

User Manual (Version 20221101)

Author: Hongcheng Xie

1 Access Method

The tool can be accessed by entering the URL (<https://imperialsustainability.azurewebsites.net/>) into the browser and its homepage is shown in the Figure 1. The tool has been tested and works fine in Microsoft Edge, Google Chrome and Firefox browsers.



Figure 1: User Manual - Index page of the website.

2 Navigation Bar

At the top of the home page is the navigation bar (Fig. 2), all the functions of the site can be accessed by clicking on the corresponding button on it.



Figure 2: User Manual - Navigation bar of the website.

Home: Jump to the index page of this website.

About: Jump to the section on the index page that describes the objectives of the project and the types of energy data to be visualised.

Visualization: When the mouse hovers over this option, a menu with the electricity and natural gas options will pop up. By selecting the different energy types, the page will be redirected to the entry selection page corresponding to the two types of data.

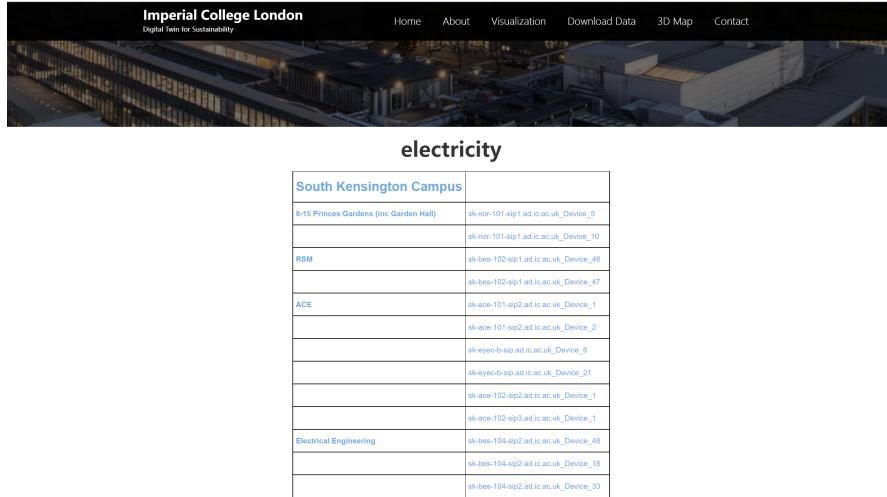
Download Data: Jump to energy consumption data download page.

3D Map: Jump to the 3D Map page.

Contact: Jump to the contact section of the page the user is currently viewing, which contains the developer's contact details.

3 Visualisation of Energy Data Entries

Once the user has selected the type of energy data they wish to view, the website will jump to the corresponding selection screen. This page presents all the entries under that data type in a table format (Fig. 3). The top row of the table is the South Kensington campus (campus-level), on the left side of the table is the name of the building within the College (building-level) and on the right side is the name of the electricity meter within that building (meter-level). By clicking on the entry, the user can browse its energy usage data.



The screenshot shows a table titled "electricity" under the "South Kensington Campus" heading. The table lists various buildings and their associated electricity meters. The columns are labeled "Building" and "Entry".

Building	Entry
8-15 Princes Gardens [inc Garden Hall]	sk-nor-101-esp1.ad.ic.ac.uk_Device_5
	sk-nor-101-esp1.ad.ic.ac.uk_Device_10
RSM	sk-bee-102-esp1.ad.ic.ac.uk_Device_46
	sk-bee-102-esp1.ad.ic.ac.uk_Device_47
ACE	sk-ace-101-esp2.ad.ic.ac.uk_Device_1
	sk-ace-101-esp2.ad.ic.ac.uk_Device_2
	sk-eye-b-esp.ad.ic.ac.uk_Device_6
	sk-eye-b-esp.ad.ic.ac.uk_Device_21
	sk-ace-102-esp2.ad.ic.ac.uk_Device_1
Electrical Engineering	sk-bee-104-esp3.ad.ic.ac.uk_Device_48
	sk-bee-104-esp2.ad.ic.ac.uk_Device_18
	sk-bee-104-esp2.ad.ic.ac.uk_Device_33

Figure 3: User Manual - Table for selecting entries for viewing.

After the user has selected the entry they wish to view, the site will jump to the visualisation page. This page will take some time to load and display "Loading". The loading time depends on the current connection speed and can vary from 5 to 20 seconds.

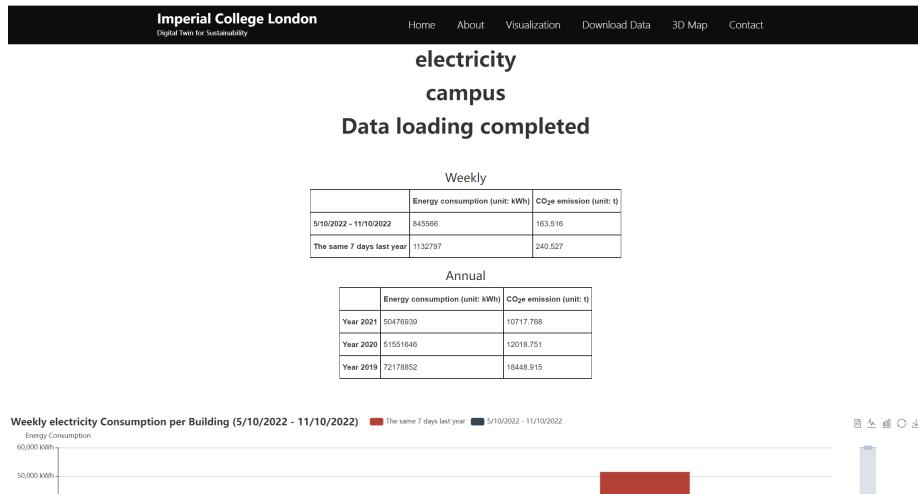


Figure 4: User Manual - Loading completed campus-level visualisation page.

"Data loading completed" will be displayed when the loading is complete (Fig. 4). At the top of the page, the CO₂e generated by the entry due to electricity or natural gas consumption will be displayed, and below it, various charts of the entry will be shown. The content depends on the level of the selected entry, with campus-level and building-level entries having additional charts to give a more comprehensive view of the data. The whole visualisation page of campus is included at the end of the user manual (Fig. 7).

The 3D map of the tool is shown below (Fig. 5), by clicking on the mark of each building, it can jump to the visualization page of the corresponding building.



Figure 5: User Manual - 3D Map.

4 File Uploads for Data Updates

The data update method for the data science tools developed in this project is done by uploading files exported from "Sigma". As the tool uses three years of data in its visualisation, when exporting data from "Sigma", please export data files with a total duration of more than three years. Before uploading the files, please pay attention to the naming format. "all_elec_data.csv" for updating electricity data and "all_gas_data.csv" for natural gas data. Incorrect naming may result in the data updating failure.

Figure 6: User Manual - File upload function.

The upload function for data files is at the bottom of the page where the user selects the view entry (Fig. 6). After clicking on the button on the left, a pop-up window will appear for the user to select the data file to be uploaded. After selecting it, click on the submit button at the bottom, and the tool will start uploading the file to the server. The process will take some time, depending on the size of the file being uploaded and will return to the top of the page when complete.

The developers have removed the default maximum file size limit of 2MB when using PHP and have adjusted the limit to 100M. If the user needs to upload a file over 100MB, please contact the developers for assistance.

5 Data Download

Users can jump to the data download page by clicking on the data download button in the navigation bar. This page currently offers two options for downloading the electricity and gas data files used for the visualisation.

There is also an option to convert charts to text in the top right corner of some of the visualisation charts (visualisation Page), which also allows the user to copy the data used in that chart.



Figure 7: User Manual - Whole visualisation page of campus.