



# Social Interchange

How can our public infrastructure buildings adapt to climate change?

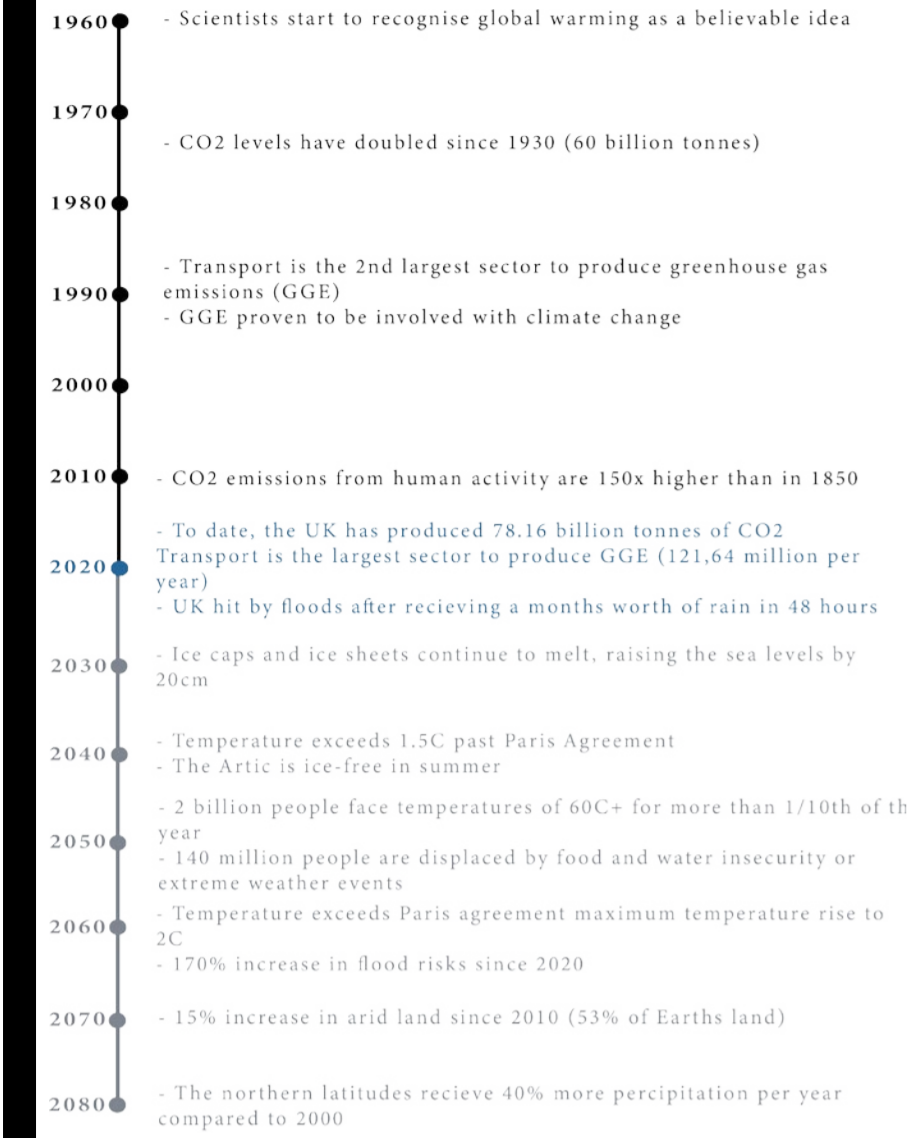
Climate change has been increasing exponentially since the industrial revolution in the 1800s. The temperature rise will lead to increased evaporation and therefore, more precipitation. An increase in precipitation and urbanisation will lead to more flash floods that will come faster and more severe.



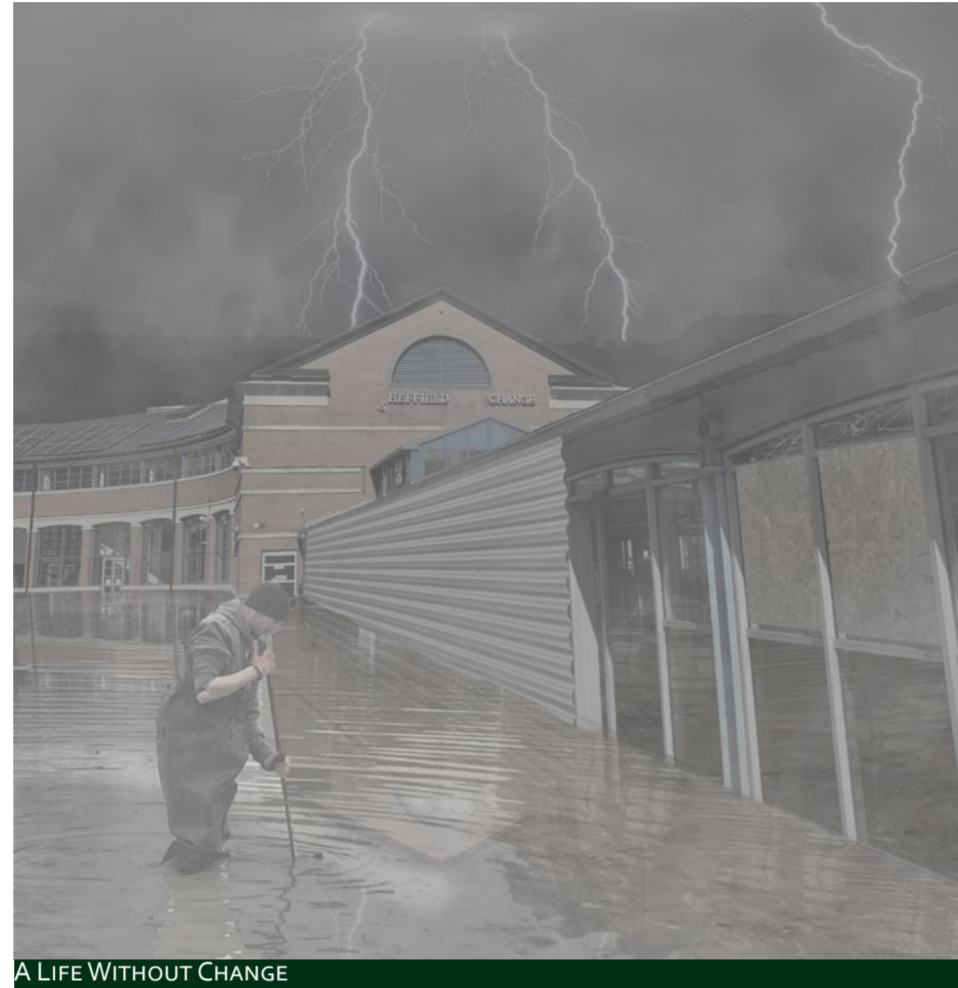


# CLIMATE CHANGE TIMELINE

## SPECULATIVE FUTURE TIMELINE

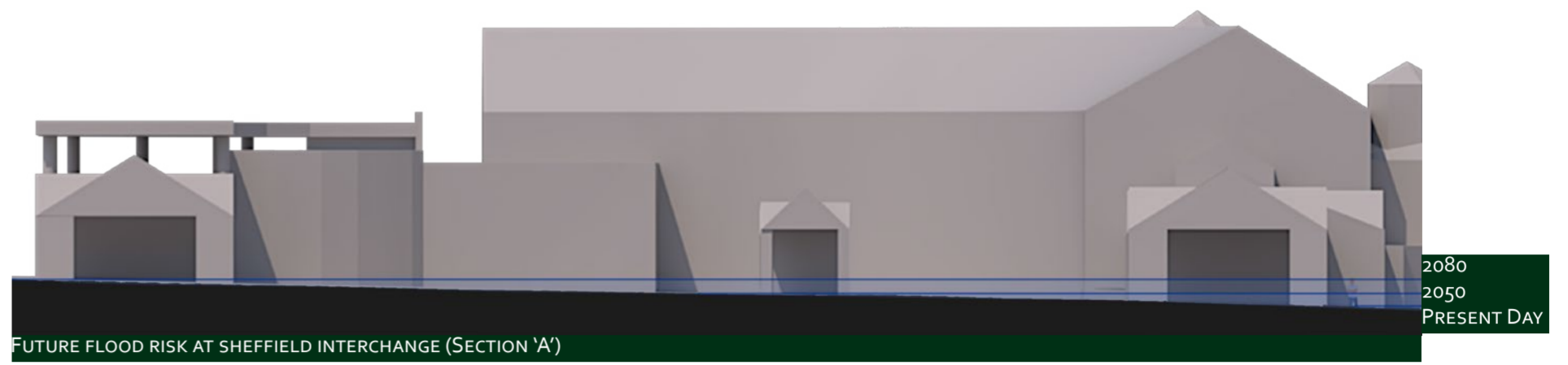


CLIMATE CHANGE HAS BEEN INCREASING EXPONENTIALLY SINCE THE INDUSTRIAL REVOLUTION IN THE 1800S. THE TEMPERATURE RISE WILL LEAD TO INCREASED EVAPORATION AND THEREFORE, MORE PRECIPITATION. AN INCREASE IN PRECIPITATION AND URBANISATION WILL LEAD TO MORE FLASH FLOODS THAT WILL COME FASTER AND MORE SEVERE.

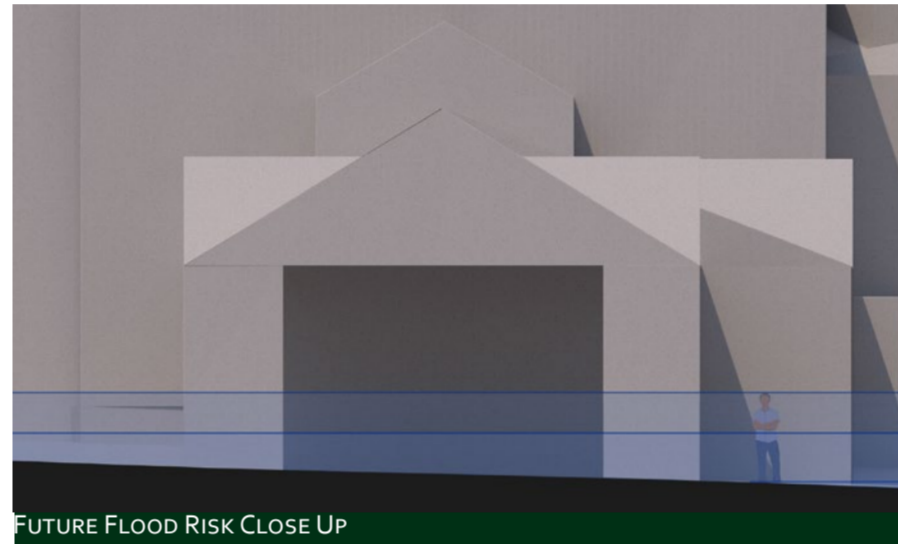


A LIFE WITHOUT CHANGE

# FUTURE FLOODING AT THE INTERCHANGE



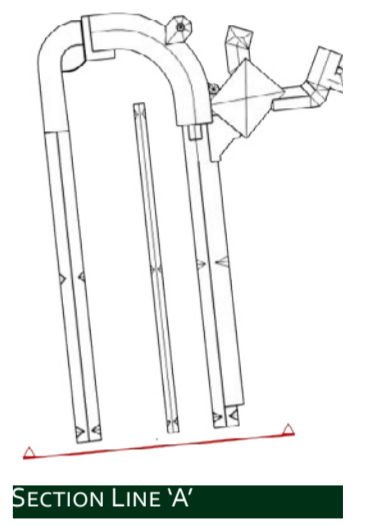
FUTURE FLOOD RISK AT SHEFFIELD INTERCHANGE (SECTION 'A')



FUTURE FLOOD RISK CLOSE UP

**RESEARCH INDICATES THAT A COMBINATION OF FACTORS COULD CAUSE SEVERE FLOODING AT SHEFFIELD INTERCHANGE IN THE FUTURE, INCLUDING:**

- INCREASED MAGNITUDE AND SPEED OF FLASH FLOODING DUE TO CLIMATE CHANGE
- INCREASING URBANISATION WILL LEAD TO MORE WATER RUNOFF AS IT CANNOT BE ABSORBED BY THE GROUND,
- THERE ARE SEVERAL RIVERS RUNNING THROUGH SHEFFIELD WHICH CANNOT NATURALLY EXPAND, THEREFORE THEY FLOOD AS THEY RUN THROUGH LARGELY POPULATED AREAS
- THE LOCATION OF THE INTERCHANGE IS IN A VALLEY WHICH WILL COLLECT THE WATER
- THE INTERCHANGE IS ALREADY ON THE VERGE OF CURRENT FLOOD RISK AREAS AND THIS WILL ONLY INCREASE WITH TIME

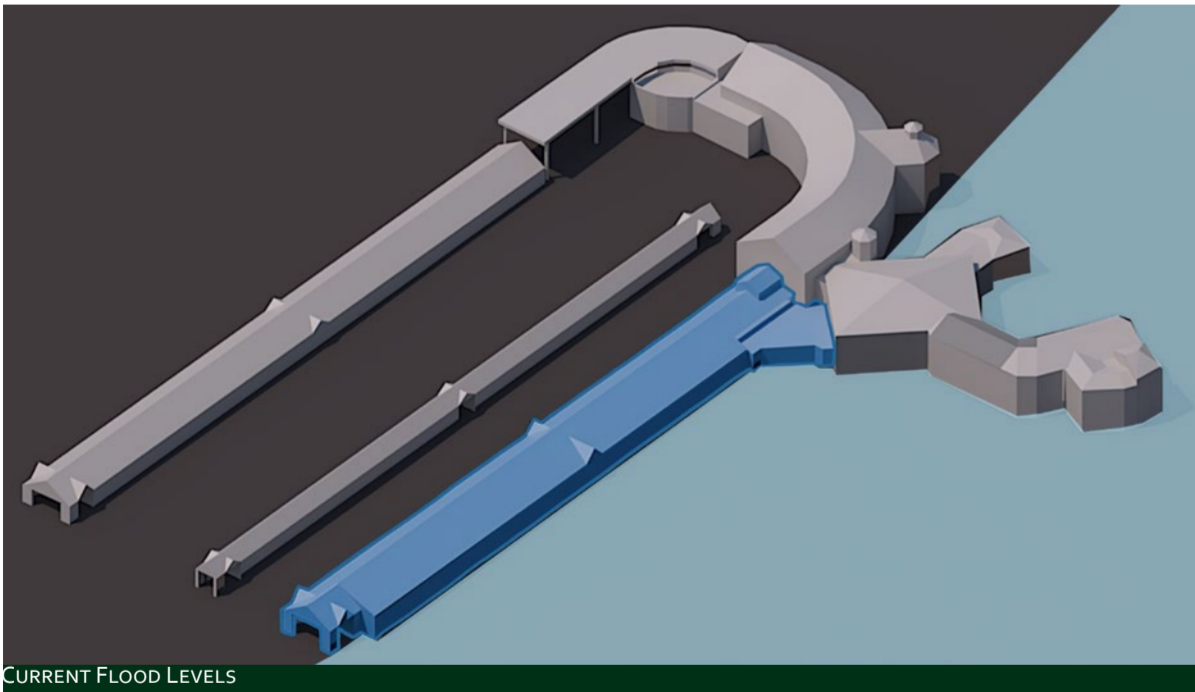


SECTION LINE 'A'



AS THE CURRENT FLOOD RISKS TO THE INTERCHANGE ARE COMING FROM THE WEST, I WILL BE FOCUSING MY DESIGN AROUND THE WEST CORRIDOR. HOWEVER OVER TIME IF THE FLOODS CONTINUE TO RISE, THEN THIS DESIGN CAN BE ADAPTED TO THE MIDDLE AND EASTERN CORRIDORS.

INTERCHANGE FLOOD RISK AREAS



CURRENT FLOOD LEVELS



THE AMPHIBIOUS HOUSE

## THE AMPHIBIOUS HOUSE BACA ARCHITECTS THE THAMES, MARLOW, SL7 1QE, ENGLAND

THE LOCATION OF THIS HOUSE IS PRONE TO FLOODING WHEN THE THAMES BURSTS ITS BANKS. WHEN FLOODING OCCURS THIS HOUSE WILL RISE IN ITS DOCK-LIKE FOUNDATIONS TO AVOID THE FLOODWATER. THE STRUCTURE IS FITTED WITH FLEXIBLE PIPES AND CABLES TO ALLOW ACCESS TO CLEAN WATER AND ELECTRICITY, THEREFORE NORMAL LIFE CAN CONTINUE DURING THE EVENT OF A FLOOD.

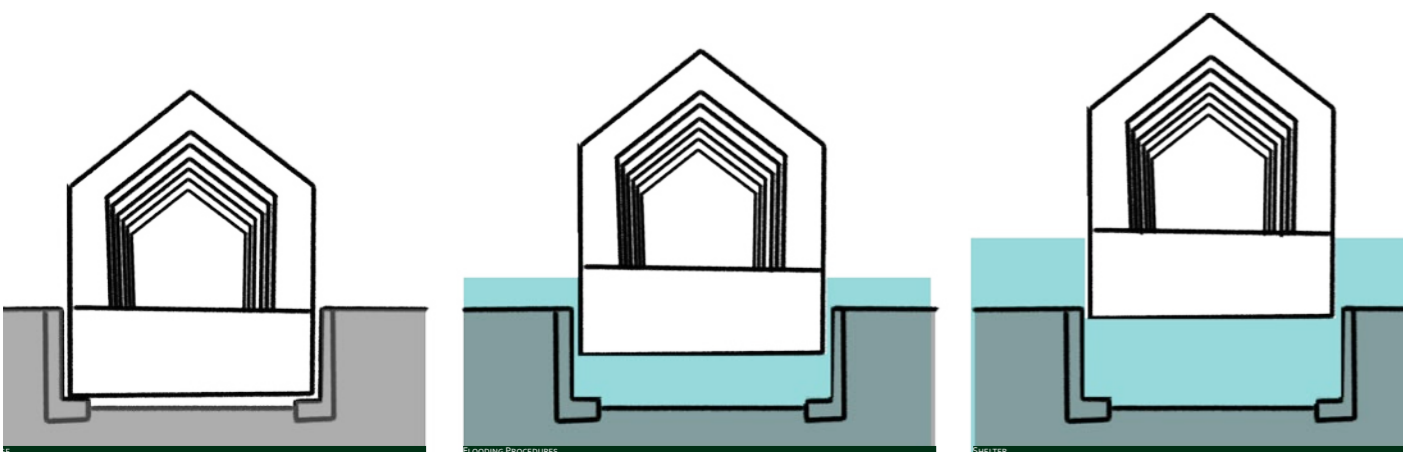
TO CONSTRUCT THIS TYPE OF STRUCTURE, A LARGE HOLE THAT WAS 4M BELOW THE AVERAGE WATER LEVEL WAS EXCAVATED. THIS HOLE WOULD THEN BE LINED WITH REINFORCED CONCRETE. INSIDE THIS DOCK, THEY FORMED A CONCRETE BOX WHICH WOULD BE USED AS THE BASEMENT, THIS BOX WOULD FLOAT WHEN FLOODING OCCURS. TO KEEP THE HOME STABLE LARGE BEAMS (NICKNAMED 'DOLPHINS') WOULD KEEP THE HOME IN PLACE, AS WELL AS KEEP THE STRUCTURE IN THE RIGHT POSITION ABOVE THE FOUNDATIONS.



DOCKED



FLOATING



LOADING PROCEDURE

UNLOAD



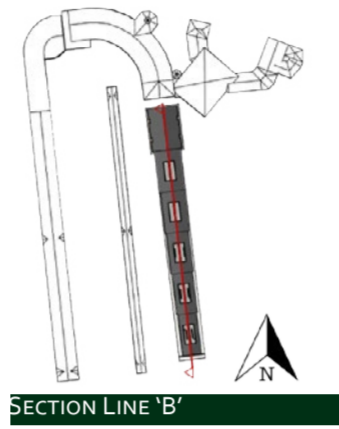
FOUNDATION

LOADING PROCEDURE

UNLOAD





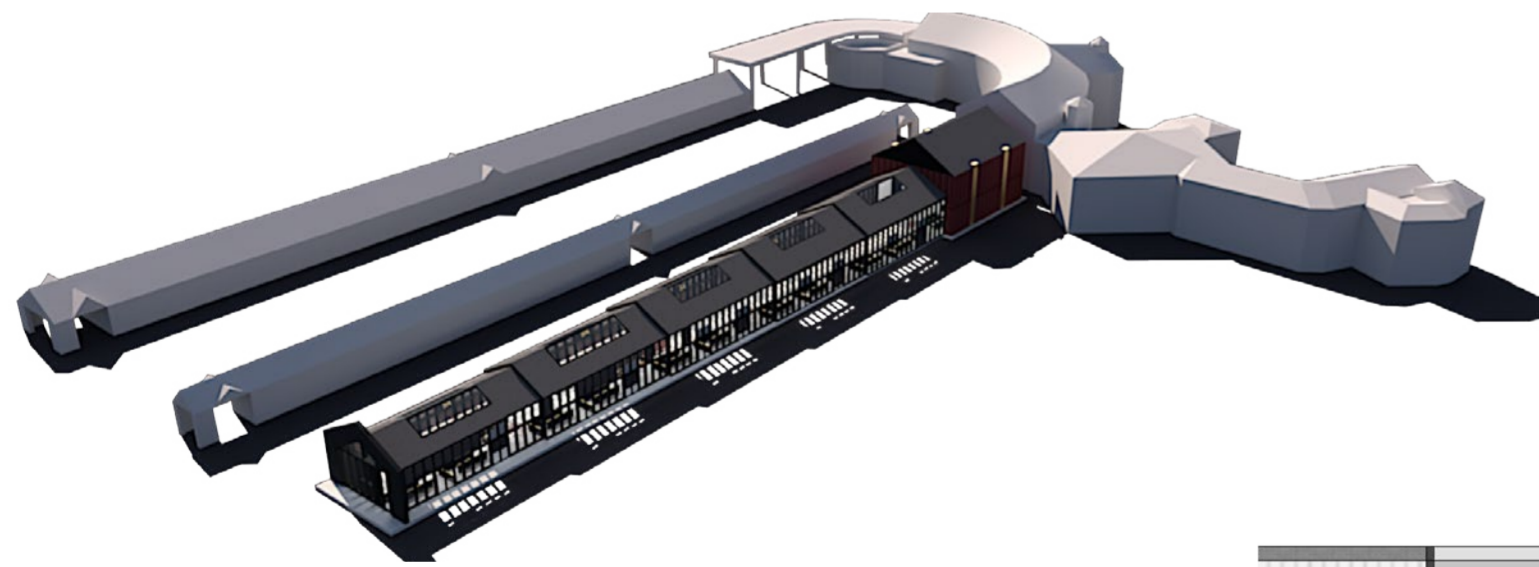
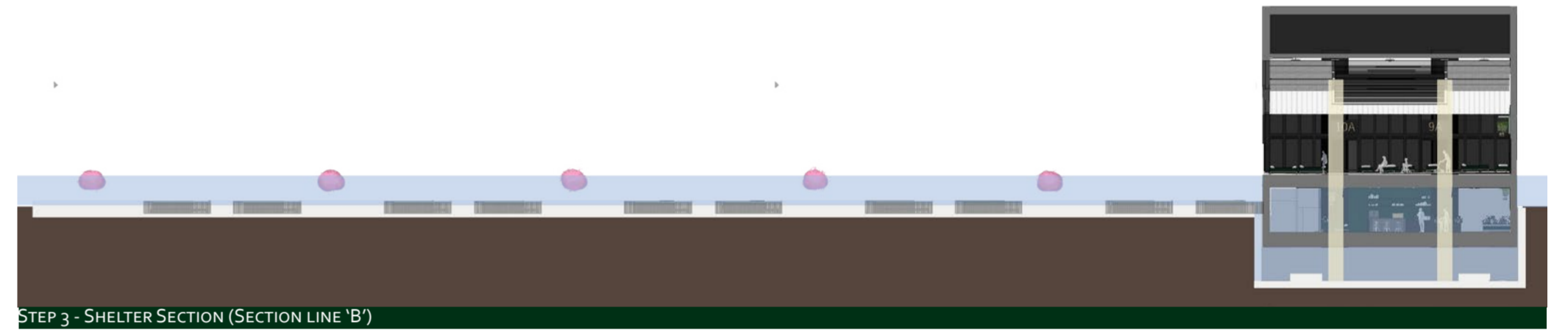
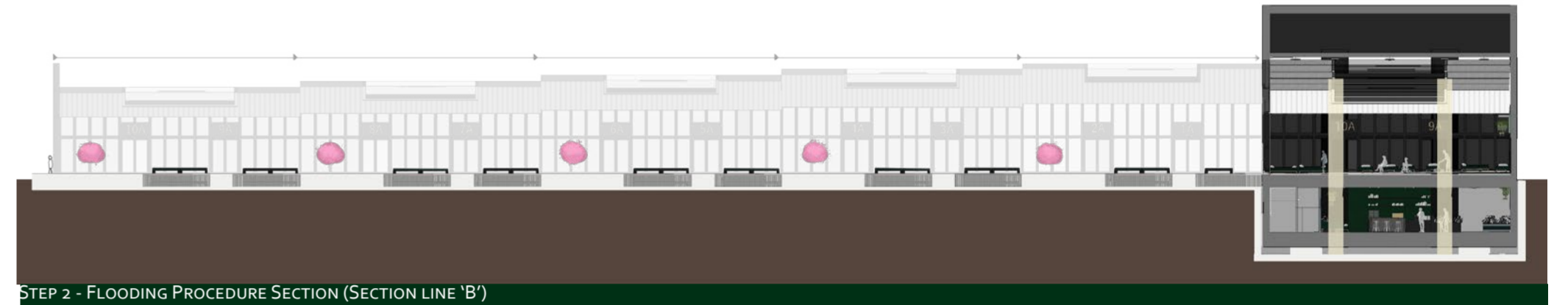


**FLOODING PROCEDURES**

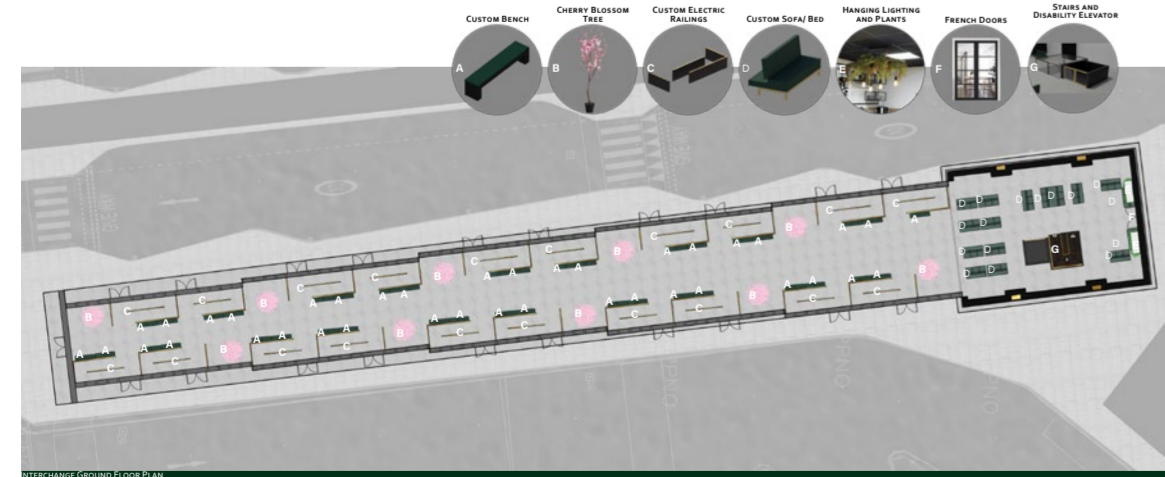
- 1) THE INTERCHANGE STAFF RECEIVE COMMUNICATIONS ABOUT FLOOD WARNINGS.
  - 2) THEN THE STAFF WILL EVACUATE THE NEW EASTERN CORRIDOR, AND REDIRECT PEOPLE TO THE WESTERN CORRIDOR, OF THE INTERCHANGE.
  - 3) THE RAILINGS ARE LOWERED AND PUSHER CUSHIONS ARE REMOVED FROM THE BENCHES. THEY ARE STORED IN THE MAIN BUILDING.
  - 4) THE FOLDING DOORS ARE OPENED FULLY SO THE END WALL DOES NOT GET OBSTRUCTED
  - 5) THEY WOULD THEN RETRACT THE SECTIONS INTO THE MAIN BUILDING.
  - 6) ONCE THE CORRIDOR IS FULLY RETRACTED STAFF WILL CLOSE THE FOLDING WINDOWS, HOWEVER, THE BUILT-IN DOORS WILL REMAIN UNLOCKED.
  - 7) THE EVACUEES WILL THEN BE INVITED IN.
  - 8) WHILST THE EVACUEES ARRIVE STAFF WILL UNLOCK THE DOORS TO THE SHOWERS AND CHANGE THE BUS STOP SCREENS TO THE NEWS.
- ONCE THE CAPACITY OF THE SHELTER HAS BEEN REACHED (OR FLOODING HAS SURROUNDED THE WESTERN BUILDING AND PEOPLE CANNOT REACH THE ACCESS POINTS TO THE MAIN BUILDING) THE DOORS WILL BE LOCKED.

**UTILITIES**

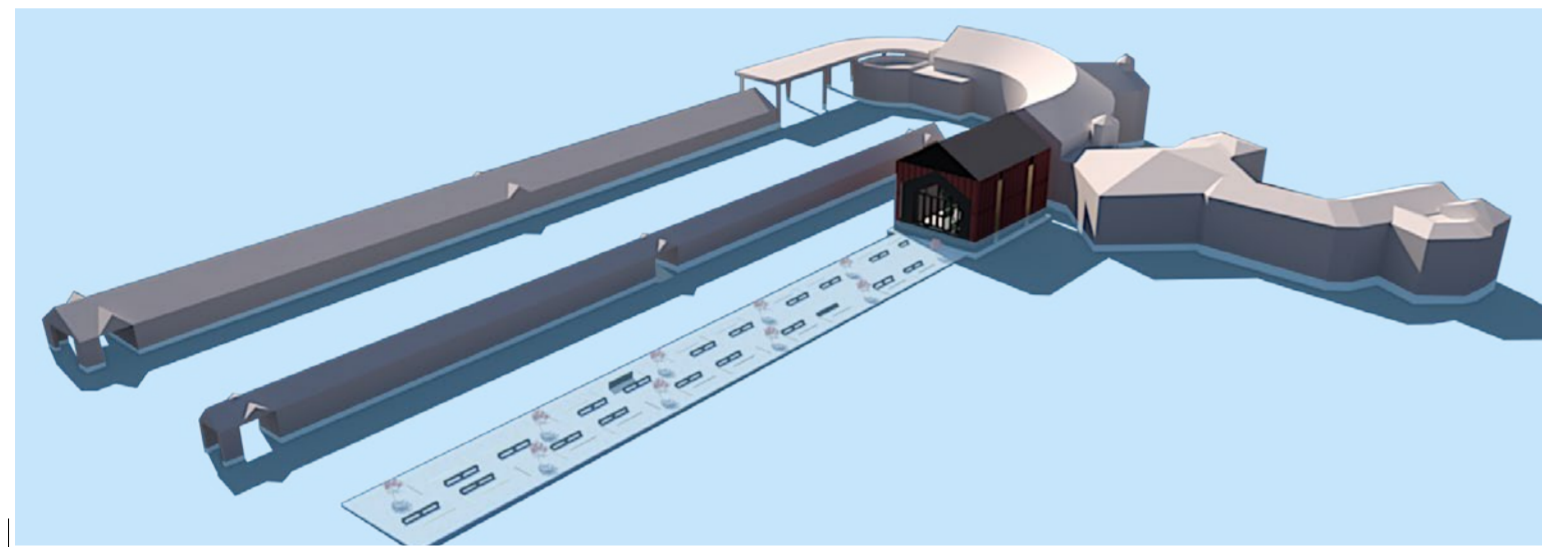
THE ELECTRICITY AND WATER WILL BE SUPPLIED USING ELEPHANT CABLING. THIS TYPE OF CABLING IS FLEXIBLE AND CAN EXTEND TO ALLOW FOR A CHANGE IN THE DISTANCE WHEN THE BUILDING RISES IN THE EVENT OF A FLOOD. THIS WILL ALLOW EVACUEES TO HAVE ACCESS TO POWER AND CLEAN WATER WHILST STAYING IN THE SHELTER.



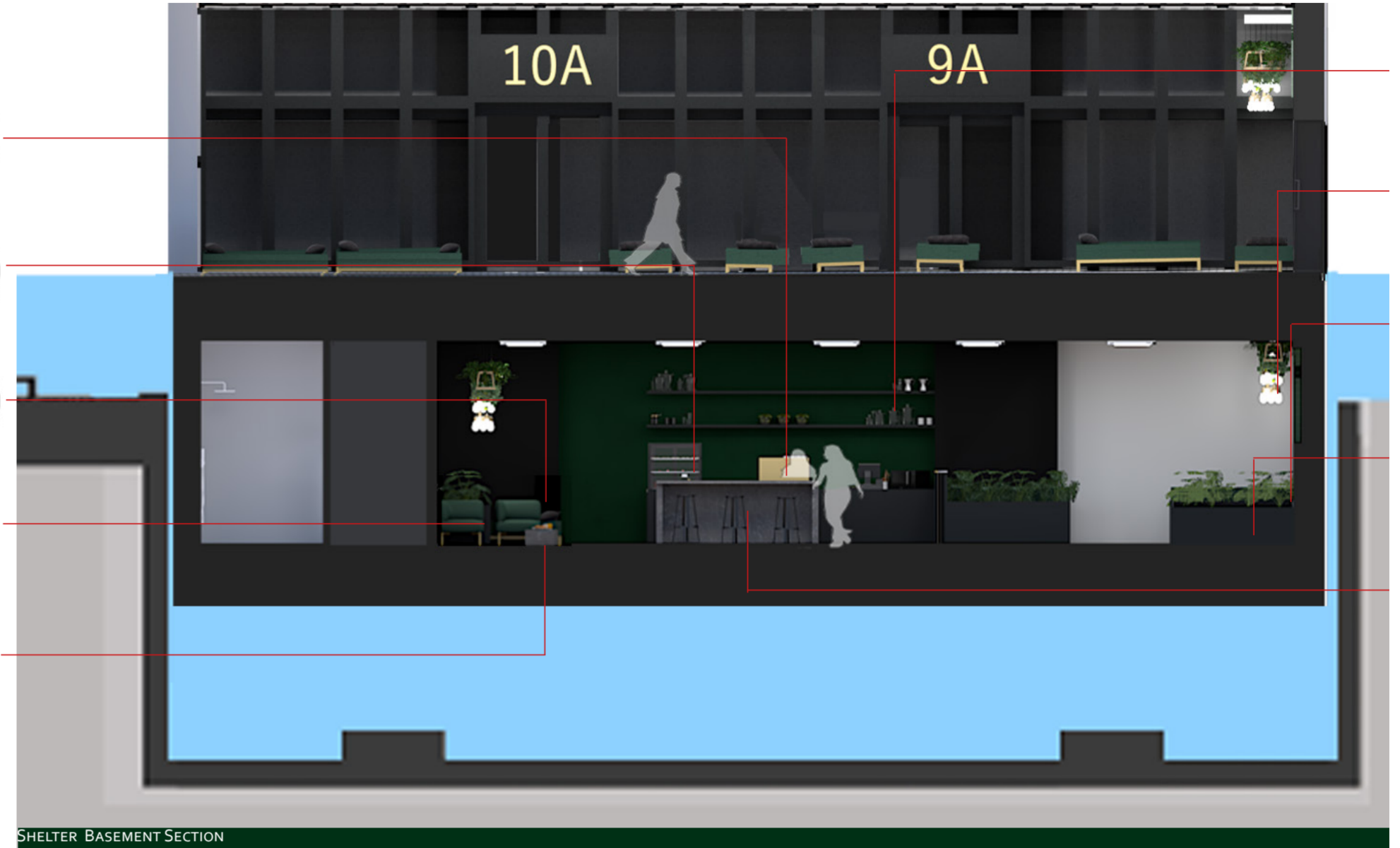
INTERCHANGE GROUND FLOOR PLAN





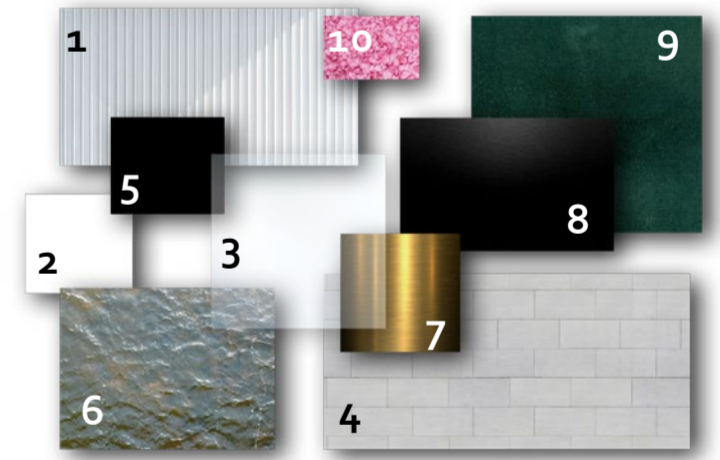
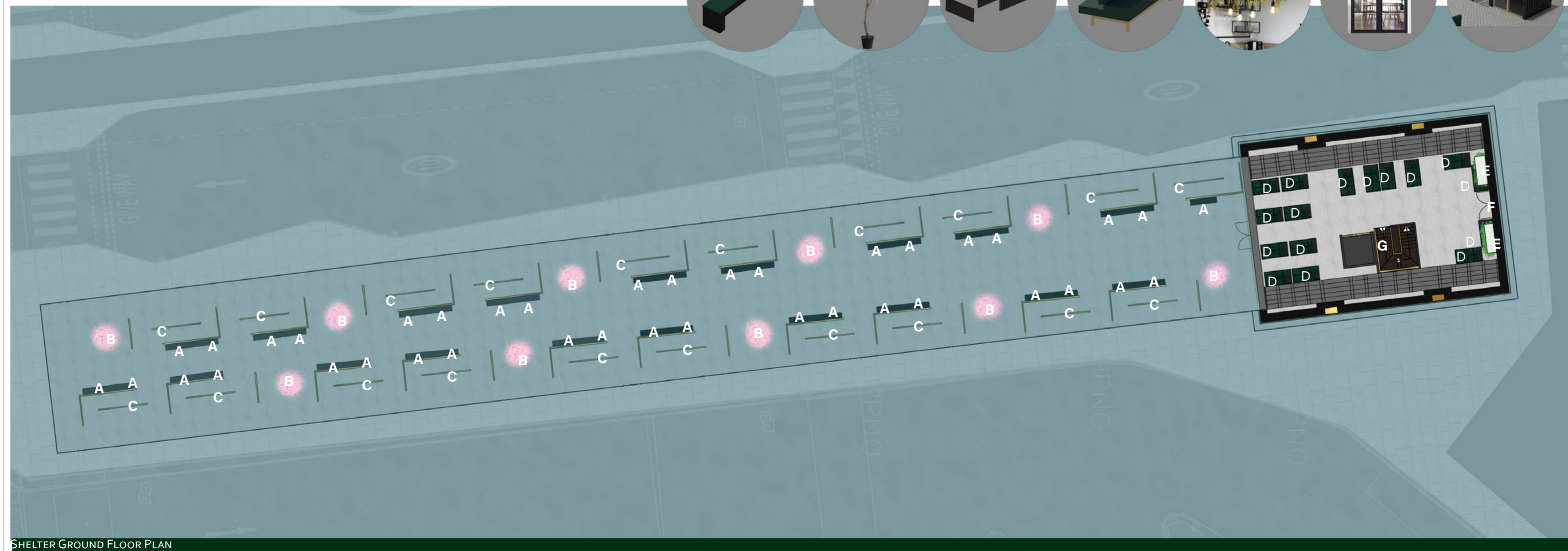


- GOLD COLOURED ESPRESSO MACHINE
- CAKE DISPLAY
- CUSTOM SOFA/ BED
- L-BACKED ARMCHAIR
- CUSTOM CUBE TABLE



SHELTER GROUND FLOOR PLAN

- A CUSTOM BENCH
- B CHERRY BLOSSOM TREE
- C CUSTOM ELECTRIC RAILINGS
- D CUSTOM SOFA/ BED
- E HANGING LIGHTING AND PLANTS
- F FRENCH DOORS
- G STAIRS AND DISABILITY ELEVATOR



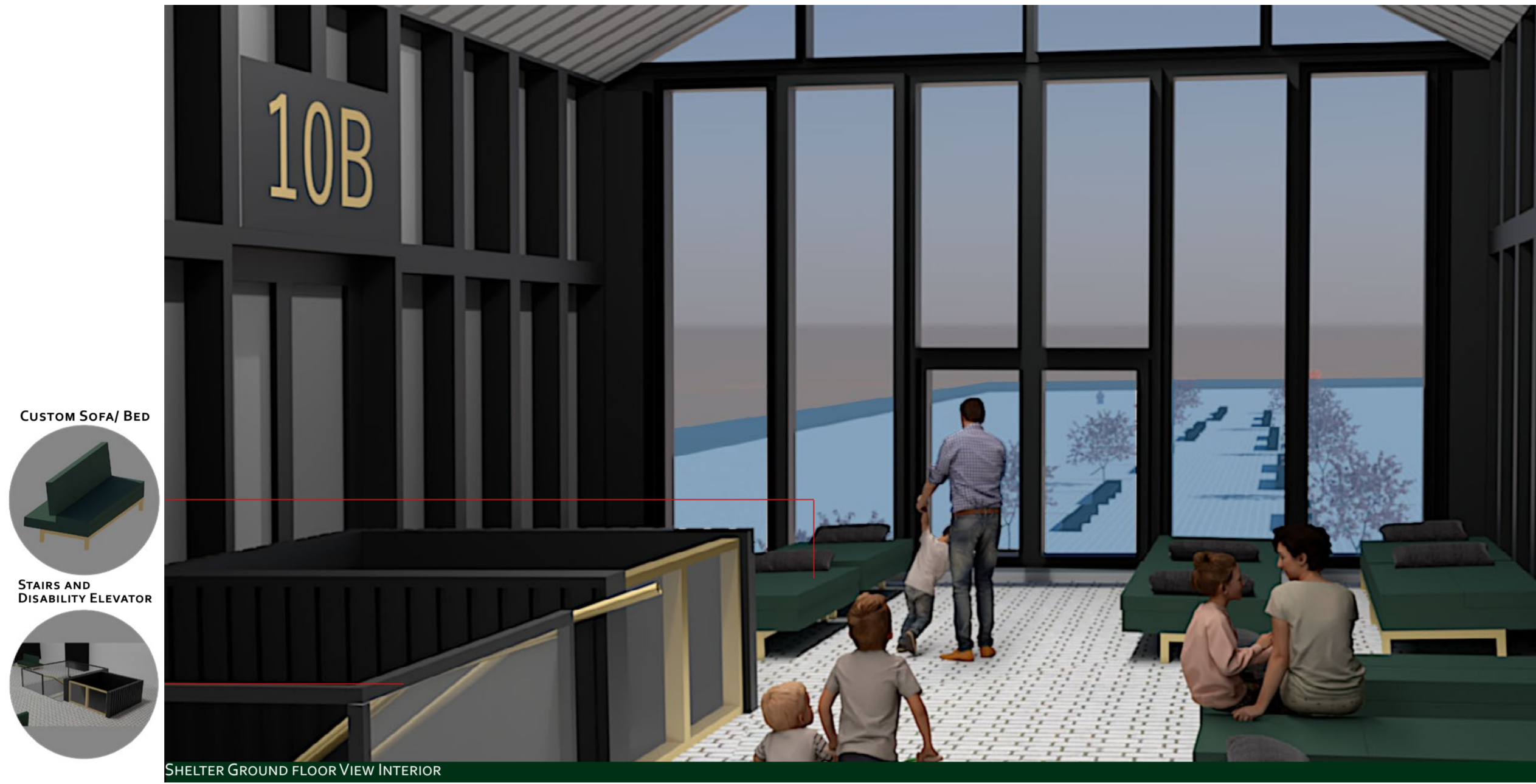
SHELTER GROUND FLOOR MATERIALITY

- 1 WHITE CORRUGATED ALUMINUM
- 2 MATTE WHITE PAINT
- 3 GLASS
- 4 CONCRETE PAVEMENT TILES
- 5 MATTE BLACK PAINT
- 6 FLOOD WATER
- 7 GOLD ANODISED ALUMINUM
- 8 BLACK ANODISED ALUMINUM
- 9 EMERALD GREEN VELVET
- 10 BLOSSOM (SPRINT TIME)

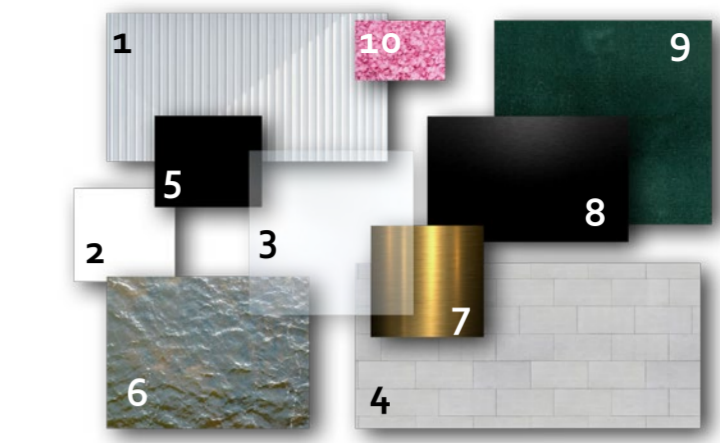
SHELTER GROUND FLOOR PLAN



SHELTER GROUND FLOOR INTERIOR



SHELTER GROUND FLOOR VIEW INTERIOR



EVACUEE SHELTER GROUND FLOOR MATERIALITY

- 1 WHITE CORRUGATED ALUMINUM
- 2 MATTE WHITE PAINT
- 3 GLASS
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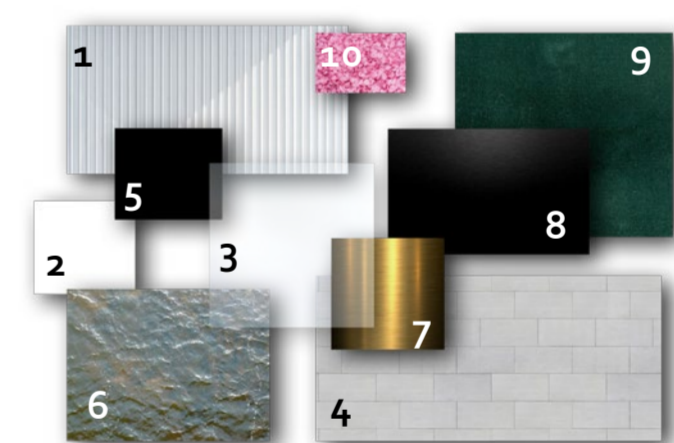


SHELTER GROUND FLOOR MAIN BUILDING PLAN

SHELTER GROUND FLOOR INTERIOR



SHELTER GROUND FLOOR INTERIOR



SHELTER GROUND FLOOR MATERIALITY

- 1 WHITE CORRUGATED ALUMINUM
- 2 MATTE WHITE PAINT
- 3 GLASS
- 4 CONCRETE PAVEMENT TILES
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- 10 BLOSSOM (SPRING TIME)



SHELTER GROUND FLOOR MAIN BUILDING PLAN