INTRODUCTION & PROJECT CONCEPT

As a response to the issue of **sustainability** in the city the idea of the project is to design an 'escape' area from the **busy city** and to provide people an alternative and more environment friendly **transport** to travel in the city- **electric scooters.** Located in the **Barge House**, the 'electric scooter centre' would allow local people and tourists to **charge** and rent electric scooters and go on a trip around London and visit famous tourist attraction areas or just explore the city. Electric scooters emit no **CO2** gas therefore the air is not polluted compared to other transport such as cars which can help to improve the quality of **air** in the area.

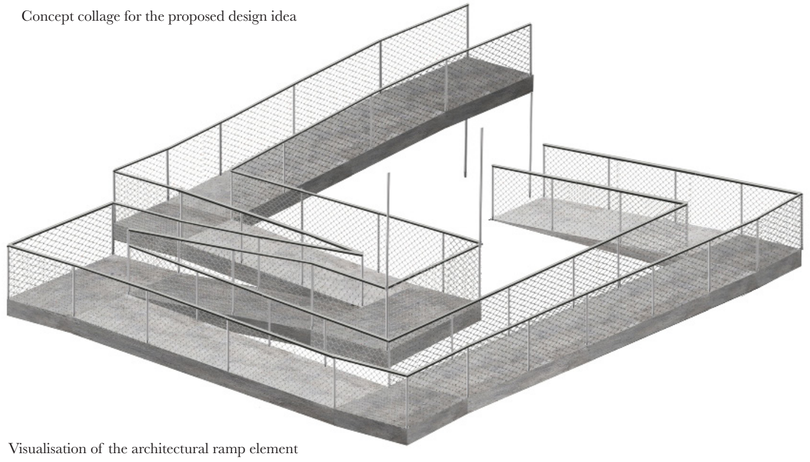
The centre itself would have **renewable energy** sources which would help to provide electricity for the building in a more **sustainable** way which would be used to charge the scooters and for any additional uses such as the café located on the 1st floor of the building.

Visitors would have the opportunity to relax in the café while their scooters are charging or just enjoy the **clean air** that is **filtered** through the air systems in a less chaotic environment since the installation of the **noise cancelling walls** would block the noise from the outside such as the sound of cars or the construction works.
The **ground floor** of the centre would mainly be allocated for scooter **parking** and charging together with a **reception** to guide visitors in the building, a workshop where the scooters would be fixed and maintained as well as additional storage space and a drinking water station.

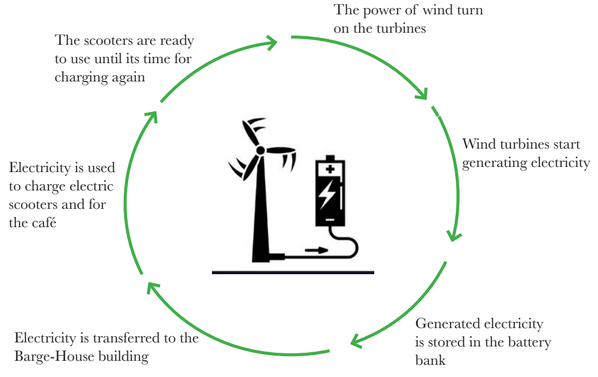
In order to make the experience of the scooter centre more memorable, a **ramp** installation that goes from the ground floor to the first floor was designed to keep the use of electricity minimal and also to attract visitors from the outside to visit the building as the architectural ramp element can be seen trough the big **windows**. Every user's needs were considered when constructing the ramp therefore the original set of stairs was kept for those who want to access the first floor faster as well as an elevator next to it.

The design idea was to match the **existing materials** and design of the space which ended up being an **industrial interior design** in order to match the outside world to the inside and to keep more **existing** elements such as concrete so that less drastic changes are required. In that way less new materials are needed and the space is kept more sustainable and any new materials needed would be picked up from the recycling and **reclamation** centres and would have a longer **lifespan.**

Concept collage for the proposed design idea



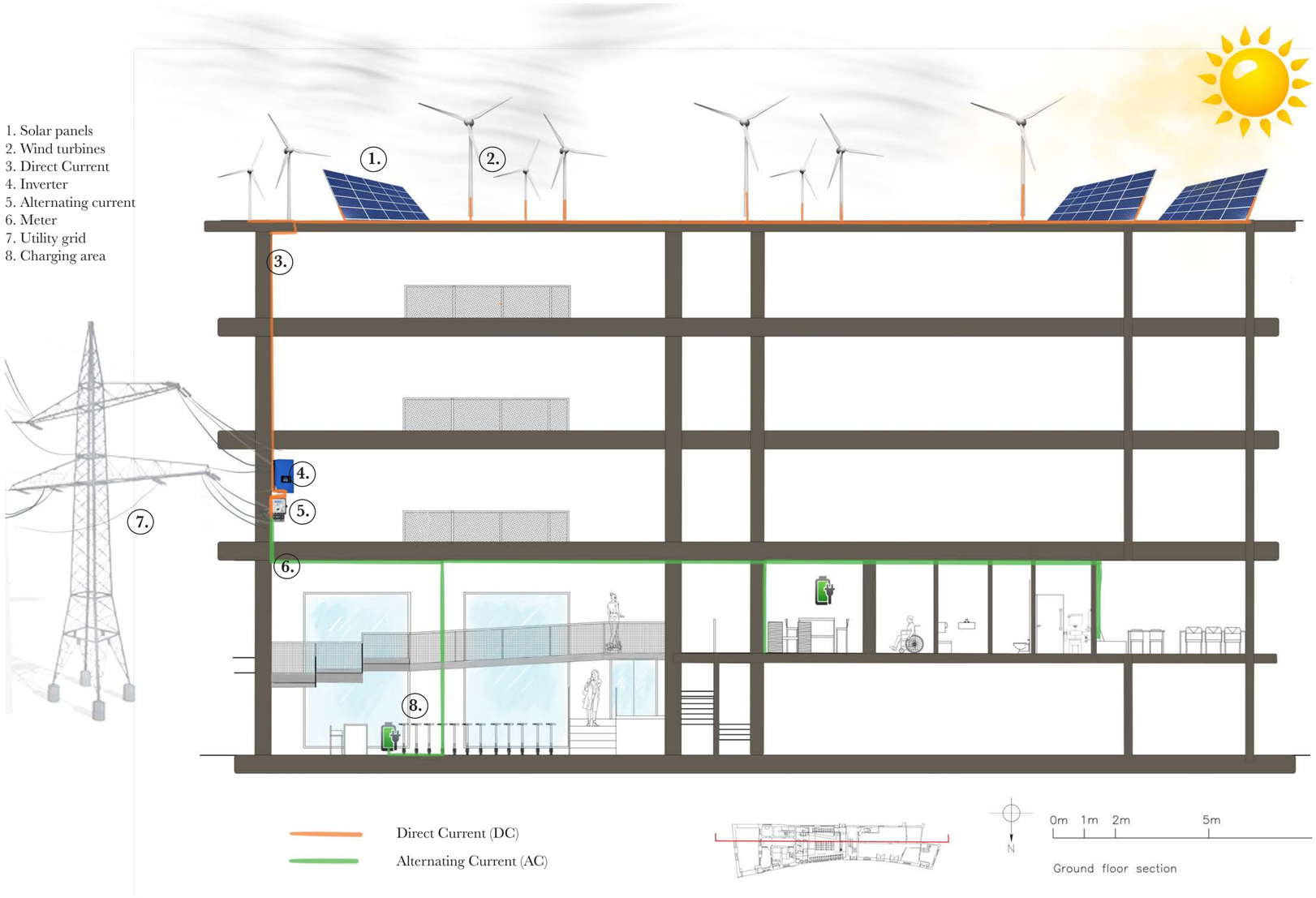
Visualisation of the architectural ramp element



Production of renewable energy

RENEWABLE ENERGY & SITE ANALYSIS

1. Solar panels
2. Wind turbines
3. Direct Current
4. Inverter
5. Alternating current
6. Meter
7. Utility grid
8. Charging area



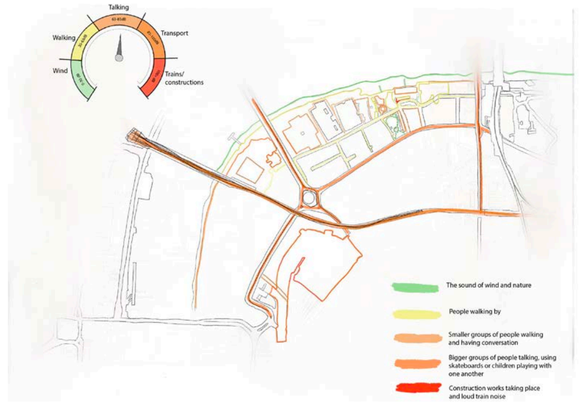
Why is renewable energy important?

In the modern world **transport** (mainly cars) is used by individuals to get to work, get groceries, meet friend and family and so on which was estimated to produce around **27%** of the total **green house emission** in the whole of UK in 2019 which means that transport was the **highest** CO2 gas producing sector and still very little changes are happening to change the statistics.
Negative **side effects** of the increasing levels of CO2 include **rise in temperature** which in 2022 February was higher than usual and it was the 5th warmest February since 1880 with an increase of **+1.19**. With increasing rise of carbon dioxide in other sectors such as energy production it is likely that the temperature **rise** will increase more in the future leading to **global warming** with more consequences to the humanity.
Combustion of fuels is still known to be the dominant way of electricity production which in the statistic is responsible for **21% of CO2** emissions. Being the 2nd largest sector in the statistics energy supply also requires additional attention for changes and better ways of **electricity production.**

How the energy is collected and transferred to the Barge-house?

Step 1:
The power of wind turn on the wind turbines which helps them spin while the warmth from the sun heats up the solar panels located on the roof top.
Step 2:
The energy collected from the wind turbines and the solar panels turns into Direct Current (DC)
Step 3:
Direct Current is sent to the inverter located on the 2nd floor of the Barge-house building which transfers the DC into Alternating Current (AC)
Step 4:
The meter located next to the inverter shows the amount of energy generated and any excess energy produced during the wind and sun peak hours is sent to the utility company (the electricity is stored and can be used whenever it's needed)
Step 5:
High quality energy now runs through the building providing electricity needed to charge electric scooters and to provide power for the café

Site analysis



Areas around the Barge-house were investigated in order to find out what kind of activities take place in the area, where the main roads are located, construction works and so on. By analysing the noise levels I was able to conclude what elements will need to be included in the new design of the Barge-house which include things such as noise cancelling wall installations to block the noise of the cars and constructions near by.

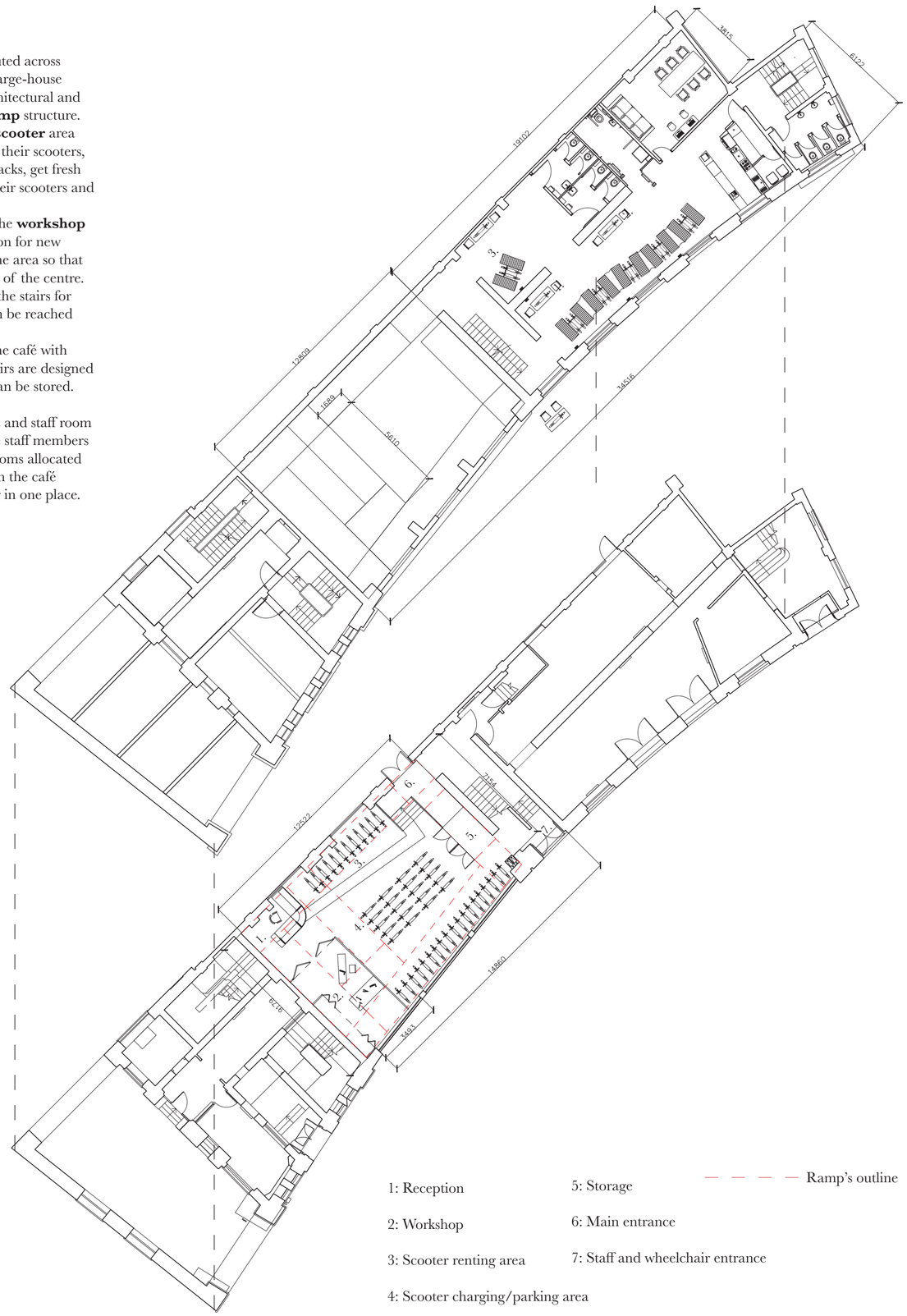
Going around the whole Barge-house building, existing materials were analysed which allowed me to see what material was the most dominant,different types of materials used as well as their current condition to help me understand how the exterior space of the building can possibly influence the interior design of it.

The interior elements such as the placement of windows, openings, existing materials and electricity were also investigated in the interior space which familiarised me with the space better and I was able to start planning my design proposal.

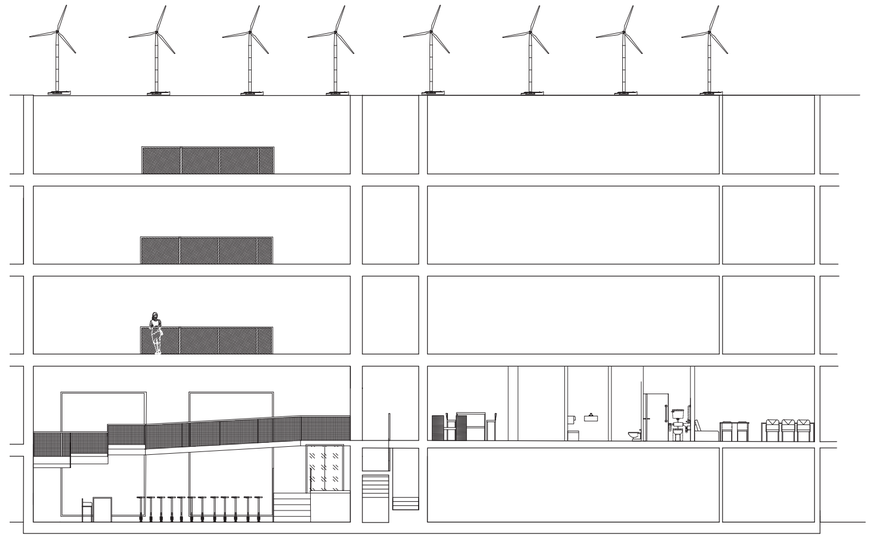
PLANNING

The sustainability centre is distributed across the ground and first floor of the Barge-house which are **connected** with an architectural and main element of the space- the **ramp** structure. Ground floor consist of the main **scooter** area where visitors can charge and rent their scooters, use **storage units** for their backpacks, get fresh drinking water, maintain/repair their scooters and so on.
The reception located in front of the **workshop** also provided additional information for new visitors and guides individuals in the area so that they can feel the **real experience** of the centre. By going up the ramp or by using the stairs for **quicker access**, the first floor can be reached where the café is located.
Visitors are also welcome to visit the café with their scooters as the tables and chairs are designed to have space where the scooters can be stored.

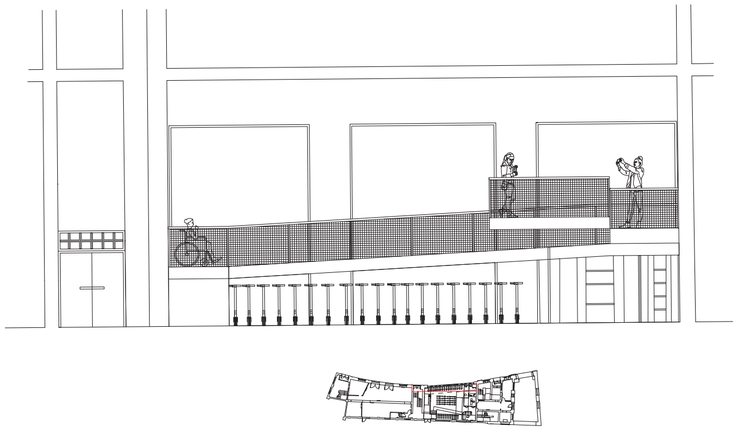
Other areas such as the bathrooms and staff room are also located on this floor where staff members and visitors have **different** bathrooms allocated to maintain a better **circulation** in the café which also helps to avoid crowding in one place.



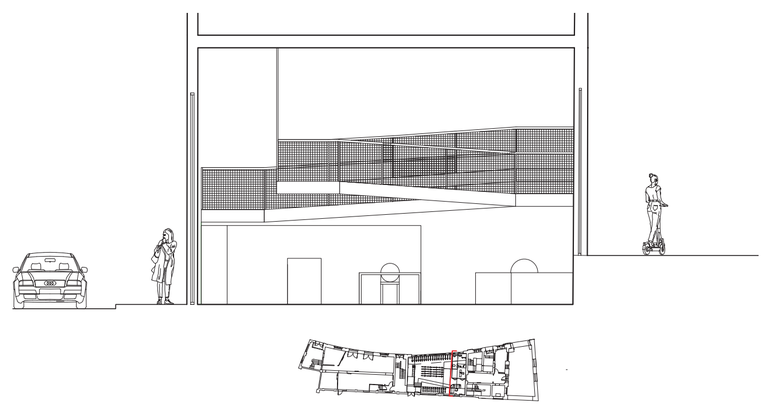
1: Reception
2: Workshop
3: Scooter renting area
4: Scooter charging/parking area
5: Storage
6: Main entrance
7: Staff and wheelchair entrance
— — — — Ramp's outline



The long section of the Barge house shows how view of the ramp can be seen through the openings on the upper floors as well as through the floor to ceiling windows from the outside which help to attract more visitors to visit the centre and become familiar with sustainable transport idea and breath purified filtered air.



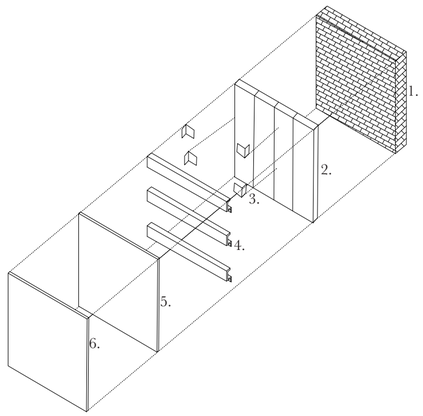
In this ground floor 'main area' section it is shown how the space underneath the ramp is used efficiently. The scooters are placed and charged in those areas which maximises space for circulation in other places. Since scooters can be folded in half, space underneath the ramp that is only 0.5m high can still be used efficiently as the scooters can be fitted there too.



This section helps to understand that the space is entered through the courtyard (right hand side) where the floor-level is higher than the street (left hand side). By leaving the building further way from cars visitors are more safe and can introduce themselves to the scooters more safely without risking their own or others' health.

MATERIAL AND DETAIL

Noise cancelling wall construction



1: Outside brick wall

2: Acoustic mineral wood

3: Screws to fix the two materials together

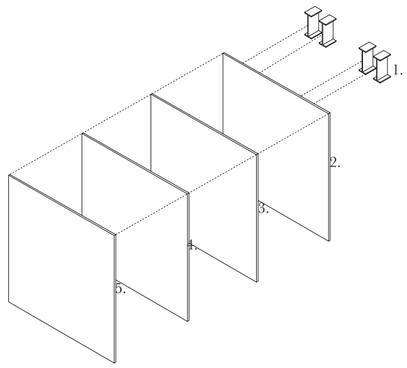
4: Resilient bars

5: Plasterboard

6: Final material that will be seen in the interior

Noise cancelling walls will ensure minimal noise from the outside entering the inside space and will help to design a more peaceful environment for the visitors

Ramp construction layers



1: I beam structures

2: Exterior gypsum

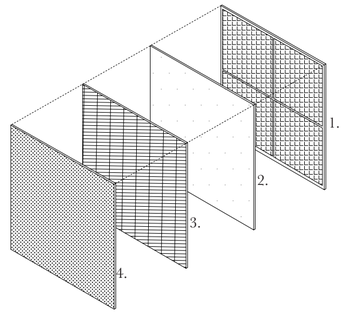
3: Water resistant barrier

4: Plaster base coat

5: Concrete base

To ensure that the ramp is constructed appropriately and is not too heavy, only the top layer will be concrete which will help to match the existing materiality in the building and will keep the weight of the ramp minimal

Air filtering system installation



1:Pre-filter

2: Carbon filter

3: Formaldehyde filter

4: HEPA filter

Air filters will help to clean the air in the building and provide an alternative area where people can breath fresh and filtered air where all the viruses and bacteria that can be found in the open city areas filtered through the system

1st floor Café's furniture

1. Bar style stool tables allow enough space for two scooters to be placed underneath allowing more space in the cafe for visitors' circulation

2. Tall chairs matching the table design add a minimal appearance to the café and are the appropriate height for the stool tables

3. Chairs that are joined together with a table surface in the middle have space underneath to store scooters and backpacks

Materials that will be used for the scooter and sustainability centre's design will be collected from the **reclamation sites** to ensure that they are given a 2nd life in other construction processes and that the concept of **sustainability** is promoted.
Materials that are not available for collection in the reclamation yards will be bought from appropriate stores ensuring that they can be **easily recycled** in the future and have a long **lifespan** so that less reconstruction works are required in the future.
Some areas in the Barge house building were decided to be kept as they are and were left in their **original state** such as the flooring on the ground floor which also matched the **industrial interior design** idea.

1: Concrete with 'rough' surface that will be used for the ramp

2: Timber will be used for furniture in the workshop as well as storage

3: Variation of metal for different 'rusty' patterns and colours

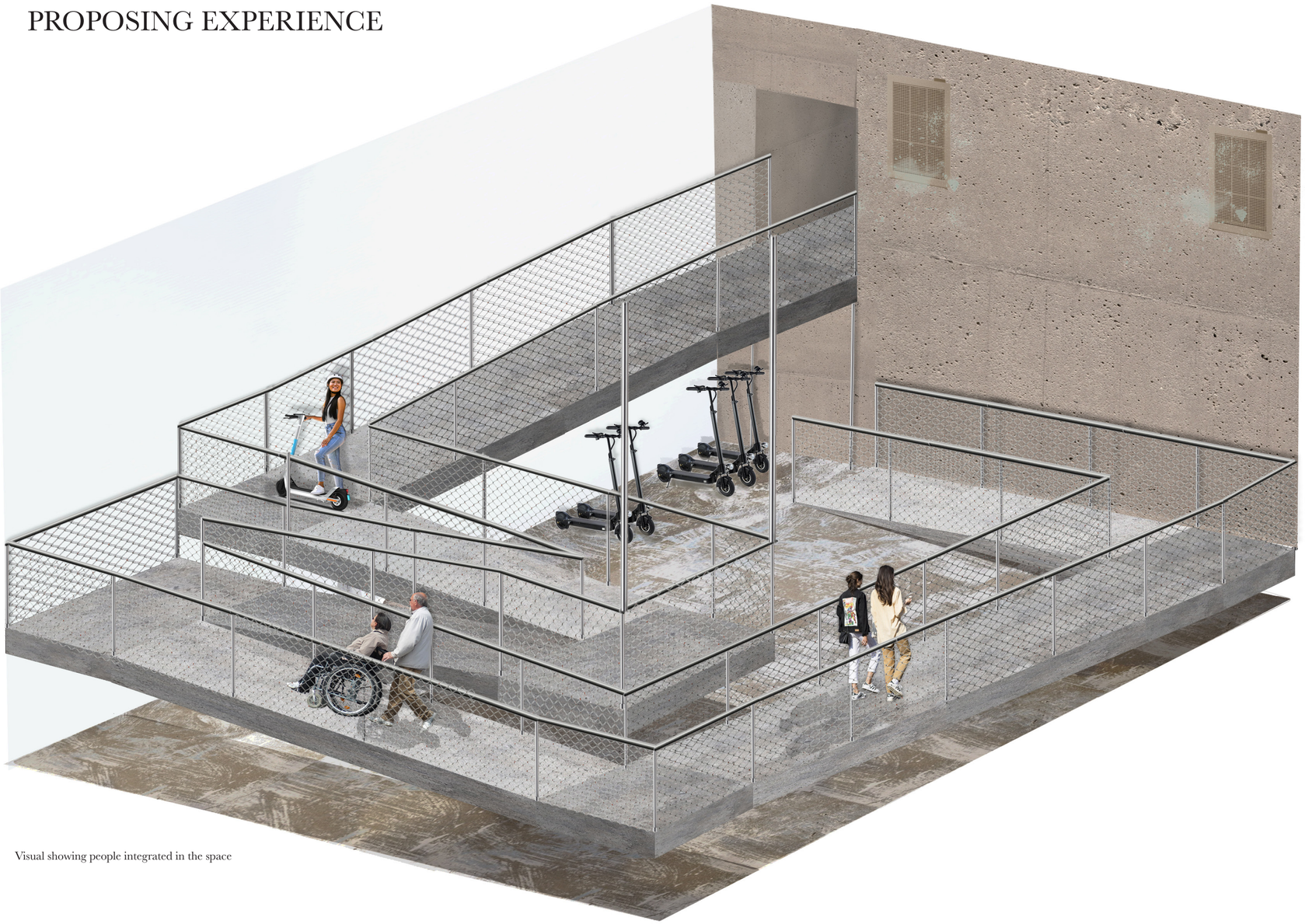
4: Textured glass wall to separate the workshop from the main scooter area

5: Beige concrete that will be used for the floors and some walls

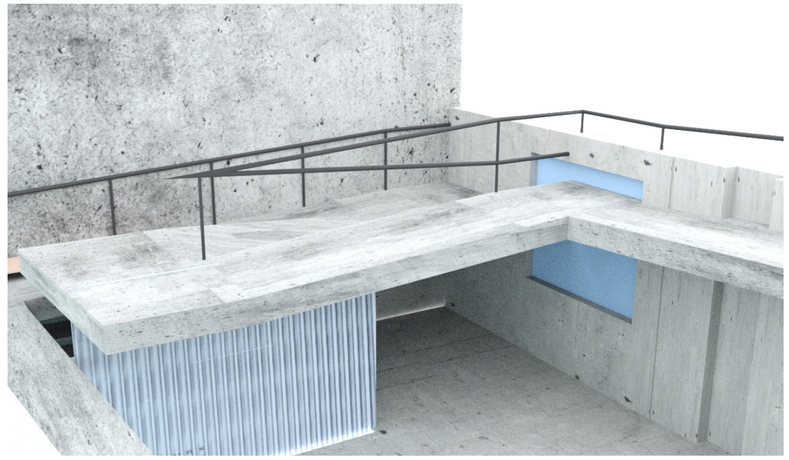
6: Rubbery flooring material for the workshop to avoid slippery floor

7: Metal structures to support the ramp and for railing design

PROPOSING EXPERIENCE



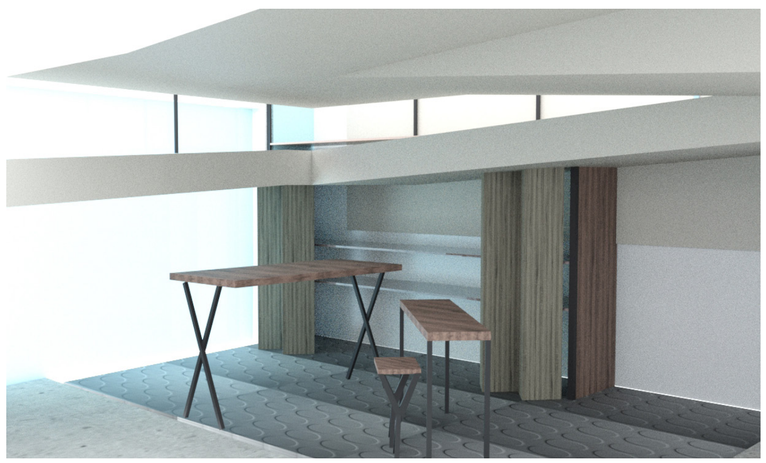
Visual showing people integrated in the space



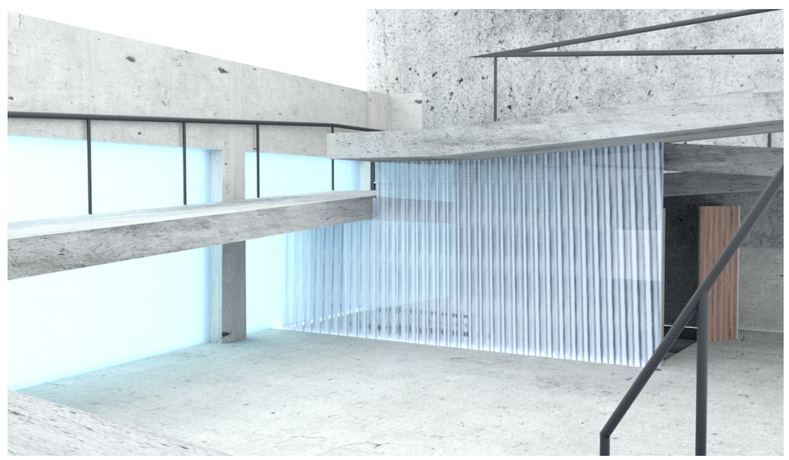
Workshop's glass partition wall

View of the entrance and the beginning of the ramp

The proposed visitor's experience can be seen in the visuals on the page. On the ramp structure, **two** individuals can fit and walk next to one another as well as visitors with **scooters and wheelchairs** are welcome to come to the 1st floor's cafe where the scooters can be placed **underneath** the stool tables in a **folded** position.
It can be seen that the areas underneath the ramp are used **efficiently** as many functions are designed to fit there such as the workshop which is separated by a **frosted glass** wall to add more **privacy** to the workshop's staff. The workshop's flooring is also different than the rest of the ground floor as rubber flooring ensures that it is **not slippery** and can be easily cleaned after scooter check-up/maintenance is done.
Large windows as shown in the visuals help to maximise the amount of **natural light** entering the centre and reduce the amount of **artificial lighting** needed. Higher up on the walls air **filtering** systems are installed to clean out the toxins from the air coming from the outside and to provide visitors with clean and **purified air** to help clean their lungs and improve general health.



Workshop/repair area



View from the main entrance