



Republic of Ghana

MINISTRY OF ROADS AND HIGHWAYS  
**DEPARTMENT OF URBAN ROADS**

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**Client: Ministry of Roads and  
Highways of the Government of  
Ghana**

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## **Construction/Rehabilitation of Selected Roads And Interchanges in Ghana-Phase 1: Lot 1 (Accra Inner City Roads)**

Value for Money (VFM) Audit Report for the Contract proposed between the Ministry of Roads and Highways represented by the Department of Urban Roads and Messrs Sinohydro Corporation Limited for the Construction/Rehabilitation of Selected Roads and Interchanges in Ghana-Phase 1: Lot 1 (Accra Inner City Roads).

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## List of Abbreviations

<b>BOQ</b>	Bills of Quantities
<b>GhIS</b>	Ghana Institution of Surveyors
<b>CO</b>	Contractor’s Offer
<b>DAB</b>	Dispute Adjudication Board
<b>DNP</b>	Defects Notification Period
<b>DUR</b>	Department of Urban Roads
<b>EFMP</b>	Estimated Fair Market Price
<b>ER</b>	Employer’s Requirements
<b>FIDIC</b>	Fédération Internationale des Ingénieurs-Conseils (International Federation of Consulting Engineers)
<b>GCC</b>	General Conditions of Contract
<b>GOG</b>	Government of Ghana
<b>GWS</b>	Goods, Works or Services
<b>MOF</b>	Ministry of Finance
<b>MRH</b>	Ministry of Roads and Highways
<b>PCC</b>	Particular Conditions of Contract
<b>PPA</b>	Public Procurement Authority of Ghana
<b>PS</b>	Provisional Sum

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<b>SHCL</b>	Sinohydro Corporation Limited
<b>AICR</b>	Construction/Rehabilitation of Selected Roads and Interchanges in Ghana-Phase 1: Lot 1 (Accra Inner City Roads)
<b>VFM</b>	Value For Money
<b>VO</b>	Variation Order

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## Executive Summary

Overall Risk Level: **Low**

This value for money (VFM) audit report concerns a proposed Contract between the Ministry of Roads and Highways (MRH, “the Employer”) of Ghana represented by the Department of Urban Roads (DUR) and Messrs Sinohydro Corporation Limited (SHCL, “the Contractor”) of China for Construction/Rehabilitation of Selected Roads and Interchanges in Ghana-Phase 1: Lot 1 (Accra Inner City Roads) (AICR).

The Government of Ghana (GOG) recognizes the importance of road transport in facilitating socio-economic development of the nation. It is in this direction that the National Transport Policy of the Ministry of Roads and Highways (MRH) set out objectives to create an integrated, efficient, cost-effective and sustainable transport system responsible to the needs of society, supporting growth and poverty reduction.

In line with these objectives, the Department of Urban Roads (DUR) seeks to reduce the average travel time on the arterial roads specially at intersections and to progressively reduce the walking and waiting time for public transport in low income communities in the urban areas of Ghana. The DUR intends to develop selected roads and intersections in some critical locations in Accra to help improve the quality of life of the citizenry and enhance economic growth. The project includes selected roads in the following communities:

- Trobu
- Teshie
- Dome-Kwabenya
- Santeo-Nanakrom
- Anyaa-Sowutuom

This VFM report makes recommendations to mitigate potential risk to the Employer with respect to the Contract Agreement, the Contract Conditions, Technical Considerations and the Contract Price.

The documentation received included the Form of Contract being Conditions of Contract (GCC) for EPC/Turkey Projects, First Edition, 1999 published by the International Federation of Consulting Engineers (FIDIC), the Particular Conditions of Contract (PCC) which adequately modifies the GCC and the proposed Contract Agreement which is a stand-alone document as demanded by best practices.

**Overall, the Contract as written is considered not likely to expose the Employer to any significant level of risk. However, if the Parties agree to and implement any recommendations made in this report, the Contract would have a higher potential to offer value for money to the taxpayers of Ghana.**

**Contractor: Low**

Sinohydro Corporation Limited is a well-known Chinese company with a track record of design and construction of interchanges, highways and dams. It is currently undertaking a major project for the Government of Ghana (GOG), being the Tema Motorway Roundabout Improvement Project.

**It is considered that Sinohydro Corporation Limited is well experienced and resourced to undertake the Construction/Rehabilitation of Selected Roads and Interchanges in Ghana-Phase 1: Lot 1 (Accra Inner City Roads).**

**Contract Agreement, Form of Contract and Contractual Terms: Low**

The documentation received contained the proposed Contract Agreement, the Form of Contract has been specified and hence the General Conditions of Contract (GCC) and the Particular Conditions of Contract (PCC) are defined. These contractual terms relate adequately with the commercial terms.

The Contract Agreement, Form of Contract and Contractual Terms are deemed adequate for the Contract.

**Commercial Terms: Low**

As with the Contractual Terms discussed above, the Commercial Terms are well reflected in the PCCs which have been specified in the Employer's Requirements, Section 6. Furthermore, the proposed PCCs are considered appropriately worded and the few areas that need review have been indicated in this Report.

**The Commercial Terms as reflected in the PCC are adequate but few areas that need review to mitigate any potentially significant level of risk to the Employer have been highlighted in the Report.**

**Technical Considerations: Low**

The information provided in both the Employer's Requirements and the Contractor's Proposal largely conform to the guidelines for best practice. Both documents are unambiguous and provide the relevant details. The Employer's Requirements are coherent and have logical flow.

The Contractor's Proposal complies with the Employer's Requirements and Specifications but few areas that need review have been indicated in the Report.

**Technical Considerations offer low level of risk to the Employer.**

**Contract Price: Low**

Based on the documents submitted, the BOQ and our Estimated Fair Market Price (EFMP), the total Contract Price of **US\$72,837,698.13** is approximately **US\$4,330,390.58** lower than the EFMP.

Justification for the provision for only physical contingency of 25% of the total Contract Price of **US\$72,837,698.13** proposed in the Proposal is well informed and premised and confirmed by the Employer.

No provision was made for price contingency because the contract is to be carried out within the agreed total Contract Price.

***In order to mitigate any potentially significant level of risk to the Employer, the recommendations made should be addressed with a Supplementary Contract Agreement since the Contract Agreement has already been signed.***

## **1. Introduction**

### **1.1 Assignment**

The Ministry of Roads and Highways (MRH), by a letter MRH/PD264/323/01 dated 17<sup>th</sup> December, 2018, requested for a Value for Money Analysis for the Construction/Rehabilitation of Selected Roads and Interchanges in Ghana-Phase 1: Lot 1 (Accra Inner City Roads).

Accordingly, the MRH submitted to the Ghana Institution of Surveyors (GhIS) on 8<sup>th</sup> January, 2019 documents relating to a proposed Contract between:

- Ministry of Roads and Highways (MRH, “the Employer”) of Ghana represented by the Department of Urban Roads (DUR), and
- Messrs Sinohydro Corporation Limited (SHCL) of China, (“the Contractor”)

(“the Parties”) and requested GhIS to undertake a Value for Money (VFM) Analysis/Audit.

### **1.2 Acknowledgement and Preliminary Report**

The Assignment was acknowledged by GhIS on 21<sup>st</sup> December, 2018.

The preparation of this VFM Report has been delayed a bit due to confirmation of correspondence and scheduling. The Assignment commenced in earnest when the all confirmations were made based on the priority levels advised by the MRH.

### **1.3 Background**

The Government of Ghana (GOG) recognizes the importance of road transport in facilitating socio-economic development of the nation. It is in this direction that the National Transport Policy of the Ministry of Roads and Highways (MRH) set out objectives to create an integrated, efficient, cost-effective and sustainable transport system responsible to the needs of society, supporting growth and poverty reduction.

In line with these objectives, the Department of Urban Roads (DUR) seeks to reduce the average travel time on the arterial roads specially at intersections and to progressively reduce the walking and waiting time for public transport in low income communities in the urban areas of Ghana. The DUR intends to develop selected roads and intersections in some critical locations in Accra to help improve the quality of life of the citizenry and enhance economic growth. The project includes selected roads in the following communities:

- Trobu
- Teshie
- Dome Kwabenya
- Santeo Nanakrom
- Anyaa Sowutuom

As part of the project, DUR intends to improve the road conditions in the above communities to aid local circulation. The selected roads are part of the Accra Inner City Road Network of the Grater Accra Metropolis. They include:

- 1) Taifa-Burkina-Nkatia Burger-Dome Kwabenya Mosque (7km)
- 2) Chisto Asafo Area roads-Taifa (7.70km)
- 3) Pure water Raods and Links-Kwabenya (8.20km)
- 4) Fan Milk Area Roads-Anyaa (1.95km)

- 5) Adu Gyamfi Road-Anyaa (2.20km)
- 6) Selected Roads in Anyaa (1.80km)
- 7) Apostle Safro Onyinase Road (2.06km)
- 8) Pentecost University Road (1.97km)
- 9) Omanjor to Olebu Road (1.80km)
- 10) Abease Road to Ablekuma (1.90km)
- 11) A Lang Area Road-Sowutuom (2.50km)
- 12) Race Course Medical Centre Road (2.50km)
- 13) Selected Roads in Gbawe (3.00km)
- 14) Nanakrom-Santeo-Ashiaman Road (8.50km)
- 15) Ofanko Hospital Link Road (3.32km)
- 16) Abensu Afiama Taxi Road (Trobu) (1.20km)
- 17) Israel Junction Sound Foundation-Blue Gate and Yeboah Street-Nii Ankraman (Trobu-Amasaman) (6.085km)
- 18) Partial Construction of North Ofankor John Teye Bypass (1.60km)
- 19) Partial Construction of Yellow House and Links (Trobu-Amasaman) (2.70km)
- 20) Partial Construction of Asofan Amamorie Road and Links (Trobu-Amasaman) (3.00km)
- 21) Poultry Farm Road (Trobu-Amasaman) (2.20km)
- 22) Drainage Construction-Confidence and Veterinary-South Ofankor
- 23) Demo Road (Ledzokuku) (2.00km)
- 24) Alloway to Malik Road (Ledzokuku) (3.50km)
- 25) Baptist School Area Tebibiano Road (Ledzokuku) (3.50km)
- 26) Sea Lady Road (Ledzokuku) (2.00km)
- 27) Teshie North By Pass Road (Ledzokuku) (1.80km)

#### **1.4 Scope of Works**

The Scope of Works of the Project comprise Engineering, Procurement and Construction of the Works as follows:

##### **(a) Design**

The Design addresses the following:

- Preliminary Design which include but not limited to
  - Improvement of pavement conditions
  - Development of network of local roads to ensure connectivity without necessarily using the improved facility
- Detailed Engineering Design
  - The Detailed Engineering Design include but not limited to
    - Resolution of the vehicular conflict at these locations;
    - Road and Drainage improvement works

##### **(b) Construction**

The Construction means the execution of the selected roads under the Contract.

It is understood that the aim of the project will be to undertake a preliminary and detail designs and construct the selected roads per the approved design under the Contract.



### 1.5 Contract Price and Period

The Contract Price quoted in the Contractor's Proposal and included in Section 4 of the EPC Agreement is in a total of sum of **US\$72,837,698.13** with details provided in the Bill of Quantities (under Annexes to Particular Conditions of Contract).

The Contract Agreement and the Letter of Acceptance confirm the figures.

It is noted that the Contractor's Proposal meant that all documents as approved by and agreed with the MRH through the DUR includes **but not limited to** the:

- a) Approved Option,
- b) Preliminary Design of the Approved Option,
- c) Detailed Design,
- d) Contractor's Documents,
- e) Estimated Bills of Quantities, and
- f) Final Bills of Quantities based on the Detailed Design.

***Clause 2(ix) and Clause 8(i) of the EPC Agreement on "Any other documents as the Parties may agree all as mutually agreed to or as to be agreed to by the Parties" must be clearly defined and limits set. Otherwise it must be made "Not Applicable".***

The total Time for Completion has been stipulated as twenty-four (24) calendar months in Sub-Clause 8.2 of the PCC in Section 5 and confirmed in the Employer's Letter of Acceptance in Section 2. However, the total Time for Completion has not been stipulated in Contractor's Letter of Proposal in Section 3 of the EPC Contract.

***It is recommended that the Employer places a definite limitation to the documents upon which the Contractor's Proposal is based.***

### 1.6 VFM Report

This VFM Report is the result of a comprehensive review of the Contract documentation supplied by the MRH. All VFM Audits Reports prepared by GhIS provide assessments of the following five components of Works:

- The Contract Agreement (Section 1)
- Employer's Acceptance and Contractor's Proposal (Sections 2 & 3)
- Form of Contract and Contractual Terms (Sections 4 & 5)
- Employer's Requirement as per Commercial Terms and Technical Considerations (Section 6), and
- Contract Price (Section 7).

However, In the Contract Documents received for the Project, the Contract Price is placed under "Annexes to the Particular Conditions of Contract" (Section 5).

This VFM Audit Report assesses the risk level to which the client is exposed. GhIS, based upon international best practices, defines risk levels in Table 1 below as follows:

<b>Table 1 Contract Risk Level Definitions</b>		
<b>Risk Level</b>	<b>Consequences of Non-Action</b>	<b>Recommendation for Risk Mitigation</b>
<b>High</b>	<b>Very likely</b> to expose the Employer to an <b>unacceptably high level of risk.</b>	The recommended action relates to a critical aspect of the Contract. The Parties should not proceed further until the issue is resolved.
<b>Medium</b>	<b>Likely</b> to expose the Employer to a <b>significant level of risk.</b>	The recommended action requires substantial change to the Contract. The Parties are strongly urged to resolve this issue before proceeding with the Contract.
<b>Low</b>	<b>Unlikely</b> to expose of the Employer to a <b>significant level of risk.</b>	The recommended action requires minimal change to the Contract.

Based on a qualitative evaluation of the risk levels, an overall risk level is assigned to the Contract. This overall risk level is stated with justifications in the Executive Summary and detailed in the Report.

## **2. General Comments**

### **2.1 Procurement Method**

Because this Contract has been submitted for VFM Audit, it is understood that the Works are being procured based on single-sourcing. Good procurement practice promotes competition, transparency, accountability and fairness.

Further to the Public Procurement Act 2003 (Act 663) as amended by 2016 (Act 914), the Public Procurement Authority of Ghana has issued detailed guidelines relating to single-source contracts submitted to the Authority for approval as follows:

1. Justification of the procurement under Section 40 of the Act which allows for use of single-source procurement of Goods, Works or Services (GWS) if:
  - a. GWS are available from one Source only,
  - b. there is a demonstrable urgent need for the GWS,
  - c. due to a catastrophe there is an urgent need,
  - d. there is reason to procure again from the same Source (i.e. additional requirements),
  - e. there is a need for GWS relating to research and development activities, and
  - f. there is a national security consideration driving the requirement for GWS.
2. Demonstration of the capability and relevant qualifications of the proposed Supplier, Contractor or Consultant, and

3. Demonstration that the conditions of contract and the Supplier’s, Contractor’s or Consultant’s proposal represent Value for Money (that is submission of a successful VFM Audit Report).

For all intents and purposes, the Employer is already familiar with Sections 40 and 41 of Act 663 as amended by Act 914 and therefore the need for this VFM Audit Report. It is noted that the Employer has provided justification for single-sourcing of this contract under these Sections in the Request for Approval from the Public Procurement Authority.

## 2.2 Source of Funding

It is understood that a financial arrangement signed between the Ministry of Finance with relevant financing institutions in China included but not limited to China Export Credit Insurance Corporation (“Sinosure”, as the underwriter of the export credit insurance policy) and the Industrial and Commercial Bank of China (“ICBC”, as the Financier) to secure the required credit facility for the MRH. No further information is provided on the source of funding and so we are unable to comment on this matter.

## 2.3 Documentation

### 2.3.1 EPC Agreement

Table 2, below, lists the documents received and those not received and the dates of receipt for the documents pertaining to each of contract elements considered by GhIS to be essential to a Works Contract.

<b>Table 2 List of Documents Received</b>			
<b>Item</b>	<b>Contract Element</b>	<b>Documents Received by GhIS</b>	<b>Date Received</b>
1.	Contract Agreement	Received	8 <sup>th</sup> January, 2019
2.	Particular Conditions of Contract (PCC)	Received	8 <sup>th</sup> January, 2019
3.	General Conditions of Contract (GCC)	Received	8 <sup>th</sup> January, 2019
4.	Employer’s Requirements	Received	8 <sup>th</sup> January, 2019
5.	Contractor’s Proposal	Received	8 <sup>th</sup> January, 2019
6.	Bills of Quantities	Received	8 <sup>th</sup> January, 2019
7.	Draft Programme	Not Received	
8.	Engineering Drawings	Not Received	
9.	Credit Loan Agreement (for information only)	Not Received	

The Contract Documents i.e. EPC Agreement, were submitted in hard copy only.

The following documents have not been received by GhIS.

- Draft Programme,
- Engineering Drawings, and

- Credit Loan Agreement.

Comments relating to these missing documents are provided in this Report under the relevant Sub-Sections.

In the Sub-Sections below our concerns relating to the presentation of some of the Contract Documents is reviewed.

### **2.3.2 Concept Design**

The Concept Design comprises the:

- a) General Plan – New Road,
- b) General Plan – Pavements,
- c) Demolition,
- d) Drainage,
- e) Plans and Elevations,
- f) Typical Cross Sections, and
- g) Branch Sections.

The aim of the Project is to undertake a Preliminary and Detail Designs and construct the selected roads based on the approved design under the Project.

### **2.3.3 Acronyms**

The Contract Documents use a number of acronyms without providing a definition for each of them. There is no schedule of acronyms but each of them is defined in the narration. Besides, best Quantity Surveying practices do not permit such in Contract Documentations.

## **2.4 Programme**

The Programme is missing from the set of Contract Documents which were received by the GhIS.

***It is recommended that the Contractor be required to provide a draft programme to monitor the planned progress of the Works in months from the Commencement Date.***

## **2.5 Credit Agreement**

The documents received by GhIS did not include a copy of the draft credit agreement. It is not part of the GhIS's responsibilities to review the credit agreement terms and conditions, but when we are provided with such a document we can review it to note if there are any potential conflicts between the credit agreement and the Contract.

***In case of this project, not having the document, we are unable to make any comment but not provided has no effect on this VfM.***

## **2.6 Employer's Requirements**

The Employer's Requirements document sets out requirements to facilitate Contractor's Pricing of the Works with a maximum degree of accuracy including making provisions for unforeseen costs arising out of any risks in the elements of the Works.

There are six (6) Sections including that on Quality of Workmanship for the Works, using the reference as the "Standard Specification for Road and Bridge Works" published by the then Ministry of Transportation dated July 2007. These Standards have been modified into Special Specifications and the linkage must be clearly indicated. Section 6 deals with training for the Employer's personnel.

Overall, these documents are full of the desired information to be used for the purposes of the Contract.

***The Employer's Requirements has been drawn up by combining as a single document with the required sections with no duplications and conforms to the terminology used in the Conditions of Contract.***

***To avoid any misunderstanding the heading "Proposed Form of Contract" (Section 4) should be replaced with "Form of Contract" to make it clear that this is a firm requirement and not simply a suggestion.***

### **3. Letter of Acceptance**

The following section of the Employer's Letter of Acceptance needs to be completed:

- Public Procurement Authority letter reference number and date
- Department of Urban Roads Entity Tender Committee letter reference number and date
- The date of the Contractor's Proposal
- The amount of the Contract Price
- Signatory and name of authorized signatory

The Letter of Acceptance should be on the Employer's Representative letter head.

***It is recommended that the above should be addressed to make the Employer's Letter of Acceptance complete to ensure adequate formation of a Contract between the Parties.***

### **4. Contractor's Proposal**

The following sections of the Contractor's Proposal needs to be addressed:

- The specific Form of Contract
- The last sentence in paragraph 3 should be deleted since it has the tendency to limit the Contractor's responsibilities under the Conditions of Contract.
- Indication of the addressee
- The Date of the Proposal
- Indication of the Total Time for Completion of the Project, taking the Design Stage and the Construction stage into consideration
- Signature, name and capacity of the authorized signatory

***It is recommended that the above should be addressed to make the Contractor's Proposal complete to ensure adequate formation of a Contract between the Parties.***

### **5. Contractor**

**Sinohydro Corporation Limited** is a well-known international Chinese company with a track record of design and construction of interchanges, highways and dams. The company undertook the Construction of RCC Gravity Dam on the Black Volta River at the Bui Gorge at the Southern End of Bui National Park in Ghana for Bui Power Authority. It is currently undertaking the Tema Motorway Roundabout Improvement Project for Ghana Ports and Harbour Authority of Ghana under the supervision of Ghana Highway Authority of the Ministry of Roads and Highways.

***It is considered that Sinohydro Corporation Limited is well experienced and resourced to undertake the Construction/Rehabilitation of Selected Roads and Interchanges in Ghana-Phase 1: Lot 1 (Accra Inner City Roads).***

### **5.1 Contracting Entity**

This Contract for Construction/Rehabilitation of Selected Roads and Interchanges in Ghana-Phase 1: Lot 1 (Accra Inner City Roads) is of a similar nature and scope to the Tema Motorway Roundabout Improvement Project under the supervision of Ghana Highway Authority (GHA) of the Ministry of Roads and Highways (MRH) and MRH's assessment through GHA of the Contractor's performance on the Contract so far confirms our initial assessment. Therefore we consider that Sinohydro Corporation Limited is suitably qualified to execute the Works under the Contract.

## **6. Contract Agreement, Form of Contract and Contractual Terms**

The documentation received was in sufficient detail in that the EPC Agreement had the needed linkages. The Form of Contract has been well specified as the General Conditions of Contract (GCC) are well defined and modified appropriately in the Particular Conditions of Contract.

The Sub-Clauses below which define the level of risks are examined in detail for our assessment of effect.

### **6.1 Variation Order (VOs)**

VOs do not apply as the Contract Price is a fixed sum calculated in accordance with the Bills of Quantities provided in the Contractor's Proposal.

### **6.2 Table of Contents**

The Table of Contents does not reflect the priority of Documents indicated in the Contract Agreement.

***It is recommended that the Table of Contents reflect the priority of Documents as indicated in the Contract Agreement to ensure consistency and remove any ambiguities.***

### **6.3 Contract Agreement**

In its current form the Contract Agreement is suitable but the following issues need to be resolved:

- a) Clause 5b – Line 1, "the Contract" must read "the Contractor",
- b) Clause 8 – in its present form must be deleted since it has already been covered by Clause 2 and Clause 8 should rather indicate the Total Time for Completion of the Project, taking the Design Stage and the Construction Stage into consideration.
- c) The addresses of the Witnesses to the signatories to the Contract must be completed.

### **6.4 Form of Contract**

Employer's Requirements specify the Form of Contract and so is the Contract Agreement but the Contractor's Offer does not. This may be a serious omission.

However, it appears that both Parties intend to use the same Form of Contract which is the Fédération Internationale des Ingénieurs-Conseils (International Federation of Consulting Engineers) (FIDIC) "Conditions of Contract for EPC/Turnkey Projects" First Edition 1999".

***It is recommended that the Form of Contract should be specified in both the Employer's Requirements and the Contractor's Proposal.***

## **6.5 General Conditions of Contract (GCC)**

Having stipulated the Form of Contract, the GCC is provided as an important part of the EPC Agreement and this document is on the list of documents that form the Agreement.

## **6.6 Particular Conditions of Contract PCC**

The Conditions of Contract for EPC has a Chapter entitled “Guidance for the Preparation of Particular Conditions”. This explains in detail how to draw up the PCC. The PCC takes precedence over and compliments the GCC. Our understanding is that it is used to state project specific matters and are not to be used to change the standard Clauses in the GCC.

In the PCC Sub-Clauses below each will be reviewed in detail for risks:

### **6.6.1 PCC 1.1.3.3 - Time for Completion**

The PCC did not contain definition of the Time for Completion.

***It is therefore recommended that this be addressed.***

### **6.6.2 PCC 1.1.3.7 - Defects Notification Period**

The PCC did not contain definition of the Defects Notification Period.

***It is therefore recommended that this be addressed.***

### **6.6.3 PCC 1.1.5.6 – Sections**

There are no proposals in the PCC for the definition of Sections even though the project comprise 27 roads totalling 84km with likelihood of differing completion periods.

Sections have implications in Conditions of Contract with regard to the Taking-Over Certificate, the Defects Notification Period and in the calculations relating to Delay Damages. For Sections to be applied to the Contract the sum of the Sections must include the total Scope of Works, and they must be priced independently in the BOQ.

***Since the BOQ has been priced in Sections according to the proposed Roads, it is recommended that Sections should be applied to this Contract.***

### **6.6.4 PCC 1.2 Interpretation**

“this Cost” in the PCC Sub-Clause 1.2 needs to be clarified.

***It is recommended that “this Cost” is defined to make the sentence meaningful.***

### **6.6.5 PCC 1.5 Priority of Documents**

The priority of documents as indicated in the Contract Agreement has not been indicated in the PCC even though it is different from the one in the GCC.

***Since the priority of documents stated in the Contract Agreement is different from what the GCC has stated, it is recommended that the priority of documents as indicated in Contract Agreement should be indicated in PCC Sub-Clause 1.5.***

### **6.6.6 PCC 4.2 Performance Security**

The conditions for delivery of the Performance Security must be specific.

In the second amendment it is stated that “The Contractor shall deliver the Performance Security to the Employer within 56 days after the issue of the Letter of Acceptance and EPC Contract has been approved by the Parliament of the Republic of Ghana.”

This makes it difficult to know which condition takes precedent.

***It is therefore recommended that the second amendment should be reworded to make the condition for delivery of the Performance Security specific.***

#### **6.6.7 PCC 11.1 Completion of Outstanding Work and Remediating Defects**

It is stated that the “The Defects Notification Period shall be Three hundred and sixty-five (365) days from the date of issuance of Taking-Over Certificate”.

Meanwhile the Project comprise 27 roads with individual BOQ.

***Since the BOQ has been priced according to the proposed Roads which constitute the project with the likelihood that the roads may be completed at different periods, it is recommended that the Defects Notification Period should be reworded to reflect different completion periods otherwise the Defects Notification Period would take effect only after all the roads have been completed, irrespective of when the individual roads are completed.***

#### **6.6.8 PCC 14.1 The Contract Price**

The following is stated:

“Delete this Sub-Clause 14.1(c) and replace with the following:”

However, there is no Sub-Clause 14.1(c) in the General Conditions of Contract.

***It is therefore recommended that the amendment should be reframed taking the Sub-Clauses in the GCC into consideration. It is further recommended that the amendment should be an “addition” to the Sub-Clause instead of “delete and replace”. That is the amendment should be***

***“Add Sub-Clause 14.1(c) as follows”:***

#### **6.6.9 PCC 14.2 Advance Payment**

In the last sentence of paragraph 3, “Performance Guarantee” has been stated instead of “Advance Payment Guarantee”.

***It is recommended that the last sentence of paragraph 3 “Performance Guarantee” is replaced with “Advance Payment Guarantee”.***

#### **6.6.10 PCC 14.4 Schedule of Payment**

The wording of PCC Sub-Clause 14.4 as it stands is considered satisfactory.

***However, since the project comprise 27 roads, it is recommended that an indication should be given in Table 1 to show that the Schedule of Payment shall apply to each road as follows:***

***“Table 1: Road Works Payment Schedule Applicable to Each Road”***

#### **6.6.11 PCC 14.8 Delayed Payment**

The following is stated in the first amendment:

“....relevant 6-month LIBOR rate...”

***It is therefore recommended that what is “relevant” should be defined or the word “relevant” deleted.***

#### **6.6.12 PCC 14.9 Payment of Retention Money**

The first amendment indicates that the Employer may accept Retention Guarantee in lieu of deduction of Retention Money.



***Since the Employer may accept Retention Guarantee in lieu of deduction of Retention Money as indicated in first amendment, it is recommended that provision should be made to deal with release of Retention Guarantee.***

## **7. Commercial Terms**

As with the Contractual Terms discussed above, several of the Commercial Terms have been included in the PCCs. Furthermore, the PCCs are considered largely and appropriately worded. Matters are reviewed as above and recommendations are made to remedy any omissions and the wording as appropriate.

***In order to mitigate a potentially significant level of risk to the Employer, the recommendations must be addressed by a Supplementary Contract Agreement since the Contract Agreement has already been signed.***

## **8. Technical Considerations**

In terms of their informational contents, both the Employer's Requirements and the Contractor's Proposal largely conform to the GhIS adopted guidelines for best practice. However, both documents include areas of clarity and detail and the Employer's Requirements have overall coherence and logical flow.

The Contractor's Proposal reflect the Employer's Requirements and the Contractor has complied with the Employer's specifications. However, few areas in the Contractor's Proposal that need to be addressed have been indicated under paragraph 4 above.

### **8.1 Consultancy Services**

In view of the nature of EPC/Turnkey Projects, FIDIC "Conditions of Contract for EPC/Turnkey Projects" First Edition 1999" Sub-Clause 3.1 allows the Employer to appoint an Employer's Representative to act on his behalf under the Contract.

Best practice requires that the Employer's Representative should be an Independent Consultant who would be responsible for the supervision of both the Contractor's Design and Construction of the Works.

It has been noted that under the General Items of the Bills of Quantities provision has been made for "Employer's Monitoring" which is more of an In-house monitoring arrangement and cannot be considered as Independent Consultant Supervision Services.

***To ensure that the Employer's Requirements are achieved and also to achieve effective supervision during the Design as well as the Construction Stages, in order to minimise any potential risks, it is recommended that provision should be made for the engagement and payment of an Independent Local Consultant as the Employer's Representative instead of using the In-house supervision approach. This would also augment the Government of Ghana's Local Content Policy.***

Under Grand Summary Bills of Quantities, there is a provision of US\$2,121,486.35 for Employer's Supervision, representing 3% of the Contract Price. This is within current industry rates from the Professional Institutions including the World-Supported Ghana Association of Consultants and the Ministry of Water Resources, Works and Housing ranging from 2.17% to 11.0% but far lower than the approved Ghana Government Rate of 16.5%.

Furthermore, this information has defined to what extent the Consultancy Services are to be provided under the Contract.

***Looking at the cost and scope of the Project, there is potentially significant level of risk to the Employer in the absence of an Independent Supervision Consultant for the project.***

*It is therefore recommended that an Independent Supervision Consultant should be engaged for the project.*

## 8.2 Superficial Area for Road

The Area constituting the carriageways have been computed as follows:

### Area for Roads

Lot No.	Total Length	Average Width	Area
1	84,000m	8.00m	84,000mx8.00m=672,000m <sup>2</sup>

## 9. Contract Price

### 9.1 Price Review

The cost of constructing roads or Interchange, all other things being equal, is directly proportional to the area. For example if two roads and/or interchanges are constructed

- at the same time,
- in the same country and within the same vicinity,
- of the same quality,
- having approximately the same ground conditions, and
- with similar facilities.

and one has 1,000 m<sup>2</sup> while the second has 2,000 m<sup>2</sup>, then the second would have a **market cost** approximately double the first.

Cost per unit of area of a similar facility is a very good measure of value when evaluating contract prices.

The information contained in the Bills of Quantities under Annexes to Particular Conditions of Contract, Section 5 of the EPC Contract provides sufficient basis for us to be able to undertake price evaluation.

Therefore, the pricing review below is based on a comparison of the Contract Price per square metre of area to an Estimated Fair Market Price (EFMP) per square metre.

### 9.2 Price Review per Square Metre – Based on Area for Road Works

For the pricing review, the total used area of **672,000m<sup>2</sup>** is taken as the basis for calculating the contract price per square metre.

The total Contract Price is quoted as **US\$72,837,698.13**. However, the Contract Price includes a 25% provision for Physical Contingencies in the sum of US\$14,143,242.36.

For comparison of price per square metre to the EFMP we have applied current prices without Price Escalation which is not applicable to the comparison.

Table 3 below shows the adjusted contract price, given as the total Contract Price less Employer’s Supervision and Physical Contingencies.

<b>Table 3 Adjusted Contract Price - Roads</b>		
<b>Total Contract Price</b>	(a)	US\$72,837,698.13
Employer’s Supervision	(b)	US\$2,121,486.35
Physical Contingencies	(c)	US\$14,143,242.36
<b>Adjusted Contract Price</b>	(d) = (a) - (b)-(c)	<b>US\$56,572,969.42</b>

The EFMP per square meter given in Table 4, below, has been determined using information from a number of Road Projects undertaken in Ghana during the past years as well as September, 2015 Cost per Km for Road Works from the Ministry of Roads and Highways and includes market costs of equipment, materials, labour, transport, insurance, financing cost, etc. as well as local construction costs.

We are confident that this EFMP represents a fair market price comparison.

Taking the adjusted Contract Price and dividing it by the area gives the adjusted Contract Price per square metre which is then compared to the EFMP per square metre in Table 4 below.

<b>Table 4 Adjusted Contract Price versus Estimated Fair Market Price - Roads</b>		
Adjusted Contract Price	(a)	US\$56,572,969.42
Total Area in m <sup>2</sup>	(b)	672,000m <sup>2</sup>
<b>Adjusted Contract Price per m<sup>2</sup></b>	(c) = (a)/(b)	<b>US\$84.19</b>
<b>Estimated Fair Market Price per m<sup>2</sup></b>	(d)	<b>US\$90.63</b>
Variance Adjusted Contract Price to EFMP in US\$	(e) = (c) - (d)	- US\$6.44
<b>Variance Adjusted Contract Price to EFMP in %</b>	(f) = (e) /(d)	<b>- 7.11%</b>

It can be seen from Table 4 above that the Adjusted **Contract Price is US\$84.19 per m<sup>2</sup>** as compared to the **EFMP of US\$90.63 per m<sup>2</sup>**. Thus the Adjusted Contract Price is **-7.11%** or US\$6.44/m<sup>2</sup> below the EFMP.

The variance of the Contract Price to the EFMP can now be calculated. Taking the variance of US\$6.44/m<sup>2</sup> from Table 4 and multiplying by the total area, it follows that the **Contract Price is lower than the EFMP** by US\$6.44 x 672,000 = **US\$4,330,390.58**.

***It is therefore recommended the Contract as signed with the Contract Price, which is lower by US\$4,330,390.58, is within acceptable limits and therefore reasonable.***

### **9.3 Bills of Quantities Review**

PCC Sub-Clause 14.1(c) as recommended in paragraph 6.6.8 above, states that the following in the PCC Sub-Clause 14.1:

*“The quantities set out in the Bill of Quantities annexed to the Particular Conditions herein shall not be taken as the final quantities of the Works which the Contractor is required to design, execute and construct and shall be used only for the purposes of obtaining the Contract Price. The final quantities shall only be established after the detailed design has been approved. The Employer and the Contractor agree and guarantee that the price*

*determined from the final approved design shall however not exceed the Contract Price stated on the Agreement hereinabove”.*

It is known that Bill of Quantities contain both quantities and unit rates. Thus the above PCC Sub-Clause 14.1 (c), implies that the rates contained in the Bill of Quantities shall be applied to the final quantities obtained from the approved final design. However, comparative rates analysis with prevailing market rates of similar projects indicated that there were variances in the rates because some of the rates were higher whilst others were lower. Further analysis of the cost indicated that the variances in the rates could be attributable to Contractor’s pricing strategy since the higher and lower rates were balance within the overall Contract Sum. The overall deviation is considered to be within acceptable limits.

***This was considered as no potential risk to the Employer.***

### **9.3.1 General Items**

Analysis of the format of the Bill of Quantities (under Annexes to the Particular Conditions of Contract) showed that it was based on the Civil Engineering Standard of Measurement, 3<sup>rd</sup> Edition (CESMM3) published in 1991 by The Institution of Civil Engineers and The Federation of Civil Engineering Contractors, UK.

General Items of CESMM3 are items, other than Permanent Works, which the Contractor is required to do or provide. It covers Contractor’s obligations under the Contract and all the services that he will be required to provide to complete the Contract in respect of the Condition of Contract, Specifications, Drawings, etc.

General Items is covered under Class A of CESMM3.

As stated in Class A of CESMM3

“It includes General obligations, site services and facilities, Temporary Works, testing of materials and work, Provisional Sums and Prime Cost Items.”

As stated in Class A of CESMM3, It provides “Items to cover elements of the cost of the work which are not to be considered as proportional to the quantities of the Permanent Works.”

Normally, General Items are prepared to cover each road. Thus for the above project that comprise 27 number roads, 27 number General Items were expected.

However, it has been noticed that only one (1) General Items (as Bill No. 1 of the Bill of Quantities) has been prepared to cover all the 27 Number Roads comprising the Project. This implies that the cost of the General Items has to be spread over all the 27 Number Roads to meet the requirements of General Items.

From the Bill of Quantities, the cost of the General Items is US\$3,061,940.75, representing 4% of the Accepted Contract Price of US\$72,837,698.13. This was considered far lower than the industrial norm of between 10% and 15% of the Contract Sum. Furthermore, when considered on pro-rata basis, the cost of US\$3,061,940.75 spread over the 27 number roads constitute US\$113,405.21 per road. This is considered woefully inadequate

***It is therefore recommended that the cost of the General Items should be reviewed to a more realistic amount within the overall Accepted Contract Sum after the approval of the final design.***

### **9.4 Contingency**

A physical contingency of 25% (US\$14,143,242.36) has been provided to ensure that the cost of Design and Construction of the Project remains within the agreed Contract Sum.

As a Provisional Sum, the procedure for authorising the release is specified in GCC 13.5. Provisional Sums require careful monitoring and control by the Employer represented by an Independent Supervision Consultant and are an additional burden for both the Employer and the Contractor under EPC/Turkey projects. There is the potential for delay and misunderstandings and therefore not well suited to EPC/Turkey projects such as this.

It seems likely that this project will commence by the base date with a contract period is 24 months.

***It is recommended that this amount for physical contingency should not be treated as Provisional Sum but should be fixed sum that would ensure that the final Contract Price obtained from the approved final design does not exceed the Contract Price stated on the Agreement, as befits this fixed EPC/Turkey Contracts.***

### **9.5 Price Review Summary**

It has been shown supra that the Contract Price as offered and agreed is lower than the EFMP, when excluding Employer's Supervision and the physical contingency. Thus the overall estimated Contract Price of **US\$72,837,698.13** stands, with the Summary as per the Estimated Bill of Quantities in the EPC/Turkey Agreement.

***Since this is a fixed price contract with the price tag of US\$72,837,698.13 determined by the loan agreement, it is recommended that the Parties discuss and agree on the detailed final design and the final Bill of Quantities to be based on the agreed final design to ensure that the Accepted Contract Sum is not exceeded so as to offer the envisaged value for money to the Employer.***

## **10. Conclusion**

Overall, as written, the Contract is considered not likely to expose the Employer to a significant level of risk but the Parties must agree to implement all of the recommendations made in this report so that the Contract would have potential to offer the envisaged value for money to the taxpayers of Ghana.

### **10.1 Contractor**

Sinohydro Corporation Limited is a well-known international Chinese company with a track record of constructing Interchanges, highways and dams. It has undertaken such projects for the GoG including the Construction of RCC Gravity Dam on the Black Volta River at the Bui Gorge at the Southern End of Bui National Park in Ghana and is currently undertaking the Tema Motorway Roundabout Improvement Project.

***It is considered that Sinohydro Corporation Limited is well experienced and resourced to undertake the Construction/Rehabilitation of Selected Roads and Interchanges in Ghana-Phase 1: Lot 1 (Accra Inner City Roads).***

### **10.2 Contract Agreement, Form of Contract and Contractual Terms**

The documentation received was sufficient in that the proposed Contract Agreement and the Form of Contract have been specified and hence the General Conditions of Contract (GCC) are well-defined with well-crafted Particular Conditions of Contract (PCC).

***Recommendations have been made to mitigate any potentially significant level of risk to the Employer and must be addressed with a Supplementary Contract Agreement since the Contract Agreement has already been signed.***

### **10.3 Commercial Terms**

Several of the Commercial Terms have been included in the PCCs and the proposed PCCs are considered appropriately worded.

***In order to mitigate any potentially significant level of risk to the Employer, the recommendations must be addressed with a Supplementary Contract Agreement since the Contract Agreement has already been signed.***

#### **10.4 Technical Considerations**

In terms of their informational contents, both the Employer's Requirements and the Contractor's Proposal largely conform to the GhIS guidelines for best international practice. The documents are unambiguous and detailed and the Employer's Requirements have the overall coherence and logical flow.

***In order to mitigate a potentially significant level of risk to the Employer, the recommendations should be addressed with a Supplementary Contract Agreement since the Contract Agreement has already been signed.***

#### **10.5 Contract Price**

The total Contract Price is within our Estimated Fair Market Price (EFMP).

***In order to mitigate a potentially significant level of risk to the Employer, the recommendations made should be addressed with a Supplementary Contract Agreement since the Contract Agreement has already been signed.***

***Construction/Rehabilitation of Selected Roads and Interchanges in  
Ghana-Phase 1: Lot 1 (Accra Inner City Roads) GhIS***

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