CIC CARBON ASSESSMENT TOOL

USER GUIDE

(29 February 2024)

CONSTRUCTION
INDUSTRY COUNCIL
建造業議會

Content

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PART 1 - INTRODUCTION

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Part 1 – Introduction

In 2018, the built environment accounted for 70% of Hong Kong's carbon emissions and the HKSAR Government has committed to reduce the total carbon emission by between 26% and 36% against the 2005 baseline by 2030.

To achieve this goal, the whole construction industry needs to play its part. The Construction Industry Council (CIC) initiated the development of a web-based tool - the CIC Carbon Assessment Tool (Tool) in 2018. The Tool aims to create a common platform to evaluate the carbon performance of buildings and infrastructure in Hong Kong from raw material extraction to the end of construction. The Tool facilitates the construction industry to contribute to the goal of carbon reduction.

CIC Carbon Assessment Tool
建造業議會碳評估工具

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Purpose and Background

The Tool is designed to:

DEVELOP

Approximately 2,000 carbon emission factors for construction materials

MEASURE

Embodied carbon of construction materials and carbon emission of on-site construction processes

ANALYSE

Carbon performance of construction projects

ESTABLISH

Carbon reduction target for the construction industry

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PART 2 - SCOPE OF THE TOOL

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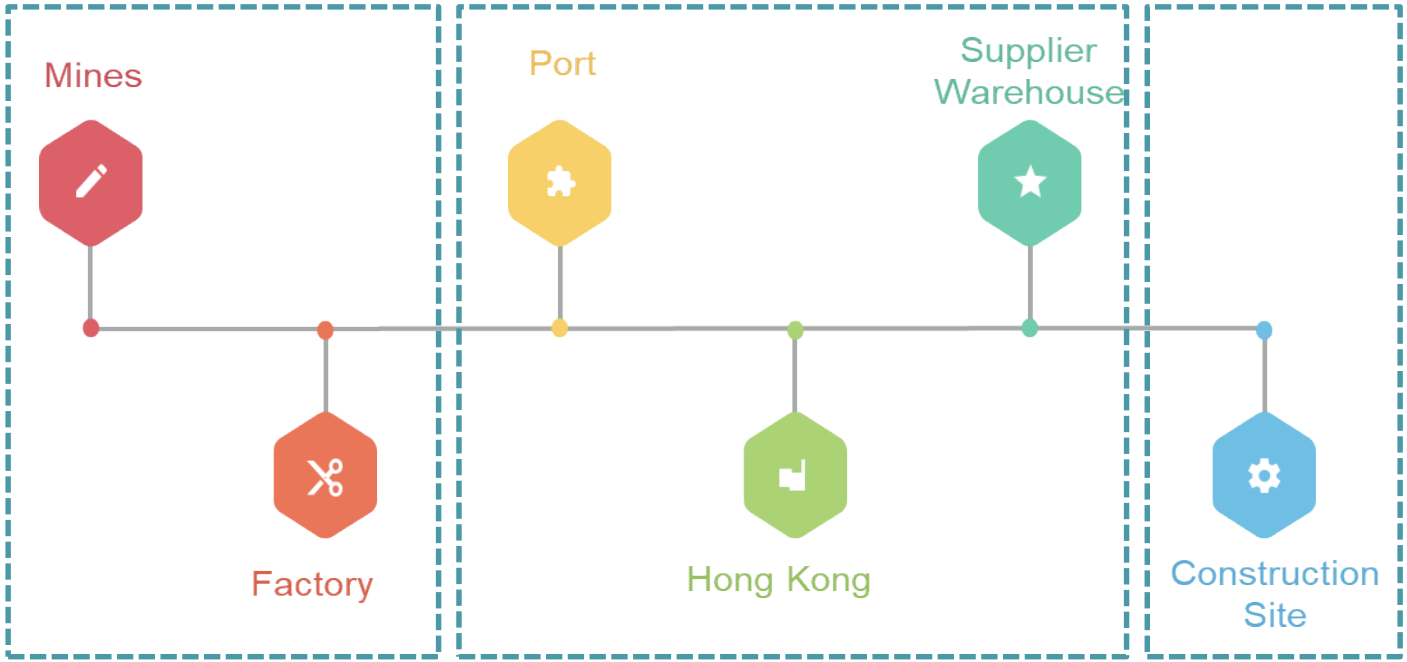
Scope of the Tool: Boundary

The boundary of the Tool is designed to cover the **embodied carbon of materials (A1 to A3)**, **transportation (A4)** and **site impacts (A5)** and is aligned with the principles of **ISO 14040:2006** (Environmental Management – Life Cycle Assessment Principles and Framework.



Embodied carbon of materials
(A1-A3)

Transportation
(A4)

Site Impact
(A5)

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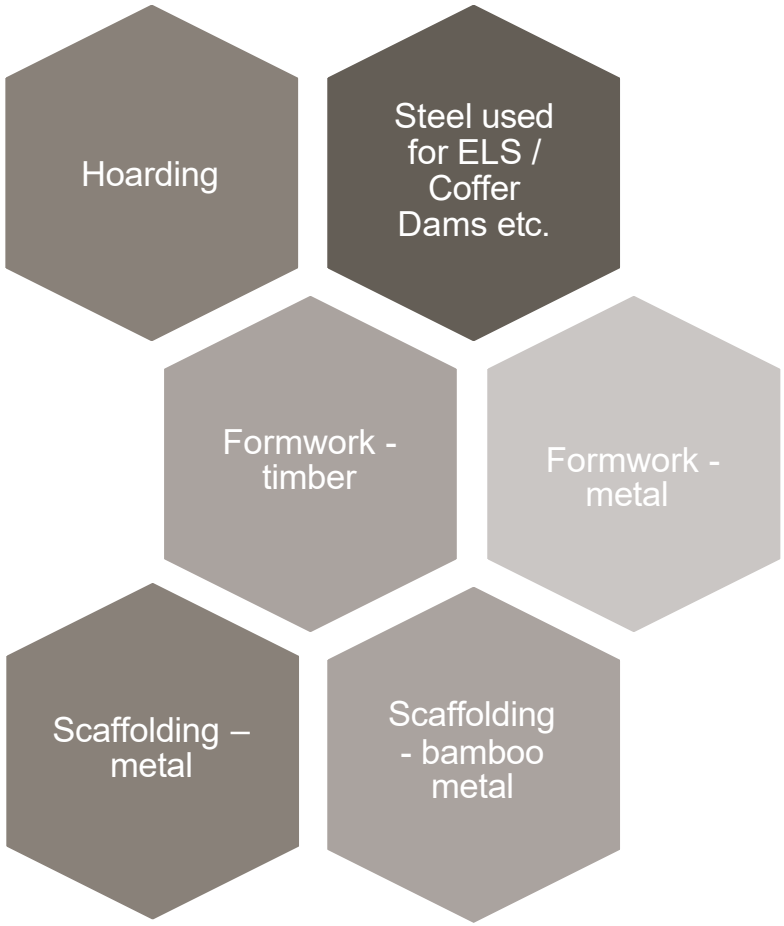
Scope of the Tool: Temporary Works

Temporary works contribute to the overall upfront embodied carbon in terms of the materials used. These are not commonly accounted for, but they can have a significant impact on the overall upfront embodied carbon of a construction project.

A similar approach was adopted for the temporary works components to compile the carbon emissions factors, and considerations for **reuse** and **end-of-life scenarios** have been incorporated into the carbon emissions factors for these materials.



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Scope of the Tool: Construction Site Impacts

- Electricity
- Town Gas
- Fuel Consumption
- Water
- Waste Disposal
- Refrigerant
- Welding and Flame Cutting
- Tree

The impact of construction activities on-site (**Site Impacts**) adds to the total carbon emissions of a project. However, it also provides an opportunity to implement innovative measures that can help reduce these emissions. These savings in carbon emissions can contribute to the achievement of the HKSAR Government's Carbon Reduction Target.

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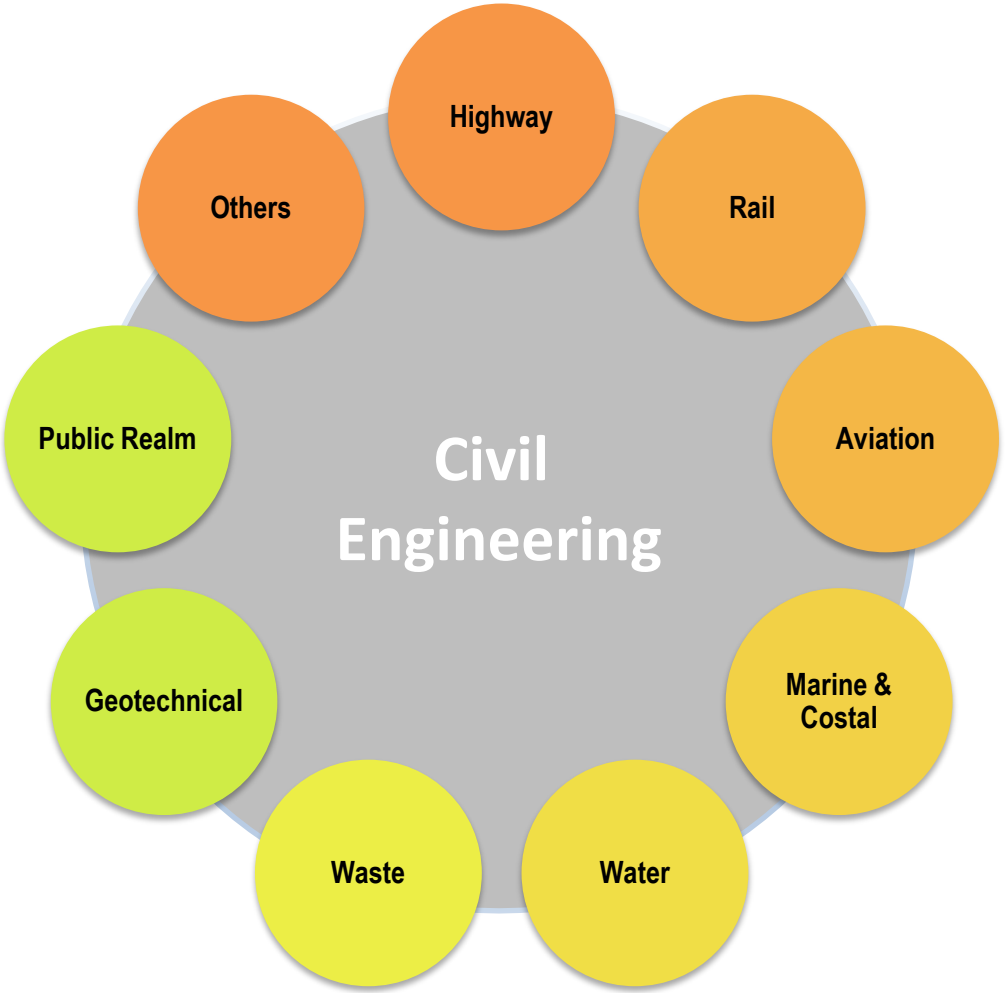
Project Classification: Building Project and Civil Project



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PART 3 - USER SIGN-IN AND SUPPORT

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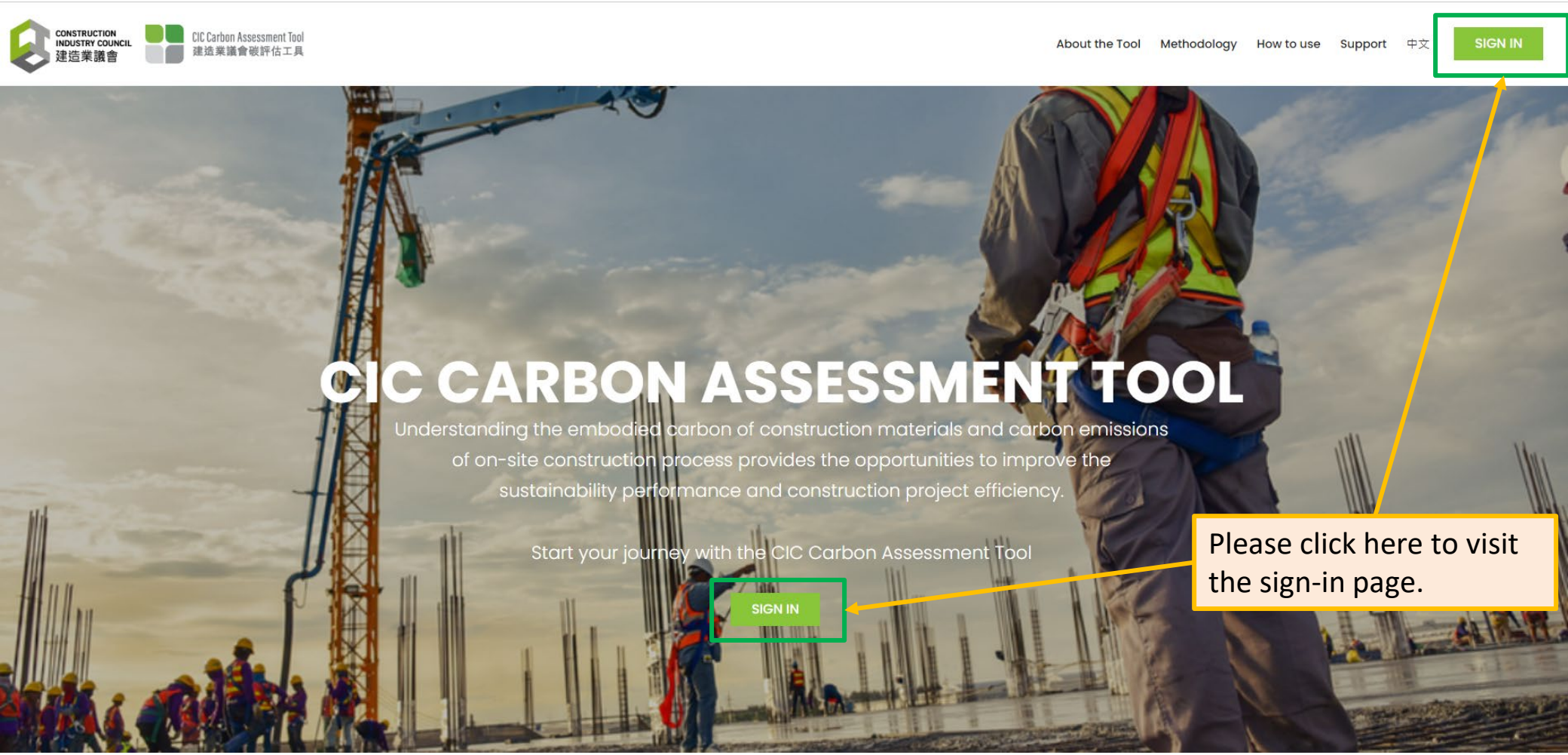
Sign-In



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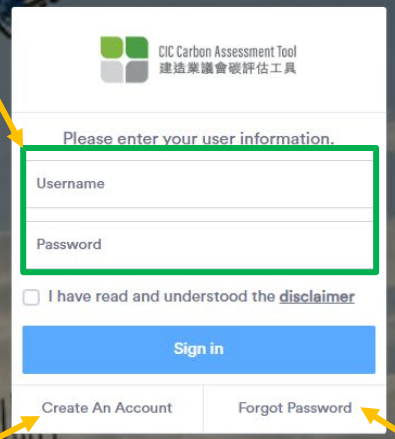
Sign-In (Cont.)

1. Enter your username and password.
2. Click on the "Sign in" button.



To access the Tool for the first time, please create an account.

If you have forgotten your password, please click here to reset it.

ReCAPTCHA applied

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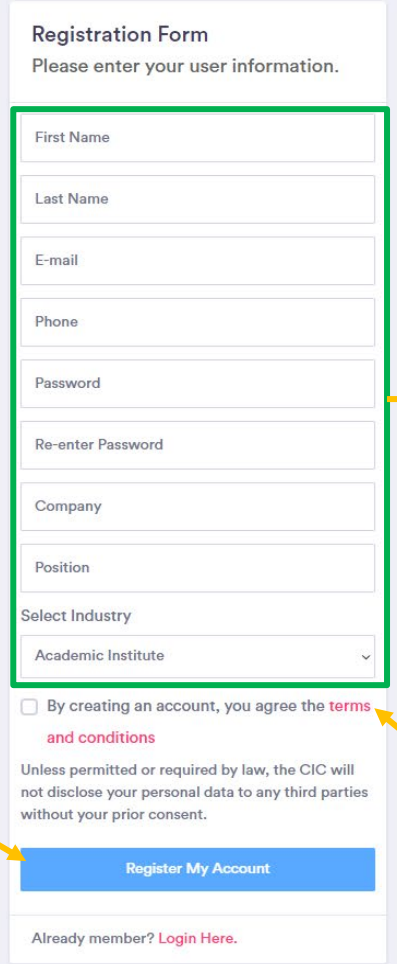
Registration for a New Account



Fill out the required information

Accept the terms and condition after reading through the terms and conditions carefully

1. Double-check the accuracy of the information you provided.

2. Click on the "Register My Account"

ReCAPTCHA applied

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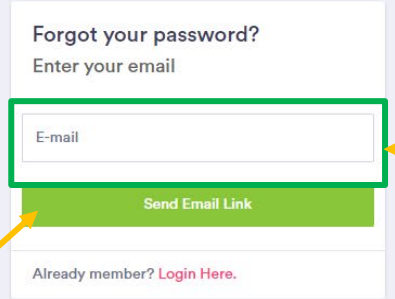
Forgot Password



Enter your registered email address

1. Click on the “Send Email Link“
2. Check your email inbox for a password reset link
3. Click on the password reset link provided in the and follow the instructions provided

ReCAPTCHA applied

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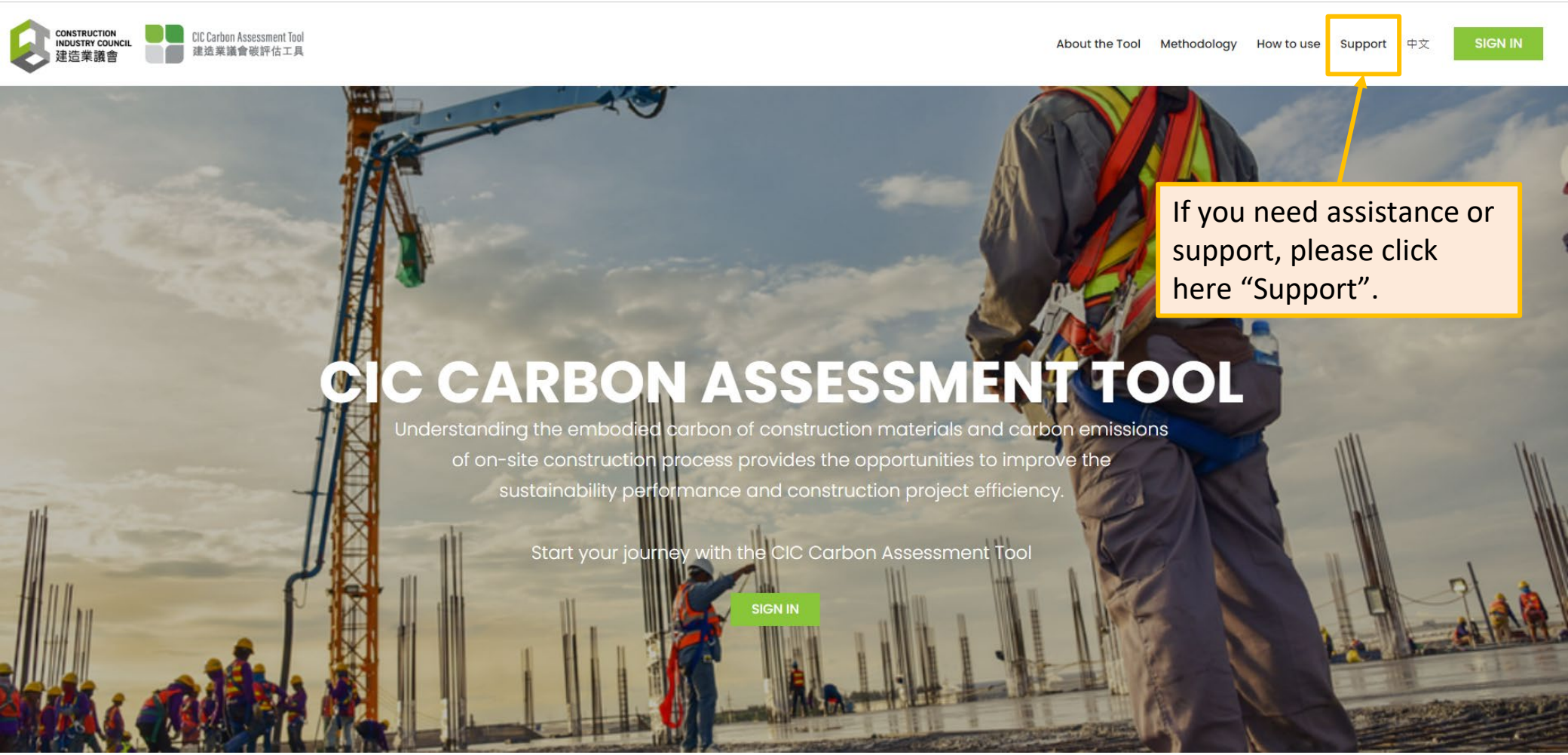
Support



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Support

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About the Tool | Methodology | How to use | Support | 中文 | SIGN IN

1. Clearly explain your issue or question
2. Provide any relevant details or screenshots that can help them understand your situation better.
3. If necessary, provide any additional information or follow-up as requested by the support team.

For question you may have **click here** for the FAQ page
If these did not answer your questions please complete the form for us to assist you further.

Fill out the required information

Your name:
Email:
Company:
Phone:
Non-IT Support

What can we help you with:

Submit

Click here to submit

ReCAPTCHA applied

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PART 4 – PROJECT SETUP

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Two Types Input – Design or Construction

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建造業議會碳評估工具

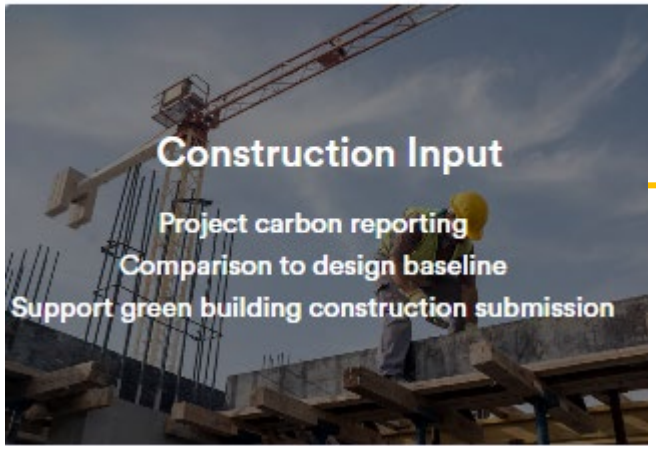
After signing in, you will have the option to choose between two types – "**Design Input**" and "**Construction Input**".

Option 1

"**Design Input**" allows projects to:

- Analyse and predict the carbon performance of materials used in a design
- Explore and showcase the potential carbon savings achievable through design modifications

Users can transfer design data to "Construction Input" to establish a baseline for comparison.



Option 2

"**Construction Input**" allows projects to:

- Report the actual carbon performance of materials, temporary works and site impacts
- Compare the actual carbon performance against the initially forecasted outcomes and industry benchmark

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Set up a New Project – **Design Input**

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Design Input

Click here to create a new project

Project Manager

Clone Project

Create New Project

Projects

Project Name	Created By (Email)	Date Created	Last Updated
TJS Test	Account Test 1 (email:1HKGCic@cundall.com)	11/10/2019 07:28	11/10/2019 07:28
TJS Test 2	Account Test 1 (email:1HKGCic@cundall.com)	11/10/2019 07:43	11/10/2019 07:43

Once you have created a project, you will find a list of all your projects under your account.
To access each project, simply click on the respective project name to open it.

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Set up a New Project – **Design Input** (Cont.)

CIC Carbon Assessment Tool 建造業議會碳評估工具 | < Untitled Project | Project Information

Click on the "Save" button once all the necessary details have been updated or filled in.

Save

Project Information

Project Name*	
Project Type*	Please select
Public Owner / Developer*	Please select
Project Address*	
Project Location	Please select
Building Project / Civil Project	Building
Project Classification*	
Design Life (years)*	Years
Construction Floor Area (m²)*	m²
Gross Floor Area (m²)*	m²
Estimated Project Duration (months)*	Months
Estimated Project Value (million HK$)*	

Project Type* Please select

- Please select
- Public Works/Developments
- Private Developments
- Trial Projects
- Design & Construction Competition - Design Competition Stage

If you would like to try the tool without using it for a real project, please choose the option "**Trial Projects**".

Please complete all the required information. You can update this information as needed over time.

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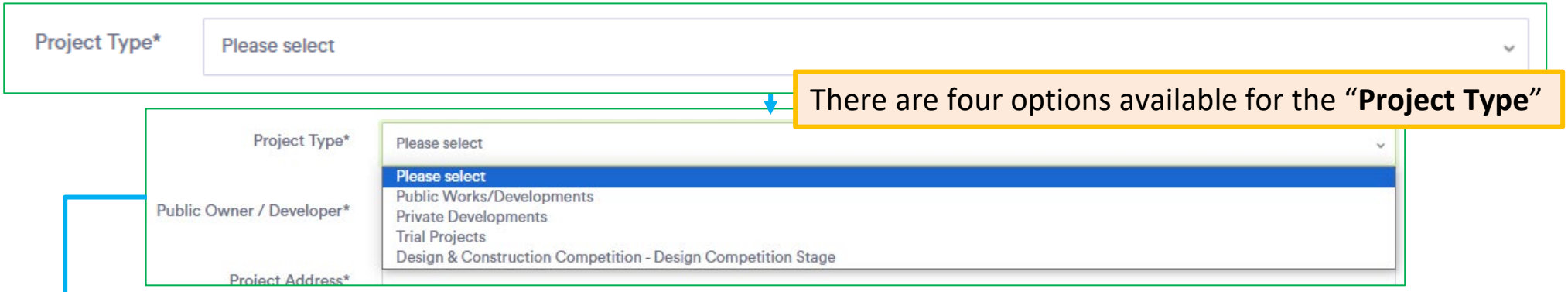
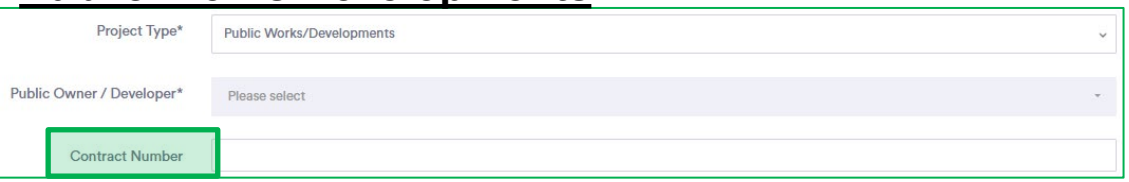
Set up a New Project – **Design Input** (Cont.)



There are four options available for the "**Project Type**"

Public Works/Developments



Design & Construction Competition – Design Competition Stage

For Public Works/Developments and Design & Construction Competition – Design Competition Stage, you have the option to fill in the "**Contract Number**" field (highlighted in green).

Trial Projects

If you would like to try the tool without using it for a real project, please choose the option "**Trial Projects**".

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Set up a New Project – **Design Input** (Cont.)

Public Owner / Developer*	Others
Other Public Owner / Developer(English)*	
Other Public Owner / Developer(Chinese)	
BR Number of Public Owner / Developer*	XXXXXXXX-XXX (X is digit)
	*Please put N/A in the box if company BR is not applicable *Correct format of Business Registration Number: XXXXXXXX-XXX (X is digit)
BR Certificate Copy Upload of Public Owner / Developer*	選擇檔案 未選擇任何檔案

If the public owner/developer is not listed in the dropdown menu, please select "**Others**" and enter the name of the organisation in the "Other Public Owner/Developer (English)" field. In addition, two additional fields – "**BR Number of Public Owner / Developer**" and "**BR Certificate Copy Upload of Public Owner / Developer**" (highlighted in green) need to be filled in.

Ensure that the name entered in this field matches the name provided in the uploaded BR.

Once the checking and confirmation of BR-related submissions by the CIC is completed, the organisation's name will be included in the drop-down menu of the "**Public Owner/Developer**" field.

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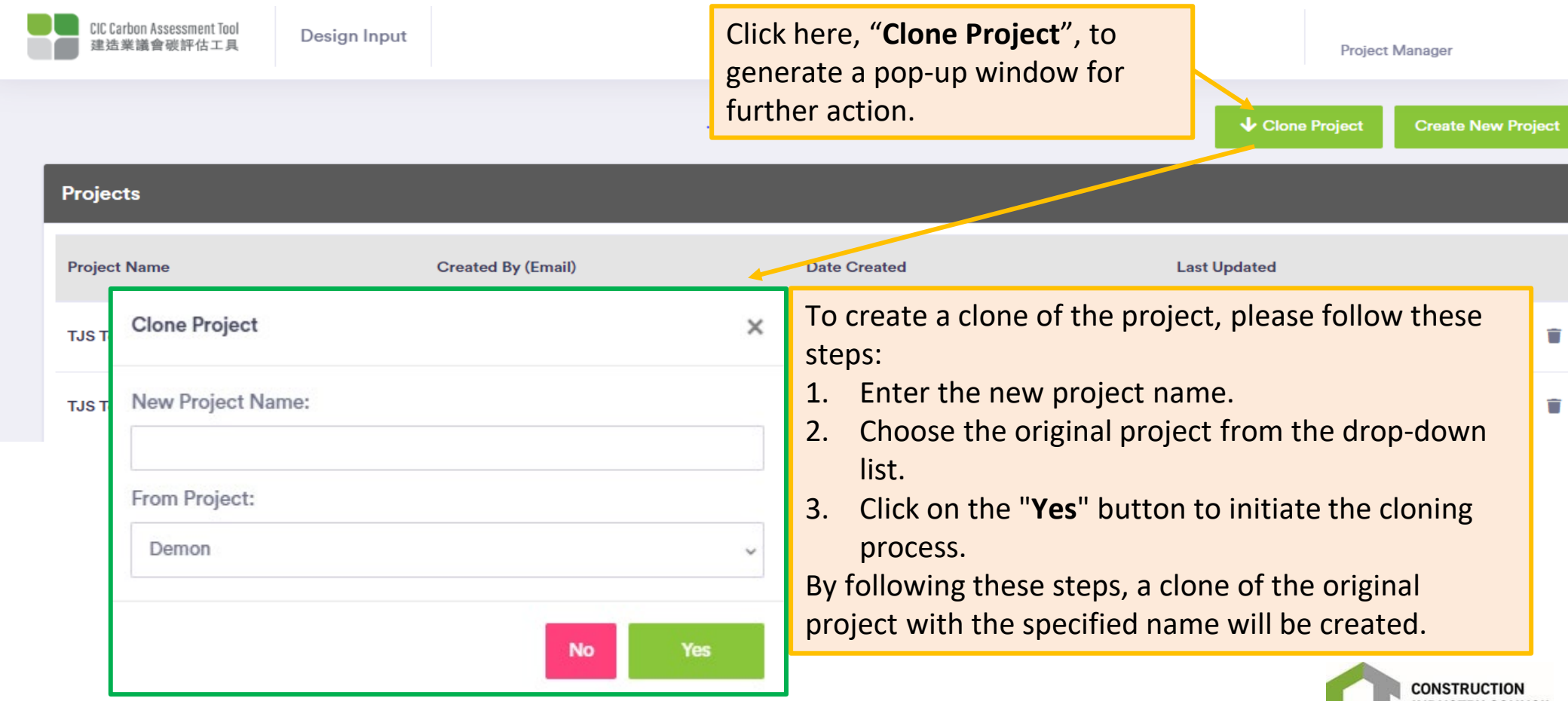
Cloning an Existing Project – **Design Input**

To facilitate design comparison, users can create another version of the project within the Tool to submit an alternative design scheme. The Tool provides the functionality to clone the project, eliminating the need for users to input all the project information again.



Click here, "**Clone Project**", to generate a pop-up window for further action.

To create a clone of the project, please follow these steps:

1. Enter the new project name.
2. Choose the original project from the drop-down list.
3. Click on the "**Yes**" button to initiate the cloning process.

By following these steps, a clone of the original project with the specified name will be created.

** Please note that the cloning function is only available for Design Input projects.*

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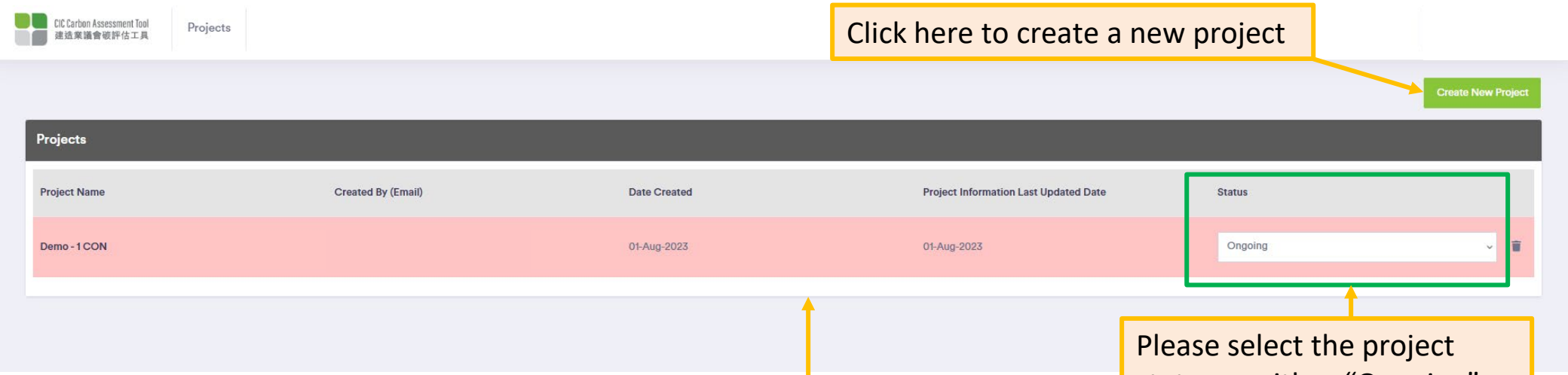
Set up a New Project – **Construction Input**



Click here to create a new project

Please select the project status as either “Ongoing” or “Complete” in this field.

Same as Design Input, once you have created a project, you will find a list of all your projects under your account.
To access each project, simply click on the respective project name to open it.

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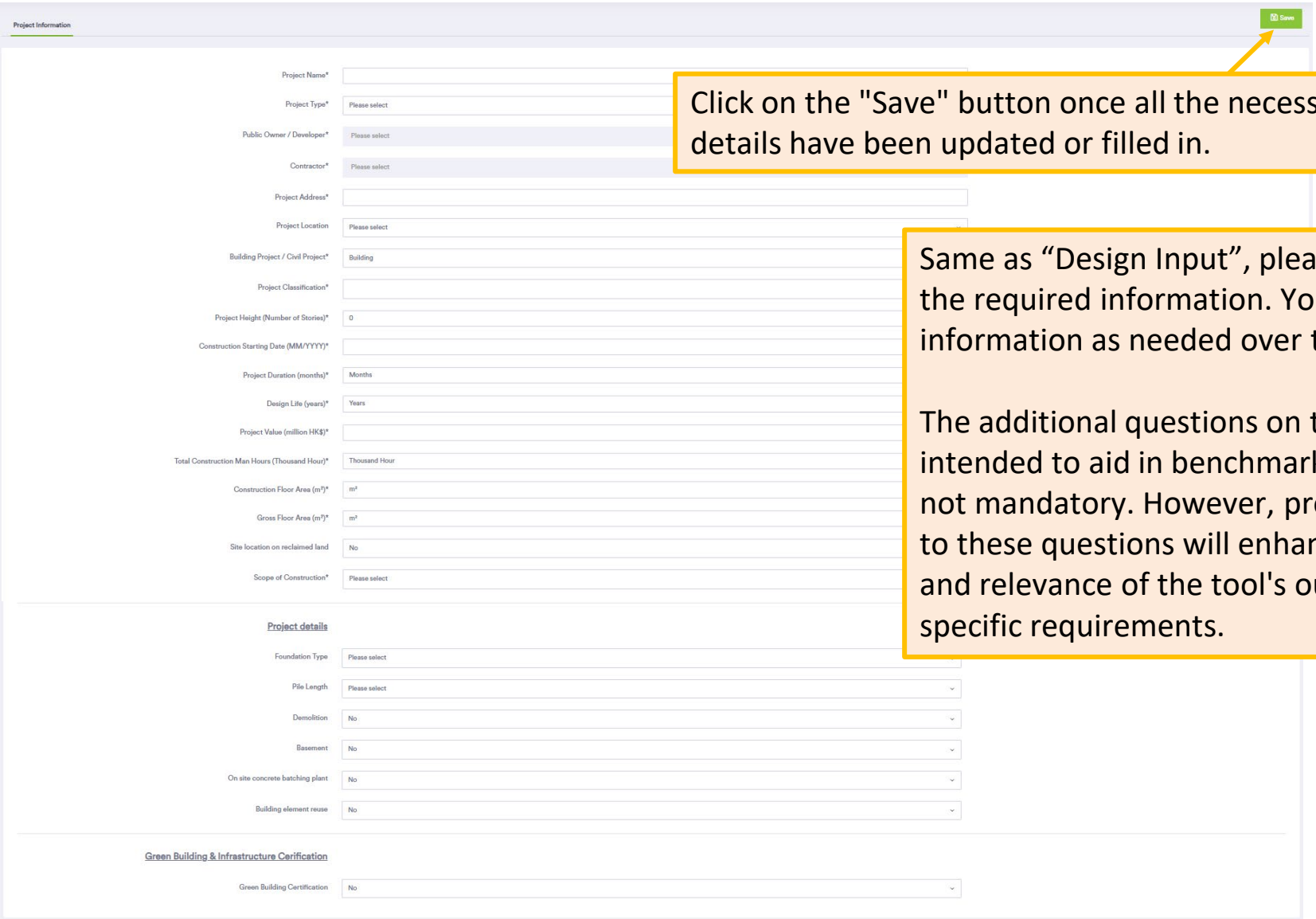
Set up a New Project – **Construction Input (Cont.)**



Click on the "Save" button once all the necessary details have been updated or filled in.

Same as “Design Input”, please complete all the required information. You can update this information as needed over time.

The additional questions on the page are intended to aid in benchmarking, but they are not mandatory. However, providing answers to these questions will enhance the accuracy and relevance of the tool's outputs for users' specific requirements.

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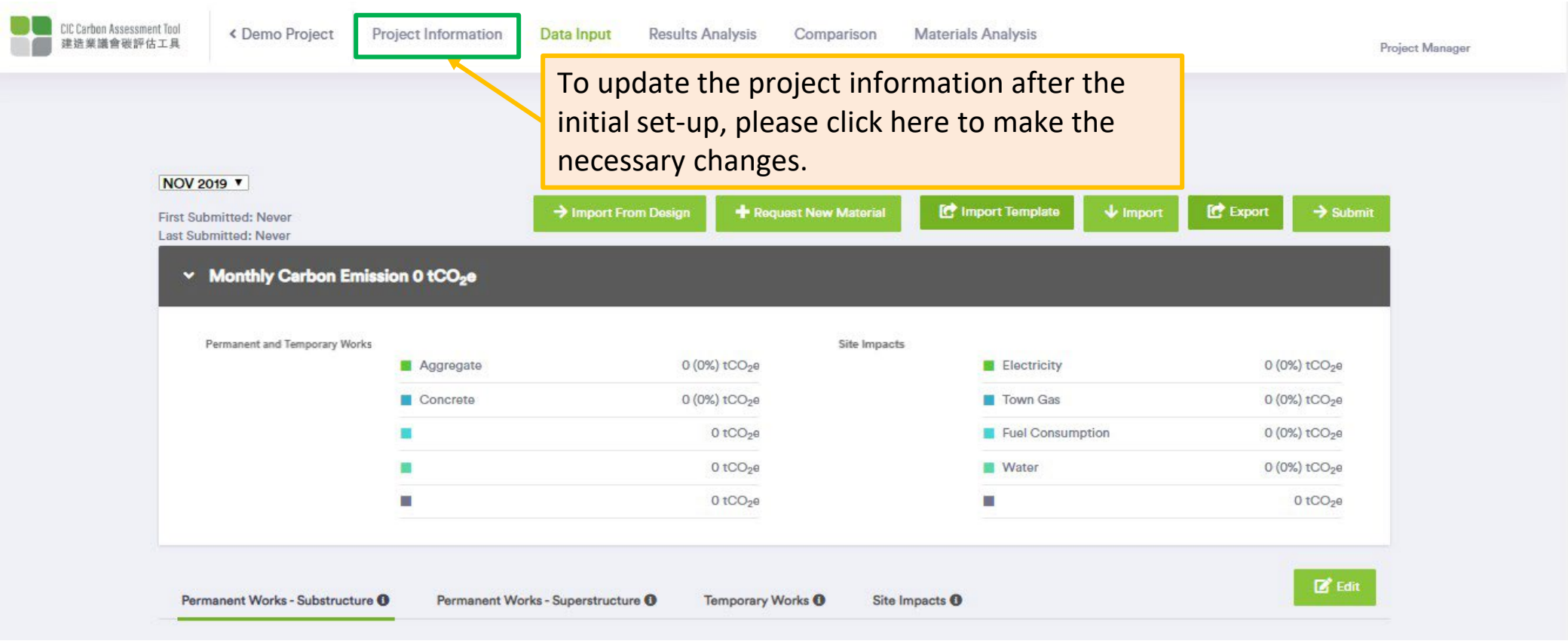
Project Information Update – **Construction Input**



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PART 5 – DESIGN INPUT

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Project Selection - **Design Input**

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Design Input

Project Manager

Clone Project | Create New Project

Projects

Project Name	Created By (Email)	Date Created	Last Updated
TJS Test	Account Test 1 (email:1HKGCic@cundall.com)	11/10/2019 07:28	11/10/2019 07:28
TJS Test 2	Account Test 1 (email:1HKGCic@cundall.com)	11/10/2019 07:43	11/10/2019 07:43

To access each project, simply click on the respective project name to open it.

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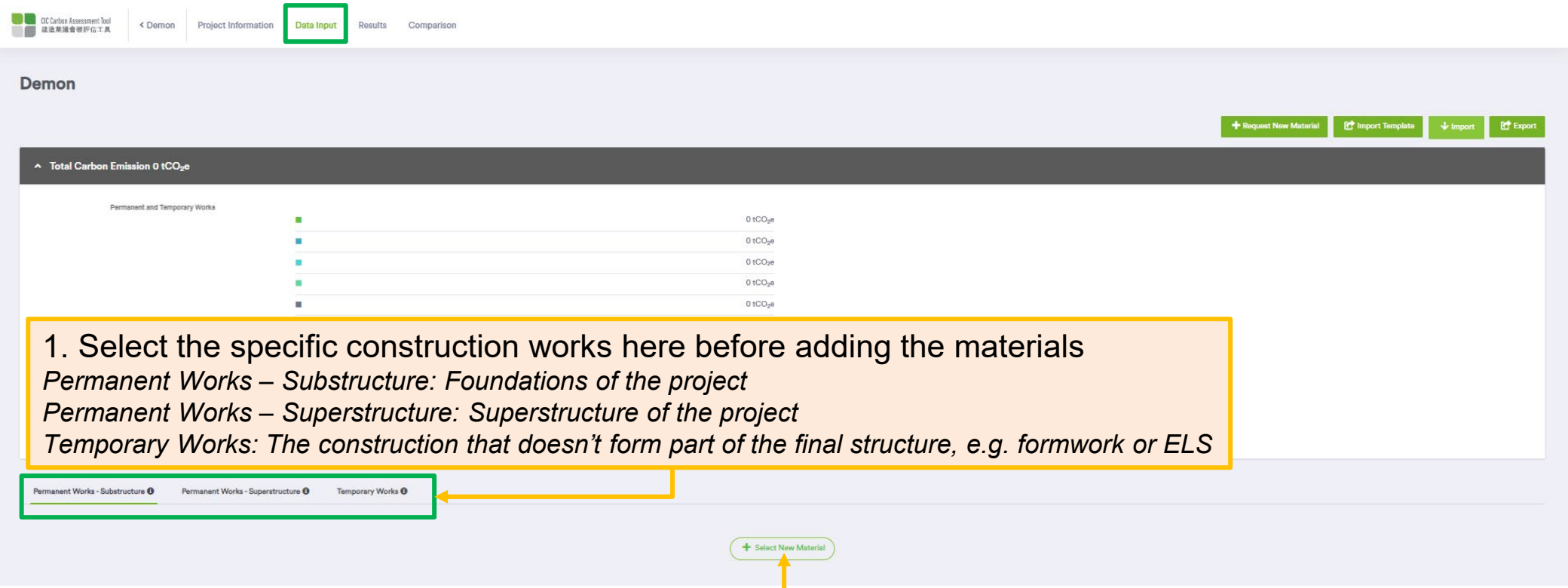
Data Input - **Design Input**



1. Select the specific construction works here before adding the materials

Permanent Works – Substructure: Foundations of the project

Permanent Works – Superstructure: Superstructure of the project

Temporary Works: The construction that doesn't form part of the final structure, e.g. formwork or ELS

2. Click on the "**Select New Material**" button to generate a pop-up window for further action.

Note: In the Design Input, all carbon emission factors include a predefined "wastage value" to estimate potential wastage during actual construction operations. However, it is important to note that this "wastage value" is not present in the construction stage's database.

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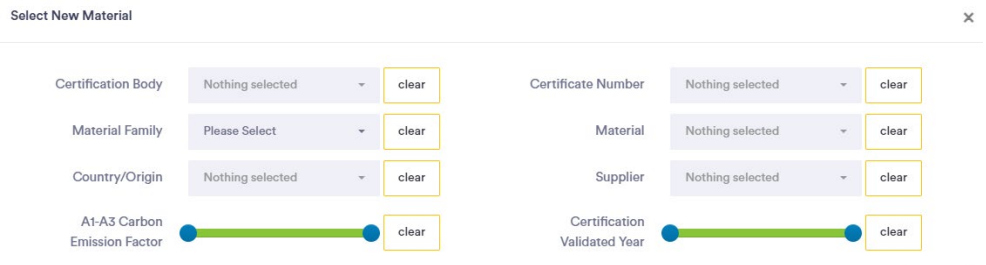
Data Input - **Design Input** (Cont.)

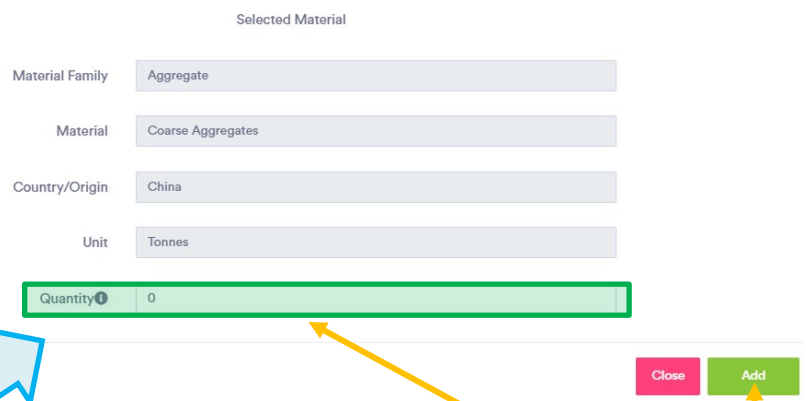
A pop-up window for **selecting materials from the database** for each construction works



3. Apply filters to sort or narrow down the results based on different types or ranges.

4. The filtered materials will be displayed here, showing only the materials that meet the selected criteria or filters.

5. Click on the "**+**" button here to the desired material. This will add the material to your calculation.



6. Fill in the quantity of the selected material and then click on the "Add" button to include the material with the specified quantity in the project.

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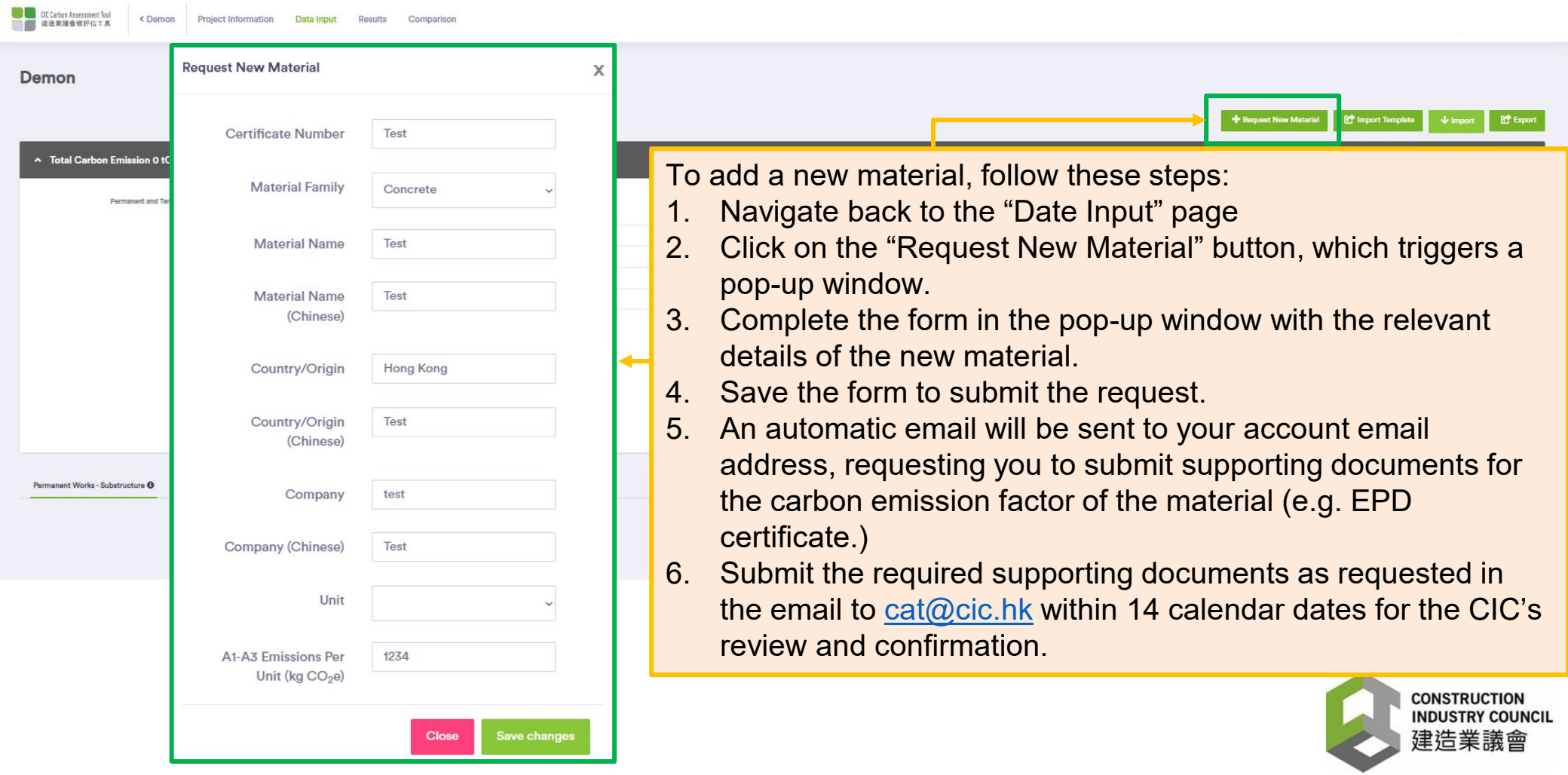
Data Input - **Design Input** (Cont.)

If the material is NOT found in the database, users can request to **add a new material along with its carbon emission factor to the database**. This will help ensure that the database is comprehensive and includes all relevant materials for accurate carbon emission calculations.



To add a new material, follow these steps:

1. Navigate back to the “Date Input” page
2. Click on the “Request New Material” button, which triggers a pop-up window.
3. Complete the form in the pop-up window with the relevant details of the new material.
4. Save the form to submit the request.
5. An automatic email will be sent to your account email address, requesting you to submit supporting documents for the carbon emission factor of the material (e.g. EPD certificate.)
6. Submit the required supporting documents as requested in the email to cat@cic.hk within 14 calendar dates for the CIC’s review and confirmation.

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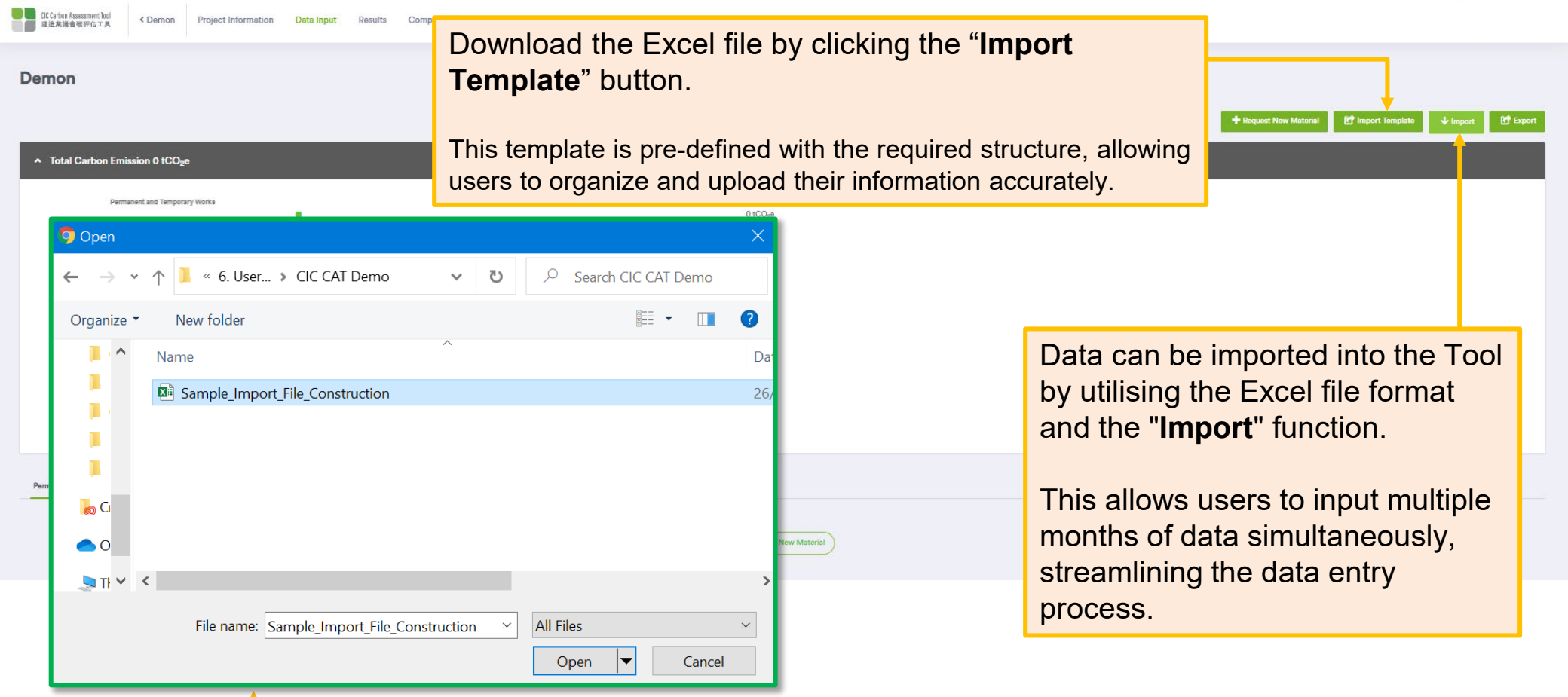
Alternative Data Input – Import Data - **Design Input**

Users have the option to import data into the tool from an Excel file.



Download the Excel file by clicking the "**Import Template**" button.

This template is pre-defined with the required structure, allowing users to organize and upload their information accurately.

Data can be imported into the Tool by utilising the Excel file format and the "**Import**" function.

This allows users to input multiple months of data simultaneously, streamlining the data entry process.

A pop-up window will appear after clicking on the "**Import**" button, allowing users to import the completed Import Template that has been saved locally from their source. By clicking the "Open" button within the pop-up window, the data will be uploaded into the system.

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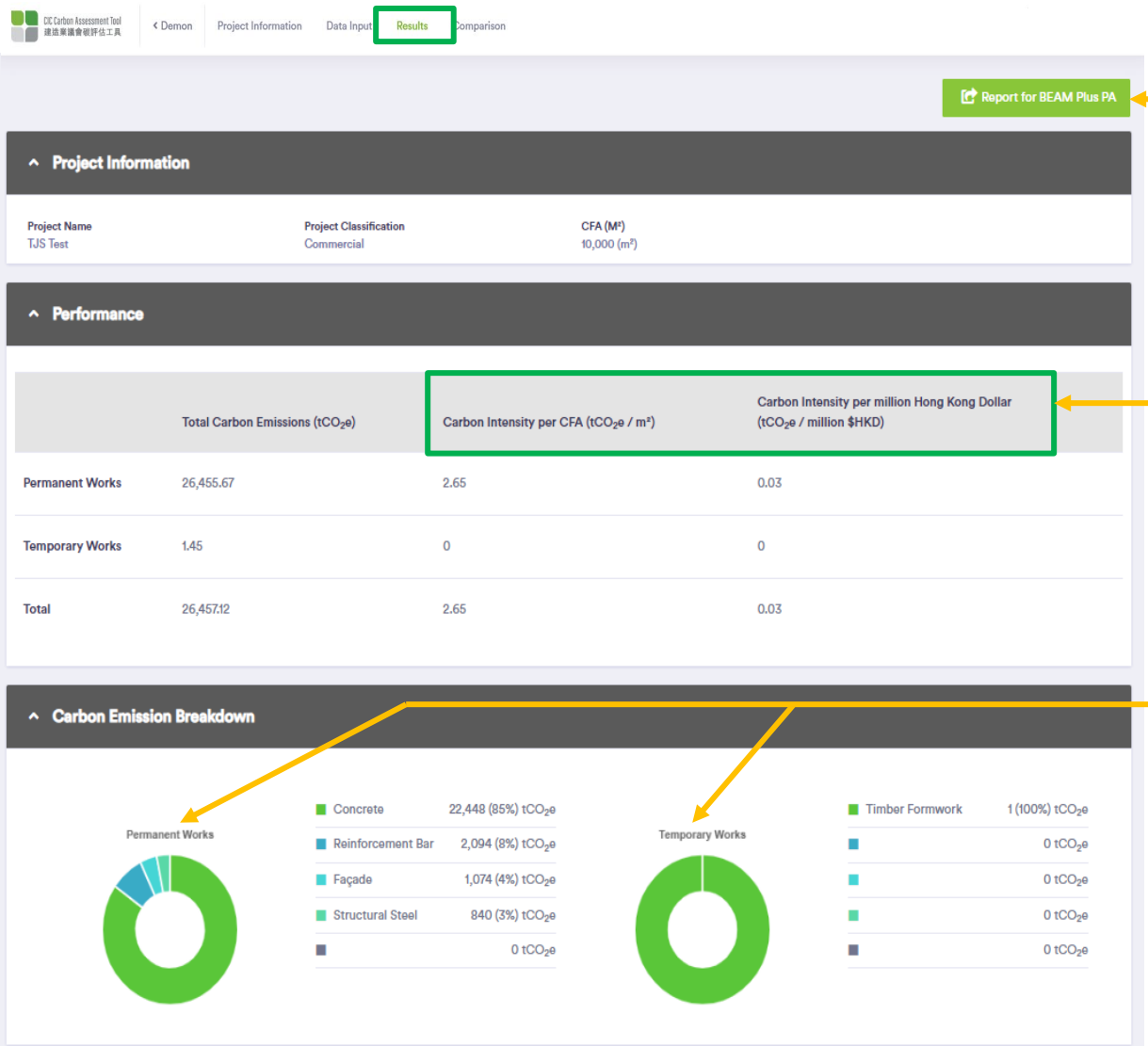
Result - **Design Input**

Once all the data has been input, the results will be displayed on the "**Result**" page.



Click on the "**Report for BEAM Plus PA**" button to generate and download the necessary supporting documents in a format suitable for submission to the BEAM Plus PA certification process.

In addition to generating the total carbon emissions from the project, the Tool also calculates the carbon intensity in terms of CFA and Project Value (million HK$). This allows for a fair comparison of carbon emissions by considering the size of the project and its financial scale.

The graphics present the total materials used in the design, highlighting the Top 5 materials, and providing a breakdown of the materials based on their reported total embodied carbon.

** Contractors can utilise the design calculator for the redesign of Temporary Works.*
The results of the redesign calculations will be displayed in the report, providing Contractors with valuable information to inform their decision-making process and optimize the temporary works for improved efficiency and reduced carbon emissions.

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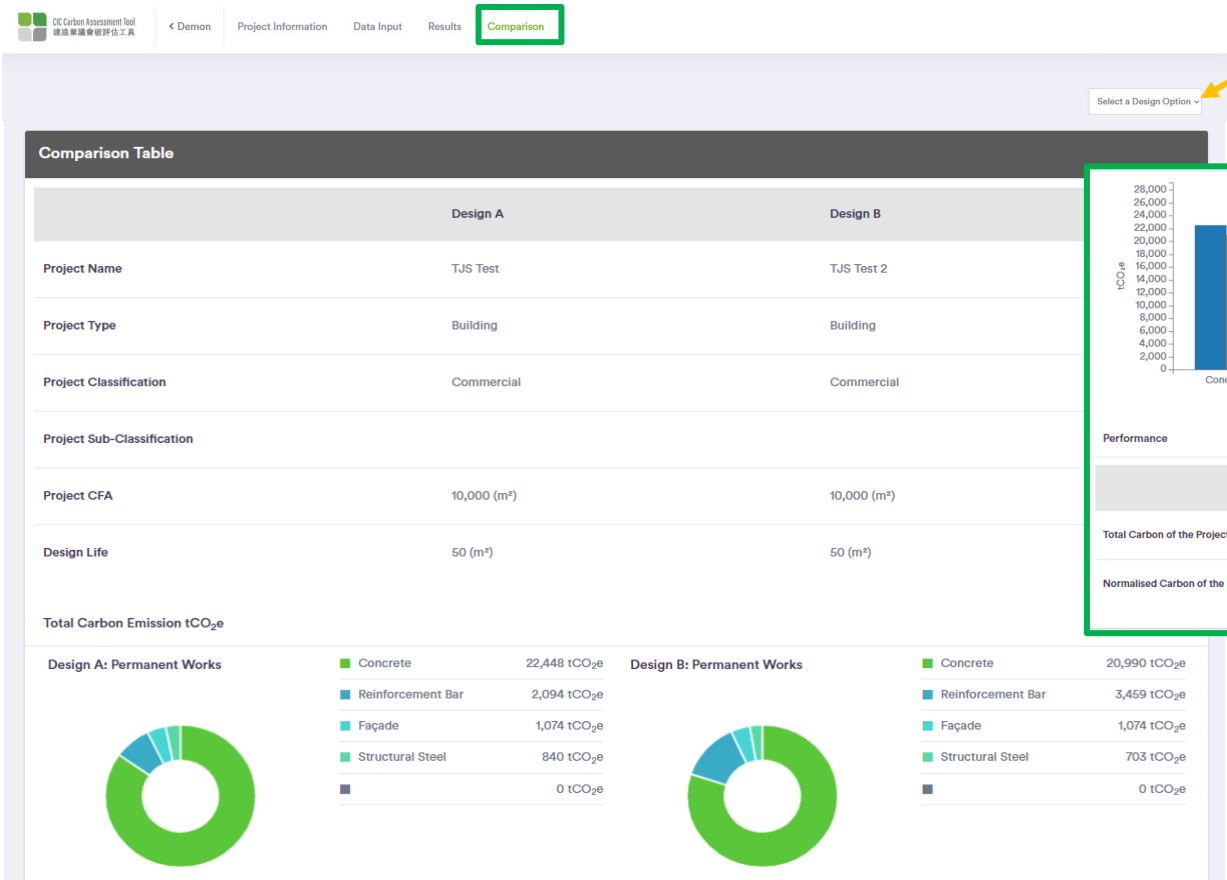
Comparison - **Design Input**

The tool has the capability to compare the performance of two design options and display the carbon savings in relative terms on the “**Comparison**” page.



Click here “**Select a Design Option**” to select the project they want to compare with.

The table at the bottom of the page displays a comparison of the two design options, showcasing the generated savings in carbon emissions. This allows users to easily identify and assess the carbon savings achieved by choosing one option over the other.

The graphics compare material usage distribution and carbon breakdown by element, enabling users to analyse relative contributions to carbon emissions.

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PART 6 – CONSTRUCTION INPUT

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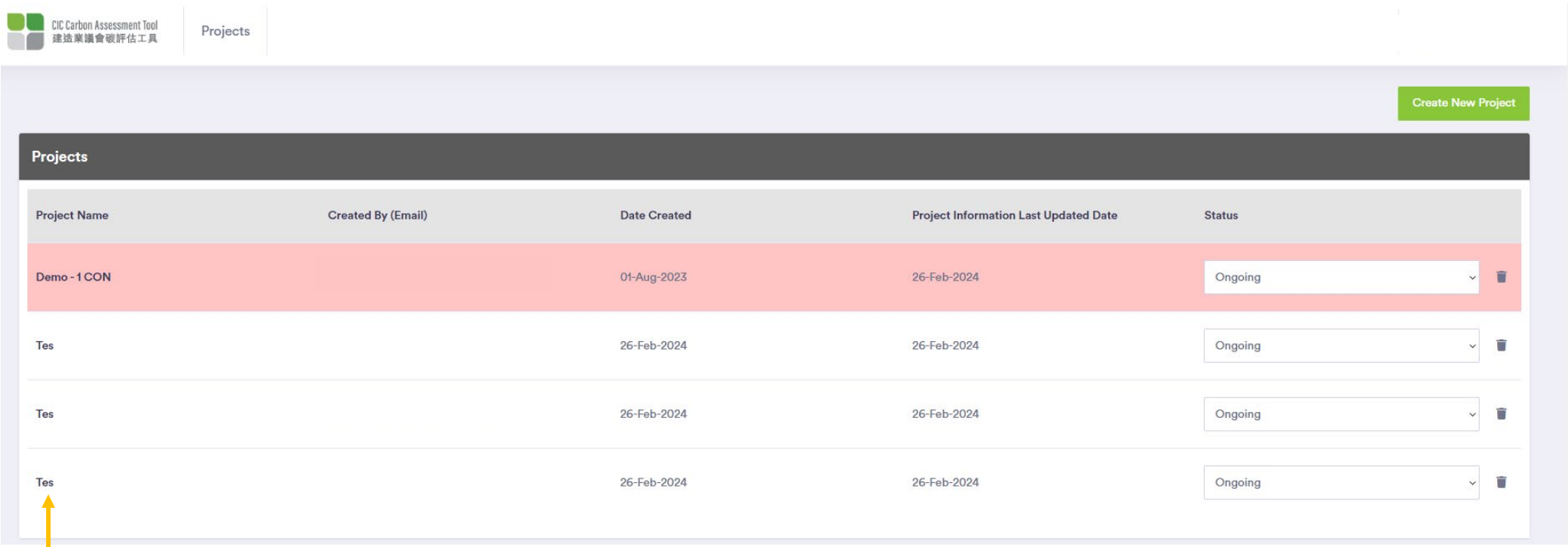
Project Selection - **Construction Input**



To access each project, simply click on the respective project name to open it.

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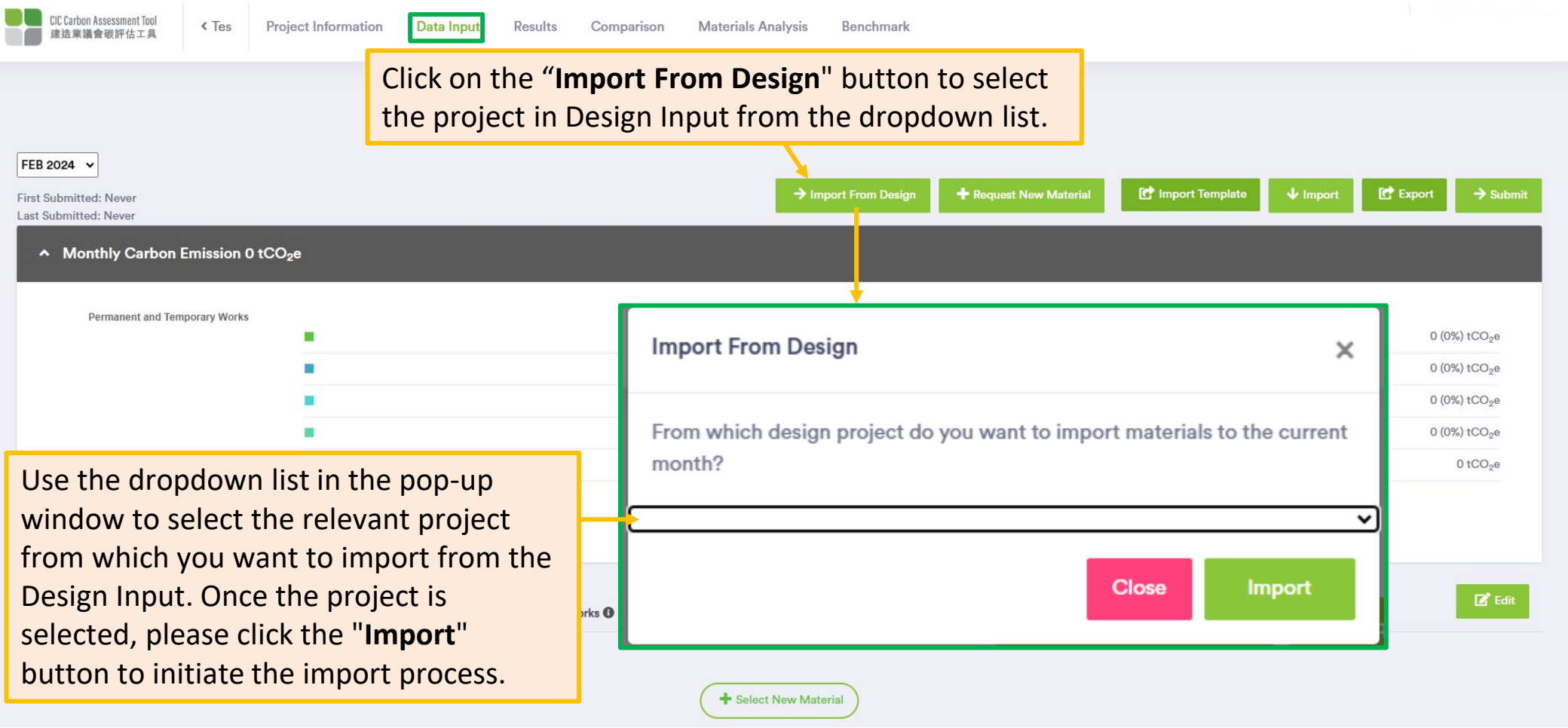
Data Input - **Construction Input**

Option 1: **From Design Input**

On the "**Data Input**" page, users can import the materials from Design Input to Construction Input.



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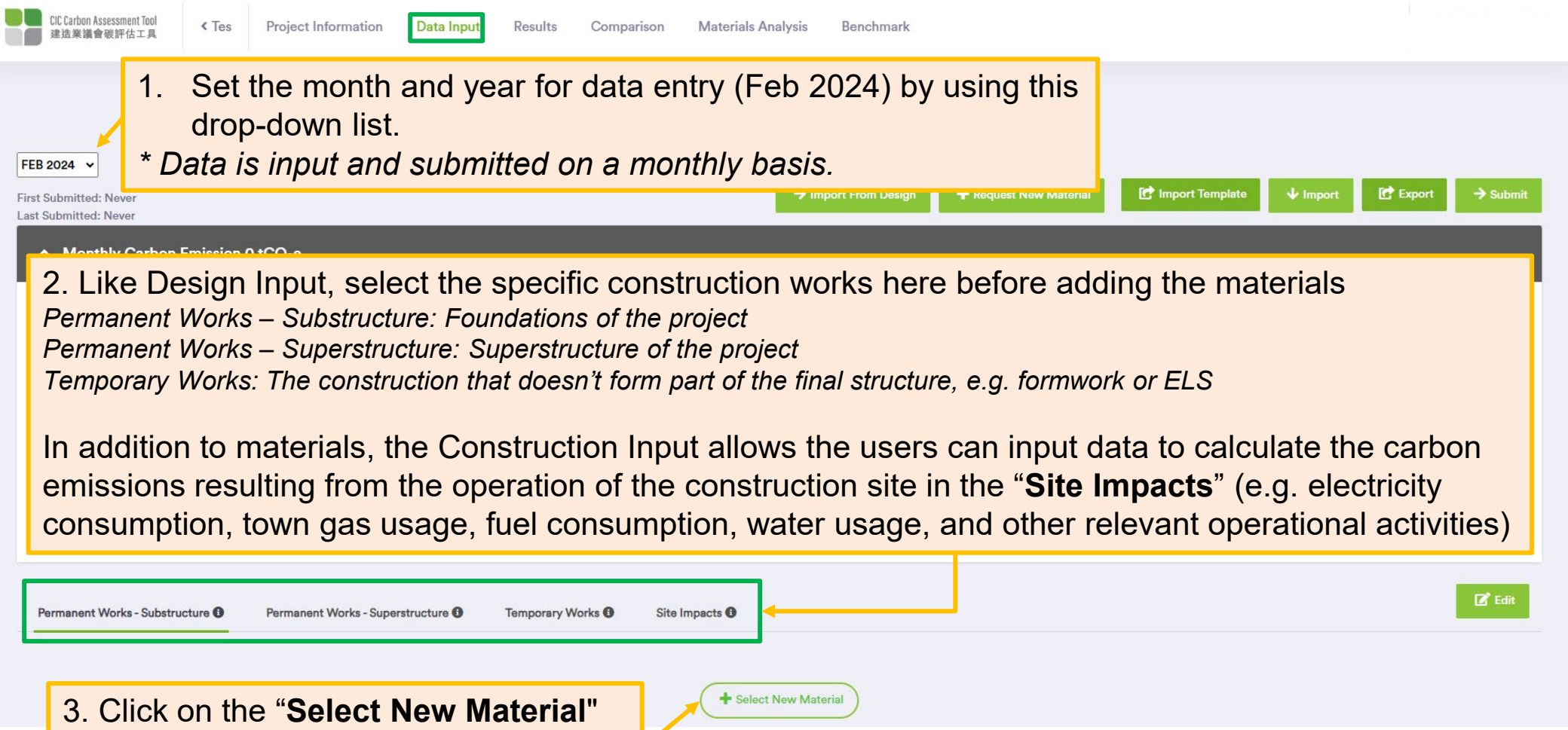
Data Input - **Construction Input**

Option 2: **Directly Input Data into the Tool**

Like Design Input, users can directly input the data in the Tool for the Construction Input.



1. Set the month and year for data entry (Feb 2024) by using this drop-down list.

* *Data is input and submitted on a monthly basis.*

2. Like Design Input, select the specific construction works here before adding the materials

Permanent Works – Substructure: Foundations of the project
Permanent Works – Superstructure: Superstructure of the project
Temporary Works: The construction that doesn't form part of the final structure, e.g. formwork or ELS

In addition to materials, the Construction Input allows the users can input data to calculate the carbon emissions resulting from the operation of the construction site in the "**Site Impacts**" (e.g. electricity consumption, town gas usage, fuel consumption, water usage, and other relevant operational activities)

3. Click on the "**Select New Material**" button to generate a pop-up window for further action.

* For Temporary Works, the material reuse, product end-of-life and transportation to the site have been captured in the carbon emission factors.

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建造業議會

Data Input - **Construction Input**

Option 2: **Directly Input Data into the Tool** (Cont.)

A pop-up window for **selecting materials from the database** for each construction works

Select New Material

Certification Body	Nothing selected	clear	Certificate Number	Nothing selected	clear
Material Family	Please Select	clear	Material	Nothing selected	clear
Country/Origin	Nothing selected	clear	Supplier	Nothing selected	clear
A1-A3 Carbon Emission Factor		clear	Certification Validated Year		clear

4. Apply filters to sort or narrow down the results based on different types or ranges.

Show 5 materials Search:

Material Family	Material	Country of Origin	unit	Supplier	A1-A3 Carbon Emission Factor per Unit	A1-A4 Emission Factor per Unit	Certification Expire Date	Action
Aggregate	Coarse Aggregates	China	Tonnes	N/A	2.425	48.03449662	2019-12-31 The certificate for this product has been expired	+
Aggregate	Coarse Aggregates, Recycled Content	China	Tonnes	N/A	0.982	46.44719662	2019-12-31 The certificate for this product has been expired	+
Aggregate	Fine Aggregates	China	Tonnes	N/A	2.796	48.44259662	2019-12-31 The certificate for this product has been expired	+
Aggregate	Fine Aggregates, Recycled Content	China	Tonnes	N/A	1.132	46.61219662	2019-12-31 The certificate for this product has been expired	+
Aggregate	Coarse Aggregates	China	Tonnes	N/A	2.18	48.23328202		+

Showing 1 to 5 of 1,608 materials (filtered from 1,945 materials) Previous 1 2 3 4 5 ... 322 Next

5. The filtered materials will be displayed here, showing only the materials that meet the selected criteria or filters.

6. Click on the "**+**" button here to the desired material. This will add the material to your calculation.

Selected Material

Material Family	Aggregate
Material	Coarse Aggregates
Country/Origin	China
Unit	Tonnes
Quantity	0

Close Add

7. Fill in the quantity of the selected material and then click on the "Add" button to include the material with the specified quantity in the project.

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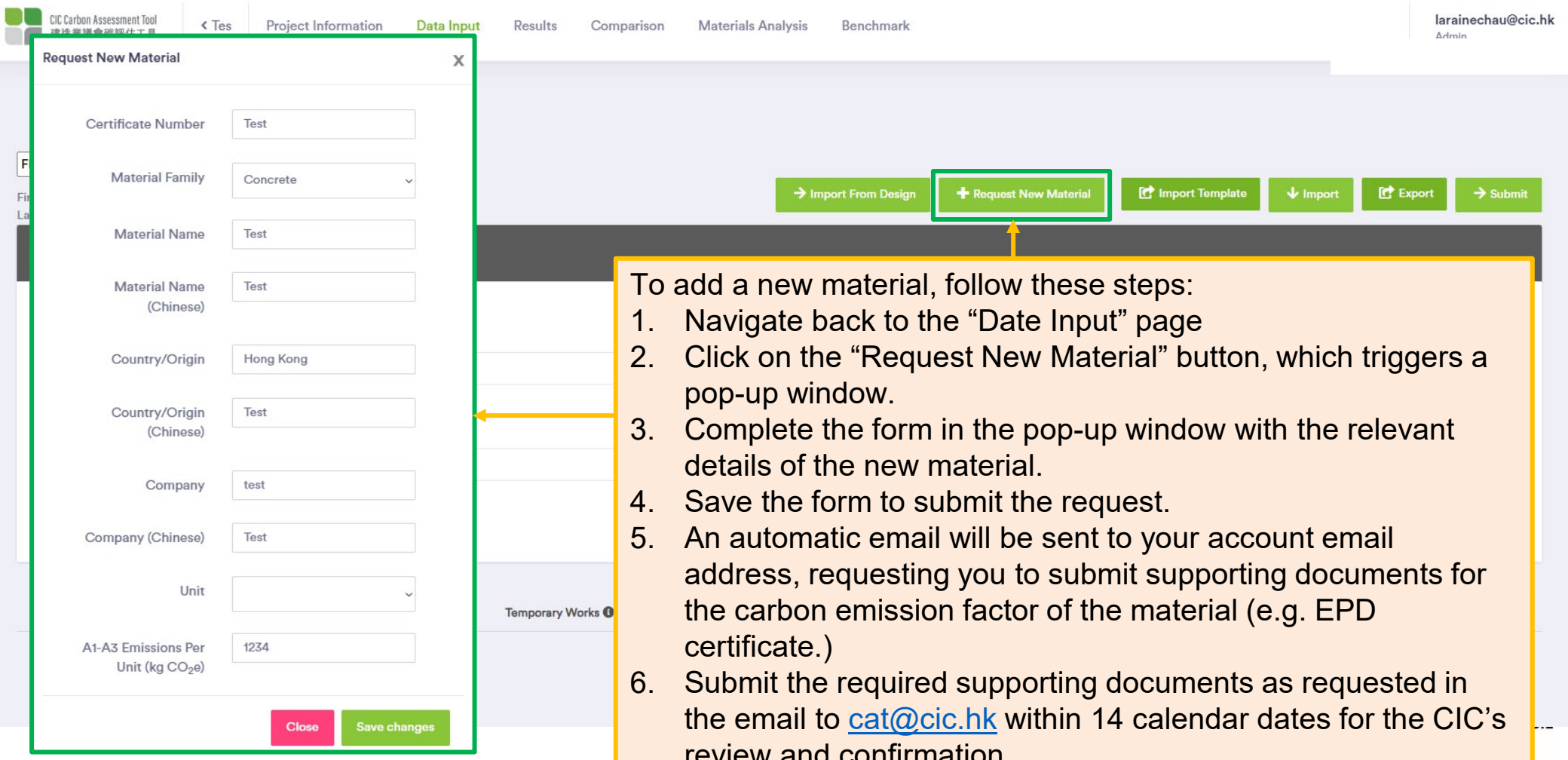
Data Input - **Construction Input**

Option 2: **Directly Input Data into the Tool** (Cont.)

If the material is NOT found in the database, users can request to **add a new material along with its carbon emission factor to the database**. This will help ensure that the database is comprehensive and includes all relevant materials for accurate carbon emission calculations.



To add a new material, follow these steps:

1. Navigate back to the “Date Input” page
2. Click on the “Request New Material” button, which triggers a pop-up window.
3. Complete the form in the pop-up window with the relevant details of the new material.
4. Save the form to submit the request.
5. An automatic email will be sent to your account email address, requesting you to submit supporting documents for the carbon emission factor of the material (e.g. EPD certificate.)
6. Submit the required supporting documents as requested in the email to cat@cic.hk within 14 calendar dates for the CIC’s review and confirmation.

Data Input - **Construction Input**

Option 2: **Directly Input Data into the Tool** (Cont.)

To calculate the carbon emissions from the operations of the construction site, the following data can be input in the "**Site Impacts**".

Fill in the amount.

Electricity

HKE	0	kWh	0 tCO_2e
CLP	0	kWh	0 tCO_2e

Town Gas

	0	unit	0 tCO_2e

Fuel Consumption

Diesel Oil	0	litre	0 tCO_2e
Unleaded Petrol	0	litre	0 tCO_2e
Liquefied Petroleum Gas	0	litre	0 tCO_2e
Biodiesel B5	0	litre	0 tCO_2e
Biodiesel B20	0	litre	0 tCO_2e
Biodiesel B100	0	litre	0 tCO_2e

Water

Water	0	m^3	0 tCO_2e

Total Waste

Landfill	0	Tonnes	0 tCO_2e
Public Fill	0	Tonnes	0 tCO_2e
Sorting Facilities	0	Tonnes	0 tCO_2e
Recycling of Metal	0	Tonnes	0 tCO_2e
Recycling of Timber	0	Tonnes	0 tCO_2e

Refrigerant

R-403A	0	kg	0 tCO_2e
R-410A	0	kg	0 tCO_2e
	0	kg	0 tCO_2e

Welding and Flame Cutting

Acetylene	0	litre	0 tCO_2e
Liquid CO2	0	litre	0 tCO_2e

Tree

Trees (above 5m)	0	Number of Trees	0 tCO_2e

Please note that only newly planted trees are considered.
Number of newly planted trees (above 5m) = Number of trees planted – Number of trees removed

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建造業議會

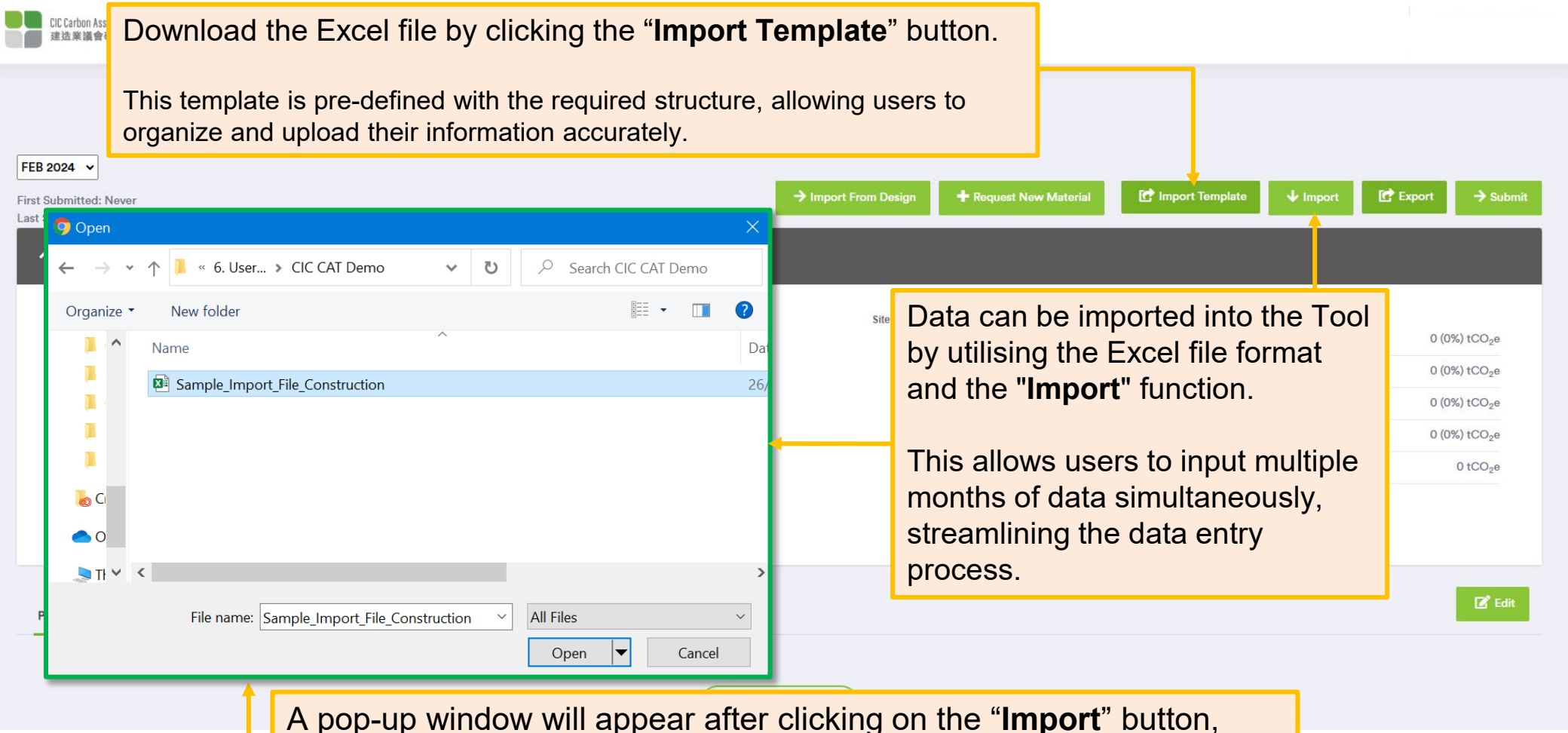
Data Input - **Construction Input**

Option 3: **Import Excel File to the Tool**

Like Design Input, Users have the option to import data into the tool from an Excel file.

Download the Excel file by clicking the “**Import Template**” button.

This template is pre-defined with the required structure, allowing users to organize and upload their information accurately.



Data can be imported into the Tool by utilising the Excel file format and the "**Import**" function.

This allows users to input multiple months of data simultaneously, streamlining the data entry process.

A pop-up window will appear after clicking on the “**Import**” button, allowing users to import the completed Import Template that has been saved locally from their source. By clicking the "Open" button within the pop-up window, the data will be uploaded into the system.

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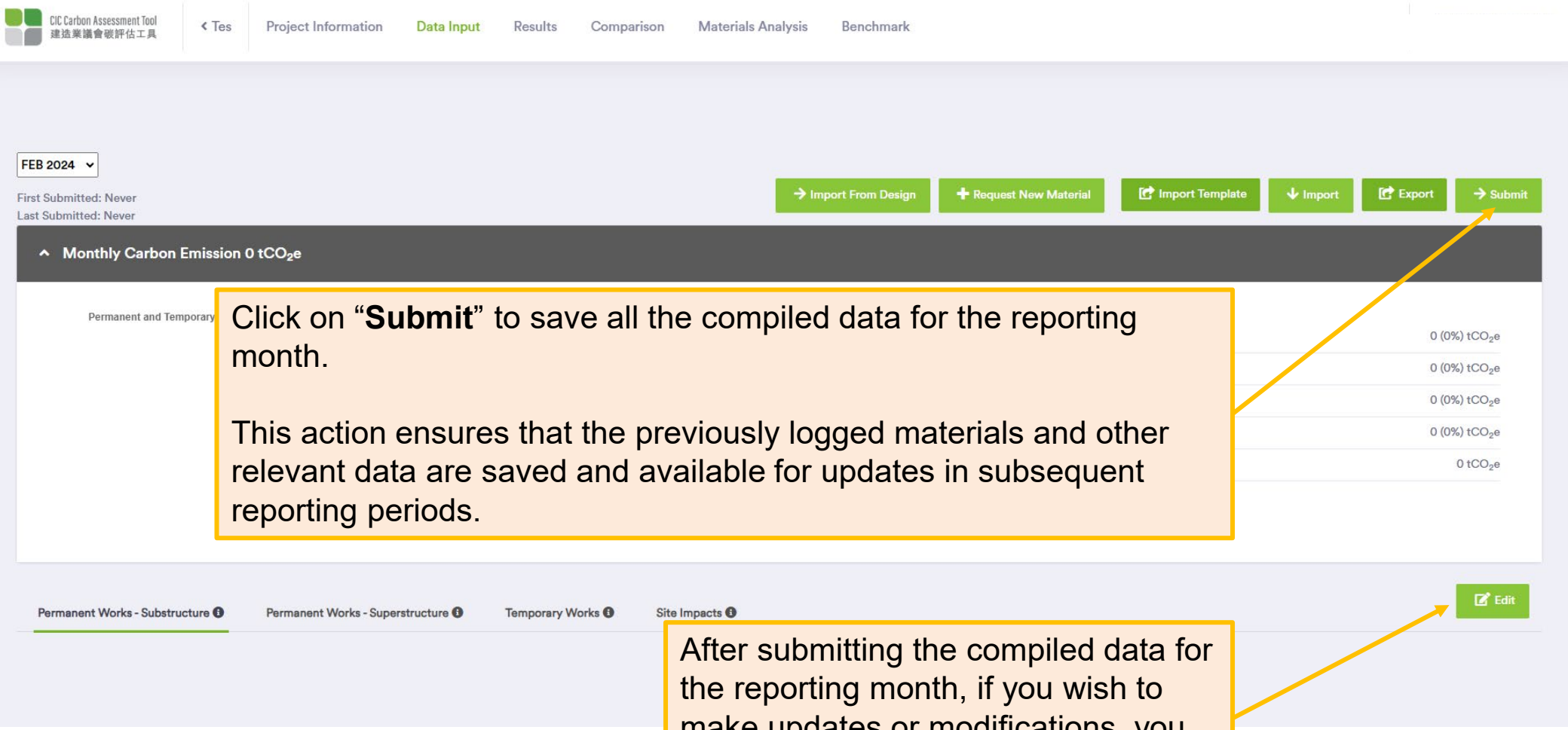
Data Input - **Construction Input**

Save Data for Each Month

Users should save all the compiled data for the reporting month, such as February 2024.



Click on "**Submit**" to save all the compiled data for the reporting month.

This action ensures that the previously logged materials and other relevant data are saved and available for updates in subsequent reporting periods.

After submitting the compiled data for the reporting month, if you wish to make updates or modifications, you can click on the "**Edit**" button.

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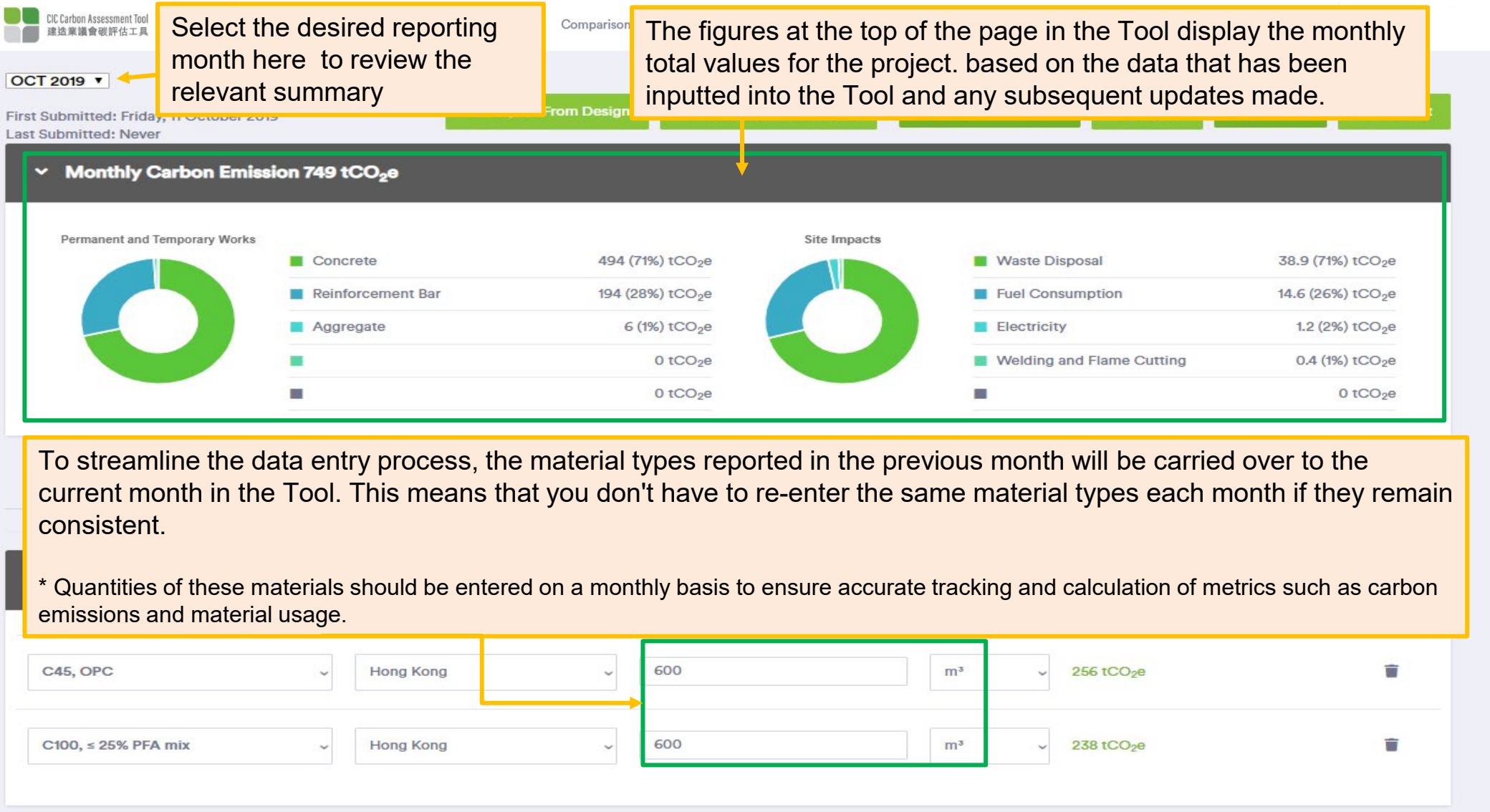
Data Input - **Construction Input**

Summary for Monthly Update

Users should save all the compiled data for the reporting month, such as February 2024.



Select the desired reporting month here to review the relevant summary

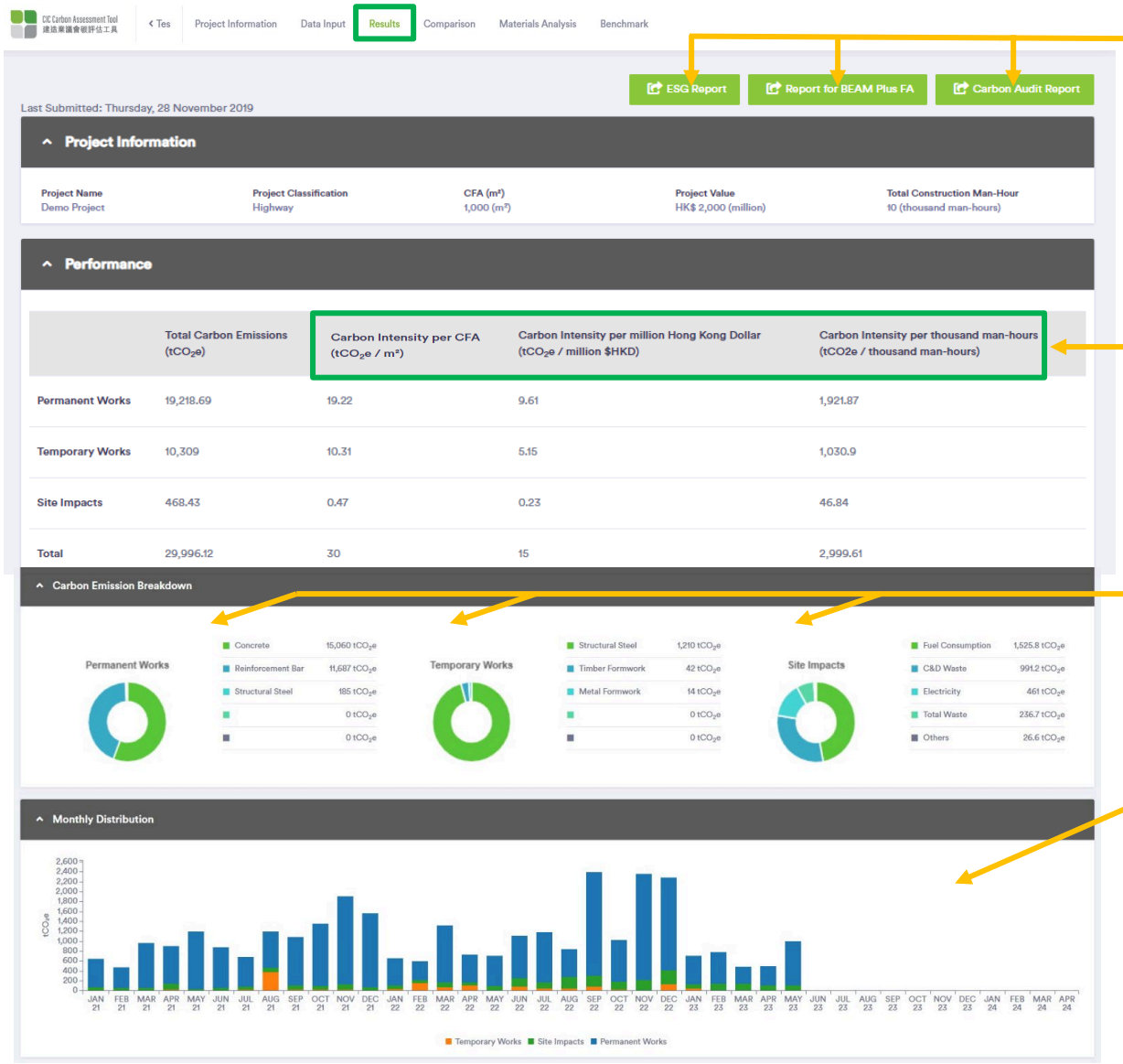
The figures at the top of the page in the Tool display the monthly total values for the project. based on the data that has been inputted into the Tool and any subsequent updates made.

To streamline the data entry process, the material types reported in the previous month will be carried over to the current month in the Tool. This means that you don't have to re-enter the same material types each month if they remain consistent.

* Quantities of these materials should be entered on a monthly basis to ensure accurate tracking and calculation of metrics such as carbon emissions and material usage.

Result – **Construction Input**

Once the data has been input, the results will be displayed on the "**Result**" page.



Click on these export buttons to generate and download the reports – **ESG Report**, **Report for BEAM Plus FA** and **Carbon Audit Report**.

In addition to generating the total carbon emissions from the project, the Tool also calculates the carbon intensity considering CFA (m^2), Project Value (million HK$) and Total Construction Man Hours. This allows for a fair comparison of carbon emissions by taking into account the size and financial scale of the project.

The graphics present the total materials used in the design, highlighting the Top 5 materials, and providing a breakdown of the materials based on their reported total embodied carbon.

At the bottom of the reporting page, you will find the monthly contributions of the three areas where data is collected. These contributions reflect the monthly data and metrics related to carbon emissions, material usage, or other relevant factors

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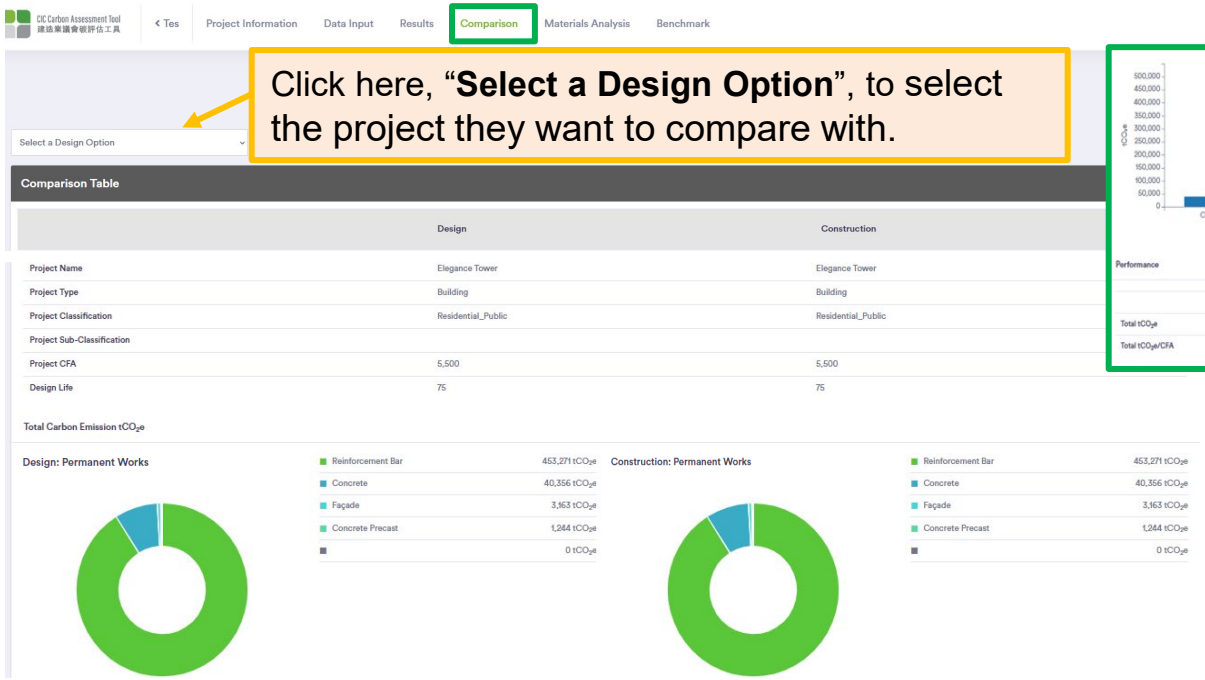
Comparison – **Construction Input**

The tool can compare the performance of the chosen design option against the actual materials used in the construction phase on the “**Comparison**” page.



Click here, “**Select a Design Option**”, to select the project they want to compare with.

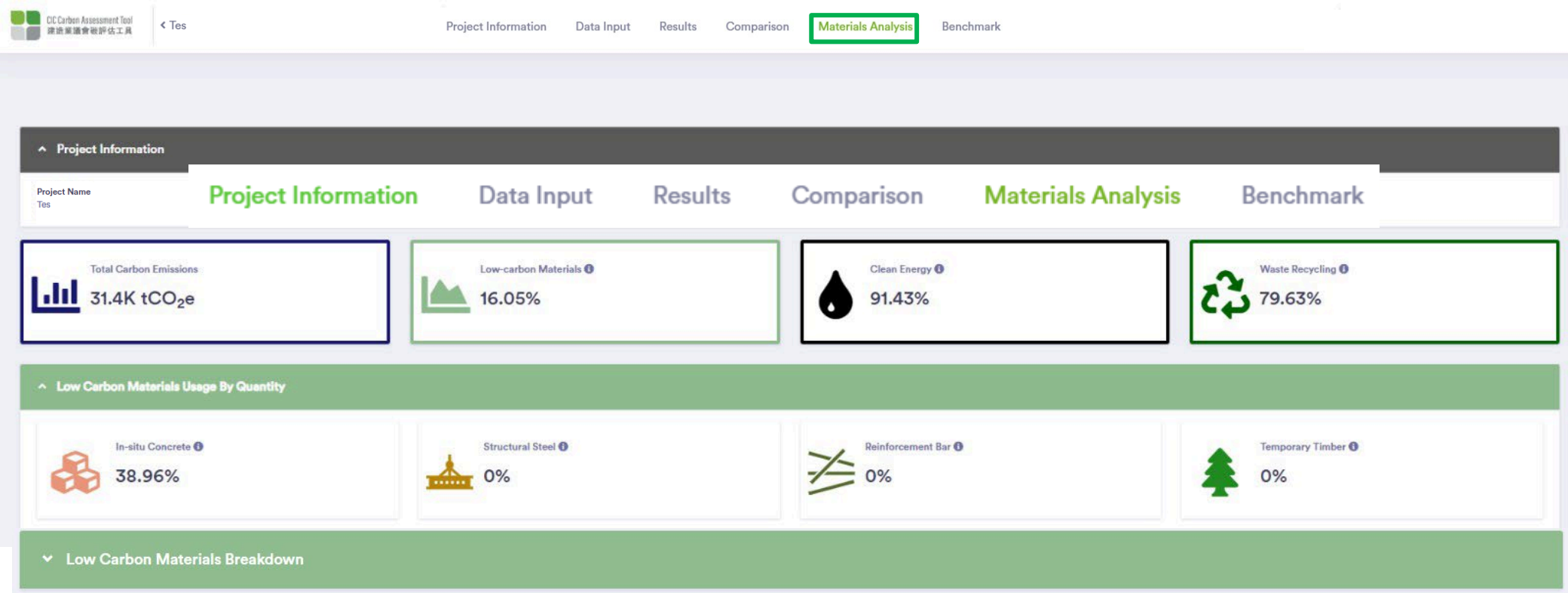
The graphics provide a comparison of the distribution of material usage and the breakdown of the total carbon emissions by element. These visual representations offer insights into the composition and environmental impact of the project.

The table at the bottom of the page typically shows a comparison between the design option and the actual quantities used during construction. It provides a side-by-side comparison of the intended design quantities and the actual quantities of materials or other parameters used in the construction phase.

The table provides a quantitative assessment of the design-to-actual performance, enabling project teams to evaluate the effectiveness of their design decisions and make informed decisions for future projects.

Material Analysis – **Construction Input**

The Tool is designed to consolidate and present the materials used on the project that can be considered low carbon. This information is typically presented as a percentage of the total quantity by material type. To access this information, you can navigate to the "**Materials Analysis**" tab within the Tool.



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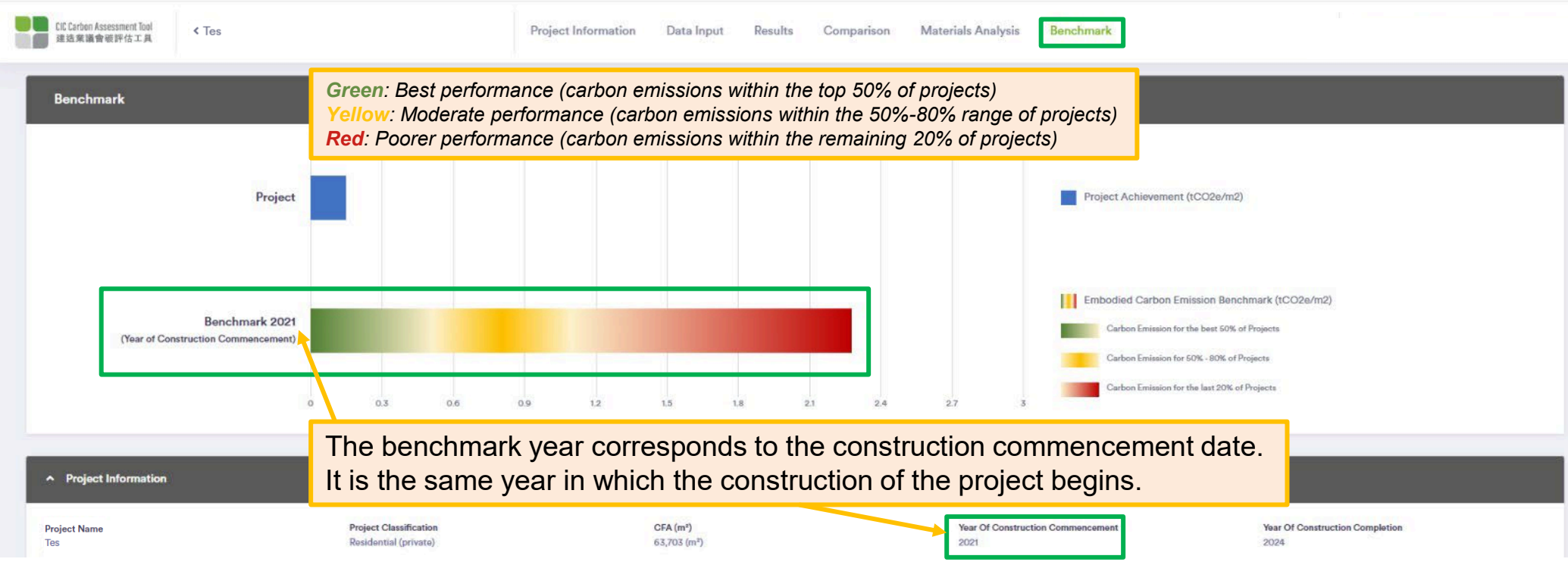
Benchmark – **Construction Input**

The Tool provides a benchmark for each project classification in building projects. These benchmarks are developed based on the carbon emissions of completed projects categorised as A1 to A4 within the same project classification. You can access these benchmarks under the "**Benchmark**" section.



	Total Carbon Emissions (tCO_2e)	Carbon Intensity per CFA (tCO_2e / m²)	Carbon Emissions Difference (tCO2e)	Carbon Emissions Reduction %
Project	9562.05	0.15	-	-
2022 Benchmark(latest available Benchmark - Reference only)	142,185.1	2.232	142,185.1	100%
2021 Benchmark (Year of Construction Commencement)	145,115.43	2.278	145,115.43	100%

The comparison table between the benchmarks and the actual project is presented in this section.

PART 7 – OTHER FEATURES

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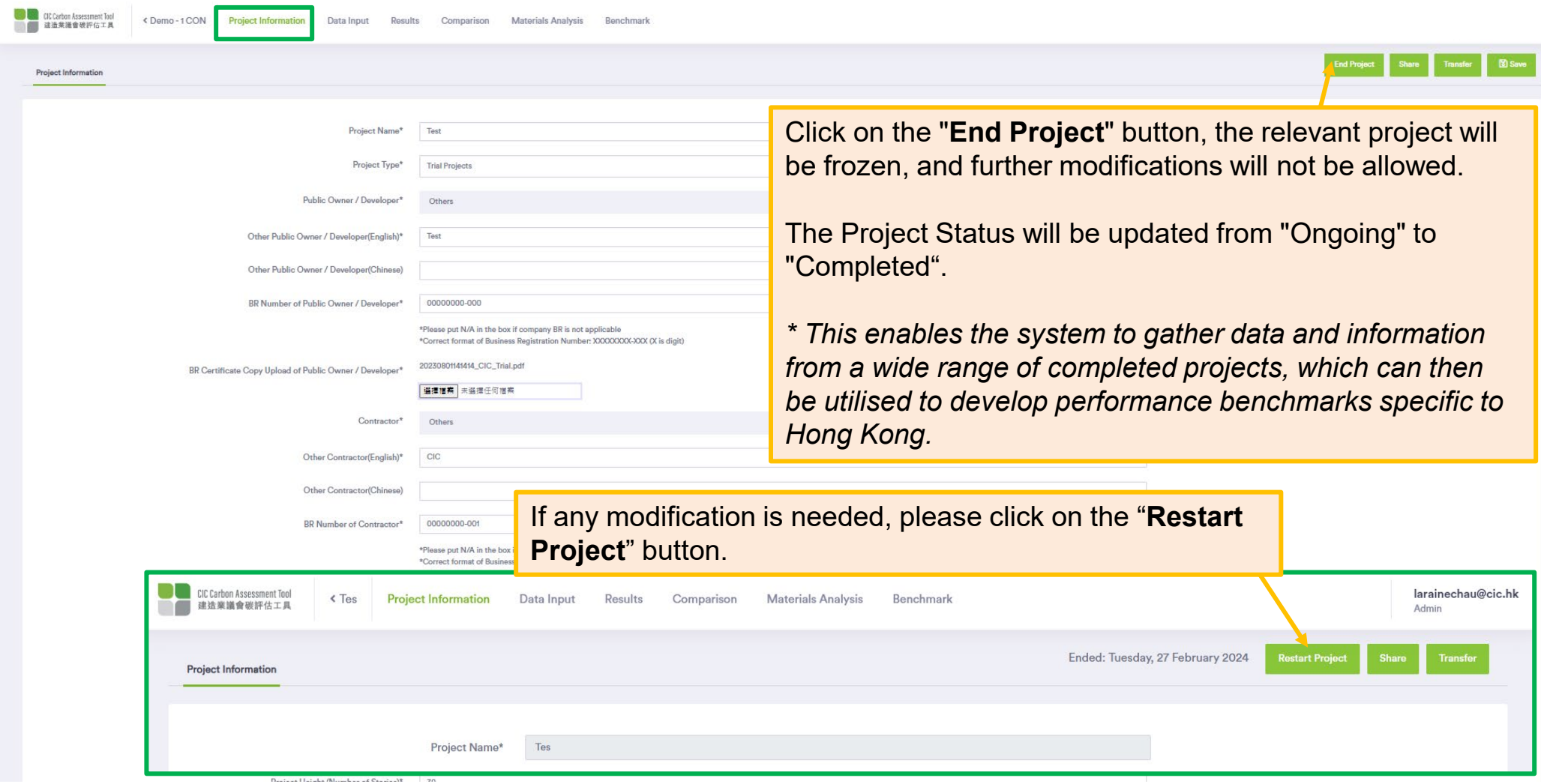
Feature 1: **End Project** (Design & Construction Input)



Click on the "**End Project**" button, the relevant project will be frozen, and further modifications will not be allowed.

The Project Status will be updated from "Ongoing" to "Completed".

** This enables the system to gather data and information from a wide range of completed projects, which can then be utilised to develop performance benchmarks specific to Hong Kong.*

If any modification is needed, please click on the "**Restart Project**" button.

** Please note that the "Share" and "Transfer" functions are only available for Construction Input projects.*

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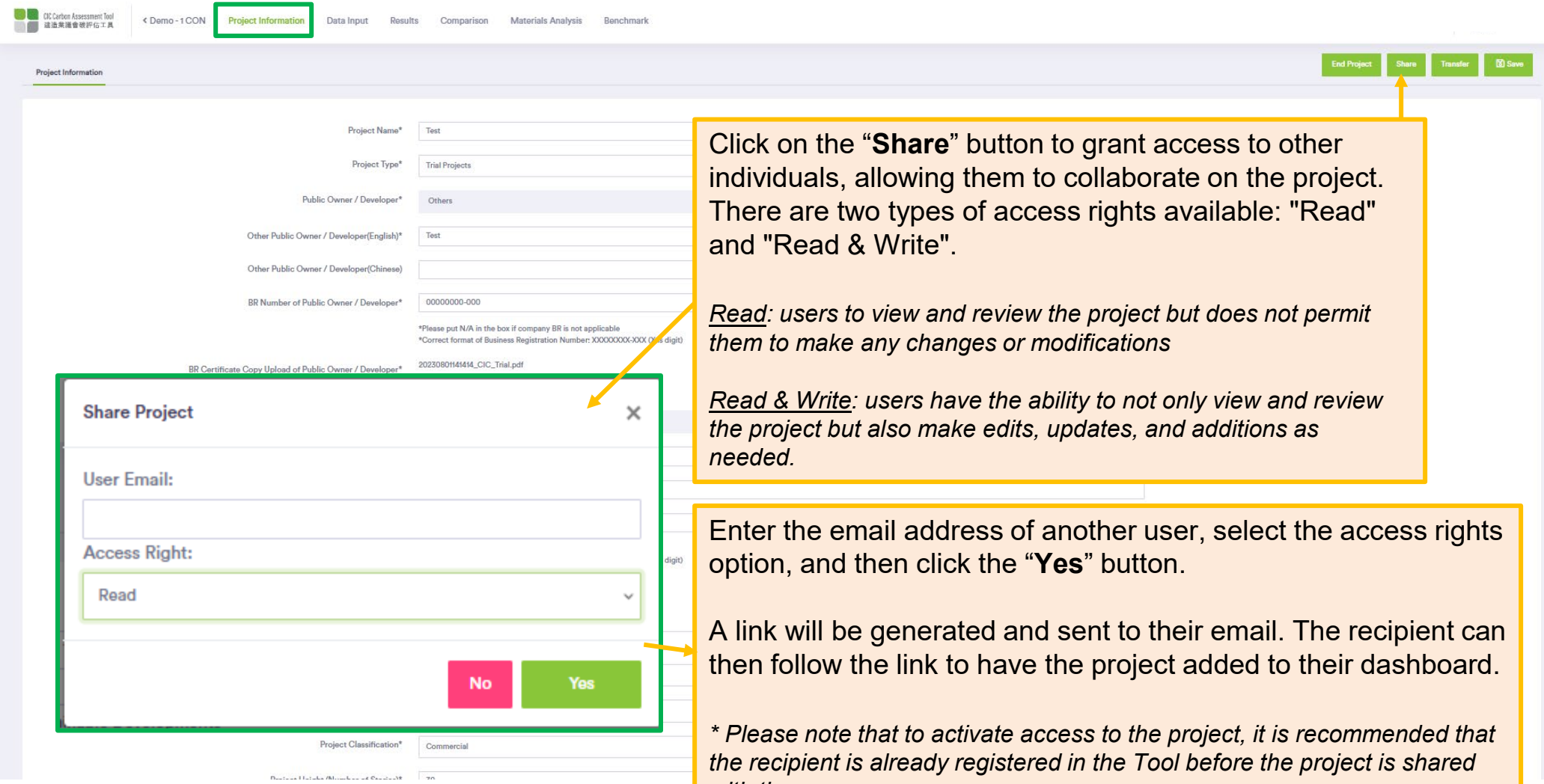
Feature 2: **Share** (Construction Input Only)

Projects can be shared with other team members.



Click on the "**Share**" button to grant access to other individuals, allowing them to collaborate on the project. There are two types of access rights available: "Read" and "Read & Write".

<u>Read</u>: users to view and review the project but does not permit them to make any changes or modifications

<u>Read & Write</u>: users have the ability to not only view and review the project but also make edits, updates, and additions as needed.

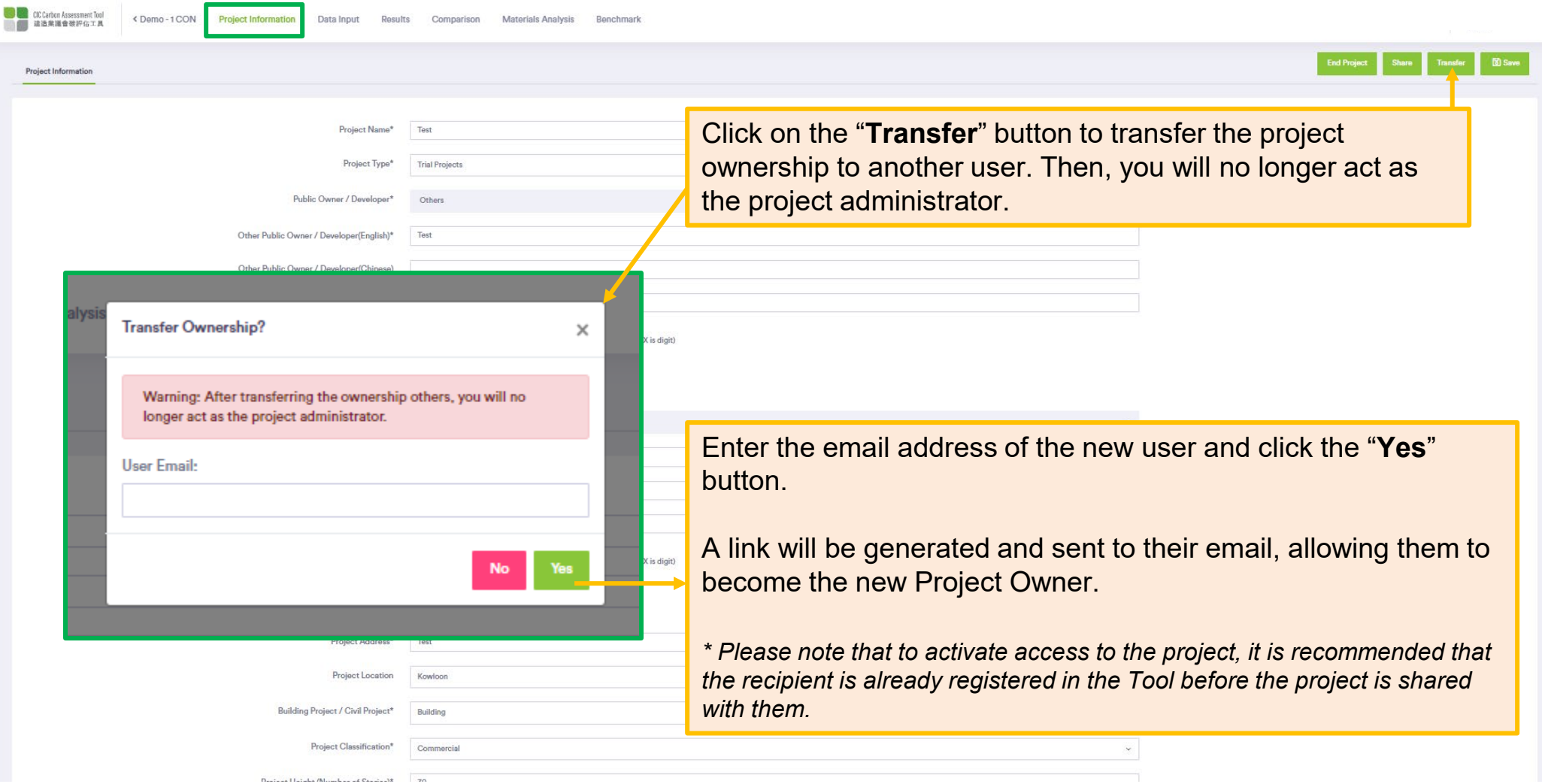
Enter the email address of another user, select the access rights option, and then click the "**Yes**" button.

A link will be generated and sent to their email. The recipient can then follow the link to have the project added to their dashboard.

** Please note that to activate access to the project, it is recommended that the recipient is already registered in the Tool before the project is shared with them.*

Feature 3: **Transfer** (Construction Input Only)

"The 'Project Owner", who is the user setting up the project, has complete ownership and management rights over the project. However, if needed, the Project Ownership can be transferred to other users by utilising the "Transfer" function.



Click on the "**Transfer**" button to transfer the project ownership to another user. Then, you will no longer act as the project administrator.

Enter the email address of the new user and click the "**Yes**" button.

A link will be generated and sent to their email, allowing them to become the new Project Owner.

** Please note that to activate access to the project, it is recommended that the recipient is already registered in the Tool before the project is shared with them.*

PART 8 – GLOSSARY OF TERMS

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Glossary of Terms

Key Term	Definition
Off-site Fabrication	Assembly of materials or systems at a location away from the project e.g. offsite rebar bending and fabrication of metal formwork
Precast Concrete	Concrete cast in a reusable mould or "form", cured in a controlled environment, transported to site and lifted into place e.g. beams, columns, façade
End of Life	Final stage of a product or material's use phase, e.g. disposal to landfill, recycling or reused on another project
Foundations	Materials and site impacts that are used / produced to complete the foundations of the project
Structure and Enclosure	Materials and site impacts that are used / produced to complete the structure and the enclosure (façade) of the project
Reuse factor	Predefined number of times the materials are reused on a project based on the assumption that timber formwork is use three times before disposal and for metal this is 10 times.
Sites located on Reclaimed land	Sites on reclaimed land, this option should be checked even if the land was not reclaimed for the purpose of the project

Glossary of Terms (2)

Key Term	Definition
Permanent Works – Substructure	The foundations of the project
Materials for Permanent Works – Substructure	The key materials used in the foundations of the project include concrete, steel, rebar and aggregates
Permanent Works – Superstructure	The superstructure of the project
Materials for Permanent Works – Superstructure	The key materials used in the foundations of the project include aggregate, cement, concrete, façade, concrete, rebar, and steel.
Temporary Works	The construction which don't form part of the final structure e.g. formwork or ELS
Materials for Temporary Works	The key materials used in the foundations of the project include bamboo scaffolding, concrete, metal formwork, hoarding & scaffolding, steel, and timber formwork & hoarding.
Site Impacts	Direct emissions from generated by the operation of the site e.g. the waste disposed from site, the fuel used and the refrigerant replacement

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Glossary of Terms (3)

Key Term	Definition
Material Family	Material group providing all the common specifications used in Hong Kong
Material	Specification of material which links to the carbon emissions factors used by the Tool to calculate the carbon emissions
Carbon Emissions - Materials	Automated conversion from the material quantity to embodied carbon (tCO_2e)
Country/Origin	Where materials are manufactured; if the locations are unknown or mixed
A1-A3 Carbon Emission Factor	Carbon emissions associated with upstream modules A1-A2: extraction and transportation of raw materials, plus core module A3: manufacturing to production plant gate
A4 Carbon Emission Factor	Carbon emissions associated with core module A4: transportation to and within Hong Kong to the site
Quantity	Delivery quantity of the materials/fuel to the site, or the quantity of waste carried away from the site

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Glossary of Terms (4)

Key Term	Definition
Electricity	Consumption of electricity (kWh) used on the site as per the electricity bill for the reporting period
Town Gas	Number of units used on the site as per the Town Gas bill for the reporting period
Fuel Consumption	Quantity of fuel measured in litres that is delivered to site for the reporting period
Water	Volume of water (m^3) used on the site as per the water bill for the reporting period
Refrigerant	Total quantity (kg) of refrigerant (e.g. R-403A, R-410A, etc.) used in refrigeration and air conditioning systems for the reporting period
Waste Disposal	Total quantity of waste removed from the site – for landfill, public fill (including sorting facility) and recycling for the reporting period
Welding and Flame Cutting	Total quantity of acetylene and liquid CO2 delivered to the site for the reporting period
Trees	Net number of additional trees (over 5-meter height) planted since the concerned building is constructed; net number of additional trees = number of newly planted trees (over 5-meter height) – number of removed trees (over 5-meter height) within the physical boundary of the construction site.

Glossary of Terms (5)

Key Term	Definition
Low-carbon Materials	All materials with a certain percentage of recycled content or HKCIC Green Product Certified Products.
Clean Energy	Clean Energy in the Tool include B5, B20 and B100-grade biodiesel.
Waste Recycling	Recycling temporary timber and metal.

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