

Important Notice

This document contains the Request for Proposal for the study “**Preparation of Feasibility and Detailed Project Report for Mass Rapid Transit System in Coimbatore**”. This document is applicable only for the following shortlisted firms based on the Expression of Interest document submitted earlier and approved by KfW.

1. M/s. Brenner BERNARD, BERNARD Ingenieure and TUV SUD
2. M/s. CPCS, ImaCS and LRTC
3. M/s. PADECO, Ardanuy and ICT
4. M/s. RINA Consulting and Urban Mass Transit Company Ltd. (UMTC)
5. M/s. SYSTRA and RITES

Only the above preselected consortium/consultants are requested to submit their proposal.



German Financing Corporation with India

Request for Proposal (RFP)

for

Selection of Consultant

for

**Preparation of Feasibility Study and Detailed Project
Report for a Mass Rapid Transit System in
Coimbatore**

June 2018

Chennai Metro Rail Limited (CMRL)
Admin Building, CMRL Depot,
Poonamallee High road,
Koyambedu,
Chennai - 600 107.

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Documents available on KfW's website:

- <https://www.kfw-entwicklungsbank.de/Internationale-Finanzierung/KfW-Entwicklungsbank/Publikationen-Videos/Publikationsreihen/Allgemeine-Geschäftspublikationen-Richtlinien/>
- Guidelines for the Assignment of Consultants in Financial Cooperation with Partner Countries; August 2016

Abbreviations

AMC	Accompanying Measure Consultant
CV	Curriculum Vitae
DNP	Defects Notification Period
EU	European Union
FIDIC	International Federation of Consulting Engineer
ILO	International Labour Organization
ISO	International Standardization Organization
KfW	Kreditanstalt für Wiederaufbau Development Bank
MoHUA	Ministry of Housing and Urban Affairs
PEA	Project Executing Agency
PMU	Project Management Unit
RBI	Reserve Bank of India
SCT	Special Conditions of Tenders
TNA	Training Needs Assessment
TOR	Terms of Reference
GCT	General Conditions of Tender
EMD	Earnest Money Deposit
CMRL	Chennai Metro Rail Limited

GENERAL CONDITIONS

1 TENDER PROCEDURE

1.1 General

The rules of the present Tender are in accordance with (and have to be read in conjunction with) the latest version of the KfW's "Guidelines for the Assignment of Consultants in Financial Cooperation with Partner Countries; August 2016" The Conditions of Tender contain the General Conditions (Chapter 1 to Chapter 6) and the Special Conditions of Tender (SCT) for this particular tender (Chapter 7). The Special Conditions of Tender are referred to in the text by "SCT" and summarized in Chapter 7.

Bidders are advised to thoroughly study the Guidelines, the General Conditions and the Special Conditions to avoid downgrading or rejection.

1.2 Project Executing Agency

The Project Executing Agency subsequently called PEA is indicated in the SCT.

1.3 Presentation of Tender

The Tender should be submitted in one sealed package containing three clearly marked separate and also sealed envelopes: one with "EMD and tender document fee", one with "Technical Proposal", and the other with "Financial Proposal". If financial information is included in the Technical Proposal, the Tender shall be rejected.

The package shall display the following information:

- the name of the institution and the address where Tenders have to be sent to;
- the title of the call for Tenders such as indicated in the invitation letter;
- the Consultant's name;
- the following words clearly visible: "Call for Tenders – Not to be opened by the Postal Service".

1.4 Language of the Tender

The technical and financial proposals as well as all communication related to the present Tender shall be prepared in the language indicated in the SCT.

1.5 Submission of Tender

Tenders should be sent in one (1) clearly marked and signed original, one (1) copy and a soft copy of **technical proposal only in CD/DVD** to be delivered in person, against confirmation of receipt, to the address indicated in the SCT.

The deadline for receipt of Tenders is specified in the SCT. All Tenders received after that deadline will be rejected automatically without being evaluated.

1.6 Cost of Tender document

The Tender document will be available at CMRL office and official website www.chennai-metro-rail.org from 27/06/2018 to 09/08/2018 till 15:00 hrs (IST) (During CMRL working hours and on working days).

The RFP document can be collected from the office of the Chennai Metro Rail Limited on payment of INR 30,000/- (Rupees Thirty Thousand only) in the form of Demand Draft drawn on any Nationalized bank/Scheduled Bank in India in favour of “Chennai Metro Rail Limited”, payable at Chennai.

Document can also be downloaded from official website of the Authority www.chennai-metro-rail.org. If downloaded from website, the proposals shall be submitted along with non-refundable Document Fee of INR 24,000 (Rupees Twenty Four Thousand only) in the form of Demand draft drawn on any Nationalized bank/Scheduled bank in India in favor of “Chennai Metro Rail Limited”, payable at Chennai.

1.7 EMD

EMD amount of INR 9,50,000 /- (Nine Lakhs Fifty Thousand only) in the form of demand draft drawn on any Nationalized bank/ Scheduled bank in India in favor of “ Chennai Metro Rail Limited”, payable at Chennai. The EMD amount will be refunded to all bidders after completion of tender procedure.

1.8 Interest Free Security Deposit (IFSD)

Consultant shall pay to CMRL a refundable interest free security deposit of 5% of total contract amount in the form of a Demand Draft within 15 (fifteen) days of issue of acceptance letter. The interest free Security Deposit will be refunded by CMRL only on satisfactory completion of the contract period taking into consideration that all CMRL dues are cleared.

1.9 Validity Period of Tenders

Unless otherwise stated in the SCT the period of validity of the Tenders counted from the deadline for receipt of Tenders is 180 days.

1.10 Information Visit to Site and Pre-Bid Meeting

Consultants are invited to carry out a site visit in order to familiarize themselves with the local conditions relevant for the execution of the services. All site visits are at the Consultant’s own expense and risk. For further clarifications a Pre-Bid Meeting shall be arranged with PEA.

1.11 Requests for Additional Information

Any question, communication or requests for additional information concerning this call for Tenders are only permitted in writing (email) and up to pre-bid meeting. Such requests are to be sent to the address indicated in the SCT. If any clarification of the call for Tenders proves necessary, the answers will be communicated simultaneously in writing to all Consultants and the same will also be published in CMRL website mentioned in website.

1.12 Amendments to the Tender Document

Any change made to the Tender document during the Tender period by the PEA will be

communicated forthwith in writing to all shortlisted Consultants who have been provided with the Tender documents, together with notice of any extension of the Tender period which the PEA in accordance with KfW may consider necessary to enable Consultants to take account of such a change.

1.13 Association

An association between preselected bidders/consortium is not allowed and will lead to rejection of tender

1.14 Pre-selected Consultants

If a pre-selection has been undertaken, a list of pre-selected Consultants is given in Annex B to these Conditions of Tender.

2 CONTENTS OF THE TENDER

2.1 Technical Proposal

Unless otherwise stipulated in the SCT the technical proposal shall contain:

a) Critical Analysis of Project Objectives and Terms of Reference (TOR)

The Consultant is explicitly encouraged to present a detailed critical analysis and the Consultant's interpretation of the project's objectives and the TOR. This might encompass critical comments and doubts about the suitability, consistency and feasibility of individual aspects and the concept as a whole, if any. The methodology suggested must take constructive account of these.

b) Proposed Concept and Methods

This section will contain:

- Conceptual and methodological approach proposed to carry out the services. In this context, the Consultant is explicitly encouraged not to repeat the TOR but to show the suitability of his concept in regard to the TOR and his comments made on these;
- A working programme (bar chart) showing clearly the different project phases as well as the main tasks planned, their duration and their interactions. The chart shall also include milestones, deadlines for discussions, decisions and submission of reports;
- A staff assignment matrix clearly showing the proposed team of experts, backstopping and supporting staff and the activities for which they will be assigned.
- A staffing schedule clearly showing times and places of effective assignment for each professional. The chart shall be completed or accompanied by a table stating the responsibilities and precise periods of duty for each professional by places of assignment. These periods shall be broken down to each project phase. In this table the assignment of expatriate and local staff will be treated separately. The Consultant is encouraged to include junior staff in his team subject to available guidance within a team headed by senior professional staff and application of adequate rates. If certain tasks are not exclusively performed at site, the Consultant has to describe how the execution and co-operation between site and home office staff is assured;
- A statement of work organization and an organisation chart showing the Consultant's (association's) internal organization as well as the interactions with the PEA and KfW as well as with other stakeholders. Responsibilities within the project team have to be defined;
- Envisaged back-up services by the home office for the team working locally on technical and administrative questions that could arise during project implementation as well as for the controlling and monitoring of the work;
- Procedures for quality control management of services (reports, documents, drawings), including those prepared by associates, sub-consultants and local partners, before submission to the PEA and KfW. Plain reference to ISO 9001 is not considered to be adequate;
- Planned logistics and facilities for the execution of the services.

The Consultant is invited to comment those items of the above mentioned fields that require additional explanation. The texts and information should be compiled and presented in a way

that is related to the project. Consultants shall refrain from long explanations in the style of a textbook. The presentation of diagrams, tables and graphics is preferred.

c) Key Staff

The Consultant shall provide a detailed description of tasks to be performed by each team member (including back-up staff in the home office) as well as details on the selection and experience of the proposed members with regard to their tasks.

Furthermore, the Consultant shall provide updated curricula vitae (CV) of the proposed key staff and professional support staff according to the model given in Annex C-1. Key staff should have adequate education, professional experience and experience in the region. Unless stipulated otherwise in the SCT, region includes the country and neighboring countries with similar political, socio-economic and cultural conditions. It is particularly expected that key staff has project - and job/post-related experience and has completed similar tasks in similar projects of similar magnitude and with international financing. The CV shall indicate whether the proposed staff member is part of the Consultant's permanent personnel or not. To support transparency and for ease of evaluation the Consultant has to summarize the essential data of proposed key staff according to the Table in Annex C-2. In case of ambiguities the CV prevails.

Key staff presented in the Consultant's proposal may not be replaced without the prior approval of the PEA and KfW. The Consultant shall only replace staff with a person of equal or better qualification.

d) Sub-contractors

The Consultant will clearly specify the services to be carried out by sub -contractors other than those being part of the Consultant/Association. This basically includes all additional services. He shall indicate the firms to whom he intends to sub-contract such services.

e) Declarations

The Consultant shall provide the following declarations issued after the date of the invitation letter:

- Declaration of association duly signed by all partners and specifying clearly the type of association and the lead firm. Sub-contractors also need to submit a declaration of association.
- Declaration of affiliations (no conflict of interest): In a duly signed declaration, the Consultant has to reveal any links with other firms which may present a conflict of interest in providing the envisaged services. He must give a binding declaration that, should he be awarded the contract, the firms with which he is associated will not intend to take part in the project in any form. For an association, all members must provide this declaration. Sub-contractors do not need to submit the declaration. (see Annex G)
- Declaration of undertaking: A duly signed declaration pursuant to Annex D shall be included (one separate declaration for each member in case of an association). Sub-contractors do not need to submit a declaration of undertaking.

2.2 Financial Proposal

Based on the quantities of staff and other services the Consultant will submit a Financial Proposal. All rates will be in the currency indicated in the SCT. The financial proposal shall clearly indicate the total cost of consultancy in both figures and words. If any discrepancy is found in quoted financial figure and words, the financial amount mentioned in words will be considered for evaluation. The financial proposal should be inclusive of all cost and taxes. All cost associated with the assignment shall be included in the Financial Proposal and it shall take into account of all expenses.

The Financial Proposal shall contain the following information and be structured as detailed in Annex E.

1. Remuneration (Key and sub key professional staffs)
2. Travel and accommodation (including local conveyance)
3. Report Preparation (documents, drawings, etc.)
4. Primary Surveys (Traffic surveys, Topographic, Geo tech, etc.)
5. Others (Site Office, Study tour, etc.)

3 PAYMENT CONDITIONS

3.1 Currency

All payments will be made in the currency (currencies) indicated in the SCT.

3.2 Taxes and Duties

Unless otherwise stated in the SCT the Tenderer shall prepare his offer under the assumption that he and his foreign staff shall be exempted from all taxes, duties, levies and other charges as stipulated in the Standard Consulting Contract of KfW.

3.3 Price Adaptation

Unless otherwise indicated in the SCT all unit and lump sum rates presented in the Financial Proposal, with the exception of reimbursable, shall be considered fixed for a period of two (2) years from the end of the validity period. For services beyond that date, price adjustment will be accepted applying the following escalation formula:

$$P_n = P_o * (0.15 + 0.85 * I_n / I_o)$$

P_n = new revised price

P_o = original price

I_n = new index of the month the respective services are rendered

I_o = original index of the month the validity expires

Price adjustment will be calculated using the index stipulated in the SCT.

3.4 Terms of Payment

The Consultant shall assume for the preparation of his Financial Proposal that payments will be made in the following sequence:

S. No.	Description	Cumulative Timeline	Payment
1	Inception Report	1 st month	10%
2	Final Report Phase A	5 th month	30%
3	Draft Final Report Phase B	11 th month	30%
4	Approved Final Report Phase B	12 th month	30%

The payment release is subject to the approval of all reports by the PEA and the final payment is subject to the approval of overall project report by PEA and KfW.

3.5 Guarantees

Unless otherwise stated in the SCT neither a tender guarantee nor a performance guarantee is required

4 ORGANISATION OF SERVICES

4.1 Project Duration

The duration of the project from commencement of services until presentation of the draft final report is indicated in the SCT. Approval periods for review and comments by PEA and KfW are indicated in the SCT. These are included in the project completion period.

4.2 Services Required

The services must satisfy in all respects the requirements laid down in the Terms of Reference (TOR) given in Annex A which will be part of the Consulting Contract. The preparation of the Consultant's proposal includes a critical verification of these services and, if necessary, their completion or modification according to the Consultant's own assessment of the local situation and his professional experience in order to achieve the set project objectives. In this context, the local standards and laws will be respected.

4.3 Performance of Services

The consultant should establish a project office in Coimbatore and Chennai city for better coordination and communication with the PEA for successful completion of project. The designated key personals for the project should be present and render their service in the project office for the specified period as mentioned in the Terms of Reference (Refer Annexure A)

The Consultant shall co-ordinate all his activities with the project coordinator designated by the PEA. All official communications to the PEA concerning the project are to be addressed simultaneously to KfW.

Unless stipulated otherwise in the SCT the Consultant will render his services in the project country. He will integrate the staff of the PEA as much as possible in his daily work in order to ensure a maximum of know-how transfer. In case services are to be performed outside the project country, the Consultant shall submit detailed proposals in his technical offer.

4.4 Contribution of PEA

The Consultant will take into account in his financial proposal that the PEA will

- provide the Consultant with all available information, data, documents, documentation, etc. in his possession and necessary for the completion of his services, free of charge, for the duration of the project;
- ensure that the Consultant has all the necessary permits to obtain further information (see above);
- Provide other contributions as stipulated in the SCT.

5 TENDER EVALUATION

5.1 General

The selection of the Consulting firm for the execution of services will be made in accordance with the KfW's latest "Guidelines for the Assignment of Consultants in Financial Cooperation with Partner Countries". The latest version of the KfW Guidelines can be downloaded from KfW's website www.kfw.de.

5.2 Technical Proposal

Only the envelope with "EMD and document fee" and the envelope with "Technical Proposals" will be opened on the submission date. Financial Proposals will remain sealed until the technical evaluation is completed.

The quality of each technical proposal will be evaluated on a scale of 0 to 100 points, according to the criteria given in the SCT, which will be examined in accordance with the requirements as indicated in the Terms of Reference.

If there are minor omissions in relation to the TOR, points will be deducted. Omissions that restrict comparison with other bids and disrespect of the proposed structure and content of the proposal may lead to the exclusion of the applicant.

5.3 Financial Proposal

After evaluation of the Technical Proposal, the Financial Proposals of those Consultants will be opened whose technical Proposal achieved a minimum of 75%.

After correcting any arithmetical errors, the price quotations will be assessed using the total price (not including customs and excise duties, taxes, levies and other charges in the project country). Optional offers of services will only be included in the assessment of price quotations if all bidders were requested to submit such offers in accordance with the terms of the invitation to tender. Any items missing in individual offers but necessary will be added. This will be done on the basis of the highest price of the corresponding cost item of the other Consultants.

5.4 Final Evaluation

For the purpose of a combined evaluation the Technical Proposal of a Consultant will be weighted 70% as follows:

$$P_T = 70 * T/T_0, \text{ with}$$

P_T = attributed score for Technical Proposal,

T = Consultant's score in the technical evaluation,

T_0 = highest 'technical' score of all Consultants.

Unless otherwise stipulated in the SCT the Financial Proposal of a Consultant will be weighted 30 % as follows:

$$P_F = 30 * C_0/C, \text{ with}$$

P_F = attributed score for the Financial Proposal (points),

C = Consultant's corrected price of the Financial Proposal,

C_0 = lowest corrected Financial Proposal.

The total score of the Tender

$$\text{is } \mathbf{P = P_F + P_T}$$

The client will select the consultant/consortium with highest overall total score of the Tender.

5.5 Consulting Contract

The Technical and Financial Proposals of the successful Consultant will become part of the Contract to be concluded. PEA and KfW, however, reserve the right to negotiate and adapt those parts of the Consultant's proposal which are considered inadequate with the requirements of the work.

After receipt of KfW's approval, the Contract with the selected Consultant will come into force upon signing by the Consultant and the PEA and achievement of effectiveness of the Project funding.

6 OTHER

6.1 Unsuccessful Consultants

After the evaluation of the Technical Proposals the PEA will inform in writing those Consultants that have not achieved the minimum required score. Their Financial Proposals will be returned unopened.

After the conclusion of the negotiations and receipt of KfW's consent to the negotiated Contract, the remaining Consultants will be informed in writing by the PEA about the rejection of their proposals.

6.2 Cancellation of Tender

The tender procedure may be cancelled, prior to awarding the Contract, without thereby incurring any liability to the Consultants, and notwithstanding the stage in the procedures leading to the conclusion of the Contract, if

- there was no adequate competition;
- none of the bids for services achieved the required minimum number of points;
- fundamental technical or financial aspects on which the invitation to tender was based have changed significantly prior to award of the contract; or
- the price quotations are obviously and clearly excessive. In that case, the alternative is either to hold a new tender procedure, with or without prequalification, or to commence negotiations on the price with the bidder who came first.

In the event of cancellation of the Tender procedure, Consultants shall be notified thereof by the PEA. Such Consultants shall not be entitled to compensation.

6.3 Other conditions

Other tender conditions or constraints, if any, are indicated in the SCT.

7 Special Conditions of Tender (SCT)

GCT 1.1	The Tender is carried out by the Chennai Metro Rail Limited (CMRL), India
GCT 1.2	The Project Executing Agency (PEA) is Chennai Metro Rail Limited, CMRL Depot, Admin Building, Poonamalle High road, Koyambadu, Chennai-600107. Ph: +9144 23792000, Fax: +9144 23792200 Web: www.chennaietrorail.org
GCT 1.4	The language of the proposal and of all communication is English unless otherwise stated in the letter of invitation.
GCT 1.5	The original proposal (hardcopy, technical and financial proposal in separated sealed envelopes, soft copy of technical proposal only in CD/DVD) shall be sent to the Project Executing Agency (PEA) to the address or listed below or handed over. Chennai Metro Rail Limited (CMRL) CMRL Depot, Admin Building, Poonamalle High road, Koyambadu, Chennai-600107.
GCT 1.5	Date of submission is 10-08-2018, 15:00 hrs Indian Time
GCT 1.6	Date of purchase of bid document: The Tender document will be available at CMRL office and official website www.chennaietrorail.org (from 27-06-2018 to 09-08-2018 till 15:00 hrs (IST) (During CMRL working hours and on working days).
GCT 1.6	Unless otherwise stated in the invitation letter the Tender validity is 180 days
GCT 1.7	A pre-bid meeting will be held by the Project Execution Agency on 11-07-2018 at 11:00 am Indian Time . The bidders are not free to visit the Project Executing Agency office before the pre bid meeting. Participation in the meeting is the decision of the bidder and participants shall meet at the following address: Chennai Metro Rail Limited (CMRL) Admin Building, CMRL Depot, Poonamallee High road, Koyambadu, Chennai - 600 107. Questions which are planned to be raised during the pre-bid meeting shall be sent to the Project Executing Agency 2 days prior to the meeting.
GCT 1.8	Any question, communication or requests for additional information concerning this call for Tenders are only permitted in writing until 13 th July 2018. Requests shall be sent in writing (Email) to the following address: Project Execution Agency R.M. Krishnan – gmpd.cmrl@tn.gov.in

GCT 1.10	An association between preselected bidders is not allowed and will be rejected
GCT 2.2	The Financial Proposal shall include - as a separate item - the taxes, duties, levies and other charges required by law at the date of preparation of the proposal.
GCT 2.2	The services of the Consultant shall include a study tour by the officials of GoTN/CMRL not exceeding six (6) officials in 1 or 2 countries/cities, where MRTS is operating, for a maximum period of five (5) days. The tour shall facilitate a better understanding of officials on MRTS system not operated in India. The consultant shall include a provisional sum of 20,000 Euro for this study tour.
GCT 2.2 c)	Air fares will only be accepted as travels in “economy class”. This specification is to be used in the financial proposal of the Consultant – Annex E.
GCT 2.2 g)	Vehicles for local transport shall be hired or from the Consultants own car part; Handing over to the PMU is not required.
GCT 2.2 h)	<p>The Consultant has to provide professional indemnity (PII) insurance (technical Consultancies / engineering services) for his services covering an amount of at least 50 % of the Contract Value. The insurance coverage against the risks shall be as follows:</p> <p>(a) employer’s liability and workers’ compensation insurance in respect of the experts and Sub-consultants in accordance with the relevant provisions of the applicable law in the Client’s country, as well as, with respect to such Experts, any such life, health, accident, travel or other insurance as may be appropriate; and</p> <p>(b) Insurance against loss of or damage to</p> <p>(i) equipment purchased in whole or in part with funds provided under this Contract,</p> <p>(ii) the Consultant’s property used in the performance of the Services, and</p> <p>(iii) Any documents prepared by the Consultant in the performance of the Services.</p>
GCT 3.1	The currency of the proposal shall be Indian Rupees (INR)
GCT 3.2	<p>The Tenderer shall prepare his offer under the assumption that he shall be exempted from taxes, duties, levies and other charges as required by the Republic of India and as stipulated in the Standard Consulting contract of KfW.</p> <p>Nonetheless, it is the duty of the Consultant to carefully analyse the fiscal local conditions and implications on him and consider this in his offer. In case taxes, duties, levies and other charges are not exempted; these shall be invoiced separately and reimbursed by the PEA as per the estimation included in the financial proposal as per actual vouchers and receipts.</p> <p>Consultants, which will carry out the consultancy services in the Republic of India under this program, are subject to registration according to the national law on registration of consultants.</p>

GCT 3.3	The rates of the proposal shall be fixed for entire period of the project.			
GCT 3.4	<p>Initial Payment: 10% of contract value upon submission of Inception Report.</p> <p>Interim Payment 1: 30% of contract value upon submission and approval of Final report for Phase A by PEA and KfW.</p> <p>Interim Payment 2: 30% of Contract value upon submission and approval of Draft Detailed Project report for Phase B by PEA and KfW</p> <p>Final Payment: 30% of Contract value upon submission and approval of Final Detailed Project Report based on latest MOHUA Appraisal Guidelines for Metro Rail Project Proposals (September 2017) by the PEA and KfW.</p> <p>Invoices shall be addressed to the Employer (CMRL), C/o of KfW, excluding local taxes. Local taxes will be reimbursed to the consultant by CMRL in INR. In this regard the consultant shall submit a separate invoice to CMRL. This would be released only after the release of the main invoice.</p>			
GCT 4.1	The project duration from the date of commencement of services until the submission of final report is 12 months			
GCT 4.1	The approval period of draft final report for Phase A (Feasibility Study) and draft final report Phase B (DPR) shall be four (4) weeks and for the rest of the documents and reports the approval period shall be two (2) weeks.			
GCT 4.4	The PEA will provide additional services as described in the terms of reference			
GCT 5.2	The technical evaluation will be made using the following criteria and maximum points. <u>Number and duration of assignment of each expert is listed in chapter 5 of the ToR.:</u>			
	1.	Concept and Methodology	Points	35
	1.1	Clarity and completeness of the tender	5	
	1.2	Critical analysis of the project objectives and the TOR	5	
	1.3	Approach and Methodology	5	
	1.4	Team Composition	5	
	1.5	Activity Schedule	5	
	1.6	Manning Schedule	5	
	1.7	Proposed Concept for elaboration of relevant E&S documentation	5	
		<u>A bidder has to achieve a minimum of 3 points under 1.7 (E&S) in order to pass the technical evaluation</u>		
	2.	Qualification of Proposed Staff		65
2.1	Key staff			
	1. Team Leader cum Urban Transport Planner - 12	17		
	2. Project Coordinator - 5			

	<p>2.2</p> <p>Experts</p> <ol style="list-style-type: none"> 3. PT Specialist Rail based Operation – 6 4. PT Specialist Rail based infrastructure – 6 5. Road Traffic Engineer – 5 6. MRT Operational Expert - 5 7. Transport Economist – 3 8. PT Financing Specialist – 3 9. Socio-Economic Expert – 2 10. Transport planner/Modeller – 2 11. Land use and Town Planner – 2 12. Architect/Designer – 2 13. Institutional Specialist – 4 	40	
	<p>2.3</p> <p>ESIA - Expertise</p> <ol style="list-style-type: none"> 1. Principal Environmental and Social Specialist - 4 2. Environment and Social Specialist - 4 <p><u>A bidder has to achieve a minimum of 5 points under 2.3 in order to pass the technical evaluation</u></p>	8	
	Further specialists, back stopping staff and support staff		
	Total (maximum)	100	

Annexure A

Terms of Reference



**Consulting services for Preparation of Feasibility Study
and Detailed Project Report for a Mass Rapid Transit
System in Coimbatore**

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1 Introduction

1.1 Background

Coimbatore City is known as the Manchester of South India. It is the second largest city in Tamil Nadu and it is well connected to the rest of the state region by rail, roads and air. It is the largest industrial centre in Tamil Nadu after Chennai. Coimbatore City encompasses an area of 257.04 sq. km and the Local Planning area, encompassing Coimbatore urban agglomeration and its peripheral area covers an area of 1287 sq.km. Population of Coimbatore city and local planning area in 2011 was 16.11 lakh and 19.20 lakh and is steadily increasing with a yearly growth rate of about 3%. Residential (71.59%) and industrial areas (18.19%) are the major land use patterns within the local planning area. During the last two decades Coimbatore has witnessed enormous economic growth, growth in population, increased urban sprawl, increased vehicle ownership and consequent traffic volumes far higher than expected level.

Keeping in mind the growing importance of the transport sector in the City's overall development and also to improve the share of public transportation, GoTN has decided to implement a Mass Rapid Transit system like Metrorail/LRT/BRT in Coimbatore City, following Chennai, as a measure to mitigate the increase in traffic. Thus, the announcement made by Hon'ble Chief Minister of Tamil Nadu under Rule No-110 regarding introduction of Metro Rail Project in Coimbatore City. Further, the Chennai Metro Rail Limited (CMRL) will undertake the assignment for preparation of a feasibility study cum Detailed Project Report (DPR) through finance assistance from German funding agency, KfW.

This feasibility study cum detailed project report (DPR) is designed to be open to different options of MRT systems. The project is aimed at introducing a fast, reliable and high-capacity public transport system in Coimbatore that not only contributes to the reduction of transport-related greenhouse gas (GHG) emissions, but also provides better access and modal choice to its users, promotes access by non-motorized transport (NMT), increases transport safety, and improves air quality. The major transport corridors should be planned in an integrated multimodal approach, where users can conveniently move from one system to the next without any additional cost.

Presently, public transportation is provided by the Tamil Nadu Transport Corporation (TNSTC) which operates city and mofussil bus service in Coimbatore. These are supplemented by private operators who are licensed to operate specific routes. The share of public transport and private vehicle is 42% and 34% respectively. However, share of public transport has been stagnant in recent years owing to a combination of inadequate investments in improving quality and capacity of public transport, overlapping bus routes, sharp increase in personal vehicle ownership, little infrastructure for walking and cycling, etc.. Further, Per Capita Trip Rate (PCTR) was assessed at 1.43 (including walk) and 1.25 (excluding walk).

GoTN and the Coimbatore City Municipal Corporation (CCMC) have set a goal of reversing this private vehicle driven scenario and achieving an increase in the use of sustainable modes, namely walking, cycling, and public transport. The following are the objectives set by Coimbatore City Commission.

- Support Non-Motorised Transport (NMT) – 36% of all trips by walking and cycling
- Improve public transport – 40% of all trips by public transport and 6% by paratransit mode.
- Public transport accessibility – 75% of residents within a 5 minute walk of formal public transport
- Improve safety – zero fatalities per year from traffic crashes and public transport accidents
- Keep Coimbatore air healthy – Zero nonattainment days for PM and NOx emissions

In order to target these objectives, the study should consist of a mixture of frequently applied approaches for investment appraisals:

- The demand-based approach, i.e. stress is laid on the development of transport markets, including instruments of pricing policy.
- The objective-oriented approaches, i.e. stress is laid on socio-political ideas of desired or aspired development of transport demand or modal split, including enabling transport policy interventions.

1.2 Comprehensive Mobility Plan

The Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL) worked with ICRA Management Consulting Services Limited (IMaCS) to prepare a City Mobility Plan for the Coimbatore Local Planning Area (Coimbatore LPA) in May 2015. The Plan seeks to identify actions for safe, efficient and sustainable mobility in the LPA until 2033.

The key objective of the Comprehensive Mobility Plan (CMP) was to develop a comprehensive, cohesive and an integrated Traffic, Transportation and Mobility Plan and also to identify feasible short term, medium term and long term traffic management solutions/measures and transport infrastructure needs to facilitate safe and efficient movement of people for the present and the future.

Population in the Coimbatore LPA is expected to grow up to 27.7 lakh by 2033 and daily trips are estimated to increase up to 47 lakh in 2033. Therefore in order to meet the future demand and to plan for a compatible, adequate and extensive mass transport network is of vital importance and an immediate requirement.

The Coimbatore city has six major arterial roads and three National Highways, NH-47, NH-67 and NH-209 passing through the city. The present share of public transport is 42%. The vehicular and pedestrian traffic on the Coimbatore city radial roads, particularly on Avinashi road, Trichy road and Sathyamangalm road are set to increase with population growth and developments along the corridors.

On the basis of the forecasted traffic, an integrated multi-modal mass transport system on various corridors has been suggested under short, medium and long term improvement measures. The Comprehensive Mobility Plan for Coimbatore LPPA articulates various proposals expected to cater to the requirements of the projected travel demand up to the year 2033, i.e.:

- i. Road/Junction Improvements
- ii. Bus Transport System
- iii. Non-Motorized Transport
- iv. Mass Transit Proposals

As part of long term improvement proposal of item (iv), the CMP has identified 136 km of Mass Transit Network in four corridors.

Table 1 Possible MRT corridors in Coimbatore

S. No.	Corridor Name	Length (km)
1	Kaniyur to Ukkadam Bus Stand (Along Avinashi Road)	26
2	Bilichi to Ukkadam Bus Stand (Along Mettupalayam Road)	24
3	Karanampettai to Thannerpanthal (Along Trichy Road and Thadagam Road)	42
4	Ganeshapuram to Karunyanagar (Along Sathyamangalam Road and Perur Road)	44

CMP is a basically broad based macro level study report. Thus, it is to be noted that the CMP has only identified the potential corridors for mass transit and that the actual technical option (whether BRT, LRT/Light Metro or Metro) would need to be finalized following the CMP based on a detailed study and consultations on the corridor, and that the final option is subject to validation based on detailed social, technical and commercial project feasibility. While pros and cons of various options have been studied with respect to cost, right-of-way, structural detail, system capacity, etc., CMP has concluded that further studies and detailing are required in finalizing choice of Mass Transit System.

1.3 Previously presented options

1.3.1 BRT

The Institute for Transport and Development Policy (ITDP) has developed a pre-feasibility study of the BRT system in Coimbatore in May 2015.

This study has identified a 72 km BRT network covering major arterial corridors including Mettupalayam Rd, Sathyamangalam Rd, Avinashi Rd, and Trichy Rd. Preliminary surveys conducted on these corridors clearly indicate the need for a high capacity rapid transit service, with demand ranging from 3,000 to 6,000 pphpd.

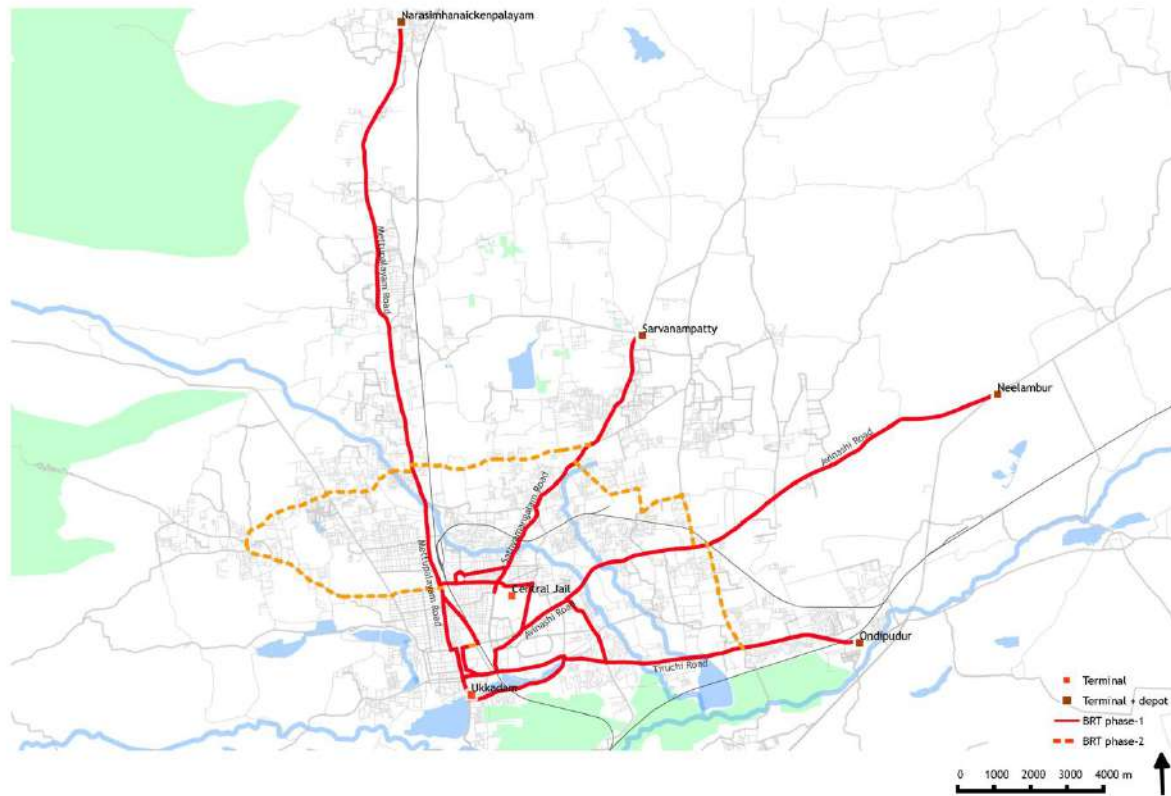


Figure 1 Possible BRT corridors in Coimbatore

The Coimbatore BRT system is supposed to follow international best practices in BRT design. The following design characteristics should be assumed for a BRT network:

- Median busway alignment. The busway will be located where conflicts with other traffic are minimised. Median alignment reduces conflicts with turning vehicles at intersections and property access points. The central verge is largely free of obstructions such as delivery vehicles or autorickshaws that require access to the kerb.
- Dedicated right-of-way. All BRT trunk corridors must have a dedicated right-of-way with physical segregation to ensure that buses can move quickly and are unimpeded by congestion.
- Off-board fare collection. To reduce travel times, improve customer experiences, and prevent revenue leakage, the system will employ off-board fare collection at all BRT stations. On-board fare collection should only be used on direct service extensions.

- Platform-level boarding. In order to reduce boarding and alighting times, the bus-station platform must be at the same level as the bus floor. This is particularly helpful for the elderly, disabled, or people with suitcases or strollers.
- Central stations. Centrally positioned stations will serve both busway directions. Central stations allow for easier integration between busway routes, particularly when two routes cross on perpendicular streets. Central stations also reduce construction and operational costs.
- Excellent NMT access. High quality pedestrian and cycle facilities along the corridor help ensure that passengers can reach BRT stations safely.

1.3.2 Other options

Other options like LRT and Metro systems have yet not been the subject of a feasibility study or detailed project report. There are also ideas of reviving railway commuter options within the Coimbatore LPA.

2 Detailed scope of tasks

2.1 Overall objective, phases and key tasks

The overall objective of this study project is to introduce a fast, affordable, accessible and efficient high quality mass transit system satisfying the mobility needs of the urban population in Coimbatore, and thus contributing to improved productivity potential, mitigated congestion levels, an improved air quality, reduced GHG emissions and less safety hazards.

The Consultant shall build on the work already undertaken by the GOTN in corridor identification and prepare a detailed plan for the rollout of the Coimbatore MRT system. The focus of consultant activities will be on accumulating data, conducting analysis, and completing planning and design work for an efficient mass rapid transit system.

The MRTS Feasibility cum DPR will be prepared in two phases.

Phase A – Feasibility study- Assessment and selection of an integrated MRT system solution for Coimbatore, completed with six key tasks:

1. Review and analysis of existing data (actual urban planning, road planning, mobility planning studies, traffic counts, existing PT services, ESIA scoping, etc) and available transport pre/feasibility studies.
2. Undertake additional investigations and conduct additions surveys/counts to supplement existing data, as needed, to determine the long term transport demand along each of the CMP corridors, taking into account urban development scenarios within a time horizon of 30 years.
3. For each potential MRT option, prepare an optimised, holistic and integrated public transport network/corridor solution. The Consultant shall provide a conceptual engineering plan, an initial service plan, a preliminary financial and economic analysis, an initial environmental and social analysis, and a preliminary infrastructure plan *for each of the*

chosen options. The MRT system choices are: Metro, Light Metro/LRT, BRT, conventional buses, or a combination of systems.

4. Develop and organize intensive stakeholder participation and engagement covering each MRT mode and their key features, including public hearings as necessary.
5. Conduct multi-criteria / screening analysis of proposed MRT solution with criteria such as projected demand, system capabilities, stakeholder acceptance, user affordability, investment cost, conceptual engineering effect, operation and maintenance cost, system viability and profitability, environmental impacts, social impacts, GHG emissions and pollution, degree of contribution to CMCC objectives and indicators.
6. Support for decision making process for selection of MRT system, in Coimbatore and with GoTN.

At the conclusion of Phase A, the result will be an approved holistic, prioritised and most feasible MRTS concept for Coimbatore planning area based on informed decision on alternatives for each of the corridors.

Phase B – Comprehensive Detailed Project Report (DPR) based on Phase A MRT system decisions, completed with seven key tasks:

1. Detailed planning for proposed MRT lines, stations, depots and maintenance facilities, including additional surveys or expansion of demand analysis from Phase A in an iterative and participative process. For each main element, identify suitable and viable locational and/or scope alternatives for further consideration.
2. Undertake necessary topographical, hydrological, geological, other technical investigations, identify operational and maintenance (O&M) issues and assess connectivity for intermodal integration, including identification of complimentary public transport policy and regulatory issues.
3. Assess environmental and social issues and prepare an Environmental and Social Impact Assessment (ESIA) report, an Environmental and Social Management Plan, a Resettlement Action Plan (RAP) and Gender Action Plan (GAP). Undertake additional stakeholder consultations, particularly related to alternatives.
4. Determine all relevant life cycle costs (initial investment, O&M, capital replacement) with a time horizon of 30 years, including those for necessary complimentary integration measures.
5. Undertake a comprehensive economic evaluation and financial analysis, including identification of potential financing sources and a financing plan.
6. Prepare an operational concept, including institutional and financing implications, need for possible capacity building measure and assessing sustainability of O&M. Identify necessary support to the proposed implementation agencies, including consulting services, training measures or complimentary studies.

7. Develop an implementation plan and schedule, including procurement issues and tentative contract packaging options for the project works along identified institutional implementation arrangements (PPP etc.) as well as necessary complimentary public transport integration measures, facilities and policies. If suitable, develop a strategy for phased implementation of the full network; identify potential areas of network expansion and a timeframe for their development.

At the conclusion of Phase B, the result will be a viable, substantiated project proposal to enable successful implementation of all elements of the selected MRT network solution.

2.2 Guidelines

The consultant shall ensure that the preparation of the study shall comply and adhere to, but not limited to, the following guidelines:

- (i) Applicable, relevant legal planning and policy framework for India and Tamil Nadu, such as the actual Metro Policy-2017, the EIA and land acquisition laws and regulations, RoW norms and standards.
- (ii) Appraisal Guidelines for Metro Rail Project Proposals, Ministry of Housing & Urban Affairs, Government of India, September 2017
- (iii) Applicable KfW policies and guidelines, including environmental and social guidelines and procurement guidelines.
- (iv) The European Union Guide to Cost-Benefit Analysis of Investment Projects; *Economic appraisal tool for Cohesion Policy 2014-2020 CBA*
- (v) The latest World Bank standards for conducting an ESIA.
- (vi) International best practice for project management and quality management (equivalent or better than ISO 9001) while performing the consultancy services.

2.3 Phase A – MRT system solutions

The key objective of conducting this MRTS alternative analysis is mainly to:

- Ensure that reasonable transportation alternatives are considered for the proposed corridors;
- Evaluate all impacts due to the project;
- Consider opinion of stakeholders;
- Select the locally preferred alternative.

Thus, based mainly on the corridor outlay of the CMP, all feasible alternatives across all modes of transportation will be evaluated in order to identify and decide in a participatory process upon the most feasible public transport system that alleviates the traffic and transportation problems of Coimbatore.

The following section further describes the scope of work for this first phase.

2.3.1 Inception – review and analysis of existing data

The Consultant shall collect and review all relevant reports, with particular attention to the Sustainable Cities through Transport strategic plan (SCIT), City Development Plan (CDP), Comprehensive Mobility Plan (CMP), Comprehensive Traffic and Transport Studies, City

Corporate plans, transport-related DPRs, and other plans. Relevant state and corporation authorities, such as the Tamil Nadu State Transport Corporation (TNSRTC), the Tamil Nadu Urban Infrastructure Financing Services Ltd (TNUIFS), and Regional Transport Office (RTO), can assist with secondary data collection. Data on socio-economic characteristics, vehicle ownership, and transport policies shall be collected. Based on this information, the Consultant shall prepare a city profile of the planning area including population and demographic data, land area, regional linkages, and socio-economic information. The Consultant shall indicate the spatial distribution of economic activities, important generators of travel demand (e.g. large hospitals, government offices, schools, universities, shopping areas, and recreational spaces).

The Consultant shall also compile and analyse information on existing motorised transport (MT) and non-motorised transport (NMT), transport infrastructure provision, public and private operators of public transport, including the current institutional setup in the sector as well as rules and regulations governing MT/NMT/PT planning, construction of transport infrastructure, PT licensing and operations, traffic management, and matters pertaining to traffic regulation enforcement.

The Consultant shall compile spatial information on plans for other related projects such as existing, planned, and proposed urban road and rail-based infrastructure projects, street and traffic flow improvement schemes, cycling networks, pedestrian networks, and pedestrian zones, as well as envisaged recreational areas and parks, planned shopping malls, industrial areas or housing areas to understand how they would impact transport demand and supply. This land-use and transport infrastructure information should be mapped using a GIS platform.

The Consultant shall prepare an inception report briefly summarizing all findings, including a detailed program for all surveys to be conducted in the subsequent study stages to obtain missing information, a draft proposal for the quantitative and qualitative screening criteria evaluation, any proposed changes to services, detailed staffing schedule and a draft stakeholder engagement plan.

2.3.2 Corridor demand estimates

Based upon the four primary transport corridors identified in the CMP, the Consultant shall undertake a comprehensive Corridor Demand Analysis for the MRT system, utilizing the results of the spatial analysis, available data, own surveys and the travel demand model for the Coimbatore to be provided. The traffic modelling, calibration and forecasting should be based on various development scenarios for key transport influencing factors and also consider plausible assumptions for accompanying ASI measures (avoid, shift, improve) within a 30 year time horizon.

2.3.2.1 Surveys

The Consultant shall conduct travel demand and traffic surveys to enable appropriate calibration of the transport model and a high quality traffic forecast (multi-modal network traffic model) based on plausible modal shift development assumptions in a “Business-as-usual (BAU)” case and up to 6 MRT scenarios. The detailed survey programme needs to be presented to and agreed upon by CMRL prior its commencement. Minimum the following surveys / information need to be taken into account:

- **Cordon Origin – Destination – Surveys:** The Consultant shall conduct origin-destination surveys (inner and outer cordon) for all modes of transport, i.e. all public transport modes, private transport modes and non-motorised traffic. The amount of traffic cells need to be agreed upon with the city administration of Coimbatore and the CMRL.
- **Traffic Counts/Classified Volume Counts/Screen Line Counts:** The Consultant shall conduct 16-hour classified direction-wise and turning movement counts at key junctions and road segments along the planned MRT corridors, using specific vehicle classification that clearly distinguish buses, 2-wheelers, 4-wheelers, share-auto etc., for off-peak and peak periods. Besides the need of this data for traffic modelling, calibration and forecasting, the purpose of this task is also to determine the layout and dimensions of the junctions. Additionally conduct NMT counts on selected locations.
- **Midblock Count with Occupancy Survey:** The Consultant shall survey frequencies and passenger loads along major public transport corridors for private passenger transport vehicles and public transport vehicles (public transport survey) and freight vehicles. The midblock count and survey should be conducted in at least 30 locations along the proposed MRT corridors and on other important public transport demand corridors.
- **Speed – Delay – Survey:** The Consultant shall provide an overview of the operating characteristics of functionally classified roadways as they pass through different area types in the LPA allowing for analysis of the data by peak and off-peak period and morning and afternoon travel and identifies the location, cause and extent of the delays in the corridors.
- **Household survey:** The Consultant shall conduct a sampling of household and work place surveys along each of the proposed MRT corridors. These surveys (1% sample size) will cover travel characteristics such as origins and destinations, mode of travel, travel time, and vehicle ownership.
- **Willingness to Pay, Stated Preference and Affordability surveys:** The Consultant shall develop questionnaires and conduct opinion surveys in order to get a better understanding on the residents transport behaviour and to qualify modal split assumptions.
- **Terminal (Road/Rail) Surveys:** The Consultant shall conduct boarding and alighting surveys for major road and rail based terminals / stations within the study area.
- **Parking Surveys:** The Consultant shall conduct parking occupancy studies for on-street and off-street parking along the potential corridors.

2.3.2.2 Modelling

For a comprehensive demand analysis, as a starting point, the Consultant shall utilize the transport model developed for the CMP, validate its assumptions –make adjustments where needed - and calibrate the transport model, establishing the relationship between transport

demand and transport supply scenarios in accordance with the modelling requirements of the EU CBA Guide. This four stage travel demand model should be undertaken by Cube software (used in the CMP) or by an equivalent software. The key modelling tasks are:

- Define the business-as-usual-scenario and up to six MRT development scenarios to be agreed upon with major stakeholders including sensitivity considerations, e.g. for high medium and low increase of public transport usage while considering the following:
 - present transport conditions, bottlenecks, shortcomings to overcome and planned road infrastructure
 - transport related objectives of the project
 - more efficient utilisation of the existing infrastructure (traffic management)
 - envisaged future land-use developments and regulatory policies
 - other modes or means of transport more suitable
 - conceptual and technical variants
- Model peak-hour passenger demand for each corridor. Use the data from occupancy surveys and traffic counts to calibrate the model to ensure that the model accurately reflects existing bus and paratransit operations and traffic demand in the base year.
- Forecast origins and destinations for trips by public transport users and other road users at the time of opening of the MRT system and 5, 10, 20 and 30 years after implementation. Estimate the shift of passengers from other modes to the new MRT system. The demand estimation should clearly indicate the relative contribution of various factors, such as population growth, land use patterns, income distribution, road network development, fare affordability, MRT journey times, and accompanying policies such as parking policy, or pedestrianisation, to the estimated MRT demand. The assumptions made for conditions of accessibility need to be clearly stated. Prepare forecasts for peak-hour and off-peak demand for MRT services, feeder services and non-MRT services.

The demand estimates will inform the service planning process and the dimensioning of physical infrastructure and will be used as inputs for the concept plan, service plan and infrastructure design, including stations, terminals, and corridors, but also as input to the cost benefit analysis.

2.3.3 MRT systems options analysis and conceptual engineering

The aim of this stage is to have a comparative analysis of the different possible alternatives available to serve the identified MRT corridors in Coimbatore. Therefore, a preliminary version of the conceptual engineering plan (infrastructure, systems and equipment), the service plan, the financial and economic analysis, and the environmental and social analysis for *each of the possible MRT system options* i.e. Metro, Light Metro / LRT, BRT, bus (either conventional or on segregated right-of-way with/without junction prioritisation) or a combination of options shall be prepared.

The primary corridors in the centre of Coimbatore are largely indicative where a MRTS line would be suitable. The exact road chosen is flexible and the Consultant shall consider that it might be more suitable for a slightly different alignment depending on the MRTS mode (a road section that is suitable for an elevated structure may not be for an at-grade solution or social and

environmental impacts might be less at a certain alignment). If applicable, the Consultant shall identify these different road sections. Also linkages between the four main corridors within the City Centre ought to be further reviewed and identify the optimal inner city connections and opportunities for intermodal integration.

The following subsections specify the requirements for each of the plans and analyses.

2.3.3.1 Conceptual engineering plan

Based on the corridor demand analysis and the actual road situation per road section within each of the corridors, the Consultant shall prepare an engineering concept for each of the proposed MRT systems, including the following:

- **Initial Service Characteristics Plan:** The Consultant shall develop a system network plan through an iterative process with the demand and financial modelling results. The network should be displayed in a GIS-based map. The network plan will include the initial network for the trunk routes, complementary feeder and last-mile connectivity services as well as by optimised location of depots and maintenance facilities for the new MRT system(s). Special attention will also be given to the network within the city centre area. When developing the network plan, options for infrastructure along the alignments should take into consideration environmental and social concerns, land-use plans, TOD and land availability. Please refer also to chapter 2.3.3.2.
- **Initial Infrastructure Characteristics Plan:** The Consultant shall discuss the realistic options for MRT infrastructure, stations, interchange stations and terminal typologies; as well as station and mass transit vehicle interface applicable and realisable in Coimbatore environment along each corridor. Specific concept solutions should be proposed for the various different physical constraints, which should highlight key issues or challenges related to implementation of proposed solution (example, loss of 1 or 2 road lanes, “X”m width of strip land acquisition, avoidance of historic/cultural structure, etc.). For each solution, the Consultant shall prepare schematic 3D drawings of how the solution is expected to look in the actual MRT corridor.

For the MRT systems that have the flexibility to operate in different physical alignments (separated, segregate – as elevated or at-grade, mixed) with normal vehicular traffic, the Consultant shall examine the key factors of viability between these physical options along each section of homogenous alignment and present them in a factors matrix to guide decision makers.

Where variations are clearly possible, the Consultant shall provide sketches of each different infrastructure solution, providing a realistic view of the solution within actual alignment conditions.

- **Street sections:** Conceptual street cross sections showing the alignment of MRT lanes/lines, mixed traffic lanes, NMT facilities, and other street elements. Sections should be prepared for each of the major Right of Ways (ROWs) that are found along the corridors in Coimbatore, split into reasonably homogeneous sections as needed.

- **Intersections:** The Consultant shall also prepare a corridor analysis to show the road capacity and its functionality during peak hours. The Consultant shall prepare concept designs for major critical intersections, proposing different options that are feasible.
- **Utilities:** The Consultant shall identify the existing utilities available and how many will be required to be shifted.
- **Initial geotechnical investigations:** The Consultant shall prepare preliminary foundation reports, soil investigations, water data and other information that are necessary to allow preliminary technical feasibility of alternatives.
- **Initial Systems and Equipment Plan:** The Consultant shall review and determine the key options for major systems and equipment, including rolling stock/vehicles, for each MRT mode characteristic, identifying particularly where there are different types of systems used by the different modes (e.g. signally system will likely vary by mode and possibly even if elevated or at-grade). The latest state-of-the-art technology already proven in operation in public transport services in India or internationally (in Asia, Europe or the USA) ought to be considered.
- **Fare structure, fare collection and passenger information systems:** The Consultant shall present a concept plan for these systems acceptable to Coimbatore PT users.
- **MRT Network expansion possibilities:** Based on the general urban characteristics of the areas of Coimbatore outside the four identified corridors, knowledge from the modelling task and available information on future city growth rates and expansion direction patterns, the Consultant shall make a “best guess” assessment of the potential extra corridors needed for long term needs of Coimbatore. This basic identification will be used to assess how selected MRT option could be expanded in the future and how further “branching” of proposed solution can be effectively optimised (or even included in first phase). Specifically transit oriented corridor developments (TODs) shall be taken into account.

For each MRT mode concept, the consultant shall propose alternatives when the characteristics of the MRT allow for two or more viable solutions that have different types of impacts – for example a BRT or LRT solution for a given demand range may be either elevated or at-grade if road ROW sufficient width, but the positive/negative impacts and costs vary between the alternatives chosen. This would effectively create “ranges” for the costs and impacts of these MRT solutions, with the final vertical alignment being determined by stakeholder decision makers, with only consultant comment inputs. The Consultant shall only present one solution only, when other solutions are not practical or have multiple substantive lesser benefits or higher impacts.

2.3.3.2 Initial Service plan

The purpose of a Service Plan is to develop an operating strategy for the MRT trunk services, including necessary feeder and complementary services, as well as required adjustments to regular city bus services in the corridors that overlap where MRT is introduced. The Consultant shall prepare a detailed Service Plan including (but not limited to) the following components:

MRT services (headways, operating hours, express services, etc.), mass transit vehicle fleet requirements, fare system, ITS, management information system, institutional model, service contracts and accompanying policy measures such as parking management, enforcement.

This step must be carried out in an iterative process together with the infrastructure and station planning as well as with the traffic forecast, e.g. the Consultant must determine what are the impacts of the service level on the length of platforms, station accessibility, service quality for the passengers, and, for BRT also the necessity for passing lanes.

The Consultant shall complete the following tasks toward development of the service plan:

- Analyse the existing public transport routes by categorizing them as: (1) fully affected by MRT introduction; (2) partially affected by MRT; (3) not affected by MRT. This analysis will help identify how existing routes should be modified to complement MRT services.
- Propose efficient MRT services detailed along the trunk corridors and roughly outlined for other feeder and complementary services with service itineraries optimised to minimise travel times. Interchanges and transfer stations shall be planned in locations with decent waiting areas and minimal walking distances.
- Produce a preliminary timetable for all MRT services, including frequency of service and actual journey times (with any variation by time of day), hours of operation, and number of runs operated per day.
- Present recommendations for future regular non-MRT services reducing conflicts with the MRT system going to be established and minimising parallel services.
- Based on the operational model / service plan, determine the total MRT fleet requirement, classified by type of vehicle, in the initial year of operations and thereafter in 5 year intervals up to 30 years planning horizon, including replacement investment and capital repairs and with a view on minimised GHG emissions and other pollutants during the operational period.
- Based on the proposed service plan, estimate passenger demand per station and mass transit vehicle frequencies at all stations and terminals in the MRT network, peak-hour and off-peak demand. This information will inform the design and sizing of these facilities.
- In case of investigated at-grade systems, optimise the layout and dimensions of the grade junctions for expected peak-hour traffic flows, including identification of intersections where a flyover or underpass is the optimal solution due to high vehicle traffic flows. Signal design must be completed through an iterative process together with the geometric design of intersections in the Infrastructure Plan.
- Re-examine station locations for adjustments to optimize the solution, as the needs of the different MRT modes for at-grade and elevated/underground will differ, including consideration of a higher frequency of at-grade stations (as costs are significantly lower) to improve level of service.

- Forecast the demand levels for feeder modes such as walking, cycling, bus and rickshaw to determine the need for interface locations and cycle parking stations.

2.3.3.3 Preliminary MRT option plan

The Consultant shall prepare a preliminary Plan for each MRT option including the following components for each of the options: corridor designs, i.e. RoW, cross sections / junctions, stations, station access, terminals, depots, mass transit vehicle fleet key specification, control centre, ITS, taking into account traffic demand, the service plan, system and equipment requirements, environmental and social issues and optimised alignment and station locations.

The plan should also take into account major accompanying infrastructure needs such as land acquisition, drainage needs and public utility relocation; station access; parking provisions, traffic signalisation, routing and intersection changes within the road reserve.

Specific attention needs to be given to the central business district, the interchange sections between the MRT corridors in this district and to the potential location and size of depots for each corridor and network option.

The preliminary infrastructure plan in this phase should help provide an idea about the technical feasibility of the MRT options. A location map scale of 1:5000 shall be applied at this phase A, while the detailed infrastructure plan of phase B lays out the specifics about each of the components in a scale of 1:500.

2.3.4 Initial environmental and social analysis

The Consultant shall carry out an initial environmental and social assessment of each corridor, i.e. scoping of the environmental and social context along the corridors and for the terminals and depots:

- A quantitative sampling must be conducted, especially to assess the existing quality of water, air, soil and noise levels;
- Land acquisition and project affected persons must be identified;
- Quantified estimate of fully and partially affected people to be resettled due to the project;
- Main potential environmental and social impacts of the project during the works phase, but also during the operational phases;
- Specific gender equality analysis in the project influence area, e.g. woman specific mobility patterns and constraints or requirements for secure stations and station access;
- Initial universal accessibility assessment, identifying appropriate vulnerable groups and their specific issues and challenges they could face to prevent or diminish their access to the proposed PT option.

Special attention need to be given to the impact of the project on the urban poor and climate change impacts, as well as to identify mitigation and adaptation measures.

Findings of the initial E&S analysis will be used to identify possible alternative solutions for the MRT options and should be criteria for comparative analysis of options. For the project design

in Phase B of the study, to reduce the environmental and social negative impacts; the initial E&S analysis will be used to identify mitigation measures, to establish baselines and they will serve as an input to the EMP and RAP to be developed.

Additionally, the Consultant shall outline a process for public consultation with the identified project affected persons, public disclosure, implementation arrangements, and public dispute resolution mechanisms for land acquisition, resettlement, and rehabilitation actions.

2.3.5 Preliminary financial and economic analysis

2.3.5.1 Capital cost

The Consultant shall need to provide a preliminary cost estimate of infrastructure components for each of the scenarios/alternatives based upon conceptual engineering, including:

- Corridor construction, including utility relocation, road widening needs, property acquisition (if necessary), environmental mitigation and resettlement (if necessary).
- Stations, terminals, depots, workshops;
- Other E & M system costs such as power supply, catenary, signalling, control centre, fare collection and passenger information systems;
- Vehicle fleet.

Techniques used to estimate the cost will be documented and must be consistent with the current construction costs and the locally applicable current schedule of rates. The costs shall reflect the true costs of the infrastructure to meet the stated capacity of the MRT, including additional non-MRT system costs (e.g. to expand road ROW in order to meet proposed minimum road capacity). In addition, unexpected cost increases must be planned for in sensitivity analysis.

These cost estimates will be updated and detailed once the selection of MRT system is made and detailed infrastructure designs have been completed under Phase B.

2.3.5.2 Operating and maintenance costs

Costs for the MRT service and corridor operation and maintenance will be estimated based upon the service plan. The operating cost analysis will include but is not limited to, the following:

- Mass transit vehicle operations (operation and maintenance of mass transit vehicles including regular and capital repairs);
- Fare collection, passenger information, operation and control centre and other IT-based system such as traffic signal prioritisation (operations of hardware/software);
- Station service (security, cleaning, landscaping, maintenance, etc.);
- Infrastructure and E&M maintenance cost;
- Costs associated with administration and management of the system.

2.3.5.3 Revenues

The Consultant is required to model the estimated revenue from the system. Revenue components will include, but are not limited to:

- Fare income from MRT systems based on traffic volume forecasts and fare level and system policies to be proposed;
- Advertising income from station and vehicle advertising contracts;
- Concession to local business opportunities at stations;
- Land value capture of property development.

Thus, besides fare revenues, the non-fare box revenues need to be given additional attention. The relevance and application of innovative revenue schemes being introduced in other MRT systems in India will be considered as a minimum.

2.3.5.4 Financial cash flow analysis

Based on the life cycle capex (initial investment, replacement investment, residual value) as well as operation and maintenance costs and forecasted revenues within the time horizon of 30 years the financial cash flow will be developed. Based on this cash flow, the financial profitability (FIRR and FNPV) for each of the options and scenarios will be calculated.

In addition, sources of financing including PPP-models will be identified and developed and their implication on the financial profitability respectively the need for subsidisation/public service obligations will be presented.

The analysis shall also identify any appropriate phasing of corridors / corridor segments.

2.3.5.5 Initial cost-benefit and economic analysis

Based on the financial cash flow revised by shadow pricing methodologies, the Consultant shall conduct a cost-benefit analysis comparing the expected life cycle costs of the MRT system options and scenarios to the total expected benefits. Benefits should include the following:

- Travel cost savings;
- Reduced road stress;
- Travel time reductions;
- Increase in local employment during construction, during operation and via general productivity enhancement and multiplier effects;
- Road safety impacts;
- Impact of system on environmental quality (noise, air pollution et.al.) and quantifiable public health benefits;
- Climate Change emission benefits.

Evaluate and monetarize the costs and benefits of the different options and scenarios as far as possible and qualify impacts for all benefits/externalities which might accrue and which are not quantifiable.

Based on the cost-benefit analysis, the economic viability (EIRR) for each of the options and scenarios will be calculated.

2.3.5.6 Risk assessment

A qualitative and quantitative risk assessment should be carried out with regard to the following risks, as a minimum:

- Implementation risks (cost overruns, construction time extensions);
- Fare levels and its incremental increase;
- Travel demand variations;
- Legal, regulatory and institutional capacity risks;
- Environmental and social risks;
- Public opposition.

The quantifiable results of the risk assessment shall be reflected in sensitivity analysis, testing the robustness of the FIRR and EIRR calculations through appropriate percentage changes in key cost and benefit/revenue streams identified in the financial and economic analyses.

2.3.6 Integration concept

The Consultant shall broadly examine the indirect impacts and effect of each PT option on the overall PT system for Coimbatore, in order to assess the secondary transport costs and benefits of establishing a holistic transport solution and identifying key external factors that will potentially impact MRT project success. This will include the following key areas:

- Intermodal exchange;
- Transport hubs;
- TODs;
- NMT and IPT accessibility and connectivity;
- City bus network (public and private) development;
- Improvement of policy and regulatory framework through establishment of an Urban Metropolitan Transit Authority (UMTA);
- System and other traffic enforcement.

Whilst the details for the development of each of these areas would require another study or DPR to be prepared, the Consultant shall ensure the issue is identified to the extent to be able to establish “order of magnitude” of the necessary requirements.

2.3.7 Multi-criteria assessment, recommendation and workshop for MRT option decision making

Upon providing the MRT options analysis, the Consultant shall give his/her assessment of the different alternatives, according to the screening criteria developed and agreed upon within the inception phase. This multi-criteria assessment is supposed to identify the solutions or their variations that are broadly equivalent (if any) and make a recommendation for the most feasible

option for MRT in Coimbatore. Note, the solution may not be just one MRT mode for all four corridors and their city centre linkages.

This section of the study should provide a comparative overview of the alternative options across various dimensions. The criteria shall include, as a minimum:

- ability to service travel demand for the next 30 years;
- service quality;
- total (life cycle) cost;
- financial and economic viability;
- implementation options, i.e. ease, pace and expedience of implementation;
- E&S impacts / community impacts.

The assessment should be based on the whole MRT system for Coimbatore. However, the Consultant shall identify those parts of the corridor with the highest impact and benefits, thus allowing effective and feasible project phasing and constructability. It is expected the priority sections would not exceed 40 km.

Details and results of the multi-criteria analysis shall be presented to major decision-makers in a decision-makers workshop to be organised at the end of all Phase A tasks. The workshop is expected to further review and consider the varying factors that contributed towards the consultant's analysis and recommendation, and - if deemed necessary - request further clarifications and inputs by the Consultant, and revise any relevant documents accordingly.

The final conclusions of the workshop shall be used in the formal decision by the Tamil Nadu government for the MRT solution, which should be planned to be expected within 2 weeks.

2.4 Stakeholder Engagement

The Consultant shall conduct the study/DPR in a highly participatory approach. Thus, he is requested to manage the stakeholder engagement process and ensure that all key stakeholders are actively involved and all other stakeholders are consulted. The stakeholder engagement should also raise awareness for the need of MRT in principle and for the necessary accompanying demand management and last-mile connectivity measures.

A further important output of the stakeholder engagement is to explore possible implementation options for the most viable MRT alternative.

2.4.1 Stakeholder analysis

At start of the assignment the Consultant shall undertake a stakeholder analysis relevant to the MRT corridor and network development. In preparation of the stakeholder analysis each stakeholder should be identified and contacted to identify their roles, responsibilities and expectations towards introduction of MRT in Coimbatore. The stakeholder engagement process should be defined in detail, identify the level of engagement for each stakeholder and define task groups dealing with specific issues of sustainable urban MRT transport. The Consultant shall provide an overview of the institutional landscape in the Tamil Nadu public transport sector.

Deliverable of the stakeholder analysis is the Stakeholder Analysis Report, including an outline of the MRT implementation options.

2.4.2 Stakeholder management

The Consultant shall serve as a focal point for the stakeholders and will reply to requests from stakeholders, forward open issues to the responsible individual or institution and distribute information regarding the development of the MRT network.

This includes organisation, preparation and facilitation of meetings and drafting of minutes from every meeting. Minutes shall be forwarded to the Steering Committee of the project for perusal.

Furthermore, the Consultant shall contribute to the content of website and newsletter in issuing articles, providing information on the development of the MRT network, replying to comments by users and forwarding relevant information from international experience.

The Consultant shall participate at public hearings as well as contribute and participate at a conference to disseminate the Phase A process and findings of the MRT corridor and network development on state and urban agglomeration level.

In phase B, the relevant counterpart entities shall be supported in carrying on the stakeholder management.

For conducting the stakeholder management, the Consultant shall respect the following:

- The consultation will be conducted in Tamil or English, depending on the preferences of the workshop participants.
- The Consultant shall make all necessary arrangements (venue, projector, other materials) for the consultation.
- The Consultant shall publish notice in at least three daily newspapers (2 Tamil, 1 English) in the format given by the client.
- The Consultant shall present the MRT planning in slide show formats. The presentations will provide an overview of the present planning stage of the MRT transport system in Coimbatore, introduce the key features of MRT, and discuss the proposed Coimbatore MRT network.
- The Consultant shall provide conceptual street sections, plans, and 3D renderings on A1 size sheets for reference.
- The Consultant shall develop a high-quality simulation video of at least 5 minutes demonstrating the operation of the MRT network options in Coimbatore.
- The Consultant shall make necessary arrangements for recording written and oral comments.

The Consultant shall prepare a summary of points raised in written or oral form at the stakeholder consultation and the suggested response to relevant comments received (i.e. whether or not to amend the conceptual designs as per comments). The Steering Committee will indicate whether the suggestion is to be incorporated or dropped. The Consultant shall revise the conceptual plans accordingly.

2.4.3 Knowledge Transfer

The Consultant will undertake the relevant steps to organize knowledge dissemination workshops and a study tour for main stakeholders and decision-makers to enable a better detailed understanding of the application of the different proposed MRT-modes and alignment scenarios in the context of Coimbatore. The study tour should be organised for about 5 officials and for a duration not exceeding 5 days. All cost would have to be covered by the consultant (provisional sum in contract). The workshops and study tour will occur at least one week in advance of the Decision-Making Workshop (task 2.3.7).

Other measures of information sharing and transfer can also be provided by the Consultant as required by the counterparts for an informed decision making on the outcomes of Phase A.

2.5 Phase B - Detailed Project Report for Selected Solution

Whereas in Phase A, stress is laid in identifying the optimal solution for each of the corridors with a view of the total MRT network and feeder functions in a multi-criteria approach with intensive stakeholder engagement, Phase B concentrates on optimising the selected and approved MRT option for the prioritised sections, and, preparing the correctly structured and formatted Detailed Project Report (DPR) required for Government approval process.

2.5.1 Preparatory surveys and studies

The Consultant shall undertake the necessary field investigations and surveys to provide information to a sufficient level of detail to compliment the detailed assessment and design activities, which will include:

- Topographical/Spatial Survey;
- Geotechnical Survey;
- Utility Survey;
- Traffic Survey (for construction management).

2.5.1.1 Topographical survey

The topographic survey would be conducted to establish the alignment, right of way, locations of stations, interchange points, maintenance depots and identification of land reservation requirements, building lines, number of properties affected, etc., along the selected MRT Corridor(s).

All streets in the Study Area, along with their legal ROWs should be mapped using GIS. The Consultant shall conduct total station surveys to prepare base plans for critical sections and junctions along the corridors. The surveys must cover all streets in the Study Area. Specific elements that must be surveyed (including documentation of geocoded X, Y, and Z coordinates in a GIS platform) include:

- Main roads, sub roads, and service lanes, as applicable;
- Signals /road marks;
- Intersection elements;
- Roundabouts;

- Medians / bollards / permanent barricades;
- Compound walls and each access point/gate;
- All utility (electricity, telephone etc.) poles/boxes;
- Overhead high tension lines;
- Trees: to be indicated in 2 categories, above and below 30 cm of main trunk circumference;
- Front facade of existing buildings/structures;
- Footpaths/pathways including all kerbs and level differences ;
- Kerbs;
- Pavements;
- Manholes;
- Sign boards/markings;
- Service lines/cable ducts;
- Difference in levels wherever it occurs;
- Establishing true/magnetic north point with respect to each location;
- Establishing reduced/relative level for each item.

Each map should be georeferenced with latitude, longitude, and height coordinates so that it can be combined with other maps on a GIS platform; and each element should be in a separate layer.

2.5.1.2 Geotechnical survey

The Consultant shall carry out a complementary geological investigation required for at-grade, elevated, underground and station works in order to confirm the parameters taken in the previous studies. Two bore-hole/km might be sufficient for the purpose. If any abrupt changes of strata are noticed, additional bore-holes may become necessary.

It will also be necessary to undertake further analysis of the evacuation of spoil from the viaduct and station excavations (by river or by truck) in view of getting an agreement with the relevant authorities. This may require complementary investigations of traffic routes and environmental impacts, and should be consistent with the project Environmental and Social Impact Assessment (ESIA), including necessary requirements of the environmental mitigation plan (EMP).

2.5.1.3 Utility survey

The Consultant shall carry out further investigation in order to define more precisely the final solutions for moving all utilities that will be affected by construction works. The extent, amount and the schedule of utilities diversion will be submitted to CMRC for coordination, and, agreement have to be achieved with the concerned authorities.

2.5.1.4 Traffic diversion during construction

Major traffic diversions will be required particularly when constructing the works and due to the logistics of disposal of materials for the construction. The Consultant shall prepare a Traffic Diversion Master Programme in close co-operation with the authorities concerned. This Master Programme shall establish the framework and the procedures to be detailed by the Contractor(s)

in the various phases of work. The master programme will be consistent with the recommendations of ESIA and requirements of the EMP.

2.5.2 Detailed analysis and design

Utilizing the recommendation for MRT system per corridor made in the preceding phase, the Consultant shall expand upon Phase A analysis as needed to provide a detailed assessment. This section of the DPR replicates the structure of the preliminary analysis, but provides a more in-depth analysis with the following sections:

- Service Plan;
- Infrastructure Plan;
- Systems and Equipment Plan;
- Integration Plan.
- Environmental and Social Impact Assessment;
- Financial and Economic Analysis.

This will include identification of suitable transit technology and the system specification to be adopted for the corridor, including the rationale for choosing a particular technology as per the prescribed specification as issued by MoHUA from time to time. The technology chosen should not be a proprietary technology of any vendor.

2.5.2.1 Service plan

The Consultant shall detail and up-date the service characteristics developed in phase A and adapt it to the selected priority sections.

Special attention in this phase B shall be given to the fare system, ITS measures and to the institutional aspects as outlined in the following sub-chapters.

2.5.2.1.1 Fare system

The Consultant is required to develop functional requirements for a MRT fare system compatible with the existing fare levels and other public transport fare systems, and the technical specifications for the procurement of the design, implementation and operation of the system, including the activities necessary for collection and disbursement of fare revenue. Thus, the consultant needs to:

- Review existing fare levels and tables used in Coimbatore, including overall government public transport fare policy, and the policy for discount (concession) fares, levels of subsidy (if any) on all transport modes;
- Develop a fare concept (distance-based, passenger-based, or mixed, or other) for the system and the technological implications of such a fare structure;
- Assess the level of fare affordability and the need for discounted (concession) fares for social reasons for various passengers (such as students and low-income users). Evaluate the costs and benefits of the different options, in particular with respect to affordability, likelihood of attracting passengers from other modes and level of government (or business community)

- subsidy (if any) required, and government payments (PSOs) for fares discounted for social reasons, and make recommendations;
- Propose mechanisms for integration of fares between the MRT trunk, complementary, and feeder services and make recommendations;
- Develop technical specifications with regard to standards for fare system, payment media, the fare regime, software and hardware, and integration requirements. Assess possible modalities for integration of the MRT ticketing system with that of city mass transit vehicles and other modes of transport in Coimbatore, including technical feasibility, cost, and institutional considerations;
- Define functional requirements for the fare system including arrangements for sale of fare cards, and collection and disbursement of revenue;
- Describe the central information sub-system for fare collection (functional requirements, technical requirements, reporting requirements, operational requirements, data storage and back-up requirements, ITS interface)

2.5.2.1.2 ITS measures

The MRT service will be facilitated by the use of a number of intelligent transport system (ITS) applications and equipment. The Consultant shall prepare a concept plan describing the broad functional requirements of the following ITS components, and available alternative approaches and/or technologies for each system, in order to propose different solutions for decision makers to select, as follows:

- Passenger Information System (PIS) on vehicles and at stations to provide real-time information to passengers on their schedule time of arrival of mass transit vehicles;
- Automatic Vehicle Location (AVL) for real-time tracking of the position of the MRT vehicles along the routes (if applicable for the chosen system);
- Automatic Fare Collection (AFC) using contactless smart cards and/or near-field communication-enabled phones;
- Access control system for the terminals and depots;
- Security and monitoring systems for vehicles, stations, and terminals;
- Traffic signal control for at-grade MRT corridor junctions, including mechanisms for MRT vehicle priority (if applicable);
- MRT Control Centre (CC) to monitor PIS, AVL and AFC and to use real-time data to manage passenger flow at stations and terminals, monitor signals, and manage the traffic movements along the MRT corridor;
- Customer Service information centre, including suitable physical, mobile and web based systems to maximize the potential for engagement with the public and key stakeholders;
- Management information system (MIS) and Asset Management System (AMS) to facilitate effective MRT implementation, operations and maintenance.

Detailed specifications for ITS components will be prepared as part of the Infrastructure and Systems Plans.

2.5.2.1.3 Institutional model

Based on the stakeholder analysis and implementation options of Phase A, the Consultant shall develop a structure for the management of the entire MRT system in Coimbatore comprising planning, construction, implementation, operation stages for all system components such as mass transit vehicle; fare collection and ITS; station and corridor maintenance; or traffic management. The Consultant shall identify staffing and staff qualification needs for the management and operations activities. The Consultant also will describe the division of responsibilities between the involved entities. The investigation and recommendations shall include possible and viable PPP schemes for implementing, financing and operations of the different system components or entire MRT systems or corridors, also with a view on the new Metro Policy of the Indian Government. This involves undertaking a basic market analysis to identify potential private partners and determine the viability and risks associated with each system being considered.

Institution and capacity building options will be presented and discussed with the Steering Committee of the MRT study.

The Consultant shall develop an industry transition plan outlining a process for outreach to existing PT system operators, including shared auto, and informal public transport (IPT). The plan should describe how existing operators may be encouraged or incentivized to participate in the tendering process for the MRT system (trunk corridors and feeder services). The plan should also describe means of integrating current staff from paratransit and other city bus services into the new MRT system.

In addition a brief review on availability of system components for each of the selected MRT systems in the corridors, in the Indian market shall be conducted.

2.5.2.1.4 Infrastructure plan

Utilizing the applicable Initial Infrastructure Characteristic Plan from Phase A, the Consultant shall develop a detailed infrastructure plan for the recommended system option per prioritised/selected corridor section.

Given the complexity of corridor planning, interim designs will be presented to the regular Steering Committee meetings before submitting final working drawings.

2.5.2.1.5 Corridor alignment and design

The selected MRT corridors will make up the Study Area. The Study Area will also include the following:

- Major streets (i.e., streets with a right-of-way of 18 m and above) perpendicular to the MRT corridor, up to a length of 500 m from the MRT corridor.
- Minor streets (i.e., streets with a right-of-way below 18 m) perpendicular to the MRT corridor, up to a length of 100 m from the MRT corridor.

Once the topographic surveys are ready, the Consultant can begin preparing detailed MRT corridor designs. The design shall be prepared following the relevant Indian guidelines and standards and if such are not applicable, e.g. in the case of LRT, Light Metros, or BRT systems

follow international best practice. In general, the designs should prioritise public transport, walking, and cycling ahead of mixed traffic. On-street parking may be provided only where sufficient space is available.

MRT Corridor design should include but not limited to:

- MRT lanes/lines at-grade and grade-separated / elevated, with dedicated right-of-way in mixed traffic or segregated;
- Pavement design (road based solution) and track line (rail based solution) design, including alternative material assessment;
- MRT stations and station design per station location (please refer also to the next chapter);
- Special design for MRT stations with envisaged IPT/paratransit and bus feeder stops and/or cycle sharing or P&R facilities;
- Dedicated station access pedestrian footpaths and cycle tracks (if the corridor falls on the cycle priority network);
- Determine the main design elements within the road reserve along the MRT trunk corridors, i.e.
 - Integration of other NMT facilities planned by GOTN that intersects with the MRT corridor;
 - Pedestrian crossings (at grade or grade-separated);
 - Carriageways, ensuring that the width remains uniform between intersections and MRT stations including road widening in case of need;
 - Street lighting;
 - Storm water drainage;
 - Utility access points.
 - Trees to provide shade for pedestrians and cyclists as well as decorative landscaping, including compensatory afforestation for the trees removed as part of the project;
 - Spaces for street vending;
 - Traffic calming elements, where needed to reduce vehicle speeds;
 - Physically demarcated on-street parking areas;
 - Street furniture, including benches, stools, tables, and other seating arrangements;
 - Signage locations;
 - Pedestrian refuge islands.

For a Metro/LRT solution - Track Work: The Consultant shall develop the alignment separately for each track at a scale of 1:1000 with reference to the selected topographic network. The Consultant shall review the load assumptions for track considered in Phase A (e.g. maximum axle loads) in the context of the specification and load estimates for the passenger vehicles. Attention shall be paid to temporary excess of track loads during the construction period.

The technical specifications for track shall consider non-ballasted slab track as predetermined in Phase A, and shall specify the appropriate type of rail fastenings. The variety of types of turnouts shall be optimised with respect to the running quality of passenger trains, and regarding an optimised stock keeping (minimum number of types).

For a BRT solution - Pavement Design: The Consultant shall evaluate by survey and analysis the soundness of all existing road pavements and subgrade conditions, making lists of measures and treatments to the relevant pavement to be improved and replaced. While comparing different materials appropriate to the expected traffic loadings from BRT vehicles special attention shall be paid to cost, durability, and maintenance aspects of each option. Among the options to be examined are existing pavements, concrete panels, continuously reinforced concrete (CRC), modified asphalt, and concrete only at stations. Based on the analysis, determine a suitable pavement structure to meet the project design life.

Intersections and other capacity reduced sections: Where the MRT will be at-grade, the Consultant shall prepare a detailed analysis of potential peak-hour capacity issues at major junctions, covering both the MRT and mixed traffic lanes, as well as along the main corridor, particularly where there are capacity constraints caused by ROW being narrower than desirable. The Consultant shall estimate traffic volumes in the opening year and each 5 years after opening until end of forecast period. The traffic volume estimates for future years will take into account expected changes in travel patterns.

The Consultant shall provide location-specific solutions to address capacity issues, including geometric design and traffic signal timing at intersections to ensure optimum operations within the available right-of-way. Key solutions include:

- The use of the network to replace right turns across the MRT lanes with a series of right turns and/or U-turns.
- Squareabouts to manage turning traffic at large intersections.
- Overpasses and/or underpasses at intersections where MRT vehicle volumes cannot be effectively operated without major hindrance to other crossing or turning traffic.

All intersection designs should promote safety for pedestrians and cyclists. The design should incorporate adequate turning radii, pedestrian refuge islands, and continuity for cycle tracks. Solutions involving grade separation, if recommended, must prioritize MRT and maintain convenient access for cyclists and pedestrians.

Approval procedures: The Consultant shall submit the Preliminary Corridor Designs for evaluation by the Steering Committee (refer also to chapter 4) before preparing the final working drawings. The Consultant will prepare Revised Preliminary Corridor Designs based on the feedback received from the Steering Committee. The Revised Preliminary Corridor Designs must be submitted to the Client for approval.

Following approval by the Client of the conceptual designs, the Consultant will prepare preliminary construction drawings (Draft Working Drawings) for the study area. The designs should include geometric and vertical profiles and include the following components:

- Typical sections along various segments;
- Horizontal control plan;
- List of existing street elements to be demolished;
- Utility relocation plans (wherever necessary);

- Storm water plans;
- Material specifications;
- Construction details for each element.

The Draft Working Drawings must be submitted to the Steering Committee for approval. The Consultant shall prepare Final Working Drawings based on the feedback received. The Final Working Drawings must be submitted to the Client CMRL for final approval.

The Consultant shall submit all conceptual designs and final working drawings to the Client in hard copy and electronic format.

2.5.2.1.6 Station planning

MRT stations form an important interface between the passengers and the MRT system. Thus, it is essential for the station facilities to be convenient, comfortable, safe, and easily accessible for all age groups. The design must consider providing for required infrastructure, adequate circulation and waiting areas, and protection from the weather. Platform height options will be evaluated and recommendations made in conjunction with determination of MRT vehicle equipment specification and cost considerations. To meet with these requirements, the Consultant must provide detailed station design to include:

- Distinct functional areas for fare payment, circulation, and waiting. A functional diagram should be prepared along with the architectural drawings;
- Appropriate station sizing (including passing lanes, number of bays or length of platforms as applicable) based on passenger demand at the respective location. The width and length of the station must allow enough space for queuing. Provision for phased modification of rolling stock (e.g. for buses: from 12 m to articulated to bi-articulated buses, as appropriate given estimated corridor demand or for Metro light: from one carriage up to six carriages in one train set);
- If a BRT solution, provision of multiple sub-stops at the highest-demand stations and where passing lanes are possible. The Consultants must design options to show how the sub-stops can be connected to one another;
- Tactile surfacing, floor markings (directional arrows);
- Provision of ticket counters, automatic ticket vending machines, and barrier control for entry;
- Provision of litterbins, drinking fountains, toilets, etc.;
- Static signage as well as real-time information displays;
- Space for IT and mechanical equipment, including station computer, turnstiles, and automatic screen doors;
- Placement of security cameras and kiosks;
- Visibility of destination display boards on approaching mass transit vehicles;
- Safe, convenient pedestrian access that minimises grade differences and considers also ease of access for differently-abled users;
- External signage to facilitate identification of the station and its name;

- Space for internal and external advertising;
- Potential for joint development of commercial or residential space at stations to generate additional revenue;
- Fire and emergency equipment, emergency exit.

Special attention need to be given to the design of major transfer terminals / public transport hubs, i.e. for route endpoints and major intermodal transfer locations for allowing easy, safe, fast and comfortable transfer from one mode respectively route to another. In this respect, opportunities for co-location of terminal and depot locations ought to be identified in order to reduce implementation costs and dead kilometres.

In addition to the above aspects, the Consultant shall develop options for environmental concepts considering state-of-the-art green building standards. The Consultant shall need to develop at least ten different architectural concepts with 3D renderings for the overall aesthetic design of the stations including the above-mentioned features.

2.5.2.1.7 Terminals (BRT solution only)

The Consultant shall design bus terminals for route endpoints and major intermodal transfer locations. In order to design for terminal requirements, the Consultant shall:

- Determine the number of bus bays required for BRT and non-BRT services. The number of bays should inform the size of the terminal;
- Show how the BRT feeder and trunk services will be integrated for ease and safety of passenger transfers;
- Indicate how BRT services will be integrated with other modes (e.g. railway stations, intercity bus services, drop-off points for auto-rickshaws, cycle parking, etc.);
- Determine facilities and amenities to be provided at terminals for an enhanced passenger experience;
- Identify potential for joint development of commercial or residential space at terminals to generate revenue for BRT operations;
- Identify opportunities for co-location of terminal and depot locations to reduce implementation costs and dead kilometres.

2.5.2.1.8 Depots / Workshops

As a first step, the number, the size and the potential MRT depot locations identified in phase A should be verified in close coordination with the Steering Committee on the basis of the selected and approved upon corridor mode and network option. Priority ought to be given to locations on land already owned by the government or existing bus (or other vehicle) depots potentially to be converged / extended to cater for MRT vehicle fleet, too.

Based on the Operating Concept and on the Maintenance Concept, the Consultant shall develop the layout track/lot grid for the depot and the workshop area, allowing a smooth operation and minimizing shunting manoeuvres. The layout will duly incorporate the initial depot buildings as an integral part of the final depot plan.

Provisions will have to be made for stabling and maintaining also the expansion of fleet for any extension envisaged as a preliminary assessment of the requirements. A staggered development of stabling capacities shall be considered for reasonable periods. The space allocation plan of the workshop building shall indicate the arrangement of heavy machinery and equipment according to the workflow derived from the Maintenance Concept.

For a Metro/LRT solution, special attention shall be directed to the layout of the connections of the spur line with the viaduct, taking precaution for cases of failures of turnouts in that zone (optional routes).

The internal layouts are to be designed as follows:

- Location of mass transit vehicle entry and exit points;
- Areas for routine maintenance (e.g. washing, cleaning, refuelling resp. recharging for bus based systems);
- Areas for current repairs and maintenance and eventually for capital repairs;
- Adequate internal circulation;
- Adequate parking spaces;
- Storage areas;
- Space for administration and staff utilities area.

The Consultant shall develop functional and architectural designs for the depot facilities at the pre-selected potential sites per corridor and corridor mode. The architectural design options should replicate aspects of the chosen station architectural design.

2.5.2.1.9 Land acquisition and development

The Consultant shall prepare a detailed Land Acquisition Plan, which includes land requirement for station, viaduct, depot area, substation, parking, property development, etc., Further; the Consultant shall prepare a detailed statement for Govt/private land details. Keeping this in view the Consultant shall also prepare the social impact assessment and the RAP (refer also to chapter 2.5.4).

In order to assess development potential for a transit oriented development along the corridors, a list of land / buildings amenable for change in the near future e.g. vacant land, low rise development relocation etc. shall be elaborated as per the guidelines issued by MoHUA.

2.5.2.1.10 Representation of infrastructure elements

The Consultant shall need to develop high-quality presentation of major infrastructure elements such as simulation videos or 3D renderings / perspectives of the MRT design components such as MRT ways, intersections, integration facilities, landscaping, trunk stations, feeder stations and depots.

2.5.2.2 Systems and equipment plan

The plan contains the descriptions for all subsystems (or components, if required), their performance data and interrelations with other subsystems (or components), and the general conditions to be met in production as well as in service.

The technical specifications for each subsystem shall stipulate the required level of

- performance;
- manageability;
- reliability;
- availability;
- maintainability (e.g. MTBF, MTTR);
- safety, and
- Interdependent functioning with other subsystems.

Furthermore, they will address

- specific Regulations and Technical Standards to be applied;
- specific issues of Quality Assurance;
- Conditions for commissioning, tests, trial runs and acceptance.

2.5.2.2.1 MRT vehicle fleet

The Consultant shall plan for the procurement of a high quality fleet of MRT vehicles to meet expected demand in the initial year of operations and in subsequent years of the project design period. Both the functional requirements and technical specifications of the MRT vehicles should be identified. As part of this exercise, the Consultant shall:

- Develop detailed MRT vehicle specifications including:
 - Number of new vehicles and vehicle type;
 - Weight and dimensions;
 - Body and interiors of the vehicle;
 - Electrical and mechanical;
 - Intelligent Transportation Systems (ITS);
 - Additional specifications such as driver training programme; maintenance training programme; warranty provision; list of spare parts (initial year of spare parts); list of required tools, software, and diagnostic equipment; supply of vehicle manuals and instructions; vehicle approval process and vehicle homologation / licensing.
- Draft set of design guidelines for the vehicle with detailed technical specifications, including provisions related to interior design, engine, and pollution standards and a procurement timeline that is calibrated to estimated demand.
- (for a BRT solution) Develop an operational staff employment plan to integrate current staff from paratransit and other city bus services into the new system, as part of the set-up process.

- Develop a plan for vehicle acquisition and approval process which should include the best international practice for procurement of completed vehicles.
 - (for a BRT solution) Conduct a market analysis for bus procurement, including an assessment of procuring hybrid or electric buses. The assessment must include, but is not limited to, identification of existing domestic and international suppliers of hybrid or electric buses, including the feasibility, capital cost, operating cost, and environmental impact of using hybrid or electric buses.

The specifications for vehicles should ensure the following:

- Passenger comfort and ease of use, ease of entry and exit, suitability for elderly passengers and passengers with young children, temperature and protection from the rain and noise;
- Specific requirements for persons with disabilities, including visual, hearing, intellectual as well as those with mobility impairments;
- Operational efficiency, including boarding and alighting speeds, dwell time at stops, commercial speeds, acceleration/deceleration rates, fuel consumption, ease of driving;
- Ease and efficiency of maintenance;
- Minimal emission levels, both local pollution and greenhouse gases; and
- Safety and security;
- Other specific issues identified under the environmental and social analysis.

2.5.2.2.2 Electrical and Mechanical (E&M) Systems

The Consultant needs to plan and design the relevant electrical and mechanical (E&M) systems of the selected MRT solution.

- **Signalling and control:** Based on the operating concept, the technical specifications for the control and signalling subsystem shall be established paying special attention to a seamless interaction with operating the trains as well as appropriate provisions for degraded operations. The Consultant shall determine the areas where shunting (manoeuvring) will be permitted on a regular basis. Clear instructions for operating shall be demanded in those cases when the subsystem is in the fall back level. A Communication based Train Control system (CBTC) will be adopted. The hierarchy of functions of personnel within the Operating Control Centre (OCC) shall be clearly stated by the Consultant.
- **Traction and Power supply:** The System will be connected to the public high tension (110 kV) network, thus achieving a reliable power supply. The network access station has to be specified in close co-operation with the public utilities (electricity) authority, and the convenience of a redundant connection when the System is operated at full capacity shall be analysed and specified, if recommended. Based on the calculations of energy

consumption by trains within the Operating Concept, the Consultant shall carry out a computerised simulation in order to ascertain accurately the pattern of projected power demand. This shall be supplemented by analyses of the energy consumption of stations and workshops, determining the total load to be connected to the public network.

The design prepared by the Consultant shall develop and specify the medium tension distribution and the traction power substations. Remote control of the external equipment for power supply shall be specified within the power supply subsystem. Data transmission however, shall be dealt with in the telecommunications subsystem. The transmission ports to non-system electrical power installations shall be identified and specified within the (internal) medium tension distribution as an interface.

The Consultant shall specify the conductor rail or overhead and make reference to the alignment by outlines of track work. Once finished the design on track alignment, the track layout shall be supplemented to the preliminary information. The Consultant shall determine the preliminary preventive measures regarding stray currents. This may be amended by the E&M-Supplier during the Design.

- **Telecommunications:** As the telecommunications subsystem plays an important role as a backbone of all kind of information transmission, the Consultant shall dedicate his utmost efforts in optimising the installations and equipment. Special attention shall be directed to the fall back level of services. The telecommunication subsystem will host the following services:
 - Data transmission network (e.g. Supervisory Control and Data Acquisition (SCADA));
 - radio communication;
 - from the OCC to trains and between trains;
 - for maintenance services, and
 - for Emergency Response Teams;
 - landline telephone services;
 - internally to work sites of operating and maintenance personnel, as well as to desks of commercial and administrative personnel, and
 - external links to emergency services (e.g. Police, Fire Brigade, Rescue Services);
 - closed circuit Television (CCTV);
 - smoke and fire detection;
 - voice recording at posts involved in safety critical tasks (OCC, driver's cabins, high tension substations);
 - clock system;
 - dynamic display of passenger information, and
 - Public address (voice).

Public address equipment shall provide perfectly audible announcements both in passenger vehicles and in areas transited by passenger taking into account the varying noise levels at the different locations and considering different load by human crowd

- **Platform Screen doors (if applicable):** The stations may be equipped with platform screen doors. With respect to the close interrelation with the train control and signalling subsystem this equipment is considered part of the E&M system package, although requiring co-ordination with the design of station buildings.
- **Non-system E&M equipment:** Non-System electrical and mechanical equipment shall be specified at least for the following, subject to amendment by the Consultant
 - Escalators and elevators;
 - Pumping stations and related drainage equipment;
 - Lighting;
 - Ventilation and air conditioning;
 - Ticketing;
 - Workshop equipment.

An Uninterruptible Power Supply (UPS) will be provided in the Stations and in the Depot to support essential functions without interruption of the equipment installed there when regular power is lost. The Consultant shall design and specify this equipment taking into account the results of the Operational Concept.

2.5.2.2.3 ITS specification

Utilizing the ITS concept developed under Phase A, the Consultant needs to propose an integrated ITS system to detail the following (if applicable):

- Identify on-board equipment for the information of passengers on board such as arrival time at the next station, weather conditions, educational information and advertising. Provide specifications for procurement of on-board computer system equipped with GPS to transmit real-time vehicle locations to the OCC.
- Identify communication equipment for stations, depots and terminals, including audio and visual display systems.
- Identify equipment required in stations and buses for an integrated AFC system. The consultant must provide details on automatic ticket vending machines, staffed ticket kiosk equipment, barrier control at stations and terminals, and mechanisms for fare collection on complementary routes.
- Prepare equipment specifications and management plan for the operation control centre. The control centre should integrate respective interfaces and functions of the AFC system and integrate data on the MRT operations with traffic and arrival data.
- Prepare a requirement profile for procurement of an integrated package of traffic signals, signal control applications, closed circuit cameras, and traffic management functions at the control centre to support efficient operation of MRT system.

- Develop functional specifications for a MIS that can generate reports for various levels of MRT system managers, including staff and duty schedule reports, bus operation reports, and financial reports.

2.5.2.2.4 Operations Control Centre (OCC)

An OCC is essential for a range of management functions, including MRT operations, maintenance, monitoring, financial management, and staff training. The OCC system should also be able to generate periodic information reports to be used in the future to optimise the MRT system.

Interdepartmental interaction is essential for an efficient functioning of the MRT/PT control centre, which means e.g. interaction / integration with road traffic management, traffic police, UMTA and PT operations centre of existing and future Bus and MRT operators. The Consultant shall prepare the detailed functional design of the OCC centre, which should have the following capabilities:

- Real-time monitoring of mass transit vehicle operations using GPS technology, with staff terminals and auditorium-style displays;
- Secure areas for initialisation of fare media and processing and reconciliation of financial data;
- Sound proof cabins and general staff cabins;
- Security management to prevent unauthorised entry;
- Alternative off-site office as a backup for system operations to enable system recovery.

2.5.2.3 Operation and maintenance (O&M)

The Consultant shall devise a detailed plan for operation and maintenance of the selected MRT system option per MRT corridor. Operations should comprise and detail such items as:

- The essence of fundamental rules and regulations for operations (frequencies, time tabling, load factors, etc.);
- The running times of a train, identifying net running times, station dwell times, and recovery times;
- The number of trains in operation during peak hours and off-peak hours;
- The energy consumption by trains according to different scenarios (peak hours, off peak hours, both for the initial and the ultimate phase of operations);
- The reserve capacity compensating imbalances and irregularities of circulation, and for exceptional demand;
- The reserve capacity compensating the number of vehicles waiting for or under inspection or repair;
- The overall number of vehicles of the fleet;
- A plan for stabling the trains at night or in off-peak hours;
- A disaster management plan, including disaster management imperatives, objectives of disaster management, systems to cater for disasters and security systems recommended.

- A disaster recovery plan, including an evacuation plan for emergencies in stations and between stations;
- Options for operating the Line when circulation is partially interrupted;
- Options for preliminary operations for test runs, training, and commissioning.

Based on this operational model and the forecasted ridership, optimised vehicle needs, as well as total staff needs shall be calculated.

The maintenance concept should comprise regular and periodic maintenance of all system components within the corridor and contain a tentative maintenance programme (in terms of workload, time requirements, and personnel requirements (man-hours) for

- Systematic (routine) maintenance such as services, inspections, and overhaul according to scheduled maintenance,
- Provisions for unpredictable repair, and
- Provisions for repair of major damages.

The maintenance concept will be the basis for

- the definition of the workflow in the depot and the workshop;
- the assessment of workshop tracks, buildings and work sites, and
- the required machinery and equipment related hereto.

The plan should function as a comprehensive operation and maintenance concept that takes into account all institutional and financial implications and responsibilities. If the Consultant finds that O&M is likely not financially sustainable, the Consultant shall list all risks and possible remedial measures.

For the operation and maintenance concept the yearly costs up to the time horizon of 30 years shall be calculated with and without financing costs.

2.5.2.4 Integration Plan

Prepare an Intermodal Integration Plan focusing on how the MRT solution will integrate with the existing transportation systems/proposed transit system and introduction of a feeder system, integrated with the proposed MRT project for improving last mile connectivity. This will include not only preparation of an operational plan for feeder system but also infrastructure that need to be upgraded/ improved or introduced for improving the intermodal integration with other modes of transport to improve the viability of the project.

Recommendations for institutional integration, physical integration, fare integration, operational integration and technology integration shall also be elaborated.

2.5.2.4.1 Intermodal integration

The Consultant shall prepare an intermodal integration plan for the Coimbatore MRT system including a modal split analysis and a MRT intermodal integration facilities plan. The plan should also illustrate whether further integration mechanisms (IPT stands, P&R facilities, etc.) are necessary. Special attention shall be also given to the following:

- **MRT Feeder Bus and City Bus transport improvements:** The Consultant shall prepare a feeder bus concept, including routes and operational plan for the proposed MRT system. In addition the Consultant shall assess the detailed routes for the City Bus Services and broadly identify route rationalization plans, potential augmentation of City Bus fleet size for the various Horizon years based on estimated passenger demand and an outline integration plan for the bus system to connect with the proposed MRT system. For City bus and feeder bus services system, the Consultant shall determine capital cost investment required.
- **Non-Motorized Transport (NMT) Improvements:** The Consultant shall prepare Non-Motorized Transport improvement proposals such as foot path improvements, cycle track, traffic calming, bike sharing schemes, etc., for the proposed MRT corridor influence area and major bus route roads. The Consultant shall identify the pedestrian grade separator (FoB/Subway) facility requirement for the proposed MRT corridor influence area and major bus route roads. Based on assessment and viability of system options a concept for the NMT plan is to be prepared, along with capital cost investment for each of the proposed NMT improvement proposals.

2.5.2.4.2 Institutional and city system integration

The Consultant shall analyse the institutional setup for the preparation, implementation and operation of the MRT system. This analysis should highlight the interdependencies of different institutions in preparing and implementing the project, as well as identify tasks and responsibilities of each organization.

The Consultant shall review all the relevant urban transport policies and regulations that are applicable to the city, including those imposed by national and state government, as well as those applied at a city level. This will at a minimum review parking, traffic control, traffic demand management and enforcement regulation in the city.

In addition, the Consultant shall explore the extent to which project related capacity support measures are required for the implementation of the MRT project. If capacity support is required, the Consultant shall develop an outline of necessary organisational and human resource advancement measures.

2.5.2.5 Bill of quantities and revised capital cost

The Consultant shall prepare a bill of quantities (BoQ) for all proposed civil works (i.e. corridors, stations, terminals, depots, and control centre) and all E&M systems based on preliminary engineering drawings of the entire corridors and inputs by the Client on rates to be quoted. The Consultant shall revise/detail the capital cost estimates for MRTS components based on the detailed designs and technical specifications again for the total life cycle costs of the entire corridor system, i.e. including replacement investment of major components to be replaced within the time horizon of 30 years.

2.5.3 Economic and financial analysis

The Phase A initial economic and financial analysis will be revised for the selected option along the more detailed and accurate figures for the system components generated in phase B following the same methodology described under Phase A.

2.5.4 Environmental and social impact assessment (ESIA)

The Phase A scoping of the environmental and social impacts will be revised for the selected option along the more detailed and accurate figures for the system components generated in phase B for each of the corridors, following the methodology described under Phase A.

However, in this phase B, cumulative environmental and social impacts (positive and negative ones) need to be captured additionally.

In the case of properties that will be affected by the construction of the project, the assessment will identify type and nature of impacts and required mitigations measures as per the ESF entitlement matrix of the Tamil Nadu Urban Infrastructure Financial Services Limited.

In addition, a Resettlement Action Plan (RAP) and an Environmental and Social Management Plan (ESMP) as well as a land acquisition plan will be elaborated in close coordination with the Steering Committee and the Indian environmental authorities.

The RAP and the ESMP shall adhere to World Bank standards and serve to prepare the environmental clearance of the relevant Indian authorities.

2.6 Preparation for project implementation

2.6.1 Implementation action plan and schedule

The Consultant shall put together an implementation plan, which details the final institutional and financing arrangements that will ensure smooth and fast implementation of the MRT network.

This action plan will give an indication on date and duration of all major implementation steps and implications for a prioritised list of investments in the short, medium and long term as well as critical steps, preconditions and limitations for its realisation. The MRT action plan should be realistic in terms of the available funding envelope and implementing capacities of the involved designated sub-sector institutions.

2.6.2 Financing plan

The Consultant shall prepare a financing plan, which includes an overview of the funding sources as well as the cost of the different project components. It is mandatory to investigate also in potential PPP funding schemes which needs to go along with the institutional set-up to be proposed for project implementation.

3 Study Implementation Arrangements

3.1 Timeline

The study project is expected to start in the third quarter of 2018.

Phase A is supposed to have a duration of 5 months. Phase B starts as soon as there is a decision for the system option per corridor and will have duration of 7 months.

3.2 Deliverables and reporting

For each of the outputs stated in the scope of work, there has to be a separate Report to be submitted to CMRL in 5 hardcopies and in file format.

Furthermore, brief regular reporting on the project progress is expected as follows:

- Inception report within 1 month after commencement of the project;
- Traffic Survey Analysis report in month 3;
- Draft final report phase A in month 4 including an Alternatives Analysis Report as defined in the “Appraisal guidelines for Metro Rail Projects, Sept. 2017 of the Ministry of Housing and Urban Affairs, Government of India”;
- Final report phase A within 1 month after approval by the Steering Committee and final decision on the selected option;
- Interim Reports: Topographical and geotechnical report (month 7), corridor alignment, station and depot layout plan (month 8), land acquisition and utilities inventory report (month 9), environmental and social impact assessment report (month 10);
- Draft final report phase B in month 11;
- Final report phase B in month 12.

At the end of the study, all primary data files and data bases (GIS data base, traffic data base, etc.) will be handed over to the client.

3.3 Study management structure

The Contracting Authority designated by the Government of Tamil Nadu will be the Chennai Metro Rail Limited (CMRL). The Consultant’s Team leader shall liaise closely with CMRL on all administrative and technical implementation issues of the study.

The Consultant is requested to outline in his proposal how he ensures to achieve the outcomes described above in the scope of work timely and in a high quality.

It is expected that minimum 70 % of working days of the entire project team are to be spent on site in Coimbatore. Furthermore, it is expected that the consultant’ team is adequately equipped with all tools, especially hard- and software such as transport planning or operational software.

Consultant's elaborations, recommendations and deliverables will be guided and decided upon by a Steering Committee consisting of following:

- Delegate of CMRL acting as Chair of the Steering Committee
- Representative of CCMC
- Representative of Transport Department
- Representative of Planning Department
- Representative of Highways Department
- Representative, District Collectorate
- Representative, Police (Traffic)
- Representative, Local Planning Authority
- Observer, KfW

The Steering Committee will meet monthly. The Consultant is requested to prepare these meetings and, as far as possible, distribute papers and presentations requiring guidance and decisions ahead of the scheduled meetings to the Steering Committee Members.

3.4 Skill requirements

The key professionals given in the table below are to be engaged by the Consultant and will be reviewed as part of the technical evaluation. The Consultant is free to add additional expertise / non-key experts as deemed necessary for successfully conducting the study. Furthermore, the Consultant shall ensure that backstopping and support staff (such as enumerators for traffic surveys, CAD specialists, etc.) is available to the project team in sufficient numbers.

S. No.	Position	Minimum Input in MM / thereof in Coimbatore/Tamil Nadu	Minimum years of relevant experience	General and Specific Requirement
1	Team Leader / Urban Transport Planner	8 / 8	15	<p>Master Degree in transport engineering, transport planning, transport economy or urban planning</p> <p>International work experience in more than 5 countries.</p> <p>Experience in successfully managing multi-cultural project teams</p> <p>Experience in MRT system planning and design. Familiar with bankable PT investment appraisals / feasibility studies.</p>
2	Project Coordinator	12 / 11	8	<p>Degree in Civil Engineering, transport engineering, transport planning, transport economy or urban planning</p> <p>Working experience in India. Work experience in other countries would be preferable.</p> <p>Experience in successful day-to-day management of the requirements of a multi-cultural project team.</p> <p>Experience in conference organisation, reporting and dissemination measures.</p> <p>Experience with Urban Mobility and Development</p>
3	PT Specialist - rail-based operation	4 / 3	15	<p>Master Degree in rail transport engineering, mechanical engineering or equivalent relevant education.</p> <p>International work experience in more than 5 countries.</p> <p>Experience in design and operation of all rail-based PT systems (Metro/Light Metro/LRT/Tram) including superstructure, vehicles and maintenance aspects.</p> <p>Familiar with rail-based O&M costing.</p>
4	PT Specialist - rail based infrastructure	5 / 3	10	<p>Master Degree in rail engineering, civil engineering or equivalent relevant education.</p>

				<p>International work experience in more than 3 countries. Experience in all rail-based PT systems (Metro, Light Metro/LRT/Tram) infrastructure requirements (elevated, at-grade and underground including maintenance aspects; Familiar with life cycle costing methodology.</p>
5	Road Traffic Engineer	6 / 5	8	<p>Master Degree in civil engineering or equivalent relevant education. International work experience would be an advantage. Experience in road-based infrastructure requirements for PT systems (BRT, BHLS, Bus, station access / sidewalks, intersections, etc.) including maintenance aspects; Familiar with land or geospatial surveying and with conducting hydrogeological surveys. Familiar with life cycle costing methods.</p>
6	MRT operational expert	5 / 4	10	<p>Master Degree in Transport engineering, transport planning or equivalent relevant education. International work experience in more than 5 countries. Experience with MRT systems and familiar with conventional / feeder bus operations, multi-modal integration and interchange facilities. Experience in PT operations and maintenance systems such as time tables, passenger information, fare systems, ITS. Familiar with PT system life cycle costing.</p>
7	Principal Environmental and Social Specialist	2 / 2	8	<p>Master Degree in environmental engineering, environmental management, biology, sociology, or equivalent relevant education. International work experience in more than 5 countries. Experience in conducting ESIA's and working with international standards for ESMPs and RAPs. Working experience with Worldbank standards is a must.</p>

8	Environmental and social specialist	8 / 5	8	Degree in environmental engineering, environmental management, biology, sociology, or equivalent relevant education. Experience in conducting ESIA's and working with international standards for ESMPs and RAPs as well as with Indian Standards. Knowledge of relevant Indian legal framework in environmental and social and land acquisition matters.
9	Transport Economist	2 / 1	8	Master Degree in economy, business administration or equivalent education. International work experience in more than 5 countries. Experience in conducting investment appraisals and cost-benefit analysis in the transport sector.
10	PT financing specialist	1 / 1	8	Master Degree in economy, business administration or equivalent education. International work experience is an advantage. Experience in financing large infrastructure projects including PPP financing options. Familiar with institutional, legal and financing implications of urban mobility investments.
11	Socio-Economic Expert	3 / 2	3	Degree in economy, sociology, statistics or equivalent. Experience in conducting socio-economic research and surveys. Experience in urban mobility would be an advantage.
12	Transport Planner / Modeller	3 / 2	8	Degree in transport planning, engineering or statistics. Abroad experience would be an advantage. Experience in transport planning, traffic modelling and traffic forecasting. Experience in outlining and implementing traffic and behavioural surveys.

13	Land-use and Town Planner	4 / 4	5	Degree in spatial planning, urban planning or equivalent education. Abroad experience would be an advantage. Experience in road design and road standards for motorised and non-motorised traffic, experience in MRT planning, TOD, urban spaces.
14	Architect / Designers	8 / 5	5	Degree in architecture, structural engineering or equivalent education. Experience in the transport sector would be an advantage.
15	Institutional Specialist	7 / 3	8	Degree in economy, engineering or equivalent education. International work experience would be an advantage. Experience in conducting stakeholder analysis, institutional analysis and capacity building, training measures and awareness creation. Familiar with the legal, institutional and policy framework for public transportation in India.
Further Specialist with adequate experience as deemed necessary by the Consultant to ensure high quality study outputs within the time lines to be presented in the proposal with short profiles each.				
Highly experienced back-stopping staff especially with regard to MRT system option and design features to be presented in the proposal with short profiles each.				
Support Staff such as survey enumerators, data manager, office manager, CAD and GIS specialists, multi-media specialists etc.)				

Annex B

List of Pre-selected firms

The following consultants, listed in alphabetical order, have been pre-selected:

S. No.	Lead Firm	Country	Associated Partner (s)	Country	Sub - Consultants
1	Brenner BERNARD	Germany	BERNARD Ingenieure and TUV	Austrian, Schweiz	ACTES Bernard & MC Mobility Consul GmbH
2	CPCS	Canada	IMaCS, LRTC	India, Germany	
3	PADECO	Japan	Ardanuy, ICT	Spain, India	VCDB
4	Rina Consulting	Italy	Urban Mass Transit Company Ltd. (UMTC)	India	
5	SYSTRA	France	RITES	India	

Annex C-1
Presentation of Curricula Vita

Proposed position in the project:

The comprehensive Curricula Vitae of the definitely assigned personnel shall be presented in the form as shown below (EU-Format):

1. Family name:
2. First name:
3. Date of birth:
4. Nationality:
5. Civil status:
6. Education:

Institution	
Date: from (month/year) to (month/year)	
Degree(s) or Diploma(s) obtained	

7. Language skills, mark 1 (worst) to 5 (best) for competence:

Language	Reading	Speaking	Writing

8. Membership of professional bodies:
9. Other skills:
10. Present position:
11. Years within the firm:
12. Key qualifications (relevant to the project):
13. Specific country experience:

Country	Date: from (month/year) to (month/year)

14. Professional experience record (projects):

Date: from – to (month/year)	
Location	
Company	
Position	
Description	

add more projects.....

15. Others (e.g. Publications)

Annex C-2

Presentation of staff characteristics

The following data have to be indicated for the key experts proposed for the different posts. They have to be backed unambiguously by details in the CV. In case of contradictions found during evaluation, details of the CV prevail. Tables may be adjusted according to the proposal and to the number of proposed staff.

Team Leader

Criteria	Name	
Professional education related to project and post	degree(s)	
Professional experience, from first job after professional education	years	
Specific project-related experience. Similar project with similar tasks	No of project with >1 year input	
Regional experience	Countries	
Employment status with firm	Years as employee	
In case of associate/retainer: accumulated years during short- or long-term assignments for the bidder	Accumulated years	
Leadership experience (team leader, project manager)	No of Projects	

Professional long Term staff

Criteria	Name	NN1	NN2	NN3
	Post/Function			
Professional education related to project and post	degree (s)			
Professional experience, from first job after professional education	Years			
Specific project-related experience (acc. To post) Similar project with similar tasks	No of Projects with > 6 months input			
Regional experience	Countries			
Employment status with firm	Years as employee			
In case of associate/retainer: accumulated years during short- or long-term assignments for the bidder	accumulated years			

Professional Short Term staff

Criteria	Name	NN1	NN2	NN3
	Post/Function			
Professional experience, from first job after professional education	Years			
Specific project-related experience (acc. To post) Similar project with similar tasks	No of Projects			
Experience in developing countries	Countries			

Home Office Support (Backstopping)/ Project Director

Criteria	Name	
Professional Experience	Years	
Regional Experience	Countries	
Management Experience	Years	
Years with Firm	Years	

Annex D

Declaration of Undertaking

We underscore the importance of a free, fair and competitive procurement process that precludes abusive practices. In this respect we have neither offered nor granted directly or indirectly any inadmissible advantages to any public servant or other person nor accepted such advantages in connection with our bid, nor will we offer or grant or accept any such incentives or conditions in the present procurement process or, in the event that we are awarded the contract, in the subsequent execution of the contract. We also declare that no conflict of interest exists in the meaning of the kind described in the corresponding Guidelines ¹.

We also underscore the importance of adhering to environmental and social standards in the implementation of the project. We undertake to comply with applicable labour laws and the Core Labour Standards of the International Labour Organization (ILO) as well as national and applicable international standards of environmental protection and health and safety standards.

We will inform our staff about their respective obligations and about their obligation to fulfill this declaration of undertaking and to obey the laws of the Republic of India.

We also declare that our company/all members of the consortium has/have not been included in the list of sanctions of the United Nations, nor of the EU, nor of the German Government, nor in any other list of sanctions and affirm that our company/all members of the consortium will immediately inform the client and KfW if this situation should occur at a later stage.

We acknowledge that, in the event that our company (or a member of the consortium) is added to a list of sanctions that is legally binding on the client and/or KfW, the client is entitled to exclude our company/the consortium from the procurement procedure and, if the contract is awarded to our company/the consortium, to terminate the contract immediately if the statements made in the Declaration of Undertaking were objectively false or the reason for exclusion occurs after the Declaration of Undertaking has been issued.

.....
(Place)

.....
(Date)

.....
(Name of Company)

.....
(Signature(s))

¹ See KfW “Guidelines for the Assignment of Consultants in Financial Cooperation with Partner Countries“ and “Guidelines for Procurement of Goods, Works and associated Services in Financial Cooperation with Partner Countries”

Annex E-1
Financial Proposal submission form

Date:

To

General Manager (P&BD),
Chennai Metro Rail Limited,
Admin Building, CMRL Depot,
Poonamallee High road,
Koyambedu, Chennai – 600 107.

Dear Sir,

We, the undersigned, offer to provide the consultancy Services for “Preparation of Feasibility study and Detailed Project Report for a Mass Rapid Transit System in Coimbatore” in accordance with your Request for Proposal dated [*Insert Date*] & its addendum and our Technical Proposal. Our attached Financial Proposal is for the sum of [*Insert amount(s) in words and figures*¹]. This amount is exclusive of applicable tax.

Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal.

No Commissions and gratuities paid or to be paid by us to agents relating to this Proposal and Contract execution.

We understand you are not bound to accept any Proposal you receive.

We remain,

Yours sincerely,

Authorized Signature [*In full and initials*]: _____

Name and Title of Signatory: _____

Name of Firm: _____

Address: _____

Annex E-2

Summary of consultancy fees

S. No.	Description	Consultancy Fee (in INR)
1	Cost of Financial proposal for Preparation of Feasibility Study and Detailed Project Report for a Mass Rapid Transit System in Coimbatore (1A + 1B + 1C + 1D + 1E)	
2	Goods and Service Tax	
3	Total Cost	

Annex E-3

Break down of consultancy fee by activity

1A. Remuneration

Position	Name	Staff Months	Unit rate in INR	Amount in INR

1B. Travel and Accommodation

Position	Name	Staff Months	Unit rate in INR	Amount in INR

1C. Report Preparation

Report	Unit rate in INR	Amount in INR

1D. Primary Surveys

S. No.	Type of Survey	Unit rate in INR	Quantity	Amount in INR

1E. Others (Site Office, Study Tour, etc.)

Annex F

Model Advance Payment Guarantee

Address of guarantor bank: ...

.....
.....
.....

Address of beneficiary (client):

.....
.....
.....

On you concluded with (name and full address)

.....
..... (“Contractor”) a Contract
for..... (Project, object of
the Contract) at a price of according to the provisions of the
contract, the Contractor receives an advance payment in the amount
.....equalli
ng % of the contract value, as an advance payment.

We, the undersigned.....(bank),
waiving all objections and defenses under the aforementioned Contract, hereby irrevocably and
independently guarantee to pay on your first written demand any amount advanced to the
Contractor up to a total of (in words
.....) against your written declaration that the Contractor has
failed to perform the aforementioned Contract.

This guarantee shall come into force as soon as the advance payment has been credited to the
account of the Contractor. This guarantee shall be automatically reduced pro rata in accordance with
the payments performed.

In the event of any claim under this guarantee, payment shall be effected to KfW, Frankfurt am
Main, BIC: KFWIDEFF, account IBAN: DE53 5002 0400 3800 0000 00, for account of (client).

This guarantee shall expire not later thanby which date we must have received any claims
by letter or coded telecommunication.

It is understood that you will return this guarantee to us on expiry or after settlement of the total
amount to be claimed hereunder.

.....
Place, date

.....
Guarantor

Annex G

Declaration of Affiliated Firms

Project (name and country):

Tender Ref. / Project ID:

We hereby declare that [insert the name of the entity submitting the declaration] is an independent consulting firm. We do not have any links, other than existing or future cooperation agreements in the field of [insert the main field of the entity's work], with other firms which may be interested in the execution of the project.

Should we, or the association in which we are members, be awarded the contract, the entities with which we are affiliated, other than the associates or the nominated sub-consultants for this assignment, shall not take part in the project in any other form or reveal information gained during the assignment concerned.

[Signature of the authorized representative of the Applicant]

Terms and Conditions Applicable to the Model Contract for Consulting Services

1. Terms and Conditions

1. *Conclusion of a contract.* By using this Model Contract (or sections thereof), every User of the Model Contract (hereinafter "User") acknowledges the following Terms and Conditions. These Terms and Conditions are agreed between each User and KfW without requiring that KfW receives the User's acceptance of the Terms and Conditions associated with the use of the Model Contract.

2. *Liability of KfW.* KfW assumes no liability for damages arising from or in connection with the use of the Model Contract, except for intent, gross negligence and injury to life, body or health.

3. *Limitation of the responsibilities of KfW.* KfW has prepared the Model Contract as an example of a contract for consulting services, for which KfW grants its consent in principle. However, KfW assumes in particular no obligation for the review of:

- the legal and factual accuracy of the Model Contract by obtaining internal or external legal advice,
- the factual accuracy of the circumstances underlying the Model Contract,
- the suitability of the Model Contract for the purposes of the User,
- the balance of the Model Contract versus the individual interests of the specific User,
- the contractual drafts prepared using the Model Contract that are submitted to KfW, e.g., for consent, and
- the need to update the Model Contract in the event of changes in legislation.

4. *Obligations of the User.* Every User shall:

- use the Model Contract only after performing a thorough individual review and making the necessary modifications for the specific circumstances.
- engage legal counsel to review the contractual draft based on the Model Contract prior to the conclusion of a contract, in order to investigate the enforceability and effectiveness of the contract under the applicable legislation.

II. Notes for the User

KfW expressly refers every User of the Model Contract to the following:

- KfW prepared this Model Contract based on the FIDIC agreement for consulting services ("White Book"), in order to provide partners of KfW with wording assistance for their contractual relationships with consultants. At the same time, use of this Model Contract facilitates the consent of KfW.
- The Model Contract was not developed based on any specific legal jurisdiction; instead, the choice of governing law is left to the contracting parties. KfW has not investigated whether modifications of the Model Contract are necessary so that it can be used under the respective potential jurisdictions.
- The Model Contract must be adapted to the individual needs of the specific User and should only be signed after the User has reviewed whether the specific contractual provisions are suitable for his individual purposes.

III. Structure of the Model Contract

Section 1: General Conditions – these include the general underlying contractual provisions. Changes in this section usually have a significant impact on the contract and require the prior consent of KfW.

Section 2: Special Conditions – these include the specific details of each individual case. Any modifications or deviations based on the specifics of the project or due to contractual negotiations can be included here.

Section 3: Annexes – depending on the contents, these are either project specific (e.g., TOR, Time Schedule) or generally defined (e.g., Declaration of Undertaking).

CONTRACT

for Consulting Services

dated

[●]

between

[●]

– hereinafter referred to as the “Employer” – /

[in case of an agency contract: represented by

KfW

Palmengartenstraße 5 – 9

60325 Frankfurt am Main

Germany

– hereinafter referred to as “KfW” –]

and

[●]

– hereinafter referred to as the “Consultant” –

Project “PREPARATION OF FEASIBILITY AND DETAILED PROJECT REPORT FOR
MASS RAPID TRANSIT SYSTEM IN COIMBATORE”

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Preamble

The Employer desires consulting services to be rendered for the Project designated in the Special Conditions. The Consultant has submitted a technical and a financial bid for these services. The parties to this Contract therefore hereby agree on the following:

General Conditions

Paragraph 1 General Provisions

1.1 DEFINITIONS

The words and expressions used in this Contract shall have the following meanings assigned to them, unless the context requires otherwise.

The “**Agreed Remuneration**” means the fee to which the Consultant is entitled as described in Paragraph 5 [Remuneration], which shall be payable in accordance with this Contract.

The “**Commission**” means the performance of the Services pursuant to this Contract.

The “**Completion Period**” means the period designated for completion of the Services in the Special Conditions.

The “**Consultant**” shall be the professional undertaking or the professional individual named in the Contract who is appointed by the Employer to perform the Services. This shall include the Consultant’s legal successors as approved by the Employer and subject to prior written consent from KfW.

The “**Contract**”, except where otherwise stated in the Special Conditions, means the conditions of this Contract for consulting services (General Conditions and Special Conditions) together with the following constituent parts of the Contract¹:

Annex 1 [*Declaration of Undertaking*]

Annex 2 [*Minutes of Negotiations pursuant to the Special Conditions*]²

If one or several of the Annexes should not be necessary in the actual Contract, to preserve the integrity of the references please retain the numbering of the Annexes and insert the words “not applicable” in the relevant Annexes.

Annex 3 [*Terms of Reference plus Tender Documents*]

Annex 4 [*KfW Guidelines for the Assignment of Consultants in Financial Co-operation with Partner Countries³*], insofar as these Guidelines do not conflict with the Conditions of this Consulting Contract

Annex 5 [*Staffing Schedule*]

Annex 6 [*Equipment and Furnishings to be provided by the Employer and Third-party Services Commissioned by the Employer*]

Annex 7 [*Time Schedule for the Performance of the Services*]

Annex 8 [*Statement of Costs*]

Annex 9 [*The Consultant's Bid – though without the Consultant's terms and conditions of delivery, contract and payment*]

(N.B.: If by way of exception the procurement guidelines are not made an integral component of the Contract, Item 1.1.19 should be supplemented to include the Declaration of Undertaking, as well as the Model Advance Payment Guarantee and the Model Retention Guarantee.)

The “**country**” means the country or region to which the Project (or the majority thereof) relates.

The “**date on which execution shall be commenced**” means the day specified in the Special Conditions.

A “**day**” means one calendar day.

“**Financing Agreement**” means the [loan agreement / financing agreement] entered into between KfW and [the Employer] in order to finance [amongst other things] the services hereunder.

“**Force Majeure**” means any event whereby one party to the Contract has been prevented from performing the Services due to an unavoidable event such as a natural disaster, hostage-taking, war, revolution, terrorism or sabotage, which, with even the best human judgement and experience and utmost care, could not have been reasonably foreseen in the circumstances, prevented or rendered harmless by economically reasonable means unless such event must be accepted by the relevant party due to its regular occurrence, including, except

where otherwise stated in the Special Conditions, circumstances such as crises, war or terror that lead to the Foreign Office of the Federal Republic of Germany calling upon German citizens to leave the country or the Project region in response to which the Consultant withdraws all its staff. If an event occurs as a result of the actions of or risks assumed by a party to the Contract, that event shall not constitute Force Majeure.

“Foreign Currency” means any currency other than the Local Currency.

The Consultant’s **“Foreign Staff”** means all those staff who do not possess the citizenship of the country.

The **“Local Currency”** means the currency of the country.

A **“notice”** means a notification communicated to one party by the other party.

A **“party”/the “parties”** means the Employer and the Consultant.

“Order Value” shall have the meaning given to it in A.d. 5.1.1 of the Special Conditions.

The **“Project”** means the project specified in the Special Conditions for which the Services are to be performed.

The **“Services”** means the contractual services described in **Annex 2** [*Minutes of Negotiations*], **Annex 3** [*Terms of Reference plus Tender Documents*], **Annex 9** [*The Consultant’s Bid*] and Paragraph 3.1 [*Scope of Services*], as well as the standard and special services defined in Paragraph 3.2 [*Standard and Special Services*].

A **“third party”** means any other natural and legal person, according to the context.

“Written” or **“in writing”** means written by hand or typed by machine, and produced in a printed or electronic form, the result being a non-editable permanent record.

A **“year”** means 365 days.

1.2 INTERPRETATION

1.2.1 Headings in this Contract shall have no bearing on the interpretation of these Conditions.

- 1.2.2 Words in the singular, insofar as the context allows, shall also include the plural and vice versa.
- 1.2.3 Reference to either sex shall include both sexes.
- 1.2.4 Provisions containing the words “agree”, “agreed” or “agreement” (and all derived grammatical forms thereof) shall require written agreement and signature by both parties⁴.

**1.3
RANKING AND ORDER OF THE
INTEGRAL PARTS OF THE
CONTRACT**

- 1.3.1 For the implementation of this Contract, the parts of the Contract listed below shall take precedence in the order shown below and the Annexes shall take precedence in the order in which they are numbered:
 - (a) The agreements of the Contract (General and Special Conditions), without the Annexes.
 - (b) The Annexes of the Contract in the order in which they are numbered.

These General Conditions and the Annexes shall remain – except where otherwise stipulated in the parts of the Contract in question – immutable.

- 1.3.2 In case of inconsistencies or ambiguities between parts of the Contract that cannot be resolved through the ranking set out in Clause 1.3.1, the Employer shall interpret the parts of the Contract in line with the intention of the parties based on the purpose and intention of the Contract as a whole, including all Annexes.

**1.4
COMMUNICATION**

- 1.4.1 Except where otherwise stipulated, notices, instructions and messages must be communicated between the parties in writing and in the language specified in the Special Conditions, and any such notice, instruction or message may not be unreasonably refused or delayed.

**1.5
NOTICES**

- 1.5.1 Except where otherwise stipulated in the Special

Conditions, the notices to be served pursuant to this Contract shall take effect upon receipt at the addresses specified in the Special Conditions. The notice may be served in person, by a courier service, by fax (with written confirmation of receipt), by registered letter or by email (only if this is sent in an encrypted and certified form (e.g. S/MIME certificate)).

**1.6
LAW AND LANGUAGE**

1.6.1 The Special Conditions shall contain the language or languages of the Contract, the prevailing contractual language and the law governing this Contract.

**1.7
ENTRY INTO FORCE OF THE
CONTRACT**

1.7.1 This Contract enters into force upon execution by both parties, subject to notification from KfW to the Employer that all conditions precedent to disbursement under the Financing Agreement have been satisfied in a form and substance satisfactory to KfW.

**1.8
MEASUREMENTS AND
STANDARDS**

1.8.1 Drawings, plans and calculations shall be based on the metric system and German DIN⁵ or European EN standards, or internationally recognised standards that are at least equivalent to those published by ISO or IEC are the standards to be applied to the Services performed under the Contract.

**1.9
ASSIGNMENT AND SUB-
CONTRACTING**

1.9.1 The Consultant shall not have the right to assign or transfer all or any of its rights under this Contract without the prior written consent of the Employer, which shall not be provided without the prior consent of KfW. The Employer's consent shall not be required for the assignment of any amounts due or which shall become due under this Contract.

1.9.2 The Consultant may conclude, terminate or cancel sub-contracts for the performance of a part of the Services that are the subject of this Contract only upon prior written approval by the Employer, which shall not be provided without the prior consent of KfW. In cases where the Services are sub-contracted, the Consultant's

obligations to fulfil the Contract shall remain unaffected.

1.10 RIGHTS TO THE RESULTS OF WORK, COPYRIGHT

- 1.10.1 Except where otherwise stated in the Special Conditions of this Contract, the Consultant shall transfer to the Employer all transferrable rights to the Services performed under this Contract on the date any such rights arise, and in any event at the latest, on the date they are acquired. Insofar as a transfer of such rights is not possible, the Consultant shall irrevocably grant the Employer an unrestricted, transferrable, licensable and exclusive rights of use and exploitation that are unlimited with respect to time and place of use. Such transfer shall include the right to adapt any transferred rights. The Consultant shall ensure that any relevant creator of such transferrable rights waives its exercise of any such relevant rights.
- 1.10.2 If the Consultant employs third parties (e.g. employees) to perform the Services, it shall ensure that these parties allow him to transfer and/or grant the rights in full. The Consultant shall ensure that third parties waive the exercise of any relevant rights.
- 1.10.3 The Consultant shall issue all information requested by the Employer and KfW in connection with this Contract, and shall make available free of charge all requested records, documents and information. This obligation shall remain effective after termination of the Contract for a period of 24 months.

1.11 OWNERSHIP OF DOCUMENTS AND EQUIPMENT

- 1.11.1 All studies, reports and pertinent data and documents such as diagrams, plans, statistics and annexes that are made available to the Consultant in the performance of the Commission, as well as software (including the respective source codes) produced or adapted for consideration as part of the Commission, shall become the property of the Employer. The Consultant shall not be entitled to exercise a right of retention with respect to these materials.
- 1.11.2 Equipment, including vehicles purchased for the performance of the Consultant's Services and

paid for fully by the Employer, shall be handed over to the Employer after completion of the Services. The Consultant shall handle with due care and maintain any such equipment.

1.12 CONFIDENTIALITY AND PUBLICATION

1.12.1 The Consultant shall, and shall ensure that its employees, keep confidential all documents passed on to it by the Employer and KfW, as well as all information exchanged and knowledge acquired concerning this Contract and its implementation, even if such documents have not been expressly designated as confidential. This obligation of confidentiality upon the Consultant and its employees shall remain effective after termination of the Contract. It shall not apply to disclosure to a court or to a public authority, insofar as this disclosure is made on the basis of legal obligations or by order of a court or a public authority. It shall also not apply to those materials, information and knowledge acquired for which and insofar as the Employer or KfW has given written consent for publication.

1.12.2 The obligation of confidentiality set out in Clause 1.12.1 shall not apply to information which:

- (a) was demonstrably already known to the recipient when the Contract was concluded, or thereafter was made known by a third party, without this having constituted any violation of a confidentiality agreement, legal regulations or official orders; or
- (b) is publicly known upon conclusion of the Contract or is made publicly known thereafter, insofar as this is not based on a violation of this Contract.

1.13 CONDUCT

1.13.1 During the term of this Contract, the Consultant and its Foreign Staff shall not interfere with the political or religious affairs of the country.

1.14 CORRUPTION AND FRAUD

1.14.1 When discharging their obligations under this Contract, the Consultant, its representatives and its employees shall comply with all applicable laws, rules, regulations and provisions of the

relevant legal systems, including the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions.

- 1.14.2 The Consultant shall not offer or grant either directly or indirectly any improper advantages to public officials (as defined below) or other individuals in connection with its bid in the tendering process. In addition, it shall not offer or grant any such incentives or conditions when implementing the Contract. The Consultant shall be obliged to notify the Employer in detail immediately in writing if the Consultant is prompted by a public official or any other persons to make illegal payments.
- 1.14.3 The Consultant will inform its members of staff of their respective obligations as well as their obligation to comply with the Declaration of Undertaking and to obey the laws of the country.
- 1.14.4 A public official shall be:
- (a) any official or employee of a public authority or an enterprise under the ownership and control of a government;
 - (b) any person who performs a public function;
 - (c) any official or staff member of a public international organisation, such as the World Bank;
 - (d) any candidate for a political office, or
 - (e) any political party or official of a political party.

1.15 REIMBURSEMENTS

- 1.15.1 All reimbursements, insurance payments, guarantee payments or similar payments, if any, shall be made for the account of the Employer to KfW, Frankfurt am Main, BIC: KFWIDEFF, account IBAN: DE53 5002 0400 3800 0000 00, which KfW shall credit to the Employer. If such payments are made in Local Currency, they shall be made to a special account of the Employer specified in the Special Conditions. The amounts reimbursed for the portion financed by KfW may, with KfW's consent, be used again, principally for further implementation of the Project.

1.16
PARTIAL INVALIDITY

- 1.16.1 The invalidity or unenforceability of one or more provisions of this Contract will not affect the validity or enforceability of any other provisions of this Contract. Any invalid or unenforceable provision shall be replaced by a valid and enforceable provision which approximates as closely as possible the economic purpose of the invalid or unenforceable provision. The same shall apply accordingly in cases of omissions.

Paragraph 2 The Employer

2.1 INFORMATION

- 2.1.1 During the term of this Contract, the Employer, within a reasonable period of time, shall, free of charge, place at the disposal of the Consultant, all data, documentation and information concerning the Services covered by the Commission that are available to it. This shall also include all Commission and Project related provisions of the separate agreements relating to any loan made in respect of the Project, the Project documents entered into between the Employer and KfW and consents of KfW as required by this Contract.

2.2 DECISIONS/ COOPERATION

- 2.2.1 Subject to the Consultant having provided the Employer with all the necessary information including, but not limited to, drawings, studies and replacement staff, the Employer shall make its decisions pursuant to this Contract as soon as possible after the Consultant requests such duty to be performed in writing and, in any event, no later than the end of the expiry period specified in the Special Conditions.

2.3 SUPPORT

- 2.3.1 The Employer will support, as far as reasonably possible, the Consultant in discharging its obligations pursuant to this Contract. The Employer shall make available to the Consultant in good time and in full all the services necessary for the performance of its tasks as detailed in **Annex 3** [*Terms of Reference plus Tender Documents*].
- 2.3.2 In addition, the Employer shall support the Consultant, the Consultant's staff and where applicable relatives of the Consultant in:
- (a) obtaining in good time any documents necessary for entering, residing in, working in and leaving the country (visa, work permit etc.);
 - (b) granting and/or obtaining unrestricted access to the Project where necessary for the performance of the Services;

- (c) the import, export and customs clearance of personal items and of goods and commodities required for performance of the Services;
- (d) securing return transport in cases of emergency;
- (e) obtaining permission to import Foreign Currency that is required by the Consultant for the performance of the Services and for personal use by its Foreign Staff;
- (f) obtaining permission to export the money paid by the Employer to the Consultant under this Contract; and
- (g) providing access to other organisations for the purpose of obtaining information to be procured by the Consultant.

2.4 TAXES

2.4.1 Subject to the following provisions, the Employer shall ensure that the Consultant and its Foreign Staff are exempted from all taxes, duties, levies and other charges that are legally prescribed in the Employer's country, in connection with:

- (a) payments to the Consultant or to its Foreign Staff in connection with the performance of the Services;
- (b) services performed by the Consultant or its staff in connection with the fulfilment of their tasks;
- (c) equipment, materials, and supplies necessary for the performance of the Services, including motor vehicles and personal belongings of the Foreign Staff that are brought into the country of the Employer and shipped out after completion of the Services or that have been destroyed in the course of the performance of the Services.

2.4.2 If it is impossible to meet the obligations arising from Paragraph 2.4.1 [*Taxes*] due to contrary legal provisions, the Employer shall, provided it is legally permissible and except where otherwise stipulated in the Special Conditions of

this Contract, upon submission of proof of the payments made, reimburse the Consultant all the amounts paid without delay.

**2.5
EQUIPMENT AND OFFICES**

- 2.5.1 For the purposes of performing the Services, the Employer shall make available to the Consultant, free of charge, technical and other equipment and offices to the extent described in **Annex 6** [*Equipment and Furnishings to be provided by the Employer and Third-party Services commissioned by the Employer*].

**2.6
CONTACT PERSONS OF THE
EMPLOYER**

- 2.6.1 The Employer shall appoint two natural persons to act as the Employer's contact person and deputy to the Consultant under this Contract, and the Employer further undertakes always to appoint another contact person without delay should either of the two individuals appointed no longer be available.

**2.7
THIRD-PARTY SERVICES**

- 2.7.1 The Employer is obliged, at its own expense, to make the necessary provision for the performance of those services by third parties commissioned by it, as described in **Annex 6** [*Equipment and Furnishings to be provided by the Employer and Third-party Services commissioned by the Employer*].

**2.8
PAYMENT FOR SERVICES**

- 2.8.1 The Consultant shall receive from the Employer remuneration for the Services performed under this Contract in accordance with Article 5 [*Remuneration*].

Paragraph 3 The Consultant

3.1

SCOPE OF SERVICES

- 3.1.1 The Consultant shall deliver the Services in full and on time.
- 3.1.2 The Services to be performed by the Consultant encompass all the part services described and explained in this Contract and its Annexes, in particular in Annex 2 [Minutes of Negotiations] Annex 3 [Terms of Reference plus Tender Documents] and Annex 9 [The Consultant's bid]. Furthermore, the Consultant must deliver all the standard and special services as defined in Paragraph 3.2.1. [Standard and Special Services].
- 3.1.3 The Consultant shall work together with third parties commissioned by the Employer pursuant to Paragraph 2.7 [*Third-party services*]. The Employer is not responsible for these third parties or their performance. In addition, the Consultant must comprehensively coordinate their services with its own services, as far as possible.

3.2

STANDARD AND SPECIAL SERVICES

- 3.2.1 In addition to the Services specified explicitly in the Contract, the Consultant shall also perform all other services, if necessary, that are not listed under the contractual services, but are customarily required in order to properly discharge the contractual obligations ("**standard services**"). The standard services shall be fully compensated through the Agreed Remuneration.
- 3.2.2 "**Special Services**" are services that are not included under the contractual or standard services, but must necessarily be delivered by the Consultant in order to properly perform its duties under the Contract, because the external circumstances of service delivery have changed unexpectedly, or because the Employer has suspended the Services pursuant to Paragraph 4.5 [*Force majeure*], or because the Employer, with the prior consent of KfW, requires services that were not included in the invitation to tender but are necessary.

3.3 DUE DILIGENCE

3.3.1 Except where otherwise stipulated in this Contract, or otherwise legally stipulated within the country or within another legal system (including the legal system in the Consultant's jurisdiction) by provisions that impose higher demands than this Contract, when performing its obligations under this Contract the Consultant shall exercise due diligence and provide the Services in compliance with professional practice and to the recognised quality standards, in accordance with current scientific and generally accepted engineering standards. The Consultant must document its work, the progress of the Project and the decisions it takes in an appropriate form that is acceptable to the Employer, bearing in mind the requirements arising from Paragraph 5.7 [*Auditing*].

3.4 REPORTING

- 3.4.1 The Consultant shall report to the Employer and KfW on the progress of the Services in accordance with the Special Conditions. Except where otherwise stipulated in the Special Conditions, in case of longer assignments such as construction management, training or operational support, the Consultant shall draw up quarterly reports, and following the conclusion of the Services draw up a final report covering the entire Completion Period. The reports shall include a comparison of targeted and actual values for the planned activities; the progress of construction; developments in the time frame; financial developments; and information on any problems and identification of possible solutions.
- 3.4.2 The Consultant shall inform the Employer promptly of all extraordinary circumstances that arise during the performance of the services and of all matters requiring KfW's approval.
- 3.4.3 Furthermore, the Consultant shall, upon request, supply the Employer with information in connection with the Services.

3.5 STAFFING

- 3.5.1 The Consultant shall employ the staff specified in Annex 5 [Staffing Schedule] to implement performance of the Services. The list of designated key staff and any changes to it shall require the prior written approval of the Employer and KfW.
- 3.5.2 The Employer may require the Consultant to terminate the contract of, or replace, any staff member who fails to meet the requirements or violates Paragraph 1.13 [Conduct]. Any such demand must be submitted in writing to the Consultant stating the reasons for it.
- 3.5.3 If staff employed by the Consultant need to be replaced, the Consultant shall ensure that the staff member in question is replaced promptly by an individual who possesses at least equivalent qualifications.
- 3.5.4 If any one of the Consultant's staff falls ill for more than one month and this jeopardises the performance of this Contract by the Consultant, the Consultant shall replace this staff member with another staff member who possesses at least equivalent qualifications.
- 3.5.5 Staff shall only be replaced after prior approval by the Employer, such approval not to be unreasonably withheld. The exchange, replacement, or planned dispensation of replacement (as exception to existing rules) of key staff specified by name shall require the prior approval of KfW.
- 3.5.6 If the Consultant must terminate the contract of, or replace, any staff during the Contract period, the costs thus accrued shall be borne by the Consultant, except where staff are removed or replaced at the Employer's request. In this case, the Employer shall meet the costs of replacing the staff member, unless the staff member in question does not meet the requirements or has violated Paragraph 1.13 [Conduct].

3.6 CONTACT PERSON OF THE CONSULTANT

- 3.6.1 The Consultant shall appoint for the exercise of all rights and obligations arising from this Contract a natural person as its contact person for the Employer under this Contract.

**3.7
INDEPENDENCE OF THE
CONSULTANT**

- 3.6.2 The Consultant shall specify and provide respective contact data to the Employer and KfW for an individual at the Consultant's place of business who can be reached at any time in cases of emergency or crisis as well as a deputy of the Consultant. The Consultant shall notify the Employer and KfW without delay of any change of elected person or their contact data.
- 3.7.1 The Consultant undertakes that neither the Consultant nor any enterprise associated with the Consultant shall bid for the Project as manufacturer, supplier, or building contractor. This prohibition also applies to any bidding for any further consulting services, insofar as such consulting services might lead to a restriction of competition or a conflict of interests. Any violation of this stipulation may lead to the immediate cancellation of this Contract and require the reimbursement of any and all costs incurred by the Employer up to the time of such violation as well as compensation for any and all losses and damages incurred by the Employer as a result of such cancellation.

Paragraph 4 Commencement, Completion, Amendment and Termination of the Services

4.1 COMMENCEMENT AND COMPLETION

- 4.1.1 The Consultant shall begin performing the Services on the prescribed date on which execution of the Contract shall take place, but not earlier than and without undue delay after the Contract has come into force. The Consultant shall deliver the Services in accordance with the time schedule in Annex 7 [Time Schedule for the Performance of the Services], and shall complete the Services within the Completion Period, subject to any further extensions to this Contract.
- 4.1.2 In relation to optional services (if any), the Consultant shall commence delivery of the optional services not earlier than upon receipt of notification from the Employer, subject to the Employer having received KfW's prior consent.
- 4.1.3 Any change to the time schedule in **Annex 7** [*Time Schedule for the Performance of the Services*] due to a reasonable request by either party shall be mutually agreed upon in writing.

4.2 PENALTIES FOR DELAY

- 4.2.1 If the Consultant fails to perform any of the Services under this Contract within the requisite time period, for reasons he must warrant, the Employer shall, unless the Special Conditions include a derogation, be authorised to inflict a penalty of 0.5% of the Order Value for every week of delay, subject to a cap of 8% of the Order Value. Beyond such penalty, the Employer may not bring any further claims arising from the delay in the performance of the Services. The right of termination shall remain unaffected.

4.3 AMENDED SERVICES

- 4.3.1 Subject to the prior consent of KfW, the Employer shall be entitled to require an amendment of the Contract (amended or additional services or amended deadlines/periods for execution – "**amended services**").

- 4.3.2 In this case, the Agreed Remuneration and the Completion Period shall be adjusted accordingly by mutual agreement of the parties. The Consultant shall submit proposals for performance of and remuneration for the amended services.
- 4.3.3 The Consultant shall execute the amended services if the Employer agrees, in writing, to the remuneration proposal. If the parties do not agree on the remuneration proposal within three months of the Consultant commencing delivery of the Services, the entitlement to remuneration shall be treated as a dispute under Article 8 [*Disputes and Arbitration Procedure*].

4.4 IMPEDIMENT

- 4.4.1 If the performance of the Services is impeded or delayed by the Employer or the Employer's contractual partners ("impediment") such that the impediment leads to an increase in the costs, the scope or the duration of the Services, the Consultant shall immediately notify the Employer of the circumstances and the possible consequences.
- 4.4.2 If an impediment falls within the sphere of risk of the Employer or if the impediment is caused by the Employer through intent or gross negligence, the Consultant shall be entitled to reimbursement of the costs incurred by it as a result of the impediment, subject to these costs being evidenced.

4.5 FORCE MAJEURE

- 4.5.1 In the event of Force Majeure, the contractual obligations, as far as affected by such event, shall be suspended for as long as performance remains impossible due to the Force Majeure, provided that one party to the Contract receives notification of the Force Majeure event from the other party within two weeks after its occurrence. Any and all liability of the Consultant for damages arising due to its absence caused by the Force Majeure is excluded.
- 4.5.2 In the event of Force Majeure, the Consultant shall be entitled to an extension of the Contract equal to the delay caused by such Force Majeure. If the performance of the Services is rendered permanently impossible by the Force Majeure, or if the Force Majeure event lasts for

longer than 180 days, both parties to this Contract shall be entitled to terminate the Contract.

4.5.3 In case of suspension or termination of the Contract due to Force Majeure, the Services performed up to the time of the Force Majeure and all necessary expenditure (which is evidenced) of the Consultant arising from the discontinuing of the Services shall be invoiced on the basis of contractual prices. Neither party shall make any further claims.

4.6 SUSPENSION OR TERMINATION

4.6.1 The Employer may, with the prior consent of KfW, fully or partially suspend the Services or terminate this Contract after serving written notice of at least 30 days. In this event, the Consultant must immediately take all measures necessary to ensure that the Services are discontinued and the expenditure minimised. The Consultant shall hand over all reports, drafts and documents to be drawn up by the date in question to the Employer. If the suspension lasts longer than 180 days the Consultant may terminate the Contract. In case of termination Paragraph 4.5.3 [Force majeure] shall apply mutatis mutandis.

4.6.2 If the Consultant fails to meet its contractual obligations without sufficient reason; in accordance with the Contract; or on time, the Employer may serve a notice upon the Consultant and request it to duly perform its Services. If the Consultant fails to remedy the performance deficit within a period of 21 days of having been called upon to do so by the Employer, the Employer shall be entitled, after this period has elapsed, to terminate the Contract by written notice.

4.6.3 The Consultant may terminate this Contract if any amounts due and payable to it under this Contract have not been paid within 60 days after the receipt of the corresponding invoice, as long as the Consultant has given the Employer a written reminder within a period of 30 days after the initial 60 day deadline has passed and the Employer does not pay the due amounts within a further period of 30 days after this notice.

4.6.4 If the termination of the Contract is not due to a default on the part of the Consultant, the Consultant shall be entitled to demand the

Agreed Remuneration. The Consultant must, however, mitigate its loss and deduct any proceeds of such mitigation, which shall include (i) any remuneration paid to the Consultant working on other projects during the time the Consultant was scheduled to work on the Project (ii) any remuneration that the Consultant would have earned working on other projects during the time the Consultant was scheduled to work on the Project, but which the Consultant has not received as a result of the Consultant's wilful actions or omissions.

4.6.5 If the termination of the Contract is due to a default on the part of the Consultant, the Consultant shall be entitled to demand the Agreed Remuneration for the Services performed until the date of termination but not yet remunerated. The Employer shall be entitled to demand compensation for the direct damages caused by the default.

4.7 CORRUPTION AND FRAUD

4.7.1 If it is proven that the Consultant has breached Paragraph 1.14 [*Corruption and fraud*], the Employer may, notwithstanding the various punishments or other sanctions to which the Consultant is subject according to the law of the country or any other legal system, terminate this Contract in writing. The Employer may also terminate this Contract in writing if the Declaration of Undertaking submitted by the Consultant in conjunction with its bid is untrue.

4.8 RIGHTS AND OBLIGATIONS OF THE PARTIES IN CASE OF TERMINATION

4.8.1 Termination of the Contract shall not prejudice or affect the rights, claims or obligations of the parties until the date on which the cancellation takes effect.

Paragraph 5 Remuneration

5.1 REMUNERATION OF THE CONSULTANT

5.1.1 The Consultant shall receive the remuneration agreed in the Special Conditions for performing the Services owed under this Contract, subject to the conditions listed therein and the conditions below. **Annex 8** [*Statement of Costs*] contains a detailed list of conditions.

5.2 TERMS OF PAYMENT

5.2.1 Except where otherwise agreed in the Special Conditions, the Employer shall pay the Consultant's remuneration as follows:

(a) **Advance payment**, due within 30 days of execution of this Contract upon presentation of an invoice.

(b) The **instalments** shall be paid upon presentation of corresponding invoices with a maximum of one payment per quarter. The first invoice for the first instalment shall be presented, at the earliest, 3 months after the contractually agreed commencement of the Services. The Employer shall have the right to suspend payment of instalments at any stage in the event of substantial deviations from the time schedule and/or insufficient performance on the part of the Consultant. This right shall also apply to payments which are not based on output-related evidence of performance. If the payment of instalments is suspended, the Employer must proceed in accordance with Paragraph 5.6 [*Objections to Invoices*].

(c) The **final payment** shall be made after the Services have been performed in full and confirmation had been provided by the Employer and KfW to that Consultant.

5.2.2 Only in cases of agency contracts: the Consultant's invoices shall be addressed to the Employer "c/o KfW". KfW shall receive the

original invoice. A copy of the invoice shall be sent to the Employer directly. The original final invoice is to be addressed to the Employer, and KfW will receive a copy.

- 5.2.3 Any guarantees shall be in the form set out in Annexes 10 and 11 and shall always be provided as bank guarantees made out to the Employer as beneficiary. They must be acceptable to the Employer and KfW. The original of the guarantee shall be sent to the Employer, with a copy, together with a confirmation of delivery of the original, to be sent to KfW.

5.3 METHOD OF PAYMENT

- 5.3.1 Payment shall be made according to the conditions set out in the Special Conditions.

5.4 PRICE ADJUSTMENT

- 5.4.1 Except where agreed otherwise in the Special Conditions, the following conditions shall apply with respect to prices. The prices specified in **Annex 8 [Statement of Costs]** shall apply to the Completion Period specified in the Special Conditions and for a period of 3 months thereafter. After this date, prices may be adjusted if the official level of prices and wages in the Consultant's country of origin (Foreign Currency costs) or in the Employer's country (Local Currency costs) has increased, as measured using the base indices specified in the Special Conditions, and this is proven by the Consultant. The following formula shall be used to calculate this:

$$P_n = P_o \cdot (0.15 + 0.85 \cdot L_n/L_o)$$

P_n = revised price, P_o = base price,

L_n = revised index, L_o = base index.

The price will not be calculated until publication of the final price index.

- 5.4.2 Except where otherwise agreed in writing, the Consultant shall only be entitled to remuneration for special services if the services are amended pursuant to Paragraph 4.3 [*Amended Services*].

**5.5
PAYMENT DEADLINE**

- 5.5.1 Except in relation to advance payment and where otherwise stated in the Special conditions, payment shall be made within 60 days of presentation of a verifiable invoice by the Consultant to the Employer.
- 5.5.2 If the Employer does not make the payment within the period set out in Paragraph 5.5 [*Payment Deadline*], except where the Employer has raised an objection pursuant to Paragraph 5.6 [*Objection to Invoices*], the Consultant shall be paid compensation at the rate agreed in the Special Conditions. This shall be calculated on a daily basis from the date on which the invoice fell due in the currency agreed. The agreed compensation shall satisfy all the Consultant's claims arising from the Employer's delay.

**5.6
OBJECTION TO INVOICES**

- 5.6.1 Should the Employer object to the whole or part of an invoice of the Consultant, the Employer shall notify the Consultant of its intention to withhold payment and shall state the reasons why. If the Employer objects only to a part of the invoice, it shall pay that part of the invoice to which it has not objected within the period specified in Paragraph 5.5 [*Payment Deadline*].

**5.7
AUDITING**

- 5.7.1 For services or part services that are not remunerated on a lump-sum basis, the Consultant shall be obliged to maintain up-to-date records that meet professional standards and that clearly and systematically indicate the services provided and the time and expense involved. The Consultant shall permit the Employer and KfW to audit these records at any time and make copies of them during the term of the Contract.

**5.8
CURRENCY**

- 5.8.1 The Special Conditions shall indicate the currency applicable to the Contract.

Paragraph 6 Liability

6.1

LIABILITY OF THE CONSULTANT FOR BREACHES OF CONTRACT FOR WHICH HE IS RESPONSIBLE

- 6.1.1 The Consultant shall be liable to the Employer for verifiably culpable breaches of its contractual obligations, particularly breaches of Article 3 [*The Consultant*]. The liability of the Consultant shall be limited to the respective insurance sum, insofar as this is higher than the Order Value. Otherwise the liability of the Consultant shall be limited to the Order Value. This shall not affect the liability for premeditation and gross negligence.

6.2

LIABILITY OF THE CONSULTANT FOR SUB-CONTRACTORS

- 6.2.1 The Consultant shall also be liable for the Services provided by a sub-contractor pursuant to Paragraph 1.9 [*Assignment and Sub-contracting*].

6.3

PERIOD OF LIABILITY

- 6.3.1 The Consultant's liability shall terminate on the date of the acceptance of the Services and in the event the Contract does not provide for acceptance of the Services, on the date of performance of the contractually agreed Services in full, unless a different point of time is provided in the Special Conditions.

6.4

LIABILITY FOR CONSEQUENTIAL DAMAGE

- 6.4.1 Liability for consequential damage is excluded.

6.5

LIABILITY OF THE EMPLOYER

- 6.5.1 The Employer shall be liable for verifiably culpable breaches of its contractual obligations, particularly breaches of Paragraph 2 [*The Employer*].

Paragraph 7 Insurance

7.1 INSURANCE AGAINST LIABILITY AND DAMAGES

7.1.1 The Consultant shall take out insurance for the period of the Contract, on the terms specified in the Special Conditions, including, but not limited to, the following:

- (a) **professional liability insurance;**
- (b) **personal liability insurance;**
- (c) **equipment insurance covering loss of or physical damage to all equipment acquired, used, provided or paid for by the Employer within the context of this Contract; and**
- (d) **motor vehicle third party liability insurance and motor vehicle comprehensive insurance for the vehicles acquired in connection with this Contract.**

7.1.2 The costs incurred in connection with the insurance specified in Paragraph 7.1.1 [*Insurance Against Liability and Damages*] shall be fully compensated by the Agreed Remuneration.

Paragraph 8 Disputes and Arbitration Procedure

8.1

AMICABLE SETTLEMENT

- 8.1.1 Should a dispute arise from or in connection with this Contract, the representatives of the parties authorised to settle disputes shall, within 21 days of one party submitting a written request to the other party, endeavour in good faith to settle the dispute amicably.

8.2

MEDIATION

- 8.2.1 If an amicable settlement cannot be reached within a period of 3 months after the written request pursuant to Paragraph 8.1 [*Amicable Settlement*], the parties may, insofar as both sides agree, attempt to settle the dispute in accordance with the Special Conditions by way of mediation prior to initiating arbitral proceedings. Notwithstanding this, the parties may agree to begin mediation immediately. Unless the parties agree otherwise within a period of 14 days, either party may require that the mediator is appointed by the institution named in the Special Conditions.

Mediation shall begin no later than 21 days after the mediator has been appointed. The mediation process shall be implemented in accordance with the procedure selected by the appointed mediator.

All negotiations and talks held in the course of mediation shall be treated confidentially, unless they are concluded in a written, legally binding contract.

If the parties accept the recommendations of the mediator or agree to settle the dispute another way, the agreement reached shall be recorded in writing and signed by the representatives of the parties.

- 8.2.2 If the dispute is not settled within 3 months after the mediator has been appointed, the dispute shall be settled by way of the arbitration procedure pursuant to Paragraph 8.3 [*Arbitration Procedure*].

8.3
ARBITRATION PROCEDURE

8.3.1 If the parties do not reach amicable agreement pursuant to Paragraph 8.1 [*Amicable settlement*] or by way of mediation pursuant to Paragraph 8.2 [*Mediation*], the dispute shall finally and exclusively be settled – except where otherwise stipulated in the Special Conditions – in accordance with the Rules of Conciliation and Arbitration of the International Chamber of Commerce in Paris by one or several arbitrators appointed in accordance with the Rules. The place of arbitration and the language of the arbitration procedure shall be stipulated in the Special Conditions.

Special Conditions

Ad Article 1: General Provisions

Ad 1.1: Definitions

“Completion Period”: The completion period shall be 12 months from the date of commencement of the project.

“Force majeure”: Force Majeure means an event which is beyond the reasonable control of consultant and which makes consultant’s performance of its obligations hereunder impossible Any period within which a consultant shall, pursuant to this contract, complete any action or task, shall be extended for a period equal to the time during which consultant was unable to perform such action as result of force majeure.

“Project”: The consulting services shall be performed for “Preparation of Feasibility and Detailed Project Report for Mass Rapid Transit System in Coimbatore”

“Date on which execution shall be commenced”: The date on which execution shall be commenced is [●] / The date on which execution shall be commenced lies [●] weeks after the day on which the contract comes into force⁶.

Ad 1.4: Communication

The language for notices, instructions, reports and other messages shall be English.

Ad 1.5: Notices

Address of the Employer

Postal address	Chennai Metro Rail Limited, CMRL Depot, Admin Building, Poonamalle High road, Koyambadu, Chennai-600107.
Email:	gmpd.cmrl@tn.gov.in
Phone:	+91 44 2379 2000
Fax:	+91 44 2379 2200

Address of the Consultant

Postal address

Email: [•]

Phone: [•]

Fax:

Address of KfW⁷

Postal address

Palmengartenstrasse 5 – 9
60325 Frankfurt
Germany

Email: info@kfw.de

Phone: +49 (69) 7431-[•]

Fax: **+49 (69) 7431-[•]**

Ad 1.6: Law and language

The language(s) of the Contract shall be English.

[The prevailing contractual language shall be English]

The law governing this Contract shall be Republic of India.

Ad 1.10: Rights to the results of work, copyright

The copyright (including future copyright) of all documents, reports, drawings, etc. prepared by the Consultant, including each and every stage of performance of the Services under the contract shall be vested with the Employer and KfW. All Documents prepared by the Consultant and its Sub Consultant, shall become, upon their creation, the property of Employer and KfW whether the Project for which they are made is executed or not. Without limitation to the foregoing, Employer shall hold, and Consultant shall be deemed to have been irrevocably assigned to Employer in perpetuity with no reserved or retained rights in any other persons or entities, all copyrights or other intellectual property rights relating to the Documents.

Ad Article 2: The Employer

Ad 2.2: Decisions/cooperation

Decisions/cooperative actions⁸ of the Employer pursuant to Paragraph 2.2 [Decisions/cooperation] must be taken/performed at the latest within four weeks days/weeks.

Ad 2.4: Taxes⁹

The contractual parties agree on the following provisions regarding taxes and levies.

Only GST will be reimbursed to the consultant by CMRL upon submitting a separate invoice to CMRL as per the estimation included in the financial proposal as per actual vouchers and receipts.

[•] *[Clarification is required for the taxes/levies that may need to be paid or reimbursed (if applicable, differentiated according to e.g. sales/value added tax, corporate tax, other taxes/levies etc.). The applicable provisions should be mentioned in the tender offer.]*

Ad 2.6: Contact person of the Employer

The Employer's contact person shall be **[•]**.

The Employer's deputy shall be **[•]**.

Ad Article 3: The Consultant

Ad 3.4: Reporting

For each of the outputs stated in the Terms of Reference/scope of work, there has to be a separate Report to be submitted to CMRL in 5 hardcopies and in file format.

Furthermore, brief regular reporting on the project progress is expected as follows:

- Inception report within 1 month after commencement of the project;
- Traffic Survey Analysis report in month 3;
- Draft final report phase A in month 4 including an Alternatives Analysis Report as defined in the "Appraisal guidelines for Metro Rail Projects, Sept. 2017 of the Ministry of Housing and Urban Affairs, Government of India";
- Final report phase A within 1 month after approval by the Steering Committee and final decision on the selected option;

- Interim Reports: Topographical and geotechnical report (month 7), corridor alignment, station and depot layout plan (month 8), land acquisition and utilities inventory report (month 9), environmental and social impact assessment report (month 10);
- Draft final report phase B in month 11;
- Final report phase B in month 12.

At the end of the study, all primary data files and data bases (GIS data base, traffic data base, etc.) will be handed over to the client.

Ad 3.6.1: The Consultant’s contact person for handling of the Contract

The Consultant’s contact person for handling of the Contract shall be [●].

Contact details [●].

The deputy shall be [●].

Contact details [●].

Ad 3.6.2: The Consultant’s contact person for cases of emergency or crisis

The Consultant’s contact person for cases of emergency or crisis shall be [●].

Contact details [●].

The deputy shall be [●].

Contact details [●].

Ad Article 5: Remuneration

Ad 5.1.1: Remuneration

For the services to be rendered by the Consultant under this Contract the Employer shall pay the sum of

[●] in [● currency¹⁰]

(“Order Value”).

The Order Value is composed of:

Fixed fee: [●] in [● currency]

Annex 8 [*Statement of Costs*] contains a detailed statement of costs.

Ad 5.2: Terms of payment

The Consultant's remuneration shall be paid against presentation of an invoice, indicating the BMZ-No. (KfW-Reference No., see § 1.1. Definitions "Project"), as follows:

[•] INR advance payment. **[•]** possible stipulation on the advance payment guarantee¹¹

[•] INR instalments¹²

[•] INR as the final payment¹³

[•] possible stipulation on the retention guarantee¹⁴.

Ad 5.3: Method of payment

Invoices shall be addressed to the Employer (CMRL), C/o of KfW, excluding local taxes. Local taxes will be reimbursed to the consultant by CMRL in INR . In this regard the consultant shall submit a separate invoice to CMRL. This would be released only after the release of the main invoice.

Ad 5.8: Currency

The applicable currency for the Contract shall be **Indian Rupees (INR)**

Ad Article 6: Liability

Ad 6.3: Period of liability

The Consultant's liability shall terminate upon approval of Final Detailed Project Report Phase B by CMRL and KfW.

Ad Article 7: Insurance

The insurance **[•]** shall be taken out by the Consultant, the insurance **[•]** by the Employer. *[N.B.: Complete as appropriate to the case in hand. Please indicate here the sums insured and the maximum number of claims per year (maximisation).]*

The Consultant will be responsible for taking out insurance coverage in the performance of the services under this contract including but not limited to the following:

- i. Third Party Liability Insurance
- ii. Workmen's compensation insurance
- iii. Professional Indemnity insurance

Ad Article 8: Disputes and Arbitration Procedure

Ad 8.2: Mediation

The mediator shall be appointed by **CMRL** and the appointment shall be binding for the parties.

The costs of the mediation and of the mediator's services shall be shared equally between the parties.

Ad 8.3: Arbitration Procedure

The place of arbitration shall be **Chennai**.

The language of the arbitration procedure shall be English.

The dispute so referred shall be settled by Arbitration and the parties agree on the following procedure for appointing the Arbitrator / Arbitrators:

In case the value of the disputed claim and counter claim is Rs.5 crore or less:

The dispute shall be referred to a sole-member Arbitral Tribunal. Such sole-member shall be nominated by the party seeking arbitration from the List of Arbitrators, maintained by the Client, consisting of independent persons to be nominated as Arbitrators, who shall meet with the requirement relating to the independence or impartiality of arbitrators referred to in the Fifth and Seventh schedules, read with Section 12, sub-sections (1) (a), (b) and (5) of the Arbitration and Conciliation Act, 1996 as amended by the Arbitration and Conciliation (Amendment) Act 2015.

If the party seeking Arbitration is the Consultant, such proposal shall be addressed to the Client and the Client shall, within fifteen days from the date of receipt of such proposal, send the list of Arbitrators maintained by the Client, to the Consultant. The Consultant shall nominate an arbitrator from the list within fifteen days from the date of receipt of the list from the Client. If the party seeking Arbitration is the Client, it shall forward such proposal to the Consultant along with the nomination of an Arbitrator from the list.

If either party fails to nominate the arbitrator within the prescribed time limit, as mentioned above, then such other party, after the expiry of the prescribed time limit, has the right to nominate the Arbitrator from the said list on behalf of the party failing to nominate.

In case the value of the disputed claim and counter claim is more than Rs.5 crore:

The dispute shall be referred to an Arbitral Tribunal comprising of three members. Either party may propose to the other party for referring the dispute to Arbitration. If the proposal is initiated by the Consultant, such proposal shall be addressed to the Client and the Client shall, within fifteen days from the date of receipt of such proposal, send the list of Arbitrators maintained by the

Client, to the Consultant. The Consultant shall nominate an arbitrator from the list within fifteen days from the date of receipt of the list from the Client. The Client (CMRL) shall nominate its Arbitrator from the said list within 15 days thereafter.

If the proposal for referring the dispute to Arbitration is made by the Client to the Consultant, it shall forward such proposal to the Consultant along with the nomination of its Arbitrator from the said list. The Consultant shall, within fifteen days of receipt of the list from the Client, nominate its arbitrator from the list.

If either party fails to nominate its Arbitrator within the prescribed time limit as mentioned above, after the nomination by the other party, then such other party, after the expiry of the prescribed time limit, has the right to nominate the arbitrator from the said list, on behalf of the party failing to nominate.

The two arbitrators nominated by the consultant and the Client as above, shall appoint the Presiding Arbitrator, by mutual consultation among themselves, within 15 days of the appointment of the second Arbitrator.

If no consensus is reached within 15 days regarding the appointment of the Presiding Arbitrator, either party may apply to the Designated Court referred to in the Arbitration and Conciliation Act, 1996 as amended by the Arbitration and Conciliation (Amendment) Act 2015 for the appointment of the Presiding Arbitrator.

The parties agree that the selection and nomination of Arbitrators from the list should be based on the nature and subject matter of dispute to be adjudicated upon, that is, the nominated Arbitrators shall have sufficient knowledge and experience to decide upon the disputed matter. In case of three-member Arbitral Tribunal, it shall also be ensured by the nominating parties / Arbitrators, as the case may be, that at least one member of the Tribunal shall be a legal professional with a minimum of 20 years of experience.

In the event of an arbitrator dying, neglecting or refusing to act or resigning or being unable to act for any reason, it shall be lawful to appoint another arbitrator in place of the outgoing arbitrator in the manner aforesaid.

Subject to aforesaid, the Arbitration and Conciliation Act 1996, as amended from time to time and the rules thereunder and any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceedings under this clause.

During the pendency of arbitration / conciliation proceedings, the Consultant shall continue to perform and make payments due to CMRL as per the License agreement.

The venue of the arbitration shall be Chennai. All proceedings of such arbitration shall be in the English language. The cost of Arbitration including the fees of the Arbitrator shall be borne equally by both the parties.

Jurisdiction of Courts: The Courts at Chennai shall have exclusive jurisdiction to adjudicate any claim, dispute or matters arising out of this Agreement.

(Place, date)

(for the Employer)

(for the Consultant)

List of Annexes

Annex no.	Title
1	Declaration of Undertaking
2	Minutes of Negotiations
3	Terms of Reference plus Tender Documents
4	Guidelines for the Assignment of Consultants in Financial Co-operation with Developing Countries (in the version valid on the date the bid was submitted)
5	Staffing Schedule
6	Equipment and Furnishings provided by the Employer and Third-party Services Commissioned by the Employer
7	Time Schedule for the Performance of the Services
8	Statement of Costs
9	The Consultant's Bid
10	Advance Payment Guarantee
11	Model Retention Guarantee

If one or several of the Annexes should not be necessary in the actual Contract, to preserve the integrity of the references please retain the numbering of the Annexes and insert the words “not applicable” in the relevant Annexes.

Declaration of Undertaking

We underscore the importance of a free, fair and competitive contracting procedure that precludes abusive practices. In this respect we have neither offered nor granted directly or indirectly any inadmissible incentives to any public servant or other person nor accepted such incentives in connection with our bid, nor will we offer or grant or accept any such incentives or conditions in the present tendering process or, in the event that we are awarded the contract, in the subsequent execution of the contract. We also declare that no conflict of interest exists in the meaning of the kind described in the corresponding [Guidelines](#).

We also underscore the importance of adhering to environmental and social standards in the implementation of the Project. We undertake to comply with applicable labour laws and the Core Labour Standards of the International Labour Organization (ILO) as well as national and applicable international standards of environmental protection and health and safety standards.

We will inform our staff of their respective obligations and of their obligation to fulfil this Declaration of Undertaking and to obey the laws of the country of [●] (name of country).

We also declare that our company/all members of the consortium has/have not been included in the list of sanctions of the United Nations, nor of the EU, nor of the German Government, nor in any other list of sanctions and affirm that our company/all members of the consortium will immediately inform the client and KfW if this situation occurs at a later stage.

We acknowledge that, in the event that our company (or a member of the consortium) is added to a list of sanctions that is legally binding on the client and/or KfW, the client shall be entitled to exclude us/the consortium or, if the contract is awarded to our company/the consortium, to immediately cancel such contract if the statements made in the Declaration of Undertaking were objectively false or the reason for exclusion from the tender procedure occurs after the Declaration of Undertaking has been issued.

.....
(Place) (Date)

.....
(Signature(s))

Minutes of Negotiations¹⁵

Terms of Reference plus Tender Documents

**Guidelines for the Assignment of Consultants in Financial Co-operation with
Partner Countries**

(in the version valid on the date the bid was submitted)

Staffing Schedule

(pursuant to the Consultant's Bid; where applicable in the version subsequently negotiated)

**Equipment and Furnishings to be provided by the Employer and Third-party
Services Commissioned by the Employer**

Time Schedule for Delivery of the Services

(pursuant to the Consultant's Bid; where applicable in the version subsequently negotiated)

Annex 7

Statement of Costs

(pursuant to the Consultant's Bid; where applicable in the version subsequently negotiated)

The Consultant's Bid

Model Advance Payment Guarantee

Address of guarantor bank: ...
.....
.....
.....

Address of beneficiary (client):
.....
.....
.....

On you concluded with (name and full address)
.....
..... ("Contractor") a Contract for
..... (Project, object of the
Contract) at a price of
.....

According to the provisions of the contract, the Contractor receives an advance
payment in the amount of
..... equalling %
of the contract value, as an advance payment.

We, the undersigned
..... (bank),
waiving all objections and defences under the aforementioned Contract, hereby irrevocably
and independently guarantee to pay on your first written demand any amount advanced to
the Contractor up to a total of

.....
(in words)

against your written declaration that the Contractor has failed to perform the aforementioned
Contract.

This guarantee shall come into force as soon as the advance payment has been credited
to the account of the Contractor. This guarantee shall be automatically reduced pro rata in
accordance with the payments performed.

In the event of any claim under this guarantee, payment shall be effected to KfW, Frankfurt
am Main, BIC: KFWIDEFF, account IBAN: DE53 5002 0400 3800 0000 00, for account of
(client/project executing agency/purchaser).

This guarantee shall expire not later than
by which date we must have received any claims by letter or coded telecommunication.

It is understood that you will return this guarantee to us on expiry or after settlement of the
total amount to be claimed hereunder.

.....
Place, date

.....
Guarantor

Model Retention Guarantee

Address of guarantor bank: ...

.....
...
.....
.....
.....

Address of beneficiary (client):

.....
.....
.....
.....

On you concluded with (name and full address)
.....
..... ("Contractor") a Contract for
..... (Project, object of the
Contract) at a price of

.....

According to the provisions of the Contract, the Contractor receives the amount of

.....
..... equalling %
of the Contract value, as a final payment.

We, the undersigned

..... (bank),
waiving all objections and defences under the aforementioned contract, hereby irrevocably
and independently guarantee to pay on your first written demand an amount up to a total of

.....

(in words)

against your written declaration that the Contractor has failed to perform the aforementioned
contract.

In the event of any claim under this guarantee, payment shall be effected to KfW, Frankfurt
am Main, BIC: KFWIDEFF, account IBAN: DE53 5002 0400 3800 0000 00, for account of
(client/project executing agency/purchaser).

This guarantee shall expire not later than

by which date we must have received any claims by letter or coded telecommunication.

It is understood that you will return this guarantee to us on expiry or after settlement of the
total amount to be claimed hereunder.

.....

Place, date

.....

Guarantor