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Economic Policy Reform and Competitiveness Project

Zamiin Uud border crossing inspection yard, clearance facilities and associated infrastructure

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Project:	Mongolia Economic Policy Reform and Competitiveness Project (EPRC)
Report Title:	***Zamiin Uud border crossing inspection yard, clearance facilities and associated infrastructure***
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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
D&B	Design/Build
DTM	Digital Terrain Model
EIRR	Economic Internal Rate of Return
EPRC	Economic Policy Reform and Competitiveness Project
MCGA	Mongolian Customs General Administration
ROM	Rough Order Magnitude
SSIA	State Specialized Inspection Agency
USAID	United States Agency for International Development

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SECTION I: INTRODUCTION

Mongolia's major gateway, its "dry port" is choking, judging from a survey of 550 lorry drivers that the project conducted during 14-19 April. The average waiting times were:

- 23.5 hours for inspection of trucks with non-uniform loads
- 28.2 hours for uniform loads to be scanned
- 135 hours for non-uniform loads of trucks to be transferred to rail
- 34.2 hours for trucks queuing in China waiting to get to the Zamiin Uud border crossing point.

Although April is not "high season" for traffic in Zamiin Uud, the aggregate costs of these queues are enormous. They create a propitious environment for product supply shortages, price speculation, and informal payments that put additional pressure on prices already rising according to world trends. In summary, the inadequacy of logistics facilities infrastructure in Zamiin Uud is constraining the supply of goods and thus contributing to inflationary pressures on the Mongolian economy, coinciding with increased aggregate demand and high liquidity.

Customs and inspections clearance facilities at Zamiin Uud

Facilities and the area are inadequate to support current traffic and projected growth of the economy. They are also one of the constraints for Mongolia's ambitions to become a competitive transit corridor between China and Europe as proposed in the "Transit Mongolia" national project.

Exhibit 1 shows a satellite image of the current customs and inspections area in Zamiin Uud. The physical improvement plan presented in Exhibit 2 seeks to:

- Expand the area for inspections to facilitate inspections and lorry circulation
- Segregate passenger from freight traffic
- Segregate freight traffic by type of load: uniform loads to proceed directly to a scanner; non-uniform loads proceed to the inspections area.

At an indicative investment cost of $2.5m to expand the customs and inspections area and assuming an average daily cost of operations of $37 per lorry and a $7 daily average cost of inventory, the Economic Internal Rate of Return (EIRR)—benefits to the economy as a whole—are conservatively estimated to be over 200%.

The project has been assisting the Mongolian Customs General Administration (MCGA), as a lead agency to re-structure these facilities, and the State Specialized Inspection Agency (SSIA). Current plans include the developing of drawings for the new layout of the area and construction specifications. The MCGA will issue the tender and supervise construction of the civil works.

1. Project description

In May 2008, EPRC commissioned consulting services for preliminary design of a customs inspection yard and clearance facilities at Zamiin Uud, Mongolia's southern "gateway" or "land port".

The project, which will rationalise the handling of imports, exports and transit revenue through Mongolia's gateway Zamiin Uud, is part of a larger program to alleviate traffic congestion, improve environmental conditions and expand the capacity for trans-shipment of goods through this land-locked state. The proposed project targets expanding the capacity and improving the efficiency of the involved Government of Mongolia agencies and consists of a number of interrelated elements.

Specific physical infrastructure components to be addressed at this time include:

- New cross-border entry road reserved for trucks;
- An additional weigh scale;
- Expanded and reorganized parking / inspection area;
- Platforms for laying out and inspecting freight;
- Rerouted traffic flow with designated lanes, including escape lanes;
- Dedicated internal road corridor to scanner facility; and
- Perhaps installation of an additional scanner.

Exhibit 1 plan of the current conditions and Exhibit 2 shows the current traffic congestion at the existing facility.

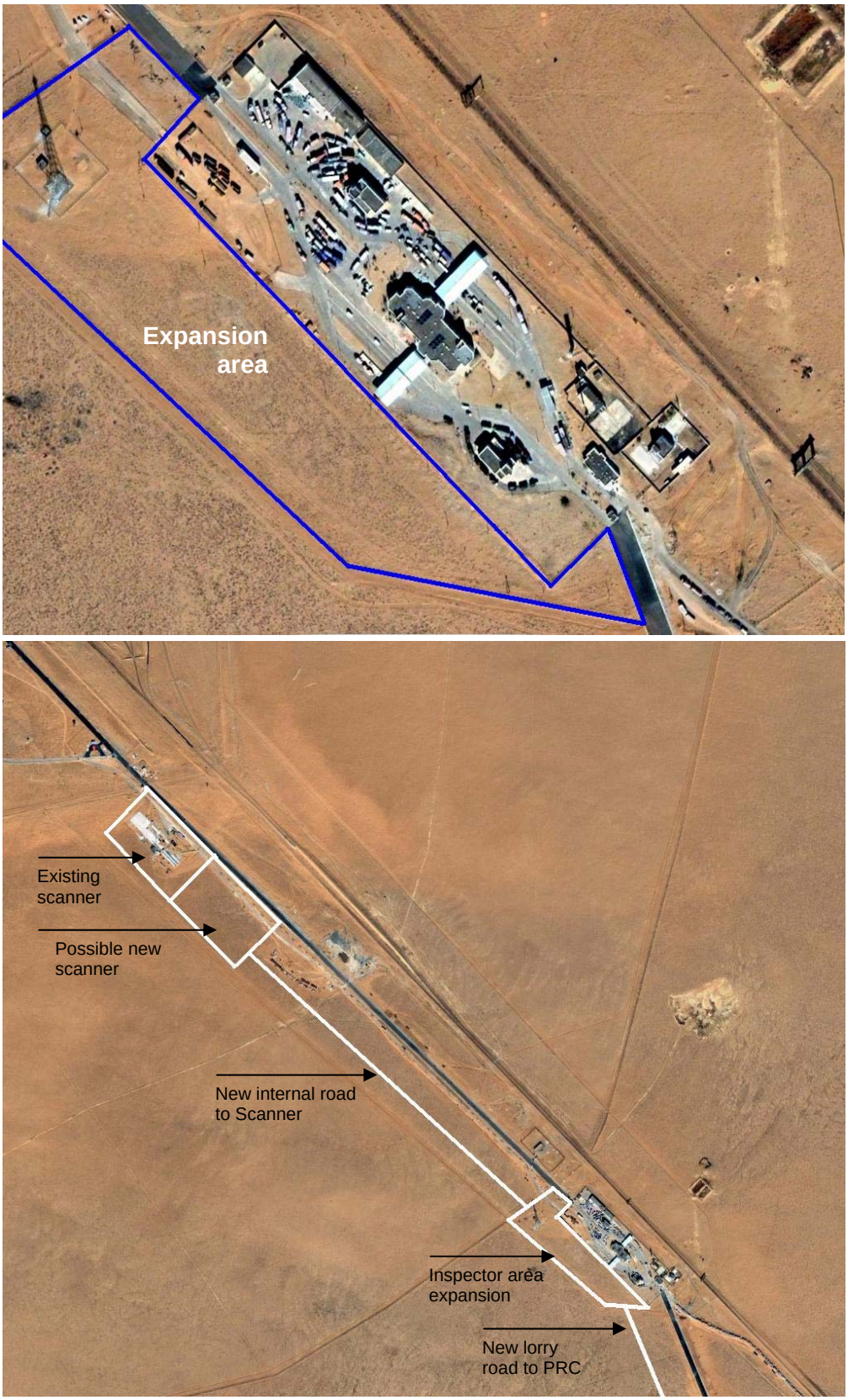
Exhibit 1 – Current conditions

Exhibit 2.

Existing queue for weigh scale (PRC border in background)

Existing Zamiin Uud customs clearance yard

Exhibit 7 - Full inspection expansions and clearance yard expansion area



2. Consultancy services

The objective of the consultancy is to recommend a preliminary layout for a high standard inspection yard, clearance facility and the associated infrastructure at the Zamiin Uud border crossing with the Peoples Republic of China

In order to achieve this,the work plan includes the following tasks:

- carry out a detailed audit of the existing available data and recommend any shortcomings, deficiencies or omissions;
- carry out data collection, surveys and tests in order to:
  - verify the existing data and visit existing facilities
  - accurately establish the most suitable and improved inspection yard layout
  - provide a solid grounding for detailed design;
- prepare a preliminary design of the preferred layout and new connecting roads to comparable Mongolian and International standard;
- concurrently choose and progress a suitable procurement methodology for the construction of the facilities, including draft bidding documents, general specifications and Employer's Requirements for the Civil Infrastructure works only;
- identify and help address administrative requirements that have the ability to delay project progress, including certificates, approvals, land acquisition, provision of utilities, utility relocations and environmental/historical protection, with the assistance of the Mongolian Customs General Administration;

This Inception Report presents the initial findings, to meet with the Terms of Reference and anticipated deliverables, and identifies supplemental data requirements.

A detailed review of the available data is also addressed briefly. Program schedules do not permit in depth studies.

3. Progress during the inception period

Sketchy existing data was received from the MCGA shortly after the effective date on Monday June 2nd 2008, and a desktop study commenced. In keeping with the program schedules, revised layout options for the inspection yard and facilities were initially prepared, along with preliminary connector road plans and details. Within a day on June 3rd 2008, these options were presented to the MCGA and discussed in detail. On Thursday June 5th 2008, Mr. Tseveenjav, Director, and Mr. Bold, Deputy Director, of the Mongolian General Customs Administration both indicated in favour of option B for the preferred layout. Mr Bold informed that senior management committee were also in favour of option B.

With the preliminary consent of the MCGA on the preferred layout, on Sunday, June 8th 2008, a joint site inspection of the project site was arranged to verify the existing data and area reconnaissance. This was followed by a consultative meeting with representatives of the Mongolian Customs General Administration, Zamiin Uud, and local stakeholders in the Zamiin Uud city Tuesday June 10th 2008. Option B of the layout as preferred by the Mongolian Customs General Administration Directors from Head Quarters (HQ) was presented and discussed in detail. Changes to the proposed layout were discussed, as well as the available land, utility relocation and future plans of the proposed road to rail logistics facilities requirements.

In a follow-up meeting with the Zamiin Uud MCGA representatives a detailed inspection of the existing facilities and alternative layout was carried out and geometric information was

collected. To facilitate the wishes of the local officials, a revised final layout will be prepared for submittal to the Directors of the MCGA at the HQ.

The UBTZ railways at the local district were also consulted at this time, as a courtesy visit.

Efforts are now being directed towards engineering design, in particular preparation of the preliminary design drawings, with the preliminary layouts of the inspection facility verified and agreed.

4. Available information

The primary source of the required engineering data for the project is limited and requires to be supplemented by additional in depth topographical, hydrological and geotechnical surveys, for an acceptable detailed design to proceed.

Like most documents from several sources, the completeness and clarity of the available documents varies. Independent assessments and audits have convinced us that the customs authorities have not had the benefit of thinking the project through thoroughly and have been unable to make informed decisions within the administration.

After several meetings with the MCGA both regional and HQ, an acceptable revised layout for the new inspection yard and clearance facilities has eventually been agreed and due to the program schedules will now have to be frozen to proceed to engineering design development.

Utility and land ownership details have been requested and immediate negotiations have to take place with these parties. These issues are a source of serious delay in most projects. Similarly environmental assessment if required has to be addressed.

A summary of the audit is included in the following section. As outlined earlier, embarking on serious final stages for engineering design is now essential. New cost estimate analysis will be updated as soon as revised material unit prices are at hand. The ADB is currently letting contracts for the construction of the Asian Highway 3, and should have some reliable data on unit cost for road construction.

SECTION II: REVIEW OF AVAILABLE DATA

The available data from the MCGA was reviewed in detail. The data identifies the proposed project site, but fails to outline preliminary engineering design criteria and does not provide invaluable legal documentation and approvals.

Documents available for review;

- Draft Pre-Feasibility Analysis
- Topographical Survey
- Geotechnical Study

The draft Pre-Feasibility Analysis, in paragraph **A.2** identifies the proposed project as a public sector undertaking. With this regard, in the absence of the understanding for Mongolian legislation and the local procedures in place for planning land development it is acknowledged that some or all of the following documents will not be available at this time.

- Synthesis
- Rough Order Magnitude(ROM) Bill of Quantities
- Road Design Criteria
- Drainage Structures Inventory
- Preliminary Road Alignment
- Detailed Engineering Estimated Costs from the pre-feasibility study
- Hydrological Study
- Environment Impact Assessment
- Public Consultation
- Land Acquisition
- Utilities Relocation and Protection Plans
- Approvals and Agreements

However, in an effort to gain more information and background on the local conditions and objectives of the proposed project, in depth site visits have been performed.

Due to tight schedules we were unable to meet with the local authorities or the Utility owners to discuss the potential impacts of the proposed project to their environment.

The result of the documents reviewed is as follows:

Draft pre-feasibility analysis

The analysis in general addresses the future needs of Mongolia to improve its trans-shipment facilities at its border with China. The report briefly addresses the economic benefits of improving the clearing facilities. The document does not reflect on what basis the traffic projections obtained were modeled. If available the model compares the economic and exogenous costs and benefits and determines the project feasibility by the Expected Internal Rate of Return method (EIRR), based on the projected traffic forecasts.

The anticipated economic benefits of this project consist of savings in inventory costs of goods and savings in vehicle operating costs due to reduced time sitting idle while awaiting weighing and inspection.

The economic feasibility is summarized below. The resulting Economic Internal Rates of Return (EIRR) are highly positive for the two components assessed: one new weigh scale plus expanded clearance yard.

Results of economic analyses: GoM clearance investments

Project	Capital	Benefits	EIRR[1]
Weigh scale	$150,000	Average 2 hours time saving / lorry	>200%
Expanded inspection yard	$2,465,000	Average 4 hours saving / lorry to 2015, 6 hours to 2020, 8 hours to 2025	22%
Yard Sensitivity 1	Time saving / lorry remains constant at 4 hours 2010 – 2025		16%
Yard Sensitivity 2	All costs increase by 20% + all benefits decrease by 20%		14%

It is important to note that the figures quoted above are based on Pre-Feasibility Analysis; estimated quantities of the original scope of construction works are not available for audit. The cost estimate for the final scheme will vary due to:

- inaccuracies in the original estimate
- changed conditions with time
- changed standards with time
- revised or changed site layout
- designed savings or added facilities

Some typical causes of variations from the original estimate could be:

(i) provision of extra escape lanes due to changed traffic numbers or changes in local standards/expectations
(ii) longer platform lengths due to initial underestimation or changed conditions
(iii) altered internal connector road lengths to avoid new obstacles or fit in with the current layout
(iv) altered canopy lengths corresponding to changed platform lengths
(v) security and lighting additions to meet changed standards/expectations
(vi) Over bridge to allow for pedestrian access.
(vii) Installation of hydraulic infrastructure in view of changing rainfall patterns

Topographical study

The topographical survey available is not detailed, and has not been developed into a digital terrain model (DTM). A more detailed topographical survey is required in order to a) plot a DTM; and b) establish a coordinate system.

Survey benchmarks or permanent monuments have not been installed neither are the right of way limits staked. Orthophoto maps may be available for the area and should be utilized to verify the topographical survey. The available survey does not identify the presence of the existing utilities. During our site inspection we have identified two overhead power lines and a buried telecommunications cable that need to be further addressed.

Geotechnical study

The geotechnical study dated March 2008 has been made available. The report has been translated into English, from the original Mongolian revision. This investigation work was

[1] Multilateral Development Banks ordinarily set 12% as minimum acceptable EIRR.

carried out and the follow-on conclusion was made by engineering-geological company "Tavan Undes" based on the assignment given by the General Customs Authority of Mongolia and in accordance with agreement No. 05/2008 concluded by mutual consent between the two parties on 18 March of 2008.

Ten test pits each with the depth of 3.0 m and spaced approximately 75m in apart were dug by an excavator along the road and area for the purpose of making engineering-geological recordings of distribution, location and properties of subsoil, and taking samples for determining soil properties in a laboratory, pursuant to design development stages, technical conditions of planned buildings and facilities, MCGA's assignment and relevant provisions of construction norms and regulations. The location of the test pits are shown in Appendix map No. 1.

6 samples from each type of soil unearthed during excavation, altogether 12 samples, have been analyzed in a laboratory. Laboratory analysis was carried out in the central laboratory of "Construction and Architectural Corporation" state enterprise. The statistical processing of the laboratory analysis results is available for review.

Field investigation was carried out by engineer Altangerel and sample processing was carried out by engineer G. Badral and U. Ganbold. However in the tests performed CBR values for the subsurface have not been calculated. Tables 1 and 2 below show the summary of the test results.

Table 1.

No.	Physical properties	Index	Measuring unit	Name of soil and number of stratum	
				Sand loam subsoil (1)	Sandy subsoil (2)
1	Natural moisture	W	units	0.076	0.039
2	Liquid limit	W_L	--	0.204	-
3	Plasticity limit	W_P	--	0.155	-
4	Plasticity index	J_P	--	0.049	-
5	Density of mineralized sections	p_s	g/sm^3	2.70	2.66
6	Natural density of soil	p_n	g/sm^3	1.99	1.82
7	Density of compacted sections	p_s	g/sm^3	1.85	1.75
8	Porosity	n	units	31.37	34.30
9	Porosity ratio	e	--	0.458	0.527
10	Moisture level	S_r	--	0.442	0.19
11	Consistency	I_L	--	<0	

Table 2 shows mechanical properties of soil that have been determined in accordance with CN&R 2.02.01-94 (BNbD 2.02.01-94) – Design of Footing Soils and Foundations of Buildings and Facilities based on the physical properties of each type of soil.

Table 2.

No.	Mechanical properties	Index	Measuring unit	Name of soil and number of stratum	
				Sand loam subsoil (1)	Sandy subsoil (2)
1	Bond strength	$C_п$	кPa кg/sm^2	21 0.21	3 0.03
2	Angle of internal friction	фп	degree	29	38
3	Deformation modulus	E	MPa кg/sm^2	32 320	45 450
4	Elasticity modulus	Eуп	MPa кg/sm^2	80 800	120 1200
5	Design resistance	Ro	кPa кg/sm^2	400 4.0	400 4.0

12 test pits up to a maximum depth of 3.0m have been investigated. The data presented in this regard is not considered adequate for the design of the development for inspection yard and facilities.

- Geotechnical parameters have not been given for each layer.
- No evaluation carried out for the soil layers parameters.
- Lack of information of deep borehole logs.
- In situ tests are not presented.
- The executed laboratory tests are very limited.
- No settlement calculations for structures or embankments presented in this report
- CBR values are not given

We have determined that based on the current investigation a structural design of the pavement will be calculated. However for value engineering further are results are required in this area to more accurately verify the conditions encountered. Nevertheless, the information of this report could be used in combination with the future geotechnical investigation if desired.

The report does not recommend foundation types/elevations as an engineering design summary.

SECTION III: PROGRAM AND METHODOLOGY

1. Phase 1: Preliminary design and pre-evaluation activities

1.1 Project program

The Terms of Reference (ToR) for the consultancy envisages a 30 Day total **preliminary design** period.

With the commencing date of May 2008, this should allow initial preliminary only design to be completed by beginning of July 2008. The MCGA intends to let construction contracts to achieve construction before the winter season of this year. To achieve this aggressive schedule the construction contract needs to be let immediately. It means there is not adequate time for the detailed design phase.

To be able to best meet the MCGA schedules, it has been recommended to the MCGA that the best course to accomplish the deadlines will be to follow a design/build **(D&B) contract to be let by July 2008**. The program timing is good, allowing the contractor to utilise a full construction season (July-October). While site clearance and utility relocations are been performed parallel related design/build activities can be accomplished.

Unfortunately, D&B projects to date have been unheard of in Mongolia. Without reservations, to achieve the required goals, a Design/Build contract will be the best way forward.

The only other option will be to go with the local contract procedures, for letting the immediate civil works. This may pose some difficulties to meet the project schedules.

The main sources of the difficulties anticipated in the early stages may be:

(i). Award of the detailed deign contract.
(ii). delays in design and document review and turnaround
(iii). errors/inconsistencies in design documents
(iv). delays in approvals
(v). tender extensions

Bearing in mind that the prequalification, design, tender and contract documents render the Employer accountable for a large sum of money, it would be simplistic to recommend that these procedures be expedited. The current program of design and procurement tasks does not allow adequate time for reviews, corrections and approvals. Any recommendations to adopt proven International Contracting procedures will delay the anticipated schedules. There shall be no time for tender extensions.

The recommended strategy is as tabulated below:

Activity	ToR Program	Current Program
Resurvey and review of survey	n/a	n/a
Draft design and tender docs	2 weeks	2 weeks
Review and value engineering	n/a	2 weeks
Calling of tenders	n/a	1 month
Tender period	n/a	1 month
Tender Opening	**2 weeks**	**3 months**

The Preliminary Design Program activities have been divided into inception, field surveys, design, legal/contractual and procurement, all of which interrelate. During the **inception**

period, the activities have been concentrated on review of existing documents, information gathering and liaison in order to secure our understanding of the MCGA's objectives and select the most suitable design and procurement standards.

Concurrently with this, various reports are required to be studied, including topographic, geological and hydrological. As discussed in the last section, these are required to substantiate the preliminary designs and provide data for detailed designs. There must be sufficiently accurate information for road design. In turn, this will expedite subsequent land acquisition/utility relocation so as to avoid subsequent contractor delays and claims.

Preliminary **design** work has commenced in keeping with the level of information on hand. The degree of design that is suitable in all respects for tendering and constructing works in Mongolia under a local contract has to be prepared.

The design that will be carried out must fulfil several pragmatic objectives:

- Provide the contractor with a sound foundation to develop detailed design
- Bring forward design decisions regarding standards, speeds and layouts so they don't give rise to subsequent variations
- Satisfy the GoM Technical requirements so that initial approvals can be obtained prior to awarding the construction contract
- Define land acquisition and utility relocation requirements so that these activities can be resolved prior to awarding the construction contract
- Allow sufficient leeway for the contractor to offer value engineering cost savings/improvements to the Employer.

In this regard, the inter-relation between design and **legal and contractual** requirements is important. Whereas the design must be completed sufficiently speedily not to delay procurement, it must be sufficiently detailed to obtain technical approval so that permits and authorisations can proceed if they are required for this project in this Nation.

Adopted design proposals are outlined in the following sections. However, close liaison with the MCGA and the Ministry of Roads, Transport and Tourism is required to assess the optimal level of detail as the project progresses.

Procurement is planned to allow realistic time-spans for various approvals and contingencies. Design work has been programmed to fit in with the procurement schedule, and will be closely monitored with regular daily internal meetings.

1.2 Road and pavement design

The proposed new inspection area and the road to the scanner facility has to be designed. A detailed ground survey is generally required to proceed with any design. The vertical and horizontal alignments as well as the Inspection area pavement structure, needs to be designed to drain efficiently. Based on site reconnaissance and visual inspection, the road shall be horizontally a straight line connecting two points, but will require vertical designs for drainage. The inspection area drainage can be designed to flow through underground drains through a drainage network, or designed as surface flow to naturally drain away to the side ditches from gravity.

The recognition that good subsurface drainage can extend the life of a pavement also has to be considered. During coordination meetings with the MGCA, the delegates present have requested to design the surface flow drainage system, as the subsurface drains will be prohibitive given the present budgets. Having examined the available rain fall records, in the absence of the required frequency, duration and intensity figures, and from records of the

performance of the existing inspection facility, the surface flow option for drainage will be adopted.

There are two power lines crossing the road alignment to the scanner that will need to be addressed for vertical headroom clearance. From visual inspections, these lines will need to be raised.

It has been confirmed by the MCGA that the land acquisition for the proposed plans are not an issue.

1.2.1 Horizontal alignment

A straight road alignment, without any horizontal curves. No super-elevation required.

1.2.2 Overtaking lanes

The Pre-Feasibility Study does not provide any data for traffic studies. It is therefore not possible to recommend the number of lanes required for projected future growth. Based on the current observations of the existing road to the scanner, it is recommended to consider a two lane dual carriageway with paved shoulders.

1.2.3 Recommended design criteria to be employed during the design phase

The MCGA has not provided a road design criteria to meet the required local standards.

Since the required design criteria for the works has not been developed, the minimum International standards are recommended, to perform equal to or better than the Mongolian requirements.

The design will cover horizontal alignment, longitudinal profiles, cross-sectional elements, junctions, and intersections as well as passing lanes where required. The table below shows the design parameters used for the design phase for a design speed of 60 km/h.

Design Parameters		Design Phase
Cross-section	Platform	18.00 m
	Traffic Lanes	3.50 m
	Shoulders (surfaced)	1.50 m
	Shoulders (marginal – gravel)	0.50 m
Horizontal and Vertical Alignment of Cross Sections	Minimum horizontal radius	310 m
	Minimum convex vertical radius	4,500 m
	Minimum concave vertical radius	2,200 m
	Maximum longitudinal gradient	4%
	Minimum longitudinal gradient	0.30%
	Minimum crossfall in straight sections	2.5%
	Maximum crossfall in curve sections	7%
	Minimum sight distance (see Note 1)	100 m

The above design parameters shall comply with the Mongolian Ministry for Roads, Transport and Tourism.

1.2.4 Plan & profile drawings

Gradients

- In accordance with International Standards and Recommended Practice, for road surface drainage, the longitudinal gradient should not be less than 0,3%. From the visual inspections of the site, meeting these standards shall not be difficult.

Vertical curvature

- In accordance with International Standards and Recommended Practice, the minimum radii for convex vertical curves to ensure sight distances shall be met for the given design speed and again is not anticipated to be any problem given the flat terrain.

Typical cross sections

Recommended main characteristics to be adopted for the connector road to the scanner;

- The platform width 18.0 m
- Carriageway 2x3.5 m
- Shoulders (surfaced) 2x1.5 m
- Shoulders (marginal – gravel) 2x0.5 m

Recommended detailed road design methodology;

Use digital alignment / CAD software to:

- Design with 3D alignment, including transitions.
- Application of super elevation is not anticipated. Checking to local standards will be required. Due to the relatively flat terrain, particular attention should be given ensure efficient drainage of surface water.
- Design carriageway widening for extra lanes, lay-bys or junctions.
- Junction design.
- Design earthworks.
- Interactive editing of cross sections.
- Calculate quantities such as earthworks volumes, pavement surfaces, fill and cut surfaces etc.
- Provide drawings and quantities.

To complete the cross sections the program must be provided with the earthworks details. For this contract it is anticipated there will be minimum earthworks and require minimum imported fill. Investigations have to be conducted to establish available local sources from "borrow" areas or from existing quarries for any required imported fill, and road works. The design of the road pavement shall be based on assumed material properties. The actual material properties available for construction may vary. The MGCA is encouraged to survey the area for available borrow pits.

Having prepared the preliminary alignment design and junctions on the base survey information (not available), the detail shall be transformed to AutoCAD files for final drawing production. These drawings will be prepared for plotting using horizontal and vertical scales for final construction. The drawings will include the following information:

- Natural grounds levels (base survey information including ground control points and level benchmarks),
- Design levels (vertical profile and carriageway offset information),
- Horizontal and vertical curve details (horizontal curves will be shown in plan and profile, vertical curves will be shown in profile),
- Running chainage (will be shown in both plan and profile),
- Side drain location (position will be shown in plan, levels will be shown in profile),

- Structures such as culverts (structures will be shown and labeled in both plan and profile),
- Ancillary equipment (locations of fencing, safety barriers etc will be shown in plan).

Some typical cross sections will be prepared for inclusion in the tender dossier. It is not anticipated that other than random cross sections will be needed due to the flat terrain. However, if necessary the CAD program can print cross sections at intervals as desired. However for earthworks measurement this will not be necessary if digital terrain modeling and computer design are used.

A list of anticipated road drawings is provided in Appendix 1.

Design methodology

Alignment Plans showing the salient features of the proposed road shall be prepared. Advance typical preliminary road cross section drawings will be submitted to the MGCA as preliminary design.

All of the following factors will be closely considered:

- The type of soil, its load bearing capacity and the chemical composition
- The type and form of the foundations and the substructures
- Ease of construction and maintenance with regard to safety, availability of manpower, plant and material resources.
- The relative costs of different forms of construction, including an assessment of the whole life maintenance costs.
- Special concern to details in order to improve durability for example technical specifications for safety barriers, crash barriers and pedestrian guardrails and all other road furnishings.
- An aesthetic appreciation of the different structural forms, considering in particular the way the inspection platforms details affect the appearance of the elevation.
- Standardization of dimensions and components to enable economy in the use of formwork and plant.
- Ease of access for inspection and maintenance of facilities such as drainage
- Ease of access for any utility infrastructure, underground or overhead.
- Durability against the adverse effects of climatic extremes and ingress of de-icing salts.
- Protection of substructures
- Utilization of locally available plant, labor and material resources
- Produce structures that are aesthetically well proportioned to fit in with the landscape and pleasing to view from every perspective.

Conclusion

Based on the review of the available engineering reports and the site reconnaissance, supplemental topographical, geotechnical and hydrological information will further help the MCGA in reducing the construction costs through value engineering, during detailed design.

1.3 Procurement

1.3.1 Prepare pre-qualification documents

The Consultant will assist MCGA in preparing the necessary documents to establish a shortlist of pre-qualified contractors if current schedules permit. These documents will be developed with the goal of providing a “standard document” for use on similar future contracts.

1.3.2 Preparation of tender dossier

These documents will, as required, be prepared in accordance with the most recent version employed by the Mongolian Authorities. Due to the urgency in letting the construction contract, it is suggested to utilize the current Contracts Documents that are available within the MGCA.

The consultant will recommended to the MCGA the use of lump sum schedules transferring the measurement risk to the contractor through a principally lump sum contract. However the lump sum contract format will contain items for all principle aspects of the works, with major quantity breakdowns. The Employer's Requirements will also detail the further price breakdown to be provided to the Engineer and specify the nature of the "supporting" documents, with outline "measurement", which will be required to support interim payment application, and in conformance with the Mongolian Laws.

1.3.3 Design report

A draft design report with draft bidding documents will be prepared for submission to meet the schedules.

The bidding documents may comprise:

- Instruction to Bidders
- Form of Tender Security
- Form of Tender and Form of Agreement
- General and Particular Conditions of Contract (if required)
- Form of Performance Bond and Form of Guarantee for Advance Payment
- Employer's Requirements
- Preliminary Design Drawings
- Information Document for Bidders (non-contractual information).

The Illustrative Preliminary Design package may comprise:

- The Currently available Survey Report
- Preliminary Road Alignment
- Existing Geotechnical Report
- Design of pavement
- Typical Engineering Drawings (formats to be agreed)
- Specifications
- Mongolian Conditions of Contract
- Employer's Requirements
- Utility Relocation Plans

ANNEX A: DRAWINGS LIST

ANNEX A: DRAWINGS LIST

Preliminary engineering drawings list

General drawings

TS - GE-01	Table of contents / drawings index
TS - GE-02	Location plan
TS – GE 03	Abbreviations and legends

Standard drawings

Inspection yard typical drawings

TS - IY-01	Site layout plan 1
TS - IY-02	Site layout plan 2
TS - IY-03	Grading and drainage plan
TS – IY 04	Utility relocations
TS – IY 05	Utility layout plan
TS - IY-06	Typical inspection facility cross sections 1
TS - IY-07	Typical inspection facility cross sections 2
TS - IY-08	Typical road cross sections
TS – IY 09	Utility manholes
TS – IY-10	Staging plans
TS – IY -11	Sand protection levy

Architectural drawings

TS-AD-01	Building 1 – Customs offices layout
TS-AD-02	Building 2 – Export office layout
TS-AD-03	Building 3 – Guard house layout
TS-AD-04	Building 4 – Emergency repair station layout
TS-AD-05	Building 5 – Fire / first aid station layout
TS-AD-06	Building 6 – Public restrooms
TS-AD-07	Building 7 – Inspection booths
TS-AD-08	Building 8 – Canopy detail
TS-AD-09	Building 9 – Inspection islands / platforms