

**2023 GREENHOUSE GAS EMISSIONS REPORT**

**EET Green Line Project**

**ANNUAL GREENHOUSE GAS EMISSIONS REPORT**

**Year 2023**

**April 2024**



National Authority for Tunnels



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## 1. INTRODUCTION

### 1.1 Background and Objective

Funding for the Electric Express Train – Green Line Project will partly be from International Financial Institutions (IFIs) and supported by Export Credit Agencies (ECAs) such as the German Euler Hermes<sup>1</sup>. As such, the Project must be implemented in accordance with environmental and social (E&S) standards of the IFIs/ECA.

These lenders standards are mainly defined by the IFC Performance Standards (2012) and the Equator Principles IV (EP4), which will require the Project Owner (MoT/NAT) to undertake comprehensive Environmental and Social Impact Assessment (ESIA) for the Project to achieve financing approval.

In addition to the ESIA, the lenders also require the assessment of anticipated greenhouse gas (GHG) emissions (“GHG Assessment”) stemming from construction and operation of the Project, and – depending on the results of this GHG assessment – further studies to evaluate related climate risks and options for adaption.

As a result of this preliminary GHG Impact Assessment, it was determined that the project shall conduct annual reporting of GHG emissions during construction and operations, as follows:

*“The Project shall publicly report combined Scope 1 and Scope 2 GHG emissions during Project construction and operations on an annual basis, as well as Scope 3 emissions on a best endeavours basis. Quantification of the GHG emissions shall be in accordance with the GHG Protocol and the reporting methodology shall be in accordance with host country regulatory requirements, or in accordance with internationally recognized methodologies (e.g. the Carbon Disclosure Project, Task Force on Climate-related Financial Disclosures, Sustainability Accounting Standards Board, or Global Reporting Initiative) and publicly disclosed. The following actions are required:*

- a) Development of draft annual reporting template for Scope 1 and 2 GHG emissions for the Project, as well as Scope 3 emissions on a best endeavours basis, including a detailed plan for reporting thereafter.*
- b) Development of annual reports for Scope 1 and 2 GHG emissions for the Project during construction, as well as Scope 3 emissions on a best endeavours basis.*
- c) Development of annual reports for Scope 1 and 2 GHG emissions for the Project during operations, as well as Scope 3 emissions on a best endeavours basis.”*

The project will report on Scope 1 and 2 emissions, however, Scope 3 will only be calculated on a best endeavours basis. This template will be updated prior to operations, to ensure the data being captured remains relevant to the activities.

## 1.2 International Requirements

The E&S requirements by the lenders/ECAs for financing of the Project encompass a wider range of international standards, guidelines and good practices.

The items that are most relevant for the purpose of this GHG Assessment are summarised below.

### 1.2.1 IFC Performance Standards Requirements

The IFC Performance Standards provide the comprehensive framework for most E&S requirements for the Project. According to IFC Performance Standard (PS) 3 *Resource Efficiency and Pollution Prevention*, the following is required (with “client” here referring to the loan borrower/project owner):

- *The client will consider alternatives and implement technically and financially feasible and cost-effective options to reduce project-related GHG emissions during the design and operation of the project. These options may include, but are not limited to, alternative project locations, adoption of renewable or low carbon energy sources, sustainable agricultural, forestry and livestock management practices, the reduction of fugitive emissions and the reduction of gas flaring.*
  
- *For projects that are expected to or currently produce more than 25,000 tonnes of CO<sub>2</sub>-equivalent annually, the client will quantify direct emissions from the facilities owned or controlled within the physical project boundary, as well as indirect emissions associated with the off-site production of energy used by the project. Quantification of GHG emissions will be conducted by the client annually in accordance with internationally recognized methodologies and good practice.*

### 1.2.2 Equator Principles 4 Requirements

A number of the IFIs involved in the Project financing will likely be signatories of the Equator Principles (EP), and thus committed to implementing the fourth and latest version of the EP E&S obligations – the EP4. The EP4 includes 10 Principles, of which some are relevant for the GHG Assessment, in particular:

- ❖ EP Principle 2 Environmental and Social Assessment
  
- The client is expected to include assessments of climate change risks as part of the ESIA or other Assessment, with these included in the Assessment Documentation. The Climate Change Risk Assessment should be aligned with Climate Physical Risk and Climate Transition Risk categories of the Task Force on Climate-Related Financial Disclosure (TCFD). A Climate Change Risk Assessment is required:
  - *For all Category A Projects, and will include consideration of relevant physical risks as defined by the TCFD.*

- *For all Projects, in all locations, when combined Scope 1 and Scope 2 Emissions are expected to be more than 100,000 tonnes of CO2 equivalent annually.*
  
- Consideration must be given to relevant Climate Transition Risks (as defined by the TCFD) and an alternatives analysis completed which evaluates lower Greenhouse Gas (GHG) intensive alternatives. The depth and nature of the Climate Change Risk Assessment will depend on the type of Project as well as the nature of risks, including their materiality and severity
  
- ❖ EP Principle 10 Reporting and Transparency
  
- The client will report publicly, on an annual basis, GHG emission levels (combined Scope 1 and Scope 2 Emissions, and, if appropriate, the GHG efficiency ratio) during the operational phase for Projects emitting over 100,000 tonnes of CO2 equivalent annually. The project will report scope 3 emissions on a best endeavours basis.
  
- GHG emissions should be calculated in line with the GHG Protocol 2 to allow for aggregation and comparability across Projects, organisations and jurisdictions. Clients may use national reporting methodologies if they are consistent with the GHG Protocol.

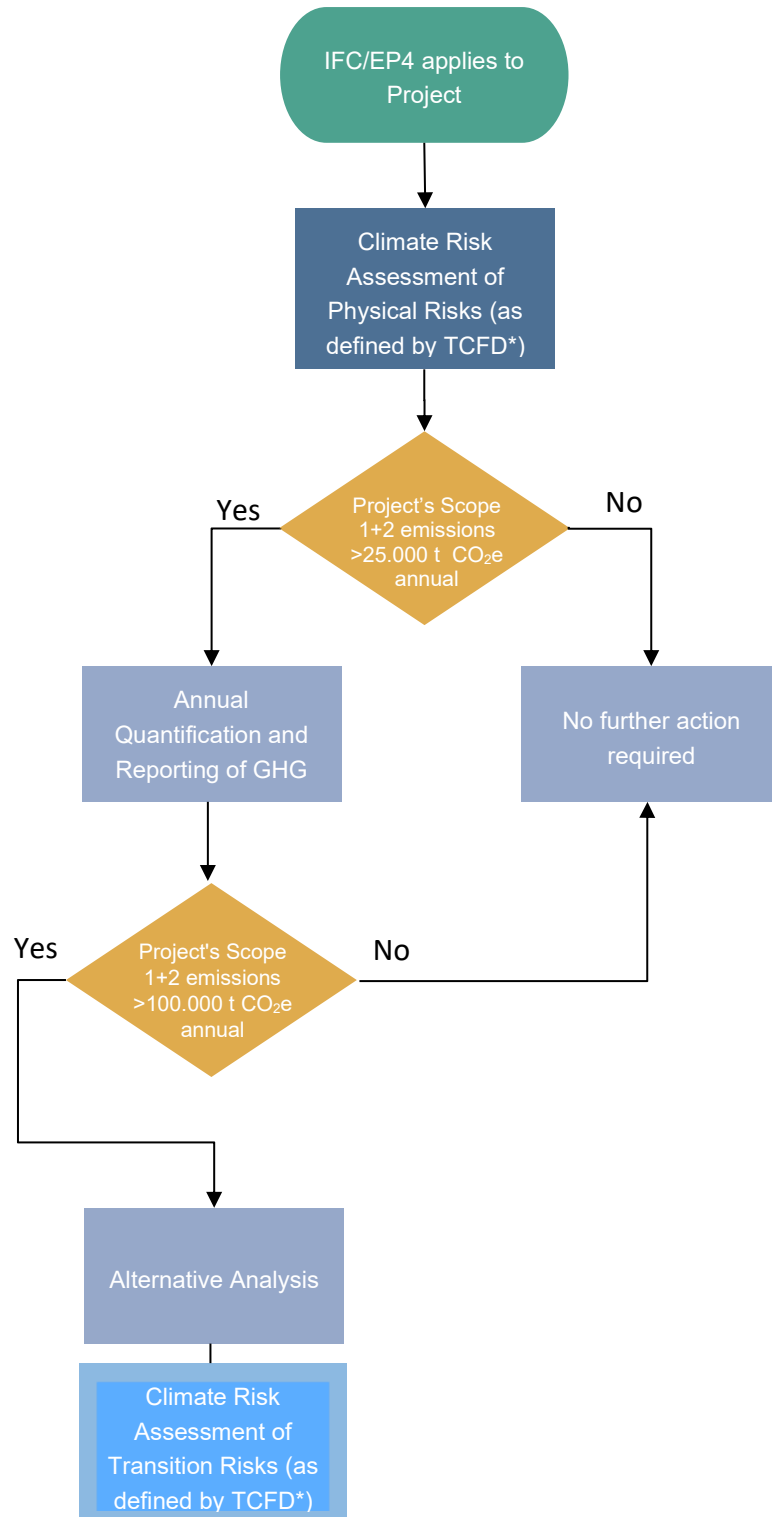
Note: both the IFC PS and EP4 require that lenders assign a risk-categorisation to each project, which then partly determines the level of assessment required. Given the large scale of this HSR Project and the potential accompanying E&S risks (irrespective of the proposed mitigation measures), we can assume that lenders will consider this to be a Category A Project.

### **1.2.3 Task Force on Climate-Related Financial Disclosure (TCFD)**

The Task Force on Climate-Related Financial Disclosure (TCFD) was established in 2015 by the international Financial Stability Board to develop voluntary, consistent climate-related financial disclosures that would be useful to investors, lenders, and other parties in understanding material risks of climate change to the finance sector. The recommendations of the TCFD were issued in 2017, and these serve as the main guidelines for preparation of the climate-risk reports required by the EP4.

### 1.2.4 Overview of GHG Triggers and Obligations

The following figure links the required actions for the Project to the relevant criteria. The aspects of Scope 1 and Scope 2 emissions are discussed further below in this Report.



\* TCFD = Task Force on Climate-Related Financial Disclosure. The risk assessments should also consider alignment of the Project with the Climate Commitments (NDCs) of the Host Country per Paris Agreement.

**Overview Flowchart IFC and EP4 Requirements**

Given that this Project is subject to IFC/EP4 and a Category A Project, as shown in the flowchart a Climate Risk Assessment of Physical Risks is obligatory. The review of Project Scope 1 and 2 emissions in this Report will determine if further Alternative Analysis and Assessment of Transition Risks is needed, as well as annual reporting of GHG emissions. In this Report we refer to units of carbon-dioxide equivalent (CO<sub>2</sub>e) as the proxy metric for all GHGs.

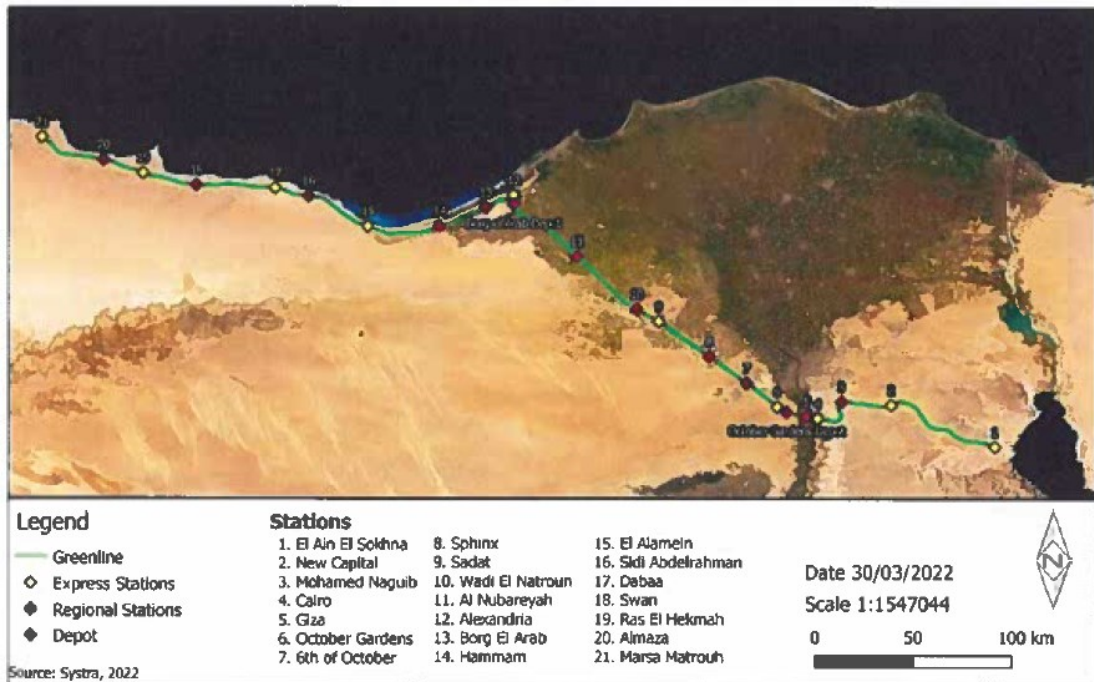
### 1.3 Project background

The High-Speed Rail (HSR) Green Line Project comprises design, construction, and commissioning by the Contractor Consortium in Phase 1 of approximately 660km network running from Ain El Sokhna to El Alamein and onwards to Marsa Matrouh at an overall project length of approximately 660Km.

The project is owned by the Ministry of Transport through its National Authority for Tunnels agency who is committed to undertake this Project in conformance with Egyptian Laws and Regulations and with the applicable Internationals Environmental and Social (E&S) Standards.

The Project design will continue to consider as far as possible, to avoid E&S impacts.

The line is designed to carry both passenger traffic incorporating an inter-city function, along with freight transportation capabilities. The HSR system will be implemented as a separated network without connection to the existing Egyptian National Railway (ENR) network. The Green Line will have 21. New stations and two maintenance depots. No upgrade to exiting ENR stations is foreseen. Design speeds up to 250 Kph are specified, with operational running speeds up to 230kph.



#### Project Location

- A modern and efficient Rolling Stock fleet consisting of
  - 34 Siemens Desiro HC 4-car train sets for regional services,
  - 15 Siemens Velaro high speed passenger trains and
  - 10 Siemens Vectron electric locomotives for freight transport.
- A safe train control system, a reliable power supply system including all components for a continuous and efficient energy supply and telecommunication systems.



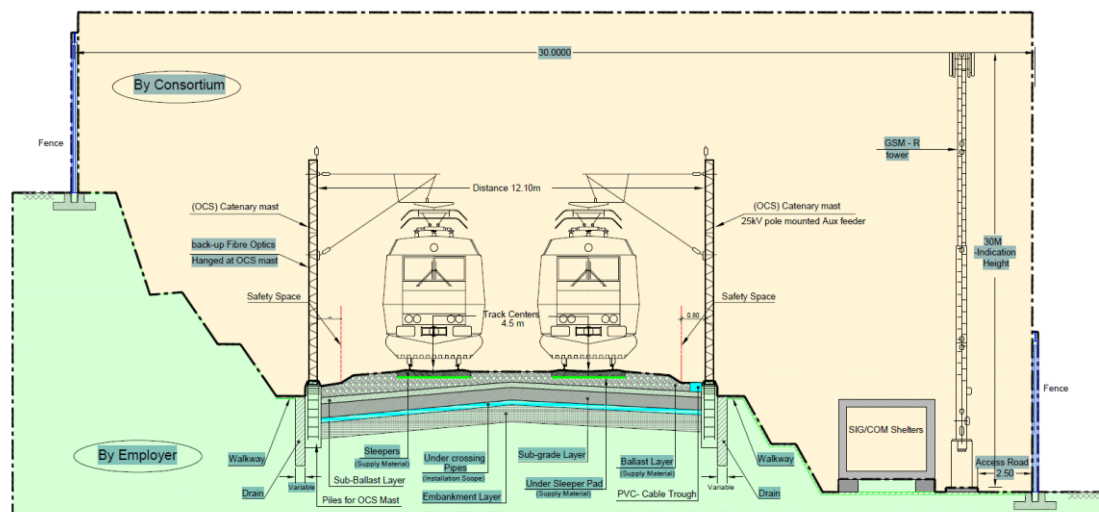
The Project Owner has split the construction work for this Project into two separate work packages:

- Works Package 1 (P1) comprises inter alia the main clearance and civil/construction works of the track bed (including bridges, tunnels, viaducts etc); P1 works will be undertaken by several groups of Egyptian contractors/subcontractors - referred to herein as the Package 1 (P1) Contractors;
- Works Package 2 (P2) comprises inter alia the installation of the sleepers and rails and the electrification and controls of the system, as well as the provision of the rolling stock; P2 works will be undertaken by the consortium of Siemens, Orascom and Arab Contractors - referred to herein as the “Siemens Consortium” or the Package 2 (P2) Contractors

**Note:** the current consideration of Project funding and ECA guarantees/coverage relates most directly to the WP2 works involving the Siemens Consortium. Although the activities of the P1 Contractors are not under the control of the Siemens Consortium, their actions have the potential to impact the operations and integrity of the Siemens Consortium assets; as such this GHG Assessment takes into account also the P1 activities as being associated with the Project.

The figure below shows a cross-sector of the typical work-split of the Siemens Consortium (in yellow) and the Package 1 Contractors (in green).

The future Project operations will be undertaken by the Egyptian National Railroads (or some other national entity or private operator on their behalf); in any case the fleet of rolling stock is defined above and the routing/alignment of the three new lines is known.



**Cross Section of the Railway System**

## 2. GHG INCLUSIONS AND EXCLUSIONS

This GHG Emission Annual Report covers the Electrical Express Train project in Egypt for the year of 2023, which is divided into two main packages.

Package 1 includes 21 stations, 17 bridges, and at-grade embankment and cut segments. For each station, one contractor is contracted and is responsible for the whole station construction for civil works. The GARB General Authority for Road and Bridges appointed their civil contractors for at-grade sections in charge of embankment, cut, subgrade and sub-ballast layers construction.

Package 2 is handled by the SOAC consortium, which consists of Siemens, Arab Contractors, and Orascom. They are responsible for the system works consisting in the supply, installation and testing of all railway components in the Main Line, Main Depot and Services Points. In year of 2023, the only activities that were implemented are related to track laying and catenary installation.

### 2.1 Inclusions

The GHG emissions report includes emissions from the following activities:

1. Construction of the 21 stations (Package 1).
2. Construction of 17 bridges (Package 1).
3. Construction of at-grade sections by alignment contractors (Package 1).
4. Construction of system works for the Main Line, Main Depot and Service Points by SOAC consortium (Package 2)

some examples of construction work at EET - Project:

#### Scope 1: Direct GHG emissions

- Site Preparation and Mobilization
- Concreting works
- Foundation Construction
- Layer grading works
- Compaction works
- Excavation works
- Slope concrete protection
- Ditch constructions
- Steel structure installation
- Skeleton Framing
- Mechanical, Electrical and Plumbing (heating, ventilation, and air conditioning HVAC systems, Firefighting, etc.)
- Interior Finishing (insulation, drywall, interior doors, trim, paint, and finishing the floors)
- Exterior Finishing (exterior walls, landscaping, and paving driveways and walkways)
- Railway Systems (supply, installation and testing of railway components, rails, sleepers, ballasts, catenary, telecom, signaling, SCADA)

#### Scope 2: Indirect GHG emissions from the use of purchased electricity, heat, or steam

- Generator
- Purchased electricity
- Purchased heat or steam

## 2.2 Exclusions

The GHG emissions report does not include emissions from activities of Scope 3 as they are not preponderant in comparison with Scope 1 and 2, nor relevant for the current objectives. However, these exclusions could be included in next annual reports on a best endeavors basis. In this 2023 report, the exclusions are therefore those such as:

- Extraction and production of purchased materials and fuels,
- Transport-related activities in vehicles not owned or controlled by the reporting entity.
- Electricity-related activities not covered in Scope 2,
- Outsourced activities,
- Waste disposal,
- Etc.

## 3. REPORTING REQUIREMENTS

Package 1 and Package 2 contractors are required to submit the following data relating to GHG Emissions, on a Monthly basis, to NAT/Employer's Representative, in order to calculate the GHG Emissions for the project green line:

- Car – petrol, <2000cc
- Car – diesel, <2000cc
- Diesel
- Gas

The table below outlines the various GHG Emission data that is expected from each line section.

GHG emission sources included in the inventory (Refer to Appendix B)

Line Segment	GHG Emission Source	Scope	Data Source	Data Collection Unit	Uncertainty (Description)
	Car – petrol, <2000cc Diesel Gas				
	Car – petrol, <2000cc Diesel Gas				
	Car – petrol, <2000cc Diesel Gas				

## 4. EMISSIONS CALCULATION METHODOLOGY

This section describes the methodology of GHG emission assessment. The following figure shows the four main steps of the assessment; further elaboration is given in the following sub-chapters.



### Methodology Overview

#### 4.1 Organisational Boundaries

There are two groupings of Project-related assets that will be assessed (as described above):

- Assets/activities, which are the responsibility of Siemens Consortium (“Package 2”), and
- Assets/activities, which are not under the Consortiums responsibility, but are associated with the Project (“Package 1”).

The control principle was used for this study. This means all emissions by entities and activities controlled by the organization must be included (ISO 14064, 2006). This includes all of the construction activities over which the Siemens Consortium has direct control.

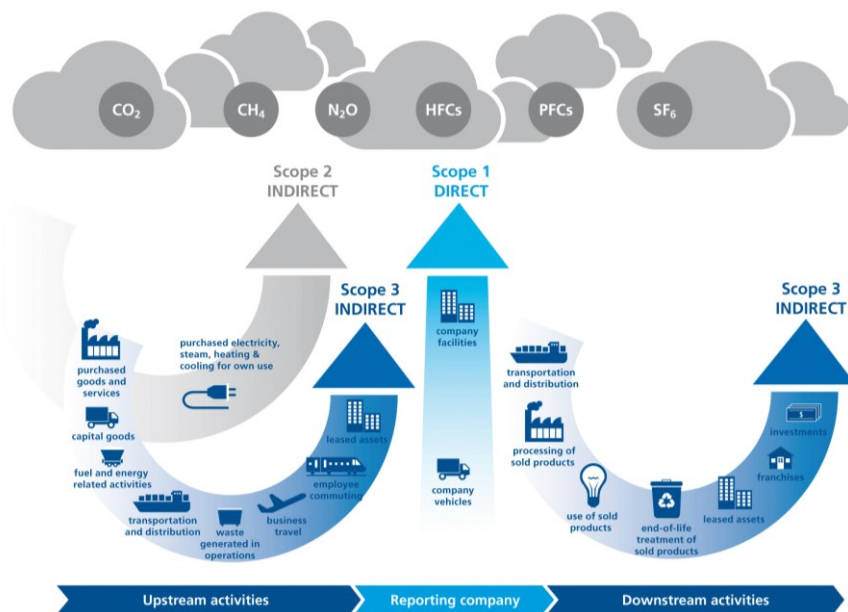
#### 4.2 Operational Boundaries

The next step is to identify the emissions associated with the relevant activities, the categorisation into direct and indirect emissions and the choice of the scope of accounting and reporting for indirect emissions.

In accordance with the ISO 14064-1 standard and the GHG protocol, direct and indirect emissions are categorised into three broad scopes:

- Scope 1: Direct GHG emissions;
- Scope 2: Indirect GHG emissions from the use of purchased electricity, heat or steam; and
- Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities not covered in Scope 2, outsourced activities, waste disposal, etc.

In line with IFC and EP4 requirements, the operational boundaries of this GHG Assessment include solely the main Scope 1 and 2 emissions. The Scope 3 emissions are not relevant for the current objectives, however, will be included on a best endeavours basis.



Source: WRI & WBCSD 2011

### Overview of GHG Emission Scopes

## 4.3 GHG Emissions Calculation

GHG emissions for the Project are calculated via the application of documented emission conversion factors. These factors are calculated ratios relating GHG emissions to a proxy measure of activity at an emissions source. The approach and calculations are split here between the two main Work Packages for the construction phase. The construction period is assumed to last about six years.

Calculation factors will be conducted according to the GHG calculation matrix, which will be included in Appendix A.

### 4.3.1 Construction Works - Package 1

The calculation of GHG emissions from Package 1 works is aggregated by the Employer's General Consultant based on the information provided by each Contractor and their suppliers when data is available, otherwise estimated.

- Scope 1 – direct emissions associated with the combustion of fuel by construction and transportation vehicles, as well as power generators
- Scope 2 – indirect emissions from the consumption of associated facilities e.g. batching plants, quarries for ballast and backfilling material, sleeper factories.

### 4.3.2 Construction Works - Package 2

The calculation of GHG emissions arising from the Project WP2 activities is based on data provided by Siemens and Orascom.

- Scope 1 – direct emissions associated with the combustion of fuel e.g. from the transportation of materials to site, use of company owned vehicles, generators and equipment for catenary and track installation.
- Scope 2 – indirect emissions from the consumption of purchased electricity to provide traction power for the operation of the trains of the HSR.

Given the above, the emissions related to construction will be dominated by Scope 1 emissions, while operations will mainly involve Scope 2 emissions.

## 5. IMPACT ASSESSMENT METHODOLOGY

This section outlines the approach to assessing the impacts of GHG Emissions from the activities associated with the HSR project.

### Methodology

The greenhouse effect occurs on a global basis, and the specific source of GHG emissions cannot be linked directly to the future potential impact on the climate or on the Project’s geography. In the absence of such causal links, this section presents a methodology that provides an appropriate and practical link between the GHG emissions caused by the Project and the impact assessment process adopted for this assessment.

The impact assessment comprises (i) determination of the magnitude of emissions from the Project compared to international GHG emissions criteria <sup>(3)</sup>, (ii) assessing the likelihood of the impact to occur, and (iii) resulting in a significance level of the impact.

### Magnitude

Impact magnitude is a function of the potential intensity of the impact, moderated by the extent and duration of that impact. When considering GHGs, the extent and duration of the potential impact will always be the same. The extent is international as it is the total stock of world GHG emissions trapped in the atmosphere (leading to global warming). The duration of the impact is regarded as permanent, as the persistence of CO<sub>2</sub> emissions in the atmosphere ranges between 100 and 300 years<sup>4</sup> and continues beyond the life of the Project.

The table below shows a magnitude scale for project-wide GHG emissions that is in line with reporting thresholds adopted by a number of international lender organisations, such as the IFC and the EP4.

Magnitude Scale for Project GHG Emissions

Project-Wide GHG Emissions/annum	Magnitude Rating
>1,000,000 tCO <sub>2</sub> e	Very Large
100,000 – 1,000,000 tCO <sub>2</sub> e	Large
25,000 – 100,000 tCO <sub>2</sub> e	Medium
5,000 - 25,000 tCO <sub>2</sub> e	Small
<5,000 tCO <sub>2</sub> e	Negligible

The IFC’s PS 3 defines a reporting threshold for annual GHG emissions of 25,000 tCO<sub>2</sub>e per annum above which it requires developers to “...consider alternatives and implement technically and financially feasible and cost-effective options to reduce project-related GHG emissions during the design and operation of the project”. This study, therefore, looks at the potential impact of the Project in relation to IFC thresholds, and the likely implications of this.

The EP 4 require all projects, in all locations, to conduct an alternatives analysis to evaluate less GHG- intensive alternatives when combined Scope 1 and Scope 2 operational emissions are expected to be more than 100,000 tCO<sub>2</sub>e annually. In addition, the Equator Principles require that “the client (should) report publicly on an annual basis on GHG emission levels (combined Scope 1 and Scope 2 emissions) during the operational phase for Projects emitting over 100,000 tonnes of CO<sub>2</sub> equivalent annually.

**Likelihood**

The Likelihood of GHG emissions is described according to the definitions outlined in below:

Likelihood Definitions

LIKELIHOOD	DEFINITION
Unlikely	Reasonable to expect that the activity causing the GHG emissions will not occur during the lifetime of a project.
Occasional	Exceptional circumstances/conditions may cause GHG emissions to occur from time to time within the lifetime of a project.
Likely	Activities causing the GHG emissions can reasonably be expected to occur within the lifetime of a project.

In the case of this HSR Project, the “Likelihood” of carbon emissions occurring during construction and operational phases is 100%, and therefore classified as “Likely” per the above table.

**Significance**

The combination of the *magnitude* of the GHG emissions and the *likelihood* yields the degree of the *significance* of a potential GHG impact. This is illustrated in the table below.

Impact Significance Rating Matrix

		LIKELIHOOD		
		Unlikely	Occasional	Likely
MAGNITUDE	Very Large	Major	Major	Major
	Large	Moderate	Major	Major
	Medium	Minor	Moderate	Major
	Small	Negligible	Minor	Minor
	Negligible	Negligible	Negligible	Negligible



The above table shows, for example, that an “Occasional” Likelihood of emissions of “Medium” Magnitude would yield an overall “Moderate” impact Significance, while “Likely” emissions of same Magnitude will yield “Major” Significance.

In the following table, the results of the GHG inventory are assessed according to their magnitude and likelihood to yield the overall significance for this Project.

## 6. PROJECT GHG EMISSIONS

### 6.1 Construction Emissions

#### 6.1.1 Construction Works - Package 1

Refer to Appendix B and C

#### 6.1.2 Construction Works - Package 2

Refer to Appendix B and C

## 7. GHG EMISSIONS IMPACT ASSESSMENT

The impact of the GHG emissions is directly related to the amount of greenhouse contributors released over the considered period. Relevant indicators are not only the absolute values but also the ratio of emissions to work activities, which can be measured in terms of:

- Linear progress of the line
- Volume of earth displaced
- Volume of concrete poured
- Electricity produced
- Others according to the specifics of the works

The cumulated amount of GHG released will be compared against:

- The regional and local GHG emissions caused by other activities
- National benchmarks for similar projects
- Results of the previous year to determine the efficiency of mitigation measures

Estimated GHG emission Impact rating (Refer to Appendix C)

	Estimated GHG emissions	Magnitude	Likelihood	Resulting Significance
<b>Construction</b>				
Work Package 1 Stations				
Work Package 1 Bridges				
Embankment And Cut Segments				
<b>Operation</b>				

## **8. CONCLUSION**

Based on this GHG annual quantification and reporting, the Project will monitor and evaluate less GHG- intensive alternatives and methods, promote energy efficiency approaches and methods, along the design development and the construction phase, as well as conduct relevant GHG risk assessment to identify relevant mitigation measures such as:

- Energy Efficiency
- Renewable Energy
- Supply Chain
- Waste Reduction and Diversion Strategies
- Reduce Methane Emissions
- Increase Fuel Efficiency in Transportation and Logistics
- Additional Resources

## Appendix A – GHG Emissions Data from the Contractors

The Project received monthly KPI's Reports from project contractors, which include the numbers, types of equipment and the amount of fuel consumed in litres:

At the Second stage, calculations to measure the amount of GHG emissions per month and then collect them annually, have been carried out.

Below are the rough data and inventory list from the contractors.

FUEL CONSUMPTION (Moon light Company) FROM 160+600 TO 175+000 (14.4 KM LENGTH) From GARB Database - Fill and Cut Construction Set of Equipments			
Equipment	No	Daily Consumption (Liter /day)	Total Consumption (Liter /Month)
Grader	2	320	9600
Compactor	2	200	6000
Loader	2	240	7200
Bulldozer	1	760	22800
Trucks	5	400	12000
Trailer trucks	10	1300	39000
Total Consumption		3220	
Consumption Ratio		Liter /DAY / KM	Liter /MONTH /KM
		224	0

From Alignment GARB Inventory



موقع القطار السريع أكتوبر  
(شركه مون لايت للمقاولات العموميه)

الاجمالي اللترات	بيان باستهلاك المعدات في الموقع للدبزل					البيان	
	عدد الاستهلاك الشهري	عدد الأيام	الاستهلاك اليومي	العدد	نوعها		
9600	9600	30	320	2	160	2جريدر	
6000	6000	30	200	2	100	2هراس	
7200	7200	30	240	2	120	2لودر	
22800	22800	30	760	2	380	بلدوزر	
12000	12000	30	400	5	80	5عربيه قلاب	
39000	39000	30	1300	10	130	10تريلات	
96600	0	96600	180	3220	23	970	الاجمالي

اجمالي اطوال المشروع من الكيلو 160+600 الي الكيلو 175+000 بالاجمالي اطوال 14.340 كم

Inventory Station Section 1						
Date	Monday, August 21, 2023					
Station	Contractors	#	Equipment	No.	Consumption	Unit/Month
Cairo St.	ARAB CONTRACTORS (OSMAN AHMED OSMAN CO.)	1	Mona Bus	1	370	liter / Month
		2	Double cabin	1	170	liter / Month
		3	Double cabin	1	240	liter / Month
		4	120KW generator	1	2200	liter / Month
		5	200 KW generator	1	235	liter / Month
		6	Water tank		500	liter / Month
		7	loader	1	420	liter / Month
		8	forklift	1	390	liter / Month
		9	forklift	1	400	liter / Month
		10	Winch for Bhair	1	1300	liter / Month
		11	Grove winch	1	1050	liter / Month
			<b>Total</b>		<b>7275</b>	<b>liter / Month</b>
Mohamed Naguib St.	REDCON & CONCRETE PLUS	1	Loader 36	1	750	liter / Month
		2	Miniloader	1	505	liter / Month
		3	Forklift-Telehandler	1	1375	liter / Month
		4	Tractor	1	285	liter / Month
		5	Generator 1 "Site &Office Area"	1	3525	liter / Month
		6	Generator 1 "Camp Area"	1	2420	liter / Month
			<b>Total</b>		<b>8860</b>	<b>liter / Month</b>
Ain Sokhna St.	CONCORD	1	Crane	5	7200	liter / Month
		2	Loader	7	7564	liter / Month
		3	Bobcat	3	584	liter / Month
		4	Forklift	2	1967	liter / Month
		5	Generator	7	26799	liter / Month
			<b>Total</b>		<b>44114</b>	<b>liter / Month</b>
New Capital Station	SIAC	1	Loader	3	660	liter / Month
		2	crane	2	200	liter / Month
		3	excavator	0	0	liter / Month
		4	cars	10	300	liter / Month
		5	Electrical generator	9	1620	liter / Month
		6	Air compressor	1	50	liter / Month
		7	tractor	3	105	liter / Month
		8	Microbus	2	80	liter / Month
		9	minibus	1	55	liter / Month
		10	compactor	0	55	liter / Month
		11	Concrete vibrator	2	40	liter / Month
		12	Concrete pump	2	440	liter / Month
		13	Concrete mixer	4	532	liter / Month
		14	Ambulance	1	45	liter / Month
		15	manlift	3	150	liter / Month
			<b>Total</b>		<b>4332</b>	<b>liter / Month</b>
<b>Total Fuel Consumption (liter)</b>					<b>64581</b>	

**Fuel Consumption of Section 1**

Inventory Station Section 2						
Date	Monday, August 21, 2023					
Station	Contractors	#	Equipment	No.	Consumption	Unit/Month
Giza South Station	Archirodon	1	Crane	4	2529	liter / Month
		2	Loader	4	2928	liter / Month
		3	Generator	5	26665	liter / Month
		4	Drill Rig	3	5234	liter / Month
		5	Welder	3	221	liter / Month
		6	Tractor		102	liter / Month
		7	Compressor	2	996	liter / Month
		8	Pick Up	8	1530	liter / Month
		9	Truck Gargo	4	5534	liter / Month
		10	Sedan Car	1	55	liter / Month
<b>Total</b>					<b>45794</b>	<b>liter / Month</b>
6th october station	ARAB CONTRACTORS (OSMAN AHMED OSMAN CO.)	1	generator	1	3320	liter / Month
		2	generator	1	4415	liter / Month
		3	generator	1	1905	liter / Month
		4	generator	1	3705	liter / Month
		5	compressor	1	140	liter / Month
		6	loader	1	715	liter / Month
		7	vehcile	1	820	liter / Month
		8	vehcile	1	925	liter / Month
		9	fork loader	1	335	liter / Month
		10	mobile crane	1	545	liter / Month
<b>Total</b>					<b>16825</b>	<b>liter / Month</b>
Sphinx St.	Concord	1	generator	3	6585	liter / Month
		2	crane	2	1000	liter / Month
		3	car	5	30000	liter / Month
		4	loader	1	460	liter / Month
		5	forklift	3	1470	liter / Month
		6	compressor	1	280	liter / Month
<b>Total</b>					<b>39795</b>	<b>liter / Month</b>
Sadat St.	Petrojet	1	loader	1	1575	liter / Month
		2	loader	1	1575	liter / Month
		3	Excavator	1	1470	liter / Month
		4	tractor	1	630	liter / Month
		5	crane	1	840	liter / Month
		6	trella	1	630	liter / Month
		7	generator	1	420	liter / Month
		8	generator	1	525	liter / Month
		9	generator	1	525	liter / Month
		10	lighting unit	1	315	liter / Month
		11	lighting unit	1	315	liter / Month
		12	lighting unit	1	315	liter / Month
		13	roller compactor	1	525	liter / Month
		14	tipper	1	630	liter / Month
		15	tipper	1	630	liter / Month
		16	welding machine	1	105	liter / Month
		17	welding machine	1	105	liter / Month
		18	welding machine	1	105	liter / Month
		19	welding machine	1	105	liter / Month
		20	welding machine	1	105	liter / Month
		21	pump	1	525	liter / Month
<b>Total</b>					<b>11970</b>	<b>liter / Month</b>
Wadi Al Natroun	Hassan Allam	1	crane	1	520	liter / Month
		2	forklift	1	411	liter / Month
		3	tractor	1	185	liter / Month
		4	generator	1	50	liter / Month
		5	generator	1	420	liter / Month
		6	light tower	1	237	liter / Month
		7	generator	1	2402	liter / Month
		8	generator	1	881	liter / Month
		9	generator	1	586	liter / Month
		10	generator	1	736	liter / Month
		11	generator	1	1018	liter / Month
		12	light tower	1	265	liter / Month
		13	light tower	1	190	liter / Month
		14	generator	1	3907	liter / Month
<b>Total</b>					<b>11808</b>	<b>liter / Month</b>
Bridge	EDECS	1	Mobile Crane	2	1110	liter / Month
		2	Crawler Crane	2	6500	liter / Month
		3	Drill Rig	2	30500	liter / Month
		4	Tractor	1	200	liter / Month
		5	Loader	4	4285	liter / Month
		6	Generator	5	5720	liter / Month
		7	Vehicle	4	1545	liter / Month
<b>Total</b>					<b>49860</b>	<b>liter / Month</b>
HSR - Station	EDECS	1	Generator	4	4200	liter / Month
		2	Loader	2	1800	liter / Month
		3	Tractor	2	1350	liter / Month
		4	Telescopic Fork Lift	1	900	liter / Month
		5	Mobile Crane	4	3600	liter / Month
<b>Total</b>					<b>11850</b>	<b>liter / Month</b>
<b>Total Fuel Consumption (liter)</b>					<b>187902</b>	

### Fuel Consumption of Section 2

Inventory Station Section 3						
Date	Monday, August 21, 2023					
Station	Contractors	#	Equipment	No.	Cosunmotion	Unit/Month
Al Amria St.	ELHAZEK	1	Dumper Truck	1	1800	liter / Month
		2	Dumper Truck	1	1800	liter / Month
		3	Dumper Truck	1	1800	liter / Month
		4	Dumper Truck	1	1800	liter / Month
		5	Dumper Truck	1	1800	liter / Month
		6	Dumper Truck	1	1800	liter / Month
		7	Dumper Truck	1	1800	liter / Month
		8	Dumper Truck	1	1800	liter / Month
		9	Dumper Truck	1	1800	liter / Month
		10	Excavator 300	1	3600	liter / Month
		11	Excavator 240	1	2400	liter / Month
		12	Excavator 240	1	2400	liter / Month
		13	Excavator 240	1	2400	liter / Month
		14	Excavator 220	1	1920	liter / Month
		15	Grader	1	1920	liter / Month
		16	Loader	1	2400	liter / Month
		17	Loader	1	2400	liter / Month
		18	Compactor (Roller)	1	1200	liter / Month
		19	Pick Up Car	1	600	liter / Month
		20	Generator 250	1	6000	liter / Month
		21	Generator 250	1	6000	liter / Month
		22	Generator 60	1	2160	liter / Month
		23	Generator 60	1	2160	liter / Month
<b>Total</b>					<b>53760</b>	<b>liter / Month</b>
Alexandria St.	GMC	1	wheel loader	L107	4539	liter / Month
		2	wheel loader	L108	5213	liter / Month
		3	wheel loader	L110	7789	liter / Month
		4	wheel loader	L111	7584	liter / Month
		5	wheel loader	L112	9001	liter / Month
		6	soil compactor	CS101	1598	liter / Month
		7	exavator	EX114	400	liter / Month
		8	grader	GR101	477	liter / Month
		9	generator 100KVA	G101	1653	liter / Month
		10	generator 150KVA	G105	450	liter / Month
		11	skidloader	BB102	170	liter / Month
		12	generator 25KVA	RG101	1080	liter / Month
		13	generator 25KVA	RG103	1100	liter / Month
		14	compressor	C101	80	liter / Month
		15	light tower	TL101	220	liter / Month
		16	light tower	TL102	220	liter / Month
		17	light tower	TL103	220	liter / Month
		18	light tower	TL104	220	liter / Month
		19	light tower	TL105	160	liter / Month
		20	light tower	TL 107	60	liter / Month
<b>Total</b>					<b>42234</b>	<b>liter / Month</b>
Nubria St.	Petro-Jet	1	louder	1	1950	liter / Month
		2	digger	1	1820	liter / Month
		3	grader	1	1560	liter / Month
		4	tractor	1	780	liter / Month
		5	pick up	1	650	liter / Month
		6	private	1	650	liter / Month
		7	generator	3	1430	liter / Month
		8	lighting unit	2	780	liter / Month
		9	pick up	1	520	liter / Month
		10	roller compactor	1	650	liter / Month
		11	tipper	2	1560	liter / Month
		12	welding machine	5	650	liter / Month
<b>Total</b>					<b>13000</b>	<b>liter / Month</b>
Borg Al-Arab St.	Orascom	1	Single cabinet car	2	750	liter / Month
		2	double cabinet car	1	660	liter / Month
		3	generator	1	1200	liter / Month
		4	tractor	1	200	liter / Month
		5	bulldozer	1	7500	liter / Month
		6	loader	2	3000	liter / Month
		7	grader	1	2100	liter / Month
		8	dump truck	2	3000	liter / Month
		9	compactor	1	900	liter / Month
<b>Total</b>					<b>19310</b>	<b>liter / Month</b>
Al-Hamman St.	Samcrete	1	Generator	1	1511	liter / Month
		2	loader	1	1200	liter / Month
		3	compressor	1	50	liter / Month
		4	crane	1	400	liter / Month
<b>Total</b>					<b>3161</b>	<b>liter / Month</b>
<b>Total Fuel Consumption (liter)</b>					<b>131465</b>	

**Fuel Consumption of Section 3**

Inventory Station Section 4						
Date	Monday, August 21, 2023					
Station	Contractors	#	Equipment	No.	Cosunmotion	Unit/Month
HSR OG Depot	RG JV	1	Fleet Vehicle - Black BYD 2016	1	243	liter / Month
		2	Fleet Vehicle - GreyBYD2016HS	1	243	liter / Month
		3	Fleet Vehicle - Grey Hyundai Tucson	1	293	liter / Month
		4	Fleet Vehicle - Micro bus Kasrawy 2020	1	312	liter / Month
		5	Fleet Vehicle - Micro bus Kasrawy 2021	1	312	liter / Month
		6	Fleet Vehicle - Double cabin		500	liter / Month
		7	Fleet Vehicle - Double cabin	1	500	liter / Month
		8	Loader 966	1	750	liter / Month
		9	Loader 970	1	725	liter / Month
		10	Loader 970	1	720	liter / Month
		11	Excavator JCB 130	1	850	liter / Month
		12	Excavator Komatsu 220	1	870	liter / Month
		13	Excavator JCB 130	1	800	liter / Month
		14	Generator 150K	1	900	liter / Month
		15	Generator 60K	1	200	liter / Month
<b>Total</b>					<b>8218</b>	<b>liter / Month</b>
<b>Total Fuel Consumption (liter)</b>					<b>8218</b>	

### Fuel Consumption of Section 4 (Main Depot)

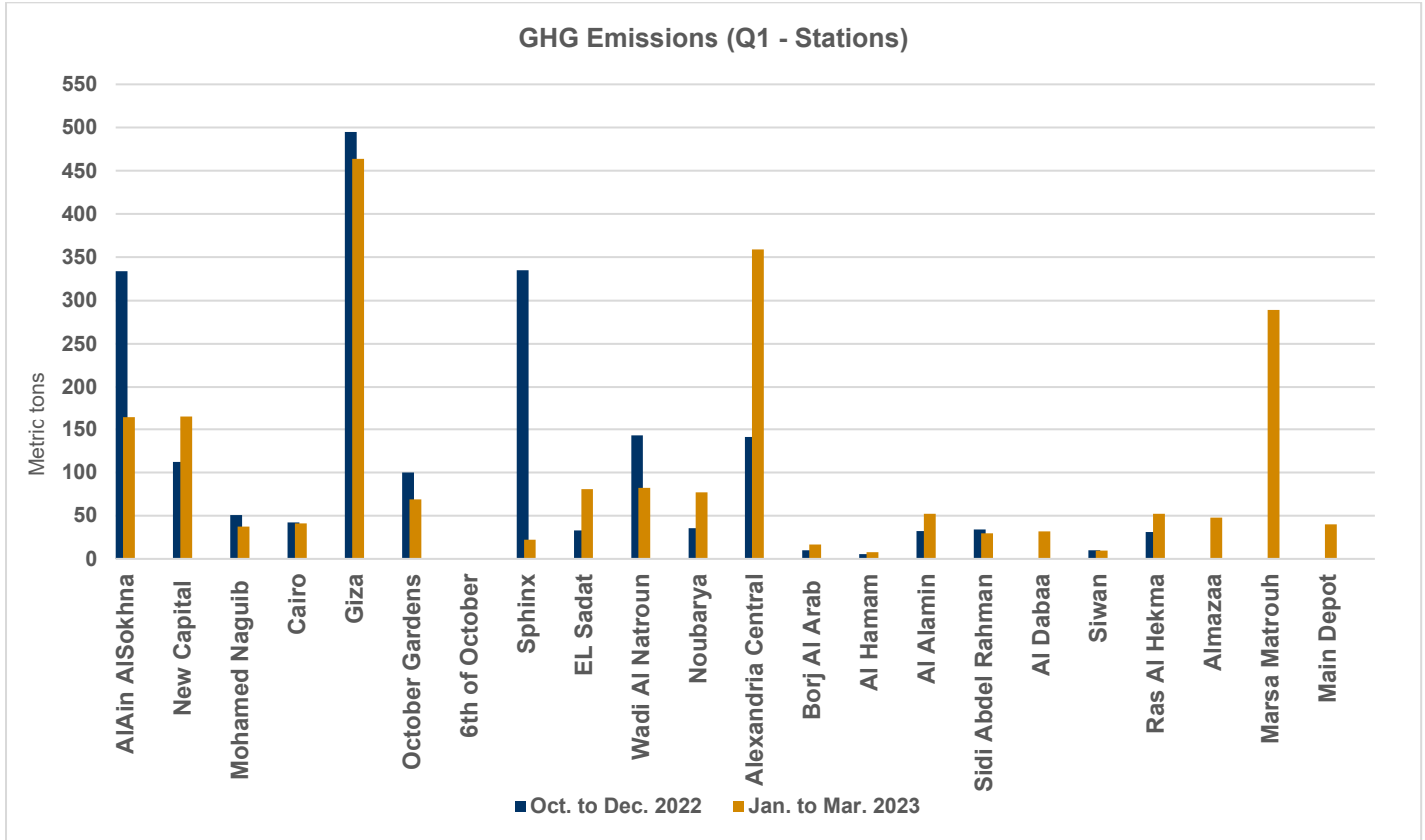
Inventory Station Section 5						
Date	Monday, August 21, 2023					
Station	Contractors	#	Equipment	No.	Cosunmotion	Unit/Month
Sidi-Abdulrahman ST	Alexandaria Construction	1	Genetator - 150K	1	1200	liter / Month
		2	Genetator - 60K	1	750	liter / Month
		3	Genetator - 45K	1	300	liter / Month
		4	loader	1	600	liter / Month
		5	forklioft	1	750	liter / Month
		6	mobile crane - 50T		750	liter / Month
		7	CAR	1	600	liter / Month
<b>Total</b>					<b>4950</b>	<b>liter / Month</b>
AL DABAA St.	Alexandaria Construction	1	Genetator	1	900	liter / Month
		2	Genetator	1	750	liter / Month
		3	Genetator	1	300	liter / Month
		4	loader	1	600	liter / Month
		5	forklioft	1	750	liter / Month
		6	CAR	1	600	liter / Month
<b>Total</b>					<b>3900</b>	<b>liter / Month</b>
RAS EL HEKMA ST.	Kased Khair	1	generator	1	2290	liter / Month
		2	generator	2	1800	liter / Month
		3	grader	1	11400	liter / Month
		4	doubl capina	1	120	liter / Month
		5	loader	1	1980	liter / Month
<b>Total</b>					<b>17590</b>	<b>liter / Month</b>
ALMAZA ST.	Kased Khair	1	generator	1	125	liter / Month
		2	truck	1	11.9 ton	liter / Month
		3	truck	2	15.6 ton	liter / Month
		4	loader	1	36	liter / Month
		5	generator	2	2200	liter / Month
		6	loader	2	966	liter / Month
<b>Total</b>					<b>3327</b>	<b>liter / Month</b>
MARSA MATROUH ST.	Redcon	1	Generator	2	3880	liter / Month
		2	Double Cabin Pickup	2	1000	liter / Month
<b>Total</b>					<b>4880</b>	<b>liter / Month</b>
<b>Total Fuel Consumption (liter)</b>					<b>34647</b>	

### Fuel Consumption of Section 5

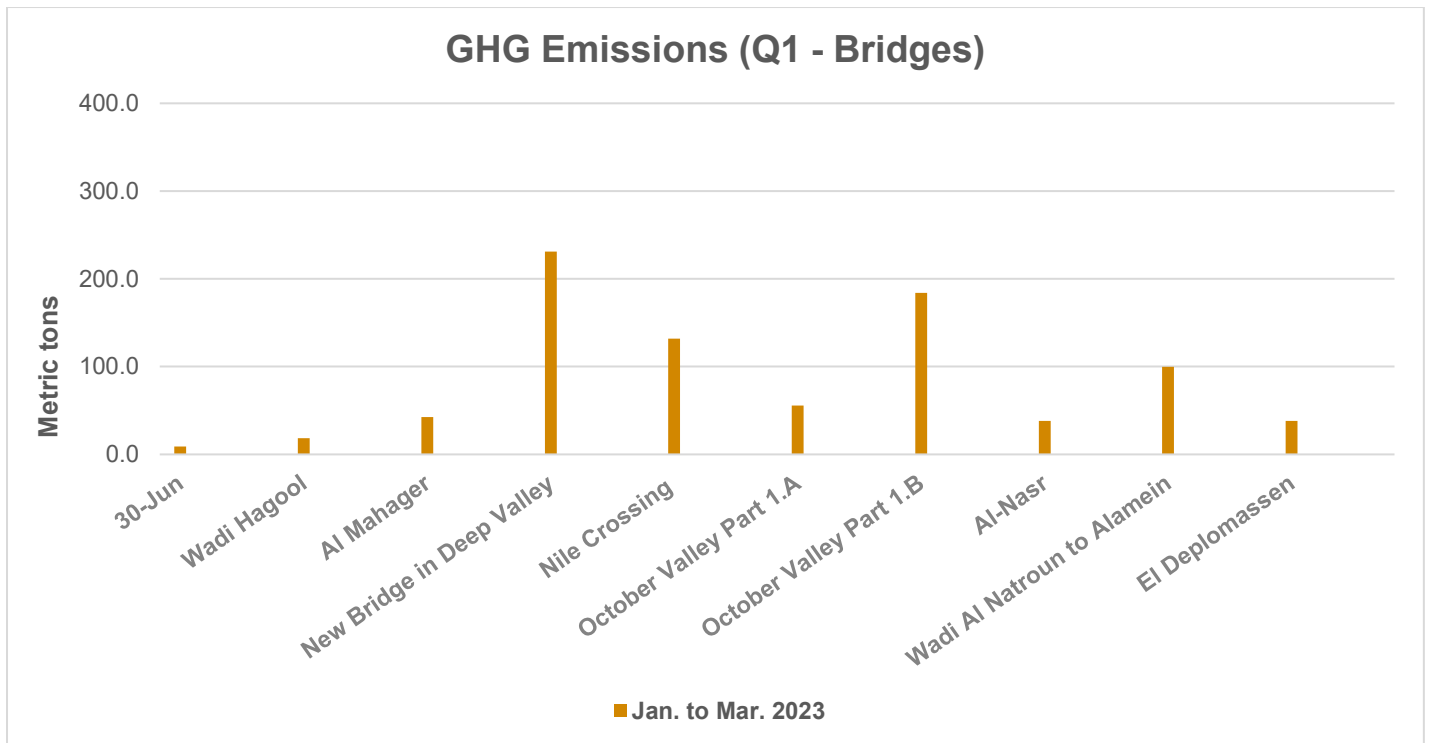


## Appendix B – GHG emission sources included in the inventory from the Contractors.

📊 Q1 – 2023 (GHG Emission Chart and Value):

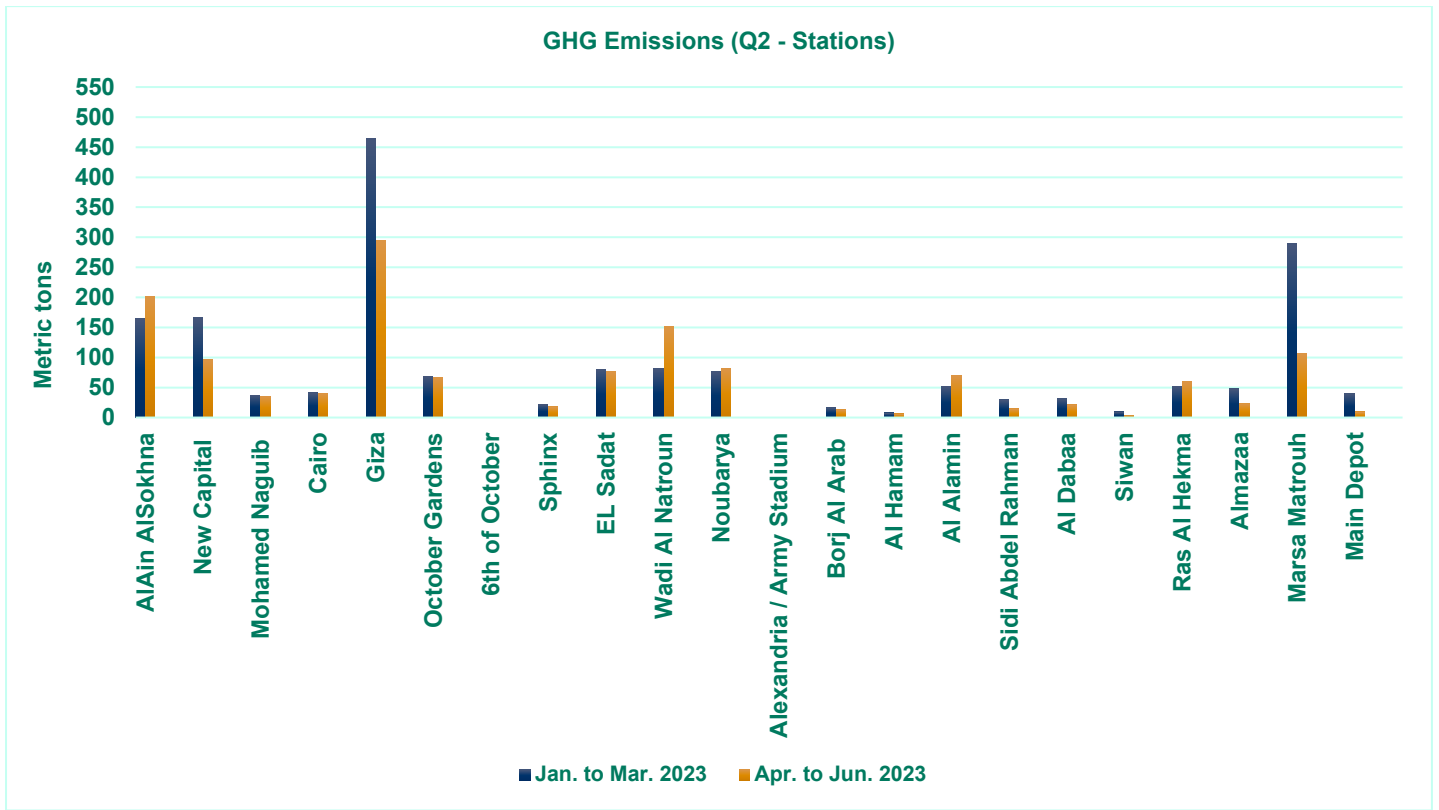


Q1	Stations	Total Fuel Consumption (Gallons).	240615.5
		Total Fuel Consumption (liter).	962462
		GHG Emissions (Metric tons).	2138

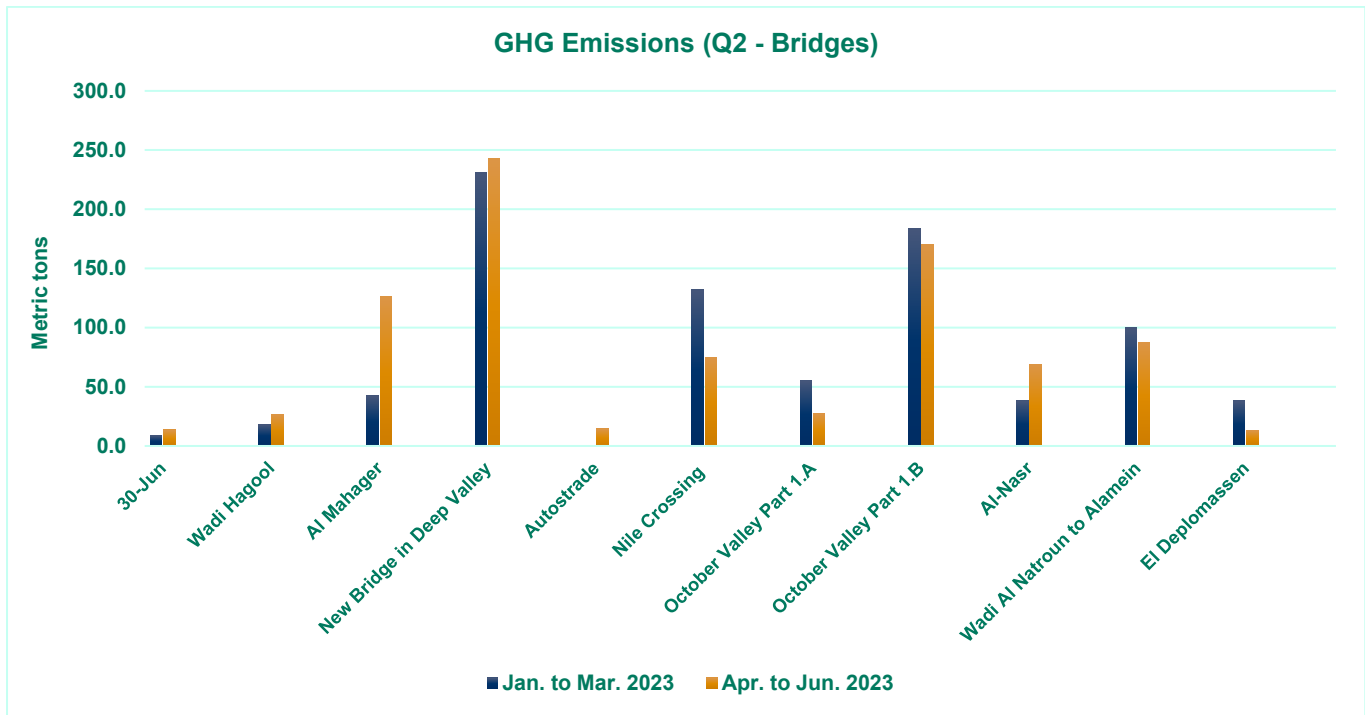


Q1	Bridges	Total Fuel Consumption (Gallons).	95512
		Total Fuel Consumption (liter).	382046
		GHG Emissions (Metric tons).	849

 Q2 – 2023 (GHG Emission Chart and Value):

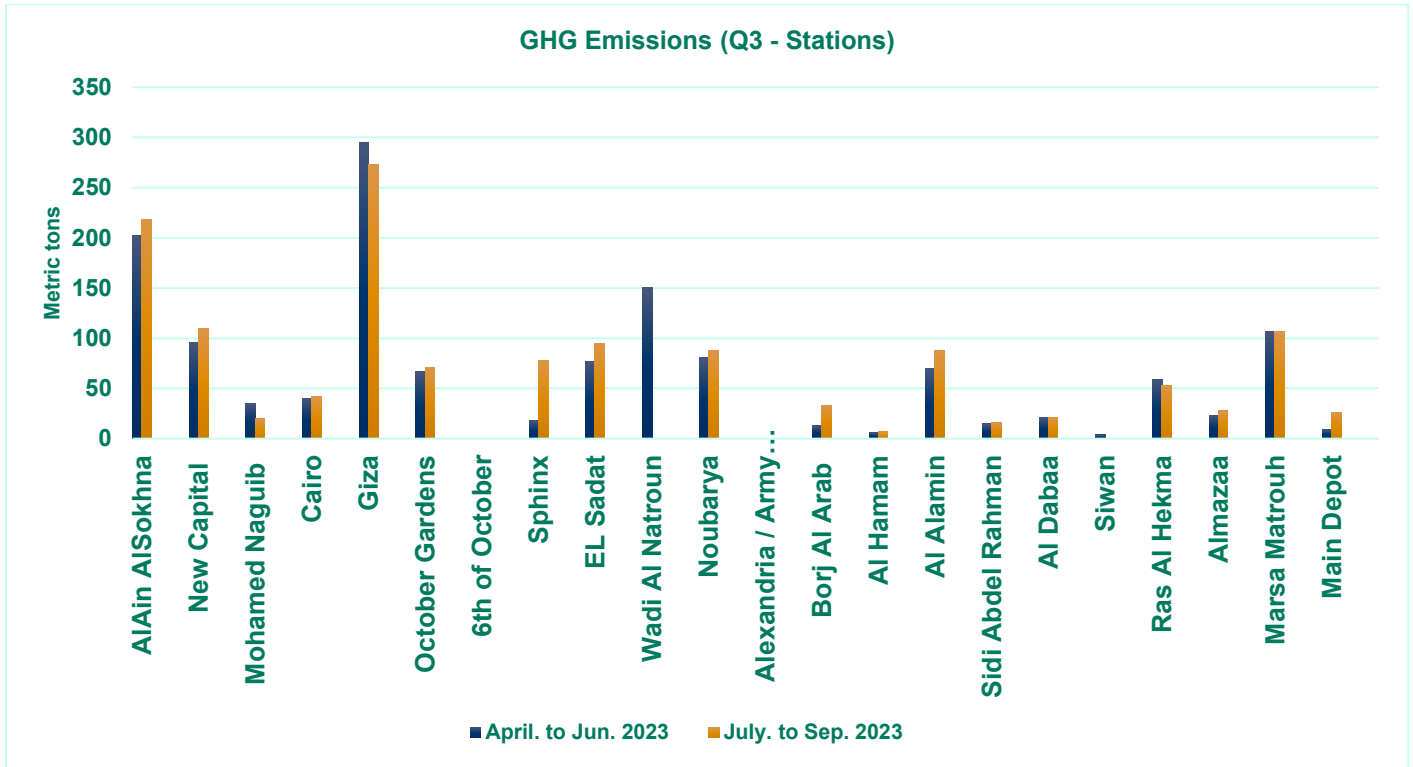


Q2	Stations	Total Fuel Consumption (Gallons).	156231
		Total Fuel Consumption (liter).	624923
		GHG Emissions (Metric tons).	1388

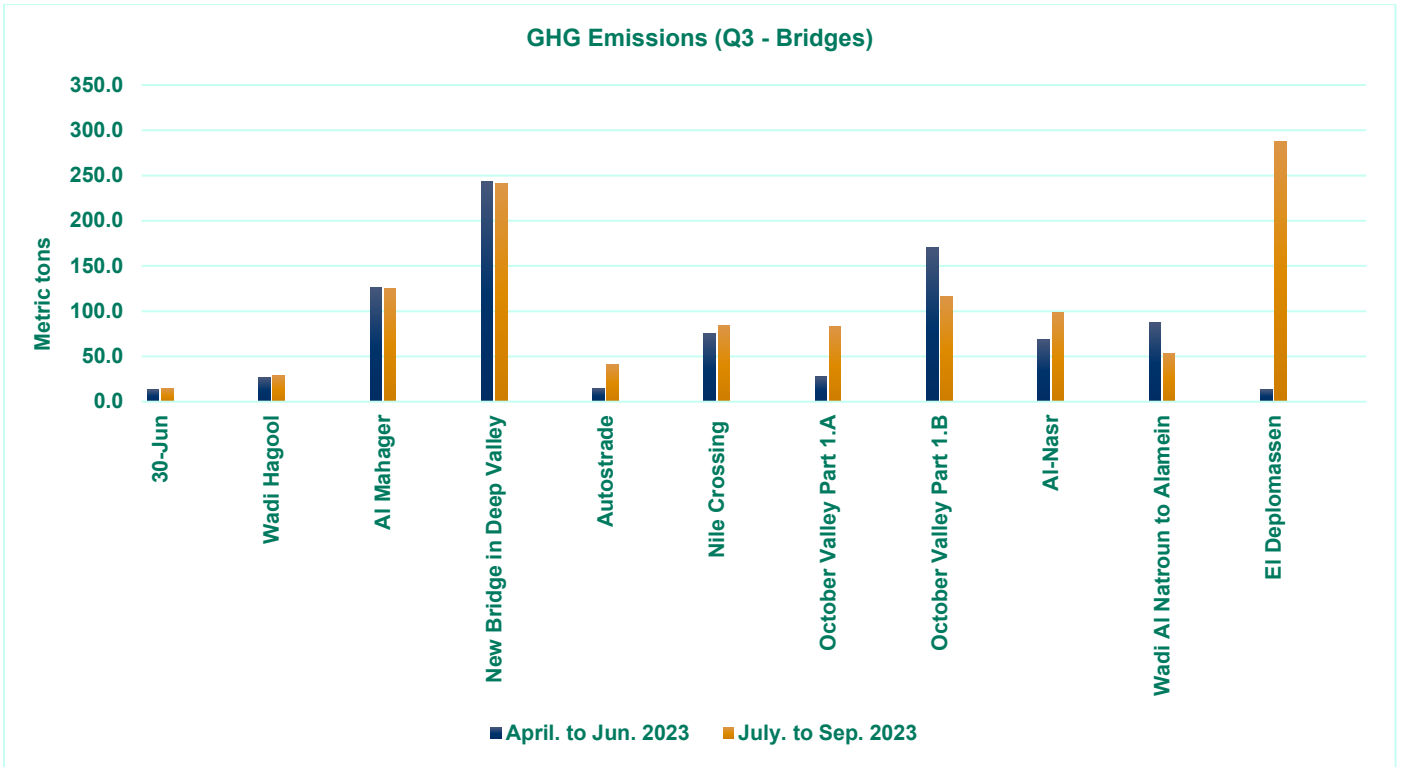


Q2	Bridges	Total Fuel Consumption (Gallons).	97561
		Total Fuel Consumption (liter).	390245
		GHG Emissions (Metric tons).	867

 Q3 – 2023 (GHG Emission Chart and Value):

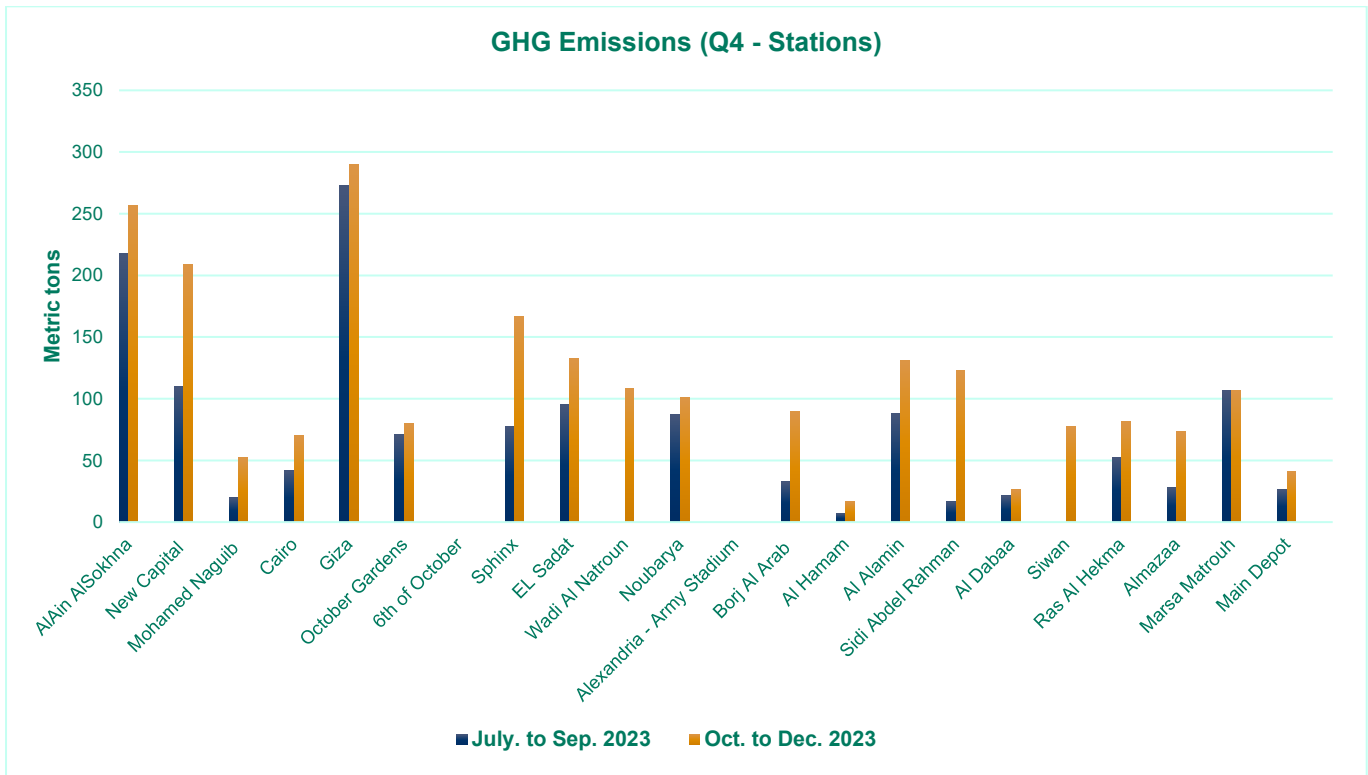


Q3	Stations	Total Fuel Consumption (Gallons).	153300
		Total Fuel Consumption (liter).	613201
		GHG Emissions (Metric tons).	1362

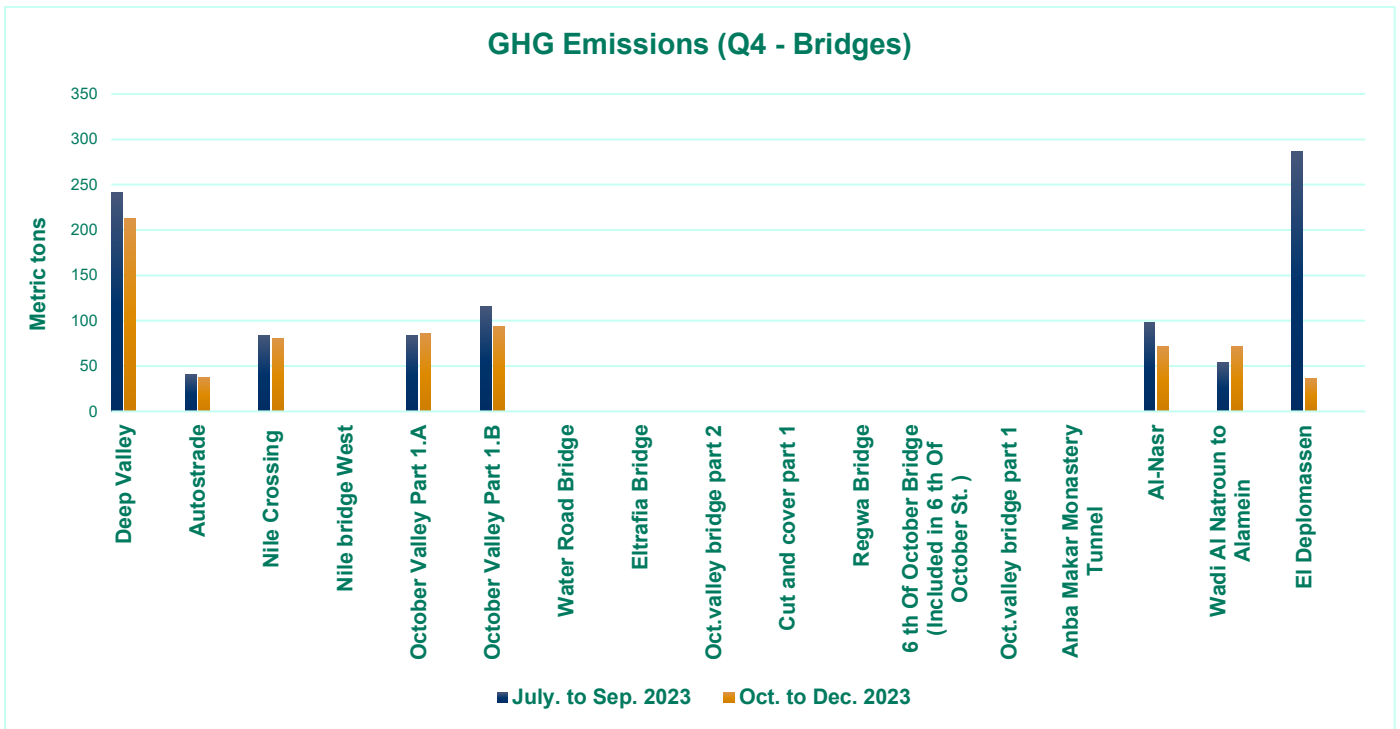


Q3	Bridges	Total Fuel Consumption (Gallons).	132039
		Total Fuel Consumption (liter).	528157
		GHG Emissions (Metric tons).	1173

**Q4 – 2023 (GHG Emission Chart and Value):**



Q4	Stations	Total Fuel Consumption (Gallons).	245306
		Total Fuel Consumption (liter).	981226
		GHG Emissions (Metric tons).	2180



Q4	Bridges	Total Fuel Consumption (Gallons).	74375
		Total Fuel Consumption (liter).	297499
		GHG Emissions (Metric tons).	661



## Appendix C – Estimated GHG Emission Impact Rating

Work Package	Estimated GHG emissions	Magnitude	Likelihood	Resulting Significance
<b>Construction</b>	<b>129,443 Tons CO2e</b>	<b>Large</b>	<b>Occasional (*)</b>	<b>Major</b>
<b>Work Package 1</b>	<b>123,943 Tons CO2e</b>	<b>Large</b>	<b>Occasional (*)</b>	<b>Major</b>
<i>Work Package 1 Stations</i>	<i>7,068 Tons CO2e</i>	<i>Small</i>	<i>Likely</i>	<i>Minor</i>
<i>Work Package 1 Bridges</i>	<i>3,550 Tons CO2e</i>	<i>Small</i>	<i>Likely</i>	<i>Minor</i>
<i>Embankment And Cut Segments</i>	<i>113,325 Tons CO2e</i>	<i>Large</i>	<i>Occasional (*)</i>	<i>Major</i>
<b>Work Package 2</b>	<b>5,500 Tons CO2e (**)</b>	<b>Small</b>	<b>Likely</b>	<b>Major</b>
<b>Operation</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

(\*) occasional due to assumption made for at-grade section (Extrapolation from specific section between 160+600 to 175+000 which includes large amount of earth works)

(\*\*) From initial estimated emissions (refer to Assumptions & Preliminary GHG Evaluation Report – April 2024)

Project-Wide GHG Emissions/annum		Magnitude Rating		
>1,000,000 tCO <sub>2</sub> e		Very Large		
100,000 – 1,000,000 tCO <sub>2</sub> e		Large		
25,000 – 100,000 tCO <sub>2</sub> e		Medium		
5,000 - 25,000 tCO <sub>2</sub> e		Small		
<5,000 tCO <sub>2</sub> e		Negligible		
LIKELIHOOD				
MAGNITUDE		Unlikely	Occasional	Likely
	Very Large	Major	Major	Major
	Large	Moderate	Major	Major
	Medium	Minor	Moderate	Major
	Small	Negligible	Minor	Minor
	Negligible	Negligible	Negligible	Negligible