

# Greenhouse Gas Inventory Management Plan

**Hikal Limited**

V4 – 12/06/2023

Prepared by: Schneider Electric

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FY 2022-23 Inventory Management Plan Overview	
<b>Organization name</b>	Hikal Limited
<b>Organization address</b>	Great Eastern Chambers, Sector 11, CBD Belapur, Navi Mumbai
<b>Contact person</b>	Mansukh Patel, Head - Sustainability & Corporate EHS (mansukh_patel@Hikal.com)
<b>Industry</b>	Pharmaceutical, Crop Protection and Animal Health
<b>Organizational activities</b>	Manufacturing
<b>Reporting Period</b>	Financial Year (01 April 2022 – 31 March 2023)
<b>Organizational Boundary</b>	Operational Control Scope 1 and 2 emissions sources from Hikal Limited's manufacturing facilities, research & technology centre, and offices.  List of facilities covered are listed below:  1. Jigani unit 1 2. Jigani unit 2 3. Taloja unit 4. Panoli Pharma unit 5. Pharma Crop unit 6. Mahad unit 7. Pune R&T Centre 8. Head office (Navi Mumbai) 9. Sales office (Bangalore) 10. Chairman's office (Nariman Point)
<b>Exclusions</b>	No
<b>Verification</b>	No 3 <sup>rd</sup> party verification

In Scope Emissions	Location-Based	Market-Based
Scope 1	26,793.24 tCO <sub>2</sub> e	26,793.24 tCO <sub>2</sub> e
Scope 2	71,295.95 tCO <sub>2</sub> e	58,436.80 tCO <sub>2</sub> e
<b>Total (in-scope) emissions</b>	<b>98,089.19 tCO<sub>2</sub>e</b>	<b>85,230.03 tCO<sub>2</sub>e</b>

Note 1: In the FY 2022-23, Hikal Limited (Jigani Unit 1) procured 1,81,11,485 kWh renewable electricity via offsite power purchase agreement. Therefore, its marked-based scope 2 emissions are lower than the location-based emissions.

Note 2: A **location-based method** reflects the average emissions intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data). A **market-based method** reflects emissions from electricity that companies have purposefully chosen (or their lack of choice). It derives emission factors from contractual instruments, which include any type of contract between two parties for the sale and purchase of energy bundled with attributes about the energy generation, or for unbundled attribute claims.

The market-based method assigns an emission factor of 0 considering that the organization has chosen to purchase offsite renewable electricity, backed by a REC. The location-based method does not factor in instruments or contracts and assigns the local grid average emission factor to all offsite usage, regardless of where it comes from.

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## 1 Introduction

The purpose of the Greenhouse Gas (GHG) Inventory Management Plan (IMP) is to provide explanation and guidance for the calculation of Hikal Limited's (hereafter referred to as "Hikal") GHG emissions in accordance with the Greenhouse Gas Protocol: Corporate Accounting and Reporting Standard. It contains organization-wide information, including reporting boundaries, emission sources, data management, quantification methods, emission factors, and base year. It is designed to account for and report on calculation methodologies. The content of this document will be used for both internal reference and, in part, to provide transparency for future external reporting and third-party validation of interest to Hikal.

The document is based on five (5) principles to ensure that the inventory has been prepared in accordance with industry accepted best practices. The accounting and reporting principles set forth below are in accordance with those outlined in the World Resource Institute (WRI) / World Business Council on Sustainable Development (WBCSD) Greenhouse Gas Protocol: Corporate Accounting and Reporting Standard:

- **Relevance:** Ensure the inventory appropriately reflects impacts and emissions and serves the decision-making needs of users—both internal and external to the organization.
- **Completeness:** Account for and report all key environmental sources and activities within the defined inventory boundary.
- **Consistency:** Use consistent methodologies to allow for meaningful comparisons of emissions and usage over time. Transparently document any changes to the data, inventory boundary, methods, or any other relevant factors in the time series.
- **Transparency:** Address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.
- **Accuracy:** Ensure that the quantification of impacts and emissions is neither systematically over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practical. Achieve sufficient accuracy to enable users of your data to make decisions with reasonable assurance of the integrity of the reported information.

### 1.1 Environmental Reporting Protocols

Hikal's GHG Inventory follows the guidelines set forth in the Greenhouse Gas Protocol ([GHG Protocol](#)), which was developed by the World Business Council for Sustainable Development (WBCSD) in collaboration with the World Resources Institute (WRI).

### 1.2 Document Declaration

This document and its associated attachments were prepared based on data provided to Schneider Electric (hereafter referred to as "SE") by Hikal. It is a complete and accurate representation of Hikal's direct and indirect GHG emissions as defined by the information presented in this document. It is recommended that the IMP be reviewed and updated annually to reflect the most recent, relevant, complete, and accurate emissions data.

### 1.3 Roles and responsibilities

All information has been collected by Hikal from its six manufacturing facilities, one research & technology centre, and three offices and shared with SE, which is responsible for high-level data gap checks and calculation of the carbon footprint. Currently, SE has no insight into Hikal's internal data collection processes and whether / what roles and responsibilities are defined. However, it is recommended that these are defined for future reporting years.

## 2 Version Information

Item	Description			
A	<b>Reporting Period</b>	01 April 2022 – 31 March 2023		
B	<b>Version of IMP</b>	V1	Prepared by: Alok Sharma	Date: 16/03/2023
			Reviewed by: Rebecca Verghese	Date: 16/03/2023
			Approved by: Ekaterina Tsvetkova	Date: 16/03/2023
		V2	Prepared by: Alok Sharma	Date: 30/03/2023
			Reviewed by: Rebecca Verghese	Date: 31/03/2023
			Approved by: Ekaterina Tsvetkova	Date: 31/03/2023
		V3	Prepared by: Alok Sharma	Date: 09/05/2023
			Reviewed by: Rebecca Verghese	Date: 09/05/2023
			Approved by: Ekaterina Tsvetkova	Date: 09/05/2023
		V4	Updated by: Alok Sharma	Date: 12/06/2023

## 3 Boundary Conditions

### 3.1 Organizational Boundaries

When establishing organizational boundaries, an entity selects an approach for consolidating its GHG emissions to define which activities are considered part of the organization. In accordance with the GHG Protocol, an organization can choose between three consolidation approaches when defining its organizational boundary, as detailed in Table 1.

Table 1: Consolidation approaches for organizational boundaries

Consolidation approach		Description
<b>Equity Share</b>		An organization accounts for activity data and GHG emission sources from operations that are wholly owned and partially owned according to the organization's share of equity in the operation.
<b>Control</b>	<b>Financial</b>	The ability to dictate or direct financial policies of a facility with the interest of gaining economic benefits from its activities (i.e., wholly own facility).
	<b>Operational</b>	The full authority to introduce and implement corporate or site-specific operating policies at the particular asset or operation.

For this GHG assessment, Hikal has applied the principles of the **Operational Control Approach**. Under this approach, Hikal accounts for all emissions where it has direct control over its operations and can influence decisions that affect GHG emissions. This includes all owned or leased facilities and vehicles operated by Hikal. This approach is consistent with the WRI/WBCSD GHG Protocol and general sustainability reporting protocols and guidelines.

### 3.2 Organization-wide sites in the inventory

The Scope 1 and 2 emissions were calculated for the following entities of Hikal in India:

#### Manufacturing facilities and Research & Technology Centre:

- I. Jigani unit 1
- II. Jigani unit 2
- III. Taloja unit
- IV. Panoli Pharma unit
- V. Panoli Crop unit
- VI. Mahad unit
- VII. Pune R&T Centre

#### Offices:

- VIII. Head office (Navi Mumbai)
- IX. Sales office (Bangalore)
- X. Chairman's office (Nariman Point)

### 3.3 Operational Boundaries

Establishing operational boundaries for Hikal's activities requires quantification of associated impacts and emissions, categorized by Scope 1 (direct emissions) and Scope 2 (energy indirect emissions). The following sections provide details on the applicable operational boundaries for Hikal's inventory.

Standard greenhouse gas reporting covers emissions associated with seven greenhouse gases:

- Carbon Dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous Oxide (N<sub>2</sub>O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur Hexafluoride (SF<sub>6</sub>)
- Nitrogen Trifluoride (NF<sub>3</sub>)

Hikal has outsourced the employee commuting activity to third-party vendors. All the vehicles used for employee commuting were owned and operated by the third-party vendors. Therefore, in accordance with the GHG Protocol, emissions due to these outsourced vehicles were not included under scope 1 emissions.

#### 3.3.1 Emission Categories and Sources

Following the definition of the inventory boundary of Hikal, relevant emission sources are identified and classified into Scopes 1 and 2 according to the defined organizational boundaries.

The definition of the emission scopes considered for the inventory is provided in Table 2 below.

Table 2: General description of emission scopes

Emission scopes	Description
<b>Scope 1 - Direct</b>	Emissions from sources that are owned or controlled by an entity directly. Activity data and emissions include combustion of fuels in stationary (non-transport) combustion sources on-site (e.g., heating boilers), mobile combustion sources (company-owned/leased vehicles), or process-based emissions (e.g., ammonia production). Also included, are refrigerants mainly for air conditioning purposes.
<b>Scope 2 - Indirect (energy)</b>	Emissions associated with the consumption of purchased or acquired electricity and district heating/cooling, or steam. Activity data and emissions include the purchase of electric power, district heating/cooling, and steam from the local utility.
<b>Out of Scope (biogenic)</b>	The fraction of CO <sub>2</sub> -only emissions related to the consumption of bioenergy (CH <sub>4</sub> , N <sub>2</sub> O are included in Scope 1 & 2). Biogenic CO <sub>2</sub> emissions are one of several activities labelled 'outside of scopes' by the GHG Protocol Corporate Accounting and Reporting Standard, because the impact has been determined to be a 'net zero' (i.e., the fuel source itself absorbs an equivalent amount of CO <sub>2</sub> during its growth phase as the amount of CO <sub>2</sub> released through combustion).

Below is a listing of Hikal’s activity types that are part of the operational boundaries for Scope 1 and 2.

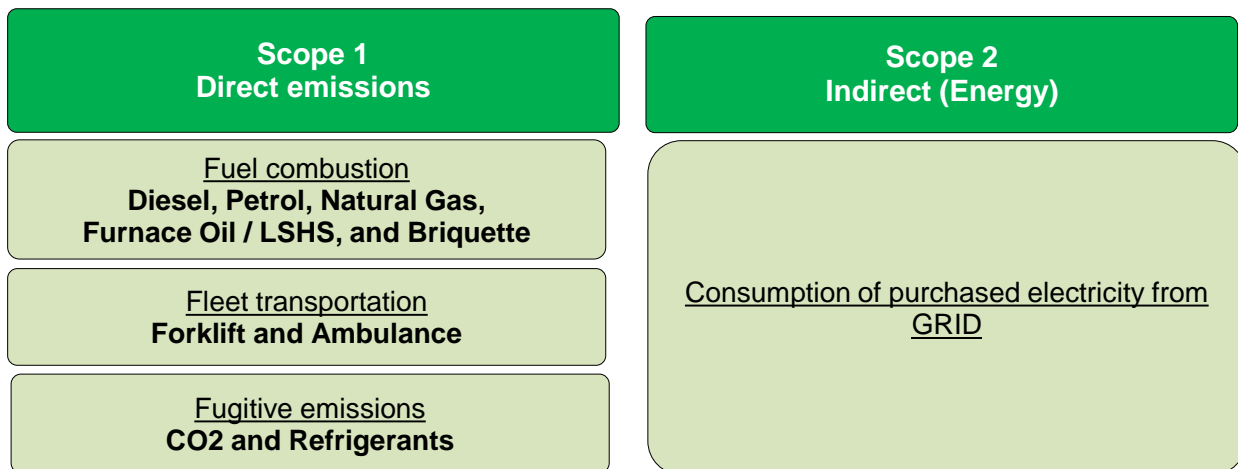


Figure 1: Emission sources and categories

## 4 Data Management

The most accurate, reliable, and readily available data was used to quantify impacts from the above sources on Hikal’s operations. Sources of activity data include, but are not limited to, monthly purchase records, meters, internal measurements and tracking controls. The following section describes the primary data collection and validation process, the data estimation methods used, as well as a *de minimis* assessment where applicable.

## 4.1 Data Collection

This section describes the process of collecting and processing activity or monitoring data from its original source to the final data disclosed in Hikal's GHG inventory.

For the FY 2022-23 GHG inventory, an Excel spreadsheet was used to collect and consolidate operational data. SE issued the template as a request for information (Scope 1 & 2 RFI). In addition to the excel spreadsheet, the revised data was shared via emails and a few units have updated their data directly in the excel calculation sheet that was shared with respective units.

### 4.1.1 Scope 1 & 2

The activity data for Scope 1 & 2 were collected using the Scope 1 & 2 RFI, where all the emissions sources are collected in different tabs. Where available, information was provided by Hikal's Point of Contact for all the facilities. Certain clarifications and additional data inputs were requested via emails and the information/data were shared via excel sheets and emails.

## 4.2 Data Quality Check and Validation

The responsibility for the validity and accuracy of the data provided lies with Hikal. SE has not been contracted in the capacity to verify any of the data against evidence of the primary data, including Renewable Energy claims. Therefore, SE cannot be held liable for incorrect results due to inaccurate primary data provided by Hikal. After Hikal consolidated and shared the data, SE conducted high-level quality checks and requested explanations for apparent data gaps where necessary.

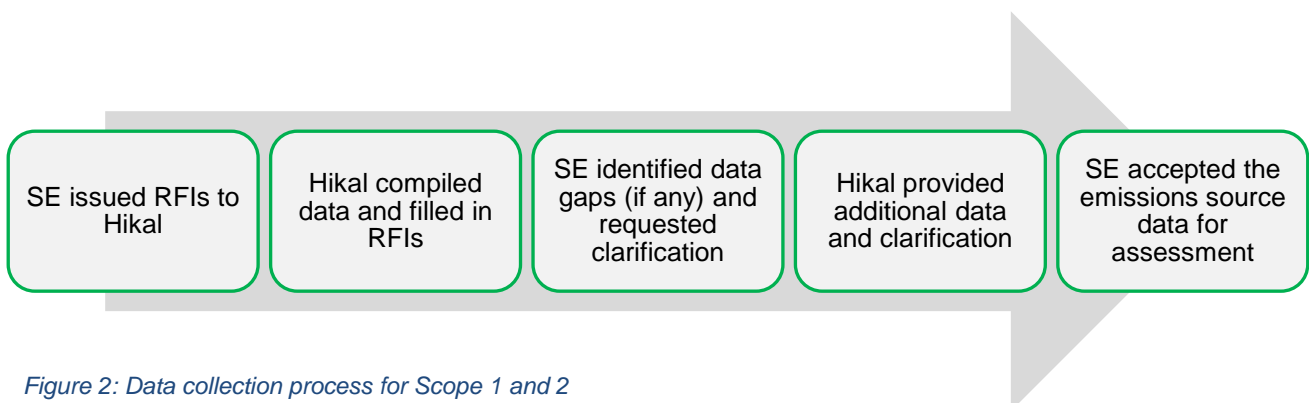


Figure 2: Data collection process for Scope 1 and 2

Year-on-Year comparisons of reported emissions to detect errors are not possible at this stage as only single year of data were provided. This IMP provides guidance on how to consistently measure Hikal's carbon footprint over time, and this type of quality control should be performed in future reporting periods. Further guidance on Year-on-Year variations is provided in Section 7.1.

## 4.3 Data Security

The information compiled to develop the FY 2022-23 GHG inventory is maintained and controlled by SE. Security and confidentiality of the data is assured in accordance with the Service Agreement. Changes to the RFIs are not acknowledged after SE accepts the data for analysis unless the changes are explicitly communicated by Hikal and approved by SE.

#### 4.4 Management engagement and review

A kick-off meeting was conducted with Hikal’s key contact(s) by SE, detailing the required data and demonstrating the data collection methodology. Subsequent communication between SE and Hikal in the form of meetings, phone calls, and emails served to provide further information and clarification regarding the completion of the RFI for Scope 1 and 2

All data and assumptions provided to SE by Hikal are considered truthful and accurate. The version 3 of the IMP was reviewed by Hikal’s key contacts and based on that we are submitting Version 4 as the final submission.

#### 4.5 Frequency

The site-level data was collected once via RFI document for the financial year 2022-23.

#### 4.6 Estimated data

The concentration of Total Nitrogen in the untreated wastewater was estimated for the Pune R&T Centre, apart from this, no estimations were required as Hikal was able to acquire primary data for all active sites and emissions sources throughout the entire reporting period. We have only allocated the electricity consumption data between Panoli Pharma unit and Panoli Crop unit based on their consumption. There is a common electricity supply for Panoli unit, which further bifurcates into Pharma and Crop units.

#### 4.7 De minimis assessment

A *de minimis* assessment has not been conducted, as all activity data have been included in the inventory.

### 5 GHG Emissions Quantification

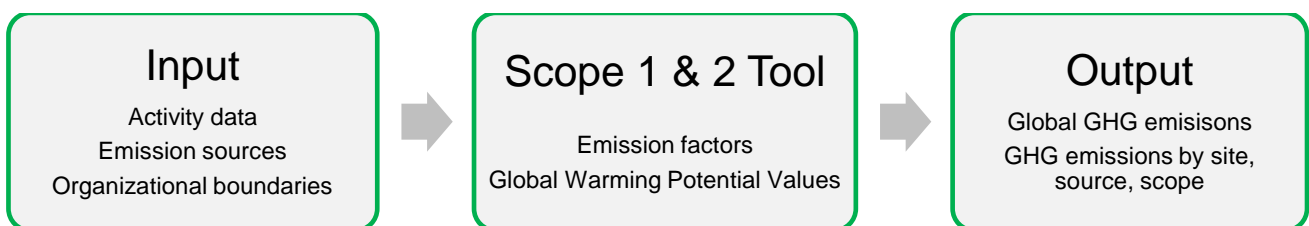
#### 5.1 Quantification Methods

##### 5.1.1 Scope 1 & 2

The quantification methods used for the inventory are in accordance with best practice as followed by WRI/WBSCSD GHG Reporting Protocol and are based on the latest available factors.

Usage or “activity” data from emission sources are used to calculate Scope 1 & 2 emissions. The activity data is multiplied by the correlating emission factor as defined in the GHG Reporting Protocol or by technical assessments for that activity. A general formula for calculating emissions is:

$$\text{Activity Data} \times \text{Emission Factor} = (\text{CO}_2, \text{CH}_4, \text{N}_2\text{O}, \text{HFC}, \text{PFC}, \text{SF}_6, \text{NF}_3) \text{ Emissions}$$



## 5.2 Emission Factors

In accordance with the dual reporting requirement of the GHG Protocol, Hikal's inventory uses emission factors from two relevant emissions databases: location-based (LB) and market-based (MB) inventories. The LB and MB emission factors differ only in Scope 2 – Electricity. The LB method reflects the average emissions intensity of grids on which energy consumption occurs and uses grid-average emission factors. The MB method reflects specifically the carbon intensity of the electricity purchased by Hikal.

For direct emissions (Scope 1), fuel-specific emission factors for CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O are used for all sites using the 2022 UK Department for Environment, Food and Rural Affairs (DEFRA) emission dataset (adjusted with GWP values from IPCC AR6), while refrigerant-specific emission factors are taken from IPCC AR5 and AR6.

For indirect emissions (Scope 2), the India specific grid emission factor was taken from the CO<sub>2</sub> Baseline Database for the Indian Power Sector - User Guide Version 18.0 published by Central Electricity Authority of India. Emission factors used in the LB and MB inventories are presented in Table 3.

Table 3: Description of Location-based and Market-based emission factors

Inventory		Location-Based	Market-Based
Scope 1	Fuels	DEFRA (adjusted with GWP values from IPCC AR6)	
	Refrigerants	IPCC AR5 and AR6	
Scope 2	Electricity	CEA - CO <sub>2</sub> Baseline Database for the Indian Power Sector - User Guide Version 18.0	Not applicable

## 6 Base Year

The base year shall represent an “average” year for the organization’s emissions data reflecting ‘business-as-usual’. Most organizations select a single year as the base year, but it is also possible to choose an average of annual emissions over several consecutive years. Furthermore, the GHG Protocol states that “companies shall choose and report a base year for which verifiable emissions data are available and specify their reasons for choosing that particular year” (p. 35, [GHG Protocol](#)). Selecting a year with anomalies or exclusion of more than 5% Scope 1 & 2 emissions is not recommended, as the emissions data may not compare well with subsequent years.

### 6.1 Adjustments to Base Year Emissions – Structural and Methodology Changes

Hikal's base year and subsequent year inventories shall be adjusted for mergers, acquisitions, and divestitures, according to the methodology provided in the GHG Protocol. They shall be updated when a significant cumulative change in Hikal's base year emissions is identified. Any change would be considered significant under the following circumstances:

- A structural change in Hikal's organizational boundaries due to a merger, acquisition, or divestiture of entities that already existed in the base year
- A change in emission calculation methods or factors used

- Additional or new data and/or methodologies are provided for emission sources that were previously not available
- Outsourcing (i.e., production of goods/services contracted outside of Hikal's agreed reporting boundaries) or insourcing (i.e., internal production of goods/services previously subcontracted), resulting in new Scope 1 & 2 emissions not previously included in the original GHG inventory
- A significant error or errors are identified in the inventory.

The GHG Protocol does not specify a significance threshold. Hikal must determine what significance threshold should trigger a recalculation of the base year. As a best practice, SE recommends defining the significance threshold as a cumulative change (+/-) of five percent (5%) or more of Hikal's total base year emissions.

If Hikal has acquired or merged with a company, but despite all reasonable efforts, base year data is not available for the new company, an alternative simplified method may be used to update the base year data using all available data. In such instances, all related procedures, calculation methodologies, and supporting data should be documented in the IMP.

If the amount of data for the newly acquired entity is insufficient to apply agreed-upon data estimation procedures to adjust the baseline data, a re-baselining exercise for the current reporting period must be performed (which includes the new acquisition / merger). Such changes to the reporting program shall be documented in the IMP.

The following are examples of circumstances that are considered insignificant and therefore do not require a redetermination of Hikal's base year data (please note that this list is not exhaustive):

- An acquisition or merger of new facilities that did not exist in the base year
- Outsourcing (i.e., production of goods/services subcontracted outside of Hikal's agreed reporting boundaries) or insourcing (i.e., bringing any production of goods/services in-house, which were previously sub-contracted), that has already been reported under a different Scope
- Organic growth or decline, such as increases or decreases in production output, changes in processes or product mix, and closure / openings of operating units owned or controlled by Hikal.

## 7 Recommendations

### 7.1 Quality of Data

SE recommends reviewing data trends, including Year-on-Year variances and missing values. All reported deviations shall be reconciled with comments from the representative who provided the data. In cases where the representative provides a full explanation, the discrepancy is marked as resolved. For unclassified deviations, the report should be returned to the Process/Department representative for clarification to verify consumption against primary data if the deviation cannot be explained.

Sources where zero or no values were entered in year N and a value was entered in year N-1 and vice versa shall also be flagged as a deviation. This will be verified and an explanation (e.g., process opening/closure, data availability, etc.) should be documented in this case.

### 7.2 Data Gaps

SE recommends that the data shall be maintained for the following indicators:

- Refrigerants: Name of refrigerant and top-up quantity in the reporting period for Chairman's office

### **7.3 Management Review**

It is recommended that the annual GHG reports be reviewed and validated by Hikal's management as part of the annual review process. This process is intended to ensure that the GHG inventory is complete and accurate. In addition, it is recommended that Hikal refines and codifies the management review process and clearly defines internal roles and responsibilities for subsequent IMP versions.

### **7.4 Scope 3**

Going forward it is recommended to do the accounting of scope 3 emissions as well. As a first step, Hikal may identify the significant scope 3 categories via spend-based method. The subsequent step is to develop a more robust approach to calculate emissions from categories that represents a significant portion of scope 3 emissions.