

**PUNJAB STATE ROAD SECTOR PROJECT
LOAN # 4843-IN**

**Consultancy Services and Project Preparatory
Studies for Package II (Phase II)**

**Task A4: Confirmation of Contracting Capacity
to Undertake and Manage the Works**



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for Package II (Phase II)
Task A4: Confirmation of Contracting Capacity to
Undertake and Manage the Works

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Executive Summary

Table 1: Industry Capacity Overview

Activity	Contractor	Consultant	Action / Comment
Staff resources	✓	✓	Resources are available, but will require some training in new approach
Physical resources	✓	NA	Contractors have (or could readily get) the resources needed
Maintenance management	Not system based	Limited	Training to be provided on maintenance management
Performance based maintenance activities	Limited to bridge construction and maintenance management on road improvement schemes	Limited	Training to be provided on maintenance activities
Long term contracts	Limited to construction contracts	Limited to construction contracts	Previous long term (5 years) contracts are only of a construction type or Design and Build.
Quality assurance	Limited to Batching Plant Quality Control systems	Variable and dependent upon size and experience.	ISO or equivalent certification only typically held by large national or international companies.
Pavement and surface understanding	✓	✓	All parties generally understand pavement and surfacing construction
Multi-asset experience	Variable and dependent upon size and experience	✓	The value of experience beyond the scope of Road Construction and Maintenance needs to be evaluated during the prequalification phase.
Project management	✓	✓	Management of large contracts is routine
Data collection and analysis	Limited to non-existent	Variable and dependent upon size and experience.	Variable experience in collecting and interpreting data.
Tender document development	NA	✓	External input will be required for initial OPRC tender
Business risk processes	✓	✓	Experience available from other contract types and standard operating procedures, but will need to be modified for OPRC.
Partnership experience	Some but generally limited to large national Contractors and within in the context of road construction.	Variable and dependent upon size and experience.	The ability of all parties to work cooperatively within a trusting environment is critical to the success of the OPRC concept.

Existence of Sufficient Number of Potential Bidders for the OPRC Pilot

- A level of awareness currently exists within the local Contracting Industry over the concept of Output and Performance based Road Contracts (OPRC).
- Sufficient Contractor capacity and capability appears to exist both locally and nationally
- There is a high probability that there will be an acceptable number of qualified Tenderers interested in bidding for the OPRC pilot networks.
- Local Contractors will need to expand their capacity to handle routine maintenance activities or will need to seek sub-contract support for this.
- Some of the larger Contractors are likely to have sufficient “in-house” technical capacity to manage the OPRC pilot but the majority of Tenderers will require additional technical assistance from the Consultancy Industry.
- The current level of quality assurance being applied by the Contracting Industry to general construction and maintenance activities needs to be further developed.
- Sufficient private Consultant resources exist to support the Contracting Industry with the management of the OPRC networks.
- OPRC will require the Contractor to determine the most appropriate treatment and optimal timing. It is unlikely this skill set is currently well established within the Contracting Industry. Therefore additional specialist sub-Consultant assistance is also likely to be required especially with Forward Work programme development and optimised treatment selection. These skills are likely to exist with those sub-Consultants who have had previous experience with advanced road asset management and especially with performance based contract model development and operation. It is probable this specialist sub-Consultant support will be procured outside of the Punjab State. Tenderer’s technical skills and methodology will need to clearly identify how they intend to procure this expertise.

Basis for the Pre-qualification of Bidders

- To ensure that the most appropriate Tenderers are selected to price the OPRC pilot, it is anticipated that an Expression of Interest (EOI) will be initially sought from the wider industry and from this a short list of appropriate Contractor’s developed who will then be invited to submit a tender for the work.
- When assessing Tenderers against predefined attributes the Client must retain the discretion (through the Tenderer Evaluation Team) to reject any Tender submission where it is clear the Tenderer’s abilities fall well short of the assessed requirements necessary to successfully manage a network under an OPRC.
- To make this process as transparent as possible it is recommended that a defined scoring process, and minimum score that must be passed for each attribute, be included within the RFP.

Specific Issues of Risk Which Will Require Mitigation When Developing the Contract Documents

- Confirmation of long term funding for this project must form part of the formal process leading up to contract award by the Client.
- The development of a robust escalation formula that will fairly compensate the Contractor over the term of the OPRC is essential.

- The OPRC contract documents will have to be explicit over how the management and maintenance of those road sections with improvement works completed by others is to be undertaken.
- The Contractor must to be given the freedom to design for overload conditions. It is important that the financial model and overall project budget provides sufficient funding to allow this level of pavement construction to be undertaken.
- The requirement for the OPRC Contractor to have in place a minimum level of quality assurance, which extends beyond just the production of Hot Mix Asphalt (HMA), needs to be clearly established.
- The importance of effective sub-Contractor management needs to be accentuated and should form part of the second or third awareness raising workshops to be held with the industry.
- The development of appropriate penalties that are sufficient to encourage the Contractor to avoid non-compliances and to speedily address those that have been recorded is required.
- A mechanism (outside of the formal dispute procedures provided for within the standard Conditions of Contract) for handling the Contractor's claims for variations to the contract is required.
- The contract documents must be as clear and concise as possible over the level of Emergency Works the Contractor is to complete within the Lump Sum (if any) and the mechanism for payment for additional work completed outside the Lump Sum.

The Value of the Contract That Will Best Fit the Local Contracting Capacity

- It is recommended that the average annual value for each of the OPRC contracts should not be less than Rs 30 crore and should not exceed Rs 100 crore. This should be further examined during the second Contractor workshop, in conjunction with the option of having one or two contracts within the Mansa/Sangrur network.
- The feedback from the OPRC Workshop No.1 Working Groups B and B1 indicated a minimum of 7 years and a maximum of 15 years were desirable limits on OPRC tenure.

Recommendations on Prioritised Actions to Improve Capability and Capacity

- Where there is an element of risk with adopting a new approach, the OPRC could also encourage the use of "trials" of new approaches within short lengths of the network. The risk associated with these "trials" could be shared through having a small Provisional Sum item in the OPRC that could assist the Contractor in funding the trial work, and the results of this (positive or negative) then shared between them.
- Within the scope of the OPRC, the Contractor should be empowered to make decisions and to undertake work that will be directly beneficial to the maintenance of the network, e.g. reinstating trenches created for utilities.
- It is critical that the agreed performance measures are:
 1. Simple to undertake, objective, unambiguous and therefore easier to enforce
 2. Appropriate to ensure the agreed Service Levels are maintained
 3. Drives the right behaviour by the Contractor and avoids encouraging short term profit driven solutions that are not in best interests of the long term management of the network.

- Placing the outcome of all audits and surveys in the public domain through the PRBDB website or similar easily accessible repository is strongly recommended to maintain a high degree of transparency and Contractor confidence.
- A process is developed and adopted within the OPRC that will require both parties to formally meet at regular intervals (e.g. every 3 months) at which time the Contractor's performance would be assessed against a preset list of criteria and an overall score agreed.

1 Introduction

1.1 Context of the Study

Task A4 of the Terms of Reference requires the Consultant to confirm that the Contracting (and Consulting) Industry in India have the capacity to undertake performance based road maintenance contracts. The details of this task are outlined below:

Task A4: Confirmation of Contracting Capacity to Undertake and Manage the Works

21. A general review of the contracting and consultancy capacity at the level of PRBDB has confirmed that there is scope for introducing performance based contracting in Punjab. However, a more detailed assessment of technical (specifically design and long term maintenance planning capability); financial and managerial capacity shall be undertaken to identify:

- The number of potential bidders for such work
- A basis for pre-qualification of bidders
- Specific issues of risk which will require mitigation when developing the contract documents and
- The value of contract that will best fit local capacity.

The review shall consider both the consulting and contracting industry and also look to awaken the industry to the opportunity presented by the contracts.

The Opus Technical Proposal outlined the following methodology for the completion of this task:

Task A4 - Confirmation of Contracting Capacity to Undertake and Manage the Works

In order for the concept to meet its potential, contractors must be brought-up-to-speed on OPRC. As well as awareness-raising, there will be a need to address the factors listed in Section 3.2.3 (i.e. the learning curve issues, the approach to risk management, the ability of small/local contractors to get involved, etc). It is important to note that the aim of the exercise is to ensure that there is sufficient capacity and not to ascertain what the total capacity is. For a successful competitive contract round, we consider that at least three capable consortiums willing to tender would be desirable.

Under this task, based on the prior feasibility work and addressing the specific issues set out in the TOR, a more detailed assessment will be made of the contracting industry's technical (specifically, design and long term maintenance planning capability), financial and managerial capacity. This will be undertaken by methods comparable to those which Opus applied in its recent study into the introduction of OPRC into Indonesia and through the following specific activities:

- Extending an open invitation to the contracting industry to attend an initial workshop in which the concepts of the OPRC, along with what is expected of the contractor, consultant and associated government agencies would be explained to ensure that the most appropriate Tenderers are selected to price the OPRC pilot. It is anticipated that an Expression of Interest (EOI) will be initially sought from the wider industry and from this a short list of appropriate Contractor's developed who will then be invited to submit a tender for the work. This would be sufficient to enable for a meaningful dialogue to occur subsequently when individual interviews with the industry take place. (Note that PRBRD input would be applied to develop an appropriate invitee list, including a good geographic coverage of suppliers and relevant contracting and consulting associations). Workshop attendee's would be left with a brief outline of the concepts and contact numbers for future reference or feedback/follow as necessary
- Holding up to at least 10 individual meetings with those contractors who have shown interest to discuss the concept in more detail and to flesh out the issues that may stand in the way of successful implementation (Note: this would utilise a modified version of the questionnaire developed for the OPRC Indonesian project). Particular attention would be given to identifying areas where the responses show that contractors are lacking in their knowledge of OPRC (i.e. to be built on in scoping the Task A6 work)
- Consolidating findings from the interview to identify common threads
- Holding a ½ day workshop specifically with the GOP/PRBDB to discuss the feedback received and issues that have been raised
- Preparing a report on the capacity of the contracting industry to deliver OPRC Contracts
- Preparing a series of informative newsletters to the industry and other stakeholders summarising the relevant outcomes from subsequent project Tasks, spanning the time between these workshops and those to be held under Task D2, – Pre-Bid Workshops.

It is our intention to run these workshops at a suitable venue (one with adequate size and with the necessary facilities) in Chandigarh in effort to minimise the logistical problems associated with arranging more remote venues.

Whereas the TOR specifically talks of the industry capacity, Opus' experience shows that it is also necessary to carefully outline the concepts within the relevant government departments such as the following in order to ascertain their capability to run an OPRC:

- PWD and PRBDB in relation to attitude to the OPRC and their knowledge of a changing role from implementer to governor of the assets
- Police / traffic enforcement in regard to overloading controls
- Finance in terms of long term project financing and escalation

1.2 Negotiated Amendments to Task A4

There were no negotiated amendments to the Opus Technical submission

1.3 Expanded Final Report

The initial series of interviews held immediately before and after the OPRC Consultation Workshop No. 1 tended to focus on the capacity of the local Contractor's and Consultants. As a result there was concern by the PRBDB that the views expressed did not take into

account the capacity and experience that may exist within the larger Contracting and Consulting Industry and which could have added further value to the introduction of this OPRC pilot to the Punjab. As a result several larger national Contractors and Engineering Consultants were contacted and information on their capability and interest in the OPRC pilot recorded. This additional information has been included in this expanded report.

1.4 Objective

The objective of the Punjab State Road Sector Project is the introduction of a pilot Output and Performance based Road Contract (OPRC) for one or more of the State's road networks. One of the critical success factors in achieving this objective is the award of the OPRC to one or more Contractors who are most able to meet the expectations of both the Client and the road users in terms of service delivery, as well as the physical requirements of the network.

The OPRC will require the Contractor to be responsible for a number of functions that are currently undertaken internally by the PRBDB and the PWD. In addition, more advanced maintenance planning will be required for effective network management and there will be the need for the Contractor(s) to either establish a level of professional engineering capacity within their organisation or to utilise independent Consultants to assist them with these functions. Part of this study will therefore consider the capacity of the Consultancy industry to provide this support.

This report summarises the outcomes of this task and has presented these under the following headings:

1. The existence of a sufficient number of potential bidders for the OPRC Pilot to be successfully tendered.
2. A basis for the pre-qualification of bidders
3. Specific issues of risk which will require mitigation when developing the contract documents
4. The value of the contract that will best fit the local contracting capacity
5. Recommendations on prioritised actions to improve capability and capacity.

2 Existence of Sufficient Number of Potential Bidders for the OPRC Pilot to be Successfully Tendered

2.1 General

The successful public tendering of a contract relies upon a healthy level of competition from the industry to ensure:

- That there will be an adequate level of expertise and resources available to complete all of the required activities under an OPRC
- That there will be an adequate level of competition between Tenderers to provide a level of price tension which in turn will ensure a fair market price is paid by the Client for the Contractor's inputs.

Although a minimum of two Tenderers could provide sufficient confidence that the above requirements have been achieved, it is generally accepted that, the greater the number of Tenders received, the greater price tension that will be applied. However within the road construction and maintenance industry the maximum number of Tenderers is typically governed by:

- The buoyancy of the local economy
- The current demand for contracting resources
- The scope of the work
- Requirement of specialist plant and/or technical skills
- The contract duration
- The value of the work
- The level of risk involved with the work

While the first two issues may be impossible for Clients to influence, the last four bullet points can be managed to encourage Contractors to tender.

2.2 Potential Pilot OPRC Contractor's Contacted

The following Table lists the Contractor's contacted and interviewed as part of this task:

Name	Company	Email Address and Phone	Postal Address	Probable Interest in Tendering
<i>K.C Mittal</i>	<i>M.G Contractor's PVT Ltd</i>	<i>kc. mittal@mgcontractors.in 0172 2575740</i>	<i>#1721, Sector - 4 Panchkula</i>	<i>Yes</i>
<i>Janki Ram Gupta</i>	<i>J.K Associates</i>	<i>98140 67545</i>	<i>Agar Nagar, Street No.2, Sangur</i>	<i>Yes</i>

Name	Company	Email Address and Phone	Postal Address	Probable Interest in Tendering
J.P Singla	J.P Singla Engineers and Contractors	0172 2580384	265, Sector 10 Panchkula	Yes
	MS Brothers	98140 54380	#2145, 2 Kot Kaniya Lal, Sultanwind Road, Amritsar	Yes
Harvinder Paul Singla	Singla Construction Co.	Singlaconstco_bat@yahoo.co.in 0164 2214832	#21605, Street No. 6/1-A Powerhouse Road, Bathinda	Yes
M.D Khattar	Infrastructure Leasing and Financial Services Limited	md.khattar@ifsindia.com 0222 6593756	The IL&FS Financial Centre Bandra Kurla Complex, Bandra East, Mumbai 400051	Uncertain – will wait for Tender Document
V.C Verma	Oriental Structural Engineers Pvt Ltd	v.c.verma@orientalindia.com 4604460011, 26874470	21, Commercial Complex, Melcha Marg, Diplomatic Enclave, New Delhi 110021	Yes
C.K Chhatre	M/S Valecha Engineering Ltd	tender@valecha.in 022 26733625-29	Valecha Chambers, 7 th Floor, Plot No. B-6, Andheri New Link Road,	Yes
R Telang	Gammon India Limited	rtl@gammonindia.com 022 67444101	Various	Subject to Tender Documents

Table 2: Contractors interviewed

2.3 23rd September 2008 Workshop Contractor Attendance

An analysis of those who registered on the day indicated that approximately 46% of the 81 registrants were Private Contractor's, either road or construction related. Consultants comprised approximately 8% with the balance (46%) being PWD, other Government departments or related organisations.

2.4 Specific Contractor Capacity Issues

The majority of the Contractors spoken to expressed a strong interest in tendering for an OPRC contract with all having had varying degrees of experience in road construction and maintenance work. While several had experience with the post construction maintenance requirements associated with the PMGSY improvement programmes, only one (Infrastructure Leasing and Financial Limited) had direct experience with performance based maintenance contracts outside of India (on a short length of Spanish Highway).

It is however possible that a degree of performance based contract management experience exists within the local industry as a result of the PRBDB's use of the design build model for bridge construction, the development and operation of toll roads and to a lesser extent the maintenance requirements of upgradation works. However these construction contracts will be typically much shorter in duration and will not normally require the Contractor to take such a long term approach to the management of pavements as the OPRC model will require.

The local contracting industry appears to have adequate resources for periodic maintenance activities such as rehabilitation and surface renewals as well as historic upgradation improvement works. This appears to be based primarily around the ownership and operation of one or more Hot Mix Asphalt (HMA) plants of various capacities along with the associated plant for pavement construction and the laying of asphaltic cement pavement and surfacing.

However, for more routine maintenance activities such as network inspections, minor pavement repairs, signs maintenance, drainage maintenance, line marking, vegetation control, lighting maintenance and other similar activities, it is likely that the local Contractors will be required to purchase additional plant and resources, or sub-contract this work out to other specialist suppliers where they exist and who may already have these resources available.

The Contractors interviewed indicated that access to suitable road aggregates that meet the grading requirements necessary for the particular application can be problematic at times. This is likely to impact upon achieving the correct design criteria and in turn on construction quality. The haul distance for aggregate into the networks around Mansa and Sangrur is significant (possibly as much as 230km) which will add additional cost to pavement construction works. However the distance is less (approximately 100km) for the networks around Amritsar and Kapurthala.

Several of the larger Contractors interviewed were ISO 9002 accredited. Where the local Contractors also had a HMA plant operation, on site lab testing and quality control systems were in place for the production runs. However no construction site quality systems

appeared to exist. When questioned over whether they might adopt ISO quality standards, there was a near universal agreement that they would, but only if this was made a requirement of the OPRC. However it was also apparent that the work required to achieve this level of accreditation was not well appreciated by the Contractor's interviewed. Consequently careful consideration of the benefits verses the cost of imposing this level of quality assurance on the industry as a compliance issue is warranted. This decision should be made within the context of what is currently required for other road maintenance and construction contracts within the Punjab as well as neighbouring States. This will ensure that the quality assurance requirements for this OPRC pilot are appropriate and not unnecessarily excessive, which could otherwise result in higher compliance costs and reduced competition.

Only two of the larger Contractor's interviewed indicated that they had specific pavement management experience and the skill necessary to develop a robust forward work programme. As the OPRC will require the Contractor to determine the most appropriate treatment and timing for this to minimise his future maintenance costs, the lack of this skill set especially with the local Contracting Industry, associated planning tools and experience is considered to be the most significant technical weakness within the local Contracting industry. Consequently it is anticipated the local Contracting industry will have to seek a level of technical assistance from the Consulting industry during the tender phase and the Contractor will need support during the first few years of the contract until sufficient knowledge transfer occurs for this to be undertaken by the Contractor directly.

The large national Contractors clearly had significant construction capability having been involved in significant infrastructure development projects. In many respects this capability, both in terms of project management and resources is likely to be well in excess of the requirements of the OPRC pilots, and especially the on-going maintenance needs following the completion of the planned upgradation work.

2.5 Consulting Firms Contacted

In addition to the Contractors interviewed, the following Consulting Engineers were interviewed directly:

Name	Company	Email Address and Phone	Postal Address	Interest in Providing Assistance to OPRC Contractor's
<i>I .J Ghai</i>	<i>Consulting Engineers Associates</i>	ceapkl@gmail.com 0172 6545529	SCO 51 B, 2 nd Floor, Swastik Vihar, Sector 5, Panchkula	Yes, including investigation and testing

Name	Company	Email Address and Phone	Postal Address	Interest in Providing Assistance to OPRC Contractor's
Er T.S Gill <i>Retired PWD Engineer</i>	C&C Works Ltd	98723 60606	Plot No.3 Sector 38, Office of Punjab Cultural Dept & Anandpur Sahib Foundation	Yes
Mr. P.K. Datta	CES (Consulting Engineering Services India Pvt Ltd)	pkdatta@cesinter.com +91 11 26423033	57,Nehru Place(5th Floor), New Delhi – 110019	Yes, in all facets including project management
Brig. Puri	Scott Wilson Kirkpatrick India Pvt. Ltd	cdpuri@scottwilsonindia.con 011 41679340, 011 41679349	A-26/4, Mohan Co-operative Industrial Estate, New Delhi	Yes, design support and project management

Table 3: Consultants interviewed

The discussion with the local Consulting Engineers indicated that there were sufficient existing private Consultants with a broad base of pavement engineering skills available that could assist the Contracting industry with the adoption of OPRC within the State. In addition there were also a number of current and recently retired PWD Engineers within Chandigarh and in other districts who would be available to assist the Contracting Industry.

There were also a number of representatives from other larger Consulting firms (i.e. CES (Consulting Engineering Services India Pvt Ltd) and BCEOM Societe Francaise d' Ingenierie) who attended the workshop. Two of these larger firms, CES and Scott Wilson were interviewed to determine their experience with performance contracts and interest in the OPRC pilot.

All Contractor/Consultant consortiums will require as a minimum specific technical experience with the following aspects of OPRC:

- Pavement and surfacing analysis and design both routine and periodic
- Forward Works Programme development and optimised treatment selection
- Pavement and surface behaviour (specific to the Punjab)
- Programming and fault recording systems and software
- Routine maintenance planning, cost recording systems and software
- Inventory data collection systems and software
- Advanced risk management
- Crash analysis and project specific safety design

- Contractor Quality Assurance system development

The interviews confirmed that the larger Consulting firms will be able to provide all of these skills in house, but that it is likely that the local Consulting Industry may need to initially seek further specialist sub-Consultants and IT support to fulfil some of these needs from the larger and specialist Consultants external to the Punjab State.

The larger Consultants interviewed were also ISO 9001 certified and they have had significant experience with other BOT projects within India. This would give them the capability to act in the role of the Contractor's auditor should they wish to engage an external resource for this role. However this component of the work would require the Consultant to have their staff based sufficiently close to the network to permit regular inspection and reporting to be efficiently managed.

2.6 Summary of Capacity Issues

- A reasonably high level of awareness currently exists within the local Contracting Industry over the concept of OPRC.
- Sufficient Contractor capacity and capability appears to exist both locally and nationally
- There is a high probability that there will be an acceptable number of qualified Tenderers interested in bidding for the OPRC pilot networks.
- Local Contractors will need to expand their capacity to handle routine maintenance activities or alternatively seek sub-contractor support for this.
- Some of the larger Contractors may have sufficient "in-house" technical capacity to manage the OPRC pilot but the majority of Tenderers will require additional technical assistance.
- The current level of quality assurance being applied by the Contracting Industry to general construction and maintenance activities may need to be further developed.
- Sufficient private Consultant resources exist to support the Contracting Industry with the management of the OPRC networks however further specialist sub-Consultant assistance is also likely to be required especially with Forward Work programme development and optimised treatment selection.
- The larger national Consultants did express interest in supporting the Contracting industry with various components of the OPRC pilot, especially technical design and project management. Their experience with other larger BOT type projects would be of value to the way the OPRC pilot will need to be managed. This could extend into providing an on-going auditing and reporting role for the Contractor.

3 A Basis for the Pre-Qualification of Bidders

The final recommendation on the format of the Tender Pre-qualification to be used will be made under Task A6: Development of Contract Format¹.

The following comments are therefore an initial review and discussion on what possible criteria could be used to screen potential Tenderers at the pre-qualification stage. Alternatively qualification against these criteria could be made at the final Tender evaluation stage.

To ensure that the most appropriate Tenderers are selected to price the OPRC pilot, it is anticipated that an Expression of Interest (EOI) will be initially sought from the wider industry and from this a short list of appropriate Contractor's developed who will then be invited to submit a tender for the work.

3.1 Previous Road Construction and Maintenance Contracting Experience

Requiring the potential Tenderer to demonstrate through a verifiable list of related projects within a recently defined period (e.g. last 5 years) will ensure that only those Contractors who have been directly involved in road construction and/or maintenance works actually tender. This will also limit the ability of either general infrastructure management or non-roading related construction firms tendering with a methodology of sub-contracting all of the physical work activities out. In our experience the risk of this model is that the head Contractor has little or no real ownership of the network and is remote from the day to day operations or requirements of the local community. This in turn can lend itself to quality issues where the sub-Contractors are held under tight financial constraints by the head Contractor who is then in turn unresponsive to these issues when raised by the Client, and seeks to pass on any payment deductions that may be made for non-compliance to the sub-Contractor. This then serves to further exacerbate the quality issues.

The issue of requiring a minimum level of experience within the Punjab State was raised at the OPRC Workshop No.1², with a period of 2 years suggested by Work Group A. Such directly related experience could be seen as beneficial in providing confidence to the PWD and the PRBDB that the local conditions and pavement performance in particular is understood. However enforcement of this as a minimum requirement could equally serve to restrict the number of Contractors to those within the State, when it is possible that highly experienced International Contractors or those from neighbouring States, with sufficient ability and knowledge to adapt, are unnecessarily excluded.

On this basis it is recommended that a requirement for a period of Punjab State specific experience is not made a requirement of the pre-qualification or tender evaluation process, but that those Tenderers who can demonstrate local experience can be scored higher on this Relevant Experience attribute than those who do not.

¹ Reference 1

² Reference 2

3.2 Track Record

Separate from the Contractor's relevant experience is the aspect of their Track Record or their actual performance against the Client's expectations. It would be desirable for the evaluation team to gain an appreciation of how the Tenderer has performed over a range of relevant and recent (e.g. 5 years) contracts.

The most appropriate way for this to be achieved is for the Tenderers to provide a list of Client referee's who can be contacted by the evaluation team to seek their comment on how the Tenderer has performed, and what problems have been encountered. This would also assist the evaluation team in determining how well the Tenderer has worked with these clients and the strength or weaknesses of the relationship.

It is therefore recommended that a Track Record assessment be included in either the pre-qualification or final tender evaluation.

3.3 Financial Capability

Feedback from the OPRC Workshop No.1 suggested that the Contractor should have a financial capability within a range of Rs 15 to 30 crore. While the larger Contractors will have a financial capability well in advance of this, it is recommended (subject to final network and contract number being confirmed) that a minimum financial capability of RS 15 crore be adopted to ensure the local industry is not unnecessarily excluded.

The risk to Client is that without some minimum level of financial capability to manage his cash flow needs over the duration of the OPRC, the Contractor may face financial difficulties which at best may comprise quality and at worst could lead to financial failure.

It is therefore recommended, either at the pre-qualification or tender stage, that the Tenderers be required to verify their capability to manage the cash flow requirements of the OPRC as outlined in the agreed payment model. **This would require Tenderers to have their bank of financial backers confirm via letter of credit.**

The possibility of permitting an advanced payment of up to 10% of the contract value against a payment guarantee provided by the Contractor should also be considered. The advanced payment would then be deducted from future Contractor payments over a specified time period.

3.4 Contractor Resources

The Client's risk over the ability of the Contractor to resource the physical work requirement has to be evaluated and managed during the pre-qualification and tender evaluation process.

However under an OPRC, the risk lies with the Contractor over how he actually undertakes this work. It is therefore important that the tender documents do not stipulate or imply any specific resource requirements either in the Pre-qualification or in the Tender documents. To do so will imply a degree of expectation by the Contractor to price for this, and then

potentially to claim a variation, either because this need was insufficient or too much in relation to the methods he has chosen to adopt.

Tenderers should however be required to detail their proposed resource requirements (including labour, plant, management and software systems etc) in their submission to demonstrate his understanding of the needs of this contract. This submission would also have to outline where the Contractor will access all of the material requirements he is proposing to use such as aggregate, bitumen and asphaltic cement. A failure to do so, or where his nominated resources are clearly inadequate, would likely result in his tender being rejected.

3.5 Technical Skills

To provide assurance that the Tender has sufficient technical expertise to manage all aspects of the OPRC, it is recommended that all Tenderers be required to provide a list of their nominated key technical personnel along with supporting evidence of prior training or work experience in each case.

The issue of whether the Tenderers should also have to nominate a supporting private Consultant in their submission was also raised at the OPRC Workshop No.1. In making this mandatory could suggest that there was insufficient confidence in the Contracting Industry for them to realise that this may be necessary. It could also pose a problem for larger Contractors who may have this resource already in house.

It is therefore recommended that this issue can be addressed through specifying a defined list of technical roles (e.g. Pavement Designer, Asset Manager etc) that the Tenderer must fill with nominated (and appropriately qualified) individuals. However, it should be left to the discretion of the Tenderer where he resources these individuals from either in house if he has the capability, or from external resources such as the private Consultancy industry.

3.6 General

With all of the attributes described above, the Client must retain the discretion (through the Tenderer Evaluation Team) to reject any tender submission where it is clear the Tenderer's proposal falls well short of the assessed requirements necessary to successfully manage a network under an OPRC.

To make this process as transparent as possible it is recommended that a defined scoring process, and minimum score that must be passed for each attribute, be included within the RFP.

4 Specific Issues of Risk Which Will Require Mitigation When Developing the Contract Documents

This section expands upon the risks identified under Task A8: Development of a Comprehensive Approach to Allocation and Mitigation of Risk³, which are specific to the aspect of Contractor Capacity and their engagement for the OPRC.

4.1 Security of Funding

The lack of funding security was seen almost universally as the biggest impediment to the ability of the Contracting Industry to adequately complete road maintenance work. The security of funding underpins the long term requirements of OPRC and it can not be effectively operated without this being adequately addressed.

Confirmation of long term funding must therefore form part of the formal process leading up to contract award.

4.2 Escalations

Price rises over the previous 2 years related to fuel and oil, but most importantly bitumen have been significant and have outpaced the ability of the Contracting Industry to absorb them. Where the provision for escalation payments within contracts has been omitted or has been insufficient to cover the true cost increases, the Contractor has seen his profitability steady decline and the Client is often unable to fund all of the work required due to significant cost increases.

Given the long term nature of OPRC, the development of robust escalations formula that will fairly compensate the Contractor over the term of the contract will be essential.

Several existing escalation formulas are applied to Indian construction contracts. The intention will be to examine the usefulness of these, and any others that can be modified to suit the long term nature of the pilot. The availability of appropriate statistical indices from respective Governmental Departments will be one of the most crucial aspects of the final decision as to which escalation formula will be applied.

4.3 Protection of the Residual Pavement Condition

Recommendations over the most appropriate mechanisms for ensuring the pavement asset is not consumed over the duration of the contract are outlined in detail within the Contract Format report completed under Task A6. While the risk of asset consumption is one of the primary concerns of most Road Controlling Agencies, it is equally important that the Contracting Industry is made aware of the importance of this, how the OPRC will be structured to mitigate this risk, and the obligations that will be placed upon the Contractor to ensure that sufficient investment into the network's pavements actually occurs.

³ Reference 3

4.4 Management of Work Completed by Others

With the extent of improvement work currently underway or programmed to commence in advance of the commencement of the OPRC's the Contracting industry has already expressed concerns over the level of their responsibility for on-going maintenance through these sections post contract award.

The OPRC contract documents will have to be explicit over how these road sections will be managed. It must define who will be responsible for which assets if there is some sharing of responsibility and how any transfer of maintenance responsibility should be undertaken once the defects liability period for the improvement works has expired within the duration of the OPRC.

4.5 Management of Traffic Overloading

The risk of the Contractor being required to design pavements to a standard that is below that necessary to sustain the impact of overloading is of major concern to the Contracting Industry. This is especially so under OPRC where the responsibility for post construction maintenance will remain with the Contractor for upwards of 10 years.

It will be necessary not only for the Contractor to be given the freedom to design to cater for these overload conditions, but that the financial model and overall project budget provides sufficient funding to allow this level of pavement construction to be undertaken.

Some consideration has been given to empowering the Contractor to assist the Police and other authorities in limiting the extent of the current overloading that occurs on the road networks. While it may be desirable to have the OPRC Contractor assist the GoP in constructing weigh pit facilities within the network (either from PS item or as a variation to the Lump Sum), it is likely to be inadvisable, from a legal stand point, to have the Contractor empowered to carry out any law and order enforcement function that is more appropriately the function of the Police.

4.6 Contractor Quality Assurance

The requirement that the OPRC Contractor has a minimum level of quality assurance that extends beyond just the production of HMA needs to be clearly established. This requirement should not act as a bar to the Contracting Industry and therefore unnecessarily restrict the number of potential tenders for this pilot.

4.7 Sub-Contractor Management

As it is possible that local Contractors will sub-contract some of the routine maintenance requirements such as vegetation control, sign maintenance and line marking, the contract documents must make it clear that the head Contractor remains responsible for the quality outcomes of his sub-Contractors. The importance of effective sub-Contractor management needs to be accentuated and should form part of the second or third awareness raising workshops to be held with the industry.

4.8 Penalty Mechanisms for Performance Measure Non-Compliance

The development of appropriate penalties that are sufficient to encourage the Contractor to avoid non-compliances and to speedily address those that have been recorded is required. These mechanisms should be seen as fair and not overly too harsh or inflexible by the Contracting Industry. They should also be reflective of the way the network conditions can change over time as well as under extreme climatic events.

4.9 Client Protection against Contractor's Failure to Perform

The development of a fair and reasonable mechanism for contract termination in the event of serious, persistent and wilful failure by the Contractor to undertake his obligations under the Contract is necessary. This may also include the improper use of financial or physical resources or a failure to apply best practice in his construction or maintenance activities.

Our experience is that most Clients are very reluctant to engage such procedures in practice because of the risks, disruption and difficulties this creates (i.e. the urgent need to find an alternative supplier at short notice, legal challenges etc). Consequently the persuasion of the Contractor to perform through the development and application of the Performance Measurement mechanisms under Section 4.8 above is recommended as the preferred method of achieving the desired outcomes, with the termination clause then only employed as a last resort.

4.10 Transparency with Decisions on Variations and Dispute Resolution

A mechanism (outside of the formal dispute resolution procedures provided for within the standard Conditions of Contract) for handling the Contractor's claims for variations to the contract and other relevant issues is required. This mechanism must be as transparent as possible and is one in which the Contractor can have faith that there is no undue influence being applied. The implementation of a Contract Management Board (CMB) comprising agreed and appropriate representatives from the Client's and Contractor's organisations is recommended.

4.11 Management and Payment for Emergency Works

The contract documents must be as clear and concise as possible over the level of Emergency Works the Contractor is to complete (if any) within the Lump Sum and the mechanism for payment for additional work completed outside the Lump Sum.

4.12 Acquiring Necessary Clearances

There needs to be a clear and transparent process developed for the Contractor to follow for achieving and managing an unencumbered Right of Way, any clearances associated with the planned improvement works and the management of any previously identified environmental issues. These processes would have to also include the managed removal of any trees and the removal and/or relocation of existing utility services required for upgradation works.

5 The Value of the Contract That Will Best Fit the Local Contracting Capacity

The participants in the Work Groups B and B1 at the OPRC Workshop No.1 were asked to consider this question and to provide feedback to the wider forum.

The answer from Group B was that *“the overall annual contract value should be within the range of Rs 20 to 50 crore. This range of value would enable the local industry to meet any pre-qualification limits based upon contract value”*

The answer from Group B1 was that *“Overall annual contract value should range between Rs 40 to Rs 100 crore. This value would allow the Contractor to invest in sufficient plant, machinery and staff and to establish depots at various locations to produce quality work at competitive rates”*.

It was felt by Group B1 that *“An annual contract value of Rs 100 crore would favour bigger national contractors and would increase the competition in the local market”*.

These values are inline with the figures of average annual contract value provided by the Contractors during their individual interviews. These figures ranged from as low as Rs 10 crore for the small local Contractor through to as much as Rs 150 crore for the larger Contractors.

The peak level of expenditure within these OPRC networks is expected to occur within the first 2 to 3 years as the bulk of the upgradation and initial rehabilitation works are completed. Following this phase, it is reasonable to expect that the overall value of work will decline as routine maintenance activities become the dominant activity. Smaller Contractors could therefore either form a Joint Venture or use sub-Contractors to resource up for the initially high level of work, and then manage the lower level of maintenance activity individually over the later years. However it is appropriate that the decision on the need for any Joint Venture or the engagement of sub-Contractors be left to each respective Tenderer in respect to their individual capacity and methodology. This would then need to be clearly stated in their tender submission.

It is therefore recommended that, subject to the final network selection and number of contracts to be let, the peak annual value for each of the OPRC contracts should not be less than Rs 30 crore and should not exceed Rs 100 crore.

6 Recommendations on Prioritised Actions to Improve Capability and Capacity

6.1 Provision of Funding Certainty

The removal of the uncertainty over if or when due payments will be made will result in a significant increase in the confidence of the Contracting Industry to invest in additional resources and capacity.

6.2 Adequate Length of Contract Tenure

Increasing the length of the contract duration will provide additional confidence to the Contracting Industry to invest in increased capacity as there will be a longer time frame, along with a certainty of income, for the cost of this investment to be recovered. A duration of 10 years will provide Contractors a longer time to depreciate plant and equipment which is expected to be seen as favourable outcome of OPRC by the Industry. It is possible that the long term nature of the contract will also provide more confidence to the lending institutions that may then be more willing to finance loans to the Contractor at lower interest rates.

The feedback from the OPRC Workshop No.1 Working Groups B and B1 indicated a minimum of 7 years and a maximum of 15 years were desirable limits.

6.3 Contract Flexibility in Accepting Contracting Joint Ventures or Sub-Contract Agreements

There should be adequate flexibility in any Pre-qualification phase and/or Tender Evaluation phase in approving and accepting Joint Venture or Sub-Contract proposals. This is seen as a way the smaller local Contractors can compete with the larger national Contractors in dealing with the expected peak work load in the first 2 or 3 years of the OPRC.

6.4 Encourage Innovative Practices

The contract format should avoid where ever possible prescribing what inputs the Contractor should use to deliver the specified outcomes. The discussions and interviews held with the Contractors in advance of the preparation of this report suggest that they have already begun to think about alternative ways of maintaining the road network should they be given the opportunity to work within a performance based environment.

Where there is an element of risk with adopting a new approach, the OPRC should also encourage the use of “trials” of new approaches within short lengths of the network. The risk associated with these “trials” could be shared through having a small Provisional Sum item in the OPRC that could assist the Contractor in funding the trial work, and the results of the trial (positive or negative) then shared between them. Any future savings to Contractor that can be achieved through the adoption of the trial approach would then be his to retain. This would act as a further incentive to the Contractor to put forward new ideas of approaches.

6.5 Contractor Empowerment

Within the scope of the OPRC, the Contractor should not be unnecessarily constrained to make decisions and undertake work that is of direct benefit to the maintenance of the network or will assist in achieving the Contractors obligations under the contract.

An example that was raised at the OPRC Workshop No.1 was permitting the Contractor to undertake the installation or relocation of utility services for the utility owner through a direct commercial arrangement between the two parties. This should be undertaken without involving the Road Agency in any way other than an initial approval on a case by case basis to do so.

The options that could be explored further during contract preparation would include:

- Leaving the pricing for this work as a commercial arrangement between the two parties, or;
- Require Tenderers to provide a unit rate for this work within the contract.

The potential advantages of such an approach would be:

- The utility service provider would still be free to seek an alternative contractor if the OPRC contractor's price was considered to be too high, i.e. such work would not be his as of right
- The OPRC Contractor is empowered to manage the process and therefore can undertake the work in the most efficient manner
- The OPRC Contractor is directly responsible to both the utility service provider for the installation or relocation of the services and the Road Agency with regard to the reconstruction of the pavement or shoulders to an acceptable standard.

6.6 Development of Targeted Performance Measures to Achieve Compliance

This aspect will have to be closely linked to the Service Levels that will be developed under Task A1. There will be three principal sets of performance measures developed:

- Durability Performance Measures (DPM) – Asset protection
- Road User Safety, Service and Comfort Performance Measures (RPM) – Safety and comfort
- Management Performance Measures (MPM) – Road user (and Client) service.

It is critical that these measures are:

- Simple to undertake, objective, unambiguous and therefore easier to enforce
- Where possible machine readable
- Appropriate to ensure the agreed Service Levels are maintained
- Drives the right behaviour by the Contractor and avoids encouraging short term profit driven solutions that are not in the Client's best interest for long term management of the network.

6.7 Rigorous Auditing Procedures for Compliance

It is vital to the success of the OPRC concept that the process of checking for compliance is well prescribed and is transparent as possible. This approach will then mitigate the risk of disputes arising from disagreements over the interpretations of the results, especially where these may impact upon Contractor payments. Most existing performance based contracts employ a mixture of:

- Contractor self auditing and reporting
- Client (Consultant) surveillance and reporting including regular joint inspections
- Regular external auditing by a nominated auditor and annual condition surveys, including those for durability measure compliance. An experienced, independent and mutually acceptable external auditor should be engaged to undertake this work.

Placing the outcome of these audits and surveys in the public domain through the PRBDB website or similar easily accessible repository is therefore strongly recommended to maintain a high degree of transparency and Contractor confidence.

6.8 Regular and Consistent Contractor Performance Assessment and Feedback

The development of a strong and trusting relationship between the Client and the Contractor will be essential for the successful implementation of the OPRC concept. Integral in the development of this relationship is a very good level of communication and feedback on issues of importance or concern.

It is therefore recommended that a process be developed and adopted within the OPRC that will require senior staff from all parties (including any external Consultants) to formally meet at regular intervals (e.g. every 3 months) at which time the Contractor's performance would be assessed against a preset list of criteria and an overall score agreed. This would not necessarily be linked to any particular Management Performance Measure, but would be taken into consideration when assessing the Contractor's overall performance under the OPRC and more importantly for other contracts including other future OPRC's.

Aside from the score, this process is important as it provides a mechanism for both parties to discuss issues of concern and for the Client to provide direct feedback on how he perceives the Contractor is performing. This would then assist in ensuring both parties are working within a "no surprises" environment.

6.9 Future Involvement in Other OPRC Networks as Capability and Capacity Increases

As the Contractor's capacity and capability increases in managing a network under OPRC it may be advantageous to encourage them to also tender for new networks in the future, subject to their adequate performance under the initial pilot contract (refer 6.8 above) and adequate resources being available. The advantages of this flexibility would be:

- The experience and skills developed from the pilot network would be immediately transferred to the new network
- The approach would further encourage the local Contractor to increase his resources and capability to handle single larger networks in the future. Contract network lengths

larger than the 200-250km pilots may prove to be more efficient to manage under OPRC in the future.

- Would provide further incentive to the Contractor to perform well.

6.10 Improving Contractor Awareness Pre-Tender and On-going Contractor Education and Training Post Award

The primary aim of the workshops leading up to the Tender is to maximise the opportunity to educate those on the short list over the contract format and the expectations of managing a road network under a performance based contract. This will then ensure the prices submitted by the Tenderers are sufficient to both undertake the work and ensure the Contractor makes an acceptable profit margin. This in turn will maintain his interest in future similar projects along with his long term financial viability.

It would also be expected that Contractor will take the opportunity to continue the on-going training and skills development of his staff overtime to ensure that they are able to apply best practice in their construction and maintenance activities. This training and skills development is crucial to them being able to successfully compete with their competitors for future contracts, as they will need to both retain their experienced staff and stay ahead of the competition in terms of innovative and efficient road construction and maintenance practices.

7 References

- 1.0 Terms of Reference Task A6: Final Report on Contract Format for Output and Performance Based Contracts for Roads (under preparation).
- 2.0 Terms of Reference Task A7: Industry Consultation Workshops: Summary of OPRC Consultation Workshop #1
- 3.0 Terms of Reference Task A8: Final Report on the Allocation and Mitigation of Risk (under preparation).