



Investigation Report - Audit of Revenue Assurance Contracts and Transactions between GRA and SML

Final Report

Office of the President

—
March 2024





Private and confidential

The President
The Office of the President
The Government of Ghana
Jubilee House
Kanda, Accra

Attention: Honourable Madam Frema Osei-Opere (Mrs) – Chief of Staff

27 March 2024

Dear Madam,

Investigation Report – Audit of Revenue Assurance Contracts and Transactions Between Ghana Revenue Authority (“GRA”) and Strategic Mobilisation Ghana Limited (“SML”)

We are pleased to submit our final report of factual findings in respect of the above subject matter.

The report has been prepared in accordance with the scope of work outlined in our engagement letter dated 12 January 2024 and is subject in all respects to the terms and conditions of that engagement letter.

To the extent that this report includes recommendations to address gaps and issues identified in the course of this assignment, the Office of the President (“OOP”) shall be solely responsible for all implementation decisions and for any future action with respect to all matters covered in this report. Our recommendations on the proposed resolution options are not to be construed as legal advice and have not considered the impact of applicable laws.

Please note that we have performed the procedures we consider appropriate in the circumstances, as we were not required to, and did not perform a statutory financial statements audit of SML, GRA and/or Ministry of Finance (“MoF”). Accordingly, we do not express an audit or similar opinion on the information contained in this final report. We are also not required to, and did not perform any of the following:

1. Conduct a trial and/or inquiry in the course of the assignment.
2. Act as a tribunal, commission of inquiry or in a judicial or quasi-judicial role.

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3. Perform any adjudicatory function whatsoever in the course of the assignment, and/or
4. Conduct any exercise with a view to determining whether any person was guilty or innocent of any offence.

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We thank you for the opportunity to be of service to you on this engagement.

Yours faithfully,

Andrew Akoto
Partner

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KPMG provided the Office of the President (“OOP”) with oral presentations on the progress and status of work done during the course of this assignment. However, KPMG’s final report shall take precedence in any circumstances. No reliance should be placed by the OOP on any oral, interim, or draft reports, advice, or presentations.

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01

Glossary of Terms

1. Glossary of Terms^(1/3)

We have listed in the table below, descriptions and explanations of terms and abbreviations used in this report. However, these descriptions and explanations serve to clarify the report and are not intended to be authoritative. Positions/designations are as of the date of this report, unless otherwise indicated.

Abbreviation	Description
AC	Assistant Commissioner
Act 663 as amended	Public Procurement Act, 2003 (Act 663) as amended
AGO	Automotive Gas Oil
AOE	Additional Oil Entitlement
APD	Accra Plains Depot
ARO	Assistant Revenue Officer
ATG	Automatic Tank Gauge
ATK	Aviation Tank Kerosene
BDC	Bulk Distribution Company
BoE	Bill of Entry
BoG	Bank of Ghana
BOST	Bulk Oil Storage and Transportation Company
BRV	Bulk Road Vehicle
CBOD	Chamber of Bulk Oil Distributors
CCVR	Customs Classification and Valuation Report
CEO	Chief Executive Officer
CG	Commissioner-General

Abbreviation	Description
CIF	Cost, Insurance and Freight
COLA	Crude Oil Lifting Agreement
Constitution	1992 Constitution of Ghana
CTSB	Customs Technical Services Bureau
CV	Curriculum Vitae
CVRM	Classification, Valuation and Risk Management
DC	Deputy Commissioner (GRA)
DPA	Downstream Petroleum Audit
EMMS	Electronic Metering Management System
EPA	Environmental Protection Agency
ERDMS	Enterprise Relational Database Management System
ESLA	Energy Sector Levy Act
EY	Ernst and Young
FCU	Financial Control Unit
FOB	Free on Board
FPSO	Floating Production Storage and Offloading
GCM	Ghana Chamber of Mines

1. Glossary of Terms^(2/3)

Abbreviation	Description
GCMS	Ghana Customs Management System
GNPC	Ghana National Petroleum Commission
GoG	Government of Ghana
GRA	Ghana Revenue Authority
GRA Act	Ghana Revenue Authority Act, 2009 (Act 791)
GSA	Ghana Standards Authority
GUPC	Ghana Upstream Petroleum Chamber
HS	Harmonised System
ICUMS	Integrated Customs Management System
IDF	Import Declaration Form
IOC	Integrated Oil Company
KIA	Kotoka International Airport
L.I	Legislative Instrument
L.I 2246	Petroleum (Exploration and Production) (Measurement) Regulations, 2016 (L.I. 2246)
LCS	Least Cost Selection
LPG	Liquefied Petroleum Gas
MC	Minerals Commission
MIIF	Minerals Income Investment Fund

Abbreviation	Description
MoE	Ministry of Energy
MoF	Ministry of Finance
MoLNR	Ministry of Lands and Natural Resources
NPA	National Petroleum Authority
NPA Act	National Petroleum Authority Act, 2005 (Act 691)
NSP	National Service Personnel
NTL	Nationwide Technologies Limited
OCR	Optical Character Recognition
OMC	Oil Marketing Company
OOP	Office of the President
ORC	Office of the Registrar of Companies
PA	Petroleum Agreement
PC	Petroleum Commission
PC Act	Petroleum Commission Act, 2011 (Act 821)
PCA	Post Clearance Audit
PFMA	Public Financial Management Act, 2016 (Act 921)
PFMR 2020	Public Financial Management (Public Investment Management) Regulations, 2020 (L.I. 2411)
PMMC	Precious Minerals Marketing Company

1. Glossary of Terms^(3/3)

Abbreviation	Description
PMS	Premium Motor Spirit
QBS	Quality Based Selection
QCBS	Quality and Cost Based Selection
QOTL	Quantum Oil Terminals Limited
RA Act	Revenue Administration Act, 2016 (Act 915)
RACE	Revenue Assurance and Compliance Enforcement
RFO	Residual Fuel Oil
RO	Revenue Officer
ROI	Return on Investment
RPMU	Research Planning Monitoring Unit
RTU	Remote Terminal Unit
SBCQ	Selection Based on Consultant's Qualification
SFB	Selection under Fixed Budget
SMEL	Strategic Mobilisation Enhancement Limited (Defunct)
SML	Strategic Mobilisation Ghana Limited
SM-OPS	Software used by SML for transaction price audit i.e. classification and valuation of goods
SSD	Support Service Division of GRA
SSS	Single Source Selection

Abbreviation	Description
TEP	Tender Evaluation Panel
TFC	Tema Fuel Company
TOR	Tema Oil Company
TRB	Tender Review Board
TTF	Tema Tank Farm
TVAS	Transaction Value Assessment System
VfM	Value for Money
We	KPMG
West Blue	West Blue Ghana Limited
WTO	World Trade Organisation

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02

Executive Summary

2.1 Engagement Background, Objective and Scope

Background

The President of the Republic of Ghana, in a letter dated 29 December 2023, appointed KPMG to conduct an audit of the contracts and related transactions between Ghana Revenue Authority (“GRA”) and Strategic Mobilisation Ghana Limited (“SML”). KPMG subsequently engaged the Office of the President (“OOP”) on 12 January 2024.

This follows a public discussion of the subject matter that the contracts may not have been in the interest of the State.

Our understanding is that the contracts were intended to enhance revenue assurance in the downstream and upstream petroleum sectors, as well as the minerals and metals resource value chain.







Objective

The overall objective of the engagement is for KPMG to review the work and activities of SML in relation to the contracts with GRA, and assess the propriety of procurement and contracting processes as well as the appropriateness of cost value analysis in the performance of the contracts.

Scope of work

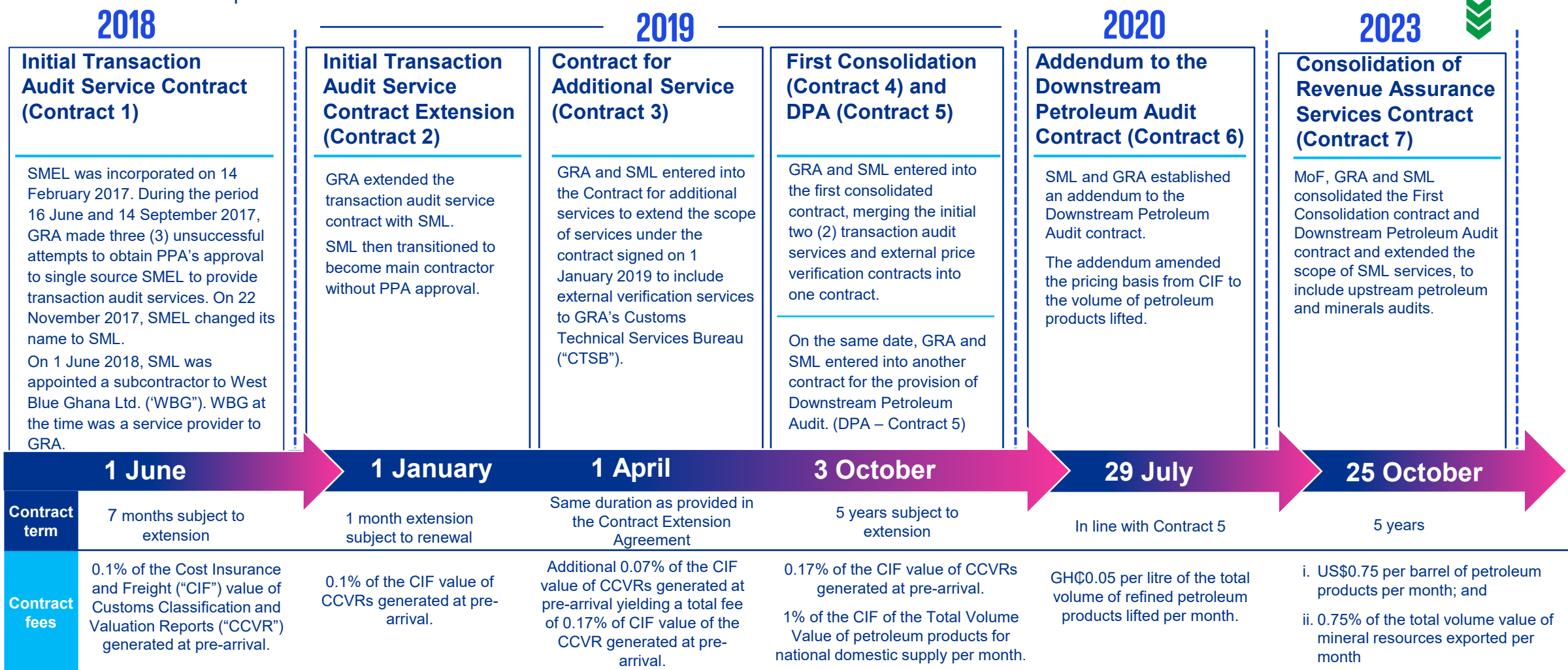
1. Ascertain the rationale or needs assessment performed prior to the contract approval by GRA and assess how the arrangement aligns with specific needs
2. Assess the appropriateness of the contracting methodology, verifying compliance with legal standards and industry best practices in the procurement process for the selection of SML
3. Evaluate the degree of alignment between current activities and the stipulated contract scope, identifying any deviations
4. Evaluate the value or benefit that SML has so far offered to the GRA through this engagement
5. Review the financial arrangements, including pricing structures, payment terms and resolution of any financial compliance issues
6. Submit a report on findings on the above together with appropriate recommendations.

Below is a summary of the approach adopted in executing this assignment. We:

-  Engaged key stakeholders to understand the various contracts between GRA and SML and the relevant services reportedly provided by SML.
-  Reviewed documents provided by SML and GRA and performed walkthrough tests to confirm our understanding of working arrangements and the respective responsibilities of the parties.
-  Evaluated the sourcing and contracting processes leading to the selection of SML, ascertaining alignment with applicable procurement laws and regulations.
-  Conducted background checks both desktop and the Office of the Registrar of Companies (“ORC”) on SML, reviewing its business and operating model to assess its qualifications to deliver on the contracted services.
-  Analysed the costs expended and revenues accruing to GRA, to determine the value or benefits derived from the engagement with SML.
-  Identified and discussed observations, gaps and recommendations with relevant stakeholders.

2.2 Evolution of Contracts with SML

The illustration below depicts the evolution of contracts between GRA and SML^{2.2.1}.



^{2.2.1} One (1) of the 7 contracts involved MoF as a contracting party 5

2.3 Summary of Key Findings: Needs Assessment ^(1/2)

2.3.1 Rationale for Procurement of Services without Needs Assessment

Section 21 of the Public Procurement Act, 2003 (Act 663) as amended with Act 914 (“Act 663 as amended”) requires a procuring entity to prepare a procurement plan to support its approved programme. The Act does not explicitly require a needs assessment to be performed by the procuring entity.

Nevertheless, the World Bank Guide to Assessing Needs (2012) and the Chartered Institute of Procurement and Supply’s 13-point Procurement Cycle recommends that entities should:

1. Conduct a needs assessment, i.e., a systematic study of a problem or innovation, incorporating data and opinions from varied sources, to make effective decisions or recommendations about what should happen next
2. Define the problem to be solved, which may be part of an entity’s procurement plan or may be a collection of source materials used to build the procurement requirements.

We enquired from MoF and GRA to ascertain and understand policy directions, needs assessment/ feasibility studies/ proposals that were performed or submitted, enabling GRA to execute contracts with SML.

The responses we received from MoF and GRA were premised on the case that, independent third-party monitoring of liftings would enhance petroleum revenue, given prevailing operational inefficiencies, particularly in price verification of imported goods and the monitoring of downstream petroleum products liftings, payment reconciliation and general sense of tax leakages. This same perception of revenue loss from leakages in the upstream petroleum and the minerals sectors prompted the expansion of the scope of the contracts to cover these sectors as well.

These concerns and challenges that influenced the various contracts with SML were however not technically analysed, documented, nor discussed by GRA with relevant state agencies if any, to adopt a common solution to address the perceived lapses in the classification and valuation of imported goods, price verification of imported goods, downstream, upstream petroleum and minerals sectors, for an inter-ministerial/ agency approach towards a coordinated resolution.

2.3 Summary of Key Findings: Needs Assessment ^(2/2)

2.3.1 Rationale for Procurement of Services without Structured Needs Assessment (Cont'd)

In the absence of a specifically commissioned and purposed needs assessment report, we sighted pockets of standalone industry analysis and reports, which were issued post GRA's contracting date with SML that provided elements of expressed needs. These reports which highlighted the existence of challenges and tax revenue losses in the petroleum downstream sector included:

- a) The 2018 Ghana Chamber of Bulk Oil Distributors ("CBOD") industry reports indicated under-reporting of revenue in the downstream sector.
- b) Ernst and Young ("EY") audit report issued in May 2021, which was commissioned by GRA to study potential revenue leakages in the downstream petroleum sector for the period 2016 to 2018, established key findings on revenue shortfalls within the downstream sector. The EY report highlighted key findings such as:
 - i. Inconsistencies in reported petroleum liftings by the National Petroleum Authority ("NPA"), GRA and Depots
 - ii. No interface of GRA (GCNet) and NPA systems
 - iii. Lack of a computerised data collection system at the point of petroleum lifting
 - iv. Lack of a standardised reconciliation reporting of petroleum imports to petroleum sales.
- c) The Revenue Assurance and Compliance Enforcement ("RACE") of the MoF, whose 2023 report cited under-declaration of taxes in the downstream petroleum and mining sectors.

In respect of the need to extend monitoring services to the upstream and minerals sector, there was no evidence that a technical needs assessment was performed by GRA, nor was an evaluation of the performance of SML at the downstream petroleum sector carried out to inform the expansion of services to those sectors.

Furthermore, we obtained annual relevant budgets and procurement plans from GRA to ascertain whether the nature of services contracted with SML were budgeted and planned for. From our review of the annual budget and procurement plans for the years 2018, 2019 and 2023, we did not sight evidence that the services contracted with SML were budgeted for or included in GRA's procurement plans.

2.4 Summary of Key Findings: Contracting Methodology ^(1/3)

2.4.1 Contracting SML for Provision of Services without the Approval of the Public Procurement Authority (PPA)

Act 663 as amended provides that a procurement entity may, under specified conditions, procure/contract for goods and services under a single source arrangement. The Act further provides that a single source arrangement must receive prior approval from Public Procurement Authority (PPA).

GRA on three (3) separate occasions sought PPA approval to contract the then SMEL using the single source method, specifically on 16 June 2017, 1 August 2017 and 14 September 2017 for the provision of transaction audit services. PPA declined all the three (3) separate requests on the grounds of SMEL's lack of capacity and prior experience in providing the subject matter services. SMEL changed its name to SML on 22 November 2017.

West Blue Ghana Limited (West Blue) under a contract with GRA dated 4 August 2015 was providing technical services with respect to the implementation and support of the National Single Window project. On 1 June 2018, SML was appointed a subcontractor to West Blue Ghana Ltd, a then service provider to GRA to provide transaction audit services for a seven (7) month period ending 31 December 2018.

On 1 January 2019, GRA executed without PPA's approval, an extended transaction audit services agreement with SML, renewable on a monthly basis, following the expiration of West Blue's contract and SML's subcontract agreement on 31 December 2018.

GRA entered into six (6) service agreements with SML, utilising the single-source method without obtaining approval from PPA, as outlined below:

- a) Transaction Audit Services – 1 June 2018
- b) Contract Extension – 1 January 2019
- c) External Price Verification Services – 1 April 2019
- d) Consolidation Services Agreement (Transaction Audit & External Verification Services) – 3 October 2019
- e) Measurement Audit of Downstream Petroleum Products – 3 October 2019
- f) Addendum to Measurement Audit for Downstream Petroleum Products Agreement – 29 July 2020.

2.4 Summary of Key Findings: Contracting Methodology ^(2/3)

2.4.1 Contracting SML for Provision of Services without the Approval of the Public Procurement Authority (PPA) (Cont'd)

Evidently, GRA executed the above contracts with SML in breach of Act 663 as amended.

On 28 July 2020, as part of regularising the contracts executed above, GRA, under a new leadership, disclosed the above breaches to PPA and sought PPA's ratification. On 27 August 2020, PPA granted ratification to GRA to cover the contracts based on the recommendations from an internal investigation commissioned by PPA to understand the circumstances surrounding GRA contracting SML without prior PPA approval.

2.4.2 No Evidence of Parliamentary Approval for Award of Multi-Year Contracts

Section 33 of the Public Financial Management Act, 2016 (Act 921) ("PFMA"), provides that an entity must seek ministerial and parliamentary approval when it is entering into an agreement with financial commitments that binds the Government of Ghana ("GoG") for more than one (1) year. The PFMA requires the manner of the parliamentary approval to follow compliance with Article 181 of the 1992 Constitution of Ghana ("Constitution"), which sets out provisions of parliamentary approval for long-term loans.

Article 181 states that agreements entered into under this Article shall not come into operation unless it is approved by parliament.

The Consolidation Services Agreement (3 October 2019), Measurement of Downstream Petroleum Products (3 October 2019) and Addendum to Measurement Audit for Downstream Petroleum Product Agreement (29 July 2020) were executed between GRA and SML, for a period of 5 years each.

The Revenue Assurance Agreement signed on 25 October 2023, with a five (5) year term, identifies GoG as a party to the contract and refers to the Ministry of Finance ("MoF") (through whom GoG acts) and GRA jointly and collectively as the client. We noted that all financial obligations stated in the contract are the responsibility of the client. Consequently, the contract binds the GoG, and according to the PFMA, both parliamentary approval and the written approval of the Minister for Finance were necessary to enter into this agreement. However, we did not sight evidence of parliamentary approval for the contract as mandated by the PFMA.

2.4 Summary of Key Findings: Contracting Methodology ^(3/3)

2.4.3 Contracting without GRA Board's Consideration and Approval

The GRA Act, Section 5 (a) provides that the Board shall ensure the proper and effective performance of the functions of the Authority, and includes the supervision and monitoring of the Authority in the performance of its functions. The functions of the Authority, under sections 3 (a) and 3 (d) include assessing and collecting taxes and combating tax fraud and evasion.

The Corporate Governance Manual for Governing Boards/Councils of The Ghana Public Services (Sections 4.1.4 and B (d)) provides among other matters, that GoG's long-term interests are served and ensure critical review of all proposals and other issues. On the basis of the above, it is expected that the management of GRA would inform and seek the Board's approval for key activities including contracts with significant financial commitments.

There is no evidence that the contracts GRA signed with SML in 2018 and 2019 were submitted to the Board for deliberation and approval. The projects underlining the contract signed in 2023 on the other hand were submitted to the Board for approval.

GRA clarified that, in this context, the Principal Spending Officer holds the responsibility for approving contracts. Furthermore, the current GRA Board has established a threshold of GH¢ 4 million for the value of significant projects requiring the Board's approval.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits (1/14)

2.5.1.1 Key Insights from Stakeholder Engagements

KPMG engaged various stakeholders within the petroleum and mining sectors to gain an understanding of the value derived from the services provided by SML and the level of stakeholder engagement relating to the contract, among others. We gathered insights through in-person interviews and an anonymous survey deployed via Microsoft Forms.

In-Person Interviews

Following interviews with ten (10) key stakeholders from the petroleum and mining sectors including key regulators such as MoE and MoLNR, we observed that stakeholders in these sectors who play a vital role in the industry and would be instrumental to the overall success of the project, were not engaged prior to the execution of the consolidated revenue assurance contract. For instance, in the upstream petroleum sector, the MoE, PC, and GNPC were not consulted before the contract was awarded, while in the mining sector, the MoLNR and MC were also not consulted. However, some stakeholders, including the GCM, MIIF and PMMC, were invited to a stakeholder engagement meeting by GRA, but only after the contract had already been awarded in 2023. The absence of input from key stakeholders within the industry risks overlooking crucial insights and expertise for effective industry regulation and decision-making.

Furthermore, stakeholders in both the petroleum and mining sectors emphasised the effectiveness of existing revenue control measures prior to engagement of SML, i.e., in the petroleum sector, entities like PC and NPA play crucial roles, while in mining, stakeholders such as PMMC are central to revenue control. Consequently, most participants perceived SML's services as potentially redundant in both sectors, adding additional costs to the State without significant value addition.

Anonymous Surveys

The anonymous survey revealed that 62% of respondents believed their industry lacked sufficient engagement before SML's services were rolled out. Similarly, 62% expressed dissatisfaction about their involvement in the implementation of the SML system. Stakeholders noted that most engagements with GRA occurred post-contract finalisation, focusing on SML integration. Respondents reporting low engagement levels were mainly from the upstream, downstream and regulatory sectors.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits (2/14)

2.5.1.1 Key Insights from Stakeholder Engagements (cont'd)

Regarding the downstream sector, respondents had varying opinions on the value of SML's services with a majority (57%) indicating that no value was provided. Some respondents believed that SML's work duplicated existing efforts, while others noted that SML improved volume assurance and increased revenue. Additionally, 62% of respondents were unsure if the cost of SML's services justified the value it provided in the upstream petroleum, downstream petroleum and mining sectors. Those who responded negatively noted that SML did not offer substantial additional value to existing revenue control measures, while those who responded positively indicated that SML improved operational efficiency and reduced revenue leaks.

Overall, 38% of respondents observed existing institutions and systems in place that provide similar services as SML in both sectors. These include GRA through Customs and the ICUMS, the PC, the NPA through the ERDMS, and PMMC. These institutions are already mandated by law to oversee and regulate various aspects of revenue monitoring and assurance within the mining, downstream and upstream petroleum sectors. The recognition of these existing systems suggests that stakeholders perceive redundancy with SML's services and this was evident in their responses regarding the value provided by SML.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits ^(3/14)

2.5.2 Transaction Audit Services (Contract 1 & 4: 1 January 2019 – 2 January 2024)

Transaction Audit Services involve validation of the assigned classification and valuation of imported goods for purposes of determining the importer's declaration and the related taxes to be paid. Between 1 June 2018 and 2 October 2019, the transaction audit services required SML to conduct a reassessment of the classification and valuation of import transactions using the CCVR data and report the outcome to the Post-Clearance Audit ("PCA") unit of GRA for the purpose of identification of misclassification and mis-valuation by the GRA team. For this period, SML submitted eight (8) out of the expected fifteen (15) reports. GRA officials however, could not confirm that the seven (7) outstanding reports were received, to evidence SML's performance of the service.

From 3 October 2019, the transaction audit service required SML to provide assurance over the importers' declaration on Import Declaration Form ("IDF") data and compare with classification and valuation performed by GRA to identify differences, if any. However, per twenty five (25) out of fifty one (51) reports submitted, SML used the CCVR data for reassessments instead of IDF data for the audit as required by the change in contractual terms. SML explained that though they had severally requested to be granted access to interface its system with that of GRA's, their request was yet to be granted. Consequently, SML continued to audit the CCVRs contrary to the service requirement to audit the IDF data before the issuance of the CCVR.

We noted that GRA did not institute monitoring and evaluation processes to assess the performance of the service and hold its personnel and SML accountable for non-performance.

Based on the analysis above, we noted that SML delivered partially on the service requirements. Given the observations above, GRA may not have obtained all the expected benefits from the service.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits (4/14)

2.5.3 External Price Verification Services (Contract 3 & 4: 1 April 2019 – 2 January 2024)

The external price verification services require SML to make available an external pricing database and conduct market research to assist the GRA in accessing current prices of imported goods. SML claimed to have granted CTSB access to the Transaction Value Assessment System (TVAS) and stationed two (2) staff members at CTSB during January 2020. However, due to COVID, these staff members were withdrawn and reassigned in April 2020. CTSB confirmed the presence of two (2) SML staff and their access to TVAS for pricing information for the period January 2020 and April 2020. However, concerns were raised regarding the reliability of SML's pricing information as CTSB perceived the prices as inflated or deflated.

In May 2020, GRA implemented the Integrated Customs Management System ("ICUMS"), a system that facilitates classification and valuation of imported goods. ICUMS has inbuilt capabilities to interface with external price verification among other functions. The introduction of ICUMS created a duplication of external price databases and research services which were offered by SML. For the period 1 April 2019 to 31 December 2019 and April 2020 to 2 January 2024, SML and GRA did not provide evidence of offering and utilising external price verification services respectively.

On 23 May 2023, SML provided TVAS system training for current CTSB officials and in December 2023, delivered computers to aid GRA's external price verification activities.

Based on the analysis above, we noted that SML delivered partially on the service requirements. Given the observations above, GRA may not have obtained all the expected benefits from the service.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits (5/14)

2.5.4.1 Measurement Audit for Downstream Petroleum (Contract 5: Period from 3 October 2019 – 2 Jan 2024)

The measurement audit for Downstream Petroleum required SML to deploy an end-to-end Electronic Metering Management System (“EMMS”) to measure and monitor petroleum products delivered to and lifted from the Bulk Distribution Companies (“BDCs”). The assessment of the key performance requirements are set out below:

Obligations	Performance
2.5.4.1.1 Develop and Implement an Electronic Metering Management System	<ul style="list-style-type: none">SML has performed this obligation as they deployed an EMMS for twenty-four (24) depots except Sentuo Oil Refinery (which was recently commissioned) and Old Bauxite Jetty (which has been classified as <i>not secure</i> by GRA).
2.5.4.1.2 Measuring, monitoring, and digitalising the entire delivery chain	<ul style="list-style-type: none">SML has partially performed this obligation as SML is currently measuring and monitoring petroleum liftings with the flow meters in 16 out of 26 depots per the data reviewed. In addition, SML had deployed staff in twenty-four (24) depots to scan the waybills. However, SML does not measure and monitor Residual Fuel Oil (RFO) because of its high temperature and viscosity.
2.5.4.1.3 Identify quantities of petroleum products delivered to the Bulk Distribution Companies’ depots per day/month and report on same to GRA on a daily, and monthly basis	<ul style="list-style-type: none">SML has partially performed this obligation as although SML has flowmeters on the inlet pipes, the measurement and readings are not reliable due to the apparent use of water to either cleanse the pipelines or drive the delivery of products as it is delivered to the depots. As a workaround, SML has began the installation of Automatic Tank Gauges (“ATG”) to continuously monitor volumes delivered and stored in the tanks. SML has deployed ATGs in five (5) out of twenty-six (26) depots. The installation was ongoing until the time of the suspension of services.
2.5.4.1.4. The parties agreed that the terms and conditions of the contract be subjected to an independent Value for Money (“VfM”) Assessment at any given time during the pendency of the agreement	<ul style="list-style-type: none">In 2021, GRA requested MoF to conduct the VfM Assessment, and subsequently furnished MoF with the information needed to facilitate the exercise. However, the independent VfM Assessment was not performed for the period of the contract.
2.5.4.1.5 Both parties agreed to review the performance of SML and its technology systems, no later than 30 days after the first two-year period from the effective date of the contract	<ul style="list-style-type: none">GRA did not perform this obligation under the contract.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits (6/14)

2.5.4.2a Value Contribution from SML

In determining the value GRA has derived from SML, we assessed the value from the following three perspectives:

1. **Quantitative increment in volumes lifted and reported to GRA:** Based on our analysis, we determined an incremental volume of 1.7 billion litres for the period 1 May 2020 to 31 December 2023 amounting to 38.6 litres per month.
2. **Incremental tax revenue:** Based on our analysis, we determined an incremental tax revenue of GH¢ 2.45 billion for the period 1 May 2020 to 31 December 2023. This works out to approximately GH¢55.68 million per month. The net fee (net of taxes) paid to SML for the same period was GH¢ 720 million (monthly average of GH¢16.36 million) which constitutes 29.41% of the incremental tax revenue.
3. **Qualitative benefits:**
 - a) SML conducts 24/7 electronic real-time monitoring of the outflow and partial monitoring of inflows of petroleum products at depots where SML has its flowmeters and ATGs installed and operationalised. This ensures that movement of petroleum products outside the depots can be identified and accounted for and also serves as a deterrent for under-declarations.
 - b) SML conducts six (6) levels of reconciliation to identify avenues that may cause revenue losses to GRA and share discrepancy reports for GRA to follow up on gaps noted:
 - i. SML readings vs Petroleum volumes lifted
 - ii. SML volumes vs Waybills, Purchase Orders, ICUMS volumes (Four-way reconciliation)
 - iii. ICUMS volumes vs Waybills
 - iv. OMC lifted amounts in ICUMS vs BoEs (Bill of Entry)
 - v. OMC Lifted amounts in ICUMS vs Tax paid/Ghana.Gov
 - vi. OMCs with pending liabilities still lifting/OMC Balance
 - c) For outflows, SML has installed flowmeters at 24 out of 26 depots, which serve as an alternate source for GRA to be able to determine quantities of petroleum products lifted at these locations, distinct from the volumes recorded by NPA and GRA in ERDMS and ICUMS, respectively. As of December 31, 2023, SML had flowmeter readings for 16 out of 24 depots representing 76% of total petroleum products lifted.
 - d) SML's scanning and storing of approved waybills from 1 February 2022 serves as a digital archive for GRA for easy retrieval of approved waybills. This is an improvement of GRA's existing process, where approved waybills were stored in sacks at its physical archive location.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits ^(7/14)

2.5.4.2b Measurement Audit for Downstream Petroleum: Quantitative Analysis - Determination of Pre-SML Volumes of Petroleum Liftings (1 Jan 2018 – 30 April 2020)

SML indicated that the commencement of its revenue assurance operations in the downstream petroleum sector has led to an increase of approximately 200 million litres from an average annual volume of about 250 million litres being lifted (pre-SML) and reported to GRA to approximately 450 million litres (SML- era) representing total gains of approximately GH¢12.9 billion in value. We performed independent analysis to ascertain the veracity of this claim.

2.5.4.2b-1 Annual Volumes

Period	GRA (million litres)	ESLA (million litres)	NPA (million litres)	Variance (NPA – GRA) (million litres)	Variance (NPA – ESLA) (million litres)
2018	Not Available	3,598	4,259	Not Available	661
2019	2,815	4,205	4,537	1,722	332
1 May 2019 – 30 April 2020	2,847	4,176	4,500	1,653	324

2.5.4.2b-2 Average Monthly Volumes

Period	GRA (million litres)	ESLA (million litres)	NPA (million litres)	Variance (NPA – GRA) (million litres)	Variance (NPA – ESLA) (million litres)
2018	Not Available	300	355	Not Available	55
2019	235	350	378	143	28
1 May 2019 – 30 April 2020	237	348	375	138	27

GRA – Data issued by GRA as declared liftings.

ESLA – Data reported by GRA to Parliament through MoF as Petroleum liftings on which levy was applied

NPA – Data published by NPA as product liftings

Our analysis is based on volumes of liftings provided by GRA and NPA for three (3) top petroleum products, namely, Premium Motor Spirit, Automotive Gas Oil and Liquefied Petroleum Gas which collectively contribute a significant 90% of petroleum tax revenues.

GRA was unable to provide system-generated petroleum liftings data for the period 1 January 2018 – 30 April 2020 for our verification, as that period was covered by the Ghana Customs Management System (“GCMS”) system, which was not in use at the time of our investigation. GRA therefore asserted that prior to the commencement of SML’s operations in May 2020, annual and monthly average of petroleum liftings were 2,847 million litres and 237 million litres respectively. According to GRA, this data is based on declarations by taxpayers.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits ^(8/14)

2.5.4.2c Measurement Audit for Downstream Petroleum: Determination of Pre–SML Volumes of Petroleum lifting (1 Jan 2018 – 30 April 2020) (Cont’d)

We, further noted that the declared data by GRA when compared with ESLA data and NPA published data was inconsistent with the other two datasets.

ESLA data originates from GRA. Ordinarily, ESLA data should be lower than that of GRA as it excludes liftings for re-export, export and transit. We however found that GRA declared data constituted 68% of ESLA data. In addition, independent data from NPA was significantly inconsistent with GRA declared data but substantially aligned with ESLA’s dataset.

From the above analysis, GRA’s declared dataset is significantly inconsistent with the two (2) other datasets (ESLA and NPA) that are meant to be complementary. Consequently, we have assessed the data provided by GRA as inaccurate and incomplete.

On the basis of the above analysis, we have placed reliance on the ESLA data as the most reliable source of GRA petroleum product liftings data available for the pre-SML period.

2.5.4.2d Determination of SML - era Volumes of Petroleum Liftings (1 May 2020 – 31 December 2023)

Table 2.5.4.2d-1 Comparison of Product Liftings recorded by NPA and GRA (Pre-SML)

Period	GRA (million litres)		ESLA (million litres)		NPA (million litres)	
	Annual	Monthly Average	Annual	Monthly Average	Annual	Monthly Average
1 May – 31 Dec 2020	3,410	426	3,260	408	3,412	427
1 Jan – 31 Dec 2021	5,240	437	5,119	427	5,240	437
1 Jan – 31 Dec 2022	5,160	430	4,234*	385*	5,151	429
1 Jan – 31 Dec 2023	5,512	459	Not Available	Not Available	5,511	459

GRA – Data issued by GRA from ICUMS

ESLA – Data reported by GRA to Parliament through MoF as Petroleum liftings on which levy was applied

NPA – Data published by NPA as product liftings

* ESLA data for Jan – Dec 2022 does not include December 2022 petroleum liftings as these will be published in the ESLA 2023 report.

From May 2020 (SML- era), the reported liftings by GRA are substantially consistent with NPA and ESLA datasets (minimal differences were noted).

2.5 Summary of Key Findings: Contract Performance, Value or Benefits ^(9/14)

2.5.4.2e Cross-sectional Comparability of Product Liftings between NPA and GRA (Pre-SML and SML- era)

A cross-sectional comparability of volumes of petroleum product lifting datasets for GRA and NPA for both the pre-SML and SML- era periods are shown in the table below.

Table 2.5.4.2e-1 Comparison of Product Liftings recorded by NPA and GRA (Pre-SML and SML- era)

Period		GRA (million litres)	ESLA (million litres)	NPA (million litres)
		Annual	Annual	Annual
Pre-SML	1 Jan 2018 – 31 Dec 2018	Not Available	3,598	4,259
	1 Jan 2019 – 31 Dec 2019	2,815	4,205	4,537
	1 May 2019 – 30 April 2020	2,847	4,176	4,500
SML-era	1 May 2020 – 31 Dec 2020	3,410	3,260	3,412
	1 Jan 2020 – 31 Dec 2020**	4,801	4,651	4,859
	1 Jan 2021 – 31 Dec 2021	5,240	5,119	5,240
	1 Jan 2022 – 31 Dec 2022	5,160	4,234*	5,151
	1 Jan 2023 – 31 Dec 2023	5,512	Not Available	5,511

** SML started operations in May 2020, therefore the SML – era period for 2020 covers 8 months i.e. between 1 May 2020 – 31 December 2020

We noted that there was consistency in product lifting data between ESLA and NPA in the pre-SML period. However, the declared data set by GRA was inconsistent with the other two data sources. As already discussed under [section 2.5.4.2b](#), the GRA declared data is assessed as incomplete and inaccurate.

On the other hand, there was consistency among GRA, ESLA, and NPA datasets for the SML- era period.

Petroleum volumes lifting data between ESLA and NPA were significantly comparable for the periods 2018 – mid 2020 (Pre-SML). Similarly, the liftings dataset for GRA and NPA for the period mid 2020 – 2023 (SML- era) were substantially comparable with minimal differences.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits ^(10/14)

2.5.4.2f Annual Growth Rate Analysis of Product Liftings (2016 – 2023)

Table 2.5.4.2f-1 Analysis of Annual Growth of Petroleum Product Liftings

Period	Annual GRA/ESLA (million litres)	Annual NPA (million litres)	% Change YoY GRA	% Change YoY NPA	
1 Jan – 31 Dec 2016	Not Available	4,283			Pre-SML Growth Rate : 2.00%
1 Jan – 31 Dec 2017	Not Available	4,173		-2.57%	
1 Jan – 31 Dec 2018	3,598	4,259		2.06%	
1 Jan – 31 Dec 2019	4,205	4,537		6.52%	
1 Jan – 31 Dec 2020	4,801	4,859	14.15%	7.12%	2020 Base Year
1 Jan – 31 Dec 2021	5,240	5,240	9.16%	7.83%	SML- era Growth Rate : 4.38%
1 Jan – 31 Dec 2022	5,160	5,151	-1.52%	-1.70%	
1 Jan – 31 Dec 2023	5,512	5,511	6.81%	7.00%	

We utilised NPA liftings data to analyse the year-on-year growth rate between 2016 to 2023. This is because pre-2018 data for GRA was not available. The analysis of NPA data from 2016 showed inconsistent growth rates over the period culminating in an average growth rate of 2% for pre - SML and 4.38% for SML - era.

SML commenced downstream petroleum monitoring services in May 2020 and therefore the year 2020 has been used as a base year to determine the pre-SML and SML-era growth rate. In the absence of complete data from GRA, we have utilised three (3) years of data pre and post-2020 from NPA to determine the growth rates that existed before and after SML commenced.

The analysis showed that the average growth rate for the period 2017 and 2019 (pre-SML) was 2% compared with 4% for the period 2021 – 2023 (SML- era). The factors that contribute to changes in the growth rate of petroleum liftings reported by NPA include crude oil prices, new OMCs, depots and retail outlets and improved automated processes.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits ^(11/14)

2.5.4.2g Incremental Volume and Tax Revenue Analysis

The table below has been provided by GRA and SML to support their assertions that the commencement of operations by SML led to incremental volume liftings and tax revenue of GH¢12.98 billion for the period 1 May 2020 – 31 December 2023.

Table 2.5.4.2g-1 Summary Analysis of Incremental Volume and Tax Revenue provided by GRA and SML

Total Volume By GRA May 2019 – April 2020 (Pre SML) Based on Declarations		Total Volume By GRA May 2020 – Dec 2023 (SML- era) Based on ICUMS			Pre-SML Average * No of Months	Diff (Taxable Volume Gains)	Gains Value
Annual (million litres)	Average (million litres)	SML-era Periods	No of Months	Total Volumes (million litres)	SML- era (million litres)	million litres	in GH¢
A	B		C	D	E = B * C	F = D - E	G = F * GH¢1.44
2,847	237	1 May – 31 Dec 2020	8	3,410	1,898	1,511	2,176
		1 Jan – 31 Dec 2021	12	5,240	2,847	2,393	3,446
		1 Jan – 31 Dec 2022	12	5,156	2,847	2,308	3,324
		1 Jan – 31 Dec 2023	12	5,650	2,847	2,802	4,035
		Total		19,455	10,441	9,015	12,981

Source: GRA & SML

1. Our review of the above analysis provided by GRA and SML to support the claim of incremental revenue of GH¢12.98 billion revealed that the average pre-SML volume data of 237 million litres used in the analysis is not accurate and complete. Refer to [section 2.5.4.2c](#). The pre-SML data that GRA should have used for its incremental revenue analysis should have been at a minimum the ESLA liftings average of 348 million litres, which correlates with the NPA average liftings of 375 million litres.
2. In addition, the pre-SML average in the model has been held constant while the SML- era volumes and related averages are growing at different inherent growth rates. Holding the pre-SML average constant assumes that all changes in reported volumes during SML- era are attributable to the involvement of SML in the petroleum downstream sector. This presumption may not be accurate as other factors contributed to the growth in petroleum liftings for both pre-SML and SML-era periods. In order to account for the impact of other factors in the changes in petroleum product liftings over the period, the pre-SML average used in the model should be adjusted by the annual inherent growth rate that existed for the reported volumes of liftings for all relevant periods. Furthermore, the volumes stated for 2023 contained marginal errors.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits ^(12/14)

2.5.4.2g Incremental Volume and Tax Revenue Analysis (Cont'd)

To address the limitations identified in the computation for incremental revenue by GRA and SML, we have utilised the pre-SML averages from the ESLA data and adjusted those averages by the inherent growth rates of volume lifting changes for the relevant periods to determine the incremental tax revenue that may be attributable to the involvement of SML.

2.5.4.2g-2 Recalculation of incremental volume and tax revenue using ESLA Pre-SML averages and applying annual inherent growth rates

Total Volume By GRA May 2019 – April 2020 (Pre SML) Based on ESLA		Total Volume By GRA May – Dec 2023 (SML- era) Based on ICUMS			Growth Rate	Adjusted Volumes (Using Pre-SML Average)	Diff (Taxable Volume Gains) million litres	Incremental Tax Revenue in GH¢
Annual (million litres)	Average (million litres)	SML- era Period	No. of Months	Total Volumes (million litres)				
A	B		C	D	F	G = (100%+F)* calculated G(Adjusted Volume) of previous Year	H = D – G	I = H * GH¢1.44
4,176	348	1 May – 31 Dec 2020	8	3,410	7.12%	2,982	427	616
		1 Jan – 31 Dec 2021	12	5,240	7.83%	4,824	417	600
		1 Jan – 31 Dec 2022	12	5,160	-1.70%	4,742	419	603
		1 Jan – 31 Dec 2023	12	5,512	7.00%	5,073	438	631
		Total		19,322		17,621	1,702	2,450

Based on analysis using ESLA reported liftings as the pre-SML average in the table above, the incremental reported volume that is attributable to the involvement of SML is determined as 1.70 billion litres for the period. This works out to a monthly average of 38.6 million litres per month. The incremental revenue that is attributable to the involvement of SML is GH¢2.45 billion for the period. The fee of GH¢720 million paid to SML for the same period constitutes 29.41% of the incremental tax revenue.

Column G - The adjusted volume for May to December 2020 was calculated by annualising the Pre-SML Average (B) by multiplying it by 12. Then, a growth rate of 7% (F) was applied to derive the adjusted volume for 2020. This figure was further prorated to obtain the adjusted volume for May to December 2020, covering an 8-month period.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits ^(13/14)

2.5.5 Upstream Petroleum Audit (Contract 7: Period from 25 October 2023 – 2 Jan 2024)

We noted from our review that SML is yet to deploy and implement its system to commence operations. Activities towards implementation have been halted following the President's directive to suspend the performance of the contract. Other services in relation to upstream petroleum audit were also yet to commence at the time of the audit exercise.

The Measurement Audit for Upstream Petroleum requires SML to:

- Develop and implement an end-to-end electronic monitoring and auditing system to track product flow
- Perform hydro-carbon measuring and monitoring and digitalising the entire delivery chain deploying very accurate computerised fiscal metering systems
- Install state-of-the-art remote terminal units ("RTU") at all necessary points along the supply and value chain to access the production data from all the operators and key processing, storage and offtake facilities within our oil and gas ecosystem
- Perform other relevant sectorial monitoring and digitalise the entire delivery value chain by deploying very accurate computerised product flow systems to improve the existing Customs Internal Audit for revenue assurance and due diligence on taxes due to government
- Implement systems that will help to improve the existing internal audit processes for the purpose of maximising revenue mobilisation in the upstream sector for the Republic.

We noted that various stakeholders in the sector including PC and other contractors perform functions targeted at ensuring accurate declaration of production. Specifically, we noted that metering systems are built into the Floating Production Storage and Offloading (FPSO) vessels which are periodically calibrated by third party contractors and observed by PC's officials/agents. The effective functioning of the metering systems depends on appropriate calibration. If the metering systems are not properly calibrated, it could potentially lead to significant revenue losses to the State. In respect of gas, transportation from the FPSO's goes through offshore pipes owned by Ghana National Gas Company to the Gas Processing Plant (GPP) at Atuabo. The volumes recorded onshore are influenced by line parking and the gas being in its dense phase. Reconciliation is performed between the volumes discharged from the FPSOs and received at GPP. The current reconciliation process is manual and if reconciliations are not effectively performed, volumes may not be accounted or recorded and this could lead to revenue losses.

2.5 Summary of Key Findings: Contract Performance, Value or Benefits (14/14)

2.5.6 Minerals Audit Services (Contract 7: Period from 25 October 2023 – 2 Jan 2024)

SML is yet to commence implementation of this service at the time of our review.

The Measurement Audit for the Minerals Sector requires SML to:

- Undertake a comprehensive review of workflow within the mineral resources sector
- Undertake a review of the operations of all the mineral resources mined for export
- Develop and implement an end-to-end electronic monitoring and auditing system to track the extraction and export of mineral resources.
- Perform minerals and metals monitoring and digitalise the entire delivery value chain by deploying a very accurate computerised weighing and analyser.
- Implement SML NOVA - Mineral Resources Auditing and Security Systems which is dedicated solely to monitoring Smelting and Pouring, Box Sealing and Weighing and Tracking to KIA from all the recognised mining companies for export.

The process of assuring the volume of gold produced includes the involvement of different parties; weighing, assaying and refining. We noted that weighing takes place at the gold room at the mine sites, port of shipment at the airport and the refinery. The weighing scales in the gold room are owned by the mines. Calibration of the scale is performed by the mine officials. The Ghana Standards Authority (GSA) with the State mandate for standards or calibration is not involved in the process. Though there are several parties involved in the process, which makes collusion unlikely, the ownership and calibration of the scales are controlled by the mines. This creates a remote risk of inaccurate weighing. Various reconciliations are performed on weighing and assaying records among the mine, shipment and refinery data.

The reconciliation process is manual and could be prone to errors. The case for improvement in the process is the provision of independent weighing scales, GSA's supervision of calibration and automation of the recording and reconciliation process. Furthermore, the elaborate process identified above at the large mines may not exist at the small scale and mining of other minerals. Opportunity exists for automation and independent monitoring of these other mines.

The contract indicates an expected investment of US\$ 54.5M and US\$ 79M for the upstream and mineral audit services respectively. According to SML, about 80% of the expected investment has been committed to the project. SML has not provided us with relevant and supporting documentation to enable us to verify the investments claimed.

As part of the engagement, we were to assess the value or benefits accruing to GRA from all contracts. However, due to the suspension of the aforementioned contracts, which are yet to be performed by SML, there are no records to determine the value or benefits derived from these contracts.

2.6 Summary of Key Findings: Financial Arrangements ^(1/3)

2.6.1 Pricing Structure Under the Various Contract

In all the contracts, the pricing model was based on variable fees linked to underlying activities. However, the cost of the nature of the services in themselves which is audit or assurance-related, are typically made of a fixed and variable component.

Pricing the contract fully on variable cost creates the potential for the fee to be disproportionate to the cost, particularly where the underlying activity moves in the positive direction. Our research and benchmarking of the pricing structure of SML and similar services of providers across the globe revealed that the predominant pricing model used is a fixed price model. While the variable pricing model used in the contract is arguably permissible, the benchmarking insight evidences the fixed pricing model as the preferred model.

2.6.2 Total Fees Paid to Date under the Contracts

The table below details the total amounts (Gross and Net of Taxes) GRA paid SML from 2018 to 2023 for the contracts in scope.

Currency	Transaction Audit and External Price Verification Payments		Downstream Petroleum Measurement Payments		Upstream Petroleum Payments	Minerals and Metals Payments	Total Amount	
	(Gross)	(Net)**	(Gross)	(Net)**	(Gross)	(Net)**	(Gross)	(Net)**
Total (GH¢)	454,860,396.27	340,362,808.32	945,342,007.29	720,691,969.68	-	-	1,400,202,403.56	1,061,054,778.00
Total (USD)*	62,470,150.09	46,745,146.19	123,855,847.51	94,422,879.77	-	-	186,325,997.6	141,168,025.96

* Exchange rates were obtained from Bank of Ghana website

** Net of Taxes

2.6 Summary of Key Findings: Financial Arrangements ^(2/3)

2.6.3 Downstream Petroleum Measurement - Payment Terms and Compliance Issues

No deduction of VAT by GRA for an 8-month period on payments to SML

During the period from 1 September 2020 to 30 April 2021, a bulk payment to SML covering invoices for an eight (8) month period, did not have VAT and WHT deductions, amounting to **GH¢13.38 million**. This contradicts GRA's standard practice of deducting such taxes for payments to SML between 1 June 2020 and 31 August 2023.

Additionally, SML failed to fulfil its statutory obligations by neither filing returns nor remitting these taxes to GRA. Pursuant to Section 71(1) of the RA Act, the accrued interest on the tax liability is estimated at **GH¢18.50 million** owed by SML to GRA as of 31 January 2024. Consequently, the total liability incurred by SML amounts to **GH¢31.88 million**.

At the time of our review, we noticed the discrepancy and informed GRA, leading to their subsequent communication with SML, demanding settlement of the outstanding amount.

2.6 Summary of Key Findings: Financial Arrangements ^(3/3)

2.6.4 Financial Projections

We have performed independent projections in respect of the various measurement obligations as part of estimating the amount payable under Contract 7 over its tenure, as follows:

1. Transaction Audit and External Price Verification – Projections were based on a growth trend of 1% of CIF and changes in net payments as a percentage of gross.
2. Downstream – Projections are made for the contract period based on growth trends over the past three (3) to five (5) years.
3. Upstream – Lifting projections covering the contract period from Ghana National Petroleum Commission (“GNPC”) were obtained and evaluated for reasonableness.
4. Minerals and Metals – Gold production projections were obtained from the Ghana Chamber of Mines (“GCM”) and evaluated for reasonableness. Price forecasts from the World Bank and Metals Focus were used to obtain the volume values. Available data for projection is three (3) years only.

The breakdown of the estimated payments to SML under the contract are as follows:

S/N	Services	Volume Value	Unit of Measurement	Volume Value Projection ^a	Rate	Gross Amount – GH¢	Gross Amount – US\$	Net Payable – GH¢	Net Payable – US\$
1	Transaction Audit and External Price Verification	13,071,304,824	1% CIF	n/a	0.15% ^b	1,960,695,725	157,760,573 ^c	1,401,593,573	112,774,360 ^c
2	Downstream	29,209,804,952	L	n/a	GH¢0.05	1,460,490,247	117,513,276 ^c	1,037,429,713	83,473,179 ^c
3	Upstream	232,004,646	bbl	n/a	US\$0.75	2,162,567,513 ^c	174,003,485	1,538,492,210 ^c	123,789,433
4	Minerals and Metals ^d	9,650,266	oz	US\$17,845,484,191	0.75% ^a	1,663,417,741 ^c	133,841,132	1,195,576,361 ^c	96,197,900
Total						7,247,171,226	583,118,466	5,173,091,857	416,234,872

- a. Volume value projections are only applicable to minerals due to the compensation terms of Contract 7. This represents the volumes projected multiplied by price projections from the World Bank and Metals Focus. A rate of 0.75% for minerals is applied to the volume value.
- b. Rate per contract 7 is 0.15% of (1% CIF)
- c. Bank of Ghana (“BoG”) interbank forex mid-rate for 28 February 2024 was used
- d. This excludes projections for non-gold minerals or metals for which data was not available.

* Exchange rates were obtained from Bank of Ghana website

2.7 Recommendations ^(1/6)

2.7.1 Contract Resolution

The findings from the review of the Consolidated Revenue Assurance Services contract, signed in October 2023, present complexities including legal and cost-value concerns that need to be resolved. The recommendations are premised on the assumption that the contracts upon which the arrangement between the GRA and SML stands on, are not void or voidable at the time of reporting. However, if parliamentary approval is not obtained the contract may be unenforceable. The options presented are also not meant to be construed as legal advice. They only serve to illustrate the possible implications of the choices available in remediating the issues with the agreements and transactions involving the contracting parties. The following resolution options may thus be considered:

- a) **Termination:** The contract provides an option for termination by either party. However, per the terms of the contract, termination could trigger specific financial obligations on GoG and GRA as follows:
- i. Upon termination, GoG and GRA remain liable to settle SML for services already completed but not yet paid
 - ii. GoG and GRA are not entitled to a refund of any compensation already paid to SML, regardless of the termination cause
 - iii. If GoG or GRA terminates without a cause, it becomes liable to pay SML an ROI equivalent to the fair value of SML's investment in the contract.

The specific investment values indicated in each relevant contract are presented below:

Service Contract	Investment Value (US\$)
First Consolidation Contract	13,935,335.00
Downstream Petroleum Audit Contract	30,108,845.00
Consolidation of Revenue Assurance Services Contract	<ul style="list-style-type: none">• 54,497.166.21 (Upstream Petroleum Audit)• 78,989,556.30 (Minerals Audit)

SML did not provide supporting documents or relevant information to verify the nature and amount of investments it had made. If the contract is terminated, the investment claimed to be have been made by SML should be validated, as they could become a source of claim on GoG and GRA in the event of the exercise of the termination clause.

2.7 Recommendations ^(2/6)

2.7.1 Contract Resolution (Cont'd)

b) Orderly Resolution: This approach is more accustomed to the financial services sector. It is however being recommended for consideration in this context as it prioritises a review of the existing contracts with the view to addressing noticeable complexities and areas of concerns in a mutually negotiated and acceptable manner. For this option, we have considered the systemic impact, cost to state, sustainability, complexity and deliverability, public trust and implications. On the basis of the above, an orderly resolution could be used to address identified challenges with the contract:

i. Upstream Petroleum and Minerals Audit

These components of the contract cover major revenue sources to the State. If there are revenue leakages, the impact could be significant. However, technical needs assessments were not performed to establish detailed gaps to be resolved. In addition, the components present significant fee outlays on Government resources, and implementation involves multiple stakeholders with diverse interests. We therefore recommend a review of the contract as follows:

- The contract did not receive parliamentary approval as required by section 33 of the PFM Act. Parliamentary approval should be sought to regularise the contract to meet the existing legal requirement, if practicable
- In order to ensure that the services are justified, and the fees are proportionate and commensurate for the services to be rendered, the contract should be subjected to a technical needs and value-for-money assessment
- Multiple stakeholders perform various roles in the upstream and minerals sectors. In the execution of this contract, MoF, GRA and SML should conduct extensive engagement with all relevant stakeholders to ensure awareness creation, stakeholder buy-in and alignment on the services contract, its deliverables and outcomes.

ii. Transaction Audit & External Price Verification

These services, which have been partially delivered, require a comprehensive review to assess their ongoing relevance. With the integration of ICUMS, there has been a duplication of external price databases and research services being provided by SML, necessitating immediate action to amend or reassess the services. Utilising ICUMS capabilities for external price verification, it is recommended to reassess the services provided by SML to optimise efficiency and adapt to evolving business dynamics.

2.7 Recommendations ^(3/6)

2.7.1 Contract Resolution (Cont'd)

ii. Downstream Petroleum Audit

The service has been provided for over four (4) years, and SML has gained experience and become more proficient. Based on this, we recommend renegotiating contract prices, including consideration of shifting from a variable to a fixed fee structure.

iii. Monitoring and Evaluation

Consideration should be given to incorporating periodic monitoring and evaluation at least every two (2) years to formally assess the performance of the components of the contract and related key performance indicators.

2.7 Recommendations ^(4/6)

2.7.2 Incorporation of Needs Assessment into Public Procurement Practice

For a covered entity in Ghana, submission of a procurement plan to PPA complies with section 21 of Act 663 as amended. However, submitting the same without conducting a needs assessment may expose the State to the following risks:

1. Misallocation of public funds
2. Erosion of public trust in the government's ability to manage resources effectively.

Conducting a needs assessment as part of the procurement process is important for aligning procurement activities with organisational needs, optimising resource allocation, mitigating risks, and fostering stakeholder engagement and accountability. It lays the foundation for successful procurement outcomes that deliver value and support organisational objectives. The process includes among others; the identification of stakeholders and the analysis of their current and future demand, the assessment of existing resources, consideration of alternative needs to address the gap between current and future demand, and compliance with relevant laws and regulations.

Regulations 20(a) and 20(c) of the Public Financial Management (Public Investment Management) Regulations, 2020 (Legislative Instrument (“L.I”) 2411) require the documentation of concept notes and feasibility study reports respectively for the purpose of planning, execution, monitoring and reporting on the progress of an investment project. However, there is no legal requirement to perform a needs assessment for procurement of other goods and services with substantial value. Consideration should be given to the following:

1. Legislation of the needs assessment process as part of public procurement practice. This may be done by amending Act 663 as amended to include a provision which explicitly mandates covered entities to conduct a needs assessment for procurement of goods and services excluded from L.I. 2411 and meet certain thresholds
2. In the meantime, Boards of covered entities should approve a policy, as part of the budget review and approval process, to require management to adopt and prepare needs assessment or perform feasibility studies as part of the procurement process.

2.7 Recommendations ^(5/6)

2.7.3 Compliance with Section 33 of Public Financial Management Act, 2016 (Act 921)

One key area requiring examination is the requirement in section 33 of the PFMA for multi-year expenditure commitments to receive approval of the Minister and Parliament. While this is a key accountability measure, the Act's current lack of a clear threshold may result in an excessive number of agreements being brought before Parliament. This could lead to delays and administrative bottlenecks in the approval process and ultimately commencement of key projects. A reasonable threshold that balances accountability and efficiency should be considered as an amendment to the Act to enhance implementation. In addition, it appears compliance with this section of the Act is not widespread.

2.7.4 Contracts Monitoring

The contracts make provision for periodic monitoring and evaluation assessment of the effectiveness of the performance of the contract. GRA should develop a contract monitoring framework to govern the evaluation of the performance of significant contracts. At a minimum, the framework should:

- a) set out appropriate governance structure to oversee and demand accountability on the status and performance of the contract
- b) identify the contract owner who will be accountable for the contract as well as individuals who will be responsible for facilitating and monitoring performance against the defined metrics, provide feedback and guidance to the consultant, and address any concerns or issues promptly
- c) outline the timing and nature of information (updates or reports) to be shared with the Executive Management team and the Board for review.

2.7.5 Pricing Model

The fee structure of the contracts is based on a variable model which changes with the underlying substantive activities. The nature of the scope of services provided is not variable. The variable pricing may be prone to paying fees which may not be commensurate with value derived from the underlying activities. GRA should consider reviewing the variable pricing structures for the contracts with the view of adopting a fixed pricing model.

2.7 Recommendations ^(6/6)

2.7.6 Review of Contract Terms by Attorney-General

Covered entities should also ensure that all contracts to which GoG is a party are reviewed by institutional legal resources and where necessary the Attorney General to confirm that the contract terms do not disadvantage the GoG.

For contracts that include the GoG as a party, it is advised that the Attorney-General, who serves as the principal legal advisor to the government, reviews the contract to ensure the terms are compliant with all relevant laws and the interests of the government are protected and not exposed to any avoidable financial or reputational liabilities.

The Office of the Attorney General and Ministry of Justice should also develop standardised terms and conditions covering critical clauses like intellectual property rights, indemnity and termination provisions to be included in all contracts. This measure will ensure the interests of the GoG and public entities are protected in every agreement. Additionally, in cases where a contract holder oversees the preparation of a contract, the legal team should conduct a thorough review to align the clauses to the benefit of the covered entity and GoG.

2.7.7 Build-Operate-Transfer Model for Major System Deployments

GRA should consider crafting contracts for major system deployments around Build-Operate-Transfer models as an option. This will ensure that GRA retains the ownership of the asset while benefiting from the expertise and resources of the vendor in system deployment, knowledge transfer/training and maintenance support.

2.7.8 VfM Assessments

GRA should perform value-for-money assessments biennially for contracts exceeding a lifespan of two years to optimise benefits. Additionally, contracts with durations less than two years should undergo one-time or annual assessments as agreed by both parties to ensure and monitor efficiency and VfM.

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03

Introduction

3.1 Background, Purpose and Scope of the Assignment ^(1/4)

3.1.1 Background and Purpose

The GRA was established in 2009, in accordance with the Ghana Revenue Act, 2009 (Act 791) with a core mandate to:

1. Ensure maximum compliance with all relevant tax laws
2. Ensure a sustainable revenue stream for government
3. Facilitate trade and a controlled/safe flow of goods across the country's borders.



The President of the Republic of Ghana, in a letter dated 29 December 2023, appointed KPMG to conduct an audit of the contracts and related transactions between GRA and SML. KPMG subsequently engaged the Office of the President (“OOP”) on 12 January 2024. This follows a public discussion of the subject matter that the contracts may not have been in the interest of the State. Our understanding is that the contracts were intended to enhance revenue assurance in the downstream and upstream petroleum sectors, as well as the minerals and metals resource value chain. The scope of the assignment has been documented in [section 2.1](#)

- 1** On 1 June 2018, SML was appointed a subcontractor to West Blue Ghana Ltd, a then service provider to GRA to provide transaction audit services for a seven (7) month period ending 31 December 2018.

On 1 January 2019, GRA extended the transaction audit service contract with SML. SML transitioned to become main contractor.

2

On 1 April 2019, GRA executed a contract with SML for additional services, i.e., provision of external price verification services to CTSB.

3

On 3 October 2019, GRA executed two (2) contracts with SML i.e., a:

1. Consolidation of services contract, to harmonise SML's services under **2** and **3**
2. Measurement Audit contract to enhance revenue assurance in the downstream petroleum sector. GRA issued an addendum to this contract on 29 July 2020 to revise the basis for determination of petroleum revenue.

4

- 5** On 25 October 2023, GRA and the MoF, executed a Revenue Assurance contract, which renewed, consolidated and extended SML's services under prior contracts, to include: (i) Transaction audit and external price verification; (ii) Downstream petroleum audit; (iii) Upstream petroleum production, and minerals and metals resources value chain services.

3.1 Background, Purpose and Scope of the Assignment ^(2/4)

3.1.2 Scope of the Assignment

Specifically, the terms of reference of the investigative audit are as follows:

1. **Needs Assessment** – ascertain the rationale or needs assessment performed prior to contract approval by GRA and assess how the arrangement aligns with specific needs
2. **Contracting Methodology** – assess the appropriateness of the contracting methodology, verifying compliance with legal standards and industry best practices in the procurement process for the selection of SML
3. **Contract Performance** – evaluate the degree of alignment between current activities and the stipulated contract scope, identifying any deviations
4. **Value and Benefits** – evaluate the value or benefit that SML has so far offered to the GRA through this engagement
5. **Financial Arrangements** – review the financial arrangements, including pricing structures, payment terms and resolution of any financial compliance issues
6. **Recommendations** – Submit factual findings report together with recommendations.

3.1.3 Period under Review

The procedures performed by us are relevant to events / documentation covering the date of first appointment of SML i.e., 1 June 2018 through to 31 December 2023, unless otherwise indicated in this report.

In instances where we deemed relevant and in the furtherance of our mandate, we may have considered events or documents falling outside the above-stated period.

3.1.4 Limitations and Subsequent Events

1. We have examined information relevant to the scope as agreed in the executed engagement letter of 12 January 2024. However, it is possible that documents and / or information / records exist, which might not have been made available to us in the course of the performance of the assignment.
2. Any document or information that may be brought to our attention subsequent to the date of this report, which would affect the findings, may require the findings to be adjusted and qualified accordingly. We do not have a responsibility to update the report with information that may come to our attention after the reporting date.
3. We relied on the information and records requested by us and provided by SML, GRA, MoF, Public Procurement Authority (“PPA”), NPA and other relevant parties. Except where specifically stated, we have not sought to establish the reliability of the sources as well as the authenticity and / or completeness of any of the documents by reference to information independent of the above entities.
4. For ease of understanding of this report, we have stated specific limitations (if any) in the relevant sections of this report.
5. To the extent possible we have used forecast information for determining estimated fees payable under the 2023 Consolidated Contracts. The forecast date and assumptions are based on information at the date of our report. The forecast data and information may differ from actual data at the dates of occurrence. We do not have a responsibility to update our report in this respect.

3.1 Background, Purpose and Scope of the Assignment ^(3/4)

3.1.5 Engagement Standards

1. Our engagement does not constitute a statutory audit of the financial statements of MoF, GRA and / or SML. Consequently, no assurance or opinion is provided or expressed by us. We have focused our investigative review efforts to the legitimate identification and collection of records provided by MoF, GRA, SML and other entities specified in this report.
2. We were not required to review the work of the prior or current external auditors of MoF, GRA, and/or SML. We were also not required to, and did not perform any of the following:
 - a) conduct a trial and/or inquiry in the course of the assignment
 - b) act as a tribunal, commission of inquiry or in a judicial or quasi-judicial role
 - c) perform, any adjudicatory function whatsoever in the course of the assignment, and/or
 - d) conduct any exercise with a view to determining whether any person was guilty or innocent of any offence.
3. The scope of our procedures involved conducting interviews, examination of records as well as analysing information and documentation provided to us during the course of our assignment with the view to ascertain factual findings on the areas stated in the scope of work.

3.1.6 Restrictions on Distribution of Report

This report is private and confidential. This report was prepared solely for the purpose of reporting our findings as an advice to the President of Ghana and the OOP. This final report should therefore not be utilised for any other purpose. No part may be quoted, referred to or disclosed in whole or in part, by any party without our prior written consent.

3.1.7 Limitation of Liability

Unless otherwise specifically stated, any recommendations relating to this report are provided solely for the use and benefit of the President of Ghana. The President may use this report for purposes related to the matters covered in the report. However, we expect the President / OOP to notify any professional advisers/parties that the OOP is seeking advice from in relation to the investigation of the fact that the report has been provided to the OOP for its sole use and benefit and is based on specific facts and circumstances provided by the OOP and pursuant to KPMG's Standard Terms and Conditions of Service.

This requirement extends to any reference the President / OOP makes to the report in any way, including but not limited to any publication in any electronic media to any third party.

Notwithstanding, KPMG to the fullest extent possible, shall accept no responsibility or liability to any third party in connection with this engagement or the report.

3.1 Background, Purpose and Scope of the Assignment ^(4/4)

3.1.8 Legal Advice

Although our report may contain references to relevant laws and legislation, we do not provide legal opinions on compliance with such laws, and our observations in this report are not to be construed as providing a legal advice.

Our discussion of the relevant laws and regulations is intended solely to facilitate the determination of applicable facts which may be relevant to the interpretation and/or application of such laws. Should such interpretation require legal advice, we recommend that independent legal advice be obtained.

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04

Procedures Performed

4.1 General Procedures^(1/3)

We performed the stated procedures below based on information and documents provided to us and, where so specifically indicated, consultations and interviews with relevant personnel in the course of the assignment.

4.1.1 Applicable contracts

1. We reviewed the contracts executed by MoF, GRA and SML jointly referred to as “contracts in scope”, as outlined below:

S/N	Date of execution	Contract name
1	1 June 2018	Transaction Audit Services Agreement
2	1 January 2019	Contract Extension of Transaction Audit Services Agreement
3	1 April 2019	Contract for Additional Services (External Price Verification)
4	3 October 2019	Consolidation Services Agreement
5	3 October 2019	Measurement Audit for Downstream Petroleum Product Agreement
6	29 July 2020	Addendum to Measurement Audit for Downstream Petroleum Product Agreement
7	25 October 2023	Contract for Consolidation of Revenue Assurance Services

4.1.2 Applicable laws and manuals

2. We reviewed the following applicable laws and manuals:
 - a) The 1992 Constitution of the Republic of Ghana
 - b) Ghana Revenue Authority Act, 2009 (Act 791) and the Ghana Revenue Authority (Amendment) Act, 2023 (Act 1096)
 - c) Public Financial Management Act 2016 (Act 921)
 - d) Public Procurement Act 2003, (Act 663) as amended
 - e) National Petroleum Authority, 2005 (Act 691) as amended
 - f) National Petroleum Authority (Prescribed Petroleum Pricing Formula) Regulations, 2012 (L.I. 2186)
 - g) Value Added Tax Act, 2013 (Act 870)
 - h) Public Financial Management (Public Investment Management) Regulations, 2020 (L.I. 2411)
 - i) Petroleum Commission Act 2011 (Act 821)
 - j) Minerals Commission Act 1993 (Act 450)
 - k) Precious Minerals Marketing Company Act 200 (Act 461)
 - l) Ghana Standards Authority Act 2022 (Act 1078)

4.1 General Procedures^(2/3)

4.1.3 Interviews conducted

3. We held discussions with the individuals detailed in [Appendix 1](#) to:
 - a) Gain an understanding of the background and context of the contracts in scope
 - b) Understand their institution's role in the contracts, if any
 - c) Understand relevant processes and procedures as they relate to services under the contracts
 - d) Discuss exceptions noted during the investigative audit.

4.1.4 Documents reviewed

4. We collated documents as provided by MoF, GRA, SML, PPA, NPA, GNPC and other relevant parties. These documents include:
 - a) Contracts signed among MoF, GRA and SML.
 - b) Extracts of GRA Board minutes
 - c) GRA Annual Reports published on its websites

- d) Schedule of payments made to SML during the period under review, to confirm total payments to SML
- e) Invoices and related payment advice, to ascertain whether payments are in line with the contract terms
- f) Correspondences between GRA and PPA, to understand the justification for the selected procurement method and basis of the contract approval
- g) Reconciliation reports among GRA, NPA and SML as well as in-tank volume receipt reports, to ascertain the accuracy of computed fuel volumes
- h) SML reports and other deliverables submitted to GRA, to assess SML's performance against the terms of the contracts
- i) The BDC Performance Statistics, Oil Marketing Companies ("OMC") performance Statistics, and National Domestic Supply and Downstream Petroleum Bulletin reports¹, to ascertain:
 - i. Volumes of finished petroleum products imported into Ghana; and
 - ii. Volumes of finished petroleum products lifted by the OMCs as reported by NPA during the period from 2015 to 2023
 - iii. Annual reports² on the management of the energy sector levies and accounts submitted to Parliament for the period from 2017 to 2022.

Refer to [Appendix 2](#) for additional details on documents reviewed.

¹ – Retrieved from NPA's website

² – Retrieved from MoF's website

4.1 General Procedures^(3/3)

4.1.5 Parties and Stakeholder Engagement

5. We interviewed officials of the parties to the contract, i.e., MoF, GRA and SML. We also interviewed various stakeholders within the petroleum and mining sectors to understand their sector roles, perspectives on the contract between GRA and SML, and their views on the level of stakeholder engagements prior to and during the onboarding of SML. The list of stakeholders consulted can be found on [page 199](#) of this report.

Additionally, an anonymous survey was administered to various stakeholders within the petroleum and mining sectors to gather insights into stakeholder perceptions on key thematic areas, such as contract understanding, perceived value, stakeholder involvement, and general satisfaction.

4.2 Specific Procedures^(1/8)

4.2.1 Needs Assessment

Objective – Ascertain the rationale or needs assessment performed prior to contract approval by GRA and assess how the arrangement aligns with specific needs.

This section involved assessing the rationale or needs assessment performed prior to the approval of the contracts by GRA and assessing if the needs identified, if any, align with the scope of the contracts. In this respect, we performed the following procedures:

- I. Identified and conducted interviews with relevant officials of MoF, GRA and SML, involved in the contracts' initiation and approval processes, to gain insights into the needs assessment process and activities performed
- II. Obtained and reviewed the following documentation relating to the needs assessment process, as well as available correspondences exchanged among GRA, MoF and GNPC:
 - a) A Letter from MoF to GRA emphasising the need for revenue assurance in the mining sector
 - b) A Letter from MoF to GNPC emphasising the need for revenue assurance in the upstream petroleum sector
 - c) 2023 Audit report by the RACE of MoF (not dated)
 - d) 2021 Special Audit report by EY on the downstream petroleum sector
 - e) Extract of the Minutes of GRA Board meetings held during the period from 1 June 2017 to 12 October 2023, relating to discussions on SML
- III. Benchmarked the procurement procedures with the World Bank Guide to Assessing Needs (2012) and the Chartered Institute of Procurement and Supply's Procurement Cycle
- IV. Determined whether the contract arrangement i.e. scope of the various SML contracts aligned with any identified need
- V. Identified any expectations and/ or improvement opportunities noted
- VI. Provided recommendations for improvements accordingly.

4.2 Specific Procedures^(2/8)

4.2.2 Contracting Methodology

Objective – Assess the appropriateness of the contracting methodology, verifying compliance with legal standards and industry best practices in the procurement process for the selection of SML.

This section involved assessing whether the procurement process adopted by MoF and GRA was in line with the laws and regulations and procurement policy and procedures of GRA. In this respect, we performed the following procedures:

- I. Performed a search at the Office of the Registrar of Companies on SML to identify relevant information such as date of incorporation, its principal activities, directors, owners and beneficial owners
- II. Reviewed the following documents and laws:
 - a) SML's company profile to identify relevant information including key management, clients, service lines and software
 - b) Under-listed relevant laws and regulations, to analyse and assess compliance with relevant provisions in relation to the contracts with SML:
 - The Public Financial Management Act, 2016 (Act 921)
 - Public Procurement Act, 2003 (Act 663 as amended)
 - Public Procurement Regulations, 2022 (L.I 2466)
 - Manual for Public Institutions – Public Procurement Act, 2003 (Act 663)
 - c) Contracts among GRA, MoF and SML
 - d) Correspondence among MoF, GRA and SML
 - e) Correspondence between GRA and PPA
 - f) PPA's investigation report on the circumstances surrounding GRA's engagement of SML without prior PPA approval
 - g) Extracts of the Minutes of two (2) GRA Board meetings held during the period from 1 June 2017 to 12 October 2023, relating to discussions on SML.

4.2 Specific Procedures^(3/8)

4.2.2 Contracting Methodology (Cont'd)

- III. Reviewed the procurement procedures followed in the context of relevant legal provisions with the support of external legal firms
- IV. Interviewed relevant officers of MoF, GRA, PPA and SML about their involvement in the contracting process.

4.2.3 Contract Performance

Objective – Evaluate the degree of alignment between current activities and the stipulated contract scope, identifying any deviations.

This section involved evaluating the performance against the scope of the contract by all parties. In this respect, we performed the following procedures:

- I. Contracts and Addendums – we reviewed relevant contracts to identify services in scope, responsibilities of parties and expected deliverables. The contracts in scope were:
 - a) Transaction Audit Services Agreement Contract
 - b) Extension Contract for Additional Services
 - c) Consolidation of Services Agreement (Transaction Audit & External Price Verification Services)
 - d) Measurement Audit for Downstream Petroleum Product Agreement
 - e) Addendum to Measurement Audit for Downstream Petroleum Product Agreement
 - f) Consolidation of Revenue Assurance Services
- II. Engaged key officials from GRA and SML to understand their involvement in the contract performance and monitoring of expectations
- III. Obtained and reviewed performance reports
- IV. Visited SML's offices, a selection of depots with GRA officials to observe the performance of services for transaction audit and downstream monitoring services.

4.2 Specific Procedures^(4/8)

4.2.3 Contract Performance (Cont'd)

V. Reviewed correspondence involving MoF, GRA, SML, NPA, GSA, Tullow, PC, ENI, PMMC and West Blue.

VI. Reviewed extracts of GRA's Board Minutes

VII. Conducted site visits to:

- a) Six (6) selected depots and SML's control room, to confirm existence of the Electronic Metering Management System and observe operation of services
- b) SML, CTSB and PCA, to observe processing of transactions.

VIII. Reviewed the following documents provided by SML:

- | | |
|---|---------------------------------|
| a) Implementation Plan (Downstream, Upstream, Minerals) | g) Survey of depots |
| b) SML SM-OPS and TVAS Manuals | h) Systems Review Documentation |
| c) Feasibility and Survey Reports | i) Maintenance Reports |
| d) Performance Review Repots | j) Training Manuals |
| e) Discrepancy reports | k) Evidence of training |
| f) Monthly Reports | |

4.2.4 Value and Benefit Assessment

Objective – Evaluate the value or benefit that SML has so far offered to the GRA through this engagement.

This section involved evaluating the value or benefit of services provided to GRA by SML thus far. In this respect, we performed the following procedures:

- I. Engaged key stakeholders such as NPA, PC and CBOD to understand their roles within the downstream petroleum sector
- II. Obtained an understanding of documented pre-SML and SML-era downstream petroleum sector process flows to confirm our understanding of the processes and to identify key value areas and systems

4.2 Specific Procedures^(5/8)

4.2.4 Value and Benefit Assessment (Cont'd)

- III. Engaged key stakeholders such as GCM, PPMC, AngloGold Ashanti Iduapriem Limited and Golden Star Wassa Limited to understand their roles in the mining sector
- IV. Engaged key stakeholders such as PC and GNPC to understand their roles in the upstream petroleum sector
- V. Obtained from GRA and SML, the basis and assumptions used in determining fee incremental volume liftings and petroleum tax revenue
- VI. Obtained the underlisted data/reports and other supporting documentation:
 - a) Pre-SML petroleum liftings data (1 January 2018-30 April 2020) from NPA and GRA. This included local consumption liftings, transit and re-exports.
 - b) SML-era petroleum liftings data (1 May 2020-31 December 2023) from GRA, NPA and SML. This included local consumption liftings, transit and re-exports
 - c) Reconciliation reports and monthly reports shared with GRA by SML
 - d) Scanned waybill data from SML
 - e) 2018 to 2023 petroleum revenues from GRA
 - f) Maintenance reports and calibration certificates from Ghana Standards Authority (“GSA”) for SML’s flowmeters
 - g) List of depots being monitored by SML.
- VII. Analysed data on petroleum volumes lifted and reported by NPA and GRA between 2018 – April 2020 to:
 - a) Identify trends in the petroleum volumes lifted prior to SML’s engagement
 - b) Identify discrepancies in volumes reported by GRA and NPA.
- VIII. Analysed and compared SML flowmeter readings, NPA's data on petroleum volumes lifted, and GRA's data on petroleum volumes lifted on a yearly, monthly, depot-by-depot, and product-by-product basis in order to:
 - a) Review trends in the petroleum volumes lifted after SML’s engagement
 - b) Determine discrepancies in volumes reported by GRA, NPA, and SML
 - c) Assess the effect of SML’s operations on petroleum liftings recorded by GRA
 - d) Evaluate the impact of depots and products not monitored by SML on petroleum products reported by GRA and the effectiveness of SML’s monitoring

4.2 Specific Procedures^(6/8)

4.2.4 Value and Benefit Assessment (Cont'd)

- IX. Analysed waybill data from SML to ascertain its function and efficacy in SML's reconciliation processes
- X. Obtained and reviewed annual reports on the Management of the Energy Sector Levies and Accounts submitted to Parliament by the Minister of Finance to ascertain the volume of liftings reported in the reports for ESLA and petroleum taxes
- XI. Calculated incremental volumes and tax revenue using derived volumes from actual tax revenue and volumes lifted for ESLA taxes
- XII. Analysed GRA's petroleum revenue data from 2015 to 2023 to:
 - a) Identify trends in GRA Petroleum Revenue before and after SML's engagement.
 - b) Assess the impact of changes in tax rates and the introduction of new taxes on GRA's petroleum revenue for the period in scope
- XIII. Conducted site visits to six (6) selected depots and performed the following activities:
 - a) Interviewed stakeholders at the depots to understand their roles and responsibilities
 - b) Conducted process walkthroughs for BRV loading activities
 - c) Monitored tank dipping activities being performed by stakeholders
 - d) Recorded real-time comparisons of flow rates between depot flowmeters and SML flowmeters.
 - e) Compared start and stop times of SML flowmeters against depot totalisers at the gantry loading bays
 - f) Compared some daily lifting totals per depot totalisers and SML flow meters.
- XIV. Enquired into NPA's Enterprise Relational Database Management System (ERDMS) covering the following:
 - a) Access Controls
 - b) Configuration of Access Rules/ Segregation of Duties
 - c) Interface Controls
 - d) Program Changes
 - e) Incidence Management/Helpdesk

4.2 Specific Procedures^(7/8)

4.2.4 Value and Benefit Assessment (Cont'd)

XV. Examined SML's Experion application to verify the adequacy of the following:

- a) Computer Operations
- b) Access Controls
- c) Configuration of Access Rules/Segregation of Duties
- d) Program Changes
- e) IT Governance

4.2.5 Financial Arrangements

Objective – Review the financial arrangements, including pricing structures, payment terms and resolution of any financial compliance issues

This section involved reviewing the financial arrangements between all parties to the contracts under review. In this respect, we performed the following procedures:

- I. Reviewed the contracts in scope to understand the financial arrangements.
- II. Gained an understanding of the basis of pricing for each contracts by performing the following:
 - a) Reviewed SML proposals, minutes of stakeholder meetings and letters of correspondence by GRA and MOF
 - b) Interviewed the CEO of SML.
 - c) Interviewed the Commissioners of GRA
- III. Reviewed invoices against payments made to SML to determine whether payments were made in line with payment terms, including the following:
 - a) Inspected the dates of invoicing against the work performed by SML in relation to the invoice and the dates of payments.
 - b) Recalculated the amount on the invoice by multiplying the volume values by the payment terms in the contract

4.2 Specific Procedures^(8/8)

4.2.5 Financial Arrangements (Cont'd)

Objective – Review the financial arrangements, including pricing structures, payment terms and resolution of any financial compliance issues.

- c) Matched the respective payment advice to its invoices
 - d) Determined the totals of all the invoices and payment advice and investigated the differences, if any
 - e) Verified tax computation on invoices and payment advice to ascertain whether the appropriate taxes were applied
 - f) Reviewed invoice dates against payment dates
 - g) Confirmed receipt of payments by the CEO of SML.
- IV. Benchmarked the pricing of the contracts against industry practices to determine reasonableness.
- a) Ascertained the model of pricing for similar services
 - b) Engaged a third-party institution to collect data on industry benchmarks in West Africa and the African continent
 - c) Compared results to the terms of the contracts in scope to determine reasonableness.
- V. Performed financial projections for the Minerals Sector Revenue Assurance for the next three (3) years, and Downstream and Upstream Petroleum Measurement services for the next five (5) years to ascertain the estimated value of fees for the period of the contract. In order to perform these projections, we:
- a) Consulted with GNPC, PC and Minerals Commission (“MC”) to understand factors that influence current production volumes in the sectors
 - b) Obtained petroleum production and lifting plans from GNPC, along with their assessment of factors that influence the total liftings in a year
 - c) Obtained gold production projection from GCM and along with facts that may influence projections
 - d) Forecasted the projections for the next five years based on information of the prior five years.

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05

Detailed Factual Findings

<div data-bbox="135 322 254 395"> <h1>SML</h1> </div> <div data-bbox="135 399 402 446"> <p> Accra, Ghana.</p> </div> <div data-bbox="147 456 1169 1163"> <ol style="list-style-type: none"> Per records examined of ORC^{5.1.1} <ol style="list-style-type: none"> Strategic Mobilisation Enhancement Limited (“SMEL”) was incorporated on 14 February 2017. On 22 November 2017, SMEL changed its name to SML SML’s primary activities include general trading and services, import and export of general goods, as well as audit services^{5.1.6} Evans Adusei owns 100% of SML shares (10,000 shares) and is the beneficial owner SML’s current directors are Evans Adusei and Esther Adusei appointed on 14 February 2017 and 21 June 2023 respectively. As at 6 February 2023, SML was not registered in PPA’s supplier database^{5.1.7}, contrary to Section 40(7) of L.I. 2466 Public Procurement Regulations, 2022, which mandates registration of suppliers on the database. </div>	<div data-bbox="1245 322 1411 378"> <h2>Clients^{5.1.2}</h2> </div> <div data-bbox="1245 399 1694 465"> <p> GRA is SML’s only and current client</p> </div> <div data-bbox="1245 556 1536 612"> <h2>Staff Strength^{5.1.3}</h2> </div> <div data-bbox="1245 634 1753 761"> <p> 11 units with 103 employees across two divisions (Transaction Audit and Downstream Petroleum Audit)</p> </div> <div data-bbox="1245 828 1452 883"> <h2>Software^{5.1.4}</h2> </div> <div data-bbox="1245 905 1493 1112"> <p> SM-OPS</p> <p> TVAS</p> <p> SML Experion</p> </div>	<div data-bbox="1811 322 2007 378"> <h2>Services^{5.1.5}</h2> </div> <div data-bbox="1811 419 2280 658"> <p> Transaction Price Audit Services</p> <p> External Price Verification Services</p> <p> Downstream Petroleum Measurement Audit Services</p> </div> <div data-bbox="1811 753 2007 809"> <h2>Partners^{5.1.8}</h2> </div> <div data-bbox="1811 849 2344 1088"> <p> Cotecna</p> <p> Honeywell^{5.1.9}</p> <p> Shaju Valappy & Leadbys Data Consultancy Services</p> </div>
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5.1.9 Exhibit 5.1-2: Minutes of Meeting held with officials of SML on 2 February 2024

5.1a Overview of SML Contracts^(2/2)

GRA engaged SML to provide transaction audit and external price verification services at the ports. GRA also engaged SML to provide revenue assurance services in the downstream and upstream petroleum sector, as well as the minerals and metals resources value chain. These services were effected via seven (7) contracts executed during the period from 1 June 2018 to 25 October 2023. MoF is also an engaging party in one (1) out of the aforementioned seven (7) contracts. We have categorised the contracts in line with the services to be provided by SML, as shown in Table 5.1-1 below.

Table 5.1-1: Summary of contracts reviewed

S/N	Contract Categorisation	Description of Service	Contract Title	Date of Execution	Parties to the Contract	Contract Term
1	Contract 1	Transaction Audit and External Price Verification Services	Transaction Audit Services Agreement	1-Jun-18	GRA, SML & West Blue	7 months subject to extension
	Contract 2		Contract Extension of Transaction Audit Services Agreement	1-Jan-19	GRA & SML	1 month extension subject to renewal
	Contract 3		Contract for Additional Services (External Verification Services)	1-Apr-19	GRA & SML	1 month extension subject to renewal
	Contract 4		Consolidation of Services Agreement (Transaction Audit & External Verification Services)	3-Oct-19	GRA & SML	5 years subject to extension
2	Contract 5	Measurement Audit for Downstream Petroleum Products Agreement	Measurement Audit for Downstream Petroleum Product Agreement	3-Oct-19	GRA & SML	5 years subject to extension
	Contract 6		Addendum to Measurement Audit for Downstream Petroleum Product Agreement	29-Jul-20	GRA & SML	In line with Contract 5
3	Contract 7	Revenue Assurance	Consolidation of Revenue Assurance Services	25-Oct-23	GRA, MoF & SML	5 years

Source: Compiled by KPMG from contracts with SML

5.1b

Understanding of Relevant Processes in Scope of the Investigative Audit

5.1b.1 GRA's Procurement Process^(1/7)

Act 663 as amended outlines two (2) applicable services, i.e. procurement for:

1. Consultancy Services
2. Technical Services

We have summarised GRA's contracting process under consultancy and technical services in the diagram below, based on discussions with relevant persons^{5.1.10} as well as a review of relevant procurement laws^{5.1.11}.

A. Overview of Procurement Methods under Consultancy Services

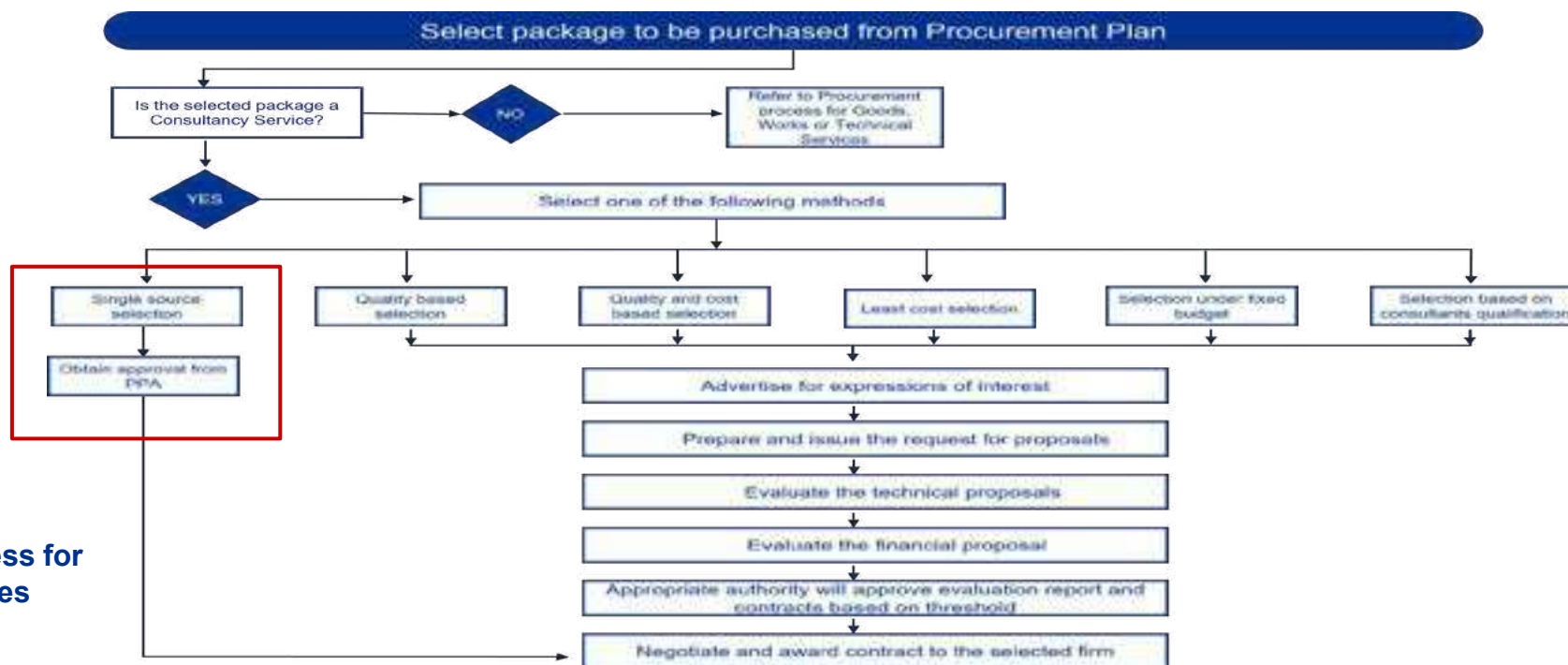


Figure 4.1-1:
Procurement process for
consultancy services

^{5.1.10} Exhibit 5.1-7: Minutes of Meeting held with GRA's Head of Procurement on 8 February 2024

^{5.1.11} Act 663 as amended, Public Procurement Regulations (L.I. 2466) and Manual-Public Procurement Act, 2003 (Act 663) ("PPA Manual") as well as the Public Financial Management Act, 2016 (Act 921) ("PFMA")

5.1b.1 GRA's Procurement Process^(2/7)

We have further analysed the procurement methods available for use when engaging a supplier for consultancy services, in the table below:

Table 5.1-1: Breakdown of Procurement Methods for Consultancy Services

S/N	Procurement Type	Suitability and other Considerations
1	Single Source Selection ("SSS")	<p>a) Per Section 40 of Act 663, where any of the following occurs:</p> <ul style="list-style-type: none"> i. The procurement package is only available from a particular supplier or a particular supplier has exclusive rights to the goods or service and a reasonable alternative or substitute does not exist ii. There is an urgent need for the service and engaging in tender proceedings is impractical due to time involved or a catastrophic event iii. There is a need for standardisation or compatibility with existing goods or services iv. For research, experiment, study or development v. For procurement that concerns national security vi. Where procurement from a particular supplier or contractor is necessary to promote specified policies. <p>b) Per Section 72 (5) of Act 663, where any of the following occurs: there is only one eligible consultant; or an emergency arises from a catastrophic event or where other methods are impracticable for use; and or for a follow-up assignment</p> <p>c) Approval from the PPA Board is required irrespective of the amount (Fifth Schedule of Act 663 as amended).</p>
2	Quality Based Selection ("QBS")	<p>a) For complex, difficult to define and highly specialised assignments</p> <p>b) Best expertise is selected without considering the price.</p>
3	Quality and Cost Based Selection ("QCBS")	<p>a) For most consultancy services and uses a merit point score system</p> <p>b) Both technical expertise and cost of the assignment is considered before award.</p>

5.1b.1 GRA's Procurement Process^(3/7)

Table 5.1-2: Breakdown of Procurement Methods for Consultancy Services (cont'd)

S/N	Procurement Type	Suitability and other Considerations
4	Least Cost Selection (“LCS”)	a) For assignments that are standard or routine in nature b) The firm with the lowest price is selected.
5	Selection under Fixed Budget (“SFB”)	a) For simple and strictly limited budgeted assignments b) The consultant with the highest ranked technical proposal within budget is selected.
6	Selection Based on Consultant’s Qualification (“SBCQ”)	a) For very small assignments b) The firm/consultant with the most appropriate qualifications and references is selected.

Source: Compiled by KPMG from review of relevant regulations

5.1b.1 GRA's Procurement Process^(4/7)

B. Overview of Procurement Methods under Technical Services

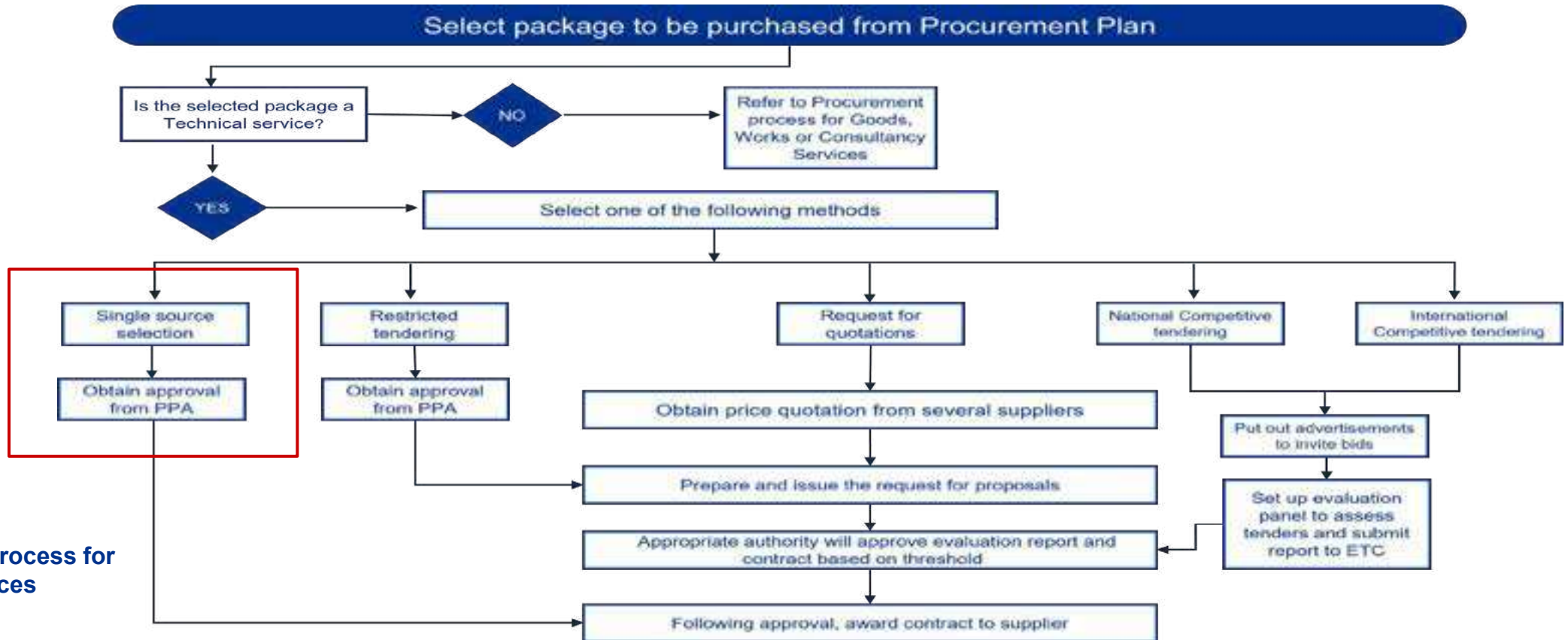


Figure 4.1-2:
Procurement process for
technical services

5.1b.1 GRA's Procurement Process^(5/7)

A further breakdown of the procurement methods available for use when engaging a supplier for technical services, is shown below:

Table 5.1-2: Breakdown of Procurement Methods for Technical Services

S/N	Procurement Type	Suitability and other Considerations
1	Single Source Selection	<div>a) Per Section 40, where any of the following occurs:<div><div>i. The procurement package is only available from a particular supplier or a particular supplier has exclusive rights to the goods or service and a reasonable alternative or substitute does not exist</div><div>ii. There is urgent need for the service and engaging in tender proceedings is impractical due to time involved or a catastrophic event</div><div>iii. There is need for standardisation or compatibility with existing goods or services</div><div>iv. For research, experiment, study or development</div><div>v. For procurement that concerns national security</div><div>vi. Where procurement from a particular supplier or contractor is necessary to promote specified policies.</div></div><div>b) Approval from PPA Board is required irrespective of the amount (Fifth Schedule of Act 663 as amended).</div></div>
2	Restricted Tendering	<div>a) The services are only available from a limited number of suppliers</div> <div>b) The time and cost for evaluating tenders is disproportionate to the value of the service</div> <div>c) A competitive tender does not receive any response after publication</div> <div>d) Approval from PPA Board is required irrespective of the amount (Fifth Schedule of Act 663 as amended).</div>

5.1b.1 GRA's Procurement Process^(6/7)

Table 5.1-2: Breakdown of Procurement Methods for Technical Services (cont'd)

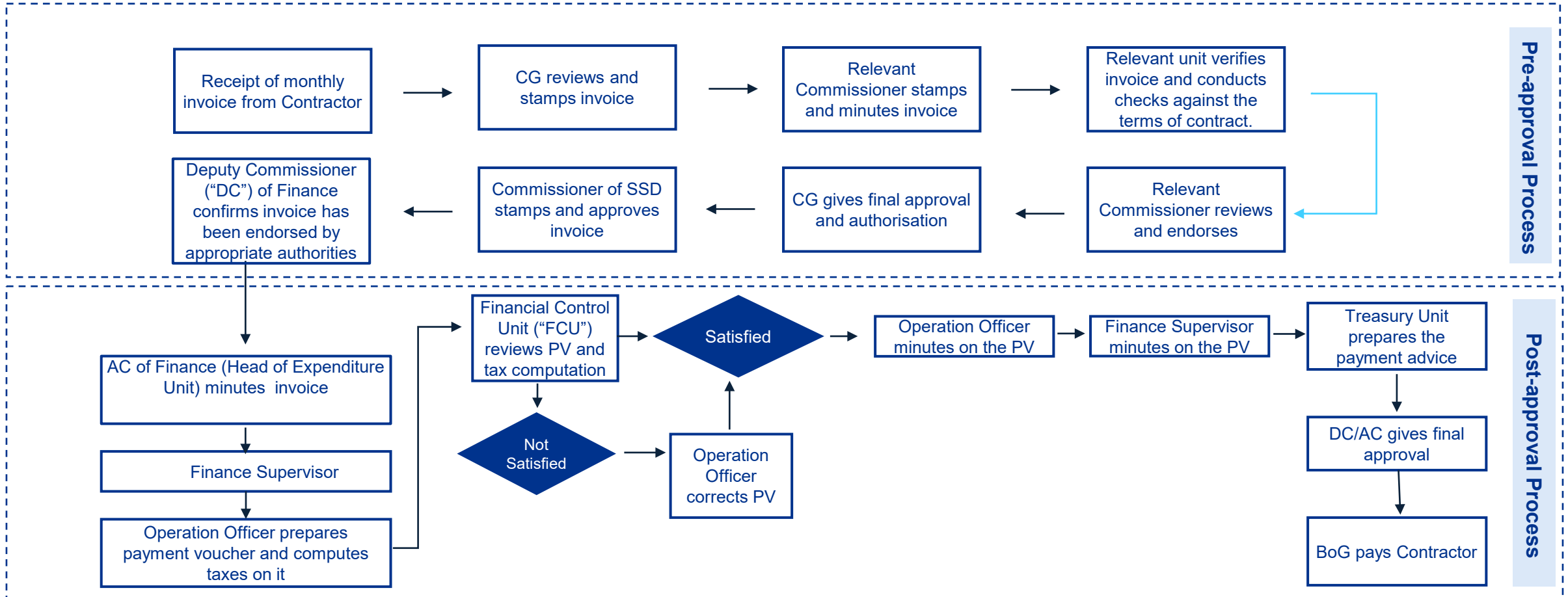
S/N	Procurement Type	Suitability and other Considerations
3	Request for Quotations	<p>a) Procurement for goods, works and technical services that are readily available, have an established market and are not specially produced or provided to the particular specifications of the procurement entity</p> <p>b) A procurement entity is expected to request quotations from at least 3 different suppliers and contractors</p> <p>c) Thresholds for this method are up to GH¢100,000 for goods, GH¢200,000 for works and GH¢50,000 for technical services.</p>
4	National Competitive Tendering	<p>a) Lower value procurement, where the goods by their nature are unlikely to attract foreign competition or where there are justifiable reasons for the Procurement Entity to restrict tendering to domestic suppliers.</p> <p>b) Thresholds for this method are above GH¢100,000 but not more than GH¢10,000,000 for goods; above GH¢200,000 but not more than GH¢15,000,000 for works; and above GH¢50,000 but not more than GH¢5,000,000 for technical services.</p>
5	International Competitive Tendering	<p>a) High value / complex procurement or where the nature/scope is unlikely to attract adequate local competition.</p> <p>b) Thresholds for this method are above GH¢10,000,000 for goods; above GH¢15,000,000 for works; and above GH¢5,000,000 for technical services</p>

Source: Compiled by KPMG from review of relevant regulations

5.1b.1 GRA's Procurement Process^(7/7)

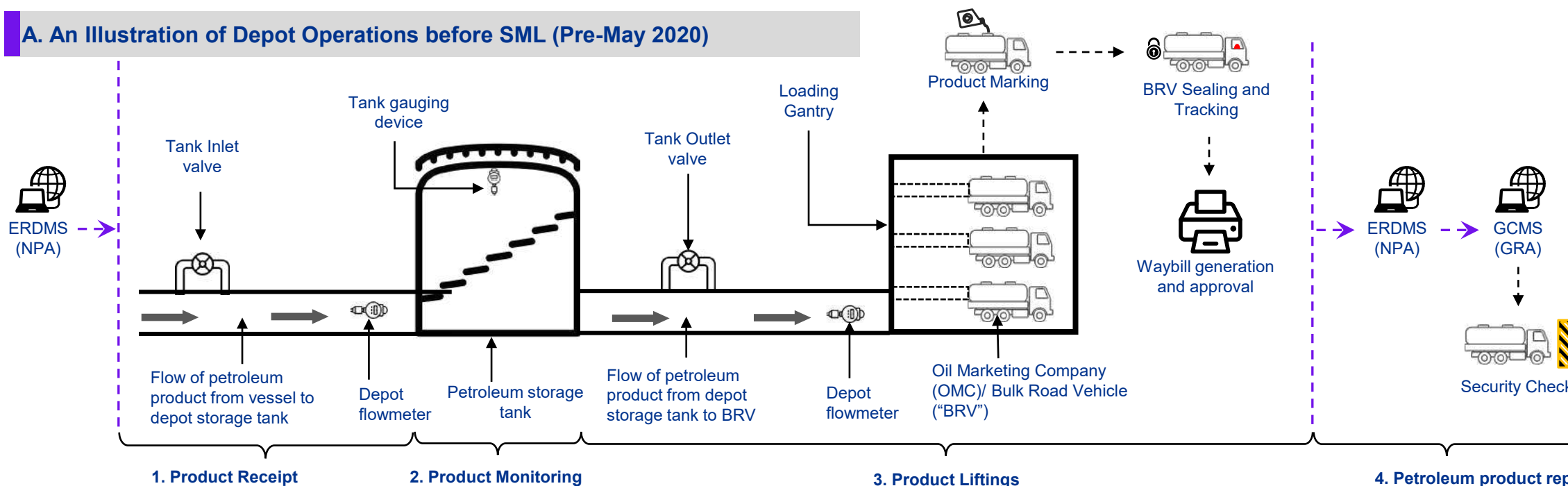
C. Overview of the Payment Process

We have summarised GRA's payment process based on discussions with the Head of Finance and the Assistant Commissioner of Finance below.



5.1b.2 Downstream Petroleum Process^(1/3)

A. An Illustration of Depot Operations before SML (Pre-May 2020)



- Depots receive products imported by BDCs from vessels into their storage tanks.
- The quantity received by the depot is ascertained by dipping the tank before and after receipt.
- A certificate of quantity known as outturn is signed by all relevant stakeholders and the product is then accredited to the BDC in the ERDMS.

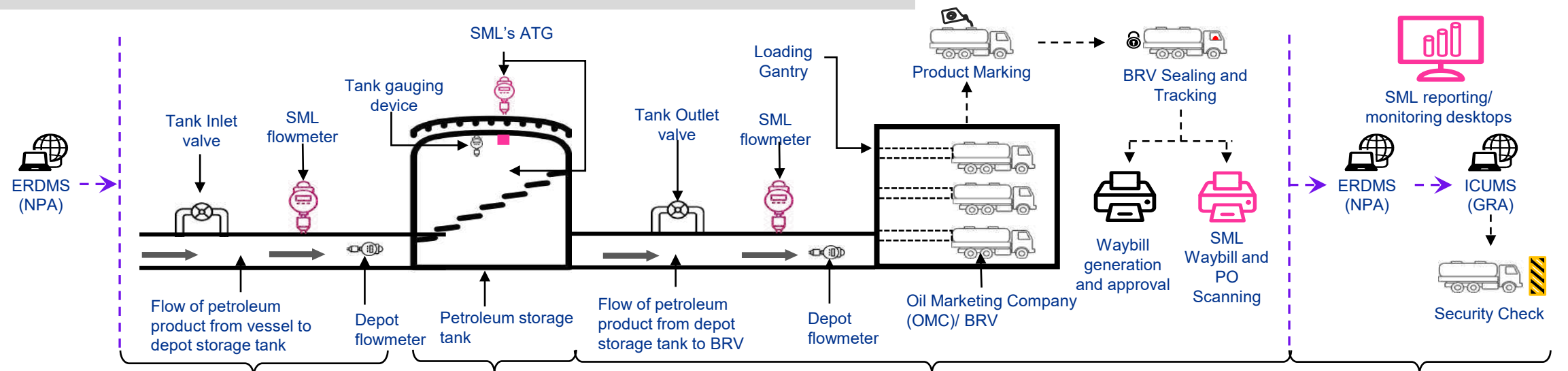
- Depots monitor the stock of products in-tank by manually gauging the tanks at regular intervals (daily, monthly and quarterly).
- Some depots have devices that automatically gauge tanks. This augments the manual gauging (dip sticks) process.

- OMC raises an order in the ERDMS and BDC approves it.
- Purchase order (PO) is verified and BRV is checked by the depot, NPA and Customs.
- BRV is loaded by depot staff.
- NTL marks the product and Rock Africa seals and tracks the BRV.
- Depot generates a waybill for the lifting.
- GRA approves the waybill and releases the order in the ERDMS before the BRV is permitted to leave the depot.
- The depot security at the exit gate inspects the BRV's purchase order and waybill before being permitted to exit the depot.

- Petroleum receipt and lifting transactions are initiated and completed in the ERDMS. A copy of the data is subsequently transferred to GCMS.

5.1b.2 Downstream Petroleum Process^(2/3)

B. An Illustration of Depot Operations with the Involvement of SML (May 2020 to Date)



1. Product Receipt

- Depots receive products imported by BDCs from vessels into their storage tanks.
- The quantity received by the depot is ascertained by dipping the tank before and after receipt.
- A certificate of quantity known as outturn is signed by all relevant stakeholders and the product is then accredited to the BDC in the ERDMS.

2. Product Monitoring

- Depots monitor the stock of products in-tank by manually gauging the tanks at regular intervals (daily, monthly and quarterly).
- Some depots have devices that automatically gauge tanks. This augments the manual gauging (dip sticks) process.
- SML has flowmeters positioned on the inlet and outlet pipes of the depots.
- SML has automatic tank gauging devices installed on the tanks of BOST which measures the level and temperature of petroleum products in the storage tanks.
- The ATGs and flowmeters are powered by SML power stations at the depot.

3. Product Liftings

- OMC raises an order in the ERDMS and BDC approves the order.
- Purchase order (PO) is verified and BRV is checked by the depot, NPA and Customs.
- BRV is loaded by depot staff.
- NTL marks the product and Rock Africa seals and tracks the BRV.
- Depot generates a waybill for the lifting.
- GRA approves the waybill and releases the order in the ERDMS before the BRV is permitted to leave the depot.
- The depot security at the exit gate inspects the BRV's purchase order and waybill before permitted to exit depot.
- SML scans the waybills using an OCR before BRVs exit the depots after loading.
- SML extracts liftings data using OCR for reconciliation and saves a digital copy of the waybill for future reference.

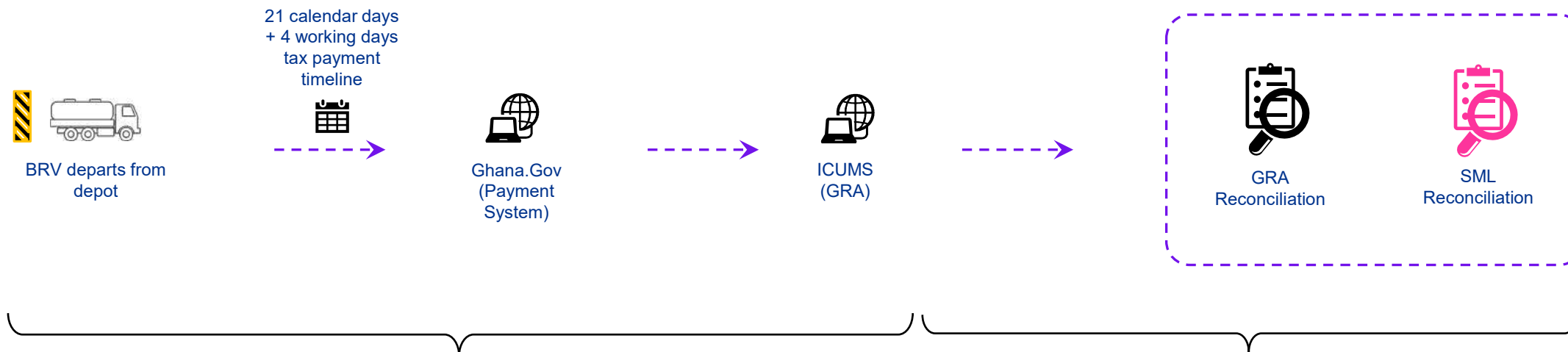
4. Petroleum Product Reporting

- Petroleum receipt and lifting transactions are initiated and completed in the ERDMS. A copy of the data is subsequently transferred to GCMS.
- SML has desktops placed in the GRA offices at the depots which show the litres of petroleum products being lifted.

5.1b.2 Downstream Petroleum Process^(3/3)

C. An Illustration of Payment and Reconciliation Process with the Involvement of SML

■ SML involvement



1. OMC Tax Payment

- After the BRV departs from the depot, the OMC has twenty-one (21) calendar days plus four (4) working days to fulfil all tax obligations on the lifting. Failure to meet a tax obligation within the specified timeframe results in the imposition of penalties.
- OMCs tax payments are processed in Ghana.gov. Subsequently, Ghana.gov updates the records of the OMC in ICUMS with the relevant details of the payment transaction.

2. GRA Reconciliation

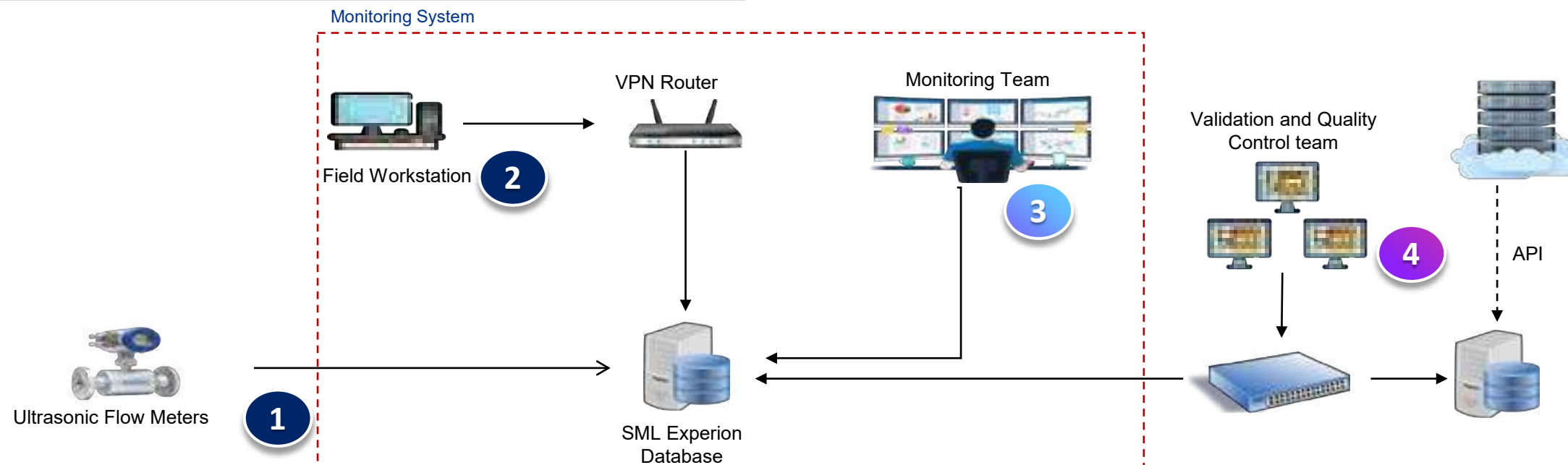
- GRA conducts reconciliation to identify discrepancies if any and ensures all payments are recognised in the revenue holding accounts (RHA).
- The reconciliation is done on two levels: ICUMS vs Ghana.gov, and Ghana.gov vs BoG RHA.

3. SML Reconciliation

- SML conducts six (6) levels of reconciliation to identify avenues that may cause revenue losses to GRA and share discrepancy reports for GRA to follow up on gaps noted:
 1. SML readings vs Petroleum volumes lifted
 2. SML volumes vs Waybills, Purchase Orders, ICUMS volumes (Four-way reconciliation)
 3. ICUMS volumes vs Waybills
 4. OMC lifted amounts in ICUMS vs BoEs (Bill of Entry)
 5. OMC Lifted amounts in ICUMS vs Tax paid/Ghana.Gov
 6. OMCs with pending liabilities still lifting/OMC Balance

5.1b.3 Overview of SML Experion System^(1/1)

A. Overview of SML's Experion System



1. Ultrasonic Flow Meters sends meter readings to the SML Experion database
2. GRA's Custom Officers use the field workstations for monitoring meter readings

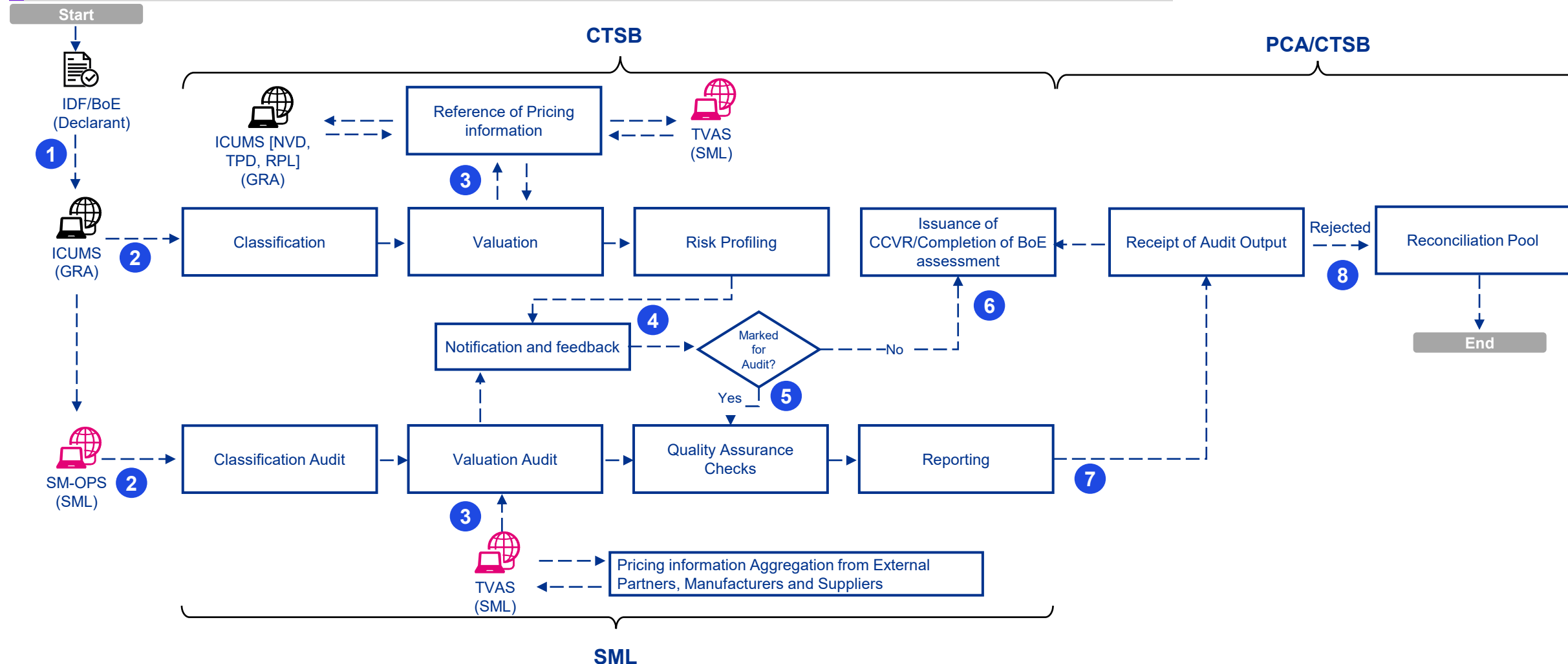
3. **The Monitoring system** consists of a monitoring desktop application and the SML Experion Database utilised by the monitoring team. It offers a dashboard display of trends and anomaly analyses derived from meter readings collected by the database

4. **Auditing and Reporting** platform is a web based reporting tool used by the Validation and Quality Control team. It enables reconciliatory reporting and analytics using field data from the SML Experion database and the ICUMS system.

5.1b.4 Transaction Audit and External Price Verification Process (1/2)

A. An Illustration of the Transaction Audit and External Price Verification Process per Contractual Expectation

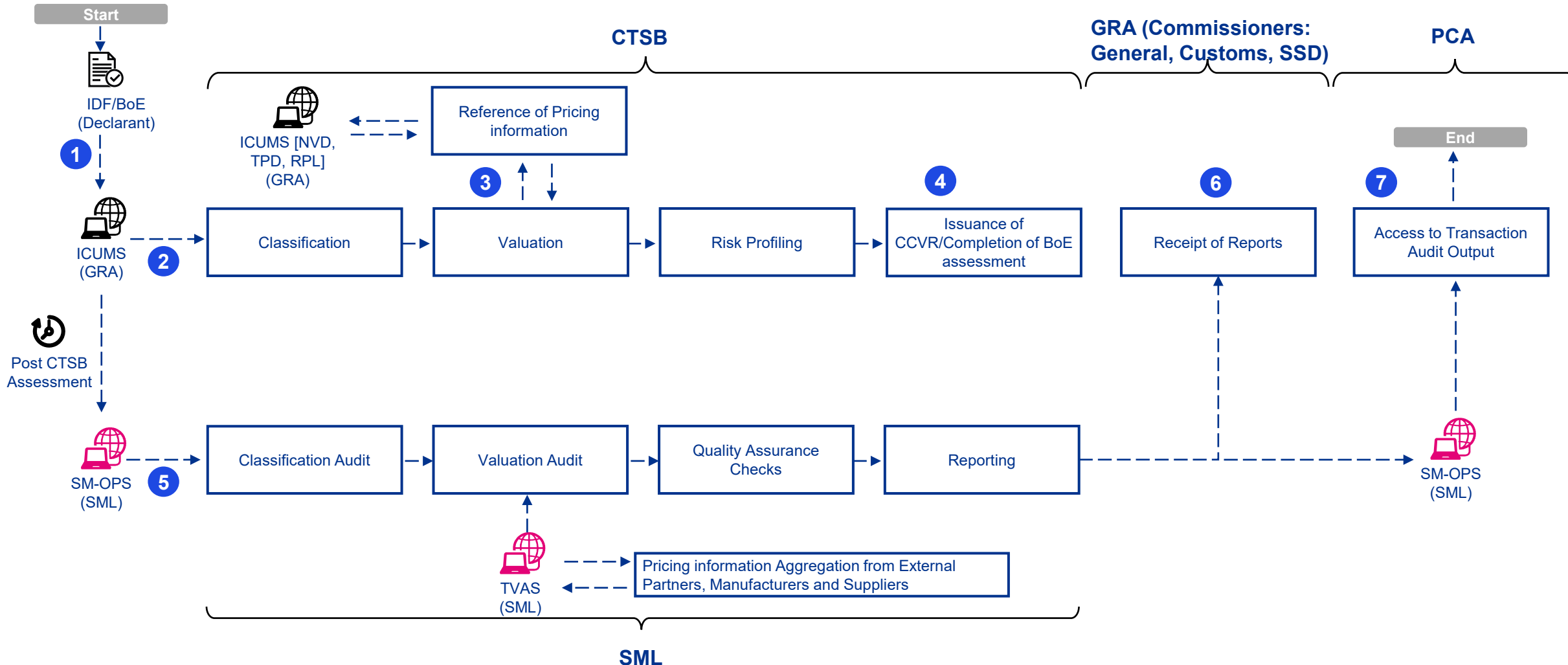
■ SML involvement



5.1b.4. Transaction Audit and External Price Verification Process^(2/2)

B. An Illustration of the Transaction Audit and External Price Verification Processes Per Actual Service Performance

■ SML involvement



5.1b.5 Upstream Petroleum Process ^(1/3)

We conducted meetings with the Chief Executive Officer of the Petroleum Commission and his team and also with senior engineers at GNPC to gain insights into the upstream petroleum processes. These meetings also helped us to understand the roles of GRA, PC, GNPC, the petroleum joint venture partners and other stakeholders in the production, processing and storage of hydrocarbons on the Floating, Production, Storage and Offloading Vessels (“FPSO”); lifting of crude oil; and transportation of gas. An evaluation of the upstream process by an industry expert is presented in [Appendix 9](#). Our understanding of the flow of activities in relation to these processes are outlined below.

A. Processing and Storage of Hydrocarbons on the FPSOs

- a) Hydrocarbons drilled from the offshore wells are transported through flowlines to the FPSO
- b) The hydrocarbons are processed in the production facilities on the FPSO to obtain the desired crude oil and natural gas
- c) The gas is compressed and stored in separate tanks from the crude. Some of the gas is flared or used for power generation on the FPSO
- d) The stored gas is transmitted through pipelines to onshore processing and storage plants, whereas crude is lifted by offloading tankers/vessels.

B. Crude Oil Lifting Process

- e. Lifting process begins once production reaches an agreed level, with the lifting parties taking turns to lift in accordance with the Crude Oil Lifting Agreement (“COLA”) and the preapproved lifting schedule
- f. There is a security measure in place at all times where entry within a five-hundred meter radius of the FPSO is not allowed without prior clearance
- g. An offloading tanker of a lifting party with clearance to lift petroleum from the FPSO arrives at the scheduled time to lift that party’s share per the COLA and the lifting schedule
- h. Present at all liftings are representatives from GRA, GNPC, PC, a third-party independent surveyor, the Mooring Master, FPSO marine team, partner representatives and the Offshore Installation Manager (OIM). A GRA representative is onboard the FPSO 24/7.

5.1b.5 Upstream Petroleum Process^(2/3)

- i) These representatives inspect the offloading tanker and FPSO before lifting commences to ensure all standards are adhered to
- j) There are fiscal meters installed on the export line used for lifting crude on each FPSO. There is a primary meter to take initial measurements and a secondary meter to confirm the measurements of the primary meter
- k) The calibrations, installations and maintenance of these fiscal meters are tested and monitored by the PC in line with the provisions of Petroleum (Exploration and Production) (Measurement) Regulations, 2016 (L.I. 2246) ("L.I. 2246"). Any substandard results are flagged for immediate action by the field operator
- l) Once all inspection results are satisfactory, the GRA rep opens the seal/valve on the meter using a physical key for lifting to commence
- m) During lifting, the reps observe the process and ensure all safety precautions are adhered to
- n) The lifting vessels/offloading tankers also have fiscal meters installed to measure the crude received onto them
- o) After lifting is done, the reps take readings from the fiscal meters on the FPSO and go onboard the offloading tanker to measure the crude loaded onto it by taking the reading on the tanker's meter
- p) The reps reconcile their records of the readings on the fiscal meters by comparing their records, ensuring that all differences are resolved
- q) A Bill of Lading and an invoice are raised for the offloading tanker as a final act in the lifting process. This is signed off by the GRA rep
- r) Monthly reconciliations of oil in the storage tanks are done by the field operators and shared with GRA, PC and GNPC.

C. Gas Transportation Process

- s) Gas stored for onward sale is transported through pipelines connected from the FPSOs to the Ghana Gas Processing Plant (GPP) at Atuabo in the Western Region
- t) Flowmeters on the FPSOs measure gas flowing through the offshore pipelines to the GPP. The GPP also takes records of gas received to the plant

5.1b.5 Upstream Petroleum Process^(3/3)

- u) Volumes of gas received at the GPP are usually not the same as volumes that are measured as having left the FPSOs due to line packing (i.e. gas filling up the vacuum in the pipelines) and the gas is in its dense phase. An allowance for these is taken when accounting for gas measured as sent from one point against gas measured as received at another
- v) Gas transported to the processing and storage plants is monitored and measured through Regulating and Metering (“R&M”) Stations along the national pipeline routes
- w) The national pipelines and the R&M Stations along the pipelines are owned and monitored by the Ghana National Gas Company (“GNGC”)
- x) The GRA rep offshore on the FPSO also has details of the hydrocarbons that are moving in and out of the facility from the control room
- y) The GNGC maintains records of gas measured by the R&M Stations along the national pipeline routes.

Summary Evaluation of Process

We noted that various stakeholders in the sector including PC and other contractors perform functions targeted at ensuring accurate declaration of production. Specifically, we noted that metering systems are built into the Floating Production Storage and Offloading (FPSO) vessels which are periodically calibrated by third-party contractors and observed by PC’s officials/agents. The effective functioning of the metering systems depends on appropriate calibration. If the metering systems are not properly calibrated, it could potentially lead to significant revenue losses to the State. In respect of gas transported from the FPSOs to the Gas Processing Plant (GPP), reconciliations are performed between the volumes discharged from the FPSOs and received at the GPP. The current reconciliation process is manual. If reconciliations are not effectively performed, volumes may not be accounted for or recorded and this could lead to revenue losses.

5.1b.6 Minerals Mining Process^(1/6)

Our understanding of the minerals mining process is limited to the large gold mining process. This is due to the following reasons:

- SML's current implementation plan focuses on revenue assurance for gold mining companies. Our assessment is therefore directly linked to our evaluation of the feasibility of their implementation plan and its estimated cost and value to GRA.
- Gold constitutes more than 90% of government revenue from the minerals sector hence our focus on the gold process should address most of the concerns on the accuracy of the reported revenue in the mining sector.

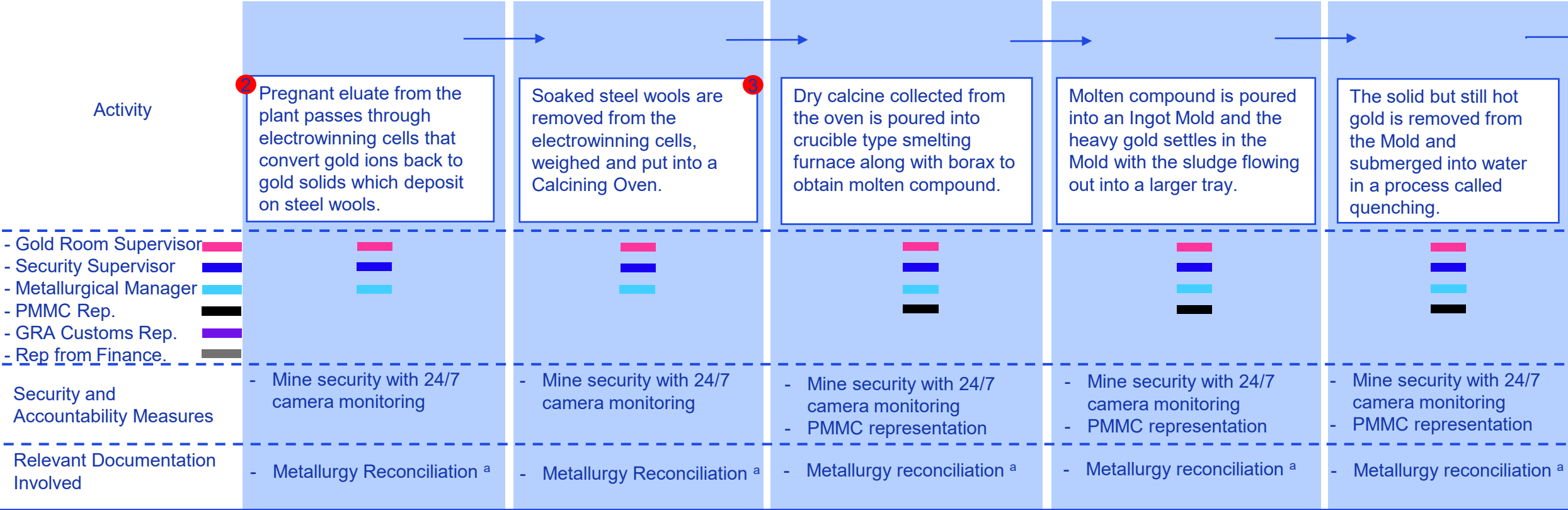
We made site visits to AngloGold Ashanti Iduapriem Limited and Golden Star Resources, Wassa to observe the gold mining process, especially the final phase in the gold room. We did this to understand the existing flow, including controls put in place by the mining companies, Precious Minerals Marketing Company ("PMMC") and the Customs Division of the GRA to ensure accurate and complete reporting of production and revenue. During these visits, we interacted with senior management and staff responsible for the plant's operations and the gold room activities on the specific nature of their work and their understanding of the pitfalls/leakages in the process that could lead to loss of revenue. We also interacted with the GRA and the PMMC representatives present at the various plant sites on their assessment of possible leakage points in the process. An evaluation of the minerals mining process by an industry expert is presented in [Appendix 10](#).

The process flow described below therefore details the final gold extraction process in the gold room as the risk of loss to the government from non-reported revenue is highest in the gold room. The process has some variations from one mine to another, however, there are more similarities than variations from the mines we visited. For the other parts of the process preceding the gold room, although the risk exists, the cost of introducing a diversion of gold ore from the mine site through to the mills at the plant site makes it impractical to do so. That notwithstanding, such risk cannot be completely written off.

Together with the risk of diversion of pregnant eluate (a solution of high gold concentration) from the tanks, the risks of losses at each stage in the gold room process are indicated along with our assessment of the levels of such risks. A key observation is the fact that calibration of the scales used for weighing is performed by the mine officials and does not involve the Ghana Standards Authority (GSA) with the State mandate for standards or calibration. The **risk of collusion**, if it occurs, introduces risks of losses throughout the process. For this reason, it is not called out for any individual stage but rather stated throughout the flow. In our assessment, this risk is remote but could lead to significantly large losses if it occurs. Our assessment is, however, not to be used as a substitute for the need for engaging experts to perform a more detailed evaluation of each mine site.

5.1b.6 Minerals Mining Process^(2/6)

Our understanding of the gold room process is detailed below:




























Risk legend: ● High risk ● Medium risk ● Low risk

- 1 Risk of collusion. Low likelihood, high severity.
- 2 Diversion of pregnant eluate to other unregistered gold rooms or for unreported sale. Low likelihood, high severity.
- 3 Diversion of calcine for subsequent smelting when state representatives are absent. Low likelihood, high severity.

a. Metallurgy Reconciliation: A reconciliation of gold estimated in the ore from the mine site to the final gold produced in the gold room.

5.1b.6 Minerals Mining Process^(3/6)

Activity	Solid gold bullion is obtained after quenching.	' Rough weight ' of the bullion is taken using the mine's scales and the reps record this weight. The scales are calibrated by the gold room supervisor in the presence of all reps. ⁴	Gold bullion is cleaned to remove residue. ' Clean weight ' is taken and an ID is imprinted on it.	Assaying samples are taken for PMMC and the mining company and set aside in labelled zip lock bags.	Gold bullion is weighed again and the weight is recorded by each rep present.	Bullion is boxed for shipment and sealed using PMMC, GRA and the finance department's seals.
- Gold Room Supervisor - Security Supervisor - Metallurgical Manager - PMMC Rep. - GRA Customs Rep. - Rep from Finance.	     	   	   	    	     	
Security and Accountability Measures	- Mine security with 24/7 camera monitoring - PMMC representation	- Mine security with 24/7 camera monitoring - PMMC representation	- Mine security with 24/7 camera monitoring - PMMC representation	- Mine security with 24/7 camera monitoring - PMMC representation	- Mine security with 24/7 camera monitoring - PMMC representation	- Mine security with 24/7 camera monitoring - PMMC representation - GRA representation
Relevant Documentation Involved	- Metallurgy reconciliation ^a	- Metallurgy reconciliation ^a	- Metallurgy reconciliation ^a	- Metallurgy reconciliation ^a	- Metallurgy reconciliation ^a	- Metallurgy reconciliation ^a - Landing Account ^b

Risk legend: ● High risk ● Medium risk ● Low risk

① Risk of collusion. Low likelihood, high severity.

④ Improper scale manipulation. Low likelihood, low severity.

a. (see [previous page](#))

b. Landing Account: Document prepared by the GRA rep. showing the total volume of gold being shipped and the mining company shipping the gold. This is submitted at the Airport Customs Office together with copies of the shipping documents obtained by the rep from the mining company to confirm the gold shipment.

5.1b.6 Minerals Mining Process^(4/6)

Activity	Weight of boxed bullion is taken and the box is placed in the gold room vault.	Assaying samples are weighed and taken to the vault.	Vault is dual-locked by the gold room supervisor and the an officer from the mine's finance department until shipment time.	On arrival of the Bullion Commander for shipment, the vault is open.	Boxed bullions and samples are weighed again in the presence of the Bullion Commander.	The Bullion Commander prepares and submits Handling Over Certificate to the gold room supervisor
<ul style="list-style-type: none"> - Gold Room Supervisor - Security Supervisor - Metallurgical Manager - PMMC Rep. - GRA Customs Rep. - Rep from Finance - Bullion Commander 						
Security and Accountability Measures	<ul style="list-style-type: none"> - Mine security with 24/7 camera monitoring - PMMC representation - GRA representation 	<ul style="list-style-type: none"> - Mine security with 24/7 camera monitoring - PMMC representation - GRA representation 	<ul style="list-style-type: none"> - Mine security with 24/7 camera monitoring - PMMC representation - GRA representation - Shipment security rep. 	<ul style="list-style-type: none"> - Mine security with 24/7 camera monitoring - PMMC representation - GRA representation - Shipment security rep. 	<ul style="list-style-type: none"> - Mine security with 24/7 camera monitoring - PMMC representation - GRA representation - Shipment security rep. 	<ul style="list-style-type: none"> - Mine security with 24/7 camera monitoring - PMMC representation - GRA representation - Shipment security rep.
Relevant Documentation Involved	<ul style="list-style-type: none"> - Landing Account ^b - Final Bullion Report ^c 	<ul style="list-style-type: none"> - Samples Registers ^d 			<ul style="list-style-type: none"> - Handling Over Certificate ^e 	<ul style="list-style-type: none"> - Handling Over Certificate ^e

Risk legend: ● High risk ● Medium risk ● Low risk

① Risk of collusion. Low likelihood, high severity.

- b. (see [previous page](#))
- c. Final Bullion Report: Contains records of bullions in a shipment including their weights. This is signed by all reps.
- d. Samples Registers: A register of samples taken from the gold room by PMMC and the mine for assaying purposes and a register of samples returned after assaying. Signed by the reps, gold room supervisor and the production manager.
- e. Handling Over Certificate: AKA the Receipt/Safe Custody/Delivery of Sealed Containers. This is prepared by the Bullion Commander and submitted to the mine as evidence of bullion shipment received for transportation to the airport.

5.1b.6 Minerals Mining Process^(5/6)

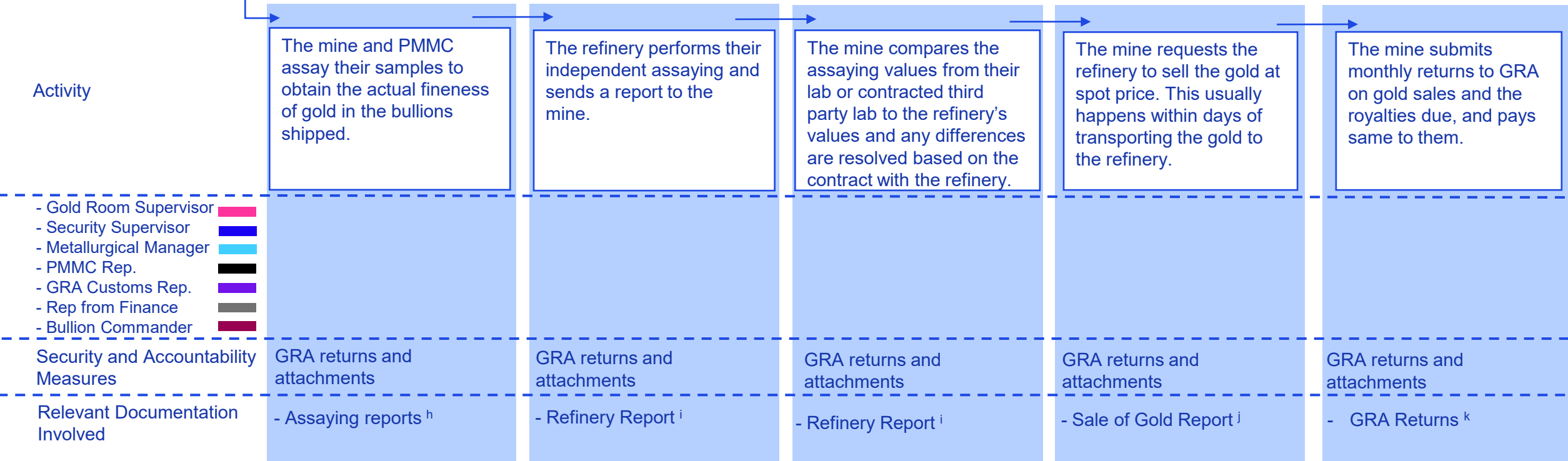
Activity					
	All shipment documents are prepared and signed by designated signatories.	The gold is loaded into a van and taken to aa helicopter on the on-site helipad.	The customs rep joins the helicopter to Kotoka international Airport ("KIA").	The customs rep submits all documents to the customs office at the airport and a final round of inspections are done.	Inspected bullions are handed over to the shipment company for transportation to a refinery outside the country.
<ul style="list-style-type: none"> - Gold Room Supervisor - Security Supervisor - Metallurgical Manager - PMMC Rep. - GRA Customs Rep. - Rep from Finance - Bullion Commander 					
Security and Accountability Measures	<ul style="list-style-type: none"> - Mine security with 24/7 camera monitoring - PMMC representation - GRA representation - Shipment security rep. 	<ul style="list-style-type: none"> - Mine security with 24/7 camera monitoring - PMMC representation - GRA representation - Shipment security rep. 	<ul style="list-style-type: none"> - GRA representation - Shipment security rep. 	<ul style="list-style-type: none"> - GRA representation - Shipment security rep. 	<ul style="list-style-type: none"> - GRA representation - Shipment security rep.
Relevant Documentation Involved	<ul style="list-style-type: none"> - Landing Account ^b - Record of Examination ^f - Shipment Documents ^g 	<ul style="list-style-type: none"> - Landing Account ^b - Record of Examination ^f - Shipment Documents ^g 	<ul style="list-style-type: none"> - Landing Account ^b - Record of Examination ^f - Shipment Documents ^g 	<ul style="list-style-type: none"> - Landing Account ^b - Record of Examination ^f - Shipment Documents ^g 	<ul style="list-style-type: none"> - Landing Account ^b - Record of Examination ^f - Shipment Documents ^g

Risk legend: ● High risk ● Medium risk ● Low risk

① Risk of collusion. Low likelihood, high severity.

b. (see [previous page](#))
 f. Record of examination: Prepared by the GRA Rep. as evidence of observing/examining the final gold production and shipment process. A record of what was observed during the process.
 g. Shipment documents: Includes original and several copies of the Packing List, Shipment Summary Sheet, Proforma Invoice, Production Report (shows estimated quality/fineness of the bullion), A3 Sheet (estimated value of shipment using gold spot price on shipment day).

5.1b.6 Minerals Mining Process^(6/6)



Risk legend: ● High risk ● Medium risk ● Low risk

1 Risk of collusion. Low likelihood, high severity.

b, f, g: (see [previous page](#))
 h. Assaying Reports: Reports from the mine’s assaying lab or contracted third party lab and PMMC showing tested fineness of gold in each bullion shipped.
 i. Refinery Report: Shows the refinery’s assaying results and the value of gold in the bullions shipped at the spot rate.
 j. Sale of Gold Report: Report submitted by the refinery on the value of gold sold on behalf of the mine.
 k. GRA Returns: Includes return form, Gold Sales Report from the mine’s treasury department, Bullion Summary prepared by the treasury team, other attachments as deemed relevant by the mine. The GRA uses these filed returns during their audit of the mines to assess unreported and revenue and

5.2

Needs Assessment

5.2 Needs Assessment ^(1/10)

5.2.1 Objective – Ascertain the rationale or needs assessment performed prior to contract approval by GRA and assess how the arrangement aligns with specific needs.

Section 21 of Act 663 as amended requires a procuring entity to prepare a procurement plan to support its approved programme. The Act does not explicitly require a needs assessment to be performed by the procuring entity.^{5.2.1}

By practice, the World Bank Guide to Assessing Needs (2012)^{5.2.2} and the Chartered Institute of Procurement and Supply's 13-point Procurement Cycle ^{5.2.3} recommend that entities should:

- i. Conduct a needs assessment i.e., *a systematic study of a problem or innovation, incorporating data and opinions from varied sources, in order to make effective decisions or recommendations about what should happen next* ^{5.2.4}
- ii. Define the problem to be solved: It may be part of an entity's procurement plan or might be a collection of source materials used to build the procurement requirements ^{5.2.4}

Per interviews we conducted, enquiries made and documents reviewed we noted that: ^{5.2.5}

- i. GRA does not have a needs assessment policy to guide its procurement activities. Needs assessment is conducted on a case-by-case basis
- ii. Needs may arise for services ordinarily under the following circumstances :
 - a) Government decisions made via the Cabinet, Economic Management Team and MoF, relating to revenue administration, mobilisation and/or collection
 - b) Legislation changes i.e., new or updated laws which may require investments
 - c) Policy changes i.e., new or updated policies approved by GRA and resulting in a purchase or an investment decision
 - d) Board and Management directives i.e., procurement directives that are in line with GRA's strategy.

^{5.2.1} The Act 663 2003 as amended does not provide further information on the requirements / content of a procurement plan and an approved programme

^{5.2.2} Exhibit 5.2-1: World Bank Guide to Assessing Needs

^{5.2.3} Exhibit 5.2-2: Chartered Institute of Procurement and Supply's 13-point Procurement Cycle

^{5.2.4} As defined by Allison Rossett (1987), professor emeritus at San Diego State University

^{5.2.5} Exhibit 5.2-3: Minutes of Meeting held with GRA on 18 January 2024

5.2 Needs Assessment^(2/10)

In respect of contracts signed with SML, GRA had pockets of information suggesting that revenue leakages existed at the relevant areas. However, the problems or gaps that pointed to the need for the services were not comprehensively assembled, technically analysed and documented in support of the contracts. Consequently, we noted that:

- i. GRA^{5.2.6} did not prepare a technical needs assessment report for **Transaction Audit and External Price Verification** as well as **Measurement Audit for Downstream Petroleum Products** services^{5.2.7}
- ii. Furthermore, in the case of the **Revenue Assurance Services in the Upstream Petroleum and Mineral Sectors**^{5.2.8}, MoF and GRA did not document a needs assessment report for the components of the contract
- iii. We also noted that GRA did not include the procurement of SML services in its procurement plans for 2018, 2019 and 2023 (the years in which the contracts were signed).

Nonetheless, discussions with key stakeholders from MoF and GRA, as well as a review of available correspondences exchanged between GRA, MoF and GNPC identified various concerns, with elements of identified gaps or needs with respect to the three (3) services provided by SML.

^{5.2.6} Exhibit 5.2-4: Minutes of Meeting held with GRA on 26 January 2024

^{5.2.7} Exhibit 5.2-5: Minutes of Meeting held with MoF on 24 January 2024

^{5.2.8} Exhibit 5.2-6: Minutes of Meeting held with GRA on 8 February 2024

5.2 Needs Assessment ^(3/10)

The applicable correspondences are set out below:

Table 5.2.1-1 Summary of case matters pointing to concerns and challenges

S/N	Description of Service	Gaps outlined per contract / other correspondences sighted	Evidence to support identified gap?	KPMG Comments
1	Transaction Audit and External Price Verification Services	a) Per a GRA letter (CG/GRA/PPA06/17) ^{5.2.9} of 16 June 2017 sent to PPA, the GRA indicated that it had identified instances where the same imported goods received different classifications and duties, leading to challenges and undue delays during port clearance.	GRA could not provide the documents requested: a) Evidence of some product misclassifications they observed during import.	We could not validate required evidence.
2		b) Furthermore, GRA ^{5.2.10} indicated that the monthly revenue reports prepared by the Research Planning Monitoring Unit (“RPMU”) revealed revenue shortages.	b) GRA could not provide evidence in supporting monthly revenue reports prepared by RPMU, detailing revenue losses ^{5.2.11} .	GRA explained that the system used to generate the reports was no longer in use as at the date of this report

Source: Compiled by KPMG from documents provided MoF, GRA and GNPC

^{5.2.9} Exhibit 5.2-7: GRA Letter to PPA on 16 June 2017

^{5.2.10} Exhibit 5.2-4: Minutes of Meeting held with GRA on 26 January 2024

^{5.2.11} GRA could not provide the requested revenue reports as the old system used in reporting was no longer in use, at the date of this report

5.2 Needs Assessment (4/10)

Table 5.2.1-1 Summary of case matters pointing to concerns and challenges (cont'd)

S/N	Description of Service	Gaps outlined per contract / other correspondences sighted	Evidence to support identified gap?	KPMG Comments
2	Measurement Audit for Downstream Petroleum Products Agreement	<p>Per Contract 5 (Measurement Audit for Downstream Petroleum Product Agreement of 3 October 2019), GRA stated that it had identified the following factors as contributors to potential revenue losses and deficits at the Bulk Distribution Depots:</p> <ul style="list-style-type: none"> a) <i>Mis-measuring due to incorrect Meter (with high error margin) and gauging Errors</i> b) <i>Over or under reading- this reduces unaccounted-for product</i> c) <i>Change in temperature/pressure and its effect on product expansion and contraction</i> d) <i>Mechanical losses</i> e) <i>Inadequate knowledge by officers to appreciate volume measurements and therefore relies on 3rd party information for monitoring</i> f) <i>Lack of capacity to control stocks to the point of revenue</i> 	<p>GRA could not provide the following documents as requested:</p> <ul style="list-style-type: none"> a) Monthly revenue report prepared by RPMU, detailing revenue losses^{5.2.12}. b) The position paper requested by the Board, justifying the need. c) Any other reports issued or utilised by GRA, supporting the assertions on the contributors to revenue shortages. 	<ul style="list-style-type: none"> a) Per review of the Minutes of the 23rd Ordinary Board Meeting held on 7 November 2019^{5.2.13}, we observed that the Board instructed the management of GRA to submit a position paper justifying the need to engage an independent assessment entity. However, this request was made after the Measurement Audit for Downstream Petroleum contract was signed on 3 October 2019. b) GRA explained that at the time the contract was signed, GRA did not have a policy which required prior approval of the Board for contracts. Contracts were approved by the spending officer. c) We noted the Board had subsequently adopted a policy which requires GRA management to seek the Board's approval for contracts with a value of GH¢4 million and above. d) We did not sight any record of submission of the position paper to the Board from our review of Board minutes from 7 November 2019 to 23 October 2023. The then Board Chairman^{5.2.14} in whose tenure the request was made, confirmed that the Board requested but did not receive the position paper from GRA management.

Source: Compiled by KPMG from documents provided MoF, GRA and GNPC

^{5.2.12} GRA could not provide the requested revenue reports as the old system used in reporting was no longer in use, at the date of this report

^{5.2.13} Exhibit 5.2-8: Extract of 23rd Ordinary Board Meeting of the 3rd Board of Directors held on 7 November 2019

^{5.2.14} Exhibit 5.2-9: Minutes of Meeting held with the GRA's Board Chairman on 12 February 2024

5.2 Needs Assessment ^(5/10)

Table 5.2.1-1 Summary of case matters pointing to concerns and challenges (cont'd)

S/N	Description of Service	Gaps outlined per contract / other correspondences sighted	Evidence to support identified gap?	KPMG Comments
3	Revenue Assurance	<p>Per a letter^{5.2.15} dated 16 March 2023 (MOF/LD/GME/GRA/03/23) and a letter^{5.2.16} dated 5 April 2023 (MOF/COS/SML/GRA/04/23) signed by the Minister of Finance to the CEO GNPC and CG of GRA respectively, MoF indicated that they had:</p> <ul style="list-style-type: none"> a) Identified potential revenue shortfalls relating to revenue mobilisation in the upstream petroleum production and mining industry. b) Noted that GRA had no real-time insights into: <ul style="list-style-type: none"> i. The production, storage and sales of the oil and gas operations by the operators, as offtake and hydrocarbon storage facilities operate independently, with no means of connectivity ii. Mining of minerals and metals by the mining industry operators. 	<ul style="list-style-type: none"> a) The RACE^{5.2.19} of MoF and GRA suggested possible leakages in the entire petroleum sector. We sighted a RACE report^{5.2.20} which indicated that RACE had identified tax liabilities from its audit of a mining company, OMCs as well as commercial banks collecting revenues for GRA. b) GRA on the other hand made references to the following reports^{5.2.18}, which highlighted the possible revenue shortfalls in the downstream petroleum industry: <ul style="list-style-type: none"> i. CBOD Industry report (2018)^{5.2.21}. ii. Ernst and Young audit report of May 2021^{5.2.22}. This report analysed possible petroleum liftings by OMCs as recorded by the NPA compared to the petroleum lifting declaration by the OMCs to the GRA. This revealed the potential tax liability of GH¢758,403,462 over a 3-year period. 	<ul style="list-style-type: none"> a) The documents provided were related to the downstream petroleum and mining sector. Although requested, MoF and GRA could not provide data to support the assertion of challenges/revenue shortages in the upstream petroleum sector. b) From our review of reports provided by GRA, we observed that there existed revenue leakages in the downstream sector due to inadequate petroleum stock reconciliation, consequently resulting in a loss of petroleum tax revenue.

Source: Compiled by KPMG from documents provided MoF, GRA and GNPC

^{5.2.15} Exhibit 5.2-10: Letter of 16 March 2023 (MOF/LD/GME/GRA/03/23) from MoF to the CEO, GNPC

^{5.2.16} Exhibit 5.2-11: Letter of 5 April 2023 (MOF/COS/SML/GRA/04/23) from MoF to the CG of GRA

^{5.2.17} Exhibit 5.2-12: Minutes of Meeting held with MoF on 23 January 2024

^{5.2.18} Exhibit 5.2-3: Minutes of Meeting held with GRA on 18 January 2024

^{5.2.19} An initiative launched in August 2021 by the Vice President of Ghana, as a measure to compliment the efforts of GRA in domestic revenue mobilisation

^{5.2.20} Exhibit 5.2-13: RACE report provided by GRA

^{5.2.21} Exhibit 5.2-14: CBOD Industry report (2018)

^{5.2.22} Exhibit 5.2-15: Ernst & Young (EY) Petroleum stock reconciliation report of May 2021

5.2 Needs Assessment ^(6/10)

5.2.1B - Assess how the arrangement aligns with specific needs.

Our assessment relating to the alignment of the scope of SML contracts to the gaps identified above, is shown in Table 5.2.1-2 below.

Table 5.2.1-2 Contract alignment with specific gaps - Transaction Audit Services and External Price Verification

Specific Gap	Scope of Services	KPMG comments on alignment of contract scope to identified gap(s)
<p>1. Instances where the same goods received different classifications and duties, leading to challenges and undue delays during port clearance.</p> <p>2. Revenue shortfalls</p>	<p>a) Per Contract 1 (Transaction Audit Services Agreement of 1 June 2018):</p> <p>i. SML, via its internal processes shall:</p> <ul style="list-style-type: none"> Provide transaction audit services of CCVRs generated and issued at the pre-arrival processing phase Set parameters including random generators to select the various transactions to be subjected to further audit by SML. <p>ii. The Post Clearance Audit Officer shall review the transaction audit reports and either accept or reject same. Where the Officer accepts the reports, SML may take up the issue with the importer /agent but where the audit report is rejected, it shall go back to the SML to be re-audited and a report sent to the Post Clearance Audit Officer through the data exchange protocols agreed with West Blue.</p> <p>The scope of services in Contract 2 and 3 are same as Contract 1.</p>	<p>Whilst Contract 1 did not provide additional information on the internal processes to be used by SML under the Transaction Audit service, the scope outlined in Contract 4 aligns with the gaps identified (see next page).</p>

5.2 Needs Assessment ^(7/10)

Table 5.2.1-2 Contract alignment with specific gaps - Transaction Audit Services and External Price Verification (Cont'd)

Specific Gap	Scope of Services	KPMG comments on alignment of contract scope to identified gap(s)
<p>1. Instances where same goods received different classifications and duties, leading to challenges and undue delays during port clearance.</p> <p>2. Revenue shortfalls</p>	<p>b) Per Contract 4 (Consolidation of Services Agreement {Transaction Audit & External Verification Services} of 3 October 2019), SML will provide:</p> <p>i. Transaction Audit Services, described below:</p> <ul style="list-style-type: none"> SML shall perform a reassessment of IDF data provided by CTSB (within an agreed number of hours from the time an IDF is generated) during the pre-arrival phase of clearance, and revert with feedback within an agreed number of hours before a CCVR is issued The CTSB Officer and PCA Officer shall review the transaction audit reports and either accept or reject same. Where the Officer accepts the reports, CCVR is issued. But where the audit report is rejected, it shall go back to the Reconciliation pool and PCA through the data exchange protocols agreed. <p>ii. External Price Verification Services.</p>	<p>Whilst Contract 1 did not provide additional information on the internal processes to be used by SML under the Transaction Audit service, the scope outlined in Contract 4 aligns with the gaps identified.</p>

5.2 Needs Assessment (8/10)

Table 5.2.1-3 Contract alignment with specific gaps - Measurement Audit for Downstream Petroleum Products Agreement

Specific Gap	Scope of Services	KPMG comments on alignment of contract scope to identified gap(s)
<p>GRA identified the following factors as contributors to potential revenue losses and deficits at the Bulk Distribution Depots:</p> <ul style="list-style-type: none"> i. Mis-measuring due to incorrect Meter (with high error margin) and gauging Errors ii. Over or under reading- this reduces unaccounted-for product iii. Change in temperature/pressure and its effect on product expansion and contraction iv. Mechanical losses v. Inadequate knowledge by officers to appreciate volume measurements and therefore relies on 3rd party information for monitoring vi. Lack of capacity to control stocks to the point of revenue. 	<p>Per section 2.1.1 of Contract 5^{5.2.23} (Measurement Audit for Downstream Petroleum Product Agreement of 3 October 2019), SML was required to:</p> <ul style="list-style-type: none"> i. Undertake a comprehensive review of workflow within the downstream petroleum sector (hereinafter collectively referred to as the "Petroleum Product Uploading and Offloading Points") ii. Undertake a review of the operations of all the Petroleum Product Uploading and Offloading Points iii. Develop and implement an end-to-end EMMS iv. Conduct product measuring and monitoring as well as digitalise the entire delivery chain by deploying very accurate computerised fiscal Metering system v. Identify quantities of petroleum products delivered to the BDC depots per day/month and report on same to the Client on daily and monthly basis vi. Implement an EMMS which is dedicated solely to the fiscal measurement aimed at loss prevention. This will improve the existing customs internal audit processes for the purpose of maximising revenue mobilisation. 	<p>The scope of services detailed in Contract 5 aligns with the gaps identified by GRA.</p>

^{5.2.23} The scope of services in Contract 6 are same as Contract 5, as addendum only revised the basis for determination of petroleum revenue

5.2 Needs Assessment (9/10)

Table 5.2.1-4 Contract alignment with specific gaps – Consolidated Revenue Assurance

Specific Gap	Scope of Services	KPMG comments on alignment of contract scope to identified gap(s)
<p>MoF identified potential revenue shortfalls relating to revenue mobilisation in the following sectors:</p> <ul style="list-style-type: none"> a) Upstream petroleum production, based on the inherent risk of not fully realising all the revenue from the producing fields. b) Mining industry, based on the following factors: <ul style="list-style-type: none"> i. Under declaration of mineral export to GRA and Minerals Income Investment Fund (“MIIF”). ii. Weakness in existing manual processes for monitoring mineral exports. 	<p>Per Contract 6 (Revenue Assurance Contract of 25 October 2023):</p> <ul style="list-style-type: none"> a) For Upstream Petroleum Audit Services, SML shall: <ul style="list-style-type: none"> i. Undertake a comprehensive review of workflow within the upstream petroleum sector ii. Undertake a review of the operations of all the upstream petroleum iii. Develop and implement an end-to-end electronic monitoring and auditing system to track the product flow in the upstream petroleum sector iv. Conduct hydrocarbon measuring and monitoring and digitalising the entire delivery chain deploying very accurate computerised fiscal Metering system. This will identify the measuring and monitoring methodologies declared by International Oil Companies (“IOCs”) for assurance and due diligence on taxes to government v. Install state of the art RTU at all necessary points along the supply and value chain to access the production data from all the operators and key processing, storage and offtake facilities within our oil and gas ecosystem vi. Conduct relevant sectorial monitoring and digitalise the entire delivery value chain by deploying very accurate computerised product flow systems to improve the existing Customs Internal Audit for revenue assurance and due diligence for taxes to government vii. Implement systems will help to improve the existing internal audit processes for the purpose of maximising revenue mobilisation in the upstream sector for the Republic. 	<p>The scope of services detailed in Contract 7 aligns with the gaps identified by MoF.</p>

5.2 Needs Assessment ^(10/10)

Table 5.2.1-4 Contract alignment with specific gaps – Consolidated Revenue Assurance (Cont'd)

Specific Gap	Scope of Services	KPMG comments on alignment of contract scope to identified gap(s)
<p>MoF:</p> <p>2. Noted that GRA had no real-time insights into:</p> <p>a) The production, storage and sales of the oil and gas operations by the operators, as offtake and hydrocarbon storage facilities operate independently, with no means of connectivity</p> <p>b) Mining of minerals and metals by the mining industry operators.</p>	<p>b) For Minerals Audit Services, SML shall;</p> <p>i. Develop and implement an end-to-end electronic monitoring auditing system to track the extraction and export of mineral resources</p> <p>ii. Perform minerals and metals monitoring and digitalise the entire delivery value chain by deploying very accurate computerised weighing and analyser. This will identify the quality and the weight of the minerals being exported for revenue assurance and due diligence for taxes to government</p> <p>iii. Implement SML NOVA – Mineral Resources Auditing and Security Systems, which is dedicated solely to monitoring Smelting and Pouring, Box Sealing and Weighing and Tracking to KIA from all the recognised mining companies for export. It is expected that the deployment of the system will help to improve the existing internal audit processes for the purpose of maximising revenue mobilisation for the Republic.</p>	<p>The scope of services detailed in Contract 7 aligns with the gaps identified by MoF.</p>

5.3

Contracting Methodology

5.3 Contracting Methodology (1/21)

5.3 Objective – Assess the appropriateness of the contracting methodology, verifying compliance with legal standards and industry best practices in the procurement process for the selection of SML.

5.3.1 Overview of events relating to introduction, selection and award of GRA's contracts with SML

Based on discussions with relevant current and former officials of GRA^{5.3.1} and officials of SML^{5.3.2} as well as relevant correspondences reviewed, we have established in Fig 5.3-1 below, a high-level timeline of events relating to the selection and award of the 7 contracts between GRA / MoF to SML.

Figure 5.3-1: Timeline of events from introduction of SML to GRA and selection / award of the 7 contracts between MoF / GRA and SML.

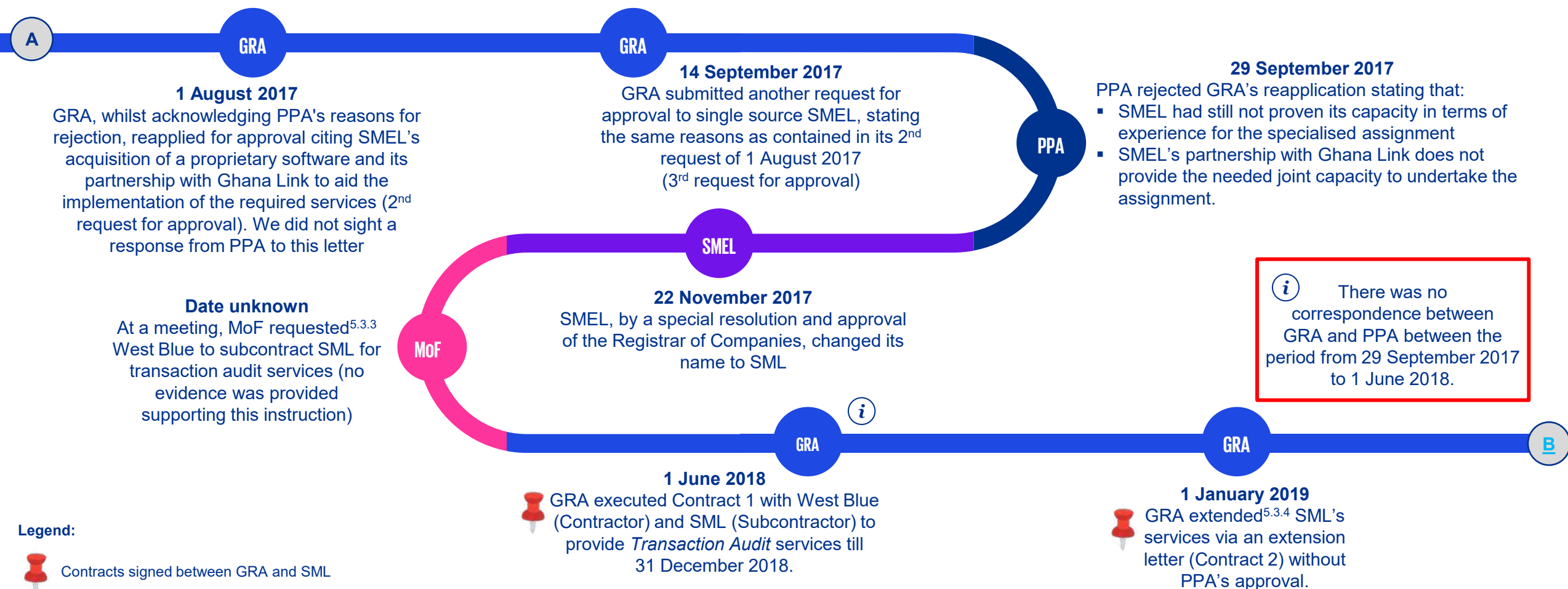


^{5.3.1} Exhibit 5.3-1: Minutes of Meeting held with the then CG of GRA on 26 January 2024

^{5.3.2} Exhibit 5.3-2: Minutes of Meeting held with officials of SML on 2 February 2024

5.3 Contracting Methodology^(2/21)

Figure 5.3-1: Timeline of events from introduction of SML to GRA and selection / award of the 7 contracts between GRA / MoF and SML (cont'd)

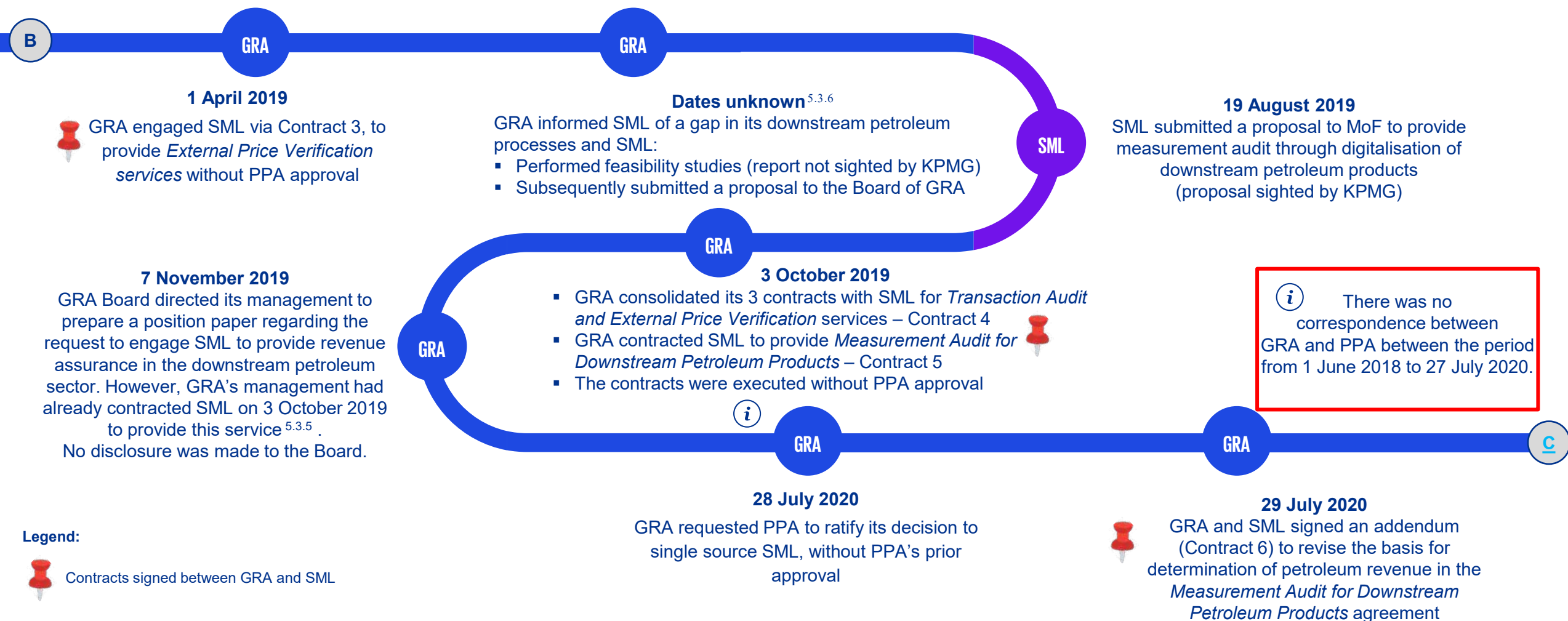


^{5.3.3} Per representation by officials of West Blue as contained in Exhibit 5.3-3: Email correspondence of 10 February 2024 between KPMG and officials of West Blue

^{5.3.4} West Blue was not a party to the extension agreement

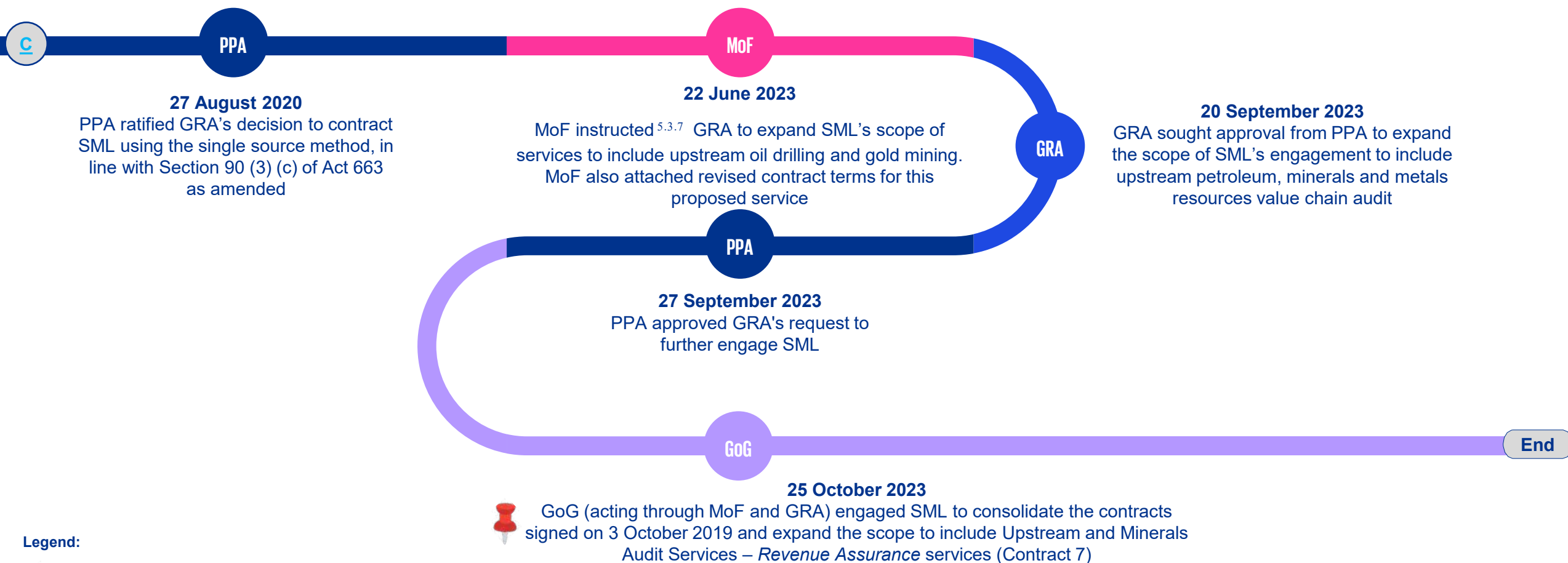
5.3 Contracting Methodology^(3/21)

Figure 5.3-1: Timeline of events from introduction of SML to GRA and selection / award of the 7 contracts between GRA / MoF and SML (cont'd)



5.3 Contracting Methodology^(4/21)

Figure 5.3-1: Timeline of events from introduction of SML to GRA and selection / award of the 7 contracts between GRA / MoF and SML (cont'd)



Legend:



Contracts signed between GRA and SML

5.3 Contracting Methodology^(5/21)

5.3.2 Assessment of Contracting Methodology adopted by GRA

The scope of services outlined in the seven (7) contracts among MoF, GRA, and SML reflect a combination of consultancy and technical services, as analysed in [Appendix 3](#). Refer to [Section 5.1](#) for GRA's contracting process under consultancy and technical services.

To assess the appropriateness of the contracting methodology adopted by GRA vis-à-vis legal requirements and industry best practices, we held discussions with relevant persons and reviewed correspondences between PPA and GRA on a contract-by-contract basis, noting the observations in three (3) segments, viz:

- i. Selection of SML
- ii. Requirement to:
 - a) Obtain PPA approval to engage SML via single sourcing
 - b) Inform GRA Board of SML engagement
 - c) Obtain approval from the Minister for Finance and authorisation from Parliament for agreements with financial commitment that binds the GoG for more than one year.
- iii. Contract development and award.

These are reflected below:

5.3.2.1 Selection of SML

Act 663 as amended and the PPA Manual allows procuring entities to assess and determine the procurement method for use, based on certain prescribed conditions. Refer to [Table 5.1-1](#) and [Table 5.1-2](#) for more details on the available methods and conditions for use.

Table 5.3.2-1 Overleaf we individually assessed GRA's selection of SML for each of the three (3) services in the seven (7) contracts.

5.3 Contracting Methodology (6/21)

Table 5.3.2-1 Assessment of GRA's Selection of SML vis-à-vis Legal Standards and Industry Best Practices

GRA's methodology in selecting SML	KPMG's assessment of the reasons provided by GRA vis-a-vis the sections quoted												
<p>GRA selected^{5.3.8} SML using the single source selection method for all the service contracts i.e., <i>Transaction Audit and External Price Verification</i> services, <i>Measurement Audit for Downstream Petroleum Products</i> services and <i>Revenue Assurance</i> services, as analysed below:</p> <p>Transaction Audit and External Price Verification Services</p> <p>Per review of GRA's letters^{5.3.9} to PPA as well as GRA's request^{5.3.10} for ratification of its single source decision, we noted the following justifications by GRA:</p> <table border="1"> <thead> <tr> <th>Condition quoted by GRA for single source</th><th>Reasons provided by GRA</th></tr> </thead> <tbody> <tr> <td>1. Section 40 (1) (a) – Goods, works or services are only available from a particular supplier, or a particular supplier has exclusive rights to the goods or service and a reasonable alternative or substitute does not exist</td><td>1. SMEL, by virtue of its partnership with COTECNA S.A, obtained the Right of Ownership and acquired COTECNA S.A's proprietary systems, required for the service request by GRA.</td></tr> <tr> <td>2. Section 40 (1) (b) – Where there is urgent need for the service and engaging in tender proceedings is impractical due to the time involved or a catastrophic event</td><td>2. SMEL also partnered with Ghana Link to provide support services for the implementation of the proprietary system.</td></tr> <tr> <td>3. Section 40 (1) (e) – Contract for research, experiment, study or development</td><td>3. Incidents of improper classification and valuation of imported goods causing challenges and undue delay at the port of clearance.</td></tr> <tr> <td>4. Section 40 (1) (f) – Procurement that concerns national security</td><td></td></tr> <tr> <td>5. Per Section 72 (5) – Where there is only one eligible consultant; or an emergency arises or for a follow-up assignment.</td><td></td></tr> </tbody> </table>	Condition quoted by GRA for single source	Reasons provided by GRA	1. Section 40 (1) (a) – Goods, works or services are only available from a particular supplier, or a particular supplier has exclusive rights to the goods or service and a reasonable alternative or substitute does not exist	1. SMEL, by virtue of its partnership with COTECNA S.A, obtained the Right of Ownership and acquired COTECNA S.A's proprietary systems, required for the service request by GRA.	2. Section 40 (1) (b) – Where there is urgent need for the service and engaging in tender proceedings is impractical due to the time involved or a catastrophic event	2. SMEL also partnered with Ghana Link to provide support services for the implementation of the proprietary system.	3. Section 40 (1) (e) – Contract for research, experiment, study or development	3. Incidents of improper classification and valuation of imported goods causing challenges and undue delay at the port of clearance.	4. Section 40 (1) (f) – Procurement that concerns national security		5. Per Section 72 (5) – Where there is only one eligible consultant; or an emergency arises or for a follow-up assignment.		<p>Per GRA representation^{5.3.11}, losing significant revenue at the ports and downstream sector constituted a matter of national security, as communicated by the Ministry of National Security. Hence, satisfying the basis for single sourcing, as Section 40 (1) of Act 663 as amended requires entities to meet only one (1) of the six (6) exceptional circumstances for single sourcing. Nonetheless:</p> <p>a) No records to support GRA's assertion that no alternative solution existed from other suppliers, as there are no records indicating contact with other suppliers.</p> <p>b) The timeline of over 12 months between when GRA engaged SMEL (i.e. 6 April 2017) and when GRA executed the first contract (i.e. 1 June 2018) does not appear to support the urgency assertion by GRA.</p> <p>c) The proposed services do not relate to research, experiment, study or development or a follow-up assignment</p>
Condition quoted by GRA for single source	Reasons provided by GRA												
1. Section 40 (1) (a) – Goods, works or services are only available from a particular supplier, or a particular supplier has exclusive rights to the goods or service and a reasonable alternative or substitute does not exist	1. SMEL, by virtue of its partnership with COTECNA S.A, obtained the Right of Ownership and acquired COTECNA S.A's proprietary systems, required for the service request by GRA.												
2. Section 40 (1) (b) – Where there is urgent need for the service and engaging in tender proceedings is impractical due to the time involved or a catastrophic event	2. SMEL also partnered with Ghana Link to provide support services for the implementation of the proprietary system.												
3. Section 40 (1) (e) – Contract for research, experiment, study or development	3. Incidents of improper classification and valuation of imported goods causing challenges and undue delay at the port of clearance.												
4. Section 40 (1) (f) – Procurement that concerns national security													
5. Per Section 72 (5) – Where there is only one eligible consultant; or an emergency arises or for a follow-up assignment.													

^{5.3.8} Per review of Exhibit 5.3-5: Request of 28 July 2020 to PPA for ratification of consultancy services, Exhibit 5.3-6: Request for Approval to PPA for Single Source Procurement on 20 September 2023 and Exhibit 5.3-7: Minutes of Meeting held with GRA's Head of Procurement on 8 February 24

^{5.3.9} Exhibit 5.3-8: Request of 16 June 2017 to PPA for approval to single source SMEL to provide enhanced classification, valuation and risk management platform at the port

^{5.3.10} Exhibit 5.3-5: Request of 28 July 2020 to PPA for ratification of consultancy services

^{5.3.11} Per discussions with CG on 20 February 2024

5.3 Contracting Methodology ^(7/21)

Table 5.3.2-1 Assessment of GRA's Selection of SML vis-à-vis Legal Standards and Industry Best Practices (cont'd)

GRA's methodology in selecting SML	KPMG's assessment of the reasons provided by GRA vis-a-vis the sections quoted.							
<p>Measurement Audit for Downstream Petroleum Product Services^{5.3.12}</p> <p>Per GRA's request for ratification^{5.3.13} as well as discussions with the then CG^{5.3.14} and officials of SML^{5.3.15}, we noted the following:</p> <table border="1"> <thead> <tr> <th>Condition quoted by GRA for single source</th><th>Reason provided</th></tr> </thead> <tbody> <tr> <td>i. Section 40 (1) (a) – Goods, works or services are only available from a particular supplier, or a particular supplier has exclusive rights to the goods or service and a reasonable alternative or substitute does not exist</td><td rowspan="4">i. Given SML's effectiveness in plugging revenue leakages and performance under the existing contracts, GRA decided to contract SML to deploy an EMMS to validate and assure the quantities of downstream petroleum products.</td></tr> <tr> <td>ii. Section 40 (1) (e) – Contract for research, experiment, study or development</td></tr> <tr> <td>iii. Section 40 (1) (f) – Procurement that concerns national security</td></tr> <tr> <td>iv. Per Section 72 (5) – Where there is only one eligible consultant; or an emergency arises or for a follow-up assignment.</td></tr> </tbody> </table>	Condition quoted by GRA for single source	Reason provided	i. Section 40 (1) (a) – Goods, works or services are only available from a particular supplier, or a particular supplier has exclusive rights to the goods or service and a reasonable alternative or substitute does not exist	i. Given SML's effectiveness in plugging revenue leakages and performance under the existing contracts, GRA decided to contract SML to deploy an EMMS to validate and assure the quantities of downstream petroleum products.	ii. Section 40 (1) (e) – Contract for research, experiment, study or development	iii. Section 40 (1) (f) – Procurement that concerns national security	iv. Per Section 72 (5) – Where there is only one eligible consultant; or an emergency arises or for a follow-up assignment.	<p>Same as previous.</p>
Condition quoted by GRA for single source	Reason provided							
i. Section 40 (1) (a) – Goods, works or services are only available from a particular supplier, or a particular supplier has exclusive rights to the goods or service and a reasonable alternative or substitute does not exist	i. Given SML's effectiveness in plugging revenue leakages and performance under the existing contracts, GRA decided to contract SML to deploy an EMMS to validate and assure the quantities of downstream petroleum products.							
ii. Section 40 (1) (e) – Contract for research, experiment, study or development								
iii. Section 40 (1) (f) – Procurement that concerns national security								
iv. Per Section 72 (5) – Where there is only one eligible consultant; or an emergency arises or for a follow-up assignment.								

^{5.3.12} For Contract 5, GRA did not request or obtain approval from PPA prior to executing the contract with SML, thus, we do not have information to confirm the justification for single source

^{5.3.13} Exhibit 5.3-5: Request of 28 July 2020 to PPA for ratification of consultancy services

^{5.3.14} Exhibit 5.3-1: Minutes of Meeting held with the then CG on 26 January 2024

^{5.3.15} Exhibit 5.3-2: Minutes of Meeting held with officials of SML on 2 February 2024

5.3 Contracting Methodology (8/21)

Table 5.3.2-1 Assessment of GRA's Selection of SML vis-à-vis Legal Standards and Industry Best Practices (cont'd)

GRA's methodology in selecting SML	KPMG's assessment of the reasons provided by GRA vis-a-vis the sections quoted.						
<p>Contract for Consolidation of Revenue Assurance Services</p> <p>Per GRA's letter^{5.3.16} to PPA requesting approval to single source SML, we noted the following:</p> <table border="1" data-bbox="91 522 1579 908"> <thead> <tr> <th>Condition quoted by GRA for single source</th><th>Reason provided</th></tr> </thead> <tbody> <tr> <td>i. Section 40 (1) (a) – Goods, works or services are only available from a particular supplier, or a particular supplier has exclusive rights to the goods or service and a reasonable alternative or substitute does not exist</td><td rowspan="3">i. Due to SML's successful and significant revenue mobilisation after the rollout of EMMS for the downstream petroleum sector, MoF and GRA decided to broaden SML's scope to cover upstream petroleum products and gold mining sectors.</td></tr> <tr> <td>ii. Section 40 (1) (d) – There is need for standardisation or compatibility with existing goods, equipment, technology or services</td></tr> <tr> <td>iii. Section 40 (1) (f) – Procurement that concerns national security.</td></tr> </tbody> </table>	Condition quoted by GRA for single source	Reason provided	i. Section 40 (1) (a) – Goods, works or services are only available from a particular supplier, or a particular supplier has exclusive rights to the goods or service and a reasonable alternative or substitute does not exist	i. Due to SML's successful and significant revenue mobilisation after the rollout of EMMS for the downstream petroleum sector, MoF and GRA decided to broaden SML's scope to cover upstream petroleum products and gold mining sectors.	ii. Section 40 (1) (d) – There is need for standardisation or compatibility with existing goods, equipment, technology or services	iii. Section 40 (1) (f) – Procurement that concerns national security.	<p>a) Even though the condition for standardisation or compatibility with existing equipment, technology or services may exist for contract 7 (by virtue of SML's ongoing downstream monitoring exercise at the period), there was no evidence to support the claim that no alternative solution existed from other suppliers which justified the use of single source.</p>
Condition quoted by GRA for single source	Reason provided						
i. Section 40 (1) (a) – Goods, works or services are only available from a particular supplier, or a particular supplier has exclusive rights to the goods or service and a reasonable alternative or substitute does not exist	i. Due to SML's successful and significant revenue mobilisation after the rollout of EMMS for the downstream petroleum sector, MoF and GRA decided to broaden SML's scope to cover upstream petroleum products and gold mining sectors.						
ii. Section 40 (1) (d) – There is need for standardisation or compatibility with existing goods, equipment, technology or services							
iii. Section 40 (1) (f) – Procurement that concerns national security.							

^{5.3.16} Exhibit 5.3-6: Request for Approval to PPA for Single Source Procurement on 20 September 2023. 4

5.3 Contracting Methodology^(9/21)

5.3.2.2A - Requirement to obtain PPA approval

Table 5.3.2-2 Assessment of requirement for GRA to obtain PPA approval to single source

Applicable legal standard / leading practice	GRA's methodology in selecting SML	KPMG comments on compliance with legal and industry best practice
For Transaction Audit and External Price Verification Services (Contracts 1 - 4) and Measurement Audit for Downstream Petroleum Product Services (Contract 5 & 6)		
<p>Per Sections 40 and 41 of Act 663 as amended, for single source procurements, entities:</p> <p>1. May procure goods, works or technical services by inviting proposals or price quotations from a single supplier or contractor.</p>	<p>a) We sighted proposals^{5.3.17} submitted by SML to provide <i>Transaction Audit and External Price Verification</i> services (undated) and <i>Measurement Audit for Downstream Petroleum Product Services</i> dated 19 August 2019. GRA confirmed receipt of the proposals.</p> <p>b) Furthermore, at the 22nd Board Meeting^{5.3.18} on 10 October 2019, the GRA Board:</p> <p>i. Discussed a proposal for the measurement audit of downstream petroleum products</p> <p>ii. Instructed the Acting CG, and another officer to review and report on the proposal.</p> <p>c) Subsequently at the 23rd Board Meeting^{5.3.19} on 7 November 2019, the GRA Board directed Management to submit a paper justifying:</p> <p>i. Management's request to engage an independent monitoring entity</p> <p>ii. The recommendation of SML for the service.</p>	<p>a) For <i>Transaction Audit and External Price Verification Services</i> and <i>Measurement Audit for Downstream Petroleum Product Services</i>, GRA received proposals from SML in line with Section 41 of Act 663 as amended. However, no records to confirm when the proposals were submitted to GRA.</p> <p>b) Although we sighted Board discussions on the <i>Measurement Audit for Downstream Petroleum Product Services</i>, these discussions (i.e. on 10 October 2019 and 7 November 2019) occurred after the relevant contract had been signed (i.e. 3 October 2019).</p>

^{5.3.17} Exhibit 5.3-9: SML proposal for Customs Valuation and Risk Management System and Exhibit 5.3-10: SML proposal for Measurement Audit

^{5.3.18} Exhibit 5.3-11: Extract of Minutes of Board Meeting of 10 October 2019

^{5.3.19} Exhibit 5.3-12: Extract of Minutes of Board Meeting of 7 November 2019

5.3 Contracting Methodology^(10/21)

Table 5.3.2-2 Assessment of requirement for GRA to obtain PPA approval to single source (cont'd)

Applicable legal standard / leading practice	GRA's methodology in selecting SML	KPMG comments on compliance with legal and industry best practice
For Transaction Audit and External Price Verification Services (Contracts 1 - 4) and Measurement Audit for Downstream Petroleum Product Services (Contract 5 & 6)		
<p>Per Section 40 and 41 of Act 663 as amended, for single source procurements, entities:</p> <p>2. Must obtain approval for single sourcing from the PPA Board</p>	<p>a) On three (3) occasions, GRA requested but PPA did not approve GRA's requests to engage SML via single sourcing. The three (3) instances are described below:</p> <p>i. 16 June 2017 – GRA sought approval from the PPA to single source SMEL by virtue of its <i>Right of Ownership</i> of COTECNA S.A's proprietary platform, amongst others^{5.3.20}, however, PPA responded^{5.3.21} stating that:</p> <ul style="list-style-type: none"> ▪ <i>Management was of the view that SMEL, the company representing COTECNA has no proven experience in the business it seeks to undertake</i> ▪ <i>It is the considered opinion of the Authority that, it is improper for a Company without any prior experience or track record in a specialised assignment such as the one in question to be considered for the award of a Contract to ostensibly hand the contract over to a more competent worldwide company</i> 	<p>Although GRA subsequently obtained ratification^{5.3.22} from PPA for its contracts with SML on 27 August 2020. As at the date of GRA's primary contract with SML i.e. 1 June 2018, GRA had not received approval from PPA to engage SML via single sourcing. Similarly, GRA did not obtain PPA's approval for other contracts assigned in 2019 relating to external price verification and downstream petroleum monitoring services. This is a contravention of Section 40 (1) of Act 663 as amended.</p>

^{5.3.20} Refer to [Table 5.3.1-1](#) for further details on GRA's justification for single sourcing

^{5.3.21} Exhibit 5.3-13: Letter of 4 July 2017 from PPA

^{5.3.22} Exhibit 5.3-14: Letter of Approval for ratification from PPA dated 27 August 2020

5.3 Contracting Methodology (11/21)

Table 5.3.2-2 Assessment of requirement for GRA to obtain PPA approval to single source (cont'd)

Applicable legal standard / leading practice	GRA's methodology in selecting SML	KPMG comments on compliance with legal and industry best practice
For Transaction Audit and External Price Verification Services (Contracts 1 - 4) and Measurement Audit for Downstream Petroleum Product Services (Contract 5 & 6)		
<p>Per Section 40 and 41 of Act 663 as amended, for single source procurements, entities:</p> <p>2. Must obtain approval for single sourcing from the PPA Board</p>	<ul style="list-style-type: none"> ▪ <i>In addition to the above, we wish to draw your attention to the fact that, the Letter of Intent provided by COTECNA does not establish any legally binding relationship between SMEL and COTECNA for the provision of the service. Kindly take note that the company seeking to be considered for a Contract must demonstrate an appreciable capacity and strength of its own and possibly sub-contract a portion to a qualified sub-Contractor or an Agent. Unfortunately this is not the case in this instance.</i> ii. 1 August 2017 – GRA^{5.3.23} acknowledged PPA's reasons for declining the initial application to single source SMEL, but stated GRA's continued interest in engaging SMEL's services and outlined further justifications for single source, i.e., SMEL's: <ul style="list-style-type: none"> ▪ Acquisition of the Classification, Valuation and Risk Management ("CVRM") platform from COTECNA ▪ Partnership with Ghana Link to provide the necessary support for implementation of the platform. <p>We did not sight PPA's response to this letter</p>	Same as previous

^{5.3.23} Exhibit 5.3-15: Letter of 1 August 2017 from GRA

5.3 Contracting Methodology ^(12/21)

Table 5.3.2-2 Assessment of requirement for GRA to obtain PPA approval to single source (cont'd)

Applicable legal standard / leading practice	GRA's methodology in selecting SML	KPMG comments on compliance with legal and industry best practice
For Transaction Audit and External Price Verification Services (Contracts 1 - 4) and Measurement Audit for Downstream Petroleum Product Services (Contract 5 & 6)		
<p>Per Section 40 and 41 of Act 663 as amended, for single source procurements, entities:</p> <p>2. Must obtain approval for single sourcing from the PPA Board</p>	<p>iii. 14 September 2017 – GRA^{5.3.24} requested approval in line with its request of 1 August 2017, but PPA^{5.3.25} rejected the request stating that:</p> <ul style="list-style-type: none"> Management at its SSRT Meeting no. 025/2017 held on Friday, 29th September 2017, noted that SMEL has still not shown any proven capacity in terms of experience and provision of similar assignments intended to be undertaken under the proposed Joint Venture agreement SMEL's relationship with Ghana Link does not provide the needed joint capacity to undertake the assignment since according to the arrangement in the agreement, SMEL will be responsible for the bulk of the assignment per GRA's requirement, which is classification, valuation and risk management GRA's re-application presenting a Partnership agreement between Ghana Link and SMEL does not address SMEL's lack of capacity in the assignment and therefore unable to grant approval to your request. 	Same as previous

^{5.3.24} Exhibit 5.3-16: Letter of 14 September 2017 to PPA

^{5.3.25} Exhibit 5.3-17: Letter of 29 September 2017 from PPA

5.3 Contracting Methodology ^(13/21)

Table 5.3.2-2 Assessment of requirement for GRA to obtain PPA approval to single source (cont'd)

Applicable legal standard / leading practice	GRA's methodology in selecting SML	KPMG comments on compliance with legal and industry best practice
For Transaction Audit and External Price Verification Services (Contract 1 - 4) and Measurement Audit for Downstream Petroleum Product Services (Contract 5 & 6)		
<p>Per Section 40 and 41 of Act 663 as amended, for single source procurements, entities:</p> <p>2. Must obtain approval for single sourcing from the PPA Board.</p>	<p>b) During the period from 1 June 2018 to 29 July 2020, GRA signed six (6) agreements with SML i.e. Contract 1 – 6, without PPA's approval to a single source</p> <p>c) On 28 July 2020, GRA requested PPA to ratify its decision to single-source SML without PPA's prior approval</p> <p>d) The ratification request was approved by PPA on 27 August 2020, with PPA stating that it conducted an investigation to determine the circumstances under which GRA engaged SML and found the recommendations satisfactory. Additionally:</p> <p>i. A PPA official who led the investigation stated^{5.3.26} that:</p> <ul style="list-style-type: none"> During a site visit to GRA, they were presented with reports from SML demonstrating significant revenue savings Based on calculations GRA had done which revealed that the project was helping the country to save money, the team were convinced and found the contract between SML and GRA reasonable and as such recommended that the PPA Board ratify the agreements. 	<p>a) We noted the following from PPA's investigation report:</p> <p>i. The findings section of the investigation report contained similar contents to GRA's ratification letter</p> <p>ii. The investigation report did not include representations from relevant persons listed as interviewed from GRA by the investigation team.</p> <p>b) It is therefore unclear the independent and technical basis advanced by the PPA investigation team for ratifying the contracts.</p>

^{5.3.26} Exhibit 5.3-18: Minutes of Meeting held with a PPA official on 26 January 2024

5.3 Contracting Methodology (14/21)

Table 5.3.2-2 Assessment of requirement for GRA to obtain PPA approval to single source (cont'd)

Applicable legal standard / leading practice	GRA's methodology in selecting SML	KPMG comments on compliance with legal and industry best practice
For Transaction Audit and External Price Verification Services (Contract 1 - 4) and Measurement Audit for Downstream Petroleum Product Services (Contract 5 & 6)		
<p>Per Section 40 and 41 of Act 663 as amended, for single source procurements, entities:</p> <p>2. Must obtain approval for single sourcing from the PPA Board.</p>	<p>ii. Another official of PPA^{5.3.27} further corroborated PPA's initial submission and added that:</p> <ul style="list-style-type: none"> ▪ The mandate of the investigation was to establish circumstances surrounding why GRA did not seek prior approval from PPA ▪ The investigation team was not aware of GRA's initial applications to single source SML in 2017 and would have asked further questions to the relevant stakeholders if they were aware ▪ The investigation team did not have to separately confirm SML's capacity to undertake the Measurement of Downstream Petroleum Product assignment as they could, in the course of their work, have proved to GRA they were capable of carrying out that aspect. <p>iii. The PPA Board^{5.3.28} also corroborated the above submissions.</p>	Same as previous

^{5.3.27} Exhibit 5.3-19: Minutes of Meeting held with an official of PPA on 29 January 2024

^{5.3.28} Exhibit 5.3-20: Minutes of Meeting held with PPA Board on 31 January 2024

5.3 Contracting Methodology^(15/21)

Table 5.3.2-2 Assessment of requirement for GRA to obtain PPA approval to single source (cont'd)

Applicable legal standard / leading practice	GRA's methodology in selecting SML	KPMG comments on compliance with legal and industry best practice
For Revenue Assurance Services (Contract 7)		
<p>Per Section 40 and 41 of Act 663 as amended, for single source procurements, entities:</p> <ol style="list-style-type: none"> May procure goods, works or technical services by inviting proposal or price quotations from the single supplier or contractor 	<ol style="list-style-type: none"> We sighted a proposal^{5.3.29} submitted by SML (undated) and further noted that at the 30th Board Meeting^{5.3.30} on 12 October 2023: <ol style="list-style-type: none"> The CG briefed the Board on SML's proposal for the upstream petroleum and mining sectors The Board approved the proposal and instructed Management to forward the contract to MoF for processing. 	<ol style="list-style-type: none"> GRA received a proposal from SML in line with Section 41 of Act 663 as amended. However, no records to confirm when the proposal was shared with GRA.
<ol style="list-style-type: none"> Must obtain approval for single sourcing from the PPA Board. 	<ol style="list-style-type: none"> Via a letter^{5.3.31} of 20 September 2023 to PPA, GRA requested approval to single source SML for additional revenue assurance services, due to significant revenue shortfalls in the upstream petroleum and mining sector. Refer to Section 5.3.2-1 for more details on GRA's justification for a single source PPA in a letter^{5.3.32} dated 27 September 2023 to GRA, approved GRA's request in accordance with section 40 (1) (d) of Act 663 as amended. 	<ol style="list-style-type: none"> GRA obtained approval from PPA to engage SML via single sourcing, in line with Section 40 of Act 663 as amended.

^{5.3.29} Exhibit 5.3-21: SML proposal for Digitalised Auditing for Mineral Resources and Upstream Petroleum

^{5.3.30} Exhibit 5.3-22: Extract of Minutes of Board Meeting of 12 October 2023

^{5.3.31} Exhibit 5.3-6: Request for Approval to PPA for Single Source Procurement on 20 September 2023

^{5.3.32} Exhibit 5.3-23: Letter of approval from PPA dated 27 September 2023

5.3 Contracting Methodology (16/21)

5.3.2.2B Requirement to inform GRA Board

Table 5.3.2-3 Assessment of GRA Board discussions of contracts with SML

Applicable legal standard/leading practice	Observations	KPMG comments on compliance with legal and industry best practice
For Transaction Audit and External Price Verification Services (Contracts 1 - 4), Measurement Audit for Downstream Petroleum Product Services (Contracts 5 & 6) and Revenue Assurance Services (Contract 7)		
<p>The Ghana Revenue Authority Act 2009 (Act 791), Section 5(a) provide that the GRA Board shall ensure the proper and effective performance of the functions of the Authority through among other things, the supervision and monitoring of the Authority in the performance of its functions. The functions of the Authority, under sections 3 (a) and 3 (d) include assessing and collecting taxes and combating tax fraud and evasion.</p> <p>The Corporate Governance Manual for Governing Boards/Councils of The Ghana Public Services provides among other matters the following guidelines:</p> <ol style="list-style-type: none"> 1. Section 4.1.4: Public Boards are to ensure that the GoG's long-term interests are served 2. Section 9.7: The Board and CEO must cooperate in order to fulfil their mutual functions in risk management, strategy formulation and implementation, instituting internal controls etc 3. Section 4.3.2 (h): The CEO will provide the Board with timely, relevant and accurate information for the purpose of decision making 4. Section B (d): Public Boards shall ensure critical review of all proposals and other issues. 	<p>a) Although the GRA Board discussed and approved the proposals relating to the <i>Measurement of Downstream Petroleum Products and Revenue Assurance Services</i>, there are no records to confirm that GRA's Board discussed the <i>Transaction Audit and External Price Verification service</i>.</p> <p>Please note that the GRA Board discussions of 10 October 2019 and 7 November 2019 on the <i>Measurement Audit for Downstream Petroleum Product Services</i>) occurred after the relevant contract was signed on 3 October 2019. Additionally, the current GRA Board has set a threshold of GH¢4 million for the value of key projects that require the Board's approval</p> <p>b) The then GRA Board Chairman stated^{5.3.33} that the GRA Board was not aware of GRA's request to PPA to ratify contracts 1 - 6 with SML.</p>	<p>a) Contrary to the provisions of the GRA Act and guidelines of the Corporate Governance Manual for Governing Boards / Councils of the Ghana Public Services:</p> <ol style="list-style-type: none"> i. GRA management at the time of Contracts 1- 4 did not provide the GRA Board with relevant information regarding GRA's engagement of SML ii. GRA management at the time of ratification did not provide the GRA Board with relevant information relating to the ratification request for Contracts 1 - 6.

^{5.3.33} Exhibit 5.3-24: Minutes of Meeting held with the then GRA Board chairman on 12 February 2024

5.3 Contracting Methodology (17/21)

5.3.2.2C Requirement to obtain authorisation from Parliament and approval from the Minister for Finance for agreements with financial commitment that binds the GoG for more than one year.

Table 5.3.2-4 Assessment of the Provisions of the Public Financial Management Act, 2016 (Act 921)

Applicable legal standard / leading practice	KPMG comments on compliance with legal and industry best practice
<p>Section 33 (1) and (2) of the PFMA states that:</p> <p>a) Entities must obtain approval of the Minister for Finance and authorisation from Parliament for agreements with financial commitment that binds the GoG for more than one year</p> <p>b) Parliament may authorise an entity to make a multi-year expenditure commitment given that it is included in the annual budget. Section 33 requires to submit for approval in accordance with Article 181 of the Constitution. Article 181 requires that parliamentary approval is required prior to commitment. The non-compliance of section 33 may render the contract invalid.</p>	<p>There is no sight of evidence of Parliamentary authorisation for Contract 7 which:</p> <p>a) Identifies the MoF (acting on behalf of GoG) and GRA, as the client</p> <p>b) States that financial obligations will be borne by the client</p> <p>c) Was signed for a tenure of five years.</p> <p>Please note that although Contracts 4, 5 and 6 were for a tenure of five (5) years, the above requirements may not apply, as the MoF was not a party to the contracts, and by extension, the GoG was not a party to the contract.</p>

5.3 Contracting Methodology^(18/21)

5.3.2.3 Contract Development and Award

Our assessment of the adequacy of the terms of the contracts executed with SML, is shown below:

Table 5.3.2-5 Assessment of relevant contract terms

Observations	KPMG comments on relevant terms
For Transaction Audit and External Price Verification Services (Contracts 1 - 4)	
<p>The following were noted regarding contracting terms under contracts 1 – 4 which may cause issues for GRA:</p> <ul style="list-style-type: none"> a) The definitions for the services i.e “Transaction Audit” and “External Price Verification” are not defined in the contracts b) For Contract 1, GRA did not have the right to terminate c) For Contracts 1-3: <ul style="list-style-type: none"> i. GRA was not entitled to benefit from any indemnity provisions ii. No mention of which party owns the intellectual property rights d) For Contract 2, GRA and SML are the parties. West Blue is not a party to the contract however, Contract 1 provided that all modifications to the agreement must be in writing and signed by authorised representatives of all two parties i.e West Blue and SML on one side and GRA on the other side e) For Contract 3, the amendment to include additional services is only stated in the recitals, but not in the substantive agreement. Therefore, in legal terms, it may be argued that no contract for the additional services subsists between the parties to the contract, as recitals are considered as an aid to interpretation and not binding on its own. 	<ul style="list-style-type: none"> a) SML and GRA being the only parties to Contract 2 was not consistent with the provisions of the Contract 1. Therefore, Contract 2 constitutes a new contract and not an extension b) Some of the key contract terms and clauses are ambiguous and conflicting which may disadvantage GRA in case of litigation.

5.3 Contracting Methodology^(19/21)

Table 5.3.2-5 Assessment of relevant contract terms (cont'd)

Observations	KPMG comments on relevant terms
For Transaction Audit and External Price Verification Services (Contracts 1 - 4)	
<p>f) For Contract 4:</p> <ul style="list-style-type: none"> i. Two (2) conflicting indemnity provisions for injuries suffered by third parties i.e. whether GRA indemnifies SML or vice versa, with no mention of which clause takes priority ii. Two (2) conflicting termination provisions created by differences in notice periods i.e. 90 days or 120 days iii. Two (2) conflicting provisions, i.e., GRA may terminate for convenience without penalty vis-à-vis GRA is required to pay all unpaid amounts at fair value upon termination. Fair value is not defined iv. Clause 24 refers to a non-existent Clause 36. <p>g) No requirement for performance reviews under the contracts</p> <p>h) Fees under the relevant contracts are not directly tied to performance milestones and/or the value derived from SML's activities.</p>	<ul style="list-style-type: none"> a) For termination without cause, the clause states that GRA will pay the return on investment on the market value of the investment. we noted that in practice where a party is required to pay such amounts upon termination, the assets revert to the client. The agreement does not stipulate that equipment and assets transfer to GRA upon termination. This deviates from market practice. b) The termination clauses for GRA provide two notice periods. It is unclear if these periods run concurrently or subsequent to each other. c) Same comments on contract terms and clauses applies (see page 112)

5.3 Contracting Methodology (20/21)

Table 5.3.2-5 Assessment of relevant contract terms (cont'd)

Observations	KPMG comments on relevant terms
For Measurement Audit for Downstream Petroleum Product Services (Contract 5)	
<p>The following were noted regarding contracting terms under (Contract 5) which may cause issues for GRA:</p> <ul style="list-style-type: none"> a) GRA may terminate the agreement with or without cause upon giving SML 120 days written notice before the effective termination date. GRA is not entitled to a refund or any portion of compensation already earned by SML. GRA may also terminate for demonstrated convenience of the State upon 90 days written notice (subject to an extension to 180 days upon application by SML) b) SML may terminate the agreement upon giving GRA 120 days' written notice if a termination event occurs. GRA is not entitled to a refund or any portion of compensation already earned by SML. Where GRA terminates without cause, GRA is liable to pay SML a return on investment equal to the fair market value of the investment made by SML. 	Same as previous

5.3 Contracting Methodology^(21/21)

Table 5.3.2-5 Assessment of relevant contract terms (cont'd)

Observations	KPMG comments on relevant terms
For Revenue Assurance Services (Contract 7)	
<p>The following were noted regarding contracting terms under Contract 7 which may cause issues for GRA:</p> <ul style="list-style-type: none"> a) This agreement amended the provisions of the existing and substantive contracts to assign intellectual property rights to SML b) GRA and MoF may terminate the agreement with or without cause upon giving SML 120 days written notice before effective termination date. GRA and MoF are not entitled to a refund, or any portion of compensation already earned by SML. GRA and MoF may also terminate for demonstrated convenience of the State upon 90 days written notice (subject to an extension to 180 days upon application by SML) c) SML may terminate the agreement upon giving GRA and MoF 120 days written notice if a termination event occurs. GRA and MoF are not entitled to a refund, or any portion of compensation already earned by SML d) Where GRA and MoF terminate without cause, they are liable to pay SML a return on investment equal to a fair market value of the investment made by SML. <p>However, GRA confirmed that they reviewed the draft contract and shared the following comments^{5.3.34} with MoF on 23 October 2023:</p> <ul style="list-style-type: none"> a) GRA advised that the provisions seeking to vest intellectual property rights under the existing and subsisting agreements to SML should be avoided b) GRA stated that a 120-day notice period for termination with or without cause was too long and should be set at 90 days. <p>MoF^{5.3.35} received GRA's comments on the day of signing the contract i.e., 25 October 2023, and thus, did not reflect the aforementioned changes. However, GRA's legal team^{5.3.36} stated that an addendum (yet to be signed) has been prepared to address these issues.</p>	<ul style="list-style-type: none"> a) In practice, intellectual property rights to software developed specifically for a client are often held by the client and not the developer. Although parties are free to contract on preferred terms, the amendment raises concerns b) Same comments on the termination for Contracts 1 - 4 apply (see page 113).

^{5.3.34} Exhibit 5.3-25: GRA comments on draft contract submitted to MoF on 23 October 2023

^{5.3.35} Exhibit 5.3-26: GRA comments on draft contract received by MoF on 25 October 2023

^{5.3.36} Exhibit 5.3-27: Minutes of Meeting held with GRA legal team on 8 February 2024

5.4

Contract Performance

5.4 Contract Performance^(1/22)

5.4 Objective – Evaluate the degree of alignment between current activities and the stipulated contract scope, identifying any deviations.

We assessed the alignment of SML's activities against the scope outlined for the three (3) services under the seven (7) contracts, in the sections below:

Table 5.4.1-1 Observations on Alignment between Current Activities and the Stipulated Contract Scope

Transaction Audit Services – Contract 1 & 2: Period from 1 June 2018 – 2 October 2019			
S/N	Scope	Observation	KPMG Comments
1	<p>SML, via its internal processes shall:</p> <p>a) Provide transaction audit services of CCVRs generated and issued at the pre-arrival processing phase.</p> <p>b) Set parameters including random generators to select the various transactions to be subjected to further audit</p> <p>c) Forward Transaction Audit reports to PCA officer through data exchange protocols.</p>	<p>Contract 1 and 2 do not explicitly provide details on the required activities under the transaction audit service, Our enquiries from SML^{5.4.1} all review of relevant documents revealed that :</p> <p>a) The transaction audit involves a reassessment of the:</p> <p>i. Classification of imported goods vis-à-vis the Harmonised System (“HS”) Codes selected</p> <p>ii. Valuation completed by CTSB in the pre-arrival processing phase. Review of invoices and documentation supporting the transactions.</p> <p>b) By a letter^{5.4.2} of 14 September 2018, GRA directed West Blue to share data relating to the top 20 revenue yielding goods with SML for transaction audit for the period that SML was a Subcontractor to WestBlue.</p> <p>c) In the period when SML became the sub-contractor, SML performed daily transaction audits of the CCVR data generated from the previous day, by selecting a sample of transactions involving frequently purchased and high-value items. Furthermore, SML^{5.4.3} indicated that, although the transaction audit contract was signed on 1 June 2018, SML began its audit in July 2018, as they used the month of June 2018 for system pilot/testing.</p>	<p>a) We performed a walkthrough and confirmed the reassessment processes described by SML and CTSB.</p> <p>b) SML provided reports for 8 out of 15 months, i.e. for the period from July 2018 to September 2019. SML and GRA officials were not able to provide reports for 7 months to evidence work done.</p>

^{5.4.1} Exhibit 5.4-1: Minutes of Meeting held SML on 18 January 2024

^{5.4.2} Exhibit 5.4-2: Letter of 14 September 2018 from GRA to West Blue

^{5.4.3} Exhibit 5.4-1: Minutes of Meeting held SML on 18 January 2024

5.4 Contract Performance^(2/22)

Table 5.4.1-1 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Transaction Audit Services – Contract 1 & 2: Period from 1 June 2018 – 2 October 2019			
S/N	Scope	Observation	KPMG Comments
1	Same as previous	<p>d) In a correspondence ^{5.4.4} with SML, we noted that in August 2018, SML built a module – SM-OPS for PCA to access the outcome of its transaction audit. SML shared a list of PCA staff with access accounts on SM-OPS. The list did not indicate the dates these accounts were created.</p> <p>e) SML stated that it shared 15 months of transaction audit reports for the period July 2018 to September 2019 with GRA. We requested copies of these reports from both parties. SML provided eight (8) months reports^{5.4.5} out of the 15 months, while GRA corroborated seven (7) monthly reports. Consequently, out of these 15 months, we could not confirm existing reports for 8 months.</p> <p>f) The report submitted by SML highlighted:</p> <ul style="list-style-type: none"> i. Exceptions from SML's Free on Board ("FOB") reassessments vis-à-vis HS code classifications and ii. Potential increases in dutiable values. 	Same as previous.

^{5.4.4} Exhibit 5.4-3: Correspondence with SML on 21 February 2024

^{5.4.5} Exhibit 5.4-4: Transaction Audit Monthly Reports

5.4 Contract Performance^(3/22)

Table 5.4.1-1 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Transaction Audit Services – Contract 4: Period from 3 October 2019 – 2 Jan 2024			
S/N	Scope	Observation	KPMG Comments
2	<p>a) SML will interface with CTSB to receive IDF data (within an agreed time after an IDF is generated) for reassessment during the pre-arrival phase.</p> <p>b) SML will use its internal process to complete the audit / reassessment, state its findings with relevant attachments if any, and send reports to the CTSB and PCA officer using the agreed data exchange protocols with GRA, before a CCVR is issued.</p>	<p>SML system could not^{5.4.6} interface with the existing system or ICUMS for IDF data. Instead, SML received assessed CCVRs data from MoF and uploaded the data into SM-OPS for its classification and valuation reassessment.</p> <p>a) In a correspondence^{5.4.7} with SML, we noted that:</p> <ol style="list-style-type: none"> for the period October 2019 to April 2020, SML submitted its reports to the GRA and MoF Secretariat from May 2020 onwards, after ICUMS was introduced, SML issued its monthly reports to the GRA (CG or Commissioner for Customs) and MoF beginning August 2022, SML also issued reports to RACE. <p>c) SML stated that PCA had access to SM-OPS to view SML's daily reassessments since 2018 and provided a list of PCA officials whose accounts were setup on SM-OPS.</p> <p>d) An official at PCA stated^{5.4.8} that PCA only gained access to SM-OPS in October 2023 after SML conducted a training for PCA officials in August.</p> <p>e) The PCA official indicated that when reviewing BoEs that have been automatically risk profiled by ICUMS, PCA utilises SM-OPS as a supplementary reference to identify if SML also reclassified and revalued those transactions and their reasons.</p>	<p>a) SML confirmed that they used assessed CCVR data rather than IDF data for its reassessment, contrary to the requirements of the contract. SML stated they had protocol issues interfacing with One Window System and ICUMS.</p> <p>b) In addition, SML does not complete the reassessment and revert to CTSB before CCVR is issued.</p> <p>c) From October 2023, PCA viewed SML's reassessments daily via SM-OPS.</p> <p>d) However, between the period October 2019 and August 2023, SML and GRA provided 20 of 46^{*5.4.9} expected monthly reports i.e., 13^{**} provided by SML and 8 provided by GRA. We did not sight 26 monthly reports at date of the report.</p>

^{5.4.6} Exhibit 5.4-3: Correspondance with SML on 21 February 2024

^{5.4.7} Exhibit 5.4-5: Correspondence dated 30 August 2018 between West Blue and SML on their inability to interface with West Blue systems

^{5.4.8} Exhibit 5.4-6: Meeting Minutes with PCA Post Events 23 February 2024

^{5.4.9} Exhibit 5.4-4: Transaction Audit Monthly Reports

* 51 reports were however, expected to be received from 3 October 2019 to December 2023

** One of the 13 reports provided by SML was also shared by GRA hence the total reports summing up to 20

5.4 Contract Performance^(4/22)

Table 5.4.1-1 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Transaction Audit Services – Contract 4: Period from 3 October 2019 – 2 Jan 2024			
S/N	Scope	Observation	KPMG Comments
2	Same as previous	<p>d) By a letter^{5.4.10} of 31 March 2023, a GRA official at CTSB confirmed that upon review of SML's January and February 2023 reports^{5.4.11}, CTSB realised that SML used declarant data and not the assessed data provided by CTSB. As a result, the reports painted a wrong picture. Consequently, in a meeting on 17 March 2023 to address the issue, CTSB requested the following updates:</p> <ul style="list-style-type: none"> i. SML would be given access to both declared and assessed data. ii. SML's audit findings will be reconciled with CTSB before they are presented to relevant stakeholders. <p>e) However, the aforementioned assertion contradicts SML's confirmation that it used assessed CCVR data rather than declarant data. SML did not provide a response to the contradiction.</p>	GRA officials at CTSB's views of the performance of SML are not consistent with the views of SML.

^{5.4.10} Exhibit 5.4-7: A Letter from SML to GRA (Follow-Up on BoE Reassessment Discussions) 31 March 2023

^{5.4.11} Exhibit 5.4-4: Transaction Audit Monthly Reports

5.4 Contract Performance^(5/22)

Table 5.4.1-1 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

External Price Verification – <i>Contract 3: Period from 3 Apr 2019 – 2 Oct 2019</i>			
S/N	Scope	Observation	KPMG Comments
1	The Developer shall provide the Client with External Price Verification Service	<p>Contract 3 does not explicitly provide details on the required activities for external price verification. An official at SML^{5.4.12} and an official at GRA (CTSB)^{5.4.13} explained that SML was required to:</p> <ul style="list-style-type: none"> a) provide CTSB with access to its up-to-date pricing database – TVAS^{5.4.14} for price verification b) assist with price research to confirm current prices of imported goods, where requested by CTSB. <p>Per representation by SML^{5.4.15} it did not issue reports on its external price verification activities.</p> <p>Officials of CTSB at GRA indicated that GRA received the external price verification service during the period from Ghana Link^{5.4.16}</p>	<p>We did not sight evidence to confirm that SML provided external price verification services to GRA, as:</p> <ul style="list-style-type: none"> a) CTSB of GRA did not have access to TVAS, and thus, was not relying on SML for price verification. b) SML did not provide documents evidencing its price verification services for GRA.

^{5.4.12} Exhibit 5.4-1: Minutes of Meeting held with on 18 January 2024

^{5.4.13} Exhibit 5.4-8: Minutes of Meeting held with an official of GRA (CTSB) on 6 February 2024

^{5.4.14} Exhibit 5.4-9: TVAS BOOK_v01 (SML's price database which SML populates via quotations received from international traders and foreign stores)

^{5.4.15} Exhibit 5.4-10: Minutes of Meeting held with SML on 22 February 2024

^{5.4.16} Exhibit 5.4-11: Correspondence between from CTSB and KPMG dated 22 February 2024

5.4 Contract Performance^(6/22)

Table 5.4.1-1 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

External Price Verification – <i>Contract 4: Period from 3 October 2019 – 2 Jan 2024</i>			
S/N	Scope	Observation	KPMG Comments
1	The Developer shall provide the Client with External Price Verification Service	<p>Per representation by an official of SML^{5.4.17}:</p> <p>a) In January 2020, SML stationed two (2) of its officials at the CTSB unit to conduct the external price verification service. However, CTSB of GRA stated that^{5.4.18}:</p> <p>a) SML stationed two (2) of its officials at GRA for less than a month to support CTSB with the external price verification services</p> <p>b) Concerns were raised regarding the reliability of SML's pricing information as CTSB perceived the prices as inflated or deflated.</p> <p>Per representation by CTSB of GRA^{5.4.19}:</p> <p>a) On 23 May 2023 and 22 August 2023, SML organised a training on the use of TVAS for select staff of CTSB and PCA respectively</p> <p>b) However, on 28 November 2023, GRA asked SML to provide desktop computers at CTSB offices, in a bid to facilitate their use of TVAS for external price verification. This was because SML encountered difficulties when installing the SML-OPS application on GRA's desktop provided by Ghana Link</p> <p>c) As at 16 February 2024, SML had provided 64 desktop computers to CTSB offices^{5.4.20}. We sighted the unboxed desktop computers during our site visit on 6 February 2024 to CTSB of GRA.</p>	<p>CTSB confirmed the presence of two (2) SML officials and their receipt of access to TVAS for pricing information between January 2020 and April 2020, but could not confirm their presence afterwards.</p> <p>Following the TVAS trainings conducted in May and August 2023, as at 5 March 2024, CTSB was yet to commence utilisation of the desktop computers delivered by SML in December 2023, for its external price verification activities.</p>

^{5.4.17} Exhibit 5.4-10: Minutes of Meeting held with SML on 22 February 2024

^{5.4.18} Exhibit 5.4-12: Minutes of Meeting held with CTSB on 5 March 2024

^{5.4.19} Exhibit 5.4-8: Minutes of Meeting held with an official of GRA (CTSB) on 6 February 2024

^{5.4.20} Exhibit 5.4-13: Correspondence from SML on 16 February 2024

5.4 Contract Performance^(7/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope

Measurement Audit for Downstream Petroleum Products – Contracts 5&6: Period from 3 October 2019 to 2 January 2024			
S/N	Scope	Observation	KPMG Comments
1	Undertake a comprehensive review of workflow within the downstream petroleum sector (hereinafter referred to as the "Petroleum Product Uploading and Offloading Points").	<p>a) In a bid to develop and implement the EMMS, SML conducted^{5.4.21} a review of the downstream petroleum sector, and officials of the Petroleum Unit^{5.4.22} of GRA confirmed that SML engaged various stakeholders and conducted site visits to depots.</p> <p>b) Via an undated report^{5.4.23} shared by SML titled "<i>Review of the Downstream Petroleum Workflow</i>", SML highlighted the:</p> <ul style="list-style-type: none"> i. Uploading and offloading process from the main pipeline to individual depots, and the six key terminals for uploading. ii. Various stakeholders involved in the process. iii. Various products (Aviation Turbine Kerosene ("ATK"), LPG and Residual Fuel Oil (RFO)) received, and the respective pipes used for uploading. iv. Terminal operations and ERDMS role in offloading. v. Processes undertaken by a BRV prior to petroleum product liftings. vi. Significant operational differences at certain depots e.g. BOST which conducts inter-depot transfers. <p>c) Furthermore, SML submitted an undated report^{5.4.24} titled "<i>Systems Review Documentation</i>" which highlights the risks within the downstream sector and SML's proposed solution, with emphasis on waybill scanning.</p>	<p>SML undertook the workflow review of both the uploading and offloading process, in line with the requirements of the contract. However:</p> <ul style="list-style-type: none"> a) The report received from SML was not comprehensive and did not detail the workflow. b) We do not have information to confirm when the review was conducted as the report was not dated.

^{5.4.21} Exhibit 5.4-14: Minutes of Meeting held with SML Downstream Team on 16 January 2024

^{5.4.22} Exhibit 5.4-15: Minutes of Meeting with Petroleum Unit of GRA on 19 January 2024

^{5.4.23} Exhibit 5.4-16: SML's report titled Review of the Downstream Petroleum Workflow

^{5.4.24} Exhibit 5.4-17: SML's report titled Systems Review Documentation

5.4 Contract Performance^(8/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Measurement Audit for Downstream Petroleum Products – Contracts 5&6: Period from 3 October 2019 to 2 January 2024			
S/N	Scope	Observation	KPMG Comments
2	Undertake a comprehensive review of the operations of all the Petroleum Product Uploading and Offloading Points.	<p>a) SML explained^{5.4.25} that it conducted a review of 24 depot operations and the Petroleum Unit^{5.4.26} of GRA confirmed that SML visited the 24 depots and engaged GRA extensively on the pipeline setup, workflow, challenges, and areas of improvement at the depots.</p> <p>b) SML subsequently shared site visit reports^{5.4.27} for three (3) depots in Takoradi, namely Ghana Stock Company, Cirrus and Blue Ocean, which highlighted data relating to oils bulk tanks with information on their interconnecting pipelines, temperature and pressure levels of the hydrocarbons, environmental conditions, nature and size of the tanks among other characteristics.</p> <p>c) The comprehensive reports did not consider the following:</p> <p>i. The different methods and temperatures used to transfer products via outlet pipes at depots e.g. transfer of RFO at high temperatures, use of gravity to offload products in some cases</p> <p>ii. The setup of depots using valves to receive multiple products and the practice of depots using water to occasionally flush inlet pipes after receiving products.</p>	<p>a) SML did not share a comprehensive report on its review of the Petroleum Product Uploading and Offloading Points. Rather, SML shared site visit reports for three (3) depots.</p> <p>b) These reports do not appear comprehensive as they only highlight technical information on the tanks and products in the depots.</p> <p>c) In addition, although SML claimed to have visited the other 21 depots, SML did not provide the relevant site visit reports.</p>

^{5.4.25} Exhibit 5.4-14: Minutes of Meeting held with SML Downstream Team on 16 January 2024

^{5.4.26} Exhibit 5.4-15: Minutes of Meeting with Petroleum Unit of GRA on 19 January 2024

^{5.4.27} Exhibit 5.4-18: SML Depot Site Visit Reports

5.4 Contract Performance^(9/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Measurement Audit for Downstream Petroleum Products – Contracts 5&6: Period from 3 October 2019 to 2 January 2024			
S/N	Scope	Observation	KPMG Comments
3	Develop and implement an end-to-end EMMS	<p>a) Per representation by SML^{5.4.28}, it conducted a feasibility study in October 2019 to evaluate the viability of deploying a Metering system in all national oil depots. However, we only received the results of the study for three (3) depots – Blue Ocean Ridge, Tema Tank Farm (Chase) and Quantum Oil Terminal^{5.4.29}</p> <p>b) SML thereafter developed and deployed its EMMS i.e. a supervisory system for measuring the flow of liquid and gas in 24 of 26 depots. Per representation^{5.4.30} by SML, the EMMS included the following:</p> <ul style="list-style-type: none"> i. A software for digital Metering ii. Power distribution, field connections and controllers iii. Wireless field devices iv. Installation of ultrasonic clamp-on flow Meters which are non-intrusive technologies v. A control room that displays real-time movements of the petroleum products at depots vi. Alarm notifications that alert SML of any suspicious or irregular activity. 	<p>a) SML deployed its EMMS at 24 depots excluding Sentuo Oil Refinery (commissioned in January 2024) and Old Bauxite Jetty (due to security concerns).</p> <p>b) During our site visit to six (6) sampled depots, we confirmed the presence and utilisation of:</p> <ul style="list-style-type: none"> i. EMMS. ii. SML's control room, used to view: <ul style="list-style-type: none"> ▪ Volumes lifted through the gantry pipes at the depots in real time ▪ Volumes present in tanks with ATGs installed ▪ Volumes transferred via inter-depot transfers ▪ Total volumes lifted at the end of the day

^{5.4-28} Exhibit 5.4-14: Minutes of Meeting held with SML Downstream Team on 16 January 2024

^{5.4-29} Exhibit 5.4-19: SML Feasibility Study Reports

^{5.4-30} Exhibit 5.4-20: Minutes of Meeting with SML Downstream Team on 18 January 2024

5.4 Contract Performance^(10/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Measurement Audit for Downstream Petroleum Products – Contracts 5&6: Period from 3 October 2019 to 2 January 2024																															
S/N	Scope	Observation				KPMG Comments																									
3	Develop and implement an end-to-end EMMS	c) Following discussions with SML ^{5.4.31} and GRA ^{5.4.32} , our review of documents ^{5.4.33} and on-site visits to depots and the SML office. We established that as at 21 February 2024, SML had installed ultrasonic flowmeters on the inlet and outlet pipes of 24 out of 26 depots. These flowmeters provide near real-time measurements of the quantity of petroleum products that flow through depot pipes. In 2020, when SML commenced operations, there were 22 depots out of which SML installed flowmeters at 16 depots				Same as previous																									
		<table><tr><th>Year</th><th>Total Depots</th><th>Newly Established Depots</th><th>Depots with SML-installed Flowmeters</th><th>Depots without SML-installed Flowmeters</th></tr><tr><td>2020</td><td>22</td><td>0</td><td>16</td><td>6</td></tr><tr><td>2021</td><td>23</td><td>1</td><td>17</td><td>6</td></tr><tr><td>2022</td><td>25</td><td>2</td><td>17</td><td>8</td></tr><tr><td>2023</td><td>26</td><td>1</td><td>24</td><td>2</td></tr></table>					Year	Total Depots	Newly Established Depots	Depots with SML-installed Flowmeters	Depots without SML-installed Flowmeters	2020	22	0	16	6	2021	23	1	17	6	2022	25	2	17	8	2023	26	1	24	2
		Year	Total Depots	Newly Established Depots	Depots with SML-installed Flowmeters		Depots without SML-installed Flowmeters																								
		2020	22	0	16		6																								
		2021	23	1	17		6																								
		2022	25	2	17		8																								
		2023	26	1	24		2																								
d) SML is yet to deploy flow meters at the two (2) depots i.e. Sentuo Oil Refinery and Old Bauxite Jetty as Sentuo Oil Refinery was recently commissioned by the President on 26 January 2024, while Old Bauxite Jetty posed security concerns for both GRA and SML. ^{5.4.34}																															

^{5.4.31}Exhibit 5.4-14: Minutes of Meeting held with SML Downstream Team on 16 January 2024

^{5.4.32}Exhibit 5.4-15: Minutes of Meeting with Petroleum Unit of GRA on 19 January 2024

^{5.4.33}Exhibit 5.4-21: List of Depots with Flowmeters and Installation Dates

^{5.4.34}Exhibit 5.4-22: Minutes of Meeting with GRA on 21 February 2024

5.4 Contract Performance^(11/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont’d)

Measurement Audit for Downstream Petroleum Products – Contracts 5&6: Period from 3 October 2019 to 2 January 2024			
S/N	Scope	Observation	KPMG Comments
3	Develop and implement an end-to-end EMMS	<div>e) Furthermore, per reports from GSA^{5.4.35} dated 10 March 2021, GSA calibrated and commissioned 44 flow meters in 24 depots in Tema, Takoradi and Atuabo</div> <div>f) SML confirmed that:<div><div>i. The EMMS was developed in partnership with Honeywell International Incorporated, an engineering and technology company</div><div>ii. SML also deployed a software – SML Experion to manage the EMMS.</div></div></div>	Same as previous

^{5.4.35}Exhibit 5.4-23: Ghana Standards Authority Calibration Reports

5.4 Contract Performance^(12/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Measurement Audit for Downstream Petroleum Products – Contracts 5&6: Period from 3 October 2019 to 2 January 2024			
S/N	Scope	Observation	KPMG Comments
4	SML shall be responsible for measuring, monitoring, and digitalising the entire delivery chain deploying very accurate computerised fiscal Metering system	<p>An official of SML ^{5.4.36} indicated that its measurement and monitoring process is two-pronged, namely:</p> <ul style="list-style-type: none"> i. Use of flow Meters and ATGs ii. Scanning of waybills at the depot by SML staff <p>a) Per the flow meter reading reports, other relevant documents and representations by officials of SML ^{5.4.37} and GRA ^{5.4.38}: We noted that</p> <ul style="list-style-type: none"> i. Flow meters in 16^{5.4.39} of the 24 depots with calibrated flow meters were functioning as required, i.e. measuring the flow of petroleum products ii. Although Flow meters are installed at Platon Oil, they are unable to measure and read the liftings because of the design and set up of the pipes on that depot iii. SML does not monitor Residual Fuel Oil (RFO) because of its high temperature and viscosity ^{5.4.40} iv. SML's installed flowmeters provide 24-hour surveillance on all depots' gantry operations, as any product lifted will be read and reported on v. SML assigned staff to the 24 depots to scan waybills^{5.4.41} for petroleum liftings via the Optical Character Recognition ("OCR") system^{5.4.42}. Due to the presidential directive on 2 January 2024 and the subsequent suspension of the contract in scope, SML staff were not present during our site visits to the sampled depots. 	<p>a) During our site visit to six (6) sampled depots, we confirmed the presence of SML flow meters.</p> <p>b) However, whilst SML has deployed flow meters at 24 depots, flow meters in only 16 depots were measuring liftings at the date of our report.</p> <p>c) In addition, the flow meters do not measure RFO. Thus, no evidence that SML digitalised the entire delivery chain.</p>

^{5.4.36} Exhibit 5.4-20: Minutes of Meeting with SML Downstream Team on 18 January 2024

^{5.4.37} Exhibit 5.4-14: Minutes of Meeting held with SML Downstream Team on 16 January 2024

^{5.4.38} Exhibit 5.4-15: Minutes of Meeting with Petroleum Unit of GRA on 19 January 2024

^{5.4.39} Exhibit 5.4-24: Summary Flow Reports

^{5.4.40} Exhibit 5.4-25: Reconciliation Report 2023 (Explanation of why SML does not monitor RFO)

^{5.4.41} Exhibit 5.4-26: Minutes of Meeting held with SML on 15 January 2024

^{5.4.42} Exhibit 5.4-27: Minutes of Meeting held with SML on 13 February 2024

5.4 Contract Performance^(13/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Measurement Audit for Downstream Petroleum Products – Contracts 5&6: Period from 3 October 2019 to 2 January 2024			
S/N	Scope	Observation	KPMG Comments
5	Identify quantities of petroleum products delivered to the Bulk Distribution Companies depots per day/month and report on same to GRA on a daily and monthly basis.	<p>a) Per SML^{5.4.43}:</p> <ul style="list-style-type: none"> i. SML identifies quantities that are delivered to BDC Depots using its ultrasonic flow meter installed on the inlet pipes that receive products into the tank ii. However, due to the presence of water in the pipes, the volume measured with the inlet flow Meter is unreliable and therefore not reported to GRA iii. As a result of the water issue identified, SML after consultations with GRA implemented ATG systems to monitor the volumes of products received into tanks at the depot. <p>c) We sighted:</p> <ul style="list-style-type: none"> i. A memo^{5.4.44} dated 26 July 2021 from the AC, Petroleum Downstream to the AC, Tema Oil Refinery (“TOR”) informing the team of SML’s planned feasibility study on the installation of ATGs for 28 July 2021 ii. 16 tank gauging system survey reports^{5.4.45} for studies conducted before the deployment of the ATGs. iii. An implementation report^{5.4.46} indicating that SML conducted the feasibility study between August and October 2021; and routed power cables for the ATG thermo probes installation in October 2022 <p>d) Between March to August 2023^{5.4.47}, SML deployed ATGs in five (5) out of the twenty-four (24) depots available across the nation. These 5 depots are all BOST depots namely, Accra Plains Depot (“APD”), Buipe, Akosombo, Bolga and Kumasi. SML had planned to install ATGs at the other depot until the suspension of services on 2 January 2024.</p>	<p>a) From our visit to two (2) BOST depots (APD and Kumasi), we observed the presence and use of ATGs in determining product volumes in the tanks during their dipping process.</p> <p>b) Additionally, from our visit to the SML’s control room, we sighted readings from ATGs at the other three (3) BOST depots.</p> <p>c) SML was yet to deploy ATGs at 19 depots at the time of the report.</p>

^{5.4.43} Exhibit 5.4-20: Minutes of Meeting with SML Downstream Team on 18 January 2024

^{5.4.44} Exhibit 5.4-28: Memo from the AC Petroleum Downstream to the AC, Tema Oil Refinery

^{5.4.45} Exhibit 5.4-29: SML Downstream Implementation Plan and Project Milestones

^{5.4.46} Exhibit 5.4-30: SML Project Implementation Report

^{5.4.47} Exhibit 5.4-21: List of Depots with Flowmeters and Installation Dates

5.4 Contract Performance^(14/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Measurement Audit for Downstream Petroleum Products – Contracts 5&6: Period from 3 October 2019 to 2 January 2024			
S/N	Other obligations	Observation	KPMG Comments
1	Provide daily reports to GRA through the computerised fiscal Metering system by providing the main operator user interface.	<p>a) According to SML^{5.4.48}, during the period from April 2020 to November 2023, SML set up monitoring systems in the offices of the Senior Officers at GRA in charge of the respective depots, to enable them to access a real-time feed of depot activities rather than submitting daily reports. These monitors were set up alongside the deployment of the flowmeters and other infrastructure at the depots</p> <p>b) Based on documents^{5.4.49} reviewed, SML has installed monitors in the 17 depots with flowmeter readings. However, only 13 depots had functional monitors that allowed the depot chiefs to monitor the volumes moving at all times and the total volumes lifted at the end of the day.</p>	<p>a) SML has not installed the monitors in 7 depots. Out of the 17 depots with installed monitors only 13 depots have functional monitors.</p> <p>b) During our site visit to 6 depots, we confirmed that:</p> <ul style="list-style-type: none"> i. SML set up monitoring systems in the offices of the Depot Customs Office Heads. ii. Tema Depots Sector Chief utilises the monitoring system to observe the volume movements across all depots monitored by SML.

^{5.4.48} Exhibit 5.4-14: Minutes of Meeting held with SML Downstream Team on 16 January 2024

^{5.4.49} Exhibit 5.4-31: Minutes of Meeting with SML on 20 February 2024

5.4 Contract Performance^(15/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Measurement Audit for Downstream Petroleum Products – Contracts 5&6: Period from 3 October 2019 to 2 January 2024			
S/N	Other obligations	Observation	KPMG Comments
2	Develop a training program and plan and provide GRA employees with periodic training; develop job aids and user trainee manuals for the technology; and conduct a half-yearly refresher training for all users.	<p>a) According to SML ^{5.4.50}, the training on operating their SML Experion application was not required as the software could operate independently and did not require any special skills. Instead, SML trained GRA Customs officials on monitoring procedures as well as the functionalities of SML Experion</p> <p>b) With respect to the training of GRA employees, we sighted:</p> <p>i. Evidence of training for:</p> <ul style="list-style-type: none"> Waybill Scanning and SML Experion on 30 December 2021^{5.4-51} Automatic Stock Management System on 16 February 2023^{5.4.52} <p>ii. Training manuals for:</p> <ul style="list-style-type: none"> Automatic Tank Gauging System^{5.4.53} Scanning^{5.4.54} 	Although SML had conducted the relevant training, there was no evidence that SML conducted half-yearly refresher training for GRA, as required by the contract terms. We requested but did not receive training reports conducted in other years.

^{5.4.50} Exhibit 5.4-31: Minutes of Meeting with SML on 20 February 2024

^{5.4.51} Exhibit 5.4-32: GRA Waybill Scanning and SML Experion Training Attendance List

^{5.4.52} Exhibit 5.4-33: GRA Automatic Stock Management System Training Attendance List

^{5.4.53} Exhibit 5.4-34: Automatic Tank Gauging Training Manual

^{5.4.54} Exhibit 5.4-35: Scanning Training Manual

5.4 Contract Performance^(16/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Measurement Audit for Downstream Petroleum Products – Contract 5&6: Period from 3 October 2019 to 2 January 2024			
S/N	Other obligations	Observation	KPMG Comments
3	Provide support and maintenance services in support of the technology	<p>a) Per a letter dated 28 May 2020, GRA Customs Division^{5.40.55} requested all depot operators to allow SML to carry out routine maintenance on the customs metering equipment</p> <p>b) We sighted 45 maintenance^{5.4.56} reports for 18 depots over the period from 10 April 2021 to 20 November 2023, analysed as follows:</p> <ul style="list-style-type: none"> i. Routine reports – 25 ii. Service reports – 13 iii. Breakdown reports – 4 iv. Unidentified Maintenance report – 3 <p>These reports were signed by a depot representative, an SML Engineer and the SML Technical Manager.</p> <p>c) According to correspondence^{5.4.57} from SML, the flowmeters have not experienced any downtimes.</p>	SML performed the required services.

^{5.4.55} Exhibit 5.4-36: GRA Letter to Depots to allow SML to conduct maintenance activities

^{5.4.56} Exhibit 5.4-37: Maintenance Reports

^{5.4.57} Exhibit 5.4-38: Correspondence from SML 29 February 2024

5.4 Contract Performance^(17/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Measurement Audit for Downstream Petroleum Products – Contract 5&6: Period from 3 October 2019 to 2 January 2024			
S/N	Other obligations	Observation	KPMG Comments
4	SML shall provide periodic progress reports in both soft and hard copies to Client on a monthly, quarterly and annual basis in a format to be agreed between the Parties. Each report shall summarise the activities undertaken by SML for the relevant period pursuant to its obligations under this Agreement	<p>a) SML submitted^{5.4.58} monthly reports on depot flow meter readings to GRA, from July 2020 to November 2023</p> <p>b) However, GRA and SML confirmed^{5.4.59} that quarterly and annual reports were to be made available upon request by GRA and also when SML identified discrepancies within various months. We sighted 7 periodic reports^{5.4.60} submitted to GRA for:</p> <ul style="list-style-type: none"> i. July to September 2020 ii. November to December 2020 iii. January to April 2021 iv. May and June 2021 v. July and August 2021 vi. April to June 2023 vii. January to March 2023 	<p>Although we sighted 42 monthly reports and 7 periodic reports submitted by SML, these reports highlighted flow meter readings, but did not contain:</p> <ul style="list-style-type: none"> a) Progress update on flow meters and ATGs installed. b) Any challenges faced in the execution of the contract.

^{5.4.58} Exhibit 5.4-39: Monthly Reports submitted by SML

^{5.4.59} Exhibit 5.4-31: Minutes of Meeting with SML on 20 February 2024

^{5.4.60} Exhibit 5.4-40: Periodic Reports

5.4 Contract Performance^(18/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Measurement Audit for Downstream Petroleum Products – Contract 5&6: Period from 3 October 2019 to 2 January 2024			
S/N	Other obligations	Observation	KPMG Comments
4	Both parties agreed to review the performance of SML and the Technology no later than 30 days after the first two-year period from the effective date of the contract.	<p>a) In a meeting with SML on 20 February 2024^{5.4.61}, SML mentioned that this definite interim performance review was not conducted as the parties met yearly to review the performance of SML as well as the effectiveness of the technology in place. He continued that since the deployment of the technology, through maintenance, the SML Experion has been operating continuously, without any breakdown or downtime</p> <p>b) In a meeting with GRA on 21 February 2024^{5.4.62}, the officials confirmed that the interim performance review was not performed. However, the GRA mentioned that several meetings have been held with SML to discuss their performance under the contract as well as the discrepancy reports they issue.</p>	Some performance reviews were carried out. However, a formal interim performance review required by the contract terms was not performed.

^{5.4.61} Exhibit 5.4-31: Minutes of Meeting held with SML on 20 February 2024

^{5.4.62} Exhibit 5.4-22: Minutes of Meeting held with GRA on 21 February 2024

5.4 Contract Performance^(19/22)

Table 5.4.1-2 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Measurement Audit for Downstream Petroleum Products – Contract 5&6: Period from 3 October 2019 to 2 January 2024																					
S/N	Other obligations	Observation	KPMG Comments																		
4	The parties agreed that the terms and conditions of the contract be subjected to an independent VfM Assessment at any given time during the pendency of the agreement.	<p>a) In a meeting with SML on 20 February 2024^{5.4.63}, SML mentioned that GRA initiated the process but could not carry it through to conduct the assessment</p> <p>b) In a meeting with GRA on 21 February 2024^{5.4.64}, the GRA corroborated the narrative by SML. According to GRA, it initiated the process by requesting and submitting all the necessary documents to the MoF to execute the VfM Assessment, however, it did not receive further action from the MoF.</p> <p>The table below highlights the correspondence between GRA and MoF on the VfM assessment^{5.4.65}</p> <table><tr><th>#</th><th>Date</th><th>Summary</th></tr><tr><td>1</td><td>10 May 2021</td><td>GRA requested for approval to review and renegotiate the SML contract</td></tr><tr><td>2</td><td>16 Jul 2021</td><td>MoF advised GRA to initiate and see to the execution of the VfM after which MoF may take further decision</td></tr><tr><td>3</td><td>21 Jul 2021</td><td>GRA requested MoF to undertake the VfM assessment and attached the contract</td></tr><tr><td>4</td><td>30 Aug 2021</td><td>MoF requested GRA to complete some forms and furnish it with some details to commence the assessment</td></tr><tr><td>5</td><td>10 Sept 2021</td><td>GRA responded to MoF, submitting documents requested to facilitate the VfM assessment.</td></tr></table>	#	Date	Summary	1	10 May 2021	GRA requested for approval to review and renegotiate the SML contract	2	16 Jul 2021	MoF advised GRA to initiate and see to the execution of the VfM after which MoF may take further decision	3	21 Jul 2021	GRA requested MoF to undertake the VfM assessment and attached the contract	4	30 Aug 2021	MoF requested GRA to complete some forms and furnish it with some details to commence the assessment	5	10 Sept 2021	GRA responded to MoF, submitting documents requested to facilitate the VfM assessment.	An independent VfM Assessment was not performed for the period of the contract.
#	Date	Summary																			
1	10 May 2021	GRA requested for approval to review and renegotiate the SML contract																			
2	16 Jul 2021	MoF advised GRA to initiate and see to the execution of the VfM after which MoF may take further decision																			
3	21 Jul 2021	GRA requested MoF to undertake the VfM assessment and attached the contract																			
4	30 Aug 2021	MoF requested GRA to complete some forms and furnish it with some details to commence the assessment																			
5	10 Sept 2021	GRA responded to MoF, submitting documents requested to facilitate the VfM assessment.																			

^{5.4.63} Exhibit 5.4-31: Minutes of Meeting held with SML 20 February 2024

^{5.4.64} Exhibit 5.4-22: Minutes of Meeting with GRA on 21 February 2024

^{5.4.65} Exhibit 5.4-41: Request for Value for Money Audit Assessment 21 JULY 2021

5.4 Contract Performance^(20/22)

Table 5.4.1-3 Observations on Alignment between Current Activities and the Stipulated Contract Scope

Revenue Assurance - Contract 7: Period from 25 October 2023 to 2 January 2024			
S/N	Scope	Observation	KPMG Comments
1	Upstream Petroleum Audit a) Conduct reviews of workflow and operations within the upstream petroleum sector b) Develop and implement EMMS c) Install RTU d) Provide other relevant monitoring and digitalisation services.	<p>SML's activities under the contract are currently on hold. Below is a snapshot of completed activities per representation by SML and documents reviewed:</p> <p>a) Pre-contract interactions with key stakeholders including GNPC^{5.4.66} and ENI^{5.4.67}.</p> <p>b) Development of an implementation plan^{5.4.68}, including site surveys planned for January 2024</p> <p>c) Review of the upstream petroleum sector. However, SML did not provide a report supporting the review</p> <p>d) Feasibility survey of FPSO John Evans Atta Mills^{5.4.69}</p> <p>e) Investments in machinery and software, as required by Schedule 9 of the Consolidation of Revenue Assurance Services contract valued at USD 44,706,453.00. However, these machinery and software are yet to be delivered</p> <p>f) Investments in human capital.</p>	<p>SML was in the process of executing the contract. However, activities are on hold in line with the suspension notice from the President.</p> <p>SML did not provide documentary evidence to enable KPMG verify the investments in equipment and human capital that it had represented.</p>

^{5.4.66} Exhibit 5.4-42: Letter to GNPC on 25 April 2023

^{5.4.67} Exhibit 5.4-43: Letter to ENI on 20 June 2023

^{5.4.68} Exhibit 5.4-44: Upstream Petroleum Implementation Plan

^{5.4.69} Exhibit 5.4-45: Feasibility Survey of FPSO John Evans Atta Mills

5.4 Contract Performance^(21/22)

Table 5.4.1-3 Observations on Alignment between Current Activities and the Stipulated Contract Scope (cont'd)

Revenue Assurance - Contract 7: Period from 25 October 2023 to 2 January 2024			
S/N	Scope	Observation	KPMG Comments
2	Minerals Revenue Audit a) Conduct reviews of workflow and operations within the mineral resources sector. b) Develop and implement EMMS. c) Perform minerals and metals monitoring. d) Implement a dedicated system for monitoring various processes related to mining and export.	<p>SML was yet to perform a comprehensive review of the mineral resources sector at the time its activities under the contract were suspended. Below is a snapshot of completed activities per representation by SML and documents reviewed:</p> <p>a) Post-contract interactions with key stakeholders including PMMC, Customs Division GRA, Chamber of Mines, G4S, Mon-Tran, DHL, MC, and MIIF during the period from 11 December 2023 to 21 December 2023^{5.4.70}.</p> <p>b) Development of an implementation plan^{5.4.71}, including site survey scheduled for 10 – 31 January 2024.</p> <p>c) Purchase of machinery and software (SML-NOVA), which are yet to be tested and deployed^{5.4.72}.</p> <p>During a site visit to SML, KPMG observed equipment (analysers) used in testing gold, however, we did not have information to confirm that whether SML owned the equipment, when it was acquired or leased, and whether it was intended for use in the minerals audit.</p>	<p>SML was in the process of executing the contract. However, activities are on hold in line with the suspension notice from the President.</p> <p>SML did not provide documentary evidence to verify investments it had made in furtherance of the service at the date of this report.</p>

^{5.4.70} Exhibit 5.4-46: Stakeholders Mineral Meeting Report^{5.4.71} Exhibit 5.4-47: GOLD Nova Implementation Plan^{5.4.72} Exhibit 5.4-48: Minutes of Meeting held with SML on 2 February 2024

5.4 Contract Performance^(22/22)

Table 5.5.4.1-2 Summary of observations – Depot Process Assessment

● Noted

● Absent

● GRA staff were not always present

● Could not be confirmed

S/N	Activity	Objective	Impact	TFC	BOST - APD	BOST - KSI	TOR	QOTL	TTF
1	Automatic tank gauging	• To automatically gauge the level and temperature of petroleum products in tanks in real time.	• Easily identify tank leakage over time • Minimises the chances of oil spillage during product receipt	●	●	●	●	●	●
2	Manual tank gauging (dipping)	• To independently verify the level of products in tanks to the satisfaction of relevant stakeholders involved.	• Reduces discrepancies that may arise from the use of reported figures that have not been independently verified.	●	●	●	●	●	●
3	GRA pipe locks	• To ensure that no BRV loading activities can commence without the consent of GRA.	• Reduces the incidence of product liftings taking place without authorisation from GRA	●	●	●	●	●	●
4	BRV check	• To ensure compliance with NPA BRV safety requirements.	• Forestalls the entry of BRVs into depots without the authorisation of NPA or GRA. • Reduces the incidence of hazards	●	●	●	●	●	●
5	Product marking	• To maintain the quality of petroleum lifted at the depot • To distinguish between products for local consumption and export.	• Easy identification of adulterated petroleum product • Mitigates the incidence of product adulteration, reexport/transit dumping and tampering with product quality.	●	●	●	●	●	●
6	BRV tracking	• To provide end-to-end visibility for the transport of petroleum products loaded from the depots to retail outlets/industrial purposes.	• Provides records of products delivery • Forestalls the incidence of re-export/transit dumping and fraudulent freight claims.	●	●	●	●	●	●
7	Way billing	• Issued by depots to serve as proof of loading.	• Provides evidence of product liftings.	●	●	●	●	●	●

5.5

Value or Benefits

5.5 Value or Benefits^(1/19)

5.5 Objective – To evaluate the value or benefits that SML has so far offered to the GRA through their services.

5.5.1 Overview

We have assessed the value or benefits of SML's services under the following three (3) contracts so far offered to GRA, in view of the relevant contract objective(s) i.e., loss minimisation, increased revenue and/or improved operational efficiency:

1. Transaction Audit
2. External Price Verification
3. Measurement Audit for Downstream Petroleum Products

We did not assess in detail, the value or benefits covering the Upstream Petroleum and Minerals Audit Service, as SML had not commenced field activities as at the date of our report.

5.5.2 Value and Benefits Assessment – Transaction Audit Services

Our observations on the value of the transaction audit service provided by SML and the resultant benefits GRA has realised from the service are shown below:

5.5.2.1 Objective of Transaction Audit Service

For the Transaction Audit service, SML was required to provide assurance over GRA's classification and valuation processes, with a view to minimising product misclassifications and subsequent undervaluation of import duties, thereby resulting in increased revenue for GRA and a more efficient port clearance process. (*Refer to [Section 5.4](#) for details*).

5.5 Value or Benefits (2/19)

5.5.2.2 Overview of Transaction Audit Service Provided by SML

We confirmed that SML provided the service as follows:

1. During the period from 1 July 2018 to 30 September 2019, SML submitted 8 of the 15^{5.5.1} expected monthly reports, evidencing the transaction audit performed on CCVRs generated, in line with Contracts 1 & 2. In the 8 monthly reports submitted, SML identified instances of misclassification of goods and undervaluation of duties for PCA's use. We however requested these documents but SML and GRA are yet to provide the 7 outstanding reports, in order to confirm that SML delivered the required service. (Refer to [Section 5.4](#) for details).
2. During the period from 2 October 2019 to 2 January 2024, SML used assessed CCVR data rather than IDF data for its reassessment, contrary to the requirements of Contract 4. In addition, SML did not complete the reassessment and revert to CTSB before CCVRs were issued. In spite of this, SML conducted its assessment on assessed CCVRs and:
 - a. Submitted 20 out of 46 expected monthly reports^{5.5.2} as at August 2023 for PCA's use. We requested the 26 outstanding reports but SML and GRA are yet to provide them.
 - b. Provided PCA access on SM-OPS to view their daily reassessments. (Refer to [Section 5.4](#) for details).

5.5.2.3 Assessment of Value Offered by SML and Derived by GRA for Transaction Audit Services

- a) Contracts 1 & 2 (1 June 2018 – 2 October 2019): SML provided transaction audit results and reports for eight (8) out of fifteen (15) months which contained exceptions of misclassifications and undervaluation for PCA's utilisation. In respect of the seven (7) months for which reports were not available, we were unable to confirm whether the transaction audit services were performed by SML or not. We made enquiries from GRA on how the exceptions noted in the reports were addressed, however, we did not sight GRA's acceptance or use of reassessment results to claim outstanding balances or refund importers or agents if they have been overcharged and then review the related taxes, if any, to recover revenue for GRA.
- b) Contract 4 (3 October 2019 – 2 January 2024): CTSB ordinarily processes classification and valuation of IDFs within 48 hours to determine taxes to be settled. SML was required to perform its assessment and submit results to CTSB within 48 hours so that corrective actions, if any, could be made. We noted that SML did not complete reassessments of IDF data and revert to CTSB to facilitate the rectification of errors, if any before CCVRs were issued. This would have enabled GRA to proactively minimise the occurrence of errors in misclassification and undervaluation of products which might lead to revenue shortages.

Based on the analysis above, we noted that SML delivered partially on the service requirements. We also noted that given the observations above, GRA may not have obtained all the expected benefits from the service.

^{5.5.1}Exhibit 5.5-1: Transaction audit reports provided by SML from July to December 2018, and August and October 2019

^{5.5.2}Exhibit 5.5-2: Transaction audit reports provided by SML from January 2022 to August 2023

5.5 Value or Benefits ^(3/19)

5.5.3 Value and Benefits Assessment for External Price Verification Services

Our observations on the value of the external price verification service provided by SML and the resultant benefits GRA has realised from the service, are shown below:

5.5.3.1 Objective of External Price Verification Service

Through the External Price Verification service, SML was required to provide CTSB with reliable pricing information via access to its up-to-date pricing database and ad hoc price research, with a view to support GRA's valuation processes.

5.5.3.2 Overview of External Price Verification Service Provided by SML

To satisfy this objective, SML delivered the service as follows:

- a) During the period of contract 3 (3 April 2019 – 2 October 2019), SML did not provide pricing information to CTSB (*Refer to [Table 5.4.1-1](#), [Page 121](#) for details*).
- b) During the period of contract 4 (3 October 2019 – 2 January 2024), SML indicated that two (2) officers were stationed at CTSB (January 2020 and April 2020) to provide pricing information. In March 2020, SML shared a link and created accounts for selected CTSB staff^{5.5.3} to access TVAS. CTSB confirmed access to pricing information on TVAS via the link shared by SML, and the presence of two stationed SML officers for the same period. However, concerns were raised regarding the reliability of SML's pricing information as CTSB perceived the prices as inflated or deflated. In December 2023, SML supplied CTSB with PC units to access TVAS^{5.5.4}. (*Refer to [Table 5.2.1-1](#), [Page 122](#) for details*). For the period before January 2020 and after April 2020, SML and GRA did not provide evidence of offering and utilising external price verification services respectively.

5.5.3.3 Assessment of Value Offered by SML and Derived by GRA for External Price Verification Services

We noted that SML provided some level of price verification services. However, the services were not fully utilised by GRA due to perceived challenges noted by GRA officials at CTSB. In addition, GRA officials at CTSB indicated that they relied on information provided via additional price databases interfaced with ICUMS from 2023 for its valuation processes^{5.5.4}. From the above analysis, GRA might not have obtained the full benefit of this service.

^{5.5.3}Exhibit 5.5-3: List of Accounts for TVAS

^{5.5.4}Exhibit 5.5-4: Minutes of Meeting held with an official of GRA (CTSB) on 6 February 2024

5.5 Value or Benefits^(4/19)

5.5.4 Value and Benefits Assessment for Measurement Audit for Downstream Petroleum Products Service

We have evaluated the value of the Measurement Audit for Downstream Petroleum Products service delivered by SML to GRA, as well as the benefits GRA has realised from the service.

5.5.4.1 Objectives of Measurement Audit for Downstream Petroleum Products Service

As per Contract 5 (Measurement Audit for Downstream Petroleum Product Agreement dated 3 October 2019), the objective of GRA's measurement audit contract with SML was to enhance petroleum revenue mobilisation in the country. This was to be achieved by addressing revenue leakages in the downstream petroleum sector, specifically at Bulk Distribution Depots (refer to [Table 5.2.1-1](#), [Page 87](#) for more details).

5.5.4.2 Overview of Measurement Audit for Downstream Petroleum Products Service Offered by SML

In order to fulfil the contract's objectives, SML performed the following:

- a) Installed metering systems at Depots, including flow meters, ATGs, and Monitoring Screens, as outlined in the contract. By the end of December 2023, SML had installed flow meters in 24 out of 26 depots nationwide. Additionally, SML installed ATGs in 5 out of 26 depots. Despite having flow meters on inlet pipes at depots, SML did not report quantities of products delivered to bulk distribution centre depots, as required by the contract.
- b) Measured outflows via flow meters from 16 out of the 24 depots where flow meters were installed, as of the end of December 2023. However, SML scans waybills at all depots. SML also performs reconciliations of petroleum volumes measured by its flow meters with petroleum volumes in GRA's system (ICUMS) and scanned waybills.

For a comprehensive overview of all activities performed by SML, refer to [section 5.4](#).

5.5 Value or Benefits^(5/19)

5.5.4.3 Assessment of Value Offered by SML and Derived by GRA for Downstream Petroleum Products Service

5.5.4.3.1 Analysis of Qualitative Benefits of SML's Monitoring of Downstream Petroleum Sector

In line with Contract 5, SML conducts 24/7 electronic real-time monitoring of the inflow and outflow of petroleum products at depots where SML has its flowmeters and ATGs installed and operationalised. This serves to mitigate issues such as product theft and leakages.

a) Monitoring of Depot Inflow Volumes

- i. SML measures the in-flow of petroleum products supplied to depots by the use of its flowmeters installed on inlet pipes. However, reliance is not placed on the readings from the flowmeters because it is an observed practice in some depots to flush in-let pipes with water to facilitate the movement of products into tanks. Consequently, SML does not report on inflow volumes captured by the flowmeters
- ii. SML completed the installation and operationalisation of ATGs in 5 depots in August 2023. SML halted the installation of ATGs at the depots due to the suspension of the contract. With the aid of the ATGs, GRA now has the means to determine the quantity of petroleum products in tanks at any given time. However, SML does not provide reports on the inflow volumes recorded by the ATGs
- iii. Information on product receipt is important for assessing the quantity of petroleum product losses. SML therefore does not offer GRA the ability to independently calculate product losses, as it does not receive any data regarding depot product receipts from SML. In the absence of monitoring for product inflows, risks of theft and diversions occurring during storage and prior to the discharge of products out of depot tanks may go unaddressed.

b) Monitoring of Depot Outflow/Lifted Volumes

- i. SML's flowmeter readings serve as an alternate source for GRA to determine quantities of liftings, distinct from the volumes recorded by NPA and GRA in the ERDMS and ICUMS, respectively. SML has installed flowmeters at 24 out of 26 depots as of 21 February 2024. However, as of December 31, 2023, SML had flowmeter readings for 16 out of 24 depots representing 76% of total petroleum products lifted. There were no meter readings available for eight (8) depots as of 31 December 2023, due to the delay in operationalising SML's flowmeters installed at these depots^{5.5.5}. In addition, SML does not monitor liftings for Residual Fuel Oil (RFO)

^{5.5.5}Exhibit 5.5-5: Minutes of Meeting with SML held on 20 February 2024 and Exhibit 5.5-6: SML Summary Flow Reports

5.5 Value or Benefits^(6/19)

The table below summarises the contribution of RFO and depots with no SML meter readings to the total liftings recorded by GRA for the period 2020 to 2023.

Table 5.5.4.3-1: Contribution of RFO and Depots with no SML Meter Readings to Total Liftings Recorded by GRA

Period	RFO		Depots not Monitored by SML Flowmeters	
	Total Liftings (ltrs/kg)	Contribution to Total Liftings	Total Liftings (ltrs/kg)	Contribution to Total Liftings
1 July to 31 December 2020	50,088,500	1.38%	507,684,980	18.24%
1 January to 31 December 2021	170,200,097	2.95%	955,626,739	16.56%
1 January to 31 December 2022	58,969,000	1.07%	950,589,237	17.18%
1 January to 31 December 2023	80,447,000	1.37%	1,346,682,675	22.89%

Source: GRA (ICUMS)

- ii. Comparable to product inflow, the absence of SML's electronic metering and monitoring system at these depots impedes GRA's ability to independently measure and monitor petroleum liftings at these depots for tax revenue purposes.

c) Measurement and Monitoring using Waybill Scanning System

- i. GRA stores approved waybills for product liftings in sacks at its archives. SML introduced scanning and storing of approved waybills and purchase orders at the depots in February 2022. SML stores a digital copy of the waybills and extracts their details using OCR devices for reconciliation purposes. These stored digital copies serve as a form of digital archiving for GRA
- ii. After implementing the waybill scanning system, SML through their automated system began reconciling on a daily basis the lifted volumes per depot between ICUMS and the waybill data. The reconciliation process aids in detecting unrecorded volumes, and assures GRA that lifted volumes have been accurately reported. SML also conducts additional ad hoc reconciliations, including comparing the amounts lifted by OMCs to the BoEs they have generated in ICUMS, as well as reconciling OMC-lifted amounts with their payments. This helps identify OMCs with outstanding liabilities who are still lifting petroleum products at depots
- iii. However, reporting of the results of these reconciliations is not performed frequently, as no scope, format and frequency has been agreed with GRA.

5.5 Value or Benefits^(7/19)

5.5.4.3.2 Quantitative Value Analysis on Downstream Petroleum Volumes and Revenue

To assess the potential increase in volumes resulting from SML's services, KPMG analysed petroleum product volumes (including local sales, exports, re-exports, and transits) prior to and subsequent to SML's operations for the top three petroleum products, namely, Premium Motor Spirit ("PMS"), Automotive Gas Oil ("AGO") and Liquefied Petroleum Gas ("LPG") that significantly contributes about 90% of petroleum tax revenues.

5.5.4.3.2.1 Determination of Pre-SML volumes of petroleum lifting (1 January 2018 – 30 April 2020)

GRA asserted that prior to commencement of SML's operations in May 2020, the annual and monthly average of petroleum liftings was 2,847,445,771 litres and 237,287,148 litres, respectively, based on taxpayers' declarations. However, GRA was unable to provide system generated petroleum liftings for the period 1 January 2018 -30 April 2020, as that period was covered by the GCMS system, which is not currently in use. As part of efforts to ascertain pre-SML volumes, analysed data from the following sources:

- i. Report by an external consultant (EY) for a petroleum stock reconciliation assignment spanning from 2016 to 2018 on behalf of GRA
- ii. ESLA reports containing data reported by GRA to Parliament through MoF as petroleum liftings on which levy was applied (from 2018 to 2020)
- iii. Estimated liftings derived from GRA reported revenue (from 2018 to 2020)
- iv. NPA petroleum liftings data (from 2016 to 2020).

We reviewed the report by the external consultant (EY) for a petroleum stock reconciliation assignment spanning from 2016 to 2018 on behalf of GRA (GRA commissioned EY to perform the assessment in 2021). This reconciliation primarily focused on two products; PMS and AGO and contained petroleum liftings sourced from GRA (GCMS) and NPA. We cross-referenced the figures provided in the consultant's report with the volumes obtained from both the NPA and the ESLA reports for the same period and products (Table 5.5.4.3-2). ESLA data originates from GRA as it is based on data reported by GRA to Parliament through MoF as Petroleum liftings on which levy was applied .

5.5 Value or Benefits^(8/19)

From our analysis, the data provided by NPA to KPMG (NPA -2) and NPA's data stated in the consultant's report (NPA -1) were found to be largely consistent. Furthermore, a comparison between GRA petroleum liftings declared in GCMS as stated in the consultant's report (GRA-1) and NPA liftings stated in the consultant's report (NPA -1) revealed that petroleum liftings declared in GRA's GCMS were higher than NPA reported petroleum liftings by 171.9 million litres and 39.2 million litres for 2016 and 2017 respectively. However, in 2018, petroleum liftings reported by NPA exceeded petroleum liftings reported by GRA by 277.3 million litres.

Table 5.5.4.3-2 Annual Liftings for two products – AGO and PMS (1 Jan 2016 – 31 Dec 2018)

Period	GRA-1	NPA-1	NPA-2	ESLA	Differences	
	<i>Data reported in EY petroleum stock reconciliation report as petroleum liftings declared by OMCs in GCMS</i>	<i>Data reported in EY petroleum stock reconciliation report as petroleum liftings recorded by NPA</i>	<i>Data provided by NPA as product liftings</i>	<i>Data reported by GRA to Parliament through MoF as Petroleum liftings</i>	<i>GRA – NPA (1)</i>	<i>NPA (1) – NPA (2)</i>
	A	B	C	D	E = A - B	F = B - C
1 Jan 2016 – 31 Dec 2016	3,675,369,904	3,503,370,410	3,503,370,410	Not Available	171,999,494	0
1 Jan 2017 – 31 Dec 2017	3,413,579,182	3,374,350,041	3,398,342,941	Not Available	39,229,141	(23,992,900)
1 Jan 2018 – 31 Dec 2018	3,558,767,525	3,836,031,392	3,836,031,392	3,332,792,462	(277,263,867)	0

5.5 Value or Benefits^(9/19)

We also compared GRA's declared liftings dataset (GRA-2) to ESLA, product liftings provided by NPA (NPA-2) and estimated liftings derived from GRA's petroleum tax revenue (GRA-3) for the period 1 January 2018 to 30 April 2020.

Petroleum tax revenue is a product of lifted volumes and the applicable tax rates for the period. In order to determine the estimated underlying liftings from GRA's petroleum tax revenue for the Pre-SML period, we divided the yearly petroleum tax revenue by the corresponding average tax rate for each period (GRA-3). The annual petroleum tax revenues were obtained from GRA's published annual reports. The tax rates were also obtained from GRA. Ordinarily, volumes derived from revenue should be lower than GRA's reported liftings as it excludes liftings for re-export, export, transit, exempted liftings and liftings whose taxes have not been paid. The derived data from GRA's reported petroleum tax revenue differed and was significantly higher than the declared data presented by GRA and SML. The result casts doubts on the declared data as the reported revenue could not be supported with the lower reported declared data. Similarly, ESLA data should be lower than that of GRA's total reported liftings as it excludes liftings for re-export, export and transit. However, the data declared by GRA constitutes 68% of ESLA data and consequently cannot be accurate.

Independent data from NPA is inconsistent with the dataset declared by GRA but substantially aligns with ESLA's data.

Table 5.5.4.3-3 Annual Pre-SML Volumes of Petroleum Lifting for three products – AGO, PMS, LPG (1 Jan 2018 – 30 April 2020)

Period	GRA-2	GRA-3	ESLA	NPA-2
	<i>Data issued by GRA as declared liftings</i>	<i>Estimated liftings derived from GRA's petroleum tax revenue</i>	<i>Data reported by GRA to Parliament through MoF as Petroleum liftings</i>	<i>Data provided by NPA as product liftings</i>
2018	Not Available	3,771,684,581	3,598,369,114	4,258,699,336
2019	2,815,306,631	3,937,890,000	4,205,298,512	4,536,519,987
1 May 2019 – 30 April 2020	2,847,445,771	3,508,446,454	4,175,923,197	4,500,299,562

Table 5.5.4.3-4 Average Monthly Pre-SML Volumes of Petroleum Lifting three products – AGO, PMS, LPG (1 Jan 2018 – 30 April 2020)

Period	GRA-2	GRA-3	ESLA	NPA-2
	<i>Data issued by GRA as declared liftings</i>	<i>Estimated liftings derived from GRA's petroleum tax revenue</i>	<i>Data reported by GRA to Parliament through MoF as Petroleum liftings</i>	<i>Data provided by NPA as product liftings</i>
2018	Not Available	314,307,048	299,864,093	354,891,611
2019	234,608,886	328,157,500	350,441,543	378,043,332
1 May 2019 – 30 April 2020	237,287,148	292,370,538	347,993,600	375,024,964

5.5 Value or Benefits^(10/19)

Therefore, after comparison with ESLA, NPA data, estimated liftings from GRA's petroleum revenue and the reported liftings in the independent consultant's report, GRA's declared data was found to be inconsistent. GRA's declared data comprising three products for the period 1 January 2018 to 30 April 2020 was significantly lower when compared with data stated in the Consultant's report (shown in Table 5.5.4.3-2), comprising two products for the period 2016 to 2018. Also, GRA's declared data stood as an outlier when compared with the other three datasets as shown in Tables 5.5.4.3-3 and 5.5.4.3-4. Consequently, we have assessed the declared data by GRA as inaccurate and incomplete. On the basis of the above analysis, we have placed reliance on the ESLA data as the most reliable source of GRA petroleum product liftings data available for the pre-SML period.

5.5.4.3.2.2 Determination of SML–Era volumes of petroleum lifting (1 May 2020– 31 December 2023)

Table 5.5.4.3-5 SML– era volumes of petroleum lifting (1 May 2020– 31 December 2023)

Period	GRA-2		GRA-3		ESLA		NPA-2	
	Data issued by GRA from ICUMS		Estimated liftings derived from GRA's petroleum tax revenue		Data reported by GRA to Parliament through MoF as Petroleum liftings		Data published by NPA as product liftings	
	Annual	Average	Annual	Average	Annual	Average	Annual	Average
1 May 2020 – 31 Dec 2020	3,409,647,703	426,205,963	3,152,499,283	394,062,410	3,259,850,753	407,481,344	3,411,770,283	426,471,285
1 Jan 2021 – 31 Dec 2021	5,240,190,817	436,682,568	4,763,000,000	396,916,667	5,119,263,147	426,605,262	5,239,805,938	436,650,495
1 Jan 2022 – 31 Dec 2022	5,160,421,610	430,035,134	4,658,793,103	388,232,759	4,234,360,667*	384,941,879*	5,150,910,970	429,242,581
1 Jan 2023 – 31 Dec 2023	5,511,839,567	459,319,964	4,932,994,253**	411,082,854	Not Available	Not Available	5,511,409,247	459,284,104

* ESLA data for Jan – Dec 2022 does not include December 2022 petroleum liftings as these will be published in the ESLA 2023 report.

** GRA's 2023 annual report that contains GRA revenues including petroleum tax revenues is yet to be published by GRA therefore we obtained 2023 petroleum revenues from GRA

From 1 May 2020, GRA's petroleum unit commenced using ICUMS for petroleum monitoring. Consequently, from May 2020 (SML - era), the reported liftings by GRA extracted from ICUMS are substantially consistent with NPA and ESLA datasets (minimal differences were noted).

5.5 Value or Benefits^(11/19)

5.5.4.3.2.3 Cross-sectional Comparability of Product Liftings Datasets between NPA and GRA (Pre-SML and SML- era)

Table 5.5.4.3-6 Comparison of Product Liftings recorded by NPA and GRA (Pre-SML and SML- era)

The table below is a cross-sectional comparability of volumes of petroleum product liftings datasets for ESLA, GRA - 3 and NPA for both pre and SML - era periods.

	Period	GRA-1	GRA-2	GRA-3	ESLA	NPA-2
		Data reported in EY petroleum stock reconciliation report as petroleum liftings declared by OMCs in GCMS	Data issued by GRA from Declared Data & ICUMS	Estimated liftings derived from GRA's petroleum tax revenue	Data reported by GRA to Parliament through MoF as Petroleum liftings	Data published by NPA as product liftings
Pre-SML	1 Jan 2016 – 31 Dec 2016	3,675,369,904***	Not Available	Not Available	Not Available	4,282,975,304
	1 Jan 2017 – 31 Dec 2017	3,413,579,182***	Not Available	Not Available	Not Available	4,172,739,963
	1 Jan 2018 – 31 Dec 2018	3,558,767,525***	Not Available	3,771,684,581	3,598,369,114	4,258,699,335
	1 Jan 2019 – 31 Dec 2019	Not Available	2,815,306,631	3,937,890,000	4,205,298,512	4,536,519,987
	1 May 2019 – 30 April 2020	Not Available	2,847,445,771	3,508,446,454	4,175,923,197	4,500,299,562
SML-era	1 May 2020 – 31 Dec 2020	Not Available	3,409,647,703	3,152,499,283	3,259,850,753	3,411,770,283
	1 Jan 2020 – 31 Dec 2020**	Not Available	4,377,239,992	4,128,006,944	4,650,729,049	4,859,339,219
	1 Jan 2021 – 31 Dec 2021	Not Available	5,240,190,817	4,763,000,000	5,119,263,147	5,239,805,938
	1 Jan 2022 – 31 Dec 2022	Not Available	5,160,421,610	4,658,793,103	4,234,360,667*	5,150,910,970
	1 Jan 2023 – 31 Dec 2023	Not Available	5,511,839,567	4,932,994,253	Not Available	5,511,409,247

* ESLA data for Jan – Dec 2022 does not include December 2022 petroleum liftings as these will be published in the ESLA 2023 report.

** SML started operations in May 2020, therefore the SML – era period for 2020 covers 8 months i.e. between 1 May 2020 – 31 December 2020

*** Petroleum liftings obtained from EY report focused on two products; PMS and AGO and sourced from GRA (GCMS)

We observed consistency in product lifting data between ESLA and NPA during the pre - SML period. Petroleum volume lifting data between ESLA and NPA were notably comparable for the period from 2018 to mid-2020 (Pre - SML). Also, estimated liftings derived from GRA's petroleum tax revenue – GRA (3) showed better alignment to ESLA data. However, the declared data by GRA showed inconsistency with the other three data sources. As discussed under [section 5.5.4.3.2.1](#), the GRA's declared data is assessed as incomplete and inaccurate. On the contrary, there was consistency among GRA, ESLA, and NPA datasets for the SML- era period. Similarly, the liftings dataset for GRA and NPA for the period from mid - 2020 to 2023 (SML - era) showed substantial comparability with minimal differences.

5.5 Value or Benefits^(12/19)

5.5.4.3.2.4 GRA/SML Assessment on Petroleum Volume and Revenue Increases due to SML's Activities

SML indicated that the commencement of its revenue assurance operations in the downstream petroleum sector led to an increase of approximately 200 million litres per month. SML indicated that the increase is from an average monthly volume of about 250 million litres being lifted and reported to GRA to approximately 450 million litres representing total petroleum tax revenue gains of approximately GH¢12.9 billion and a total of 9 billion litres for the period May 2020 to December 2023.^{5.5.6}

Our review of the analysis provided by SML to support the claim noted the following:

Table 5.5.4.3-7 Summary of Incremental Volume and Revenue Savings Analysis Provided by SML using Pre-SML Data Based on Declarations

Pre SML Period			SML- era (Total Volume By GRA May – Dec 2023 (SML-era) Based on ICUMS					
Pre SML Period	Annual (litres/kg)	Average (litres/kg)	SML - era Periods	No. of Months	Total Volumes (litres/kg)	Pre SML Average * No of Months SML-era (litres/kg)	Diff (Taxable Volume Gains) litres/kg	Incremental Tax Revenue in GH¢
	A	B		C	D	E = B * C	F = D - E	G = F * GH¢1.44
1 May 2019 - 30 Apr 2020	2,847,445,771	237,287,148	May - Dec 2020	8	3,409,647,703	1,898,297,181	1,511,350,522	2,176,344,752
			Jan - Dec 2021	12	5,240,190,817	2,847,445,771	2,392,745,046	3,445,552,866
			Jan - Dec 2022	12	5,155,865,210	2,847,445,771	2,308,419,439	3,324,123,992
			Jan - Dec 2023	12	5,649,775,694	2,847,445,771	2,802,329,923	4,035,355,089
			Total		19,455,479,424	10,440,634,494	9,014,844,930	12,981,376,700

- GRA's average monthly pre-SML petroleum lifting of 237.29 million litres (*refer to [column B in Table 5.5.4.3-7](#)*) for the period 1 May 2019 to 30 April 2020 was derived from declarations made in GCMS for three major products i.e. PMS, AGO and LPG.
- To arrive at the taxable volume gains (*refer to [column F in 5.5.4.3-7](#)*) stated by SML, SML deducted the average monthly pre-SML petroleum lifting multiplied by the SML - era number of months (*refer to [column E in 5.5.4.3-7](#)*) from the total monthly petroleum liftings for the three products for the period 1 May 2020 – December 2023 (*refer to [column D in 5.5.4.3-7](#)*).

^{5.5.6} Exhibit 5.5-7: SML Performance and Exhibit 5.5-8: GRA Project Needs Assessment

5.5 Value or Benefits^(13/19)

- iii. SML multiplied the taxable volume gains (refer to [column F in Table 5.5.4.3-7](#)) by an average petroleum tax of GH¢1.44 to arrive at the GH¢12.98 billion value gains made over the SML era period (refer to [column F in Table 5.5.4.3-7](#)).
- iv. Based on our analysis of SML's assessment, 5.5.4.3-8 presents a summary of our observations regarding the data and methodology utilised by GRA and SML in evaluating increases to petroleum volume and revenue attributed to SML's activities.

Table 5.5.4.3-8 KPMG observations on Value Analysis Performed by GRA and SML

S/N	Observations
i	Our review of the above analysis provided by GRA and SML to support the claim of incremental revenue of GH¢12.98 billion revealed that the average pre-SML volume data of 237 million litres used in the analysis is not accurate and complete (Refer to section 5.5.4.3.2.1). The pre-SML data that GRA should have used for its incremental revenue analysis ought to have been at a minimum the ESLA liftings average of 348 million litres, which correlates with the NPA average liftings of 375 million litres.
ii	The pre-SML average in the model has been held constant while the SML-era volumes and related averages are growing at different inherent growth rates. Holding the pre-SML average constant assumes that all changes in reported volumes during SML-era are attributable to the involvement of SML in the petroleum downstream sector. This presumption may not be accurate as other factors contributed to the growth in petroleum liftings for both pre-SML and SML-era periods. In order to account for the impact of other factors in the changes in petroleum product liftings over the period, the pre-SML average used in the model should be adjusted by the annual inherent growth rate that existed for the reported volumes of liftings for all relevant periods.
iii	There were some transpositional errors in certain dates, duplicated records and omitted records identified in the data ^{5.5.7} GRA used in determining the total monthly petroleum liftings for the period 1 January 2021 – December 2023 (refer to column D in in Table 5.5.4.3-7). Hence, the monthly volumes presented in the analysis by SML for the period 1 January 2021 – December 2023 were inaccurate and showed differences with data extracted from ICUMS and used for our analysis.

^{5.5.7} Refer to [Appendix 4](#) for details on transpositional errors duplicated records and omitted records identified in data used by GRA

5.5 Value or Benefits^(14/19)

5.5.4.3.2.6 Analysing Incremental Petroleum Volume Liftings Pre-SML and SML- era: A Comparative Study Using NPA and GRA Data

In this analysis, we utilised data from the NPA and GRA to assess any incremental changes in liftings comparing periods before and after the implementation of the SML's activities. All volumes are in litres/kg.

Table 5.5.4.3-9 Analysing Incremental Petroleum Volume Liftings Pre-SML and SML- era using NPA and GRA data.

Year	Period	Annual GRA/ESLA Volumes ^{5.5.8}	% Change YoY (GRA Volumes)	Annual NPA Volumes	% Change YoY (NPA Volumes)	
2016	1 Jan – 31 Dec 2016	Not Available		4,282,975,304		Pre-SML Growth Rate : 2.00%
2017	1 Jan – 31 Dec 2017	Not Available		4,172,739,964	-2.57%	
2018	1 Jan – 31 Dec 2018	3,598,369,114		4,258,699,336	2.06%	
2019	1 Jan – 31 Dec 2019	4,205,298,512		4,536,519,987	6.52%	
2020	1 Jan – 31 Dec 2020	4,800,525,999	14.15%	4,859,339,219	7.12%	2020 Base Year
2021	1 Jan – 31 Dec 2021	5,240,190,817	9.16%	5,239,805,938	7.83%	SML - era Growth Rate: 4.38%
2022	1 Jan – 31 Dec 2022	5,160,421,610	-1.52%	5,150,910,970	-1.70%	
2023	1 Jan – 31 Dec 2023	5,511,839,567	6.81%	5,511,409,247	7.00%	
Average Growth Rate: 3.75%						

The analysis of GRA data showed inconsistent growth rates over the period. Similarly, the analysis of NPA data to analyse the year-on-year growth rate between 2016 to 2023 showed inconsistent growth rates over the period culminating in an average growth rate of 3.75%.

SML commenced operations in May 2020 and therefore the year 2020 has been used as a base year to determine the pre and post-SML growth rate. In the absence of complete data from GRA, we have used three years of data pre and post-2020 from NPA to determine the growth rates that existed before and after SML commenced operations (the NPA data reflects normal trends in the sector). The analysis showed that the average growth rate for the period 2016 and 2019 (pre-SML) was 2% compared with 4% for the period 2021 – 2023 (SML- era). Several combined factors may account for this growth, including, the impact of COVID-19 on crude oil and retail outlet prices of petroleum products, the introduction of new OMCs, new depots, new retail outlets, increased energy demand^{5.5.9}, deterrent and compliance effect from SML, improved digitalised system from NPA, improved automated processes by GRA (ICUMS), effective data transfer between NPA and GRA systems.

^{5.5.8} Pre SML data used by KPMG based on liftings from ESLA

^{5.5.9} Exhibit 5.5-9: 2022 National Energy Statistics Report

5.5 Value or Benefits^(15/19)

Our analysis of some of these major factors are outlined in Table 5.5.4.3 -10.

Table 5.5.4.3-10 Analysis of factors that contributed to 16-19% increase in petroleum lifting between May 2020 – April 2021

S/N	Factors	Description
1	Impact of Covid 19 on Crude Oil and Retail Outlet Prices of petroleum products	Covid 19's impact on the global and local petroleum industry specifically in March, April and May 2020 resulted in the prices of crude oil dropping significantly from \$63.67 per barrel in January 2020 to record lows of \$26.63 in April 2020 representing a drop of 58.17%. Accordingly, prices of petrol and diesel per litre reduced by 25% from GH¢5.39 and GH¢5.40 in January 2020 to GH¢4.03 and GH¢4.04 in May 2020 respectively ^{5.5.10}
2	Introduction of new OMCs, new depots, new retail outlets	<p>According to the 2020/2021 CBOD report^{5.5.11}, the number of OMCs operating in the country increased from 172 in 2019 to 192 (12%) in 2020 and subsequently 230(20%) in 2021. Furthermore, the report states the number of retail outlets in the country grew significantly from 3,055 to 4,334 in 2020 representing an increase of 42%. we noted that the introduction of new OMCs and retail outlets in the country has a direct impact on the amount of petroleum products being lifted.</p> <p>A comparison of petroleum liftings data provided by NPA for the period May 2019 – April 2020 and May 2020 to April 2020 noted significant increases (approximately 16.7%) of petroleum liftings for some OMCs within the period.</p>
3	Improved automated processes by GRA (ICUMS) and enhanced data transfer between NPA and GRA	The petroleum module of ICUMS which was integrated with NPA's ERDMS became operational in May 2020. The integration between ERDMS and ICUMS is automated. Petroleum volume liftings recorded in ERDMS are pushed by APIs into ICUMS. Therefore, OMCs do not manually input liftings in ICUMS. The period within which GRA started reporting significant increases in liftings and a fall in the variances between NPA and GRA coincides with the deployment of the ICUMS Petroleum module for GRA.

^{5.5.10} Exhibit 5.5-10: Monthly Indicative Crude Oil and Petroleum Product Prices compiled from BoG Website

^{5.5.11} Exhibit 5.5-11: 2020/2021 CBOD Report

5.5 Value or Benefits^(16/19)

5.5.4.3.2.7 Recalculation of Incremental Volume and Tax Revenue using ESLA and NPA pre-SML Averages and Applying Annual Inherent Growth Rates

To address the limitations identified in the computation for incremental revenue by SML, we have used the pre-SML averages from estimated liftings from GRA's petroleum tax revenue, ESLA and NPA datasets and adjusted those averages by the inherent growth rates of volume lifting changes for the relevant periods, in order to determine the incremental tax revenue that is attributable to the involvement of SML.

Table 5.5.4.3-11 Summary of Incremental Volume and Tax Revenue Analysis Using ESLA Pre-SML Averages and Applying Annual Inherent Growth Rates

Total Volume By GRA May 2019 – April 2020 (Pre SML) Based on ESLA		Total Volume By GRA May – Dec 2023 (SML - era) Based on ICUMS			Growth Rate	Adjusted Volumes ^{5.5.12} (Using Pre-SML Average)	Diff (Taxable Volume Gains)	Incremental Tax Revenue in GH¢
Annual	Average	SML - era Periods	No of Months	Total Volumes				
A	B		C	D	F	G = (100%+F)* calculated G(Adjusted Volume) of previous Year	H = D – G	I = H * GH¢1.44
4,175,923,197	347,993,600	1 May – 31 Dec 2020	8	3,409,647,703	7.12%	2,982,165,952	427,481,751	615,573,721
		1 Jan – 31 Dec 2021	12	5,240,190,817	7.83%	4,823,504,320	416,686,497	600,028,556
		1 Jan – 31 Dec 2022	12	5,160,421,610	-1.70%	4,741,504,746	418,916,864	603,240,284
		1 Jan – 31 Dec 2023	12	5,511,839,567	7.00%	5,073,410,079	438,429,488	631,338,463
		Total		19,322,099,697		17,620,585,097	1,701,514,600	2,450,181,024

Overall, based on analysis using ESLA reported liftings, the incremental reported volumes that is attributable to the involvement of SML is 1.70 billion litres for the period. This works out to a monthly average of 38.67 million litres per month. The incremental revenue that is attributable to the involvement of SML is GH¢2.45 billion for the period. The fee of GH¢720 million paid to SML for the same period constitutes 29.41% of the incremental tax revenue.

^{5.5.12}The adjusted volume for May to December 2020 was calculated by annualising the Pre-SML Average (B) by multiplying it by 12. Then, a growth rate of 7% (F) was applied to derive the adjusted volume for 2020. This figure was further prorated to obtain the adjusted volume for May to December 2020, covering an 8-month period. For 2021, 2022 and 2023, 12 months was used to calculate the adjusted volume.

5.5 Value or Benefits^(17/19)

Table 5.5.4.3-12 Summary of Incremental Volume and Tax Revenue Analysis Using Estimated Lifting derived from GRA's petroleum tax revenue and Applying Annual Inherent Growth Rates

Total Volume By GRA May 2019 – April 2020 (Pre SML) Based on Estimated Lifting Data		Total Volume By GRA May – Dec 2023 (SML-era) Based on Estimated Lifting Data			Growth Rate	Adjusted Volumes ^{5.5.13} (Using Pre-SML Average)	Diff (Taxable Volume Gains)	Incremental Tax Revenue in GH¢
Annual	Average	SML - era Periods	No of Months	Total Volumes				
A	B		C	D	F	G = (100%+F)* calculated G(Adjusted Volume) of previous Year	H = D – G	I = H * GH¢1.44
3,508,446,454	292,370,538	1 May – 31 Dec 2020	8	3,152,499,283	7.12%	2,505,498,561	647,000,722	931,681,040
		1 Jan – 31 Dec 2021	12	4,763,000,000	7.83%	4,052,518,647	710,481,353	1,023,093,148
		1 Jan – 31 Dec 2022	12	4,658,793,103	-1.70%	3,983,625,830	675,167,273	972,240,873
		1 Jan – 31 Dec 2023	12	4,932,994,253	7.00%	4,262,479,638	670,514,614	965,541,045
		Total		17,507,286,639		14,804,122,677	2,703,163,962	3,892,556,106

Based on estimated liftings derived from GRA's petroleum tax revenue, incremental volumes and tax revenue from SML's involvement were determined as 2.70 billion litres and GH¢3.89 billion respectively, for the period May 2020 to December 2023.

Table 5.5.4.3-13 Summary of Incremental Volume and Tax Revenue Analysis Using NPA Pre-SML Averages and Applying Annual Inherent Growth Rates

Total Volume By GRA May 2019 – April 2020 (Pre SML) Based on NPA		Total Volume By GRA May 2020 – Dec 2023 (Post SML) Based on ICUMS			Growth Rate	Adjusted Volumes ^{5.5.13} (Using Pre-SML Average)	Diff (Taxable Volume Gains)	Incremental Tax Revenue in GH¢
Annual	Average	SML - era Periods	No of Months	Total Volumes				
A	B		C	D	F	G = (100%+F)* calculated G(Adjusted Volume) of previous Year	H = D – G	I = H * GH¢1.44
4,500,299,562	375,024,964	1 May – 31 Dec 2020	8	3,409,647,703	7.12%	3,213,813,927	195,833,776	282,000,637
		1 Jan – 31 Dec 2021	12	5,240,190,817	7.83%	5,198,183,337	42,007,480	60,490,772
		1 Jan – 31 Dec 2022	12	5,160,421,610	-1.70%	5,109,814,220	50,607,390	72,874,642
		1 Jan – 31 Dec 2023	12	5,511,839,567	7.00%	5,467,501,215	44,338,352	63,847,227
		Total		19,322,099,697		18,989,312,699	332,786,998	479,213,277

^{5.5.13}The adjusted volume for May – Dec 2020 was obtained by multiplying the Pre SML Average (B) by 12 to annualise it and then the growth rate of 7% (F) was applied to obtain the adjusted volume for 2020. This figure was prorated, to obtain the adjusted volume for May-Dec 2020 (8 months)

5.5 Value or Benefits^(18/19)

5.5.4.3.2.8 KPMG Analysis on Downstream Petroleum Trends, Volumes and Revenue

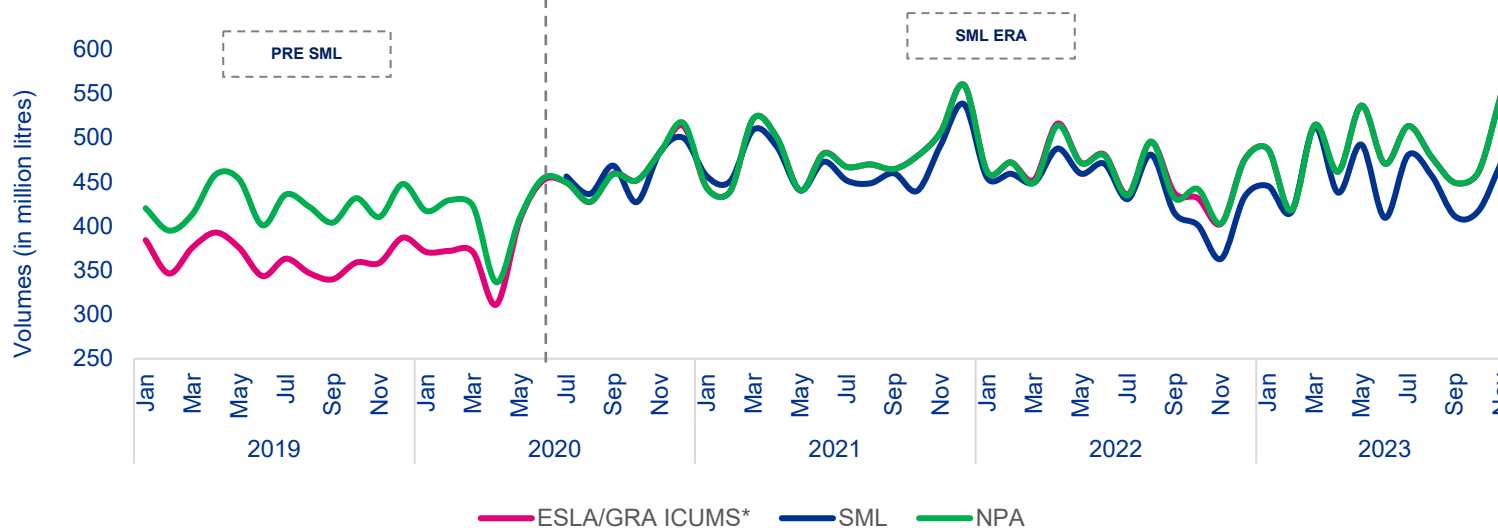
Analysis was conducted on petroleum volume trends and data from GRA, NPA, and SML to identify potential factors contributing to the growth in downstream petroleum volumes and revenue. Furthermore, comparisons were made among data from GRA, NPA, and SML to discern trends, growth patterns, discrepancies, and potential underlying reasons for such variations.

Trends in Downstream Petroleum Volume Liftings

Key Observations

- An average of 400 million litres per month was already being recorded in Ghana in 2019 and the first quarter of 2020 as per our review of NPA's data.
- NPA and GRA recorded a significant decrease in lifting volumes in April 2020, i.e. 336 million and 311 million litres respectively as a result of Covid – 19 lockdown spanning the period 1 to 20 April 2020.
- Volumes recorded after April 2020 were constantly above 400 million litres.
- In the latter half of 2020, when SML commenced operations, data comparison from three sources indicates that NPA reported higher annual volumes than both GRA and SML. Following NPA, GRA reported the next highest annual volumes, with SML recording the lowest annual volumes.

Figure 5.5.4.3-1: Petroleum Product Liftings Monthly Trend



**GRA could not provide digital records of petroleum liftings data from January 2019 to April 2020. To compensate for this, GRA petroleum liftings data published in ES/SLA reports to the Parliament was utilised.*

5.5 Value or Benefits^(19/19)

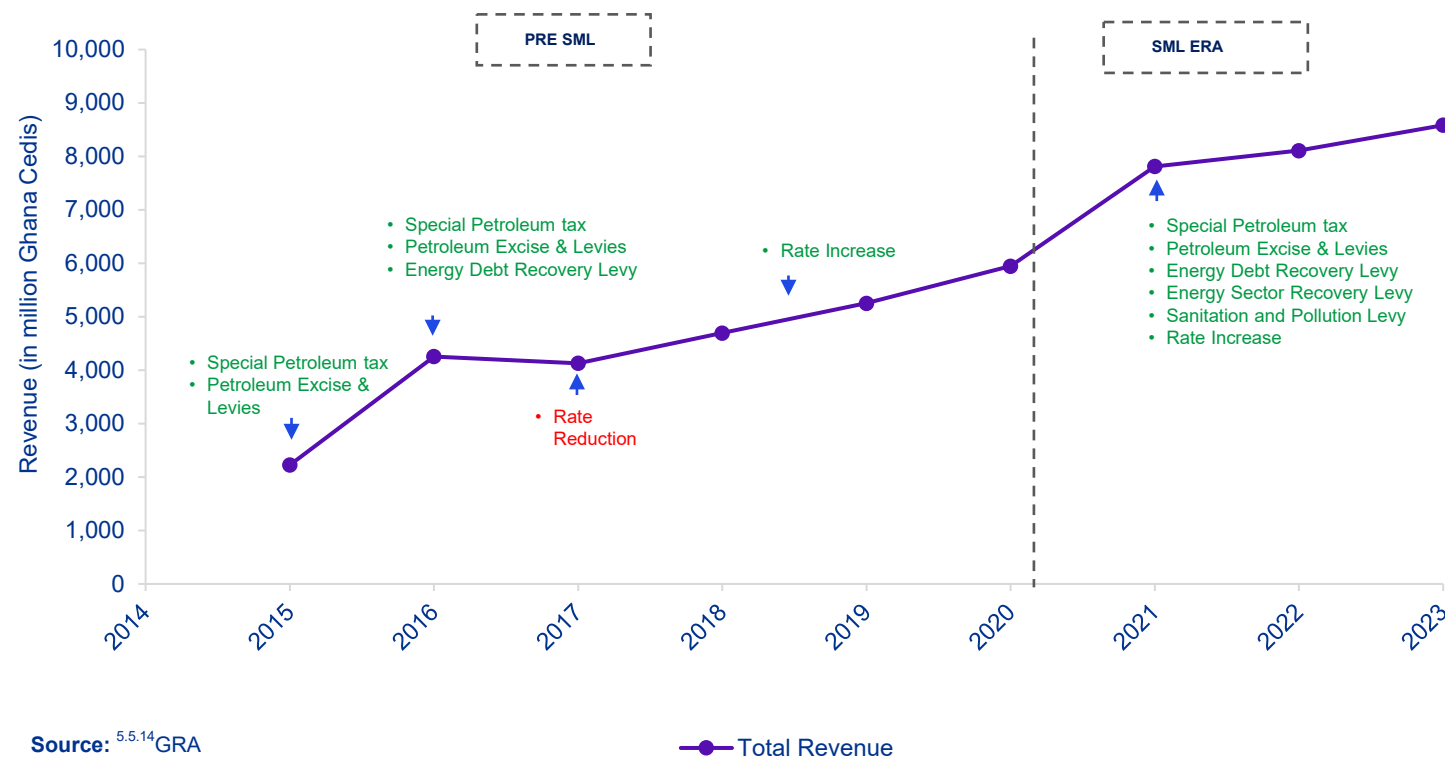
5.5.4.3.2.9 Trends in Downstream Petroleum Revenue

Key Observations

The following were observed from the analysis of the revenue collected by GRA over the period 2015 to 2023:

- An incremental growth in revenue was observed from 2015 to 2023, except for a decline observed solely in 2017.
- One significant contributor to this growth was the increase in the number of taxes over the years i.e. from two taxes in 2015 to five taxes in 2023.
- Another significant contributor to this growth is the increase in tax rates in 2016, 2019, and 2021. However, there was a decrease in tax rates in 2017, coinciding with a revenue reduction from 2016 to 2017.
- For any petroleum product lifted to be taxable, it must be declared in ICUMS. GRA's records of petroleum volumes lifted (taxable and non-taxable) are transmitted from NPA's ERDMS systems into ICUMS. SML's flow meter's readings are used for assurance purposes only.

Figure 5.5.4.3-2: Effect of Increased Number of Taxes On Petroleum Tax Revenue



Source: ^{5.5.14} GRA

^{5.5.14} Exhibit 5.5-12: Taxes Declared and Paid from GRA

5.6

Financial Arrangements

5.6 Financial Arrangements ^(1/25)

Objective – To review the financial arrangements, including pricing structures, payment terms and resolution of any financial compliance issues

We evaluated the financial arrangements between SML and GRA over the seven (7) contracts in scope, with a view to:

- 1. Ascertain the basis for the pricing structure utilised
- 2. Confirm compliance of payments made to SML with contract terms
- 3. Benchmark the pricing structure against industry practices, to determine reasonableness and fairness
- 4. Performed financial projections to determine the cost of service to GRA over the next five years.

The table below details the payments made under each contract and the projected amounts payable for the next five years.

S/N	Services	Actual Payments made	Projected Net Payable Amounts
1	Transaction Audit and External Price Verification	GH¢ 340,362,808.32	GH¢ 1,401,593,573
2	Downstream Petroleum	GH¢ 720,691,969.68	GH¢1,037,429,713
3	Upstream Petroleum	-	US\$123,789,433
4	Minerals and Metals	-	US\$96,197,900

Based on our review of the downstream contract (Contract 5), SML estimated an initial investment of US\$ 30 million. We requested evidence to validate the investment claims, however, we were not provided with this information. Contract 7 outlined investments worth US\$ 54.5 million and US\$ 79 million for upstream and minerals respectively. We could not obtain documentary evidence to validate these investments.

5.6 Financial Arrangements ^(2/25)

5.6.1 Transaction Audit Services and External Price Verification

Basis for the pricing structure utilised

Table 5.6.1-1 – Basis for the pricing structure utilised

Pricing Structure per Contract	Observations																		
<p>Transaction Audit</p> <p>Contract 1 – Per Section 4.1.1, SML was due to receive:</p> <p><i>A transaction fee equivalent to zero-point one percent (0.1%) of the CIF value of CCVRs generated at the Pre-Arrival Processing phase.</i></p> <p>External Price Verification</p> <p>Contract 3 – Per Section 3, SML was due to receive:</p> <p><i>A transaction fee equivalent to zero-point one percent (0.07 %) of the CIF value of CCVRs generated at the pre-arrival processing phase.</i></p>	<p>GRA stated^{5.6.1} that, it allocates 1% of CIF to service providers contracted to provide various services at Ghana's land, sea and air ports. These services include scanning of containers, providing software for customs activities, providing external price verification services, etc. In addition, the allocation changes as and when GRA onboards a new vendor or when additional services are required from existing vendors.</p> <p>Transaction Audit</p> <p>A payment advice^{5.6.2} for June 2018, i.e., the execution date for Contract 1, showed the sharing formula for the 1% as detailed below. We sighted a letter dated 25 January 2018 from MoF to GRA requesting GRA to revise West Blue's allocation from 35% to 28%, however, the revision was effected on January 2019.</p> <p>Table 5.6.1-1A – Share of 1% allocation as at June 2018</p> <table> <tr> <th>Organisation</th><th>Share of 1%</th></tr> <tr> <td>West Blue</td><td>35%</td></tr> <tr> <td>Nick TC Scan</td><td>30%</td></tr> <tr> <td>MoF</td><td>10%</td></tr> <tr> <td>SML – Transaction Audit</td><td>10%</td></tr> <tr> <td>MoF (Special fiscal programs)</td><td>5%</td></tr> <tr> <td>GRA</td><td>5%</td></tr> <tr> <td>Ghana Standard Authority</td><td>3%</td></tr> <tr> <td>Ministry of Trade and Industry</td><td>2%</td></tr> </table>	Organisation	Share of 1%	West Blue	35%	Nick TC Scan	30%	MoF	10%	SML – Transaction Audit	10%	MoF (Special fiscal programs)	5%	GRA	5%	Ghana Standard Authority	3%	Ministry of Trade and Industry	2%
Organisation	Share of 1%																		
West Blue	35%																		
Nick TC Scan	30%																		
MoF	10%																		
SML – Transaction Audit	10%																		
MoF (Special fiscal programs)	5%																		
GRA	5%																		
Ghana Standard Authority	3%																		
Ministry of Trade and Industry	2%																		

^{5.6.1} Per discussions with with GRA held on 31 January 2024

^{5.6.2} Exhibit 5.6.1: CCVR payment advice

5.6 Financial Arrangements ^(3/25)

Table 5.6.1-1 – Basis for the pricing structure utilised

Pricing Structure per Contract	Observations
<p>First Consolidation</p> <p>Contract 4 – Per Section 4, SML was due to receive:</p> <p><i>A fee charge of 0.17% (i.e. of 0.1% fee for transaction audit and 0.07% fee for price verification) equivalent to the CIF value of the CCVRs generated at the Pre-Arrival processing phase at the end of every month.</i></p>	<p>In response to our request to provide the basis for apportioning 10% of the 1% allocation to SML, GRA stated that the apportionment was per a directive from MoF. We requested but GRA is yet to provide the aforementioned directive. However, we sighted a directive^{5.6.3} dated 17 November 2022 wherein the MoF acknowledged SML as a party to the 1% allocation.</p> <p>External Price Verification</p> <p>In a letter dated 18 August 2016 from GRA to the BoG, GRA indicated that Ghana Link was providing External Price Verification services at a fee of 0.1% of CIF value of the CCVR.</p> <p>An official of GRA stated that GRA ended its External Price Verification contract with Ghana Link and transferred the responsibility to SML for 0.07% of CIF value of the CCVR, we do not have evidence to confirm the assertion as CTSB confirmed that as at the date of this report, Ghana Link offered the service via ICUMS. GRA explained that at the time SML was engaged, External Price Verification through ICUMS had not been introduced.</p> <p>In addition, we requested but GRA could not provide the directive from MoF showing an adjusted breakdown of the sharing formula including SML's external price verification service.</p>

^{5.6.3} Exhibit 5.6-1: Directive of sharing as at 17 November 2022

5.6 Financial Arrangements (4/25)

Compliance of payments made to SML with contract terms

Table 5.6.1-2 – Compliance of payments made to SML with contract terms

Contract Clause	Observations
<p>The clauses of Contracts 1 and 3 require GRA to make payments under the contract as follows:</p> <p>Transaction Audit</p> <ol style="list-style-type: none"> 1. SML shall submit an invoice to West Blue Ghana Ltd for endorsement before it is submitted to GRA. 2. West Blue Ghana Ltd shall endorse the invoice and keep a copy of each invoice for its records. 3. GRA upon the receipt of the invoice and the report pay SML the agreed fee as stated in clause 4.1.1. Payment of the fees shall be made within one month of the submission of its invoice and reported to GRA. <p>External Price Verification</p> <p>GRA upon the receipt of the invoice and the report, shall pay SML the agreed fee. Payment of the fees shall be made within one month of the submission of its invoice and reported to GRA.</p>	<ol style="list-style-type: none"> a) GRA stated^{5.6.4} that as payments to vendors providing services to GRA at the port is based on the allocation of 1% of CIF value of CCVRs, they do not require vendors to submit an invoice. Rather, GRA calculates and shares the CIF values amongst the vendors on a monthly basis b) Consequently, SML did not issue invoices as required by Contracts 1 and 3 c) Per review of GRA's payment advice, GRA paid SML GH¢340,362,808.32 for its Transaction Audit and External Price Verification services over the period from 1 June 2018 to 31 December 2023, broken down as follows: <ol style="list-style-type: none"> i. For Contracts 1 & 2 (Transaction Audit services), GRA accurately calculated and paid SML GH¢39,941,950.19 representing its share i.e. 0.1% of 1% of the CIF value of CCVRs generated in the respective months ii. For Contract 3 (External Price Verification), GRA confirmed that they did not make payments to SML from April 2019 to October 2019, as they were unsure about the appropriate account from which to make the payments. There is however no evidence that SML was aware of the missed payments valued at GH¢8,429,843.53, as SML received payments from the transaction audit service iii. For Contract 4 (Consolidation of Services Agreement – Transaction Audit & External Verification Services), for the period from: <ul style="list-style-type: none"> ▪ November 2019 to August 2022, GRA accurately calculated and paid SML GH¢156,761,924.96, representing its share i.e. 0.17% of 1% of the CIF value of CCVRs generated in the respective months.

^{5.6.4} Per discussions with GRA held on 31 January 2024

5.6 Financial Arrangements ^(5/25)

Table 5.6.1-2 – Compliance of payments made to SML with contract terms (cont'd)

Contract Clause	Observations
Same as above	<ul style="list-style-type: none"> September 2022 to December 2023, GRA paid SML a rate of 0.15% on CIF values, instead of the contractual fee of 0.17%. Upon inquiry, GRA explained that the reduction was due to a directive^{5.6.5} from the MoF, which indicated that a new vendor i.e. National Security had been added to the distribution of the 1% allocation. Hence, the share of existing vendors, including SML, had to be decreased to incorporate the new vendor. Following the reduction in rates effective September 2022, GRA has yet to inform SML about the new payment arrangement. <p>Total payments for this period amounted to GH¢143,658,933.16.</p> <p>d) Per a payment^{5.6.6} advice signed by GRA on 5 January 2024, GRA made a payment of GH¢11.15 million to SML, despite the President's directive on 2 January 2024 to suspend all payments to SML. GRA stated that it approved the payment to SML on the morning of 3 January 2024. However, they officially received the directive to suspend all payments to SML at the close of business on 3 January 2024.</p> <p>e) At the time of our audit, we noted that GRA had taken steps to recover this payment from SML.</p> <p>Refer to Table 5.6.1 overleaf for a breakdown of the payments to SML.</p>

^{5.6.5} Exhibit 5.6-1: Directive of sharing as at 17 November 2022

^{5.6.6} Exhibit 5.6-2: CCVR December 2023 payment advice

5.6 Financial Arrangements ^(6/25)

The total payments of **GH¢ 340,362,808.32** (net of taxes) made under the Transaction Audit and External Price Verification from June 2018 to December 2023 are detailed below:

Table 5.6.1-2A: Payments for Transaction Audit and External Price Verifications (GH¢) -

Month	2018	2019	2020	2021	2022	2023
January	-	2,755,596.76	3,487,804.20	3,500,754.38	4,833,317.38	6,664,783.36
February	-	2,346,679.02	1,416,627.69	3,585,256.43	5,036,053.31	6,672,272.68
March	-	2,459,222.05	1,826,734.63	4,860,818.39	7,237,040.38	7,590,069.02
April	-	2,192,337.50	2,474,141.15	4,434,596.00	6,740,840.58	7,616,601.00
May	-	2,473,049.73	3,238,948.69	4,829,218.94	7,617,946.54	11,497,424.79
June	2,497,962.90	1,883,754.90	2,964,574.85	5,368,152.33	7,676,754.78	10,307,888.81
July	2,527,775.97	2,097,301.31	4,527,789.24	4,727,499.49	7,261,211.55	10,207,768.62
August	2,544,287.42	1,618,297.27	1,412,382.17	5,060,752.49	8,668,464.83	10,309,208.30
September	2,535,917.51	1,777,892.89	3,867,650.40	4,709,461.29	6,780,281.14	8,818,614.55
October	3,247,299.18	1,933,673.66	3,772,527.51	4,976,195.04	6,875,961.46	10,457,673.61
November	2,626,272.05	3,196,604.98	4,289,639.86	5,442,639.12	9,280,402.72	11,289,589.54
December	2,424,630.08	3,750,418.77	4,409,706.49	5,559,401.08	8,135,594.80	11,154,798.76
Subtotal	18,404,145.11	28,484,828.84	37,688,526.88	57,054,744.98	86,143,869.47	112,586,693.04
Total						340,362,808.32

5.6 Financial Arrangements (7/25)

Benchmark of the pricing structure against industry practices, to determine reasonableness

External Price Verification

External Price Verification is the process of validating the prices for goods, services, or assets, is typically conducted by leveraging access to globally recognised standard databases. In assessing the reasonableness and fairness of the pricing structure reflected in the contracts with SML, we obtained independent data on leading practice firms offering similar services in other jurisdictions and benchmarked their pricing arrangements against SML's structure under the External Price Verification contract. Our observations are summarised below and overleaf:

1. Comparators typically operate a subscription model, with fees structured on an annual or monthly basis, rather than as a fixed percentage of overall transaction value per month i.e., as 0.07% of the monthly CIF value; and
2. The fee paid (net of taxes) under External Price Verification for the period 1 November 2019 – 31 December 2023 was **GH¢131,589,863.41 (US\$ 15,952,367.59)** with an average of GH¢ 2,631,797.27 (US\$ 319,047.35) per month. SML's variable pricing structure, coupled with the inclusion of data collection significantly influences the price for this service. GRA should consider alternative price options, i.e., subscribing directly to the databases listed in the table provided, amongst others, which may offer more favourable terms. Alternatively, GRA could also consider renegotiating the payment terms with SML to ensure that the pricing structure (fixed fee) is equitable and reflects the value received from the use of TVAS.

It is however imperative that GRA undertakes a thorough cost-benefit analysis to ascertain the most economically viable and efficient approach to external price verification. This will not only ensure fiscal responsibility but also uphold the integrity of the pricing validation process.

5.6 Financial Arrangements (8/25)

The table below provides a summary of the benchmarking assessment performed

Table 5.6.1-3: External Price Verification Benchmarking

• Exchange rates were obtained from the Bank of Ghana website

S/N	SML			Industry Benchmark			
	Software	Pricing	Coverage	Comparator	Pricing	Monthly fees	Coverage
1	TVAS (Transaction Value Assessment System)	Monthly payments of 0.07% of CIF values of CCVR	Database of 22,191 international companies covering 144 countries including the USA, UK, UAE and most African and South American countries.	Comparator 1	Annual/Monthly Subscriptions	<ul style="list-style-type: none"> US\$125/month for SME US\$800/month for Corporate 	209 countries 25 million verified import and export companies 3 billion shipment records
2				Comparator 2	Monthly Subscriptions	<ul style="list-style-type: none"> US\$99/month for standard US\$399/month for premium 	18 countries, including the US, Russia, India, and most of Latin America.
3				Comparator 3	Monthly Subscriptions	<ul style="list-style-type: none"> US\$29.99 Per Month 	Database of 8,668,815 US & International companies. Provides import/export data of regions including Asia, Europe, and North America.
4				Comparator 4	Annual / Monthly Subscriptions	<ul style="list-style-type: none"> US\$116.7/month for starter US\$333.3/month for essential US\$750/month for expert 	Import and Export trade data for more than 190 countries, including detailed custom data for 55 countries, and provides more than 10 million contacts of companies and employees.

Data Limitation: The comparators provided above reflect standard market offerings for external price verification databases. While these databases offer valuable pricing insights, it is important to note that subscription costs typically range about US\$ 800 per month (annual \$9,600). However, it is worth noting that the databases used as comparators may not directly compare with those provided by SML in terms of content, access, updates and value adding support services. The fee paid to SML is significantly influenced by the variable pricing structure. It is appropriate to review the fee structure from a variable to a fixed pricing model if continuation of the service is considered necessary going forward.

5.6 Financial Arrangements ^(9/25)

KPMG's Financial Projections – Transaction Audit Service and External Price Verification

In order to estimate additional payments to be made to SML under Contract 7 for External Price Verification (“EPV”) and Transaction Audit Services (“TAS”), we performed financial projections using historical CIF values and payments made to SML for their performance under the previous contracts.

The projections are guided by the following assumptions:

1. Monthly payments to SML for EPV and TAS are made out of one percent (1%) of Cost, Insurance and Freight (“CIF”) revenue for that month, which is set aside for the purposes of paying a number of service providers. For our projections, we summed up the monthly amounts in each year from 2018 to 2023 to obtain the annual amounts and determined the year-on-year (“YoY”) growth. We made an assumption that the average YoY growth will continue for the projection period. This is used to project the expected values of CIF over the contractual term
2. It is assumed that the trend of net payments made to SML as a percentage of gross compensation since 2018 will continue, hence, this is used to project net payments over the contractual term to estimate the final amount payable to SML

The projections have the following limitations:

1. No consideration was made for the impact of force majeure and possible economic and political conditions, including new enactments and regulations, on CIF revenue to GRA
2. Like any projection, actual results/outcomes may differ from the amounts projected.

5.6 Financial Arrangements ^(10/25)

From our estimates, the total amount that GRA will pay for the next five years is **GH¢1,401,553,188** for the SML’s performance of the External Price Verification Services and Transaction Audit Services under Contract 7. The table below presents the results of these projections. Please be mindful of the rounding differences.

Table 5.6.1- 4: Projections for Transaction Audit and External Price Verification

	ACTUALS						PROJECTONS					
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	TOTAL
1% of CIF Value to be distributed (GH¢)	241,002,524	335,550,413	291,666,760	445,607,385	707,637,532	1,022,295,559	1,275,161,759	1,741,090,764	2,377,264,710	3,245,889,081	4,431,898,510	13,071,304,824
Percentage paid/payable to SML as Gross (%)	10.00%	11.12%	17.00% ^a	17.00%	16.22% ^b	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	n/a
Gross Amount (GH¢)	24,100,252	37,300,921	49,583,349	75,753,255	114,778,284	153,344,334	191,274,264	261,163,615	356,589,707	486,883,362	664,784,777	1,960,695,725
Net as a percentage of gross (%)	76.00%	76.36%	76.01%	75.32%	75.05%	73.42%	73.19%	72.53%	71.87%	71.22%	70.57%	n/a
Net paid/payable to SML (GH¢)	18,404,145	28,484,829	37,688,527	57,054,745	86,143,869	112,586,693	139,993,634	189,421,970	256,281,022	346,758,330	469,138,617	1,401,593,573
Total Net Payment from 2018 to 2023						340,362,808						
Monthly Average							11,666,136	15,785,164	21,356,752	28,896,528	39,094,885	

a. This is the weighted average of payments at 10% from January to October and 17% for November and December.

b. This is the weighted average of payments at 17% from January to August and 15% from September to December.

Sources:
1% of CIF Value - GRA
Net as a percentage of gross - GRA payment advice
Payments to SML - GRA payment advice

5.6 Financial Arrangements ^(11/25)

5.6.2 Measurement Audit for Downstream Petroleum Products

Basis for the pricing structure utilised

Table 5.6.2-1 – Basis for the Pricing Structure Utilised

Contract Clause	Observations
<p>Contract 5 - Per section 15.1.1, SML was due to receive:</p> <p><i>A service fee of 1% of CIF of the total Volume Value of petroleum products for national domestic supply per month.</i></p> <p>Contract 6 – Per the amendment of the pricing structure, SML was due to receive:</p> <p><i>A service fee of five (5) Ghana Pesewas per litre of the total volume of petroleum products lifted per month from the various depots in the country.</i></p>	<p>By a proposal^{5.6.7} dated 19 August 2019 submitted by SML to GRA, SML:</p> <ul style="list-style-type: none"> a) Outlined their plan to digitise the metering system for petroleum products in Ghana by implementing an EMMS that could save GH¢ 59.33 million per month in taxes, totalling GH¢ 711.91 million per year b) Estimated their initial investment as \$30 million, which would cover the procurement, installation, maintenance, manpower resources and training, spare parts and associated software c) Proposed a service fee of 2% of the total volume value of taxable petroleum products supplied domestically each month. The proposal did not provide further data supporting the proposed 2% charge. <p>Although SML and GRA did not provide a document evidencing further negotiations of this service fee, Contract 5 reflected a service fee of 1% of CIF of the total value of petroleum products for national domestic supply per month.</p> <p>Furthermore, on 29 July 2020, SML and GRA signed an addendum to update the payment terms to 5 pesewas per litre on the total volume of petroleum products lifted in the country. Per Contract 6, the update was requested when the parties realised that petroleum revenue is determined from calculations based on specific duty/tax and not on ad valorem rate based on CIF. This was further explained by the CEO of SML who stated^{5.6.8} that:</p> <ul style="list-style-type: none"> a) SML realised and informed GRA that due to the investments SML would be making in the downstream petroleum sector, the original payment terms based on CIF value were not sustainable and would invariably lead to losses for SML b) Consequently, SML suggested revising the payment terms to GH¢0.07 per litre on monthly petroleum liftings. After negotiations, GRA agreed to reduce this rate to GH¢0.05 per litre on monthly petroleum liftings. <p>We thereafter sighted Minutes of a meeting^{5.6.9} held by GRA and SML on 24 July 2020 wherein SML proposed to charge 5 pesewas per litre on monthly petroleum liftings as fees, which was accepted by GRA.</p>

^{5.6.7} Exhibit 5.6-3: SML proposal dated 19 August 2019

^{5.6.8} Exhibit 5.6-4: Minutes of meeting held with officials of SML on 2 February 2024

^{5.6.9} Exhibit 5.6-5: Meeting minutes dated 24 July 2020

5.6 Financial Arrangements ^(12/25)

Compliance of payments made to SML with contract terms

Table 5.6.2-2 – Compliance of Payments made to SML with Contract Terms

Contract Clause	Observations
<p>Contracts 5 and 6 require GRA to make payments as follows:</p> <p><i>SML shall on expiration of each month send an invoice to GRA for payment due it under the contract and payment shall be made by GRA to SML no later than 30 days upon receipt of an invoice.'</i></p> <p><i>The parties agree that payments of invoices submitted shall be subject to the satisfactory performance or delivery by SML of the services.'</i></p>	<p>Per review of GRA's payment advice documents, GRA paid^{5.6.10} SML GH¢720,691,969.68 for the Measurement Audit for Downstream Petroleum Products service over the period from 1 June 2020 to 30 November 2023. Our observations relating to the payments are as follows:</p> <p>a) No payment by GRA from the date of contract execution – 3 October 2019 to 31 May 2020</p> <p>During the specified period, SML had not commenced operational activities as they were engaged in the installation of devices and system testing procedures. Consequently, no payments were disbursed to them by the GRA. The initiation of payments to SML began in June 2020.</p> <p>b) Acceptance of wrong invoices by GRA from SML for three (3) years</p> <p>Although GRA acknowledged the errors in the invoices and notified SML about them via phone call on two occasions, GRA continued to accept the wrong invoices from 1 June 2020 to 30 November 2023. SML admitted that the invoices were incorrectly computed due to their inability to perform tax calculations but expressed confidence that GRA would rectify the errors and pay the correct amounts. Despite these errors by SML, our re-computation confirmed that GRA accurately paid GH¢720.7 million to SML for invoices issued, totalling GH¢674.17 million.</p> <p>c) Payment to SML without flow meter report attached to the invoice</p> <p>Contrary to the practice observed in other months, GRA paid amounts invoiced by SML in June^{5.6.13} 2020, even though SML did not attach its flow meter reports as evidence of products lifted within the month. SML stated that they could not attach the flow meter report as SML:</p> <ol style="list-style-type: none"> Was testing their flow Meters and thus, could not print reports from the system which had been turned off Conducted manual recordings from the meters, hence it was not possible to provide flow meter reports to confirm work done. <p>We subsequently requested but SML did not provide evidence of their manual recordings to confirm the work done and the basis for the invoice submitted.</p>

^{5.6.10} Exhibit 5.6-2: Downstream Invoice payment analysis

^{5.6.11} Exhibit 5.6-3: Tax analysis

^{5.6.12} Exhibit 5.6-2: Downstream Invoice payment analysis

^{5.6.13} Exhibit 5.6-6: June 2020 invoice

5.6 Financial Arrangements ^(13/25)

Compliance of payments made to SML with contract terms

Table 5.6.2-2 – Compliance of Payments made to SML with Contract Terms (cont'd)

Contract Clause	Observations
Same as the previous page	<p>d) Inconsistent Payment Practice by GRA</p> <ul style="list-style-type: none"> i. Contrary to the practice observed in other months wherein GRA in all payments to SML withheld or deducted all taxes payable to GRA before the final service fee was paid to SML, for payments^{5.6.14} made for invoices raised for the months of September 2020 to April 2021, GRA did not withhold or deduct taxes but rather paid the gross amounts to SML. This resulted in excess payment of GH¢13,382,941 to SML, representing GoG taxes that should have been remitted to the GRA by SML ii. As at the time of the audit GRA had taken steps to obtain a refund from SML for the excess payment of payment of GH¢13,382,941. Likewise, SML confirmed^{5.6.15} that they observed the overpayment, however, they are undergoing a VAT audit and will initiate a refund of the excess amounts to GRA as soon as completed iii. In line with Section 71 (1) of the RA Act, we have estimated the interest due as GH¢18,495,068, thus resulting in a total liability of GH¢31.878,008 due to GRA as at 31 January 2024. As at the date of this report, GRA has yet to receive the refund from SML. <p>e) No filing of VAT by SML</p> <p>Although Section 52 (1) of the Value Added Tax Act, 2013 (Act 870) requires companies to file their VAT to the Revenue Authority, there is no evidence that SML filed its VAT for the period from 1 June 2020 to 30 November 2023, even though GRA deducted the VAT payable on each payment for the same period. SML stated^{5.6.16} that it previously filed its VAT returns up until its accountant passed. As at the time of this report, SML was yet to provide evidence of VAT return fillings for the total payments received, which amounts to GH¢ 720,691,969.68</p>

^{5.6.14} Exhibit 5.6-7: Lump sum payment September 2020 – April 2021

^{5.6.15} Exhibit 5.6-8: Meeting with SML dated 20 February 2024






^{5.6.16} Exhibit 5.6-8: Meeting with SML dated 20 February 2024

5.6 Financial Arrangements ^(14/25)

Benchmark of the pricing structure against industry practices, to determine reasonableness- Downstream Petroleum

We reviewed the contract pricing under Contracts 5 & 6 and obtained independent data^{5.6.20} on leading practice firms offering Revenue Assurance services in the Downstream sector (with minor differences) in other jurisdictions and benchmarked their pricing arrangements against SML's structure under Contracts 5 and 6. For the benchmark exercise, we evaluated comparators based on the pricing model, the basis of pricing, payment terms and contract period, observations from which are reflected in the table below and summarised overleaf:

Table 5.6.2-3 – Downstream Petroleum, Benchmarking

Service provider & Country of Origin	Service User	Justification for the service	Prices / Fees	Pricing Model	Basis of pricing	Payment Terms	Contract Period
 SML	Revenue Authority	Minimise revenue leakage in downstream operations	GH¢0.05 of total petroleum lifting	Variable fee	Flat fee on a variable factor	Monthly payment of GH¢ 0.05 times total petroleum liftings	5 years
 Comparator 1	Oil Refinery	Minimise revenue leakages and to report accurate financial data.	US\$ 0.60 million	Fixed fee	Total revenue	Additional half-yearly payments of \$100,000 based on achieved milestones	3 years
 Comparator 2	Petroleum Contractors	Minimise revenue leakage in downstream operations	CA\$ 1.25 million (US\$ 0.93 million)	Performance based fee	Percentage of revenue recovered	Annual payments of CA\$ 250,000, with a 10% success fee based on revenue recovered exceeding \$2.5 million annually	5 years
 Comparator 3	Oil Marketing Company	To derive comfort on recorded revenue.	NGN 15-30 million (US\$ 0.0099-0.020 million)	Variable fee	Incremental volume	Annual upfront payment	1-3 years
 Comparator 4	Revenue Authority	To monitor revenue generation and compare it to the remittances made to ensure that they are no shortfall or leakages	NGN 3,000-4,000 million (US\$ 2.07-2.76 million)	Performance based Fee	Total volume	Percentage of recovered revenue at end of contract period	1-3 years

5.6 Financial Arrangements (15/25)

The benchmark has the following limitations:

- a) The amount of investments made by the comparators may not be the same as that of SML's investment
- b) The scope of services provided by SML may differ from the scope of services provided by the other comparators
- c) Variations in the size of the service recipient play a role in the scope of service as such it is an important consideration for assessing the benchmarking results.

Our analysis of the benchmark exercise is detailed below

1. Price Comparison:

- a) SML's pricing is based on a flat fee applied to the total petroleum liftings, which suggests a direct correlation with the volume of petroleum handled
- b) Comparator 1 has a substantial fixed fee, which could indicate a preference for predictable costs regardless of revenue fluctuations
- c) Comparator 2 has a performance-based fee, which aligns its payment with the success of revenue recovery efforts
- d) Comparator 3 has a variable fee based on incremental volume, which could incentivise increased production or sales
- e) Comparator 4 has a performance-based and likely reflects the larger scale of operations or higher stakes involved in their revenue recovery efforts.

2. Pricing Model:

- a) SML has a variable model where they charge a flat fee on variable components.
- b) Comparator 1 and 3. have fixed and variable fees, respectively, which suggests different approaches to risk-sharing between the service provider and the client
- c) Comparator 2 and 4 both use performance-based fees, which strongly align the service provider's compensation with their performance in increasing revenue or reducing leakages.

5.6 Financial Arrangements ^(16/25)

Summary and Recommendation

3. Contract Period:

- a) All comparators, including SML, had a contract period between 3 to 5 years
- b) Comparator 2 has the same contract period as SML i.e., 5 years
- c) Comparator 1 has a contract period of 3 years
- d) Comparators 3 and 4 have a contract period between 1 – 3 years.

As SML's fees are variable but based on a flat rate applied to total petroleum liftings, there may be less financial motivation for SML to aggressively pursue revenue maximisation strategies leading to outcomes for GRA. Consequently, GRA should consider revising the pricing structure of SML to a percentage of incremental volumes, to accurately reflect SML's efforts in preventing revenue leakages or adopt a fixed fee arrangement.

5.6 Financial Arrangements ^(17/25)

KPMG's Financial Projections – Downstream Petroleum Audit

Having been in operation since October 2019, the downstream measurement service in Contract 6 was extended for five (5) additional years by Contract 7 with no amendments to the compensation terms for these services. We performed independent projections using historical payments made under this contract to estimate payments to be made to SML for the additional contract period of five years, in relation to downstream measurement services. This is intended to give a fair approximation of additional payments due to SML if the contract continues as is, in absolute terms and as a percentage of revenue from downstream petroleum liftings.

The projections are guided by the following assumptions:

1. Growth trend of petroleum liftings since 2022 is expected to continue for the next five years. The trend is viewed from 2022 onwards since:
 - a) volumes recorded in 2020 are only for June to December, hence, cannot be used to reliably measure growth against 2021 annual volumes; and
 - b) including movements between 2021 and 2022 will lead to a trend of declining volumes for the projection period, which is not consistent with expectations of petroleum product liftings in the coming years.
2. The trend of net payment as a percentage of gross compensation since 2020 is expected to continue for the projection period given the current trajectory of taxes and tax rates in the country
3. Invoicing and payments began in June 2020, and SML has not invoiced or received payments from GRA in relation to the month of December 2023. The gross amount due SML for work done in December 2023 under the contract is included in the table, however, the net amount payable to them has not been included since this payment is yet to be made
4. Projections of revenue to GRA from the downstream petroleum liftings follow historical growth trends from 2020 to 2023.

However, the projections have the following limitations:

1. No consideration was made for the impact of force majeure and possible economic conditions on volumes sold by the BDCs
2. Like any projection, actual results/outcomes may differ from the amounts projected.

5.6 Financial Arrangements (18/25)

From our estimates, the total amount that GRA will pay for the next five years to 2028 is **GH¢1,037,429,713** for Downstream Petroleum Measurement Services. The table below presents the results of these projections.

Table 5.6.3-1: Downstream Petroleum Projection Summary Table

	Paid to SML	GRA Revenue	Percentage
	A	B	C = A/B*100%
Total Actual payments to November 2023	720,691,970	30,445,340,000	2.37%
Total Projected for the next 5 years	1,037,429,713	49,552,553,246	2.09%
Total	1,758,121,687	79,997,893,246	2.20%

Table 5.6.3-2: Downstream Petroleum Projection Expanded Table

	ACTUALS				PROJECTIONS					TOTAL
	2020	2021	2022	2023	2024	2025	2026	2027	2028	
Volumes (litres)	3,164,384,129	5,591,476,586	5,249,871,740	5,391,066,892	5,536,059,484	5,684,951,647	5,837,848,261	5,994,857,025	6,156,088,535	29,209,804,952
Gross@ GH¢0.05/litre (GH¢)	158,219,206	279,573,829	262,493,587	269,553,345	276,802,974	284,247,582	291,892,413	299,742,851	307,804,427	1,460,490,247
Net paid/payable (GH¢)	19,878,256	220,319,483	200,572,519	179,921,716	201,066,133	204,250,645	207,461,013	210,696,324	213,955,598	1,037,429,713
GRA Revenue (GH¢)	5,944,330,000	7,811,310,000	8,106,290,000	8,583,410,000	8,998,079,644	9,432,782,226	9,888,485,548	10,366,204,168	10,867,001,660	49,552,553,246
Net amount as percentage of GRA revenue	2.02%	2.82%	2.47%	2.10%	2.23%	2.17%	2.10%	2.03%	1.97%	2.09%

Sources:
Actual/historical volumes – SML invoices
Net amount paid (historical) – GRA payment advice
GRA Actual/historical revenue – GRA
Rate of GH¢ 0.05/litre – Contracts 6 & 7.

5.6 Financial Arrangements ^(19/25)

5.6.3 Contract for Consolidation of Revenue Assurance Services

Basis for the pricing structure utilised

Table 5.6.3-1 – Basis for the pricing structure utilised

Contract Clause	Observations																
<p>Contract 7 – Per section 15.1.1, SML was due to receive a service fee of:</p> <ul style="list-style-type: none"> \$0.75 per barrel of petroleum products per month. 0.75% of the total volume value of mineral resources exported per month as monitored by SML-NOVA. 	<p>Via a presentation^{5.6.21} to GRA titled “<i>Real Time Monitoring for Upstream Petroleum</i>”, SML expressed their intention to replicate the purported success gained in the downstream sector i.e., increased liftings, in both the upstream and mining sector; and performed a financial analysis to support the service.</p> <p>Upstream Financial Analysis</p> <p>SML valued its proposed investment at GH¢ 654million, with monthly loan repayments and operational expenses totalling GH¢ 26.5 million. Per its financial projections shown in the table below, SML assumed that the average barrels per month would equal 3,660,644 and while the project’s initial operations would generate negative returns, with operational efficiency SML would break even in five years.</p> <p>Table 5.6.3-1A: SML’s Upstream projections</p> <table> <tr> <th>Description</th><th>Amount</th></tr> <tr> <td>Assumed barrels per month (a)</td><td>3,660,644.00</td></tr> <tr> <td>Fee of \$0.75 (a*\$0.75)</td><td>\$2,745,483.00</td></tr> <tr> <td>Monthly income in GH¢ @ a rate of GH¢ 11 (b)</td><td>GH¢30,200,313.00</td></tr> <tr> <td>Accrued Monthly taxes to GRA (c)</td><td>GH¢9,037,375.71</td></tr> <tr> <td>Net Income per month (d=b-c)</td><td>GH¢21,162,937.29</td></tr> <tr> <td>Total Investment per month (e)</td><td>GH¢26,498,866.48</td></tr> <tr> <td>Monthly Income to SML (f=e-d)</td><td>(GH¢5,335,929.20)</td></tr> </table> <p>We further noted that the fee of \$0.75 per barrel of petroleum products per month SML quoted in their presentation, was the fee agreed in Contract 7. We further noted that the fee of \$0.75 per barrel of petroleum products per month SML quoted in their presentation, was the fee agreed in Contract 7.</p>	Description	Amount	Assumed barrels per month (a)	3,660,644.00	Fee of \$0.75 (a*\$0.75)	\$2,745,483.00	Monthly income in GH¢ @ a rate of GH¢ 11 (b)	GH¢30,200,313.00	Accrued Monthly taxes to GRA (c)	GH¢9,037,375.71	Net Income per month (d=b-c)	GH¢21,162,937.29	Total Investment per month (e)	GH¢26,498,866.48	Monthly Income to SML (f=e-d)	(GH¢5,335,929.20)
Description	Amount																
Assumed barrels per month (a)	3,660,644.00																
Fee of \$0.75 (a*\$0.75)	\$2,745,483.00																
Monthly income in GH¢ @ a rate of GH¢ 11 (b)	GH¢30,200,313.00																
Accrued Monthly taxes to GRA (c)	GH¢9,037,375.71																
Net Income per month (d=b-c)	GH¢21,162,937.29																
Total Investment per month (e)	GH¢26,498,866.48																
Monthly Income to SML (f=e-d)	(GH¢5,335,929.20)																

Source: SML Upstream Realtime Presentation

^{5.6.21} Exhibit 5.6-12: Real time monitoring for upstream petroleum

5.6 Financial Arrangements (20/25)

Table 5.6.3-1 – Basis for the pricing structure utilised (cont’d)

Contract Clause	Observations														
Same as previous page	Minerals Financial analysis														
	SML valued its proposed investment in solid minerals revenue assurance at GH¢ 947.9 million, with monthly loan repayments and operational expenses totalling GH¢ 35.4 million. Per its financial projections shown in the table below, SML assumed that the average minerals exports per month will be GH¢5,836,344,143.81 ounces and while the project’s initial operations would generate negative returns, with operational efficiency SML would break even in five years. The minerals to be exported are gold, diamond and lithium.														
	Table 5.6.3-1B: SML’s Minerals projections														
	<table><tr><th>Description</th><th>Amount</th></tr><tr><td>Assumed minerals per month (a)</td><td>GH¢5,836,344,143.81</td></tr><tr><td>Monthly income at a Fee of 0.75% (b= a*0.75%)</td><td>GH¢43,772,581.08</td></tr><tr><td>Accrued Monthly taxes to GRA (c)</td><td>GH¢13,089,846.40</td></tr><tr><td>Net Income per month (d=b-c)</td><td>GH¢30,673,734.68</td></tr><tr><td>Total Investment per month (e)</td><td>GH¢35,395,822.52</td></tr><tr><td>Monthly Income to SML (f=e-d)</td><td>(GH¢4,722,087.84)</td></tr></table>	Description	Amount	Assumed minerals per month (a)	GH¢5,836,344,143.81	Monthly income at a Fee of 0.75% (b= a*0.75%)	GH¢43,772,581.08	Accrued Monthly taxes to GRA (c)	GH¢13,089,846.40	Net Income per month (d=b-c)	GH¢30,673,734.68	Total Investment per month (e)	GH¢35,395,822.52	Monthly Income to SML (f=e-d)	(GH¢4,722,087.84)
	Description	Amount													
	Assumed minerals per month (a)	GH¢5,836,344,143.81													
	Monthly income at a Fee of 0.75% (b= a*0.75%)	GH¢43,772,581.08													
	Accrued Monthly taxes to GRA (c)	GH¢13,089,846.40													
	Net Income per month (d=b-c)	GH¢30,673,734.68													
	Total Investment per month (e)	GH¢35,395,822.52													
Monthly Income to SML (f=e-d)	(GH¢4,722,087.84)														
Source: SML Upstream Realtime Presentation															
We further noted that the fee of 0.75% of the total volume value of mineral resources SML quoted in their presentation, was the fee agreed in Contract 7.															
An official of SML also indicated ^{5.6.22} that:															
a) SML was expected to break even in five years and make profits in 10 years															
b) Proposed a period of 10 years to GRA but GRA agreed to an initial five years as stated in Contract 7.															
KPMG requested for documentary evidence from SML to validate their proposed investments, however, SML did not provide us with our request hence we could not validate the investment.															

^{5.6.22} Exhibit 5.6-4: Minutes of Meeting held with officials of SML on 2 February 2024

5.6 Financial Arrangements (21/25)

Compliance of payments made to SML with contract terms

Table 5.6.3-1 – Compliance of payments made to SML with contract terms (cont'd)

Contract Clause	Observations
<p>Contract 7 requires GRA to make payments as follows: <i>SML shall on the expiration of each month send an invoice to the client for payment due it hereunder and payment shall be made by the client to SML no later than 30 days upon receipt of an invoice.'</i></p> <p><i>The parties agree that payments of invoices submitted shall be subject to the satisfactory performance or delivery by SML of the services</i></p>	<p>GRA is yet to make any payments to SML on Contract 7. Hence, no observations relating to compliance of payments to the contract terms.</p>

5.6 Financial Arrangements ^(22/25)

KPMG's Financial Projections – Upstream Petroleum Measurement

To reasonably estimate the amount payable to SML under Contract 7 for Upstream Petroleum Measurement services, we obtained crude oil production and lifting forecasts from GNPC^{5.6.23}, along with their assessment of factors that could influence the total liftings in a year.

Assumptions that drive these projections are as follows:

- a) Estimated lifting parcel size of 950,000 barrels was taken for Sankofa and Jubilee, and a parcel size of 997,500 for Tweneboa Enyenra Ntomme Oil Field (TEN). This is based on tanker volume sizes used by all partners
- b) Partnership participating interests which correspond to their production share of cost are used to determine the liftings of each party
- c) Liftings are based on preapproved lifting schedules by all partners compliant with the Petroleum Agreement (“PA”) and COLA
- d) Royalties, as paid through crude liftings, are included in projected volumes to be lifted by GNPC
- e) Impact of planned shutdowns on production for each year was considered
- f) The analysis period is consistent with the contract period of 2024 to 2028.

The projections have the following limitations:

- a) Projections are for crude oil lifting for presently operating fields only and are based on forecasted annualised average oil production. Newly discovered fields and gas transmittals are not included
- b) Unplanned/emergency shutdowns, although expected, were not considered since they cannot be reliably predicted.

These projections are based on the best up-to-date forecast at the date of this report and like any projection, actual results/outcomes may differ from the amounts projected.

^{5.6.23} Exhibit 5.6-13: Actual & projected volumes: GNPC

5.6 Financial Arrangements ^(23/25)

We multiplied the total forecasted liftings for each field across the five-year horizon by the contractually agreed rate per barrel of US\$0.75. This results in a total estimated contract price of **US\$174,003,485** and net after-tax of **US\$123,789,433 (GH¢1,538,492,210^a)**. The table below provides additional details on the projections.

Table 5.6.3-2: Upstream petroleum projections.

Oil Fields	ACTUALS					PROJECTIONS							
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total	Rate (USD)	Gross per field (US\$)
TEN	22,319,020	17,753,965	11,978,205	8,612,905	6,716,365	6,144,410	5,440,325	4,880,050	4,423,070	4,043,105	24,930,960	0.75	18,698,220
<i>YoY growth</i>		-20.45%	-32.53%	-28.10%	-22.02%	-8.52%	-11.46%	-10.30%	-9.36%	-8.59%			
JUBILEE	31,573,759	30,865,105	27,613,383	30,445,289	30,403,546	33,039,518	34,591,121	35,791,232	31,600,700	29,037,325	164,059,896	0.75	123,044,922
<i>YoY growth</i>		-2.24%	-10.54%	10.26%	-0.14%	8.67%	4.70%	3.47%	-11.71%	-8.11%			
OCTP	17,062,150	17,965,974	16,095,820	13,055,816	10,584,977	9,291,805	9,047,620	8,725,325	8,195,710	7,753,330	43,013,790	0.75	32,260,343
<i>YoY growth</i>		5.30%	-10.41%	-18.89%	-18.93%	-12.22%	-2.63%	-3.56%	-6.07%	-5.40%			
TOTAL	70,954,929	66,585,044	55,687,408	52,114,010	47,704,888	48,475,733	49,079,066	49,396,607	44,219,480	40,833,760	232,004,646	0.75	174,003,485
<i>Volumes in barrels (bbl.)</i>	Rate per barrel (US\$)					0.75	0.75	0.75	0.75	0.75	n/a		
	Total annual compensation (US\$)					36,356,800	36,809,300	37,047,455	33,164,610	30,625,320	174,003,485		
Sources:	Expected Net after tax percentage					72.64%	71.86%	71.07%	70.29%	69.51%	n/a		
<i>Actual & projected volumes: GNPC</i>	Expected Net Payment					26,409,580	26,451,163	26,329,626	23,311,404	21,287,660	123,789,433		
<i>Rate per barrel: Contract 7</i>	Average monthly payments (US\$)					2,200,798	2,204,264	2,194,136	1,942,617	1,773,972	n/a		

Percentage of gross expected to be paid as net: Projections of net payments made for downstream measurement services under Contract 6.

a. Bank of Ghana ("BoG") interbank forex mid-rate for 28 February 2024 of 12.4283 was used.

5.6 Financial Arrangements (24/25)

KPMG's Financial Projections – Minerals Sector Revenue Assurance

We obtained mine-level data^{5.6.24} from the GCM, showing production levels and revenue from 2018 to 2022, and production forecasts for 2024 to 2026. The GCM confirms that these data and forecasts are directly received from the mining companies and the forecasts are from the official mine plans of these companies.

Assumptions driving the projections are as follows:

- a) Price forecasts for 2024 and 2025 are from the World Bank^{5.6.25} and a forecast for 2026 is from Metals Focus^{5.6.26} which like any forecast, are subject to change.

The data and forecasts have the following limitations:

- a) Prices for bauxite and manganese cannot be reliably predicted since they are usually based on bilateral contracts since their prices are not uniform and their markets are not as advanced as the gold market. Also, diamonds mined in Ghana are of industrial grade which is not actively traded, and the only lithium mine in Ghana plans to start production in 2025. For these reasons, there is very high estimation uncertainty involved in projections on these minerals, hence, our forecasts do not cover any of these
- b) The data relates solely to mining companies that are members of the GCM. Some large-scale miners are not members of the GCM, since it is a voluntary organisation. However, the GCM confirms that these mines' outputs are marginal, with about 35,421 ounces of gold in 2022. As against total reported volumes of 3,044,176 ounces from the members of the GCM
- c) Small-scale miners do not make an official publication of their production numbers. For these mines, it is industry practice to use the records of total exports in the year as a proxy for determining their production and revenue levels. Due to the high estimation uncertainty with this approach, they are not included in the forecasts.
- d) Annual production and revenue data for 2023 have not been reported to the GCM by a number of its members, hence, the entire 2023 data is excluded from the table
- e) Production forecasts from the mines are only up to 2026, hence, we have limited our projections to 2026
- f) In relation to the production forecasts the following mine-specific limitations exist:
 - i. The Damang mine operated by Abosso Goldfields Limited is at 'end of life', hence, the forecasts for this mine for 2024 and 2025 are for the processing of stockpiles of already mined ore. The mine is expected to cease operations at the end of 2025
 - ii. Forecasts for the Wassa mine operated by Golden Star Resources end in 2025 since their mine plan is yet to be extended beyond this period.
- g) Like any projection, actual results/outcomes may differ from the amounts projected.

^{5.6.24} Exhibit 5.6-14: Mine Level data GCM

^{5.6.25} Exhibit 5.6-15: Price Forecast from World bank and Metal Focus

^{5.6.26} Exhibit 5.6-15: Price Forecast from World bank and Metal Focus

5.6 Financial Arrangements ^(25/25)

Using these forecasts we estimated the amounts payable to SML under the contract by multiplying the value of gold forecasted for production in 2024 to 2026 by the respective forecast prices, and the products of these by the contractual agreed rate of 0.75%. This gives an estimated total net payment of **US\$96,197,900 (GH¢1,195,576,361^a)**, averaging **US\$32,065,967 annually (GH¢398,525,458^a)**. The summarised projection is presented in the table below.

Table 5.6.3-4: Gold Projections

	ACTUALS						PROJECTIONS ^b					
	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total	Rate (%)	Compensation (US\$)
Production (oz)	2,804,990	2,986,837	2,845,115	2,712,673	3,044,176		3,347,543	3,257,176	3,045,547	9,650,266		
Forecast prices (US\$)							1,900	1,700	1,953	n/a		
Value (US\$)	3,561,364,435	4,156,427,948	4,998,669,392	4,835,514,174	5,401,382,706		6,360,331,700	5,537,199,200	5,947,953,291	17,845,484,191	0.75%	133,841,131
Sources: <i>Production actuals and forecasts – GCM</i> <i>Rate per volume value – Contract 7</i> <i>Price forecasts, 2024-2025 – World Bank</i> <i>Price forecast, 2026 – Metals Focus</i>	Rate per volume value						0.75%	0.75%	0.75%	n/a		
	Total annual Compensation (US\$)						47,702,488	41,528,994	44,609,650	133,841,132		
	Net amount as a percentage of Gross						72.64%	71.86%	71.07%	n/a		
	Net amount payable (US\$)						34,651,087	29,842,735	31,704,078	96,197,900		
	Royalties to Government @ 5%						318,016,585	276,859,960	297,397,665	892,274,210		
	Net payment as percentage of Government Royalties						10.9%	10.78%	10.66%	n/a		
	Average monthly payments (US\$)						2,887,591	2,486,895	2,642,007	n/a		

a. Bank of Ghana (“BoG”) interbank forex mid-rate for 28 February 2024 of 12.4283 was used

b. This excludes projections for non-gold minerals or metals for which data was not available.

5.7 Other Findings

5.7 Other Findings (1/9)

5.7.1 Review of SML’s IT Controls

The review of SML’s Information Technology (IT) controls encompassed the SML Experion system, with the following key areas of focus:

- i. Identity and Access Management
- ii. Access Rules
- iii. Helpdesk/ Support Operations
- iv. Program Change Management
- v. Application Interface Controls

5.7.1.1 Identity and Access Management

Table 5.7.1.1-1 Observations from identity and access management review

S/N	Observation	Risk	Recommendations
1	<p><i>Disabled security auditing and logging features</i></p> <p>SML has implemented authentication measures including biometric scan and username and password requirements, for accessing key areas and systems.</p> <p>However, SML has not enabled security auditing and logging features on its systems. Additionally, there is no monitoring mechanism in place to detect unauthorised access or changes to systems and applications.</p>	<p>Not enabling security auditing and monitoring features on systems increases the organisation’s vulnerability to security threats by making it harder to detect unauthorised access attempts and insider threats. Additionally, without auditing and monitoring capabilities, investigating security incidents becomes challenging, hindering the organisation's ability to respond effectively.</p>	<p>a) Enable security auditing and logging features on the SML Experion system, including servers, workstations, and the database</p> <p>b) Deploy a Security Information and Event Monitoring (SIEM) system to enhance the organisation's ability to detect and respond to security incidents, such as unauthorised access.</p>

5.7 Other Findings (2/9)

Table 5.7.1.1-1 Observations from identity and access management review (cont'd)

S/N	Observation	Risk	Recommendations
2	<p><i>Unenforced Password Policies</i></p> <p>SML has documented a password policy which defines guidelines and requirements for creating and managing passwords. The policy was benchmarked against leading standards like ISO 27001 and the Centre for Information Security (CIS) was deemed adequate.</p> <p>However, the guidelines and requirements have not been enforced on the SML Experion system including workstations, servers and the Auditing and Reporting platform.</p>	<p>Unforced password policies may allow employees to use weak or easily guessable passwords, reuse passwords across multiple accounts, or neglect to update passwords regularly, leaving systems vulnerable to unauthorised access and potential security breaches.</p> <p>Additionally, weak password practices undermine the effectiveness of other security measures and investments in cybersecurity, posing financial and operational risks.</p>	<p>a) Enforce password policies for all systems and applications, including Auditing and Reporting platforms to prevent users from setting insecure passwords. Also, ensure that password policies align with SML's Password Policy</p>
3	<p><i>Default password change upon first login not enabled</i></p> <p>Once a user is profiled on the SML Experion system such as the Auditing and Reporting platform, the default credentials are communicated to the user.</p> <p>However, upon initial sign in to the platform, it does not prompt the user to change the default password.</p>	<p>Not prompting system users to change the default password upon first login could lead to users maintaining their default credentials, which exposes the system to vulnerabilities such as unauthorised access.</p> <p>Additionally, failure to change default passwords undermines the principle of least privilege and increases the organisation's exposure to cybersecurity threats, regulatory non-compliance, and reputational damage.</p>	<p>a) Ensure the platform is configured to prompt users to change their default passwords immediately upon first login</p> <p>b) Implement multi-factor authentication (MFA) to add an extra layer of security</p> <p>c) Conduct regular audits to monitor compliance with the password policy and enforce consequences for non-compliance.</p>

5.7 Other Findings ^(3/9)

Table 5.7.1.1-1 Observations from identity and access management review (cont'd)

S/N	Observation	Risk	Recommendations
4	<p><i>No evidence of periodic access reviews</i></p> <p>The head of IT Downstream Petroleum profiles users on systems and applications based on their role. Users are either profiled on the biometric readers and/or the SML Experion system based on their role.</p> <p>However, periodic reviews of accesses on these systems i.e. biometric access and SML Experion system are not done.</p>	<p>In the absence of regular review of user access, there is an increased risk of unauthorised access, insider threats, and data breaches, which could result in financial losses and reputational damage.</p> <p>Additionally, the lack of access reviews hampers the organisation's ability to maintain an accurate and up-to-date understanding of who has access to critical systems and data, making it difficult to detect and mitigate security risks effectively.</p>	<p>a) Implement a systematic approach to performing regular access reviews, including defining clear roles and responsibilities, establishing review schedules, and leveraging automated tools where possible</p> <p>b) Additionally, conduct comprehensive training for employees on access management policies and procedures to enhance awareness and adherence to security best practices.</p>
5	<p><i>Unapproved Access Management policies</i></p> <p>SML has documented access management policies such as Access Control Policy, User Registration and Deregistration Policy and User Access Rights Policy. The policies are centrally hosted on SharePoint for users to access.</p> <p>However, these policies are yet to be approved by the management of SML.</p>	<p>Failure to approve the access management policies increases the risk of non-compliance and security breaches.</p>	<p>a) All access management policies should be approved by management, published and communicated to all employees and other relevant stakeholders.</p>

5.7 Other Findings (4/9)

Table 5.7.1.1-1 Observations from identity and access management review (cont'd)

S/N	Observation	Risk	Recommendations
6	<p>Key-man risk</p> <p>SML's head of IT Downstream Petroleum is responsible for overseeing and managing SML's information technology (IT) operations and infrastructure including the SML Experion System.</p> <p>However, he is the only member of the IT team, therefore posing a key man risk to SML. Additionally, IT standard operating procedures (SOPs) have not been documented to enable other team members to provide support in the event that the Head of IT, Downstream Petroleum is not available.</p>	<p>Relying solely on the Head of IT Downstream Petroleum for knowledge of the SML Experion system creates a single point of failure (SPoF), which could result in disruptions to the operations of the organisation if he is not available for a period of time.</p>	<p>a) Cross-train existing staff to mitigate reliance on a single individual or implement a formal succession plan to identify and groom potential supports and/or replacements for critical roles</p> <p>b) Develop and document IT specific standard operating procedures (SOPs) to ensure critical information is readily available and accessible to other team members, even in the Head of IT, Downstream Petroleum's absence.</p>

5.7.1.2 Configuration of Access Rules

Table 5.7.1.2-1 Observations from configuration of access rules review

S/N	Observation	Risk	Recommendations
1	<p>Inadequate user role definitions</p> <p>SML has defined specific roles on the SML Experion system such as Administrator, Analyst, Customs, Monitoring, Validation and Quality Control.</p> <p>However, segregation between user roles has not been fully enforced. Currently, the Analyst role is defined with privileges that enable its users to perform the duties of all other roles on the platform, allowing analysts to also undertake other role responsibilities using the same profile.</p>	<p>The lack of effective segregation of duties compromises internal controls, potentially leading to errors, fraud, or unauthorised actions going undetected.</p> <p>Additionally, there is an increased risk of conflicts of interest, manipulation of records, and abuse of privileges, which can undermine the integrity of quality control processes and jeopardise the accuracy and reliability of scanned waybill approvals.</p>	<p>a) Review and revise the roles and privileges assigned to the Quality Control and Validation role to ensure separation of duties and enhance accountability</p> <p>b) Conduct regular audits and implement monitoring mechanisms that can help detect any unauthorised activities or potential conflicts of interest.</p>

5.7 Other Findings (5/9)

5.7.1.3 Help Desk/Support Operations

Table 5.7.1.3-1 Observations from the review of help desk/support operations

S/N	Observation	Risk	Recommendations
1	<p><i>Absence of Incident Management Log</i></p> <p>Issues involving the SML Experion system are reported by phone call to the Head of Engineering and Head of IT Downstream Petroleum for resolution.</p> <p>However, SML does not maintain an incident or issue log.</p>	<p>Without a centralised log to record incidents and issues, there is limited visibility and accountability regarding the frequency, nature, and severity of incidents within the organisation's systems and processes. This impedes the organisation's ability to track trends, identify recurring issues, and prioritise remediation efforts effectively.</p>	<p>a) Establish a centralised logging system to systematically record all incidents and issues encountered within the organisation's systems and processes. The log should capture the following relevant information:</p> <ul style="list-style-type: none"> i. Date and time ii. Description of the incident iii. Category iv. Severity v. Reference number vi. Affected systems or resources vii. Reporter viii. Actions taken ix. Resolution status x. Root cause analysis xi. Lessons learned xii. Follow-up actions <p>b) Integrate mechanisms for categorising and prioritising incidents based on their impact and urgency, to facilitate efficient incident management and response</p> <p>c) Regularly review and analyse the incident and issue log to identify trends, recurring issues, and areas for improvement to enable proactive measures which prevent future incidents.</p>

5.7 Other Findings (6/9)

Table 5.7.1.3-1 Observations from the review of help desk/support operations (cont'd)

S/N	Observation	Risk	Recommendations
2	<p>Absence of security clauses in vendor SLAs</p> <p>SML has documented an incident management procedure which includes incident reporting and escalation procedures. Additionally, SML maintains a Service Level Agreement (SLA) with its critical service providers and vendors.</p> <p>However, vendor SLAs do not include specific clauses related to information security such as data protection, access controls, incident response, and compliance with security standards.</p>	<p>Without these clauses, there is a heightened risk of vendors not prioritising or adequately addressing security concerns, leaving the organisation vulnerable to various security threats and breaches.</p> <p>Additionally, in the event of a security incident, the absence of defined responsibilities and procedures in the SLA can lead to delays in incident response, inadequate coordination between the organisation and the vendor, and potential legal and financial liabilities.</p>	<p>a) Review existing SLAs to include specific clauses related to information security which address data confidentiality, integrity, availability, access controls, encryption, and security incident response</p> <p>b) These clauses should mandate vendor adherence to relevant security standards, frameworks, and regulations (e.g., ISO 27001, DPA) with proof of ongoing compliance demonstrated through audits, assessments, or certifications.</p>
3.	<p>Lack of vendor performance and security reviews</p> <p>The Head of IT Downstream Petroleum handles first-level resolution for issues related to the SML Experion system. Additionally, a vendor provides specialised services for the SML Experion system, including maintenance, support, and system upgrades, through on-site and remote assistance.</p> <p>However, vendor performance and security practices are not regularly reviewed.</p>	<p>In the absence of vendor performance reviews, organisations may fail to identify inefficiencies, breaches of service level agreements (SLAs), or instances of subpar service delivery, which can lead to disruptions in operations and diminished service quality.</p> <p>In addition, overlooking vendor security practices leaves the organisation vulnerable to security breaches as weaknesses in the vendor's security measures may go unnoticed. This lack of regular reviews hinders the organisation's ability to adapt to changing security threats and industry best practices.</p>	<p>a) Perform periodic assessments of vendor performance, focusing on service delivery, adherence to SLAs, and compliance with security standards and contractual obligations</p> <p>b) Implement regular security audits and assessments to evaluate the effectiveness of vendors' security measures and identify any weaknesses or vulnerabilities.</p>

5.7 Other Findings ^(7/9)

5.7.1.4 Program Change Management

Table 5.7.4-1 Observations from program change management review

S/N	Observation	Risk	Recommendations
1	<p>Inadequate program change procedures</p> <p>SML has documented a change management procedure with specific roles and responsibilities defined for the management of change within SML. SML maintains a change request form to track authorised changes.</p> <p>However, the procedure does not have provisions for fall-back procedures and emergency changes. Additionally, once SML receives the Auditing and Reporting platform update package from its vendor, it is not tested prior to deployment in production.</p>	<p>a) Without fall-back procedures, the organisation may lack contingency plans for reverting changes that result in unexpected issues, disruptions, or failures.</p> <p>b) Absence of emergency change procedures leaves the organisation ill-prepared to respond promptly and effectively to urgent situations requiring immediate action, such as critical security patches or system outages.</p> <p>c) Lack of testing prior to updating the Auditing and Reporting platform raises the risk of compatibility issues, performance degradation, and functionality gaps, thereby jeopardising the accuracy and reliability of auditing and reporting processes.</p>	<p>a) Ensure updates to the Auditing and reporting platform are tested in a test environment prior to deployment</p> <p>b) Document fall-back procedures to revert changes to ensure minimal downtime and operational disruptions. Define procedures for handling emergency changes, prioritising rapid response and clear communication channels.</p>

5.7 Other Findings (8/9)

5.7.1.5 Application Interface Controls

Table 5.7.1.5-1 Findings from application interface controls review

S/N	Observation	Risk	Recommendations
1	<p><i>Insecure communication protocols</i></p> <p>The integration of SML’s Auditing and Reporting platform with the Ghana Revenue Authority (GRA)’s Integrated Customs Management System (ICUMS) is facilitated through an Application Programming Interface (API). The Auditing and Reporting platform authenticates to ICUMS through a secret key.</p> <p>However, users access the Auditing and Reporting platform through an unsecured link, i.e. HTTP instead of HTTPS, posing a major risk to SML.</p>	<p>a) Without HTTPS encryption, sensitive data including usernames and passwords transmitted between users' devices and the platform is vulnerable to interception, eavesdropping, and tampering by malicious actors.</p>	<p>a) Urgently implement secure protocols such as HTTPS for key applications.</p>

5.7 Other Findings (9/9)

5.7.2 Review of NPA's IT Controls

A review of NPA's ERDMS sought to assess the design, implementation and test of the operating effectiveness of relevant application controls required to protect the Confidentiality, Integrity and Availability (CIA) of petroleum lifting volumes and associated data/information transferred from ERDMS to ICUMS. The review sought to cover the following key areas:

1. Access Controls
2. Configuration of Access Rules/ Segregation of Duties
3. Interface Controls
4. Program Changes
5. Incidence Management/ HelpDesk

Our efforts to assess the adequacy of controls surrounding the system integration of ERDMS and ICUMS was hindered by the unavailability of requested information from NPA. It is important to note that while our review primarily focused on assessing the controls related to the system integration rather than conducting a direct audit of NPA's system, the lack of provided information limited our ability to comprehensively analyse the functionality and effectiveness of the integrated system. Nonetheless, our observation relating to the integration of ERDMS and ICUMS is summarised below:

Table 5.7.2.1-1 Summary of observation

S/N	Observation	Risk	Recommendations
1	NPA's ERDMS and GRA's ICUMS are closely integrated, with ICUMS obtaining its petroleum liftings data from ERDMS through API integrations.	The risk exists that petroleum lifting volumes and associated data/information transferred from ERDMS to ICUMS may be incomplete and inaccurate or could be compromised due to ineffective or non-existent controls.	Conduct a comprehensive review of General IT and Application Controls implemented by NPA to assess the adequacy of their design and implementation as well as operating effectiveness in protecting the Confidentiality, Integrity and Availability of petroleum liftings data and associated information transferred from ERDMS to ICUMS. This could help to prevent errors and fraud as well as improve the overall efficiency and effectiveness of the systems.

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06

Stakeholder Engagements

6.1 State Institutions and their Mandate ^(1/3)

This table summarises the key players involved in Ghana's petroleum sector, providing an overview of their specific functions and responsibilities within the industry:

Sector	Agency Name	Profile & Value Chain Position
Petroleum Downstream and Upstream	Ministry of Energy	MoE was established by the Executive Instrument, (E.I. 28) and merger of the Ministries of Petroleum and Power in 2017 as the Government of Ghana Ministry responsible for the energy sector. The key responsibilities of MoE include formulation, implementation, monitoring and evaluation as well as supervision and coordination of activities of Energy Sector Agencies.
	Petroleum Commission	PC was established by the PC Act with the primary responsibility of regulating and managing the utilisation of petroleum resources in the upstream sector. Its primary objective is to ensure that companies extracting oil and gas comply with Ghanaian laws. Within the Commission, the Fiscal Monitoring and Instrumentation unit plays a crucial role in minimising uncertainty in Meter readings, which is vital for accurately measuring the volume of crude lifted. This unit is also involved in ensuring that the design of the Meters meets the commission's requirements. Furthermore, the Commission conducts audits of FSPO facilities and suggests measures to address any exceptions or discrepancies identified during these audits. The PC's mandate encompasses overseeing Ghana's petroleum sector to facilitate efficient resource exploitation while maintaining legal compliance.
	Ghana National Petroleum Corporation	GNPC was established as a statutory corporation in 1985 to handle the country's Exploration and Production activities by PNDCL 64. GNPC engages in the exploration, development, production, and disposal of petroleum in Ghana. Within the revenue monitoring process, GNPC's role is to ensure efficient production and monitor costs. By law, GNPC is required to have commercial interests in every field in the country.
	Ghana Upstream Petroleum Chamber	GUPC, an organisation focused on fostering sustainable growth within Ghana's upstream petroleum sector, comprises twenty-three (23) companies engaged in various aspects of oil exploration and service provision. Serving as an industry umbrella group, GUPC conducts research and disseminates position papers and other informative materials to advocate for the sector's advancement.
	National Petroleum Authority	NPA, established under the National Petroleum Authority Act, 2005 (Act 691) ("NPA Act"), serves as the regulatory body overseeing Ghana's petroleum downstream sector. Tasked with ensuring efficiency, profitability, and fairness, the Authority ensures stakeholders receive optimal value for their investments. Its responsibilities encompass regulating various aspects of the downstream industry, including the importation, and refining of crude oil, as well as the marketing and distribution of refined petroleum products throughout Ghana.
	Chamber of Bulk Oil Distributors	CBOD is a collective organisation representing 46 bulk oil distributors in Ghana's petroleum industry. It facilitates collaboration, advocacy, and information sharing among its members involved in importing, storing, transporting, and distributing petroleum products in bulk. CBOD engages with regulatory bodies and stakeholders to address industry challenges, promote best practices, and advocate for favourable policies. Its goal is to ensure the efficient and reliable supply of petroleum products while upholding safety, quality, and environmental standards.

6.1 State Institutions and their Mandate ^(2/3)

This table summarises the key players involved in Ghana's mining sector, providing an overview of their specific functions and responsibilities within the industry:

Sector	Agency Name	Profile & Value Chain Position
Mining and Metals	Ministry of Lands and Natural Resources	MoLNR, through the Geological Survey Department and the MC, oversees all aspects of Ghana's mineral sector. The Geological Survey Department is responsible for providing reliable and up-to-date geological information and serves as the repository for the country's geoscientific data
	Minerals Commission	MC established by the Minerals Commission Act 1993, Act 450, is responsible for regulating and managing the use of Ghana's mineral resources and for co-ordinating government policy related to them. Through its Inspectorate Division, the MC institutes and enforces environmental, health and safety standards in the country's mines and ensures that mining companies and all mining-related activities comply with Ghana's mining and mineral law. Act 450 also stipulates that the Commission should secure a firm basis of comprehensive data collection on national mineral resources and the technologies of exploration and exploitation for national decision making.
	Precious Minerals Marketing Commission	PMMC operates as the National Assayer under PNDC Law 219, tasked with grading, assaying, valuing, and processing precious minerals in Ghana. Additionally, it holds the authority to buy and sell these minerals and issue licenses. Through its subsidiary, PMMC Jewellery Ltd., it engages in jewellery manufacturing. Serving as the National Assayer, PMMC verifies the authenticity, weight, purity/carat, and value of gold submitted for export, with a representative stationed at every gold room in mining sites. To uphold impartiality, these representatives undergo rotation every six months. The assaying process, including the issuance of assay reports, is fully digitised, ensuring accuracy and efficiency.
	Ghana Chambers of Mines	GCM is the main minerals industry association that represents the collective interests of companies involved in mineral exploration, production, and processing in Ghana.
	Minerals Income Investment Fund	MIIF was established by the government through the Minerals Income Investment Fund Act, 2018 (Act 978) (as amended) in 2018. The mandate of the Fund is to manage the equity interest of the Republic in mining companies and receive dividends from these equity interests, to receive mineral royalties and other related income due to the Republic from mining, and to provide for the management and investment of these funds.

6.1 State Institutions and their Mandate ^(3/3)

This table summarises the key players indirectly involved in Ghana's petroleum and mining sectors, providing an overview of their specific functions and responsibilities:

Sector	Agency Name	Profile & Value Chain Position
Regulatory Institutions	Ghana Standards Authority	The GSA was established by the Standards Decree, 1973 (NRCD 173) with the mandate to establish and promulgating standards to ensure high quality of goods produced in Ghana, whether for local consumption or for export. GSA is responsible for the development and enforcement of standards for petroleum products in Ghana to ensure products quality and safety standards through testing, inspection, and certification.
	Environmental Protection Agency	The Environmental Protection Agency (“EPA”) was established by the EPA Act 1994 (490) with the mandate to protect and preserve the environment in Ghana. EPA plays a crucial role in the regulation of mining activities by conducting environmental impact assessments, issuing environmental permits, and monitoring environmental compliance by mining companies. The EPA ensures that mining operations adhere to environmental standards and mitigates any adverse impacts on ecosystems and communities

6.2 Interview Overview

As part of our assessment on the performance of the contracts and transactions between SML and GRA, and related benefits or value derived from the perspective of the industry, KPMG engaged in interviews with a broad spectrum of stakeholders within the petroleum and mining sectors, encompassing regulators, agencies, businesses, and business associations.

Objective

- The purpose of these interactions and interviews was to achieve the following objectives:
- Gain insights into the pertinent industries, prominent stakeholders, and the overall value chain
 - Understand the extent of stakeholder engagements conducted within the industry, both pre-contract and leading up to the signing of contracts with SML
 - Understand the value the industry derives from the services rendered by SML
 - Understand the origins of demand for revenue assurance services in the industry.

Below is a list of the agencies/stakeholders engaged to understand their sector roles, perspective on the contract between GRA and SML, and their level of stakeholder engagements prior to and during the onboarding of SML:

Downstream/ Upstream Sector	Mining Sector	Regulator
<ul style="list-style-type: none">Ministry of Energy	<ul style="list-style-type: none">Ministry of Lands and Natural Resources	<ul style="list-style-type: none">National Petroleum Authority
<ul style="list-style-type: none">Petroleum Commission	<ul style="list-style-type: none">Minerals Income Investment Fund	<ul style="list-style-type: none">Minerals Commission
<ul style="list-style-type: none">Ghana National Petroleum Corporation	<ul style="list-style-type: none">Ghana Chamber of Mines	<ul style="list-style-type: none">Ghana Standards Authority
<ul style="list-style-type: none">Ghana Upstream Petroleum Chamber	<ul style="list-style-type: none">Precious Minerals Marketing Company	<ul style="list-style-type: none">-
<ul style="list-style-type: none">Chamber of Bulk Oil Distributors	<ul style="list-style-type: none">-	<ul style="list-style-type: none">-

6.2 Interview Themes ^(1/2)

Petroleum Sector

Themes from discussions

Stakeholder Engagement

A significant proportion of respondents from both the upstream and downstream petroleum sectors indicated that they were not engaged preceding the contracting of SML for revenue assurance services.

Advocacy for Collaborative Efforts amongst Industry Stakeholders

Throughout our interviews with diverse stakeholders in the petroleum sector, participants emphasised their readiness to participate in collaborative endeavours among other petroleum stakeholders, aiming to protect state interests and foster industry development. They expressed their readiness to engage in and endorse revenue assurance initiatives provided there is sufficient stakeholder interaction and involvement before contracting and implementation.

Awareness of Revenue Leakages

Interviewees stated they were unaware of, or uninformed about, the specific revenue leakages in the sector that necessitated SML's services.

Existing of Revenue Control Measures

Through interactions with stakeholders in the petroleum sector, they indicated that adequate existing revenue control measures are in place within the industry. For this reason, participants expressed the view that SML's services may be of diminished value, incurring additional costs for the State with minimal value addition. They indicated stakeholders in both downstream and upstream such as PC and NPA that contributes to the existing revenue control measures.

6.2 Interview Themes ^(2/2)

Mining Sector

Themes from discussion

Advocacy for Collaborative Efforts amongst Industry Stakeholders

Our engagement with stakeholders in the mining sector revealed a willingness among participants to collaborate with other stakeholders to enhance the value delivered to the State.

Industry Oversight at Mining Sites

During our engagements with stakeholders, it was noted by participants that in recent years, there has been an increase in industry oversight at mining sites. This underscores a growing emphasis on accountability within the sector.

Stakeholder Engagement

While most mining sector respondents reported no stakeholder engagement before SML was onboarded to provide revenue assurance services in 2023, interviews revealed MIIF, PMMC, and GCM were invited to stakeholder meetings after SML was onboarded. Although MIIF could not attend, they indicated their participation in a site visit on April 13, 2023, before SML was onboarded. This indicates that only MIIF was engaged prior to onboarding SML.

Existing of Revenue Control Measures

From our engagement with some stakeholders within the mining sector, they indicated adequate existing revenue control measures provided by stakeholders such as PMMC, in the sector. Due to this, participants felt that the value of SML's service was diminished and served as an extra cost to the State.

Right and Authority of MoF

Our engagement with the MoLNR and MC indicated that the MoF has the authority to introduce any assurance measure it believes would support the cause of protecting financial interests of the State.

6.3 Stakeholder Feedback on SML/GRA Contract ^(1/4)

Petroleum Sector

Engaging with MoE revealed concerns regarding GRA's contracting of SML. MoE emphasised its role as the primary decision-maker in the petroleum industry, asserting that the MoF and GRA should not bypass MOE in crucial decisions within the sector. The MoE highlighted the critical nature of fiscal Metering underscoring its position in ensuring accurate measurements and quality, surpassing the authority and expertise of MoF and GRA. Moreover, MoE indicated that the accuracy of measurements directly influences taxable revenue.

MoE noted that due to meter reading discrepancies in the past, the Ministry has implemented technological solutions, such as the ERDMS software deployed by NPA to enhance measurement reliability in the downstream sector. The MoE strongly advocated for collaborative efforts with regulatory bodies like GSA and PC to ensure accurate meter calibration, technical audits, and compliance with industry regulations in both the upstream and downstream petroleum sectors.

The PC also provided insights on their role in the upstream petroleum sector and perspective on the GRA/SML contract as indicated below:

Perspective on GRA Contracting SML

The PC expressed concerns regarding GRA's decision to contract SML for revenue assurance in petroleum production, citing their own established expertise mandated by the Petroleum Commission Act, 2011 (Act 821) ("PC Act"). Underscoring their role in ensuring strict adherence to fiscal metering requirements and guaranteeing national revenue through petroleum activities, the PC expresses concern over being bypassed in this crucial decision-making process. They emphasise the value of their direct industry experience and readily available data, arguing that these assets were essential for a more informed and effective selection of an assurance provider.

Industry Value Chain

The PC details Ghana's upstream petroleum sector, outlining the framework for sharing petroleum production between IOCs and the State (through GNPC). PC explains the participating interests of each partner in producing fields and the determination of revenue based on fiscal terms outlined in Petroleum Agreements. The PC underscores its role in ensuring compliance with L.I. 2246 for accurate measurement and allocation of petroleum for revenue determination.

6.3 Stakeholder Feedback on SML/GRA Contract ^(2/4)

Petroleum Sector

Responsibilities in Revenue Assurance and Compliance

PC's approach to revenue assurance involves continuously monitoring the maintenance plans for fiscal Metering systems in all producing oil and gas fields throughout the year. Their primary function is to ensure every drop of oil and gas extracted is accurately measured and allocated to the appropriate stakeholders based on contractual obligations and relevant regulations. The specialised Fiscal Metering and Instrumentation Department within the PC plays a crucial role in overseeing these activities, ultimately safeguarding national interests and guaranteeing fair resource distribution.

Collaboration with GRA

PC collaborates with GRA to increase oversight in the upstream petroleum sector:

- **Data sharing:** PC furnishes vital data (volumes, revenue, financials) to GRA for efficient tax collection
- **Audit support:** During audits, PC offers insights, data access, and technical expertise to ensure thoroughness and meaningful results
- **Joint monitoring:** Both entities work together to vigilantly monitor crude oil lifting and ensure fiscal meter accuracy
- **Surface rental management:** Collaboration ensures proper assessment, collection, and recording of surface rentals.

6.3 Stakeholder Feedback on SML/GRA Contract ^(3/4)

Mining Sector

Upon engaging the industry regulator, Minerals of Lands and Natural Resources, as well as the MC, it was established that both stakeholders were not engaged prior to onboarding SML. The PMMC, in responding to KPMG's inquiries on securing and monitoring revenue in the mining sector, also indicated that they were not engaged prior to onboarding SML.

Additionally, PMMC's response sheds light on their role and perspectives. Below is an overview of their stance on safeguarding national interests and their approach to enhancing regulatory efficiency within the mining sector.

Perspective on GRA Contracting SML

In their response to KPMG's queries, PMMC opposed the contracting of SML for revenue assurance services in the mining sector. They cite their established track record of providing accurate assay data, relied upon by stakeholders such as GRA for years without an issue. PMMC emphasised its role in detecting counterfeit gold and supporting security agencies, raising concerns about the suitability of SML's proposed assay method of using an XRF Handheld gun for such a critical task.

Industry Value Chain

PMMC shed light on the distinct tax regimes governing large-scale and small-scale mining operations. PMMC also highlighted the challenges posed by the informal nature of small-scale mining, proposing streamlined royalty payment processes for large-scale companies to expedite government revenue collection to reap the benefits of the time value of money. Operating largely outside established frameworks, this informal maze lacks proper documentation and transparency, posing significant challenges. PMMC suggests the current 1.5% withholding tax, the highest in the subregion, might even incentivise gold smuggling as miners seek to bypass the burden within the informal sector.

Responsibilities and Controls

PMMC, the designated National Assayer, plays a crucial role in ensuring the accuracy of gold valuation and export processes. Their responsibilities, mandated by legislation, include grading, assaying, valuing, and implementing robust controls to prevent smuggling and under-valuation. Committed to excellence, PMMC invests in capacity building, technology and plans to establish a fire assay laboratory. PMMC goes beyond its core role as the National Assayer, outlining its multifaceted responsibilities and ongoing efforts in capacity building such as jewellery manufacturing and gold refining, demonstrating its commitment to continuous improvement and broader sectoral development.

6.3 Stakeholder Feedback on SML/GRA Contract ^(4/4)

Mining Sector

Information Sharing with GRA

PMMC emphasised its transparent approach to data sharing, providing detailed information on gold exports to relevant government agencies such as the MC who in turn shares with GRA upon request. They further express willingness to grant access to their Digitalised National Assay Platform to GRA for real-time monitoring, fostering collaboration and enhancing regulatory oversight within the industry.

6.4 Assessment of Engagement of Key Industry Stakeholders ^(1/2)

The recent implementation of a consolidated revenue assurance solution across the upstream petroleum and mining sectors in Ghana raises concerns about the lack of engagement with critical stakeholders by GRA. We derived the following insights per the interview sessions held:

Upstream Petroleum Sector:

The execution of the revenue assurance contract in the upstream petroleum sector did not involve several key stakeholders that play a vital role in the industry. The stakeholders include:

1. MoE: As the industry's policymaker and primary decision-maker, their involvement is crucial for ensuring alignment with strategic objectives
2. PC: As the industry regulator, their expertise is essential for guaranteeing compliance with regulations and identifying potential challenges
3. GNPC: Responsible for exploration, development, production, and disposal of petroleum resources, their perspective is critical for understanding operational intricacies and potential leakages.

Mining Sector

While some stakeholders were involved in stakeholder meetings to some extent, others were entirely excluded. The following stakeholders were not engaged by GRA before or after onboarding SML in 2023:

- MoLNR: Acting as the policymaker and regulator, their absence raises concerns about the solution's alignment with broader sectoral goals and compliance with regulations
- MC: Serving as the regulatory authority overseeing mining activities, their exclusion overlooks their critical role in ensuring effective oversight and identifying sector-specific leakages

6.4 Assessment of Engagement of Key Industry Stakeholders ^(2/2)

Mining Sector (cont'd)

Stakeholders who were invited **to engagement meetings** after onboarding SML:

- GCM: Representing mining companies and advocating for industry interests
- MIIF: Responsible for managing national mineral revenue
- PMMC: Serving as the national assayer

Despite MIIF's absence at the meeting, they did partake in a site visit on April 13, 2023, before SML was contracted.

6.5 Survey Overview

Introduction

As part of our assessment on the performance of the contracts and transactions between SML and GRA, and related benefits or value derived from the perspective of the industry, KPMG utilised anonymous surveys to gather insights on the provision of revenue assurance services within the petroleum and mining sector.

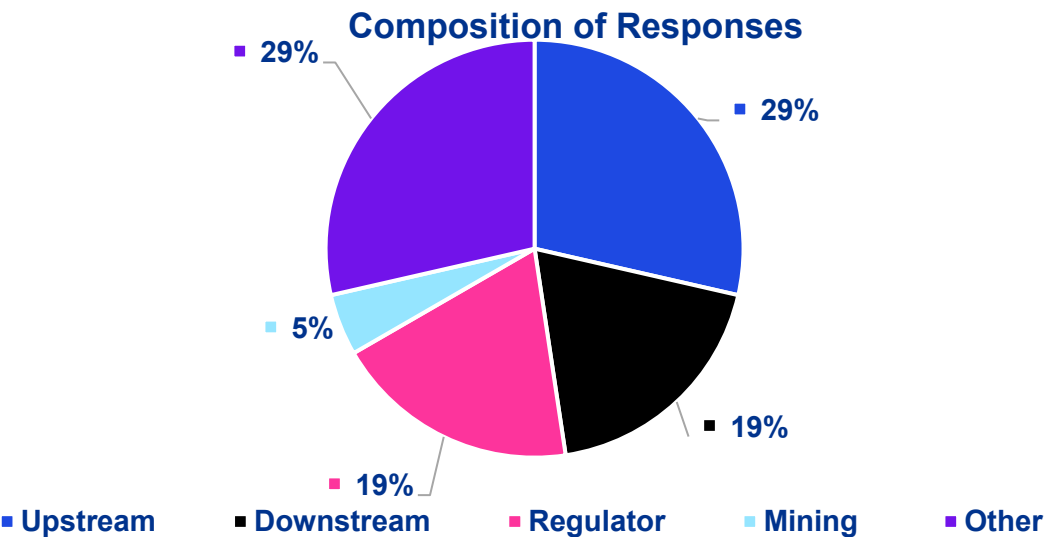
Background

Following the interviews, the KPMG team distributed anonymous surveys to a wide range of personnel throughout the petroleum and mining value chain. The surveys aimed to gather insights into the existing revenue assurance and monitoring systems implemented at oil depots nationwide, as well as their potential extension to the upstream and mining sectors. The views expressed are not those of KPMG. Based on the outcomes we considered relevant procedures performed to factually validate some of the comments.

Objective

The purpose of the survey was to achieve the following objectives:

- Obtain anonymous insights across a section of relevant stakeholders
- Gain insights from stakeholders on contract understanding, perceived value, stakeholder involvement and general satisfaction.



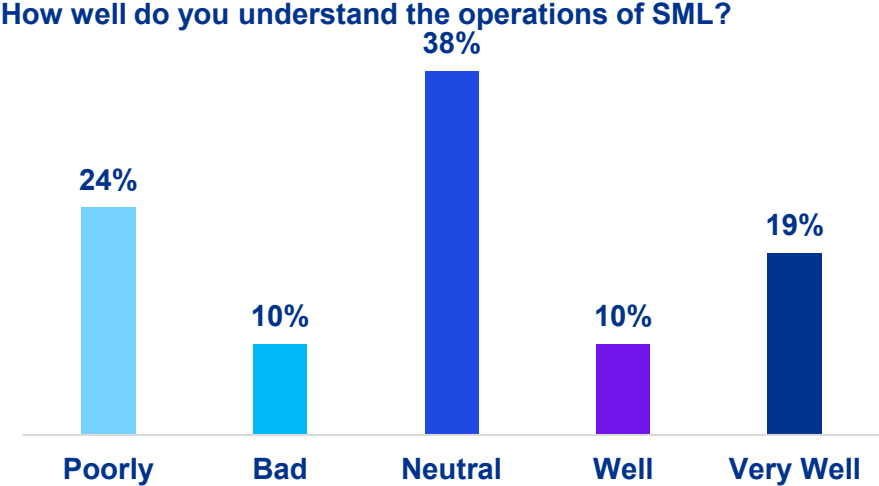
6.6 Outcome of Stakeholders' view on Value or Benefit ^(1/4)

The responses gathered through the anonymous survey led to a qualitative and quantitative analysis performed. The analysis revealed the following relevant themes:

Operational Knowledge of SML Services

Operational knowledge of SML's services amongst stakeholders within the petroleum and mining sectors supports collaboration and obtaining maximum value from services rendered. Our survey noted that some participants were not knowledgeable of SML's activities and contributions to their respective sectors.

Analysis



Survey outcome

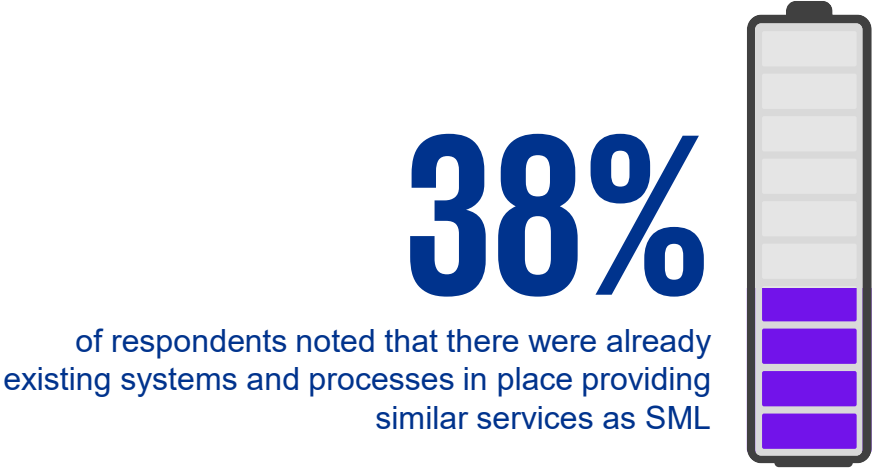
It was noted that only 29% of respondents expressed a good understanding of SML's operations. Notably, regulators and downstream stakeholders were more likely to rate their understanding as poor, while upstream and other stakeholders perceived their understanding as bad. The majority of respondents rated their understanding as neutral and were primarily regulators and downstream stakeholders. This highlights the need for improved communication and engagement efforts by SML, particularly with stakeholders in the upstream and downstream sectors, to enhance transparency and comprehension of its operations.

6.6 Outcome of Stakeholders' view on Value or Benefit ^(2/4)

Existing Revenue Assurance Controls

The replication of services by different stakeholders within an industry could lead to fragmented service delivery, potentially diminishing the overall effectiveness of the service. This situation may also introduce ambiguity regarding accountability. A key theme identified within the responses indicated that respondents found there to be various initiatives and services provided by other stakeholders in the industry that could be likened to the work of SML.

Analysis



Survey outcome

38% of respondents acknowledged the presence of existing systems and processes in place offering services similar to those provided by SML. Notable institutions mentioned included the GRA through Customs and the ICUMS, the PC, the NPA through the ERDMS, and PMMC. These institutions are already mandated by law to oversee and regulate various aspects of revenue monitoring and assurance within the mining, downstream and upstream petroleum sectors. The recognition of these existing systems suggests that stakeholders perceive redundancy with SML's services.

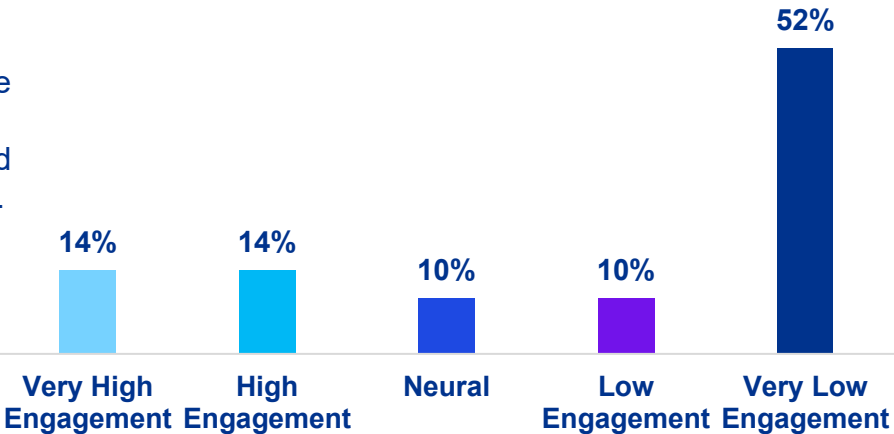
6.6 Outcome of Stakeholders' view on Value or Benefit ^(3/4)

Stakeholder Engagement and Involvement

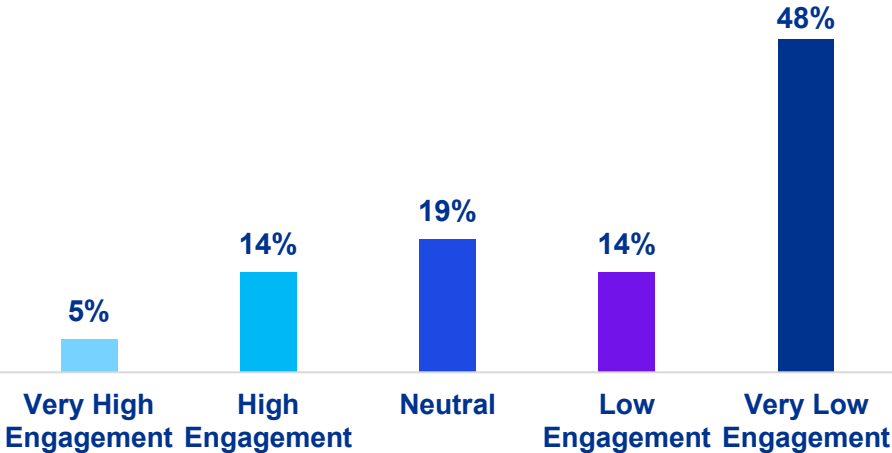
Stakeholder interaction is a fundamental step in determining the needs of an industry. This further fosters collaboration and transparency, building trust between government and industry stakeholders. The involvement of key players supports the relevance of selected service providers and enhances the success of service provision. A prominent theme noted during our analysis concerned the fact that respondents were not engaged or involved before the implementation of the SML system.

Analysis

To what extent were stakeholders in your sector engaged before the system rollout?



To what extent do you feel the stakeholders from your sector have been actively involved in the implementation of the SML system?



Survey Outcome

Our survey results revealed that 62% of respondents believed their industry lacked sufficient engagement before the rollout of SML's services. Additionally, 62% expressed reservations regarding their industry's involvement in the implementation of the SML system. Notably, stakeholders observed that the majority of engagement occurred post-SML onboarding and contract finalisation, primarily focusing on integrating SML into their facilities. The respondents reporting very low or low levels of engagement were predominantly from the upstream and downstream sectors, as well as regulatory bodies. Furthermore, a majority of stakeholders who rated their involvement as low or very low belonged to the upstream sector and regulatory bodies. This consistent trend across different stakeholder groups underscores the need for enhanced communication and engagement efforts by SML, particularly with stakeholders in the upstream and regulatory sectors.

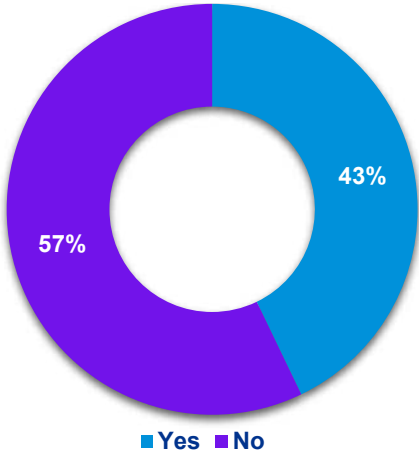
6.7 Outcome of Stakeholders' view on Value or Benefit (4/4)

Value provided by SML

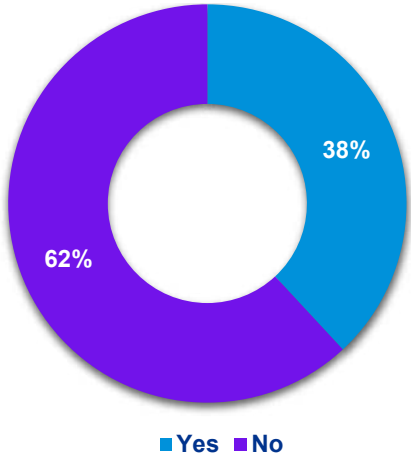
Respondents provided their views on the value delivered to the industry by SML vis a vis their understanding of the cost of the service. A prominent theme noted during our analysis concerned the respondents perception of value derived from services provided by SML. This theme reflects participant's thoughts on the offerings of SML within their respective industries.

Analysis

Do you believe SML is providing value to the downstream petroleum process?



Based on your understanding of the costs of the service provided by SML, is there a commensurate value?



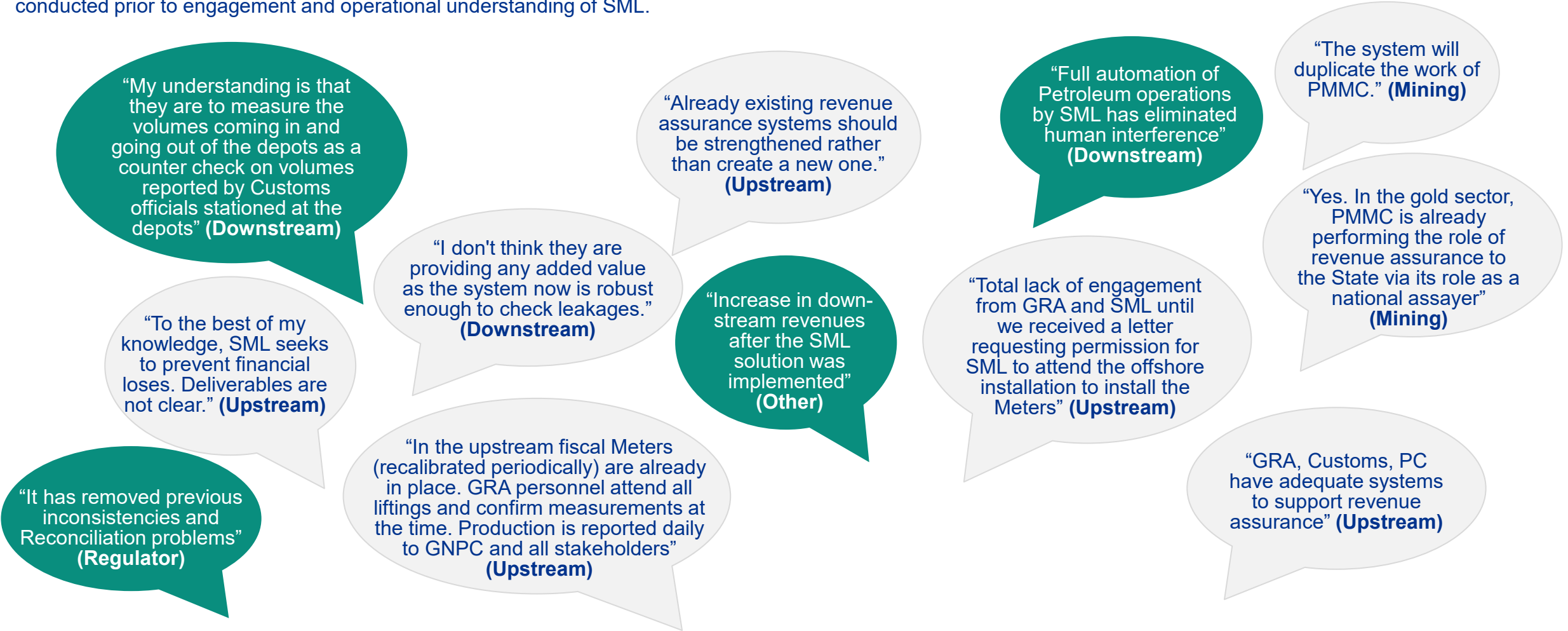
Survey outcome

It was observed that 57% of survey respondents expressed reservations regarding the perceived value provided by SML in the downstream sector. Respondents cited concerns about duplication of efforts within the industry, indicating sufficient existing systems and infrastructure, while others lacked clarity on SML's deliverables and services. However, 43% acknowledged SML's contribution to improved volume assurance and increased revenue.

Furthermore, 62% of respondents indicated reservations about whether the cost of services rendered were commensurate to the value derived from SML. Respondents who selected "no" indicated that there was no added value compared to existing solutions, while others acknowledged operational efficiency gains and reduced revenue leaks.

6.8 Stakeholder Responses

The following is a selection of anonymous stakeholder responses to open-ended questions around their perceived value of SML’s services, stakeholder interactions conducted prior to engagement and operational understanding of SML.



07 Key Recommendation

7.1 Proposed Resolution ^(1/5)

Introduction

This section provides resolution options to address the identified key findings from our audit of GRA’s service contracts with SML. The recommendations are premised on the assumption, that the contracts upon which the arrangement between the GRA and SML stands are not void at this time or voidable at the time of reporting. However, if parliamentary approval is not obtained the contract may be unenforceable. The options presented are also not meant to be construed as legal advice. They only serve to illustrate the possible implications of the choices available in remediating the issues with the agreements. and transactions involving the contracting parties. The following resolution options may be considered:

A. Termination

The Consolidated Revenue Assurance Contract, like other Service Contracts, grants both parties the right to terminate under specific circumstances.

- a) Either party can terminate upon a material breach by the other, provided the defaulting party fails to cure within 90 days of written notice
- b) GRA possesses the unilateral right to terminate with or without cause by providing 120 days' written notice. However, termination "for the sole purpose of awarding the services or contract to another developer" constitutes termination without cause
- c) SML can terminate upon a "termination event," including GRA's failure to pay undisputed amounts within 60 days or a material breach of non-monetary terms not rectified within 30 days of written notice.

Financial Implications of Termination:

Termination triggers specific financial obligations for both parties:

- Upon termination, GRA remains liable to pay SML for services already completed but not yet paid
- GRA is not entitled to a refund of any compensation already paid to SML, regardless of the termination cause
- If GRA terminates without cause, it becomes liable to pay SML an ROI equivalent to the fair value of SML's investment in the contract. The specific investment values disclosed by SML for each relevant contract are presented in the table below:

S/N	Service Contract	Investment Value (US\$)*
1	First Consolidation Contract	13,935,335.00
2	Downstream Petroleum Audit Contract	30,108,845.00
3	Consolidation of Revenue Assurance Services Contract	• 54,497.166.21 (Upstream Petroleum Audit) • 78,989,556.30 (Minerals and Metals Audit)

SML did not provide supporting documents or relevant information to verify the nature and amount of investments it had made. If the contract is terminated, the investment claimed to be have been made by SML should be validated, as they could become a source of claim on GoG and GRA in the event of the exercise of the termination clause.

7.1 Proposed Resolution^(2/5)

B. Orderly Resolution

The Orderly Resolution approach offers an alternative to the termination of the Consolidated Revenue Assurance Contract. It prioritises addressing identified contractual irregularities while minimising the risks and disruptions associated with full termination of the contracts.






Orderly Resolution aims to rectify identified contractual imbalances through a series of targeted actions:

- a) Based on the findings from the audit, specific contract elements demonstrating **limited or partial value delivered, contractual irregularities, or non-fulfilment of contractual obligations** could be renegotiated. This ensures a targeted approach that focuses on correcting specific issues without unnecessarily disrupting the entire contract
- b) The remaining portions of the contract, deemed to be of value, should undergo a thorough review. This review will focus on identifying and addressing unfavourable clauses that potentially disadvantage GRA. This could involve renegotiating specific terms, such as intellectual property rights, termination clauses, or service delivery expectations, to establish a more balanced and equitable agreement
- c) The approach emphasises a planned and gradual transition, allowing for continued service provision while irregularities are addressed. Minimising disruption is vital for maintaining operational efficiency and avoiding negative impacts on revenue collection activities
- d) Transitioning to a fixed-fee model within the framework of Orderly Resolution offers cost predictability, transparency, accountability and potential cost savings.

Orderly Resolution, with its focus on renegotiation, and transition to a fixed-fee model, presents a more balanced and strategic approach. It allows Government to address contractual concerns, protect its interests, and ultimately achieve a more sustainable and cost-effective solution for revenue assurance services. The evaluation of the orderly resolution utilises a pre-defined set of metrics to ensure a thorough analysis and a well-informed decision that prioritises the best interests of GRA and the State.

7.1 Proposed Resolution ^(3/5)





















Orderly Resolution

Options	Systemic Impact	Cost to State	Sustainability	Complexity & Deliverability	Public Interest	Implications
Orderly Resolution						<ul style="list-style-type: none">Minimises disruptionPredictable costs

This was assessed based on the following

- a. Systemic Impact:** Potential long-term effects on GRA's revenue collection capabilities and overall operations
- b. Cost to State:** Financial implications associated with termination costs, potential liabilities, and ongoing operational expenses
- c. Sustainability:** Assesses the long-term viability and ability of the chosen option to deliver sustainable benefits
- d. Complexity & Deliverability:** Ease of implementation and potential challenges associated with executing each option
- e. Public Interest:** Public perception and potential impact on trust and confidence in GRA's operations.

Legend

Systemic Impact	Cost to State	Sustainability	Complexity & Deliverability	Public Interest
 The proposed resolution is unlikely to cause any major setbacks or operational challenges.	 Significant cost savings or minimal financial burden. The proposed resolution offers clear financial benefits for GRA/MoF, either through reduced costs or potential revenue gains	 The proposed resolution offers a sustainable solution with long-term benefits.	 The proposed resolution is relatively easy to implement with minimal logistical challenges and resource requirements.	 The proposed resolution aligns with public expectations and reinforces trust in government processes.
 The proposed resolution might require temporary adjustments or adaptations to minimise disruption.	 The proposed resolution might involve additional costs that need to be managed effectively.	 The proposed resolution might need adaptations over time to maintain effectiveness.	 The proposed resolution is moderately complex, requiring careful planning and potential resource allocation.	 The proposed resolution might raise some concerns in relation to public trust that need to be addressed transparently.
 The proposed resolution could lead to noticeable setbacks or require significant adjustments to the revenue collection system	 The proposed resolution could incur significant additional costs for GRA/MoF	 The proposed resolution might not offer a long-term solution or require major revisions to be sustainable.	 The proposed resolution is significantly complex, requiring significant planning, resources, and potential expertise.	 The proposed resolution might have potential negative impact on public perception, requiring significant efforts to rebuild trust and address concerns.
 The proposed resolution would result in severe disruption or pose a high risk of compromising the revenue collection systems.	 The proposed resolution would lead to very high costs for GRA, potentially exceeding the benefits achieved.	 Unsustainable solution with limited potential for long-term success. The proposed resolution is unlikely to address concerns effectively or offer long-term benefits.	 The proposed resolution is highly complex and challenging to implement, requiring extensive resources and expertise.	 The proposed resolution might have significant negative impact on public perception, potentially damaging trust and confidence in government processes.

7.1 Proposed Resolution^(4/5)

Resolution for the Consolidated Revenue Assurance Services Contract

Consolidation of Revenue Assurance Services Contract

In making the recommendation, we have considered the systemic impact, cost to state, sustainability, complexity and deliverability, public trust and related implications. On the basis of the above, we propose for consideration the recommendations below:

1. Upstream Petroleum and Minerals Audit

The components of the contract cover major revenue sources of the State. If there are revenue leakages, the impact could be significant. However, technical needs assessments have not been performed to establish detailed gaps to be resolved. In addition, the components present significant fee outlays on Government resources, and implementation involves multiple stakeholders with diverse interests. Therefore, we recommend a review of the contract as follows:

- a) The contract did not receive parliamentary approval as required by section 33 of the PFM Act. Parliamentary approval should be sought to regularise the contract to meet existing legal requirements, if practicable.
- b) In order to ensure that the services are justified, and the price paid is proportionate for the services to be rendered, the contract should be subject to a technical needs and value-for-money assessment. For example, SML may be requested to provide the services at its own cost and risk for a period of 3 months to demonstrate the value of the service to the state. The amount to pay SML should be based on the determined increased revenue.

7.1 Proposed Resolution ^(5/5)

Resolution for the Consolidated Revenue Assurance Services Contract

2. Transaction Audit & External Price Verification

These services, which have been partially delivered, require a comprehensive review to assess their ongoing relevance. With the integration of ICUMS, there has been a duplication of external price databases and research services provided by SML, necessitating immediate action to amend or reassess the services. Utilising ICUMS capabilities for external price verification, it is recommended to reassess the services provided by SML to optimise efficiency and adapt to evolving business dynamics.

3. Downstream Monitoring and Petroleum Audit

- a) The service has been provided for over four (4) years, and SML has gained experience and is more proficient. Based on this, we recommend renegotiating price levels, including consideration of shifting from a variable to a fixed fee structure.
- b) Introduce and incorporate periodic monitoring and evaluation every two (2) years and assessment of KPIs as well as formally assess the performance of the components of the contracts.

Other Recommendations

7.2 Needs Assessment^(1/7)

Incorporate Needs Assessment into Public Procurement Practice

For a covered entity in Ghana, submission of a procurement plan to PPA complies with section 21 of Act 663 as amended. However, submitting the same without conducting a needs assessment may expose the State to the following risks:

- a) Misallocation of Public Funds
- b) Erosion of public trust in the government's ability to manage resources effectively.

Conducting a needs assessment as part of the procurement process is important for aligning procurement activities with organisational needs, optimising resource allocation, mitigating risks, and fostering stakeholder engagement and accountability. It lays the foundation for successful procurement outcomes that deliver value and support organisational objectives. The process includes among others; the identification of stakeholders and the analysis of their current and future demand, the assessment of existing resources, consideration of alternative needs to address the gap between current and future demand, and compliance with relevant laws and regulations.

In view of these, we recommend the following:

- a) Legislation of the needs assessment process as part of the public procurement practice, particularly for single-source contracts. This may be done by amending Act 663 as amended with (Act 914) to include a provision which explicitly mandates covered entities to conduct a needs assessment for contracts whose fees exceed a certain threshold before tendering for the service. The PPA may take a cue from section 20 of the Public Financial Management (Public Investment Management) Regulations, 2020 (L.I 2411) and section 18 of the Nigerian Public Procurement Act, 2007. Section 18 of the Nigerian Public Procurement Act, 2007 specifies that *subject to regulations as may from time to time be made by the Bureau under the direction of the Council, a procuring entity shall plan its procurement:*

- i. preparing the needs assessment and evaluation*
- ii. identifying the goods, works or services required*
- iii. carrying appropriate market and statistical surveys and on that basis prepare an analysis of the cost implications of the proposed procurement*

7.2 Needs Assessment^(2/7)

Incorporate Needs Assessment into Public Procurement Practice (Cont'd)

- iv. aggregating its requirements whenever possible, both within the procurement entity and between procuring entities, to obtain economy of scale and reduce procurement cost*
- v. integrating its procurement expenditure into its yearly budget*
- vi. prescribing any method for effecting the procurement subject to the necessary approval under this Act; and*
- vii. ensuring that the procurement entity functions stipulated in this Section shall be carried out by the Procurement Planning Committee.*

The above will standardise and formalise the needs assessment process across all procurement activities.

- b) In the meantime, Boards of covered entities should formulate policies as part of the budget review and approval process which require their management to conduct a needs assessment prior to incurring any major capital or non-capital expenditure (as was the case in the revenue assurance services SML was contracted for). This will ensure that covered entities perform a needs assessment for procurement transactions before consideration for funding or implementation.

7.2 Needs Assessment^(3/7)

Recommendation to the Ghana Revenue Authority

The Board should mandate the management of GRA to develop and implement a process for conducting needs assessment to provide clarity, consistency, and accountability in the decision-making processes prior to procuring goods, works, or services. The process of performing needs assessment should include, but not limited to, the following activities:

- a) Consultation with relevant stakeholders to ascertain the gaps between their current state and desired outcome; discussion of the needs and expectations to address the gaps identified; facilitation of information-sharing to ensure that all relevant stakeholders have access to relevant information to promote inclusiveness and collaboration. Following the consultation, the team responsible for the needs assessment should be able to:
 - i. Differentiate between 'needs,' 'wants,' and 'desires' following the stakeholder consultation. (Needs are essential for improving the performance of an organisation, Wants are resources, activities, or methods perceived as necessary for progress but not essential for achieving the objectives of the organisation and Desires are aspirations that stakeholders may express, but they are not essential for addressing immediate needs)
 - ii. Eliminate any uncertainties or unclear elements and strive for precision in understanding stakeholder expectations
 - iii. Group together similar needs to establish coherent and manageable categories
 - iv. Develop a clear high-level needs statement that provides a detailed overview and captures the essential aspects discussed during the consultation
 - v. Obtain validation and approval from key stakeholders regarding the accuracy and completeness of the formulated high-level needs statement.
- b) A defined scope for the needs assessment to ensure an effective and ethically conducted analysis/assessment that aligns with the goals and objectives of the Covered Entity. This will establish a structured and organised approach for the needs assessment.

7.2 Needs Assessment^(4/7)

Recommendation to the Ghana Revenue Authority (Cont'd)

- c) Development of an assessment criteria collaboratively with relevant stakeholders to facilitate a systematic and effective evaluation of the diverse spectrum of needs identified in the needs statement. This will contribute to making informed decisions and adopting an approach to meet the varied needs outlined in the needs statement, including considerations of VfM
- d) Development of a data collection plan collaboratively with relevant stakeholders to guide the acquisition of essential information that reflects the structured and organised approach outlined in the needs assessment scope. The plan should include, but not be limited to, the following activities:
 - i. Identification of key data sources, both internal and external
 - ii. The types of data to be collected, such as quantitative (e.g., numerical data, statistics) and qualitative (e.g., opinions, feedback) data, to provide a holistic view of the needs
 - iii. The methodologies and tools for gathering relevant data
 - iv. The roles and responsibilities of the data collection team to ensure accountability and efficiency
 - v. The timelines for data collection activities, taking into consideration the urgency of procurement and the availability of stakeholders.
- e) All data collection activities should be conducted in accordance with the data collection plan. The data collected should be assessed to gain a better understanding of the complexities of the identified gaps and their corresponding needs
- f) Application of pre-defined criteria consistently and transparently to prioritise the identified needs. This involves making decisions on which needs are the most important or urgent for action, considering not only immediate costs but also factors such as quality, VfM, long-term benefits, and overall value proposition to enhance effective resource allocation and decision-making

7.2 Needs Assessment^(5/7)

Recommendation to the Ghana Revenue Authority (Cont'd)

In determining the validity of the urgency of a need, the following should be considered:

- The number and type of people and processes to be impacted by the introduction of the need
 - The availability of partners to help address the need
 - The anticipated costs to meet the need
 - The increasing severity of the need over time
 - The alignment of the needs with the institution's mission.
- g) Following the application of the pre-defined criteria, the results of the needs assessment should be submitted to the team in charge of coordinating the needs assessment activities to ensure alignment with national financial objectives and to obtain the necessary approval for the implementation of prioritised initiatives
- h) Communicating the results of the assessments to relevant stakeholders in a clear and understandable manner. The presentation should highlight key insights, trends, and areas that require attention to facilitate informed decision-making and promote stakeholder engagement
- i) Training the team responsible for the needs assessment to enhance their capacity to conduct stakeholder participation activities and promote professionalism, competence, and ethical conduct within the assessment process
- j) A governance framework that clearly outlines the roles and responsibilities, levels of authority, and accountability associated with conducting and reporting on the results of the needs assessment. This will ensure that needs assessments are conducted consistently across all procurement activities and that decisions are made with integrity and in the best interest of the organisation. The governance framework should include, but not be limited to, the following:

7.2 Needs Assessment^(6/7)

Recommendation to the Ghana Revenue Authority (Cont'd)

- **Steering Committee:** The steering committee is responsible for the coordination of needs assessment processes (strategic direction, overseeing resource allocation, engaging stakeholders, and managing risks) as well as reviewing and approving the data collection plan and the needs assessment results. This committee may include representatives from relevant departments, such as procurement, finance, operations and technical experts with expertise in addressing the identified gaps and needs. The roles and responsibilities of each committee member should be well defined to ensure accountability and the proper implementation process.
- **Needs Assessment Lead(s):** A designated team or individual in each division responsible for executing and documenting the needs assessment activities. The team or individual will ensure that their activities align with the outlined needs assessment process and the directives of the steering committee.
- **Communication Protocols:** Establish a communication protocol between the Steering Committee and the Needs Assessment Team to ensure the committee remains informed and involved throughout the needs assessment process. The following communication protocols should be considered:
 - The Needs Assessment Champion(s) should have regular meetings or progress updates through periodic reports to the Steering Committee
 - The Needs Assessment Champion(s) should provide the Steering Committee with relevant information, analysis, and insights to support their decision-making process
 - The Needs Assessment Champion(s) should seek approval from the Steering Committee for resource allocation, including budget, personnel, and other support needed for the needs assessment activities
 - The Needs Assessment Champion(s) should work collaboratively with the Steering Committee to address and resolve challenges faced during the needs assessment in a timely manner.
- **Periodic revision of governance structure:** Schedule periodic reviews of the governance structure to identify areas for improvement and address emerging challenges.

7.2 Needs Assessment^(7/7)

- **Periodic Evaluation of the Needs Assessment Performed:** Establish measurable indicators to ascertain the effectiveness of the needs assessment process, such as the percentage of procurements aligned with identified needs.
- k) A reporting template that will serve as a standardised framework for documenting key findings, insights, and recommendations. This will ensure consistency and uniformity in reporting across various initiatives undertaken by the GRA. The template should include, but not be limited to, the following:
 - i. An introduction that provides an overview of the purpose and scope of the needs assessment
 - ii. The description of the methods used to conduct the needs assessment. This should include the data collection techniques, sources of information, and any relevant tools or instruments employed
 - iii. Stakeholders involved in the needs assessment process, along with a summary of their inputs and feedback
 - iv. Detailed analysis of the identified needs after the stakeholder engagement. Distinguish between 'needs,' 'wants,' and 'desires,' and grouping similar needs into coherent categories)
 - v. Results of the prioritisation of categorisation of needs, considering factors such as impact, feasibility, and resource availability
 - vi. Summary of the key needs identified during the assessment, capturing essential aspects discussed during stakeholder consultations
 - vii. Detailed analysis of the data collected, including an examination of its nature, structure, patterns, trends, outliers, and key themes
 - viii. Recommendations based on the assessment findings, aimed at addressing the identified needs effectively and efficiently
 - ix. A section for key stakeholders who will review and approve the findings and recommendations
 - x. An attachment of any supplementary materials, such as needs statement, survey instruments, interview guides, data tables, or additional analysis, to support the findings and conclusions presented in the report.

7.3 Contracting Methodology^(1/3)

Enforcement of Procurement Laws

Procurement laws are essential for ensuring transparency, fairness, and accountability in the use of public funds. Spending officers and procurement entities should ensure strict adherence to the laws and regulations by obtaining requisite approvals before engaging in a single source procurement or restrictive tendering, as required by Act 663 as amended to prevent instances of non-compliance and circumvention of these laws by some public officials. Furthermore, procurement entities may unduly take advantage of the ratification process to enter into contracts with suppliers via a single source without prior PPA approval.

To mitigate the risk of non-compliance and circumvention, we recommend the following measures:

- a) Implement strict sanctions for public officials found to be in violation of procurement laws as provided by Act 663 as amended to serve as a deterrent to others. This can include disciplinary action, fines, and even criminal charges where applicable
- b) PPA, as part of their investigations, should strive to ensure that the justifications provided by procurement entities seeking ratification are validated. Clear documentary evidence supporting the submissions made by the entity seeking ratification should be contained in the investigation report
- c) In line with Section 40 (7) of the Public Procurement Regulations, 2022 (L.I 2466), PPA should mandate procurement entities to ensure registration of their suppliers/service providers on PPA's suppliers database prior to engaging them.

7.3 Contracting Methodology ^(2/3)

Public Financial Management Act, 2016 (Act 921)

While the Public Financial Management Act provides a framework for public financial management, its application appears not to be widespread. It is important to examine the practicality of implementing the PFMA to ensure its effectiveness in promoting transparency, accountability and efficiency in public financial management.

To enhance the implementation of the PFMA, we recommend the following measures:

1. Introduction of Threshold: One key area requiring examination is the requirement in section 33 of the PFMA for multi-year expenditure commitments to receive approval of the Minister of Finance and parliamentary authorisation. While this is a key accountability measure, the Act's current lack of a clear threshold may result in an excessive number of agreements being brought before Parliament. This could lead to delays and administrative bottlenecks in the approval process and ultimately commencement of key projects. A reasonable threshold that balances accountability and efficiency should be considered as an amendment to the Act to enhance implementation.

2. Training and Awareness Programmes: Extensive training and awareness should be provided for public officials. This will ensure they are aware of their obligations and responsibilities pertaining to the PFMA, thus facilitating compliance. The awareness programs could include understanding the requirements for budget preparation, approval for multi-year contracts, expenditure monitoring, and reporting, as well as the principles of transparency and accountability that underpin the Act. The MoF and Parliament should collaborate to develop and implement comprehensive awareness programs on the PFMA. These programs should target all relevant stakeholders, including principal spending officers, budget officers, accountants, legal officers procurement officials, and members of oversight committees.

Furthermore, the MoF and Parliament should require full compliance with the provisions of PFMA. This could be achieved through regular monitoring and reporting mechanisms to ensure that public officials are adhering to the requirements of the Act.

7.3 Contracting Methodology^(3/3)

Review of Contract terms by Attorney-General

Covered entities should also ensure that all contracts to which GoG is a party are reviewed by institutional legal resources and where necessary the Attorney General to confirm that the contract terms do not disadvantage the GoG.

For contracts that include the GoG as a party, it is advised that the Attorney-General, who serves as the principal legal advisor to the government, reviews the contract to ensure the terms are compliant with all relevant laws and the interests of the government are protected and not exposed to any avoidable financial or reputational liabilities.

The Office of the Attorney General and Ministry of Justice should also develop standardised terms and conditions covering critical clauses like intellectual property rights, indemnity and termination provisions to be included in all contracts. This measure will ensure the interests of the GoG and public entities are protected in every agreement. Additionally, in cases where a contract holder oversees the preparation of a contract, the legal team should conduct a thorough review to align the clauses to the benefit of the covered entity and GoG.

Board Review and Approval of all ongoing Contracts

The Board and Management of covered entities should regularly check for compliance reviews or audits of significant contractual arrangements to ensure relevant laws have been adhered to and the interests of GoG are protected in line with the Board's effective discharge of their monitoring function.

GRA should implement a monitoring framework and function that establishes clear criteria for the review of significant contractual arrangements. Reports from this function should be submitted functionally to the CG and presented to a committee of the Board at defined intervals.

According to the Corporate Governance Manual for Governing Boards / Councils of the Ghana Public Services, the functions of public Boards include oversight on risk management, strategy formulation and implementation, instituting internal controls, etc. Therefore, Boards of covered entities have a vested interest in the decisions and initiatives taken by management in discharging the covered entity's mandate. The Board in its oversight of internal controls, is also responsible for ensuring that laid down policies relating to the procurement process are adhered to. As such, management of covered entities should ensure that procurements involving significant financial commitments are reviewed by their Board to ensure all relevant considerations are taken into account and all necessary approvals are obtained.

7.4 Contract Performance, Value or Benefit^(1/2)

Contract Monitoring

GRA should ensure that contracts are clearly written and unambiguous, leaving no room for misinterpretation regarding roles, responsibilities, timelines, and performance expectations. Additionally, priority should be given to clearly defining key terms, metrics, and service level agreements to assess performance periodically and objectively.

- a) GRA should designate Contract Holders and responsible individuals for all significant contracts. We propose appointing the relevant Commissioner under GRA's Division as the primary Contract Holder for contracts developed, with the beneficiary function for e.g. in this instance, CTSB and PCA responsible for overseeing and reporting on compliance and progress to the Contract Holder. The Contract Holder would then report to the Commissioner General and the Board
- b) The Contract Holder and responsible persons must receive training on the contract's technical aspects, including expectations and the benefits sought by GRA. Additionally, they should be trained in utilising project management tools and techniques to effectively monitor contract compliance
- c) GRA and its service providers should promptly engage in discussions regarding any identified contract limitations to ensure mutual understanding and alignment.

VfM Assessments

GRA should perform value-for-money assessments biennially for contracts exceeding a lifespan of two years to optimise benefits. Additionally, contracts with durations less than two years should undergo one-time or annual assessments as agreed by both parties to ensure and monitor efficiency and VfM.

Build-Operate-Transfer Model for Major System Deployments

GRA should consider crafting contracts for major system deployments around Build-Operate-Transfer models as an option. This will ensure that GRA retains the ownership of the asset while benefiting from the expertise and resources of the vendor in system deployment, knowledge transfer/training and maintenance support.

7.4 Contract Performance, Value or Benefit ^(2/2)

Extensive Consultation with the Industry Regulators and other Stakeholders prior to System Implementation

GRA should ensure that there is extensive stakeholder consultation especially with industry regulators prior to the implementation of any monitoring system in order to achieve the following benefits:

- a) Informed decision-making: Decisions are made with input from all relevant stakeholders, leading to more informed and well-rounded decisions
- b) Consensus building: Consultation helps build consensus among stakeholders, increasing the likelihood that decisions will be accepted by all parties involved
- c) Managing expectations: By involving stakeholders in the decision-making process, their expectations can be managed and aligned with the project's goals and objectives
- d) Identifying and mitigating risks: Consultation can help identify potential risks and challenges early on, allowing for proactive risk management and mitigation strategies
- e) Enhancing transparency and accountability: Stakeholder consultation promotes transparency and accountability by ensuring that all stakeholders are aware of the decision-making process and have an opportunity to contribute.

Proper Document Retention/Digital Archiving

GRA and the contracted service providers should agree on clear document retention policies, ensuring the proper identification, storage, and periodic review of relevant documents. Additionally, GRA should consider implementing a digital archiving solution to ensure all important information including waybills are preserved and easily accessible over time, even if the original physical documents or data are lost or damaged.

Setup of a Calibration Centre for Meter Calibration

GRA, in discussions with key relevant stakeholders such as NPA, PC and GSA should setup an in-country calibration center that will define calibration standards and perform calibration of fiscal metering devices. This will ensure that measuring instruments and equipment are accurate and reliable based on acceptable industry standards. The calibration centre will also help depots and FPSOs comply with industry standards and regulations that require regular calibration of equipment.

7.5 Financial Arrangements^(1/2)

Pricing Model

GRA should ensure agreed pricing structures align with leading guidance which proposes a fixed compensation rather than a variable fee pricing model for assurance services:

- a) Under the external price verification service, GRA could explore alternative options by subscribing directly to additional databases. Alternatively, GRA could renegotiate the pricing structure with SML to a fixed fee to ensure it accurately reflects the value derived from utilising SML's software
- b) Under the downstream contract, GRA should consider revising the pricing structure by adopting a fixed pricing model to ensure that the value derived commensurate with the underlying activities being provided.

GRA should seek legal advice regarding the implications of modifications in fees, scope, and other critical changes, as well as identify and address any evident non-performance concerns.

Payment to Vendors on Correct Invoices

GRA should review all invoices received from service providers and reject invoices that have discrepancies or inaccuracies. The service provider should be notified of the specific errors and be requested to amend and resubmit the invoice. Only after confirmation that the revised invoice is free of errors and fully compliant with the contractual terms should the GRA proceed with the payment processing.

7.5 Financial Arrangements^(2/2)

Payment of Outstanding VAT and initiation of Tax Audit into SML's Activities

GRA should mandate SML to settle the outstanding VAT amount and associated accrued interest identified from our review. Furthermore, GRA should conduct a comprehensive tax audit of SML's operations to ascertain their adherence to all relevant tax obligations, including timely and accurate payment of taxes and filing of VAT returns.

Adjustments to Service Vendor Rates

GRA should seek legal advice on the implications of adjusting service providers agreed fees, even if internal circumstances warrant and justify the adjustments.

Sharing of CIF Values for Invoice Generation

GRA should ensure that the CIF values from the preceding month is formally communicated to SML and other port service providers whose payments are based on CIF values, to enable the service providers issue invoices that reflects the true amount payable from GRA.

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Appendices

Appendices

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Appendix 1: Persons Interviewed

8.1 Appendix 1: Persons interviewed (1/4)

The following is a list of all persons interviewed at various stages during the execution of this audit:

S/N	Name	Position
MoF		
1	Hon. Ken Ofori-Atta ("Mr. Ofori-Atta")	Minister of Finance
2	Hon. John Kumah ("Mr. Kumah") (Deceased)	Deputy Minister of Finance
3	Ms. Grace Mbrokoh-Ewoal ("Ms. Mbrokoh-Ewoal")	Director, Legal Division
4	Mr. Ernest Akore ("Mr. Akore")	Technical Advisor to the Minister of Finance
5	Mr. George Swanzy Winful ("Mr. Winful")	Director, Revenue Policy Division
6	Mr. Richard Opoku Mensah ("Mr. Opoku Mensah")	Technical Analyst
GRA		
1	Dr. Anthony Oteng-Gyasi ("Dr. Gyasi")	Board Chairman (August 2021 to date of the report)
2	Rev. Dr. Ammishaddai Owusu-Amoah ("Dr. Owusu- Amoah")	Commissioner-General
3	Alhaji Seidu Iddrisu Iddisah ("Mr. Iddisah")	Commissioner, Customs Division, GRA

S/N	Name	Position
GRA (cont'd)		
4	Mr. Edward Apenteng Gyamerah ("Mr. Gyamerah")	Commissioner, Domestic Tax and Revenue Division
5	Ms. Julie Essiam ("Ms. Essiam")	Commissioner, Support Services Division
6	Prof. Stephen Adei ("Prof. Adei")	Former Board Chairman
7	Mr. Kofi Nti ("Mr. Nti")	Former Commissioner-General
8	Colonel (Rtd.) Kwadwo Damoah ("Mr. Damoah")	Former Commissioner Customs Division
9	Dr. Isaac Crenstil ("Mr. Crenstil")	Former Commissioner, Customs Division
10	Meshaah K. Danso ("Mr. Danso")	Ag. Head Petroleum
11	Ampson Anim ("Mr. Anim")	CRO
12	Edward Apaloo ("Mr. Apaloo")	RO - Headquarters
13	Blessed Kyei-fram ("Mr. Kyei-fram")	RO - (TOR)
14	Samuel Arthur ("Mr. Arthur")	ARO
15	Daniel Foli ("Mr Foli")	Head of Procurement

8.1 Appendix 1: Persons interviewed (2/4)

S/N	Name	Position
SML		
1	Mr Evans Adusei ("Mr. Adusei")	Chairman & CEO
2	Mr. Christian Sottie ("Mr. Sottie")	Managing Director/CEO*
3	Mr. Hamdan Abukari ("Mr. Abukari")	Head, Engineering
4	Mr. Prince Sarpong ("Mr. Sarpong")	Head, IT – Petroleum
5	Mr. John Ekow Mensah ("Mr. Ekow Mensah)	Head, Operations
6	Mr. Samuel J. Prempeh ("Mr. Prempeh")	Head, Group IT
7	Mr. Richard Marfo ("Mr. Marfo")	Technical Advisor to the MD
8	Mr. Kwame Boafo ("Mr. Boafo")	Human Resources Manager
9	Mr. Crosby Attipoe ("Mr. Attipoe")	Classification Manager
10	Ms. Yaa Serwaa Sarpong-Adusei ("Ms. Sarpong-Adusei")	Advisor to the Chairman
11	Mr. Emmanuel Afriyie Koranteng ("Mr. Koranteng")	Quality Control Manager

S/N	Name	Position
PPA		
1	Frank Mante ("Mr. Mante")	CEO
2	Lesley Doodoo ("Mrs. Doodoo")	Director (Legal)
3	Victor Eric Appiah ("Mr. Appiah")	Former Director (Compliance, Monitoring & Evaluation Unit)
4	Joseph Kuruk ("Mr. Kuruk")	Deputy Director (Compliance, Monitoring & Evaluation Unit)
NPA		
1	Curtis Perry Okudzeto ("Mr. Okudzeto")	Deputy CEO
2	Aaron A Gyaban-Mensah ("Mr. Gyaban-Mensah")	Manager, Legal
3	Melanie Akoto ("Ms. Akoto")	EA Deputy CE
4	Jacob Kwamina Amuah ("Mr. Amuah")	OPPF Coordinator
5	Fred Abban ("Mr. Abban")	Manager
6	Linda Asante ("Ms. Asante")	DCC
7	Belinda Adjei ("Ms. Adjei")	Admin Officer

* - Managing Director per SML organogram, CEO per SML website

8.1 Appendix 1: Persons interviewed (3/4)

S/N	Name	Position
PC		
1	Mr. Egbert Faibille ("Mr. Faibille")	Chief Executive
2	Edward Appiah-Brafoh ("Mr.Appiah-Brafoh")	Corporate Affairs Manager
3	Mr. Richard Addo Darko ("Mr. Addo Darko")	Dir Res Management
4	Ms. Sarah Quayson Danquah ("Ms. Danquah")	Ag. Director, Human Resource Localisation
5	Mr. Henry Mensah ("Mr. Mensah")	Ag. Director Operation
GNPC		
1	Mr. Daniel Koranteng ("Mr. Koranteng")	Production Engineer, AG. Manager
2	Mr. Yaw Ackonor ("Mr. Ackonor")	Manager, Facilities Engineer
3	Mr. Simon Essilfie ("Mr. Essilfie")	Reservoir Engineer, AG. Manager
4	Mr. Albert L. Nyewan ("Mr. Nyewan")	Compliance, Deputy Manager

S/N	Name	Position
CBOD		
1	Dr. Patrick Kwaku Ofori ("Mr. Ofori")	CEO
2	Richard Kissi ("Mr. Kissi")	Head of Finance
GCM		
1	Sulemana Koney ("Mr. Koney")	CEO
2	Ahmed Dasana Nantogmah	Director, External Relations and Communications
3	Christopher Opoku Nyarko ("Mr. Opoku Nyarko")	Ag. Director, Analysis, Research and Finance
MoLNR		
1	Hon. Samuel A. Jinapor ("Mr. Jinapor")	Minister of Lands and Natural Resources
2	Clelus Alengah ("Mr. Alengah")	Legal Counsel
PMMC		
1	Nana Akwasi Awuah ("Mr. Awuah")	Managing Director
2	Derrick Fredua Akohene ("Mr. Akohene")	Deputy Managing Director
3	Araba M. Brew-Hammond (Ms. Brew-Hammond")	Legal Officer

8.1 Appendix 1: Persons interviewed ^(4/4)

S/N	Name	Position
MC		
1	Martin Ayisi ("Mr. Ayisi")	CEO
MIIF		
1	Daniel Imadi	Head of Legal and Compliance
2	Seidu Sumaila	Chief Financial Officer
3	Bubune Sorkpor	Chief Investment Officer
GSA		
1	Prof. Alex Dodoo	Director General
2	Steve Opoku	Deputy Director-General (Operations)
3	Striggner Bedu-Addo	Head, Information Technology

S/N	Name	Position
ME		
1	Hon. Matthew Opoku Prempeh	Minister of Energy
2	Andrew Mercer	Deputy Minister
3	William Aidoo	Deputy Minister
4	Herbert Krapa	Deputy Minister
5	Wilhelmina Asamoah	Chief Director
6	Kwame Ntow Amoah	Director, Petroleum
7	Kwame Agyapong	Technical Advisor to the Minister
8	Isaac Ampofo	Engineer
9	Ernest B. Wiafe	Director, Internal Audit
10	Ali Nuhu Abeka	Finance

Appendix 2: Documents Reviewed

8.2 Appendix 2: Documents reviewed ^(1/11)

The following is a list of all documents reviewed from various stakeholders during the execution of this project:

S/N	Document Title	Source Institution	Reviewed Under
1	Transaction Audit Services Agreement	GRA	Needs Assessment, Contract Performance, Contract Methodology
2	Contract Extension	GRA	Needs Assessment, Contract Performance, Contract Methodology
3	Contract for Additional Services	GRA	Needs Assessment, Contract Performance, Contract Methodology
4	Consolidation of Services Agreement (Transaction Audit & External Verification Services)	GRA	Needs Assessment, Contract Performance, Contract Methodology
5	Measurement Audit for Downstream Petroleum Products Agreement	GRA	Needs Assessment, Contract Performance, Contract Methodology
6	Contract for Consolidation of Revenue Assurance Services	GRA	Needs Assessment, Contract Performance, Contract Methodology
7	Measurement Audit for Downstream petroleum products	GRA	Contract Performance
8	Addendum to measurement audit for downstream petroleum products	GRA	Contract Performance

8.2 Appendix 2: Documents reviewed ^(2/11)

S/N	Document Title	Source Institution	Reviewed Under
9	SML Downstream Proposal	GRA	Contract Performance
10	SML Upstream and Mining Proposal	GRA	Contract Performance
11	IT Infrastructure	SML	Contract Performance
12	Certificates of Incorporation and to commence business	SML	Contract Performance
13	Policies	SML	Contract Performance
14	Petroleum Lifting Reports	SML	Contract Performance
15	Reports from SML to GRA	SML	Contract Performance
16	Meeting Minutes from Gold and Upstream Meetings	SML	Contract Performance
17	Training Manuals	SML	Contract Performance

8.2 Appendix 2: Documents reviewed (3/11)

S/N	Document Title	Source Institution	Reviewed Under
18	Training Reports	SML	Contract Performance
19	Training Attendance Reports	SML	Contract Performance
20	Project Milestone Document	SML	Contract Performance
21	Ghana Standards Authority Calibration Reports	SML	Contract Performance
22	Meeting Minutes, Correspondence and Memos between GRA, SML, MoF and other stakeholders	GRA, SML, MoF	Contract Performance
23	Measurement Audit for Downstream petroleum products	GRA	Contract Methodology
24	Addendum to measurement audit for downstream petroleum products	GRA	Contract Methodology
25	Correspondence between GRA and PPA	GRA	Contract Methodology
26	Curriculum Vitae's ("CV") for SML Board and Management Team	SML	Contract Methodology
27	BDCs_2014 to 2023	NPA	Value and Benefits

8.2 Appendix 2: Documents reviewed (4/11)

S/N	Document Title	Source Institution	Reviewed Under
28	Bi-Annual Stock Balances_2014-2019	NPA	Value and Benefits
29	Bulk Oil Storage Depots	NPA	Value and Benefits
30	Export Volumes (2014-2023)	NPA	Value and Benefits
31	Import Data From 2014- September 2023	NPA	Value and Benefits
32	Inter depot BRV Transfers 2015 - 2023	NPA	Value and Benefits
33	Inter depot Transfers via Barges	NPA	Value and Benefits
34	Inter depot Transfers via Pipeline	NPA	Value and Benefits
35	Local Production Data (2014-2023)	NPA	Value and Benefits
36	OMC Ordering and Loading Process	NPA	Value and Benefits
37	GRA Annual Reports (2019-2022)	GRA	Value and Benefits
38	Bi-Annual Stock Balances_2014-2019	NPA	Value and Benefits

8.2 Appendix 2: Documents reviewed ^(5/11)

S/N	Document Title	Source Institution	Reviewed Under
39	CBOD Reports (2018-2021)	NPA	Value and Benefits
40	Summary Flow Reports(July 2020 - December 2023)	SML	Value and Benefits
41	All Waybill Data (2022 - 2023)	SML	Value and Benefits
42	Daily Flow Meter Readings Lifting Report (2020 - 2023)	SML	Value and Benefits
43	Daily Spool of Purchase Orders (2022 - 2023)	SML	Value and Benefits
44	SML ICUMS Product Mapping	SML	Value and Benefits
45	Waybill Scan Samples	SML	Value and Benefits
46	Daily Flow Meter Readings Lifting Report	SML	Value and Benefits
47	Daily Petroleum Lifting Report from 2020-2023 grouped by product	SML	Value and Benefits
48	Daily Spool of Purchase Orders Feb 2022 - Dec 2023	SML	Value and Benefits
49	Monthly Flow Meter Readings Lifting Report	SML	Value and Benefits

8.2 Appendix 2: Documents reviewed ^(6/11)

S/N	Document Title	Source Institution	Reviewed Under
50	Monthly Petroleum Lifting Report	SML	Value and Benefits
51	Waybill Daily Petroleum Lifting Report Feb 2022 - Dec 2023	SML	Value and Benefits
52	Sample Scanned Waybills (photos)	SML	Value and Benefits
53	Inter depot data	SML	Value and Benefits
54	Evidence of Fuel Loaded back into BRVs but discharged back into tanks	SML	Value and Benefits
55	GSA Calibration Reports	SML	Value and Benefits
56	Petroleum Lifting Reports 2020 -2023	SML	Value and Benefits
57	SML Petroleum Lifting Reports to GRA	SML	Value and Benefits
58	Sample Discrepancy Reports to GRA	SML	Value and Benefits
59	List of Depots monitored by SML	SML	Value and Benefits
60	Acceptable Use of Assets- IT Policy	SML	Value and Benefits

8.2 Appendix 2: Documents reviewed ^(7/11)

S/N	Document Title	Source Institution	Reviewed Under
61	Backup Policy	SML	Value and Benefits
62	IT Access Control Policy	SML	Value and Benefits
63	Mobile Device Policy	SML	Value and Benefits
64	Password Policy	SML	Value and Benefits
65	Policy for Working in Secure Areas	SML	Value and Benefits
66	User Access Rights Policy	SML	Value and Benefits
67	User Registration and Deregistration Policy	SML	Value and Benefits
68	Procedure for procurement process	SML	Value and Benefits
69	Compliance - Information Security Policy	SML	Value and Benefits
70	SML Information Security Policy	SML	Value and Benefits
71	Application_Flow_Diagram	SML	Value and Benefits

8.2 Appendix 2: Documents reviewed (8/11)

S/N	Document Title	Source Institution	Reviewed Under
72	Change Request	SML	Value and Benefits
73	IT Meeting	SML	Value and Benefits
74	IT PLAN	SML	Value and Benefits
75	List of Service Providers	SML	Value and Benefits
76	Nmap Scan Report - Scanned at Wed Jul 1 18_49_20 2020	SML	Value and Benefits
77	Penetration_Testing (PENTESTING)_Report	SML	Value and Benefits
78	Stress Test Report	SML	Value and Benefits
79	System Extracted User List	SML	Value and Benefits
80	User Access Log	SML	Value and Benefits
81	Vulnerability Scan	SML	Value and Benefits
82	IT Infrastructure	SML	Value and Benefits

8.2 Appendix 2: Documents reviewed ^(9/11)

S/N	Document Title	Source Institution	Reviewed Under
83	List of Users for New TPDv2	SML	Value and Benefits
84	Request 5.1 - Audit Activity Log GRA 1 June 2018 to 2nd October 2019	SML	Value and Benefits
85	Request 6.1 Audit Activity Log SMOPS GRA 3 Oct 2019 to 2 Jan 2024	SML	Value and Benefits
86	ESLA Reports (2018 - 2022)	N/A	Value and Benefits
87	Penalty Payments (VI)	GRA	Value and Benefits
88	Tax Exemption April 2020 - December 2023 (XI TAX EXEMPT)	GRA	Value and Benefits
89	BDCs PETROLEUM IMPORT FROM APRIL 1, 2020 TO DECEMBER 31, 2023 (XIII CIF)	GRA	Value and Benefits
90	ICUMS Data (VIII UPDATED)	GRA	Value and Benefits
91	ICUMS Daily Petroleum Lifting report 2021 - Dec 2023	GRA	Value and Benefits
92	Taxes declared and paid	GRA	Value and Benefits
93	In-tank Volumes Report	GRA	Value and Benefits

8.2 Appendix 2: Documents reviewed ^(10/11)

S/N	Document Title	Source Institution	Reviewed Under
94	Final to KPMG - Project Needs Assessment Report - SML	GRA	Value and Benefits
95	Strategic and Mobilisation LTD- Audit and Monitoring Report (July 2020 - June 2021, January 2023 - June 2023)	GRA	Value and Benefits
96	Operational report. May 2021 to Date	GRA	Value and Benefits
97	Penalty Payments	GRA	Value and Benefits
98	Petroleum downstream progress flow - Memo	GRA	Value and Benefits
99	Petroleum Stock Reconciliation Report – May 2021	GRA	Value and Benefits
100	GRA Bank Statements	GRA	Value and Benefits
101	SML_Performance_PDF	SML	Value and Benefits
102	Performance Report on SML Audit and Assurance of Petroleum Downstream	SML	Value and Benefits
103	ERDMS Spool	NPA	Value and Benefits
104	ICUMS_PMSAGOLPG_May2020-Dec2023	GRA	Value and Benefits
105	OMC Performance	NPA	Value and Benefits
106	Sample Reconciliation Reports	SML	Value and Benefits

8.2 Appendix 2: Documents reviewed ^(11/11)

S/N	Document Title	Source Institution	Reviewed Under
107	SML Downstream Proposal	SML	Financial Arrangements
108	SML fianancial Statements	SML	Financial Arrangements
109	Meeting Minutes	GRA	Financial Arrangements
110	Various Contracts	GRA	Financial Arrangements
111	Correspondences between GRA and MoF	GRA	Financial Arrangements
112	SML Invoices for downstream Contract	SML	Financial Arrangements
113	Payment Advice for Downstream Contract	GRA	Financial Arrangements
114	Payment Advice for Transaction Audit and Price Verification	GRA	Financial Arrangements
115	Petroleum Liftings	NPA	Financial Arrangements
116	Chamber of Mines report	N/A	Financial Arrangements
117	SML upstream proposal	SML	Financial Arrangements

Appendix 3: Classification of SML Contracts

8.3 Appendix 3: Classification of SML contracts

The scope of services provided by SML to GRA involves a combination of consultancy and technical services. The table below details the types of services provided by SML under the Service Contracts and their respective classifications:

S/N	Scope of work as reflected in the various contracts with SML	Related Contract	Classification
1	Setting parameters including random generators to select transactions which are to be subject to further audit by SML	Contract 1	Technical Service
2	Auditing selected importers and forwarding audit reports to the Customs Post Clearance Audit officer	Contract 1	Consultancy Service
3	Conducting re-audits where audit reports are rejected by the Post Clearance Audit Officer	Contract 1	Consultancy Service
4	External price verification	Contract 3	Consultancy Service
5	Undertaking a comprehensive review of workflow and the review of operations within the downstream petroleum, upstream petroleum and the mineral resources sectors	Contract 5 & 7	Consultancy Service
6	Developing and implementing an end-to-end EMMS	Contract 5 & 7	Technical Service
7	Product measuring and monitoring and digitalising the entire delivery chain deploying very accurate computerised fiscal Metering system	Contract 5 & 7	Technical Service
8	Identifying and reporting to GRA the quantities of petroleum products delivered to the bulk distribution centre depots	Contract 5	Consultancy Service
9	Implementing an EMMS which is dedicated solely to the fiscal measurement aimed at loss prevention	Contract 5 & 7	Technical Service
10	Installing state of the art RTUs at all necessary points along the supply and value chain to access the production data from all the operators and key processing, storage and offtake facilities within our oil and gas eco system	Contract 7	Technical Service
11	Implementing SML NOVA – Mineral Resources Auditing and Security Systems dedicated solely to monitoring smelting and pouring, box sealing and weighing and tracking to KIA from all the recognised mining companies for export.	Contract 7	Technical Service

Appendix 4: KPMG Observations on Value Analysis Performed by GRA and SML

8.4 Appendix 4: KPMG observations on Value Analysis Performed by GRA and SML^(1/2)

Sample of transpositional errors in dates

S/N	ICUMS Data			Underlying Data for GRA Needs Assessment		
	Order Date	Transaction ID	Quantity	Order Date	Transaction ID	Quantity
1	02/08/2021	ORD2108021191002567	13,500	08/02/2021	ORD2108021191002567	13,500
2	02/08/2021	ORD2108021211002569	27,000	08/02/2021	ORD2108021211002569	27,000
3	02/08/2021	ORD2108021221002570	13,500	08/02/2021	ORD2108021221002570	13,500
4	06/09/2021	ORD2109068991025608	54,000	09/06/2021	ORD2109068991025608	54,000
5	06/09/2021	ORD2109069001025609	54,000	09/06/2021	ORD2109069001025609	54,000
6	06/09/2021	ORD2109069011025610	54,000	09/06/2021	ORD2109069011025610	54,000
7	02/11/2021	ORD2111023531064417	36,000	11/02/2021	ORD2111023531064417	36,000
8	02/11/2021	ORD2111023541064418	13,500	11/02/2021	ORD2111023541064418	13,500
9	02/11/2021	ORD2111023551064419	45,000	11/02/2021	ORD2111023551064419	45,000
10	02/01/2023	ORD2301021061347312	49,500	01/02/2023	ORD2301021061347312	49,500
11	02/01/2023	ORD2301021071347313	45,000	01/02/2023	ORD2301021071347313	45,000
12	06/01/2023	ORD2301067421351280	23,960	01/06/2023	ORD2301067421351280	23,960
13	06/01/2023	ORD2301067451351283	54,000	01/06/2023	ORD2301067451351283	54,000
14	06/01/2023	ORD2301067461351284	45,000	01/06/2023	ORD2301067461351284	45,000
15	01/03/2023	ORD2303014981388614	18,000	03/01/2023	ORD2303014981388614	18,000
16	01/03/2023	ORD230301501388166	8,800	03/01/2023	ORD230301501388166	8,800
17	01/03/2023	ORD2303015041388620	18,000	03/01/2023	ORD2303015041388620	18,000
18	11/04/2023	ORD2304113531416444	45,000	04/11/2023	ORD2304113531416444	45,000
19	11/04/2023	ORD2304113541416445	54,000	04/11/2023	ORD2304113541416445	54,000
20	11/12/2023	ORD231211991594175	45,000	12/11/2023	ORD231211991594175	45,000

8.4 Appendix 4: KPMG observations on Value Analysis Performed by GRA and SML^(2/2)

Sample of duplicated records in underlying data used for value analysis by GRA and SML

S/N	Order Date	Transaction ID	Quantity
1	15/09/2023	ORD23091510001535271	36,000
2	15/09/2023	ORD23091510001535271	36,000
3	15/09/2023	ORD23091510011535272	54,000
4	15/09/2023	ORD23091510011535272	54,000
5	15/09/2023	ORD2309151001534371	21,540
6	15/09/2023	ORD2309151001534371	21,540
7	15/09/2023	ORD23091510021535273	13,500
8	15/09/2023	ORD23091510021535273	13,500
9	15/09/2023	ORD23091510031535274	54,000
10	15/09/2023	ORD23091510031535274	54,000
11	15/09/2023	ORD23091510041535275	45,000
12	15/09/2023	ORD23091510041535275	45,000
13	15/09/2023	ORD23091510061535277	54,000
14	15/09/2023	ORD23091510061535277	54,000
15	15/09/2023	ORD23091510071535278	54,000
16	15/09/2023	ORD23091510071535278	54,000
17	15/09/2023	ORD23091510081535279	54,000
18	15/09/2023	ORD23091510081535279	54,000
19	15/09/2023	ORD23091510091535280	13,500
20	15/09/2023	ORD23091510091535280	13,500

Records in underlying data used for value analysis by GRA and SML but not present in ICUMS

S/N	Order Date	Transaction ID	Quantity
1	20/06/2022	ORD2206208491232048	54,000
2	22/11/2022	ORD2211226491324452	45,000
3	22/11/2022	ORD221122711323874	45,000
4	22/11/2022	ORD221122731323876	45,000
5	22/11/2022	ORD221122771323880	45,000
6	22/11/2022	ORD221122801323883	45,000
7	20/04/2023	ORD2304204141424509	20,697

Appendix 5: List of Stakeholders Engaged

8.5 Appendix 5: List of stakeholders engaged ^(1/14)

The following is a list of all stakeholders engaged at various stages during the execution of this audit:

S/N	Name	Organisation	Position
1	Rev. Dr. Ammishaddai Owusu-Amoah	GRA	Commissioner-General
2	Dominic Naab	GRA	AC-General Services
3	Naomi Chartey	GRA	Public Relationship Officer (TOR)
4	Samuel Arthur	GRA	Assistant Revenue Officer (“ARO”)
5	Edward Apaloo	GRA	RO - Headquarters
6	Blessed Kyei-Fram	GRA	RO - (TOR)
7	Ampson Anim	GRA	CRO - Head
8	Meshaah K. Danso	GRA	Ag. Head Petroleum
9	Egbert Faibille	PC	Chief Executive
10	Edward Appiah-Brafoh	PC	Corporate Affairs Manager

8.5 Appendix 5: List of stakeholders engaged (2/14)

S/N	Name	Organisation	Position
11	Richard Addo Darko	PC	Director, Resources Management
12	Sarah Quayson Danquah	PC	Ag. Director, Human Resource Localisation
13	Henry Mensah	PC	Ag. Director Operation
14	Hon. Ken Ofori-Atta	MoF	Minister of Finance
15	Hon. John Kumah	MoF	Deputy Minister of Finance
16	Grace Mbrokoh-Ewoal	MoF	Director, Legal Division
17	Ernest Akore	MoF	Technical Advisor to the Minister of Finance
18	George Swanzy Winful	MoF	Director, Revenue Policy Division
19	Richard Opoku Mensah	MoF	Technical Analyst
20	Mr Evans Adusei	SML	Chairman & CEO

8.5 Appendix 5: List of stakeholders engaged ^(3/14)

S/N	Name	Organisation	Position
21	Christian Sottie	SML	Managing Director
22	Hamdan Abubakar	SML	Head, Engineering
23	Prince Sarpong	SML	Head, IT - Petroleum
24	John Ekow Mensah	SML	Head, Operations
25	Samuel J. Prempeh	SML	Head, Group IT
26	Richard Marfo	SML	Technical Advisor to the MD
27	Kwame Boafo	SML	Human Resources Manager
28	Crosby Attipoe	SML	Classification Manager
29	Yaa Serwaa Sarpong-Adusei	SML	Advisor to the Chairman
30	Emmanuel Afriyie Koranteng	SML	Quality Control Manager

8.5 Appendix 5: List of stakeholders engaged ^(4/14)

S/N	Name	Organisation	Position
31	Dominic Naah	GRA	AC- CGS
32	Naomi Chantey	GRA	PRO (TOR)
33	Samuel Arthur	GRA	ARO (COM.SECT)
34	Edward Apaloo	GRA	RO (HQ)
35	Essel Kyei-Fram	GRA	RO (TOR)
36	Sampson Anim	GRA	CRO (Head, Ops)
37	Meshach K. Danso	GRA	AG Head (Petroleum)
38	Oscar Awini	GRA	Head, PCA
39	Emmanuel Opare Addo	GRA	Accountant
40	Rosemary Addo-Parker	GRA	AC, CTSB
41	Augustine Adegah	GRA	AC, PCA

8.5 Appendix 5: List of stakeholders engaged ^(5/14)

S/N	Name	Organisation	Position
42	Frank Mante	PPA	CEO
43	Lesley Dodou	PPA	Director (Legal)
44	Victor Eric Appiah	PPA	Former Director (Compliance, Monitoring & Evaluation Unit)
45	Joseph Kuruk	PPA	Deputy Director (Compliance, Monitoring & Evaluation Unit)
46	Evans Adusei	SML	CEO
47	Christian Sottie	SML	COO/Consultant
48	Hamdan Abukari	SML	Head of Engineering
49	Prince Sarpong	SML	IT Head, Petroleum Downstream
50	Yaa Serwaa Sarpong	SML	Advisor to the CEO
51	Samuel Prempeh	SML	IT Head

8.5 Appendix 5: List of stakeholders engaged ^(6/14)

S/N	Name	Organisation	Position
52	Kwabena Boahene	SML	Field Engineer
53	Judith Bani	SML	Operations Manager
54	Christian T. Sottie	SML	General Manager, Petroleum Downstream
55	John Ekow Mensah	SML	Operations Head
56	Richard Marfo	SML	Technical Advisor to the MD
57	Kwame Boafo	SML	Human Resources Manager
58	Crosby Attipoe	SML	Classification Manager
59	Emmanuel Afriyie Koranteng	SML	Quality Control Manager
60	Kofi Amoah	SML	Consultant
61	Edward Akpaloo	GRA	Customs Officer, Downstream Petroleum

8.5 Appendix 5: List of stakeholders engaged ^(7/14)

S/N	Name	Organisation	Position
62	Meshach Danso	GRA	Head of Downstream Petroleum
63	Blessed Kyei-Fram	GRA	Customs Officer, Downstream Petroleum
64	Jeremiah James-Ocloo	GRA	Second-in-command, Customs BOST APD
65	Frank Kusi	GRA	Second-in-command, QOTL
66	Nasiru A. Mumuni	GRA	Customs
67	Patrick Djabanor	GRA	Customs
68	Elizabeth Opoku	GRA	Customs
69	Emmanuel Ato Mensah	GRA	ARO
70	Collins Appiah Mensah	GRA	Service, QOTL
71	Alex Gyamera	GRA	2IC, TOR

8.5 Appendix 5: List of stakeholders engaged ^(8/14)

S/N	Name	Organisation	Position
72	Bismark Adu-Kyei	GRA	Customs Officer
73	Percy Amoako	GRA	Customs, QOTL
74	Jacob Amuah	NPA	Director, UPPF Operations
75	Perry Okudzeto	NPA	Deputy Chief Executive
76	Edmund Gsahl	NPA	National Service Personnel (NSP)
77	Romano Amoako	NPA	National Service Personnel (NSP)
78	Nana Ama Q. Akwaboah	NPA	National Service Personnel (NSP)
79	Colins Yeboah	NPA	Deputy IT Manager
80	Evans Addo Asamany	NPA	Assistant Manager, Depot Operations
81	Fawzy Issifu	NPA	NPA Official

8.5 Appendix 5: List of stakeholders engaged ^(9/14)

S/N	Name	Organisation	Position
82	Godwin Duncan Alikor	GPMS	General Manager
83	Obed Kofi Aphoto	GPMS	Operations Lead
84	Mary Annang	MoF	RACE team
85	George Winful	MoF	Director, Revenue Policy Division, MOF
86	Kofi Baiden	MoF	RACE team
87	Sukhwinder Singh	BOST APD/TSL	Terminal Operations Manager (TOM)
88	Abubakari Yehuza	BOST APD	Technician
89	Michael Amofa	BOST APD/ TSL	Assistant Product Coordinator
90	Eric Asare Osei Bonsu	BOST APD	Operation Technician
91	Olukokun Olushola	TSL	Pro. Coordinator

8.5 Appendix 5: List of stakeholders engaged ^(10/14)

S/N	Name	Organisation	Position
92	Cornelius Senyo Attah	TSL	HSEQ
93	Amoah Bright	Rock Africa	Supervisor
94	Christopher Tetteh	Rock Africa	ECTS
95	Isaac Korsah	Rock Africa (TOR)	Seal Preparation
96	Adjarthey Odopey	Tema Fuel Company (“TFC”)	Stocks Supervisor
97	Emmanuel Acheampong	TFC	HSSE Officer
98	William Bentil	TFC	Tank Farm Supervisor
99	Kofi A. Amponsah	TFC	Tank Farm Controller
100	Ishmael Larbi Ashitey	TFC	Gantry Operator
101	Seedraina Jehu-Appiah	TFC	Stock Administrator

8.5 Appendix 5: List of stakeholders engaged ^(11/14)

S/N	Name	Organisation	Position
102	Selorm Yaw Fiagbedzi	TFC	Gantry Operator
103	Nii Anokwafo Tetteh-Mensah	TFC	Tank Farm Operator
104	Naphtali Yeboah-Asare	TFC	Tank Farm Operator
105	Daniel J. Atepaloo	TFC	Gantry Supervisor
106	Stanley Annang	TOR	Loader
107	Lewis Osei-Wusu	TOR	Delivery Clerk
108	Vincent Avenya	TOR	Technician
109	Francis Ebow Amonoo	TOR	National Service Personnel (NSP)
110	Alice Appau	TOR	Distribution Manager
111	Rosina Fiahagbe	TOR	Exports and Imports Manager

8.5 Appendix 5: List of stakeholders engaged ^(12/14)

S/N	Name	Organisation	Position
112	Charles Awuah	TOR	Commerce Division
113	William Hamenu	TOR	Safety Officer
114	Alex Dei Osei	TOR	National Security Officer
115	Kwesi Rogers	TOR	Booking Officer
116	George Appiagyei	TOR	Loading Technician
117	Emmanuel Blay	TOR	Deliveries
118	Forster Frimpong	NTL (TOR)	Asst. Supervisor
119	David Donkor	Nationwide Technologies Limited (“NTL”)	Assistant Supervisor
120	Frank Ato Nartey	NTL	Marking Officer
121	Bannerman Arthur	Tema Tank Farm (“TTF”)	Foreman

8.5 Appendix 5: List of stakeholders engaged ^(13/14)

S/N	Name	Organisation	Position
122	Laydrown Agardru	TTF	Tank Farm Operator
123	Racheal Siaw	TTF	Stocks Supervisor
124	Nana A. Winful	TTF	Operations Manager
125	Geoffrey Takyi	TTF	Officer
126	Nana Ama E. Bonney	TTF	Officer
127	Ahmed Sheriff	Quantum Oil Terminals Limited (“QOTL”)	Terminal Manager
128	Joseph Djabanor	QOTL	Maintenance Supervisor
129	Peter Inkum	QOTL	Operations Supervisor
130	Anthony R. Tsiquaye	QOTL	HSSE Officer
131	Ernest Quaye	QOTL	Control Room Operator

8.5 Appendix 5: List of stakeholders engaged ^(14/14)

S/N	Name	Organisation	Position
132	Eric Arko	QOTL	Stocks and Quality Control Officer
133	Benedicta Yeboah	QOTL	Stocks (Waybill)
134	Osborn Nyametiase Otu	QOTL	Stocks (Waybill)
135	Frederick Kpodo	QOTL	HSSE Officer
136	Jerry Okantey	PERSOL	Managing Director

Appendix 6: Petroleum Liftings

8.6 Appendix 6: Petroleum Liftings (1/2)

Below shows the volumes of petroleum liftings for all products for the period 2019 to 2023. For the purposes of this analysis, the data used includes re-exports, transits, so comparisons can be made like for like to SML

2019

Month	NPA	GRA (ESLA*/ICUMS)	SML
Jan	416,116,240	384,092,710*	-
Feb	393,675,590	346,337,290*	-
Mar	412,152,695	375,697,095*	-
Apr	458,979,136	392,669,516*	-
May	452,108,910	375,402,433*	-
Jun	399,988,379	343,455,219*	-
Jul	435,497,393	363,126,083*	-
Aug	421,639,830	346,823,560*	-
Sep	403,793,310	339,789,120*	-
Oct	431,462,879	358,651,721*	-
Nov	410,415,870	358,369,510*	-
Dec	447,529,120	386,899,520*	-
Total	5,083,359,352	4,371,313,777	-
Avg.	423,613,279	364,276,148	

2020

Month	NPA	GRA (ESLA*/ICUMS)	SML
Jan	416,916,640	370,675,220*	-
Feb	429,259,681	371,971,981*	-
Mar	422,599,130	370,561,230*	-
Apr	336,291,385	280,091,365*	-
May	408,904,727	406,379,657	-
Jun	451,527,950	451,505,170	-
Jul	449,196,410	449,157,910	456,127,343
Aug	427,391,550	427,082,320	436,329,481
Sep	458,438,209	459,341,709	468,308,853
Oct	451,574,688	451,547,688	426,994,560
Nov	483,166,749	483,085,749	483,729,184
Dec	513,124,400	513,101,900	499,720,161
Total	5,248,391,519	5,034,501,899	2,771,209,582
Avg.	463,815,334**	463,886,213**	461,868,264**

2021

Month	NPA	GRA (ICUMS)	SML
Jan	443,162,000	443,162,000	456,469,512
Feb	439,258,590	439,258,590	450,593,838
Mar	521,817,425	521,817,425	509,074,917
Apr	500,079,278	499,940,778	489,747,946
May	440,272,580	440,259,080	440,316,777
Jun	481,774,577	482,288,577	472,706,816
Jul	466,745,489	466,785,989	451,309,075
Aug	469,682,970	469,670,850	448,324,126
Sep	464,346,568	464,306,068	459,720,381
Oct	479,085,187	479,116,687	439,759,505
Nov	506,163,431	506,193,931	491,303,635
Dec	559,658,540	559,615,539	537,820,377
Total	5,772,046,635	5,772,415,514	5,647,146,906
Avg.	481,003,886	481,034,626	470,595,576

* Represents petroleum liftings reported by GRA to Parliament through MoF

** Represents the average for the period July to December 2020

8.6 Appendix 6: Petroleum Liftings ^(2/2)

2022			
Month	NPA	GRA (ICUMS)	SML
Jan	460,878,739	460,924,739	454,177,681
Feb	472,062,437	472,062,437	459,199,029
Mar	449,165,135	452,410,405	449,055,697
Apr	512,660,278	515,930,918	487,609,067
May	471,220,375	471,684,105	459,239,935
Jun	479,936,879	480,925,879	470,511,379
Jul	434,418,942	435,598,942	430,404,724
Aug	494,978,598	495,038,598	480,726,367
Sep	437,399,392	437,399,392	414,855,067
Oct	431,540,934	431,540,934	401,070,737
Nov	402,878,224	402,653,224	362,968,887
Dec	474,746,037	475,381,037	433,082,177
Total	5,521,885,970	5,531,550,610	5,302,900,748
Avg.	460,157,164	460,962,551	441,908,396

2023			
Month	NPA	GRA (ICUMS)	SML
Jan	487,007,746	487,007,746	445,324,611
Feb	417,454,900	417,724,500	415,556,660
Mar	514,305,030	514,304,530	511,983,947
Apr	461,508,005	461,508,005	437,794,011
May	536,290,451	536,335,451	492,041,808
Jun	470,346,154	470,566,154	409,280,403
Jul	513,097,790	513,097,790	480,450,853
Aug	477,842,690	478,041,690	457,069,827
Sep	448,875,666	448,875,666	411,012,970
Oct	461,201,298	460,792,118	417,030,655
Nov	551,633,677	551,633,677	473,068,084
Dec	542,197,740	542,197,740	494,908,284
Total	5,881,761,147	5,882,085,067	5,445,522,113
Avg.	490,146,762	490,173,756	453,793,509

SML does not monitor all depots and products and therefore total liftings from SML is expected to be lower than that of GRA and NPA. However, SML conducts various reconciliation checks between the liftings data collected from the monitored depots (using flowmeters), scanned waybills, purchase orders and the data stored in ICUMS (details can be found on [page 145](#)). This provides GRA with the assurance that liftings data in ICUMS is complete and accurate.

Appendix 7: GRA Board Memberships

8.7 Appendix 7: GRA Board Memberships ^(1/2)

Below is the list of GRA Board Members

Board Memberships from 2017 to 2020

S/N	Name	Role	Year Appointed	Year of Termination
1	Harry Owusu	Board Chairman	2017	June 2019
2	Kofi Nti	Commissioner-General	2017	October 2019 (Retired)
3	Millison Narh (Deceased)	Member	2017	July 2021
4	Carlos Kingsley	Member	2017	July 2021
5	Ernest Akore	Member	2017	July 2021
6	Colonel Kojo Damoah	Member	2017	January 2022
7	Madam Adelaide Ahwireng	Member	2017	Present
8	Juliana Addo-Yobo	Member	2017	July 2021
9	Major Ablorh-Quarcoo	Member	2017	July 2021
10	Kwame Owusu	Board Chairman	June 2019	September 2019
11	Professor Stephen Adei	Board Chairman	September 2019	July 2021

8.7 Appendix 7: GRA Board Memberships (2/2)

Board Membership from 2021 to date

S/N	Name	Role	Year Appointed	Year of Termination
1	Dr. Anthony Oteng-Gyasi	Board Chairman	August 2021	Present
2	Rev. Dr. Ammishaddai Owusu-Ansah	Commissioner-General	Appointed (2018)	Present
			Board Membership (August 2021)	
3	Madam Adelaide Ahwireng	Member	August 2021	Present
4	Rev. Prof. Peter Ohene Kyei	Member	August 2021	Present
5	Mrs. Dela Obeng-Sakyi	Member	August 2021	Present
6	Dr. Maxwell Opoku-Afari	Member	August 2021	Present
7	Hon. Nana Ama Dokua Asiamah-Adjei	Member (Representative from MoF)	August 2021	Present
8	Mr. Kwabena Boaten	Member	August 2021	Present
9	Ms. Eva Mends	Member	August 2021	Present

Appendix 8: GRA Past and Present Commissioners

8.8 Appendix 8: GRA Past Commissioners ^(1/2)

Below is the list of GRA Commissioners:

Commissioners for 2017 to 2020

S/N	Name	Role	Year Appointed	Year of Termination
1	Mr. Emmanuel Kofi Nti	Commissioner-General	February 2017	October 2019
2	Kwesi Gyimah Asante (Deceased)	Commissioner with Domestic Tax Revenue Division	April 2017	May 2019
3	Isaac Crentsil	Commissioner with Customs Division	April 2017	May 2019
4	Fred Charles Anson	Commissioner with Support Services Division	April 2017	May 2019
5	Mr Ammishaddai Owusu-Amoah	Acting Commissioner for Domestic Tax Revenue Division	June 2019	October 2019
6	Colonel Kwadwo Damoah (Rtd)	Acting Commissioner, Customs Division-General	June 2019	January 2022

8.8 Appendix 8: GRA Present Commissioners (2/2)

Below is the list of GRA Commissioners:

Commissioners for 2017 to 2020

S/N	Name	Role	Year Appointed	Year of Termination
1	Mr Ammishaddai Owusu-Amoah	Commissioner-General	October 2019	Present
2	Mr. Edward Apenteng Gyamerah	Commissioner, Domestic Tax and Revenue Division	2019	Present
3	Ms Julie Essiam	Acting Commissioner, Support Services Division.	June 2019	Present
4	Alhaji Seidu Iddrisu Iddisah	Commissioner Customs Division	January 2022	Present

Appendix 9: Overview of Upstream Petroleum Sector and SML's Scope of Work

8.9 Appendix 9: Overview of Upstream Petroleum Sector ^(1/7)

This section presents an evaluation of the upstream petroleum sector conducted with the assistance of a subject matter expert in the sector. For an overview of the sector, see below:

Upstream Petroleum Industry Overview and Volume Verification Process

Overview

Oil and gas companies are generally divided into three segments: upstream, midstream and downstream. These categories are segregated based on the stages of the operation involved therefore, upstream which is a segment in focus, refers to firms engaged primarily in exploration and initial production stages of the oil and gas industry. Their core activities include the exploration, drilling and extraction stages and are often called exploration and production (E&P) companies.

FPSO

FPSO stands for floating, production storing and offloading. They are located near an offshore oil field and oil/gas is processed and stored until it can be transferred to shuttle tankers for transporting and additional refining. It is either a converted former super tanker where the processing units and living quarters are built on the topside of the tanker or it is a new purpose-built vessel which is either a shoe box shape or as we have seen since 2001 cylindrical. They all have a separation/treatment facility where the hydrocarbons are split into crude, water, gas and debris. The hydrocarbons are transported on board through a complex network of flowlines and risers. There are currently about 225 FPSOs operating worldwide and they cost in the region of \$850M upwards based on size and functionality. The largest FPSO in the world is the Egina which is in Nigeria with a 200,000 barrels a day production capacity and a hull which can hold 2.3 million barrels of oil. It is operated by Total Energies and cost a staggering \$3.3 billion to build.

GHANA FPSOs

1. Jubilee FPSO is the Kwame Nkrumah MV21. It was a conversion built in Singapore and operated by MODEC until recently by Tullow. Its storage capacity is 1.6M barrels and can produce up to 120,000 bpd. It cost \$875M.
2. The John Evans Atta Mills is a conversion-built FPSO and leased from MODEC who are the builder/operator. It holds 1.7M barrels and can produce 80,000 bpd.

8.9 Appendix 9: Overview of Upstream Petroleum Sector (2/7)

Upstream Petroleum Industry Overview and Volume Verification Process

3. The John Kufuor FPSO is operated by ENI and is on the Sankofa/Gye Nyame field. It holds 1.7M barrels and can produce 58,000 bpd.

Sources Of Government Revenues

Oil-producing countries typically earn revenues from several streams. The Government of Ghana receives its revenues from the several sources listed below:

1. **Corporate tax:** This refers to the tax on profit of an organisation. The corporate tax rate applied in the upstream sector is the same as for other businesses in Ghana which is 35%
2. **Royalty:** The PA stipulates the royalty fee and this is payable before any crude liftings by the joint venture partners. There is the option to either receive this in cash or liftings. Ghana receives its stipulated 5% in liftings and this crude is lifted by GNPC on behalf of the government of Ghana
3. **Flaring fees:** This is the fee you pay for flaring of gas in excess of the permitted tonnage of carbon dioxide equivalent emitted offshore. Flaring is the practice of burning natural gas to ensure safe operations on board the FPSO or at oil production sites. However, during operations occasionally the operator would have to flare gas more than the permitted tonnage, and that attracts a fee per tonnage of each excess flaring. Excessive flaring is a waste of a valuable natural resource as this could be used to generate power or conserved or pumped back into wells to help accelerate production
4. **Subsurface rental:** Surface rentals are fees payable to the government every year for a quarrying permit holder or a lessee for the right to exploit mineral resources. The charge is usually computed on a square kilometer basis and is part of the contractor's PA
5. **Additional Oil Entitlement (“AOE”):** The State becomes entitled to an additional percentage of the IOCs share of crude oil on each separate field once profitability passes certain agreed rate of return thresholds. The Government of Ghana has a share or a percentage interest in the crude oil being produced in a production area by contractors. The AOE indicated in the PAs seeks to measure Ghana's entitlement to crude oil and acts as an additional windfall tax. The threshold for the Jubilee fields for example is 50% of the proven reserves. AOE of between 10-25% of petroleum revenue (minus royalties and the GNPC interest) can accrue depending on the rate of return of the project. This entitlement is yet to be realised by Ghana.

8.9 Appendix 9: Overview of Upstream Petroleum Sector (3/7)

Upstream Petroleum Industry Overview and Volume Verification Process

Volume Verification

Volume verification is a critical and integral part of the upstream oil processing sequence. Each partner in the joint venture, as well as the host country, has a vested interest in ensuring that they are allocated their accurate share by the agreed upon petroleum agreement. As such, there are several assurance steps built into the production and the lifting protocols. There are also several partner meetings and committees to ensure proper governance and full shared visibility and consensus. The volume verification process is crucial for both the buyer and the seller, as the revenues are tied directly to the volumes produced and thereafter lifted by each of the joint venture partners and the host country.

Participation Interest

Each field has its specific equity structure governing its participation interest and supported by the PA which are as follows:

Jubilee

Partner	% Stake
Tullow	38.98%
Kosmos	38.61%
GNPC	19.69%
Petro SA	2.72%

TEN

Partner	% Stake
Tullow	54.80%
Kosmos	20.38%
GNPC	20.95%
Petro SA	3.82%

OCTP

Partner	% Stake
ENI	44.44%
Vitol	35.56%
GNPC	20.00%

8.9 Appendix 9: Overview of Upstream Petroleum Sector ^(4/7)

Upstream Petroleum Industry Overview and Volume Verification Process

Security Measures

Security is one of the topmost critical focus on any FPSO. Given the complexity and cost of the set-up, the risk associated with a highly inflammable substance and the risk of piracy. The Ghana FPSOs are located offshore in deep water off the western region of Ghana. The Kwame Nkrumah FPSO (KNK) which services the Jubilee field is located 60km offshore between Deepwater Tano and West Cape Three Points blocks and is accessible by a 45-minute helicopter ride from Takoradi. The John Evans Atta Mills FPSO services the Tweneboa, Enyenra, Ntomme (TEN) field which is located 25km away from the Jubilee field. Both these fields are operated by Tullow Oil.

The John Agyekum Kufuor FPSO is operated by ENI and operates the Sankofa-Gye Nyame fields in the Offshore Cape Three Points area (OCTP) and sits in the Tano basin also 60km from shore. All three FPSOs are sitting in water between 1,000 to 2,000km depths.

There are several security measures in place to ensure the safety and integrity of the FPSOs and the oil production quantities. Examples of some of these measures are a 500 meters' entry restriction around the vessels. Without prior clearance which is visible by all partners, you cannot access the neighboring waters. All supporting vessels to the production process must be pre-cleared before entry and this includes offloading tankers, supply vessels, tug boats, drill ships, anchor handlers etc. including the armed security vessels that patrol the waters. None of these vessels apart from the offloading tankers have the capacity to offload or store oil in commercial quantities from the FPSOs.

These security measures prevent potential loss of oil and most importantly prevent potential disasters to the vessels and the complicated subsea structures.

8.9 Appendix 9: Overview of Upstream Petroleum Sector ^(5/7)

Upstream Petroleum Industry Overview and Volume Verification Process

Recommendations

The current Ghana oil-producing field operators are two, which are Tullow Oil for the Jubilee and TEN fields and ENI for OCTP. They are two separate companies governed by individual petroleum agreements and separate joint venture partners. Each field has its own joint venture partners who aside from Tullow and ENI are non-operators and also each with its own unique equity stakes and as such cannot be integrated as they are all legally autonomous. There are, however, services that Tullow being operator of TEN and Jubilee shares, especially in the support service areas where feasible. Tullow and ENI do share certain basic infrastructure amenities where it is cost-efficient and feasible such as sharing helicopter services and also marine patrol services. Aside from these kinds of services, the operators are governed by legal agreements and as such must work independently.

The storage facilities are autonomous and cannot be interconnected as the design of each FPSO has its own double hull as its storage and production tanks. The oil produced at each field also has its unique composition and viscosity and is therefore processed and tracked separately. The petroleum agreements, the COLA and the governance and reporting structures along with its equity partners are all field-specific.

Real-time visibility exists for all the fields in several forms aside from physical reports. As mentioned earlier there is a Production Information System (PI) room at the Tullow office in Ghana where you can view on multiple screens exactly what is going on at the FPSO.

There is state of the art real-time digitised software programs which provide all partners regardless of where they are located worldwide with key crucial indicators. GNPC has full access to all this data as well. The current operational structures on the FPSO has very skilled and accomplished GNPC engineers integrated throughout therefore ensuring 24/7 visibility and inclusion assurance. GNPC along with all the joint venture partners have real-time visibility into the production, storage and lifting of the oil and gas operations from all the three oil producing fields.

All the FPSOs have GRA personnel onboard 24/7 who are custodians of the metering room key and are present at every lifting. Without them opening and releasing the last valve to the tanker, a lifting cannot occur. This step in the lifting process is not an industry standard but an additional assurance step implemented by Ghana.

8.9 Appendix 9: Overview of Upstream Petroleum Sector ^(6/7)

Upstream Petroleum Industry Overview and Volume Verification Process

PC's L.I 2246 is world class and robust ensuring right from their build and integration during construction of the FPSOs through to operations and scheduled maintenance that ensures these fiscal meters are fully compliant.

With all the above assurances currently in place and consistent with best-in-class industry standards, it is difficult to identify per the MoF/GRA/SML contract the inherent high risk that the nation is not fully realising all the revenue from the oil-producing fields. One could continue to add further assurances on the FPSOs up and beyond industry standards but the potential costs could outweigh the benefits of these additions.

SML Upstream Implementation Plan

The implementation plan put together by SML in its Background section states “This project represents a crucial initiative for SML (Strategic Mobilisation Ghana Limited) **as it seeks to enhance its operational capabilities** and ensure efficient petroleum auditing and monitoring in the upstream segment. **Leveraging the experience gained from SML's Downstream operations,**” It further mentions **collaboration with oil rig operators** and a comprehensive rig design study including site surveys of each **upstream rig platform**.

Ghana's upstream production primarily relies on FPSOs, rather than traditional rig platforms. Drill ships, equipped with drill rigs, are only engaged when there are wells to be drilled. Once that well or wells are completed the leased drill ship leaves. This distinction is crucial as the roles and operations of oil rig operators significantly differ from those involved in FPSO operations.

Understanding this difference is essential for developing an effective implementation plan. The upstream and downstream sectors of the oil industry are distinct entities, with separate regulatory bodies such as the NPA and PC. As such, leveraging experience gained in downstream operations for upstream endeavours, and vice versa, is challenging due to the lack of synchronisation between these sectors.

The purpose and scope of the implementation plan remain unclear, particularly regarding its engagement with key stakeholders such as PC or GNPC. Furthermore, no engineering drawings or schematics of the proposed system are included in the plan, nor any clarification on which system it would be synchronised with and if it would require modifications to the FPSOs.

8.9 Appendix 9: Overview of Upstream Petroleum Sector (7/7)

Upstream Petroleum Industry Overview and Volume Verification Process

There seems to be uncertainty regarding SML's comprehension of the PC LI 2246 metering laws and acts, as well as the COLA tolerance and variance thresholds, given the absence of any indication in the implementation plan regarding plans for compliance. Additionally, there is no reference to any international standards or codes that are requisites and are currently being breached by the FPSOs, to back this implementation plan set out by SML.

Furthermore, there are aspects of the deployment process for software and hardware installations that appear to be missing from the implementation plan. It is ideal to deploy a software package establishing and testing an interface model to ensure that the new software will not be disruptive to the existing platform system. There are many engineering and design reviews that must be cleared before proceeding to write an implementation plan.

Typically, there should be a bridging document which will merge the different procedures and operations of SML and the operators of the FPSOs, as the two separate entities have their individually designed processes which will have to be infused for continuity without disruption.

In summary, the implementation plan appears to require extensive preparatory work and collaboration with various stakeholders. It is evident that SML aims to enhance its operational capabilities and knowledge of Ghana's upstream petroleum sector through this initiative. However, successful execution will necessitate full cooperation from all involved parties, including International Oil Companies (IOCs), to avoid breaches of the existing petroleum agreements and ensure proper process integration.

Appendix 10: Overview of Mining Sector and SML's Scope of Work

8.10 Appendix 10: Overview of Mining Sector ^(1/10)

This section presents an evaluation of the mining sector conducted with the assistance of a subject matter expert in the sector. For an overview of the sector, see below:.

The Mineral Resources Mining Industry in Ghana

Introduction

The mineral resources mining sector has shaped the political economy of Gold Coast and then Ghana, playing a significant role in the country's economic development, land tenure system and development of the chieftaincy institution since the 19th century. Gold mining activities around Obuasi and Tarkwa are known to date back to the late 19th century. The mining sector currently plays a vital role in the economy by attracting foreign direct investment and making substantial contributions to employment, government revenue, and export earnings as well as Gross Domestic Product.

Ghana's annual production of gold averaged 800,000 ounces in the 1950s but declined from the 1970s and averaged less than 300,000 ounces from 1982 to 1985. The Economic Recovery Programme launched by the Government in 1983 resulted in updated laws and regulations as well as fiscal incentives. Initially, the Minerals and Mining Law, 1986, PNDCL 153, was replaced with the Minerals and Mining Act (Act 703), which was subsequently amended in 2010 with Act 794. The updated mining laws have led to significant investment and activities in the mining sector. There is a substantial increase in the production of gold, with a marginal increase in manganese and bauxite production, commercial production of oil and gas also commenced in 2010. Gold production exceeded 1 million ounces in 1993, and then 2 million ounces in 1998 and by the dawn of the millennium it had risen to 2.5 million ounces, and subsequently to 3.6 million ounces in 2011 (Minerals Commission – Gold Deposit of Ghana).

Understanding of the minerals sector

Both local and international mining companies are now involved in the Ghanaian mining sector, with multinational companies partnering with local entities. This collaboration has contributed to the transfer of technology, knowledge, and capital, enhancing the productivity and efficiency of mining operations in the country. The large-scale sector is now largely foreign-owned but the Government of Ghana has a minority (10 per cent) free carried interest share in most of the main active large-scale mining operations.

8.10 Appendix 10: Overview of Mining Sector ^(2/10)

The Mineral Resources Mining Industry in Ghana

The essential players of the Ghanaian Mining Industry and their production

Currently, there are 16 large-scale international mining companies producing gold, bauxite and Manganese. Investments have come from both major multinational companies and junior mining companies. Whilst there have been some local equity interests, the sector remains predominantly foreign, save for the small-scale component and the privatised Ghana Consolidated Diamond Ltd which is wholly Ghanaian-owned. According to the Ghana Chamber of Mines, there are currently thirteen international mining companies that operate active gold mines within the country, mostly located within the Ashanti and Western regions.

In total, over 3.3 million ounces of gold were produced in Ghana in 2022. outlines the production and revenues of the essential players of the mining sector from 2020 to 2023. The producing member companies of the Chamber's gold output in 2022 was 3 million ounces, which was an improvement of 12 per cent on the preceding year's output of 2.7 million ounces. There was a remaining 35,421 ounces attributable to non-Chamber member mines in 2022 and 9,631 ounces in 2021. Therefore, the Chamber's share of the large-scale gold sector's output was 99.6 per cent in 2021 and 98.8 per cent in 2022. Small-scale and artisanal mining generated the remaining of the country's production. Small-scale mining of precious minerals continues to make significant contributions to the country's foreign exchange earnings. Currently, there are over 3,000 registered small-scale mining groups and ninety (90) mine support service companies. In fact, all diamond production is now from small-scale mining.

8.10 Appendix 10: Overview of Mining Sector (3/10)

The Mineral Resources Mining Industry in Ghana

Table 1.0 Production and Revenues of Essential Player in Ghana's Mineral Sector from 2020 to 2023

Name of Mine	2020		2021		2022		2023	
Gold (Ounces)	Production	Revenue (\$)	Production	Revenue (\$)	Production	Revenue (\$)	Production	Revenue (\$)
Abosso Goldfields Ltd	222,953	400,796,046	254,409	457,508,881	230,001	414,827,532	152,600	296,978,770
Adamus Resources Ltd	70,701	123,375,468	61,372	111,624,734	55,416	103,405,963	45,328	87,645,494
AngloGold Ashanti Iduapriem Ltd	274,537	485,448,023	201,669	204,125,731	248,075	443,440,374	268,064	522,333,108
AngloGold Ashanti Obuasi Ltd	127,195	229,976,665	108,015	361,004,679	250,061	430,579,764	224,000	602,301,115
Asanko Gold Limited	249,904	418,130,426	210,421	382,380,459	170,342	297,334,840	134,077	256,957,573
Chirano Gold Mines	166,276	295,101,472	154,430	267,036,214	132,783	246,079,282	137,386	248,238,473
FGR Bogoso Prestea Ltd	29,833	52,849,521	32,725	55,737,306	35,278	66,394,738	26,015	49,920,879
Gold Fields Ghana Ltd- Tarkwa	526,256	927,742,233	521,688	936,879,994	531,595	953,766,675	555,100	1,068,933,534
Golden Star Wassa Ltd	167,648	297,471,686	155,411	275,938,934	170,724	299,936,891	161,453	323,680,930
Mensin Gold Bibiani Ltd	n.a.	n.a.	n.a.	n.a.	52,175	84,052,074	77,272	149,324,010
Newmont Ghana Gold Ltd- Ahafo	480,247	859,811,831	480,708	864,773,191	573,936	1,023,216,912	580,965	1,136,490,363
Newmont Golden Ridge Ltd- Akyem	371,476	660,412,008	381,494	681,144,008	420,554	748,571,097	295,707	576,333,737
Perseus Mining (Ghana) Ltd	158,090	247,554,013	150,330	237,360,042	173,235	289,776,564	202,599	385,778,305
Total Gold	2,845,115	4,998,669,392	2,712,673	4,835,514,174	3,044,176	5,401,382,706	2,860,566	5,704,916,291
Manganese (Tonnes)								
Ghana Manganese Company Ltd	2,357,515	141,801,025	3,336,273	170,439,747	3,171,722	201,374,139		
Bauxite (Tonnes)								
Ghana Bauxite Company	1,251,957	37,719,435	839,465	22,041,943	773,213	18,710,825		
Diamond (Carats)								
PMMC	25,291.9	660,705.11	54,174	1,612,979	82,252	3,731,372		
Notes								
n.a.- The mine was not in operation								
Source: Ghana Chamber of Mines								

8.10 Appendix 10: Overview of Mining Sector ^(4/10)

The Mineral Resources Mining Industry in Ghana

Mineral Resources Mining Processes and Workflow

Mineral processing involves crushing, grinding, washing, and separating the minerals from waste materials usually in a high-security perimeter fence, as gold is a highly liquid asset. These minerals are then reduced into marketable metallic forms by smelting or electrolytic reduction. Access to this enclosure is through one of two electrically controlled gates, one for personnel and another for occasional truck entrance. Admittance is restricted to essential personnel who are required to sign a register in and out with the date and time. The gold room, the strongroom and safe doors are kept locked and secured at all times with keys kept by three (3) nominated senior officials who must be present for access to the gold room. All entrants to the gold room are subject to search, in the presence of the security. The gold-room security usually includes motion sensors, closed-circuit television (CCTV) cameras, a locked door, a separate perimeter fence, in situ guards, and body searches. Smelting and transport arrangements are kept secret amongst relevant authorised people. International best practice of the industry indicates that government officials representing relevant ministries or departments and the national assayer are invited by giving sufficient notice as appropriate to attend gold smelting and shipping and they are issued permits to the gold room.

In the presence of the representative of the national assayer, PMMC, a Customs official from GRA, and the company's senior security officials, the steel wool from the electrowinning cells is melted in a furnace and a gold bar is poured in the mould. Before the bar solidifies in the mould, the smelter obtains a pin sample from the mould which is placed into a water bath and later transferred to the assay laboratory and the national assayer (PMMC) to determine the grade of the gold in the bar. Residual slag is removed and after cooling, the bar is weighed, stamped with the date and bar number, boxed and sealed with the seals provided by the refinery's security agent, the national assayer and the company (certain companies rather drill the top and the bottom of the gold bar to provide the samples to PMMC and their Laboratory). Both the wet and dry weights are recorded and bars are placed in the vault pending shipment to the refinery (based on volumes).

Security and Internal Controls at Processing Plant Sites and Gold Rooms

Gold mining invites the inherent problems of vulnerability and threats, therefore, stringent countermeasures are required for the security of gold products. Consequently, internal controls are implemented by the international large-scale mining companies to ensure maximum security of gold both at the mine and during shipment.

8.10 Appendix 10: Overview of Mining Sector (5/10)

The Mineral Resources Mining Industry in Ghana

The controls also ensure that all gold sales are in compliance with all legal and statutory requirements while securing the maximum possible revenue from gold sales. The safeguarding of gold production by enforcing tight security measures is a prime responsibility of management. Historically, the greatest threat to gold security is from internal staff. Primary security begins by knowing the expected gold production by reconciling the ore mined and processed as well as the gold poured. Metallurgical accounting is kept at a high standard and monthly reconciliations of ore mined and processed at the critical areas of the mine are undertaken. A typical production daily report of a gold mine has the following critical steps, inputs, outputs, and control points used for the validation checks and reconciliation for gold recovered and poured:

1. **Crushing to Stockpile** – daily dry tonnes of ore and feed grade in grammes per tonne are compared with the daily and monthly budgets and the variance is investigated
2. **Milling** – daily dry tonnes milled, utilisation and head grade are compared with the daily and monthly budgets
3. **CIL Circuit** - daily feed grade, tail grade, recovery percentage, gold recovered and gold poured in ounces are compared with the daily and monthly budgets.

The process is carried out quarterly and annually and it helps to provide estimates for gold produced by the mine.

Observations from visits to two gold mines

Our observation of gold smelting, weighing, boxing and shipment at the mine sites of two large-scale mining companies at Tarkwa and Wassa indicates that they both operate stringent safety and security procedures which are in line with the international best practice of the industry. The gold smelting and shipment at both sites were done in the presence of a GRA customs official, a representative of the national assayer, PMMC, as well as the companies' senior production, finance and security officials. In the presence of the various officials, samples are taken from all gold bars to be sent for assaying, the bars are then sequentially numbered and marked with the Company details, weighed before and after boxing with the seals of the company, GRA and the Refiner's security representative prior to shipment. Assay samples are weighed, labelled, recorded and kept secure for later submission to the assay laboratories. A sample register is maintained for samples taken, sent to the laboratories and returned to the gold room.

8.10 Appendix 10: Overview of Mining Sector ^(6/10)

The Mineral Resources Mining Industry in Ghana

We highly recommend the importance of independent periodic calibration of the scales used for weighing. Our review of the sales document also confirms that the refinery determines a final weight and fineness for each shipment and sends a statement of fineness to the company as well as a sales invoice, as per their contract. The statement of fineness is reconciled by the company to ensure that differences are within tolerable limits. As required by Minerals and Mining General Regulations, 2012 (L.I. 2173) the two mining companies furnish the Mineral Commission and the Ghana Revenue Authority with certified copies of refinery returns not later than thirty (30) days after a shipment of minerals.

Overall, despite the absence of a representative of the MC, the main regulator, our observation of the two mines confirms a low probability of leakage of ounces produced and declared by the two mining companies. Leakage can only be possible in the unlikely event of concurrent management override of internal controls in the gold room and collusion of government, company and refinery officials involved in the process of gold smelting and shipment.

Fiscal regime of the Mineral Resources Mining Sector in Ghana

Ghana operates a “tax-royalty” fiscal regime, meaning that the central way that government revenue is generated from mining activities in the country is through corporate income taxes and royalties levied on revenue generated from production. Accordingly, the Minerals and Mining General Regulations, 2012 (L.I. 2173) requires mining companies to furnish the Mineral Commission and the Ghana Revenue Authority with certified copies of refinery returns not later than thirty (30) days after a shipment of minerals.

Key Regulators of the mining industry

The MoLNR, through the Geological Survey Department and the MC, oversees all aspects of Ghana’s mineral sector. Based on the Minerals Commission Act 1993, Act 450, the MC is responsible for regulating and managing the use of Ghana’s mineral resources and for coordinating government policy related to them. Through its Inspectorate Division, the MC institutes and enforces environmental, health and safety standards in the country’s mines and ensures that mining companies and all mining-related activities comply with Ghana’s mining and mineral law.

8.10 Appendix 10: Overview of Mining Sector ^(7/10)

The Mineral Resources Mining Industry in Ghana

Act 450 also stipulates that the Commission should secure a firm basis of comprehensive data collection on national mineral resources and the technologies of exploration and exploitation for national decision-making. In fulfilling its functions, the commission engages in the following activities:

1. Investigate the background, process applications for mineral rights and recommend their grant or otherwise to the Minister responsible for Mines
2. Review agreements relating to minerals
3. Collect, collate and analyse data on the operations of mining companies for decision-making and dissemination
4. Organise and attend workshops/seminars/conferences, as well as issue publications to promote mineral sector activities
5. Liaise with other governmental agencies, notably the BoG and the GRA, to ensure that the spirit of the sector's fiscal regime is maintained
6. Liaise with other governmental agencies, notably the Geological Survey Authority and the EPA, to monitor and ensure the adherence of mining companies to the terms and requirements of mineral rights granted to them; etc.

Environmental Protection Agency: The EPA is mandated to protect and preserve the environment in Ghana. It plays a crucial role in the regulation of mining activities by conducting environmental impact assessments, issuing environmental permits, and monitoring environmental compliance by mining companies. The EPA ensures that mining operations adhere to environmental standards and mitigate any adverse impacts on ecosystems and communities.

The Geological Survey Department is also responsible for providing reliable and up-to-date geological information and serves as the repository for the country's geoscientific data.

8.10 Appendix 10: Overview of Mining Sector ^(8/10)

The Mineral Resources Mining Industry in Ghana

Assessment of the feasibility of SML's workflow/implementation

On 25 October 2023, the Government of Ghana, represented by the MoF and GRA entered into a contract with SML for consolidation of revenue assurance services. Based on the contract, SML is to carry out the following services in respect of the Mineral Resources Mining Sector:

1. Undertake a comprehensive review of workflow within the mineral resources sector
2. Undertake a review of the operations of all mineral resources mined for export
3. Develop and implement an end-to-end electronic monitoring and auditing system to track the extraction and export of mineral resources
4. Perform minerals and metals monitoring and digitise the entire value chain by deploying a very accurate computerised weighing and analyser. This will identify the quantity and the weight of the minerals being exported for revenue assurance and due diligence for taxes for the government.

SML's Process for Review for Minerals Audit

A critical review of the SML's process indicates that SML intends to focus on the high-security final stage of the gold production process which takes place in the gold room and at the airport. As outlined earlier, as part of our audit fieldwork we spent three days at two large-scale gold production mines at Tarkwa and Wassa Akyempim and observed their smelting and shipment procedures. In the main, our observation indicates that the smelting and shipment of the two mines were carried out under stringent security and safety procedures in line with the international best practices of the industry. The gold smelting and shipment at both sites were done in the presence of a Customs official from the GRA and a representative of the National Assayer, PMMC as well as the companies' senior production, finance and security officials. We were informed that the PMMC represented the MC as well. In the presence of the various officials, samples are taken from all gold bars to be sent for assaying, the bars are then sequentially numbered and marked with the Company details, weighed before and after boxing with the seals of the company, Customs and the Refiner's security representative prior to shipment.

8.10 Appendix 10: Overview of Mining Sector ^(9/10)

The Mineral Resources Mining Industry in Ghana

The assay samples are weighed, labelled, recorded and kept secure for later submission to the assay laboratories. A sample register is maintained for samples taken, sent to the laboratories and returned to the gold room. The same procedure is repeated during shipment except that the refiner's agent and security are present to participate in the process as well as the transfer of custody of the gold bars to the refinery.

Our analysis of the smelting and shipment as well as gold sales procedures of the two mines indicates that, despite the absence of a representative of the MC, the main regulator, the risk of leakage of ounces produced and declared by the large-scale mining companies is virtually non-existent. Leakage can only be possible in the unlikely event of concurrent management override of internal controls in the gold room and collusion of the relevant government, company and refinery officials involved in the gold smelting, shipment and refinery of the bullion. As outlined earlier, four of the world's top gold producers, including the top world gold producer, who are listed on the New York Stock and Toronto Stock Exchanges manage seven out of the thirteen mines under consideration and produce about 80 per cent of Ghana's gold. The listing standards of the various exchanges require these world-class companies to maintain in all material respects, effective internal control over financial reporting, based on criteria established in Internal Control-Integrated Framework (2013) issued by the COSO. Due to its importance, the gold production and sales process forms an integral part of their internal control and, therefore, supports our observation of the risk of leakage. Moreover, it was confirmed that both companies use Rand Refinery which is "one of the largest single-site precious metals refining and smelting complexes in the world". Significantly, the Minerals and Mining General Regulations, 2012 (L.I. 2173) requires all mining companies to furnish the Mineral Commission and the Ghana Revenue Authority with certified copies of refinery returns not later than thirty (30) days after a shipment of minerals.

Conclusion

Considering the number of monthly transactions involved, we find that the Ministry and GRA dispose of all the required capacity to monitor and confirm with accuracy the revenues of all the large-scale producers from their gold room through the Kotoka International Airport and to the refinery, without resorting to the contract in question which will involve additional annual estimated average cost US\$45.87 million notwithstanding the deployment of accurate computerised weighing and analyser.

8.10 Appendix 10: Overview of Mining Sector ^(10/10)

The Mineral Resources Mining Industry in Ghana

It is recommended that the capacity and regulatory procedures of MC are reviewed to ensure that Minerals Commission is more positioned to provide the required timely information to the relevant authorities and the Ghanaian public. As of the time of concluding this report, key information required for Ghana’s gold production for 2023 is not available on the MC’s website. Also of importance, is the calibration of the scales used for weighing the gold bars and samples, we recommend that the Ghana Standards Board be engaged to ensure the appropriate calibration of the scale.

Appendix 11: Applicable Tax Rates

8.11 Appendix 11: Applicable Tax Rates^(1/1)

The table below details the applicable tax rates for AGO, PMS and LPG for the period 2018 to 2023. The highest tax rate for each period was used in our computations to derive liftings from GRA's reported revenue.

Period		Tax Rate			Tax Rate Used
		AGO	PMS	LPG	
2018	1 Jan – 31 Jan	0.995	0.995	0.545	0.995
	1 Feb – 15 Feb	0.995	0.995	0.545	1.1375*
	16 Feb – 28 Feb	1.28	1.28	0.85	
	1 Mar – 31 Dec	1.28	1.28	0.85	1.28
2019	1 Jan – 31 Aug	1.28	1.28	0.85	1.28
	1 Sep – 31 Dec	1.44	1.44	0.93	1.44
2020	1 Jan – 31 Dec	1.44	1.44	0.93	1.44
2021	1 Jan – 30 Apr	1.44	1.44	0.93	1.44
	1 May – 31 Dec	1.74	1.74	1.07	1.74
2022	1 Jan – 31 Dec	1.74	1.74	1.07	1.74
2023	1 Jan – 31 Dec	1.74	1.74	1.07	1.74

* A weighted average of the applicable tax rates were used for the month.

Appendix 12: Derivation of liftings from GRA Petroleum Tax Revenue

Appendices

8.12 Appendix 12: Derivation of liftings from GRA Petroleum Tax Revenue ^(1/1)

The table below details how liftings were derived from petroleum tax revenue reported in the GRA Annual Report for the period 1 January 2018 to 31 December 2023.

Period	Tax Rate A	Revenue B	Derived Volume C = B/A	Remarks
1 Jan 2018 – 31 Dec 2018	1.24	4,693,390,000	3,771,684,581	A weighted average of 1.24 was used for 2018 since two rates – 0.995 (1 Jan – 15 Feb) and 1.28 (16 Feb – 31 Dec) – were applicable for the year.
1 Jan 2019 – 31 Dec 2019	1.33	5,250,520,000	3,937,890,000	A weighted average of 1.33 was used for 2019 since two rates – 1.28 (1 Jan – 31 Aug) and 1.44 (1 Sep – 31 Dec) – were applicable for the year.
1 May 2019 - 30 Apr 2020	1.39	4,865,045,749	3,508,446,454	A weighted average of 1.39 was used for the period since two rates – 1.28 (1 May – 31 Aug) and 1.44 (1 Sep – 30 Apr) – were applicable for the year. Also, monthly data from GRA’s account was used to estimate the proportion of the revenue reported in the GRA Annual Report applicable for 1 May 2019 to 31 Dec 2019 and 1 Jan 2020 to 30 Apr 2020.
1 May 2020 - 31 Dec 2020	1.44	4,539,598,968	3,152,499,283	Monthly data from GRA’s account was used to estimate the proportion of the revenue reported in the GRA Annual Report applicable for 1 May 2020 to 31 Dec 2020.
1 Jan 2020 – 31 Dec 2020	1.44	5,944,330,000	4,128,006,944	
1 Jan 2021 – 31 Dec 2021	1.64	7,811,320,000	4,763,000,000	A weighted average of 1.64 was used for 2021 since two rates – 1.44 (1 Jan – 30 Apr) and 1.74 (1 May – 31 Dec) – were applicable for the year.
1 Jan 2022 – 31 Dec 2022	1.74	8,106,300,000	4,658,793,103	
1 Jan 2023 – 31 Dec 2023	1.74	8,583,410,000	4,932,994,253	



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