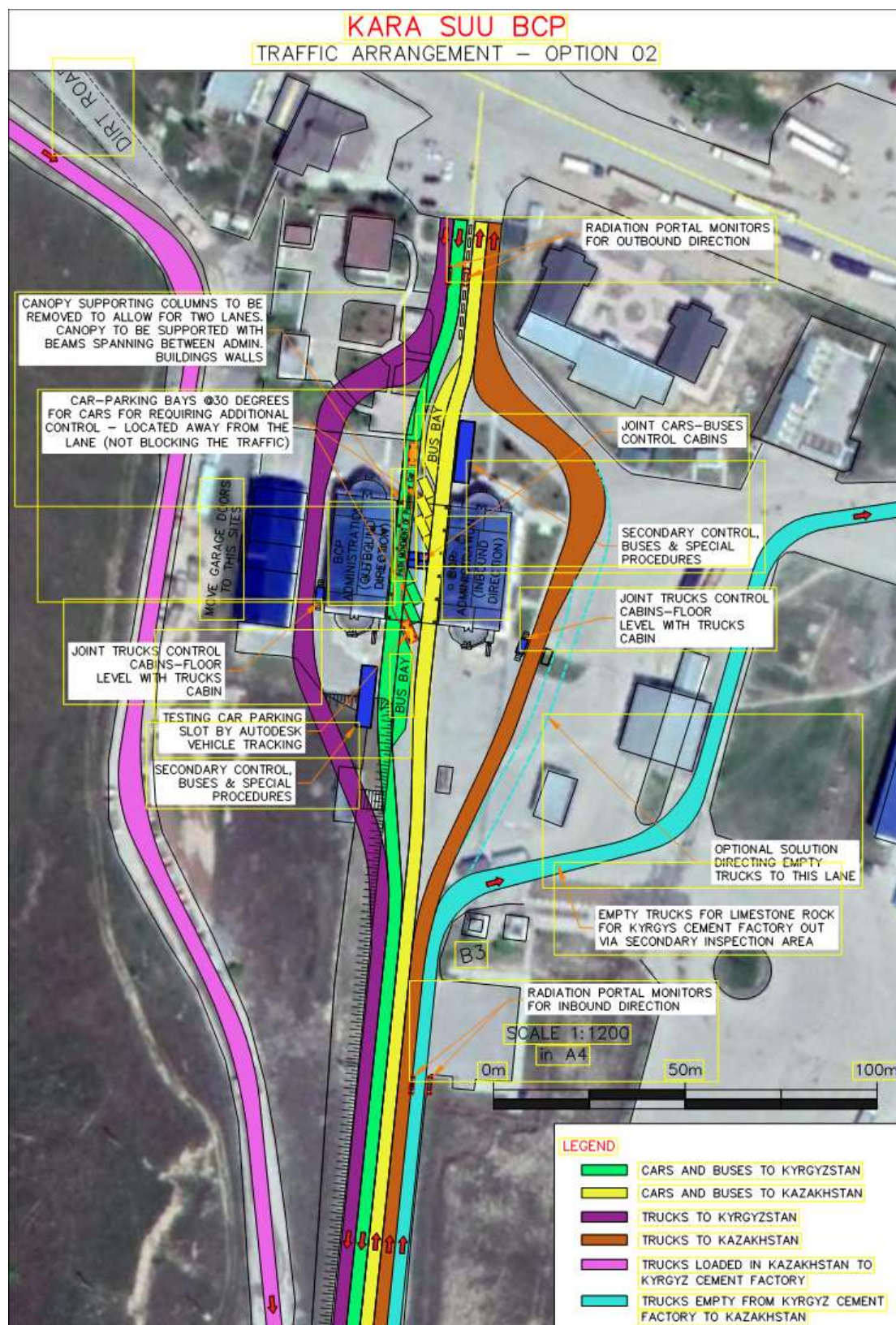


Kara-Suu BCP – OPTION 2 Proposed vehicular traffic



Kara-Suu BCP – OPTION 2

Proposed vehicular traffic - on Google Earth image



1. APPENDIX 9

Proposed bridge with steel truss girders and cast in situ slab

