

## Research Methods

Initially the work will be desktop based, completed from floor plans submitted by the estate and facility department of Lancaster City council, with results generated through processing by computer software including Rhino, Grasshopper and Python.

The implementation phase will then propose the creation of a 'live' wayfinding test case located in an existing Lancaster City Council publicly accessed building. This will provide data gathering for analysis and review of the success of social distancing measures. A user survey will provide qualitative data on experience and perceived operational success.

## Descriptive Methodology

- 1) Receive building plans from Lancaster City Council.
- 2) (A) Designer builds an Analysis Surface on basis of floor plans.
- 3) Analysis surface inputted into master algorithm.

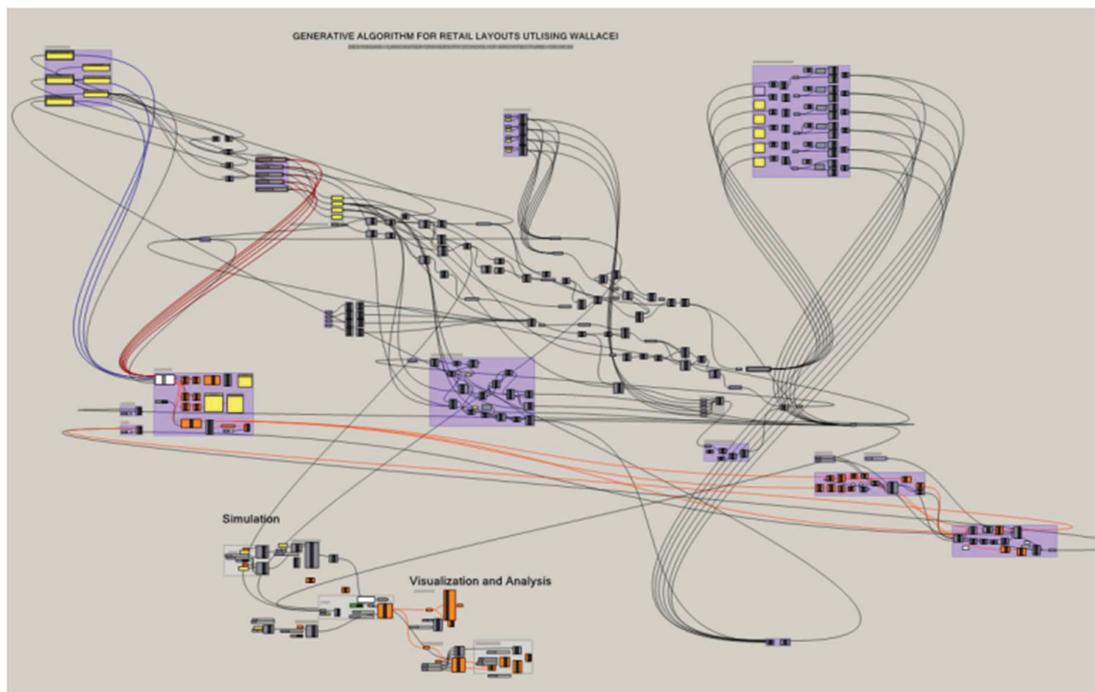


Fig 1. Example of previously authored Grasshopper definition for automated retail space (DF)

- 4) Algorithm charts the median route between obstructions, including aisles, places of work, places to queue, places to sit.

- 5) A 2m exclusion zone between two passing users is tracked onto the plans and an area (shown in Fig.2 in red below) is highlighted at risk of non-compliance for social distancing.

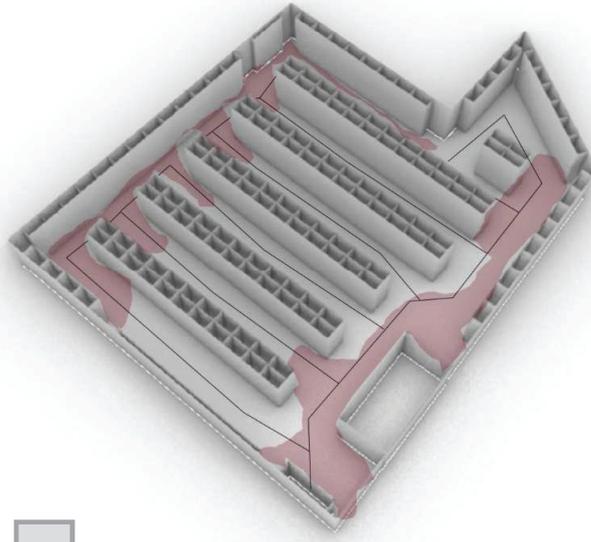


Fig 2. Example plan indicating median line and social distancing non-compliance (red)

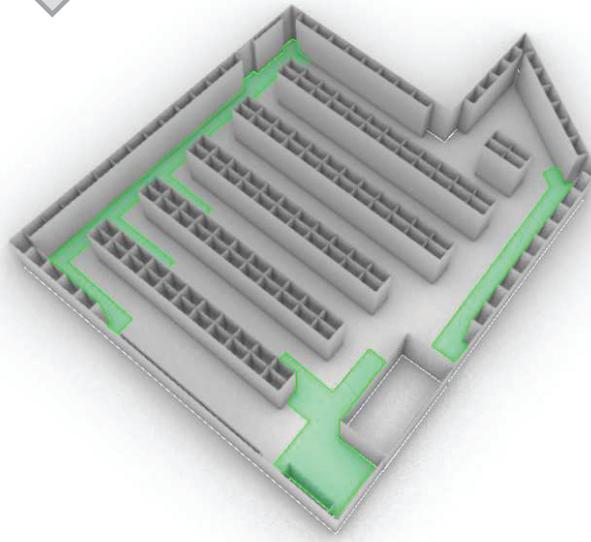


Fig 3. Perimeter indicates zone for wayfinding signage automation (green)

- 6) The algorithm generates an optimised layout for wayfinding and floor signage/graphics based on minimum distances between furniture and walls (the extent of which is identified as the outlined green colour on Fig.2). This is checked and evaluated by the (A) Designer.

7. Design of branded floor signage and post / wall signage by (A) Designer is produced as a cohesive package of information for communication to users and reviewed against inclusivity criteria.

8. A test case is identified from the estate of Lancaster City Council, and signage and wayfinding physically incorporated in the space prior to opening.

9. On opening, evaluation through observation of users and staff, including person to person questionnaires and timing of pedestrian movement by (A) Designer.

### **Analysis**

Based on analysis of outcomes for the live test case, the algorithm and methodology are revised to provide improved accuracy. The automated analysis of floor plan risk and proposed wayfinding can be completed for the estate of buildings as a package of work. Analysis and observations can be made on the scalability and applicability of the methodology to the diversity of case uses within the estate.

### **Research Limitations**

- i. Ethical approval required re: pandemic and interaction with public – a possible means to remove risk is to bring project to conceptual stage only, not implementation.
- ii. Speculative new research with minimal precedent on existing models for distancing.

### **Proposed Timescale**

Steps 1-2 = 2 weeks

Steps 3-6 = 3 weeks

Steps 7-9 = 4 weeks

Analysis, conclusion, further work & paper = 3 weeks

Total length = **12 weeks** to completion

### **Further Funding by scaling:**

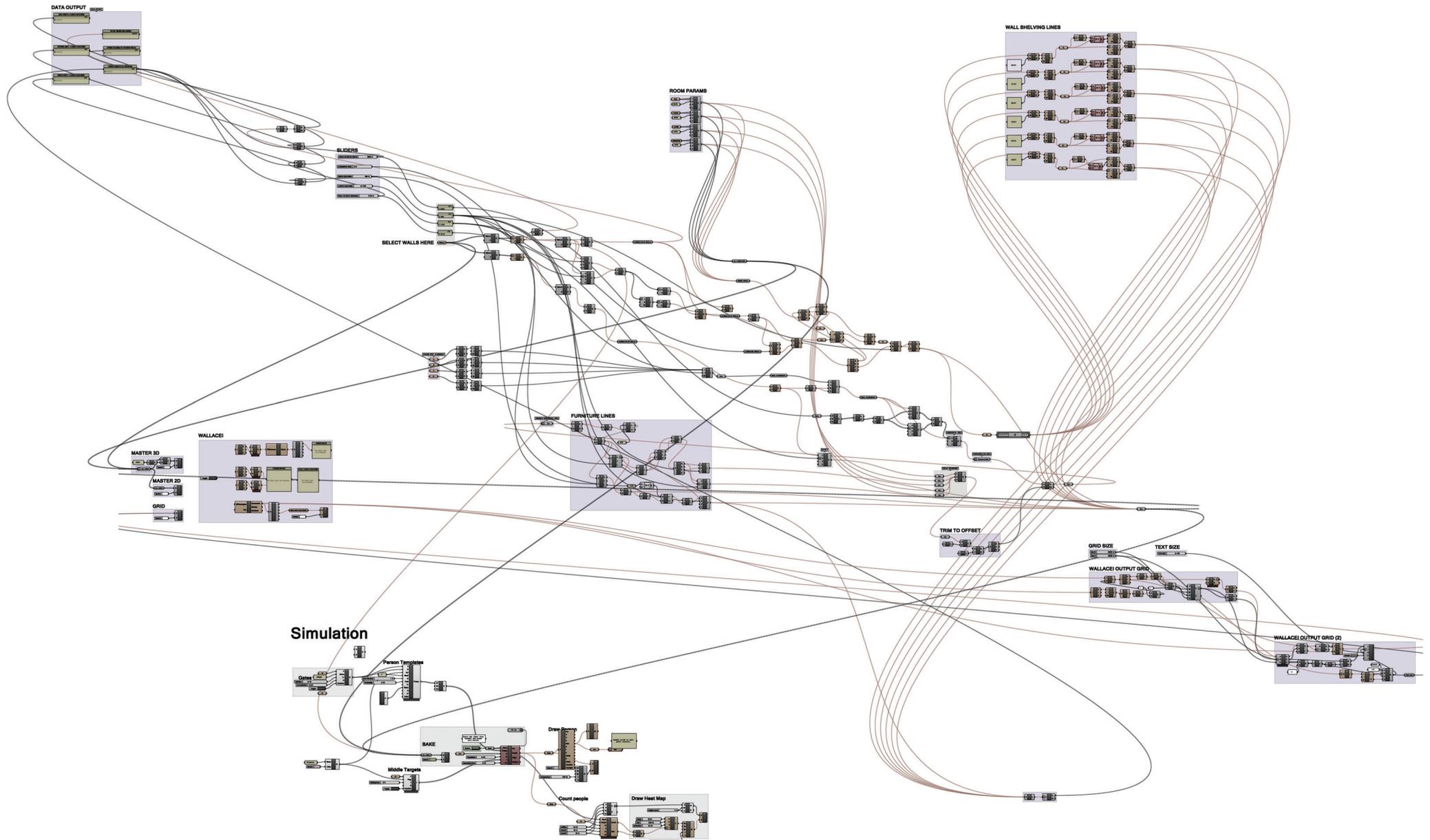
- *UKRI open call for research and innovation ideas to address COVID-19*
- *ISCF Healthy Ageing Social, Behavioural & Design Research Programme*
- *Strategic Priorities Fund*

### **References**

- 1) Asperges, E. et al. (2020) '*Rapid response to COVID-19 outbreak in Northern Italy: how to convert a classic infectious disease ward into a COVID-19 response centre*', Journal of Hospital Infection. doi: 10.1016/j.jhin.2020.03.020.

- 2) Wortmann, T. (2019), *Genetic evolution vs. function approximation: Benchmarking algorithms for architectural design optimization*, Journal of Computational Design and Engineering. Society for Computational Design and Engineering, 6(3), pp. 414–428.
- 3) Greenstone, M. and Nigam, V., 2020. *Does Social Distancing Matter?*. University of Chicago, Becker Friedman Institute for Economics Working Paper, (2020-26).
- 4) Prem, K. et al. (2020) '*The effect of control strategies to reduce social mixing on outcomes of the COVID-19 epidemic in Wuhan, China: a modelling study*', The Lancet Public Health, 2667(20), pp. 1–10. doi: 10.1016/s2468-2667(20)30073-6.
- 5) Cammett, M. and Lieberman, E. (2020) '*Building Solidarity : Challenges , Options , and Implications for COVID-19 Responses*', pp. 1–34. preprint ethics.harvard.edu
- 6) Favero, C., Ichino, A. and Rustichini, A. (2020) '*Restarting the economy while saving lives under Covid-19*'. preprint
- 7) Chen, C. and Zhao, B. (2020) '*Makeshift hospitals for COVID-19 patients: where health-care workers and patients need sufficient ventilation for more protection*', Journal of Hospital Infection. The Healthcare Infection Society, doi: 10.1016/j.jhin.2020.03.008.
- 8) Daneshpour, Z. A. and Planning, R. (2020) '*Out of the coronavirus crisis , a new kind of urban planning must be born*', pp. 1–10. Preprint
- 9) Honey-rosés, J. et al. (2020) '*The Impact of COVID-19 on Public Space : A Review of the Emerging Questions*', pp. 1–20. preprint
- 10) Salama, A. M. and Brown, J. (2020) '*Coronavirus questions that will not go away : interrogating urban and socio-spatial implications of COVID-19 measures* preprint

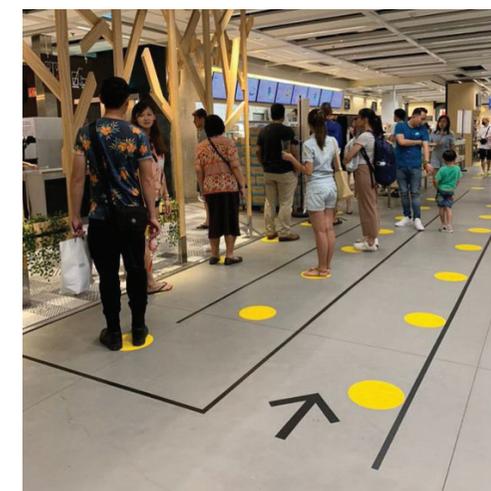
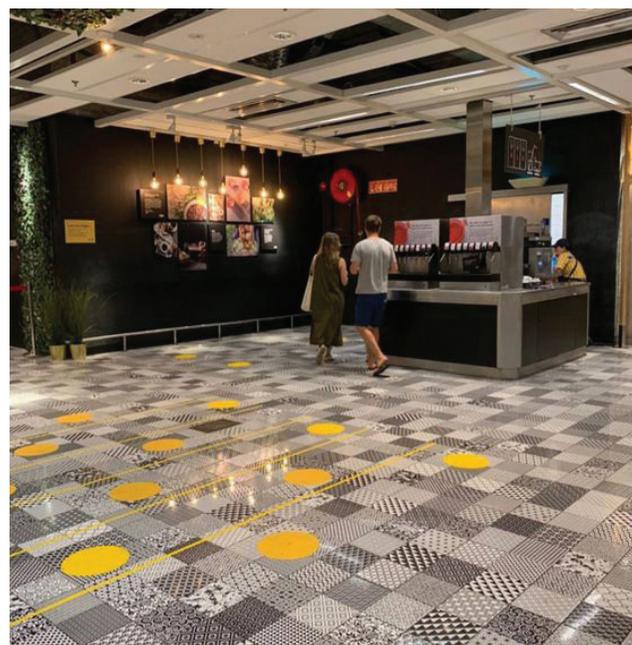
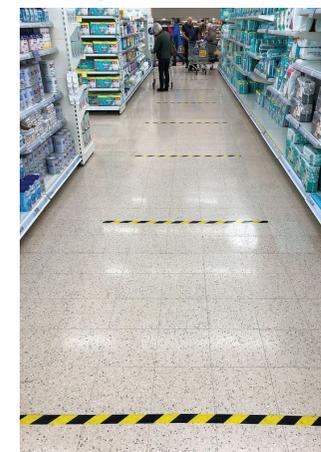
GENERATIVE ALGORITHM FOR RETAIL LAYOUTS UTILISING WALLACEI  
DES FAGAN - LANCASTER UNIVERSITY SCHOOL OF ARCHITECTURE - 09.04.20



LANCASTER CITY/  
THE STOREY  
**SOCIAL DISTANCING**  
**WAYFINDING.**

Around the world, floor stickers, tape, chalk, road cones, street art, posters and signs have popped up to encourage social distancing. It's a reminder of the importance of wayfinding keeping us safe.

To help people understand how close is too close, business owners are creating makeshift signs and markers to encourage social distancing.



With Long-term in mind, and with social distancing here to stay, for at least the foreseeable future - it is now time to rethink the temporary hazard graphic direction.

Changing the public's perception from immediate 'danger' to a more permanent 'wellbeing' lifestyle could be a positive evolution of social distancing wayfinding.

But first we need to start with the basics. An effective wayfinding system is based on human behaviour and consists of the following characteristics:

**Do not make them think**

Create a comprehensive, clear and consistent visual communication system with concise messaging.

**Show only what is needed**

Show information what relevant is to the space, location and/or navigation path.

**Remove excessive information**

Remove unnecessary elements to create a clear visual environment ahead.

Other elements such as typefaces, iconography, colour and language are also other important aspects to consider before creating a wayfinding system.

## Typefaces

Wayfinding typefaces are usually a sans-serif type and available in various weights with a simple easy-to-read straightforward design.

- A clear and straightforward type design, sans-serif
- Easy recognizable letterforms
- Positive letter spacing to enhance the visual appearance
- The Font Family includes a package of many different weights
- The typeface has a large X-height for good readability

## Iconography

When symbols are designed with focus and care, they can speak to a universal audience, and give visitors the additional guidance they need in a hurry.

- Simple
- Accessible
- Understood immediately
- Used to support words

## Language

Wayfinding should communicate in a way that is friendly. Existing off-the-shelf signs can sometimes induce stress - so shifting the tone of voice to something more friendly and human can help to instill a sense of community and common purpose.

- Clear
- Informative
- Instill a sense of community and/or common purpose
- Precise

## Colour

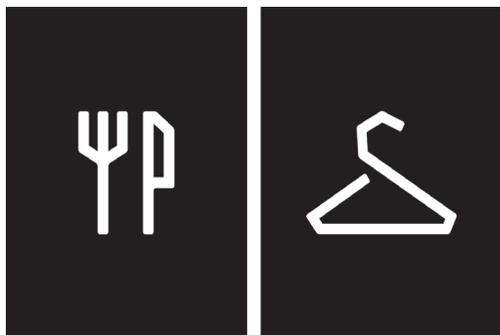
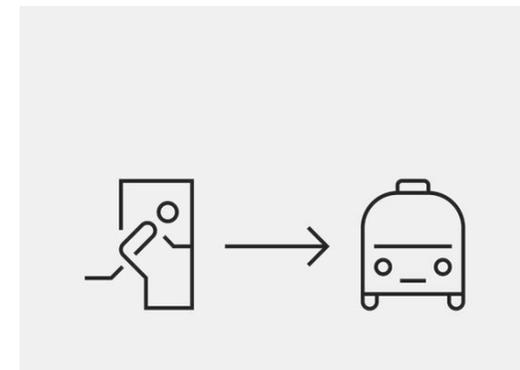
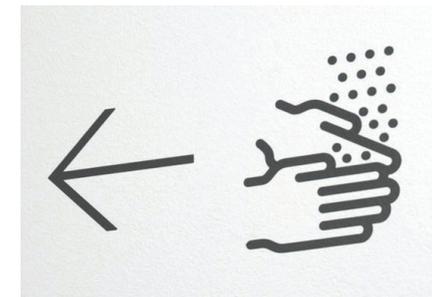
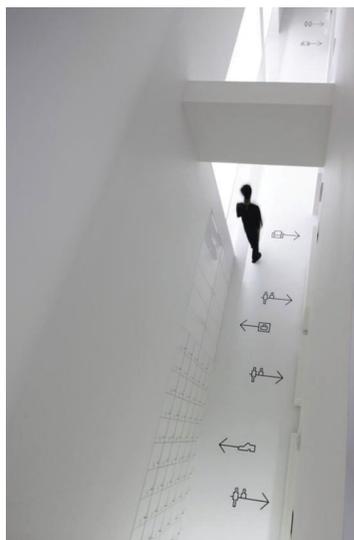
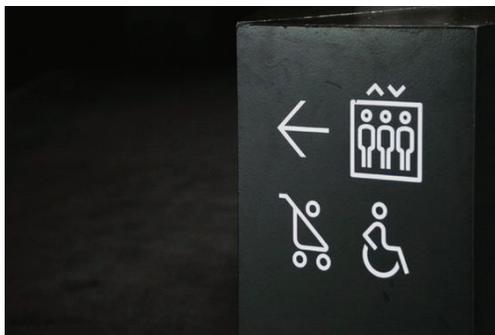
Colour should act as an aid. It is also important to choose and use colours which are distinctive and clear. Colour can also change people's perceptions - reds for example can make a space feel harsh, dangerous, and unwelcoming.

- Distinctive colours
- Used to support words
- Accessible
- Use colour theory

**RESEARCH.**

# ICONOGRAPHY

When used alongside words, iconography can give visitors additional wayfinding aid. Simple and clear iconography works best, while bespoke iconography can give wayfinding systems a more premium and tailored look.

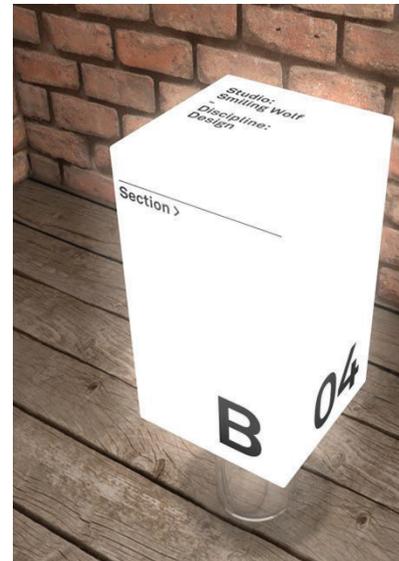
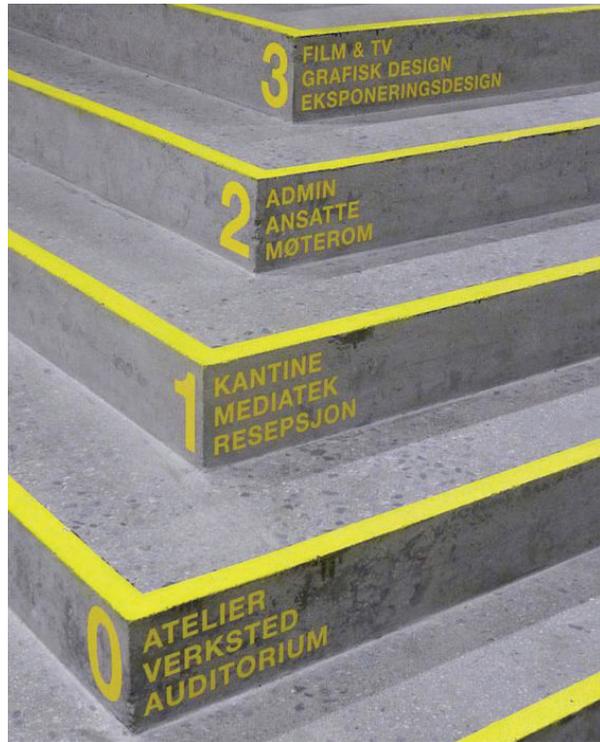


## FLOOR GRAPHICS

The longevity of floor graphics differ from temporary (low adhesive vinyl stickers, removable structures), to permanent (GFloor, asphalt), which makes them adaptable for the different stages wayfinding adaptability.



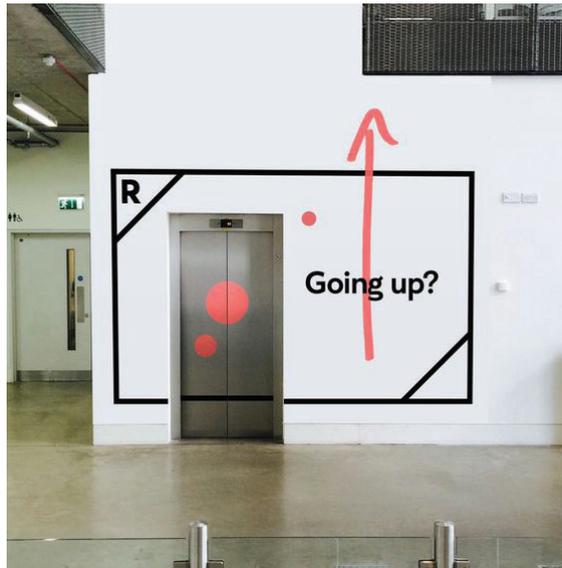
# FLOOR GRAPHICS



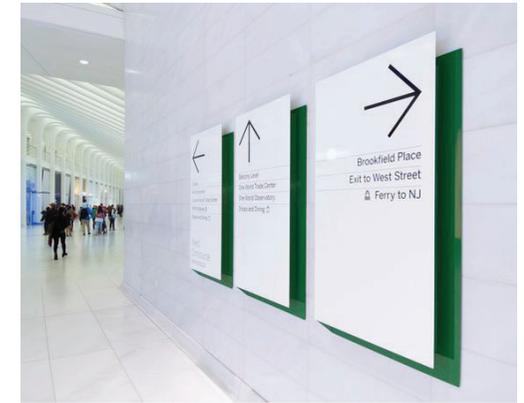
## WALL GRAPHICS

Wall wayfinder graphics are usually the most visual, as they can be placed directly within the public's eye line. They usually also offer more surface area, that can be used for big impact graphics, and important messaging.

They also offer an array of different techniques, from vinyl graphics, to bespoke structures that stand off the wall.

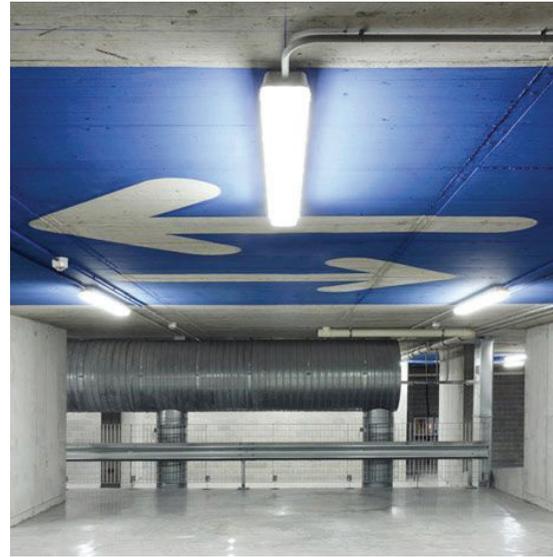


# WALL GRAPHICS



## CEILING GRAPHICS

Ceiling graphics used solely can often be missed, but used alongside other supporting signage they can create interesting support - especially for temporary solutions, such as hanging banners, that are less evasive to building structures.



# CEILING GRAPHICS



## DIGITAL WAYFINDERS

Wayfinder that have a digital element have the flexibility to change to different scenarios, layouts and times.



LANCASTER CITY/  
THE STOREY  
**SOCIAL DISTANCING**  
**WAYFINDING.**

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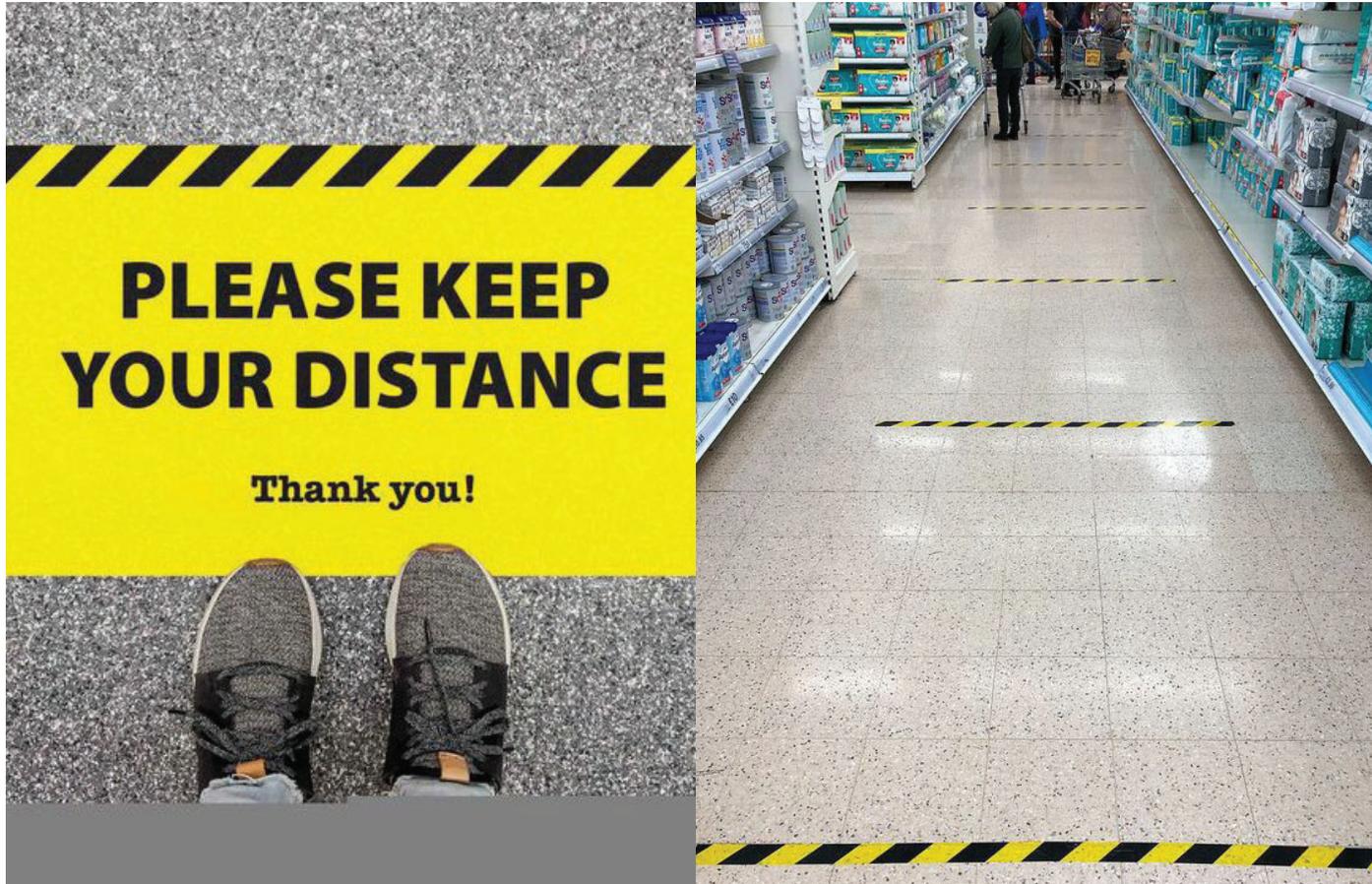
- Distinctive colours
- Used to support words
- Accessible
- Use colour theory

## UNIVERSAL SIGNAGE (STANDARD 'OFF THE SHELF' WARNING TAPE/SIGNS)

Using the typical yellow colour palette, along with universal hazard graphics, to create a quick and temporary solution to social distancing within the building.

## KEY POINTS

- + The use of universal language makes signage more instantly recognisable
- + The 'off the shelf' look could give a low-budget tone to the overall aesthetic
- + Use of warning tape and hazard lines could give the public a permanent feeling of uneasiness
- + Restricted to what is available
- + Restricted to predetermined design elements and language tone





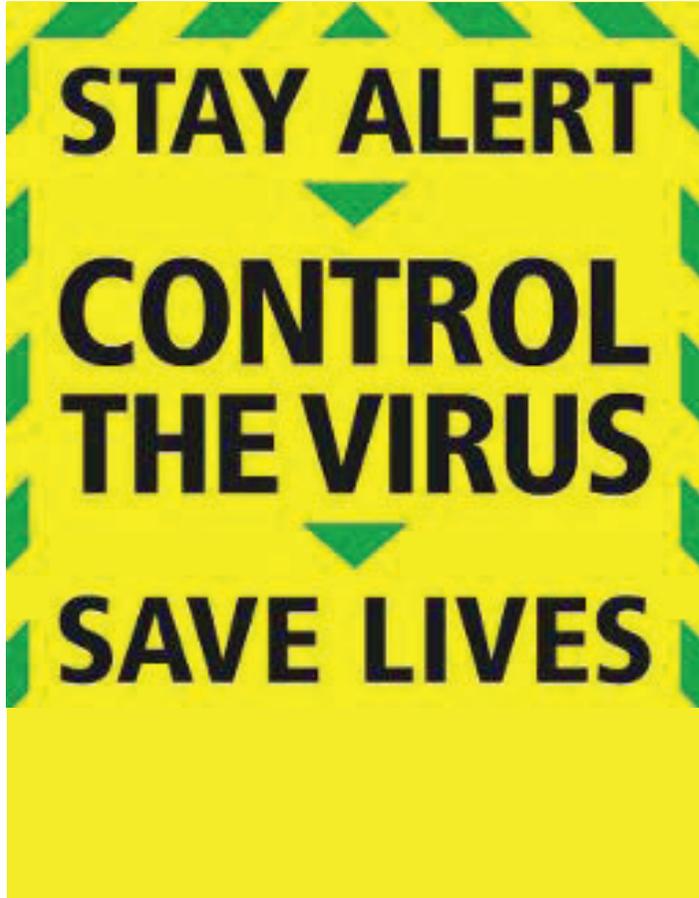
**GOVERNMENT SPECIFIC  
(UK NATIONAL GOVERNMENT  
BRANDED)**

Using elements such as the colour palette arrows and hazard graphics to create a direct and serious solution to social distancing graphics.

**KEY POINTS**

- + If rolled out throughout different locations in Lancaster, signage will have a consistent feel throughout the City
- + Restricted to the governments current signage branding - colour, language and design style

- + Signage would have to take on a more serious direction - with minimal design character. For example: signage couldn't adopt a friendlier approach to language tone.





## LOCAL COUNCIL (LCC BRANDED)

As with the Manchester City Council reference below, the LCC direction should also lead with the blue, from the brand's colour palette.

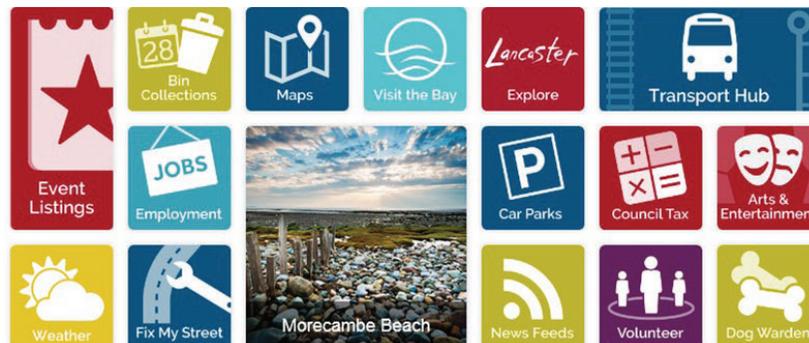
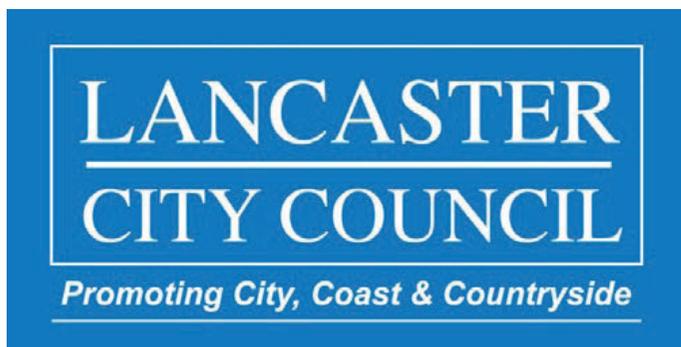
LCC also use iconography for some existing collateral, this element could also be introduced to the signage to add interest and personality.

## KEY POINTS

- + If rolled out throughout different locations in Lancaster, signage will have a consistent feel throughout the City
- + Restricted in brand colour, language and design style



LANCASTER CITY COUNCIL'S  
BRAND ELEMENTS





**STORE SPECIFIC  
(E.G. PRINTROOM CAFÉ  
BRAND)**

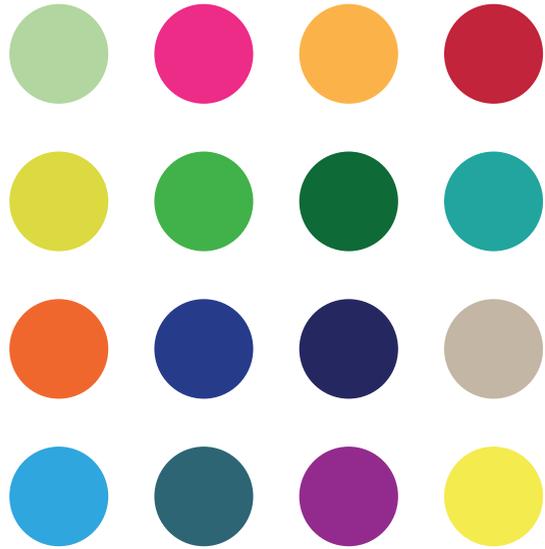
As with the Tesco reference below, the Storey can also utilise the brands colour palette and graphic elements to create a bespoke style, that is also in-keeping with the other design collateral around the building.

**KEY POINTS**

- + Signage may be more fitting for the environment, as the signage design will adopt to the existing brand style
- + Limited to just the Storey, as the design is led by the Storey brand
- + Restricted in brand colour, language and design style
- + Potential to use design elements within the Storey's brand to create bespoke feel



THE STOREY'S  
BRAND ELEMENTS





## UNIQUE DESIGNER

The unique designer direction offers a fresher approach to social distancing signage, by using elements such as colour and language to change the public's perception to a more permanent state of 'wellbeing'.

As mentioned above, this can be achieved through colour theory. Choosing a colour such as green, can naturally evoke feelings of wellbeing and positivity. Rather than red, which is associated with danger.

Language is also an important element that helps change the overall tone of a design. Using a friendly and more humorous tone, creating a sense of ease.

Finally using a simple sans serif typeface, accompanied with some iconography gives clarity to the overall design.

The flexibility of this direction also enables the design to develop - working with feedback to develop the style, and working with a copywriter to refine the copy-tone.

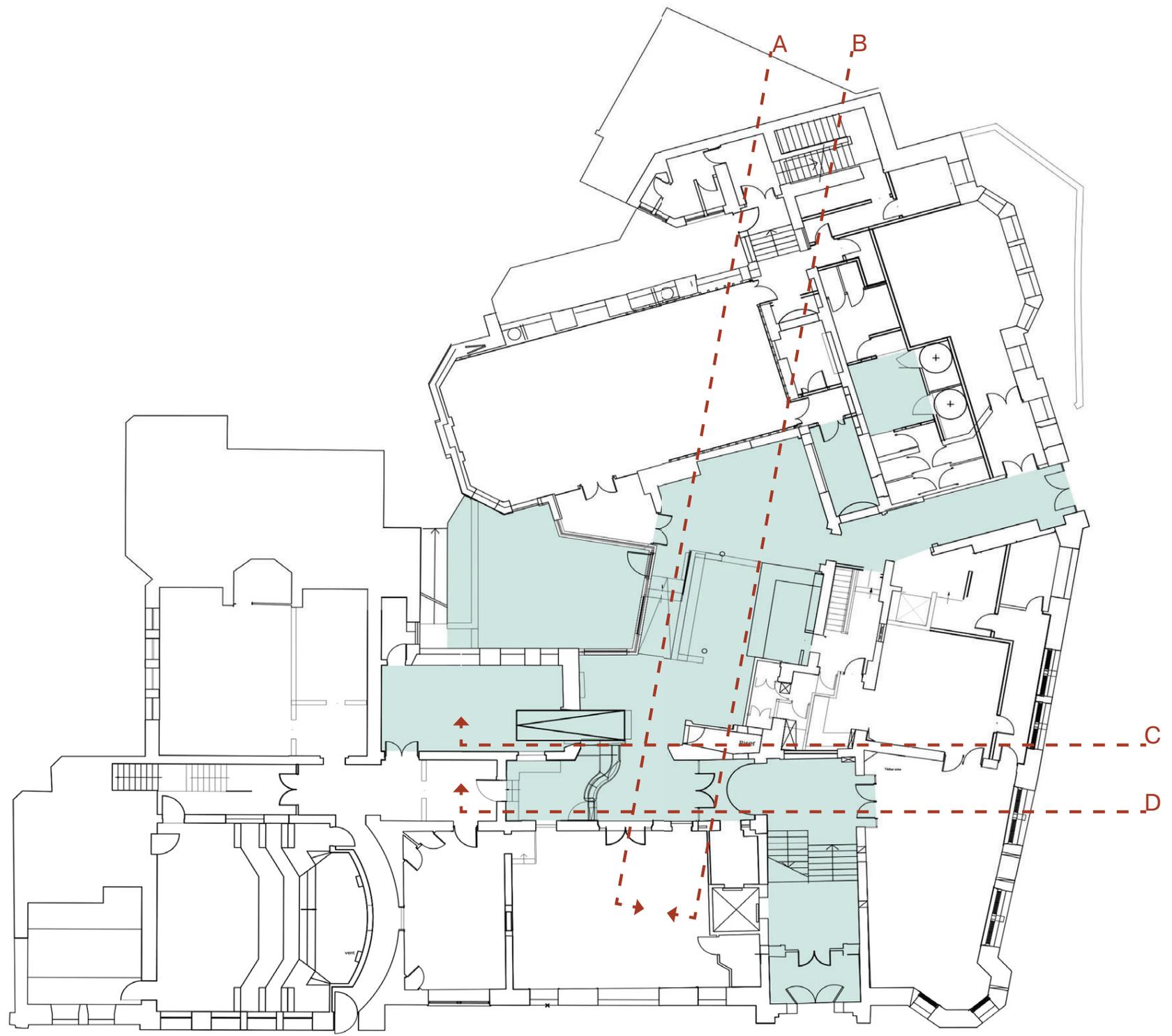
## KEY POINTS

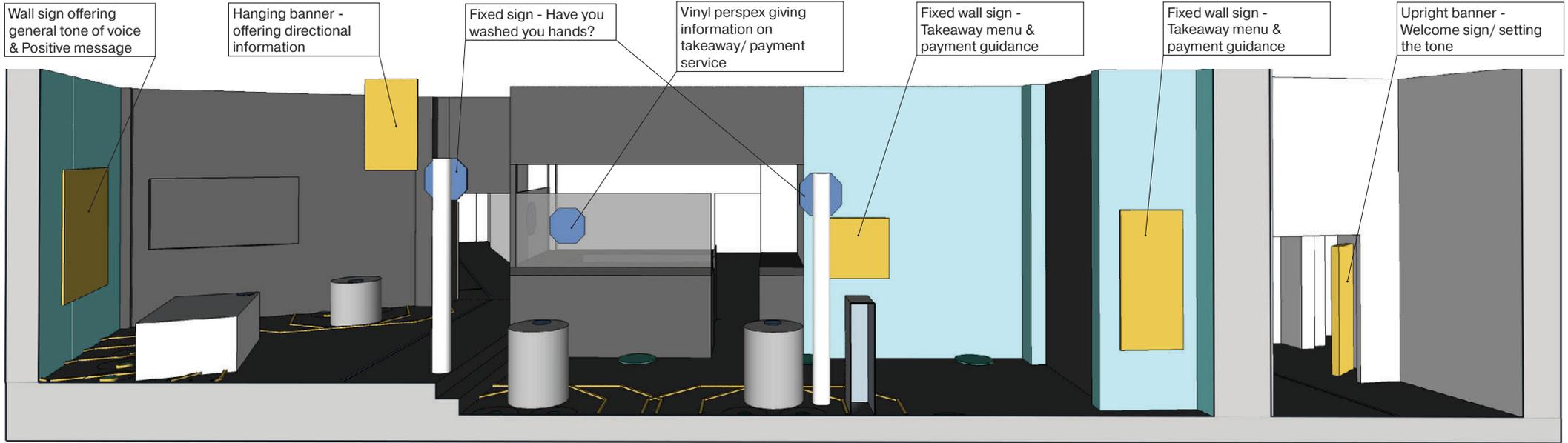
- + Wide scope to explore colour, language and tone, as this direction doesn't belong under any existing brand
- + Has the capacity to be rolled out in other environments, other than the Storey building
- + Potential to create a commercial and sellable brand



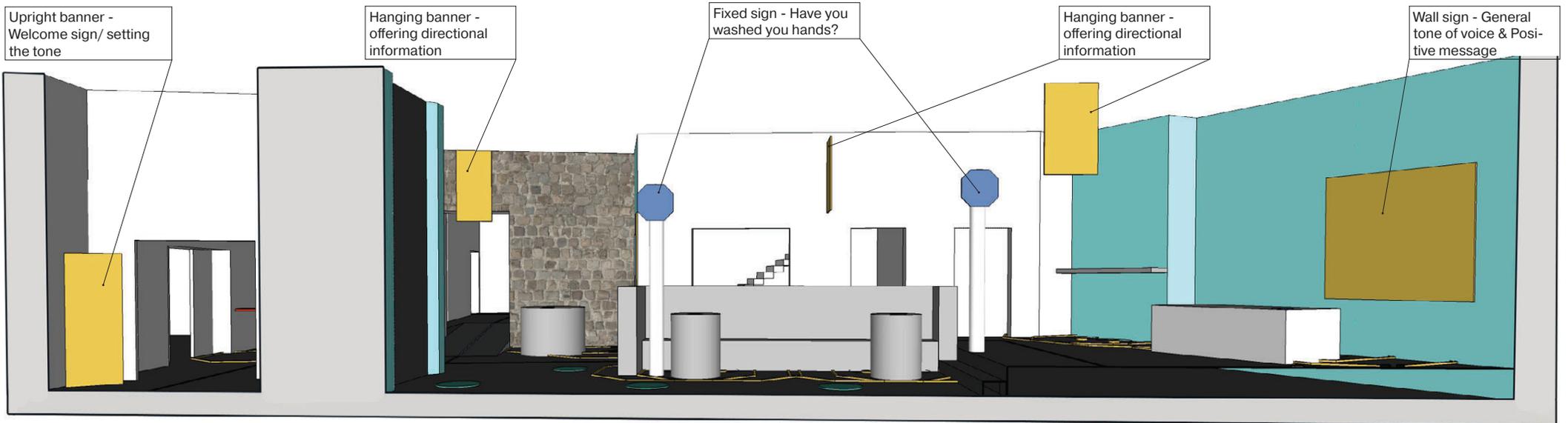


**The Storey**  
Sections

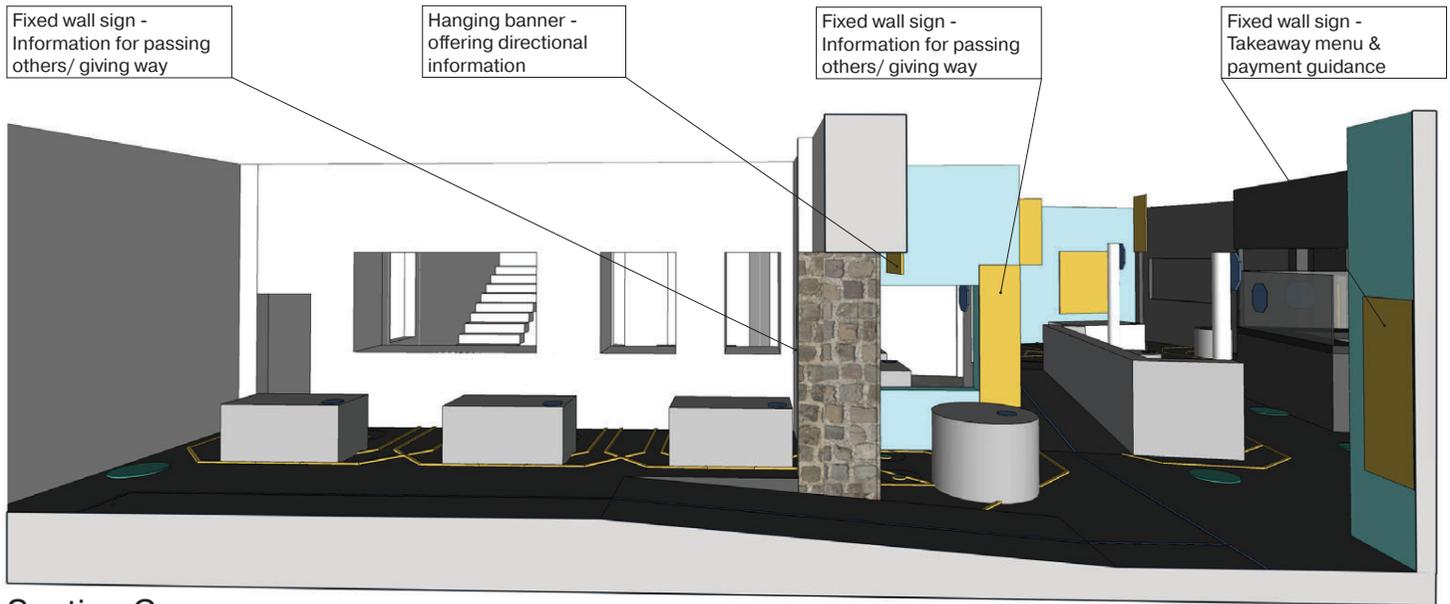




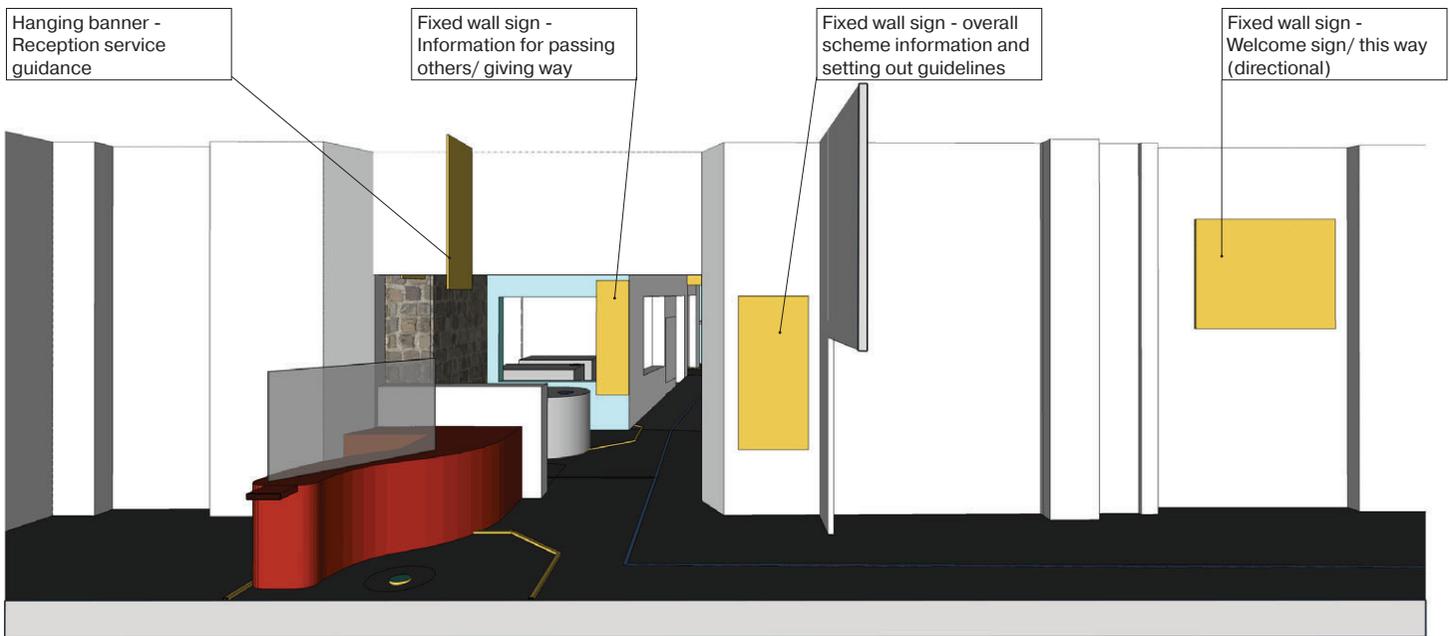
Section\_A



Section\_B

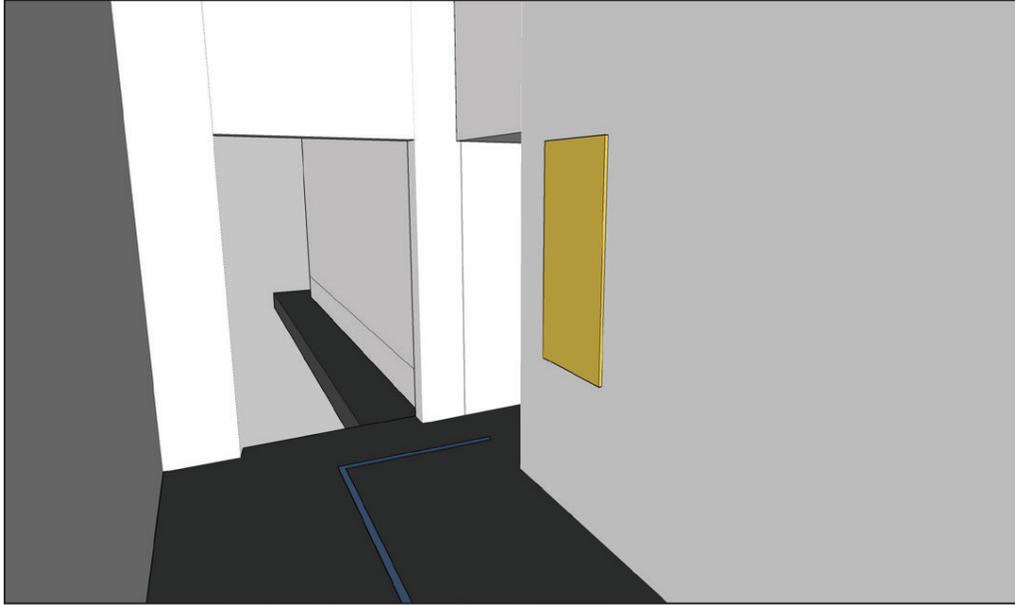


Section C

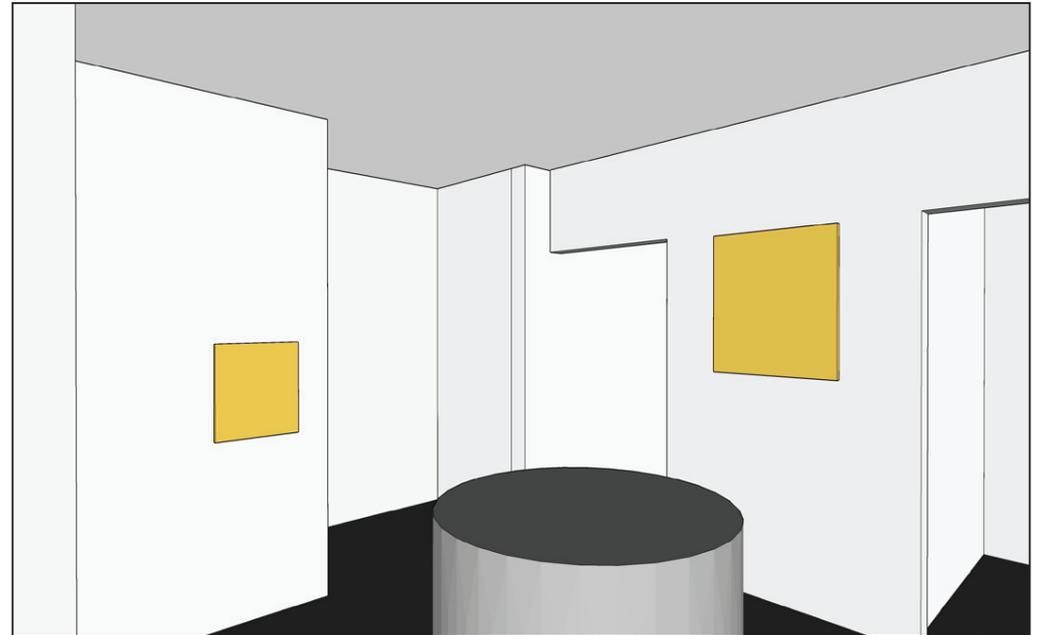
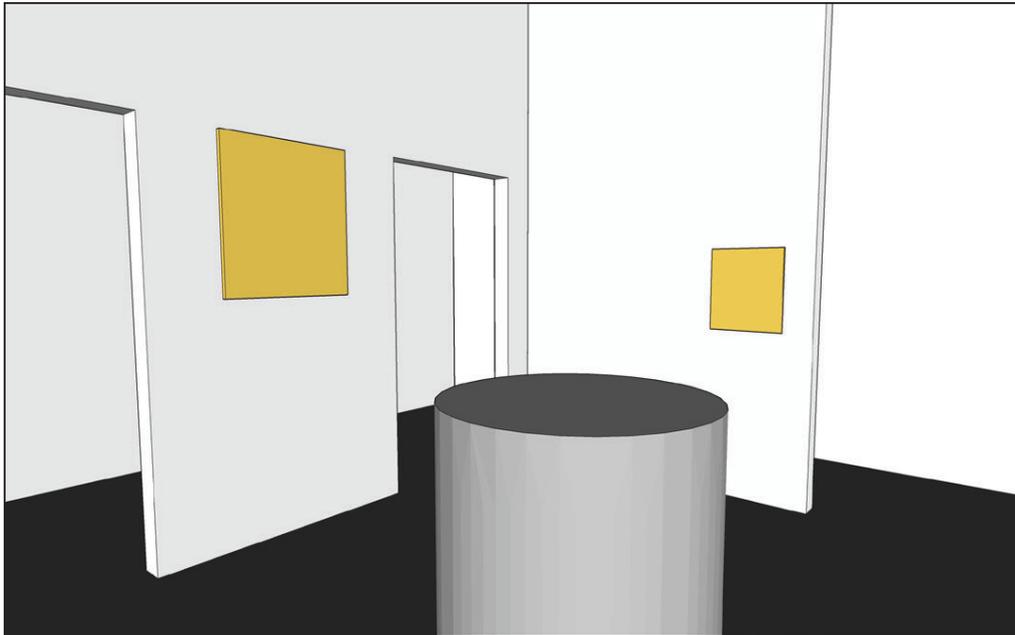


Section D

## Toilet Signage & Wayfinding



- Floor graphics will lead people into the toilet area
- There will be a fixed wall sign on the external toilet entrance, offering advice and information on using the toilet area
- Reminders on social distancing and washing hand signs will be applied to the walls
- The middle urinal will need a sign/ graphic applying, to indicate not in use

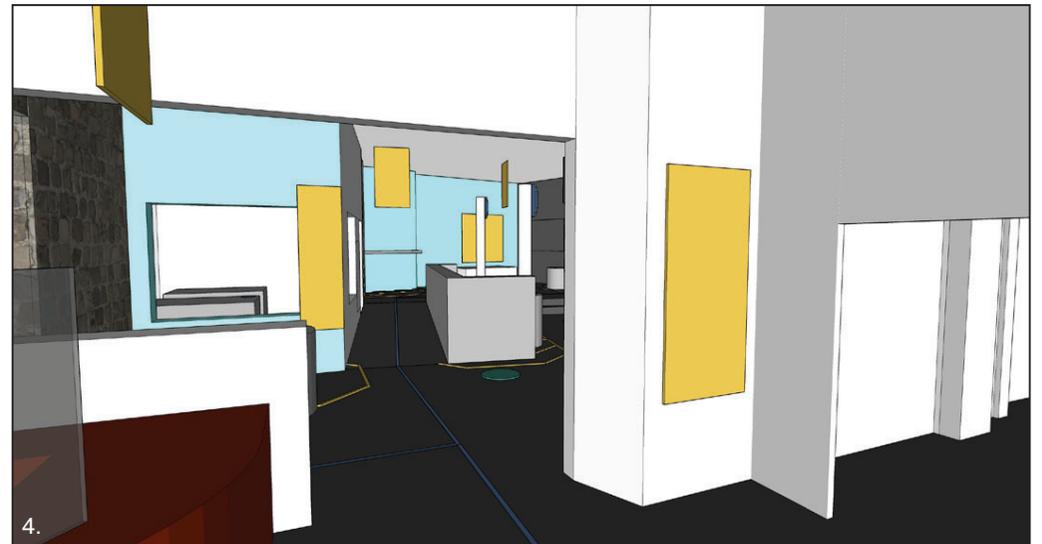
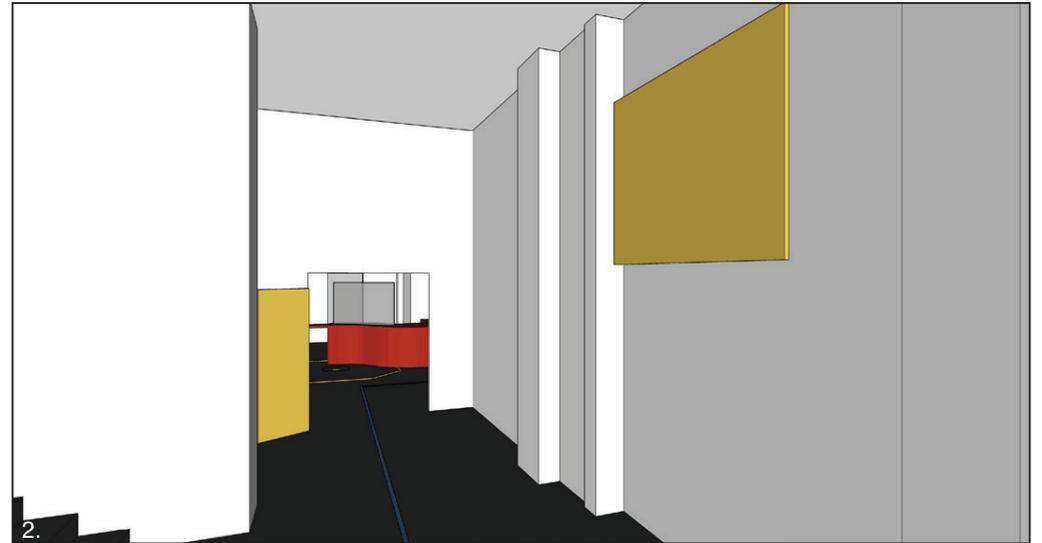
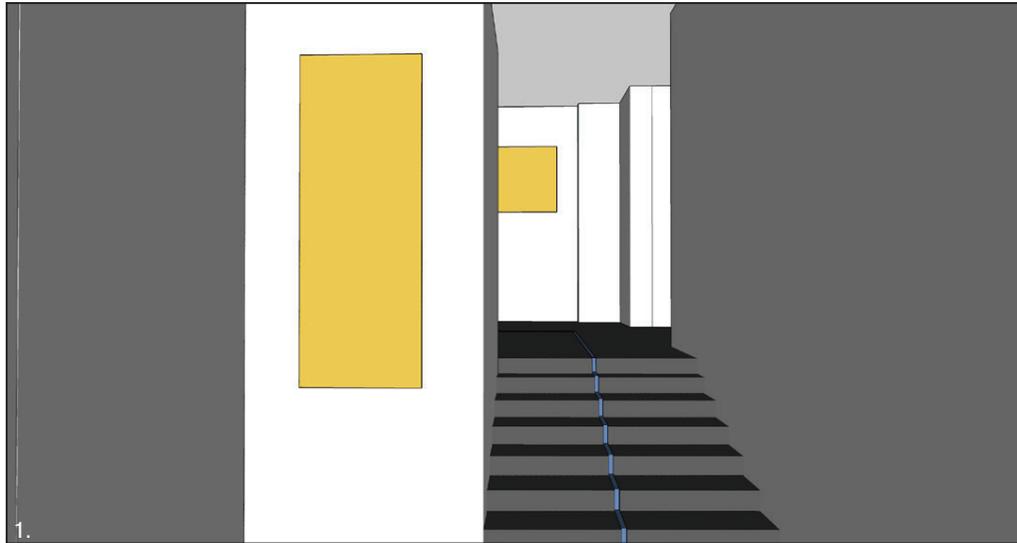


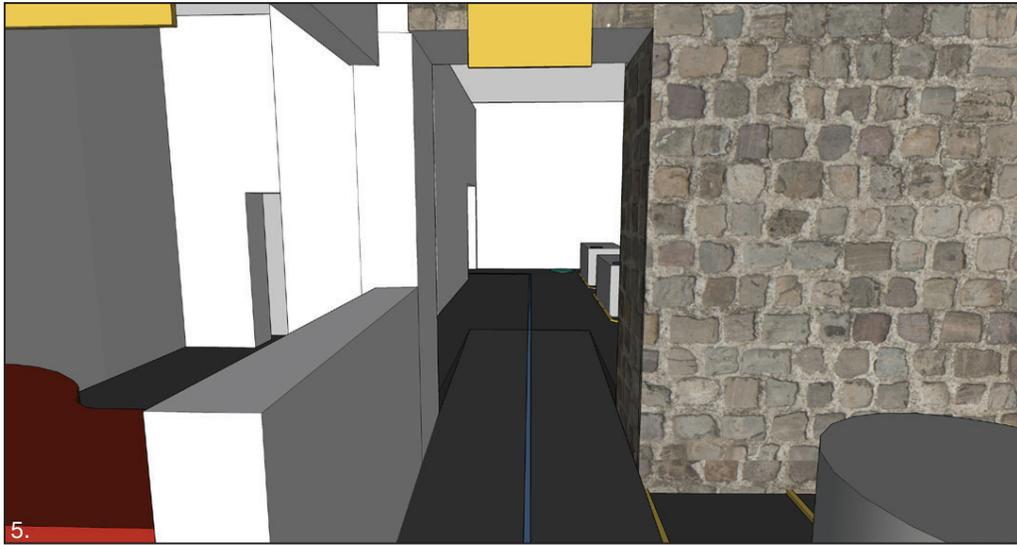
## External Signage

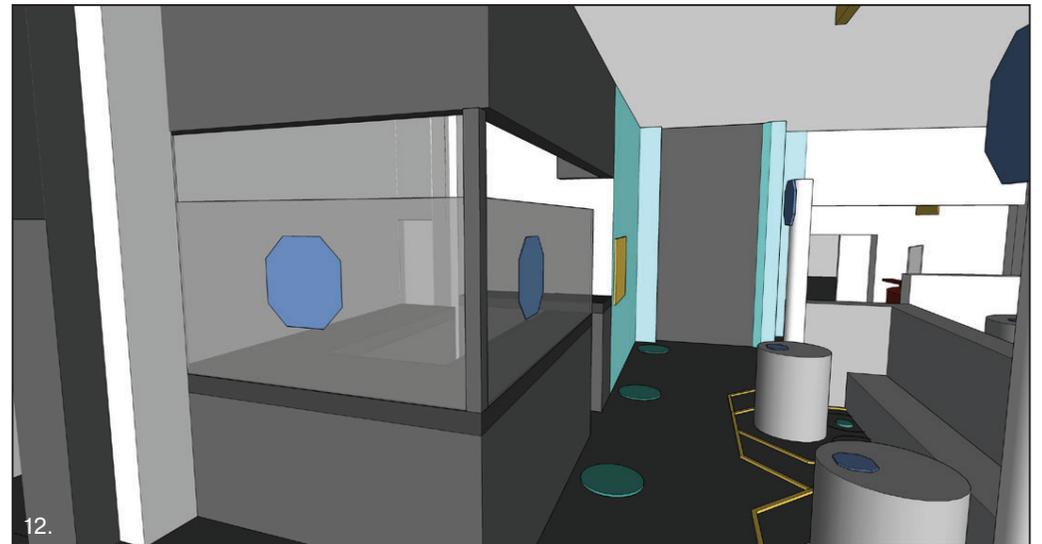
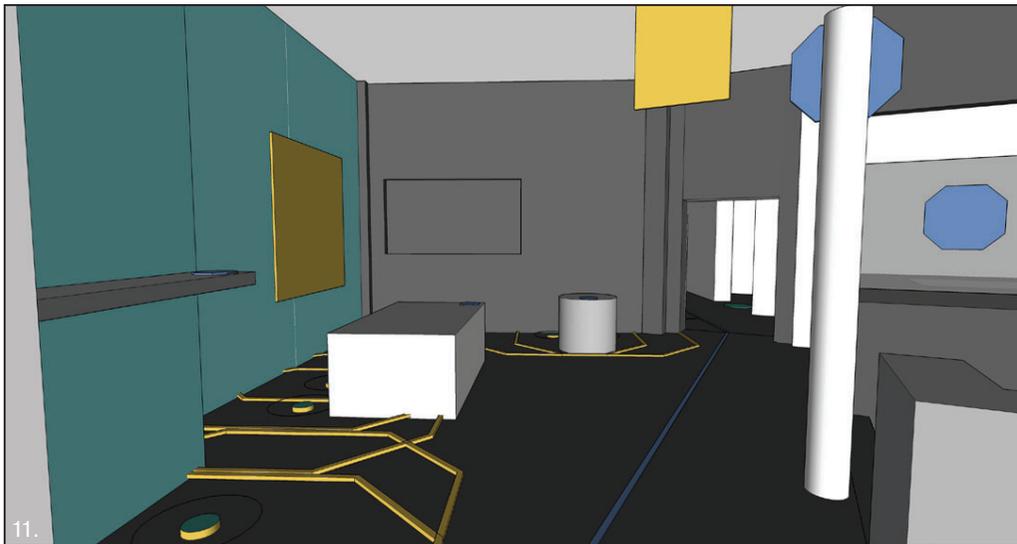
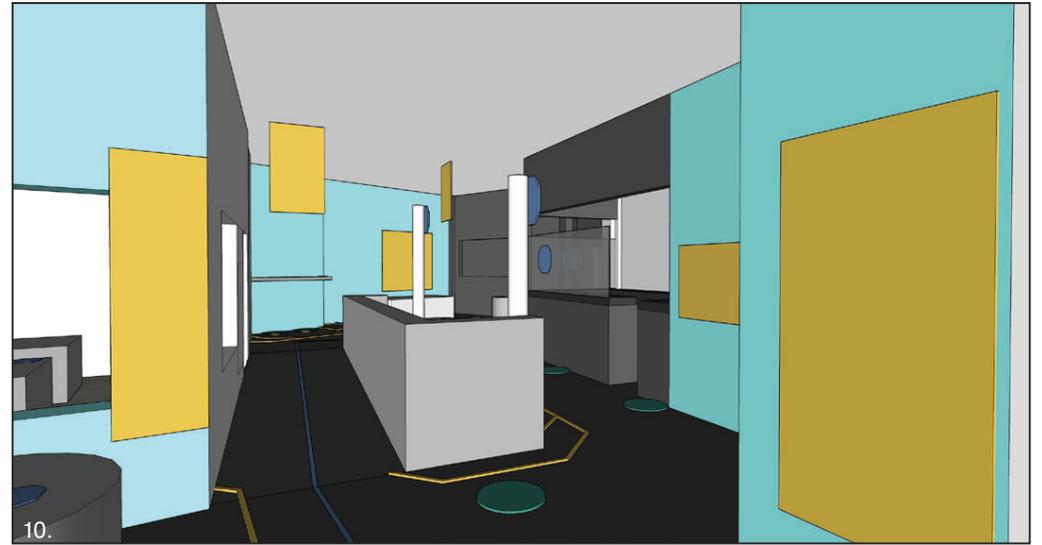
- In order to adhere to planning regulations and the Grade II listing of the property, we are proposing to apply graphics to existing A boards and signs
- The visuals below indicate where there is potential to apply a sign within the social distancing branding scheme to invite and advise on the business and its current operations

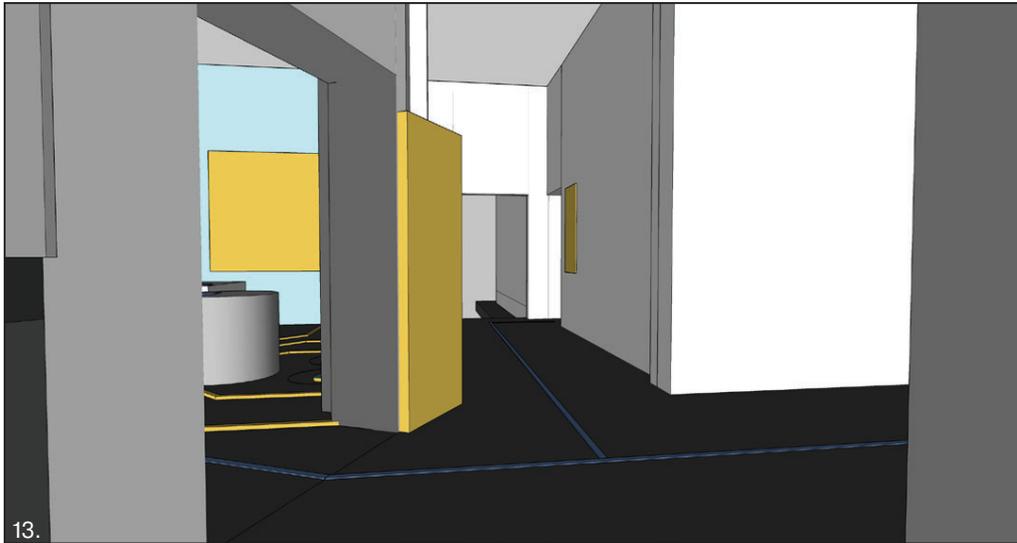


## Walk through Visuals











Keep on  
moooving  
folks

Visitor  
Information

Gardens  
←←←  
through our  
courtyard & up  
the steps are  
the beautiful  
storey gardens  
EXPLORE THEM  
MON-SAT 9-4

Order

Pay



Come clean  
have you  
washed your  
hands?



STAY SAFE







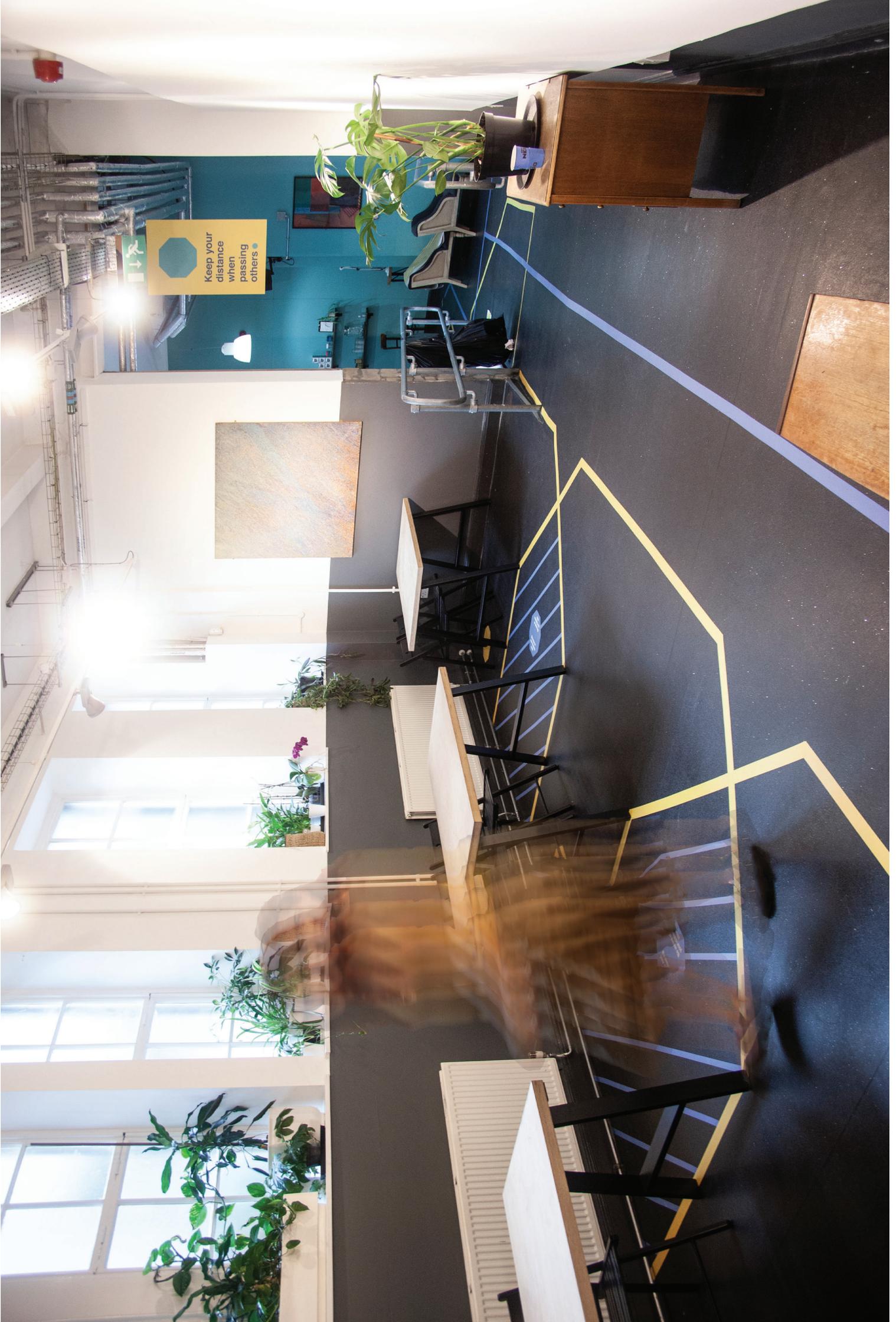
**THE STOREY RECEPTION**  
Happycraft coffee & looseleaf tea

**CAFE & BAR**

**VISITOR INFO**  
What's happening in & around Lancaster

  
**Lancashire Adult Learning**

Learn something new today...



**Give way  
No need to  
rush** 

**We know keeping  
apart isn't easy, but  
you're doing a great  
job. Thank you ●**







We know keeping  
apart isn't easy, but  
you're doing a great  
job. Thank you 🍷

PR  
RO



Meet  
customers first  
in virtual and  
then  
in person at  
your business  
table

Turn  
right for  
orders at  
the bar ▶

Straight  
ahead  
to exit ▲

Please keep  
your space  
when entering  
the cafe.

