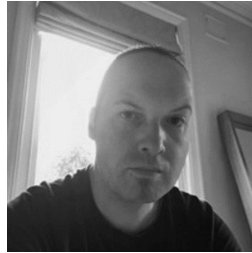


GENERATIVE SOCIAL DISTANCE DESIGN

THE SOCIAL DISTANCE LAB, LANCASTER, UK



DES FAGAN RIBA ARB BArch MArch SHFEA Architect
Head of Architecture at Lancaster
Advisor to the Architects Registration Board, UK

Des worked as lead architect for a number of international award-winning architectural practices prior to working in academia, most recently as the Project Architect for the Olympic Village Scheme for London 2012 at Glenn Howells Architects, and as Lead Architect at Zaha Hadid Architects for the Glasgow Transport Museum – winner of the 2013 European Museum of the Year.

THE SOCIAL DISTANCE LAB, LANCASTER

1

SOCIAL DISTANCING

Discussion on what constitutes social distancing, and what impact it has on infection rates.

2

SIGNAGE

A precedent study of global signage, considering different approaches to regulation.

3

LANCASTER SOCIAL DISTANCE LAB

Development and assembly of the Social Distance Lab to test generative distancing.

4

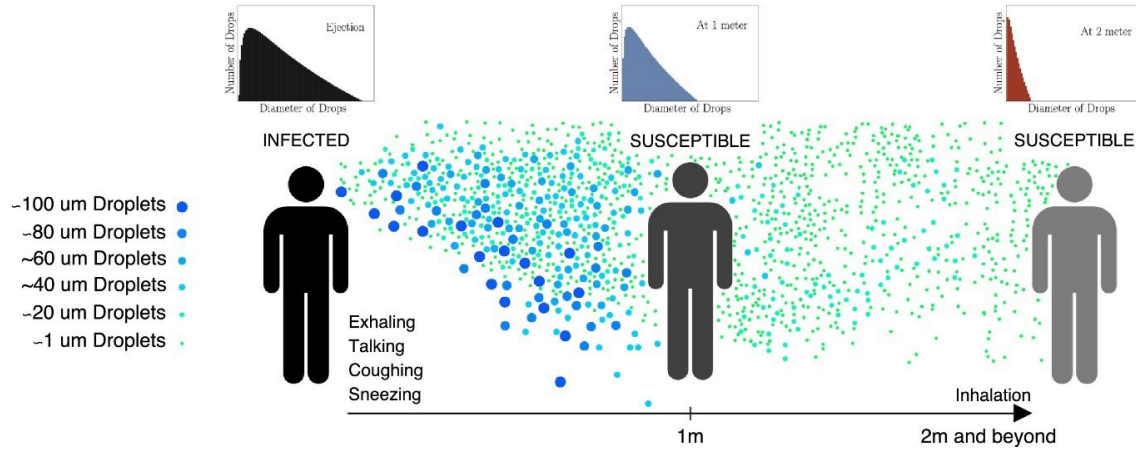
CONCLUSION

Evaluation of the work, reflection and speculation on future trends of social distancing.



SOCIAL DISTANCING

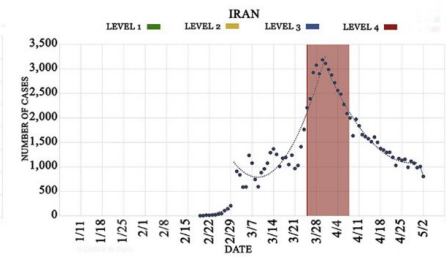
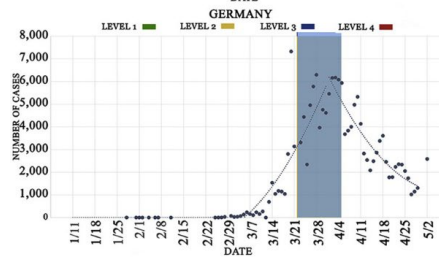
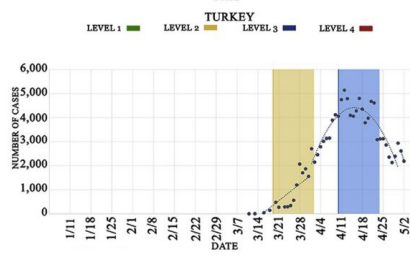
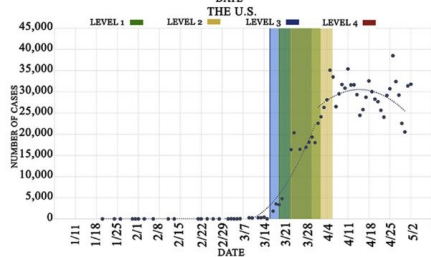
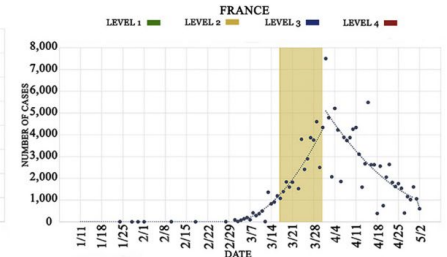
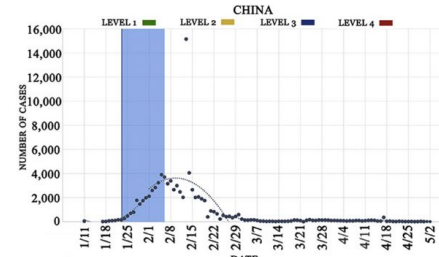
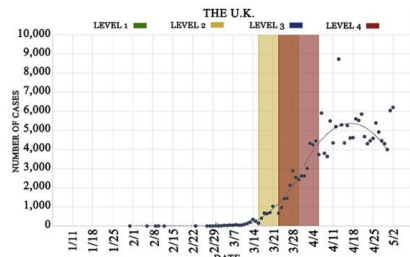
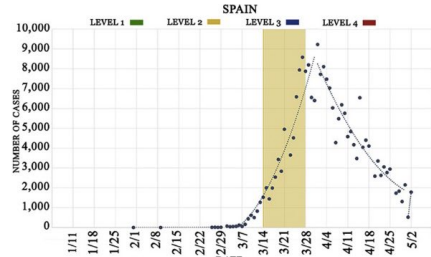
SCIENCE, HISTORY, CHANGE



Host-to-Host Airborne Transmission as a Multiphase Flow Problem For Science-Based Social Distance Guidelines

Airborne particles, or aerosols, in the context of human to human transmission. It is also increasingly clear that airborne transmission is an important contributor to rapid spreading of the disease. The above diagram illustrates droplet generation by exhalation, their potential transformation into airborne particles by evaporation, transport over long distances by exhalation and by ambient air turbulence, and final inhalation by the receiving host as interconnected multiphase flow processes.

SOCIAL DISTANCE IMPACT ON CASES



Effect of the social distancing measures on the spread of COVID-19 in 10 highly infected countries

COVID-19 pandemic has demonstrated how important it is to develop fundamental knowledge related to generation, transport and inhalation of pathogen-laden droplets and their subsequent possible fate as airborne particles, or aerosols, in the context of human to human transmission

The total number of infections in the US is projected to reach 287 million without social distancing and 188 million with social distancing. When combined with the differential mortality rates when the health system capacity threshold is exceeded versus when not, the difference between the infection curves translates into about 1.24 million lives saved. Using a \$10 million value of reduced mortality risk (VSL) for the lives saved, the **benefits of social distancing are \$12.4 trillion**. The cost of social distancing is the difference in present value terms of the GDP losses without (\$6.49 trillion) and with (\$13.7 trillion) the policy, which is \$7.21 trillion.

Table 1 Benchmark outcomes for the uncontrolled scenario (without social distancing) and controlled scenario (with social distancing).

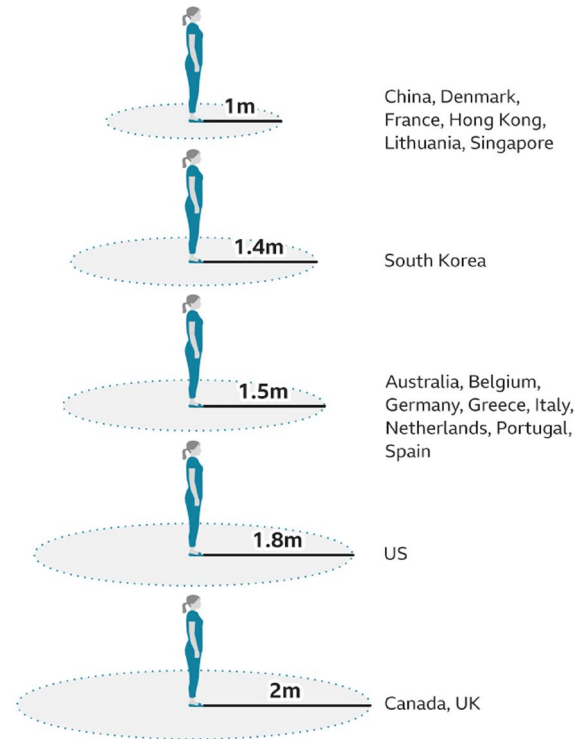
	Uncontrolled	Controlled
Infections (million)	287	188
Deaths (million)	2.18	0.941
Present value of GDP loss (trillion US\$)	6.49	13.7
Value of lives lost (trillion US\$)	21.8	9.41
Net benefits (trillion US\$)		5.16

Benchmark parameter values: $R_0 = 2.4$, infectious period = 6.5 days, low mortality rate = 0.5 %, high mortality rate = 1.5 %, reduction in contact rate = 38 %, VSL = \$10 million, uncontrolled initial GDP decline = 2.0 %, controlled initial GDP decline = 6.2 %, medical capacity threshold = 36 million infected, equal proportional rates of recovery in uncontrolled and controlled scenario, discount rate = 3.0 % year⁻¹, planning horizon = 30 years.

The Benefits and Costs of Using Social Distancing to Flatten the Curve for COVID-19

- Initially, the scientific evidence for distancing varied across the world, from an initial 2m in the UK and Canada, to 1.8m in the US, 1.4m in South Korea and 1m in China, France and Hong Kong.
- Aggressive social distancing measures buy enough time to develop and distribute cost-effective COVID-19 treatments or vaccines.
- Distancing is, however, difficult to maintain for a long period of time and its' effectiveness decreases as time goes on. Long-term distancing breaches the limits of people's physical and mental endurance and the negative effects on socio-economics are enormous.

How social distancing rules differ



Note: Regional authorities can impose different guidelines in some countries

SIGNAGE

GLOBAL, TYPE, APPLICATION



GLOBAL SOCIAL DISTANCE SIGNAGE



GLOBAL SOCIAL DISTANCE SIGNAGE



GLOBAL SOCIAL DISTANCE SIGNAGE



GLOBAL SOCIAL DISTANCE SIGNAGE



Can social distancing guidance be effectively automated using generative software (Grasshopper w/python)

- Can automated software generate optimized building layouts successfully

- How does the design of signage impact the effectiveness of social distancing measures?

- How do the complex variables of signage design influence behavior?

- How does branding impact signage – should signage be designed case by case?

- Should signs be made to suit the building they are in, or be universal?

Can the outcomes be achieved cost-effectively?

- Can the project be scaled efficiently at economic cost for global use?

LANCASTER SOCIAL DISTANCE LAB

DESIGN TEAM, DEVELOPMENT, FABRICATION



FUNDING



CLIENT



DESIGN TEAM



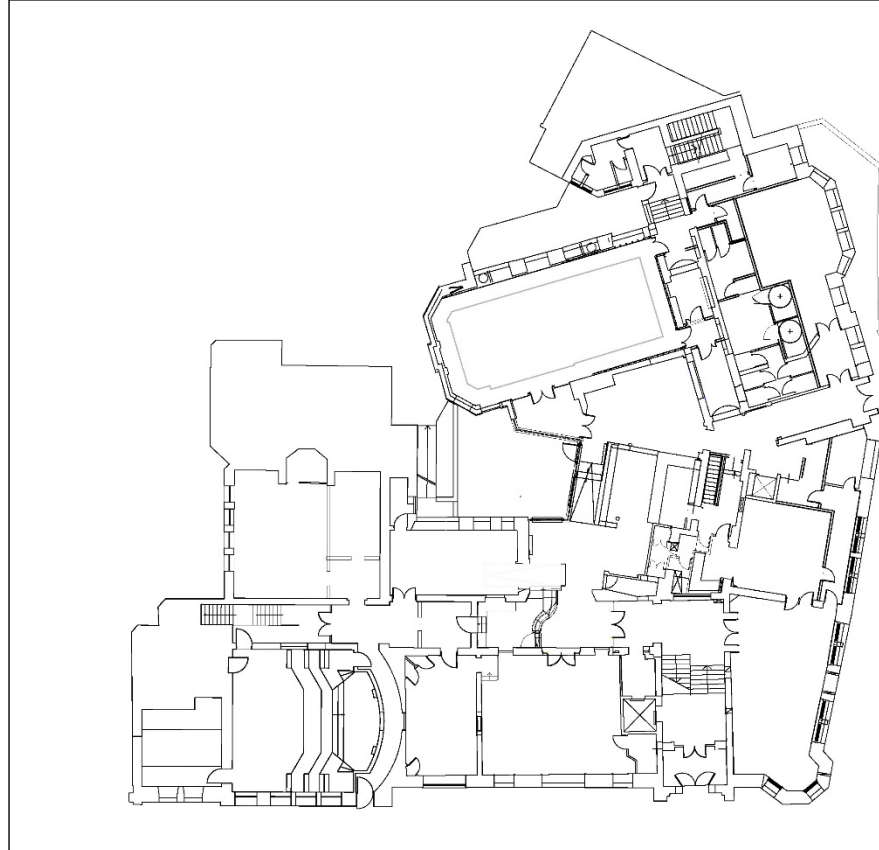
RESEARCH




LOCAL BUSINESSES



*An image of the Storey
Building, Lancaster, UK*



Health & Safety Comments			
TOTAL AREA:			
GROSS EXTERNAL AREA (GEA) = 4498.91 m ²			
GROSS INTERNAL AREA (GIA) = 3461.82 m ²			
DATE/ISSUE	DESCRIPTION	ISSUED BY	REVISIONS
18/12/2012	1	MG	Issue for information only - not for construction
18/12/2012	2	AWA	Issue for information only - not for construction
<p>\\asharedservice1.lan.ac.uk</p> <p>Resource - Property Group Lancaster City Council</p> <p>Lancaster Town Hall Deion Square Lancaster LA1 1FJ Tel: +44 (0)1524 523277</p> <p> Lancaster City Council - Property Group 2012</p> <p><small>Note: All rights reserved in Copyright of the Copyright, Design and Patents Act 1988 have been generally reserved.</small></p>			
Drawing Name: Current			
<small>Note: Dimensions are not to be scaled from this drawing. All minor dimensions are to be checked on site by the contractor.</small>			
<p>Team Name Lancaster</p> <p>Project Name The Storey Meeting House Lane LA1 1FJ</p> <p>Project Reference L004210</p> <p>UPR Number 100012621093</p> <p>Building Number 347417 Meeting Room 461709</p> <p>Drawing Title 0 - Ground Floor</p>			
Scale	Drawn by	Checked by	Date
1:200	MG	AWA	18/12/2012
Project No.	Drawing No.	Revision	
L-003-12	LAN00104	1	

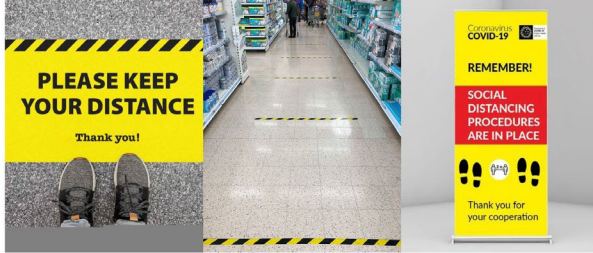
Plan of the Storey Building
Lancaster



*Interior View of the Storey
Building, Lancaster, UK*



*Interior View of the Storey
Building, Lancaster, UK*



Q.7A how EFFECTIVE IS 'UNIVERSAL' signage AS SHOWN ?

63%

BELIEVE 'UNIVERSAL' SIGNAGE IS EFFECTIVE





Q.7B how EFFECTIVE IS
'UK GOVERNMENT' signage
AS SHOWN ?

60%

BELIEVE 'UK GOVERNMENT'
SIGNAGE IS EFFECTIVE





Q.7C how EFFECTIVE IS
'LANCASTER CITY COUNCIL'
signage AS SHOWN ?

65%

BELIEVE 'LCC'
SIGNAGE IS EFFECTIVE





Q.7C how EFFECTIVE IS
'STORE SPECIFIC'
signage AS SHOWN ?

51%

BELIEVE 'STORE SPECIFIC'
SIGNAGE IS EFFECTIVE





Q.7E how EFFECTIVE IS
'DESIGNER BESPOKE'
signage AS SHOWN ?

72%

BELIEVE 'DESIGNER
ESPOKE' SIGNAGE IS EFFECTIVE



**Confidence &
Integrity**

**Warmth &
Friendliness**

**Safety &
Freshness**

**Peace &
Calmness**

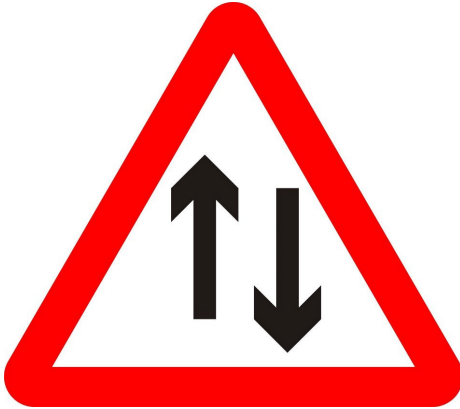
Ready Set Go



MESSAGE



INSTRUCTION



DIRECTION

The design is created out of three basic shapes. A circle, an octagon and a triangle - with each having its own purpose. Simplicity is key. Allowing these shapes to create a clear, precise and approachable design.

The rounded friendliness of a circle is used for general greeting messages. While the universal connotation of an octagon, flags more serious instructions; while the form of the triangle naturally lends itself to directional messaging.



ROUTE 2

As with route one - using colour to coordinate different instructions, this route uses basic shape to define different groups of information.

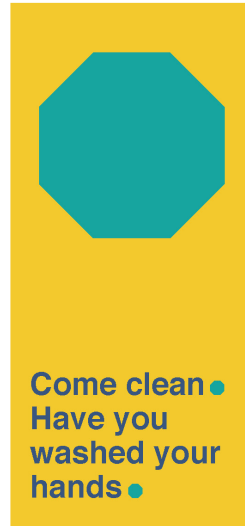
The friendly connotations associated with a circle reflects the approachability of general 'greeting' messages. While the universal connotation of a hexagon, flags more serious questions and statements. Finally, the form of a triangle naturally lends itself to directional signage.

Using a mix of blue, green and yellow of mid tones from the palette creates a fresh, friendly and confident tone, without being too 'flashy'.

Simplicity, is key in this route. Allowing basic shapes and language to create a clear, precise and approachable route.



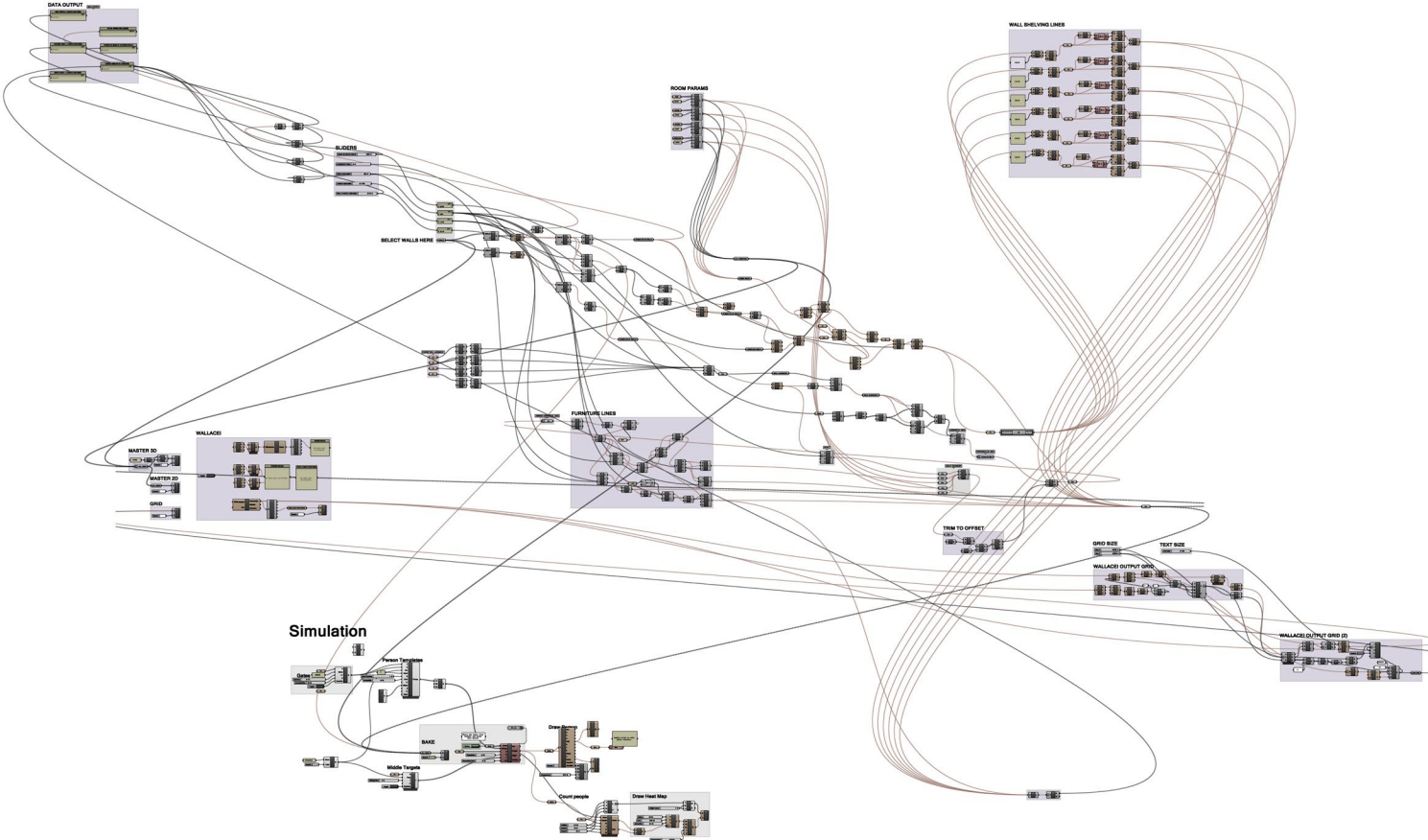
'GREETING' HANGING BANNER

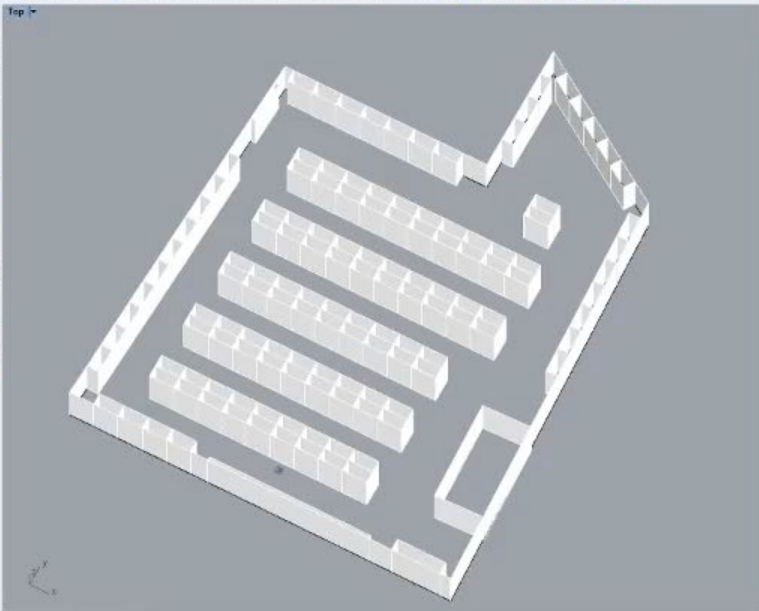


'QUESTION STATEMENT' HANGING BANNER



'DIRECTIONAL' HANGING BANNER





Viewport

Title Top

Width 101.2

Height 339

Projection Parallel

Camera

Lens Length 50.0

Rotation 0.0

X Location 8378.06

Y Location -3712.06

Z Location 37576.67

Distance 40208.11

Location Place...

Target

X Target 547.47

Y Target 10891.04

Z Target 676.16

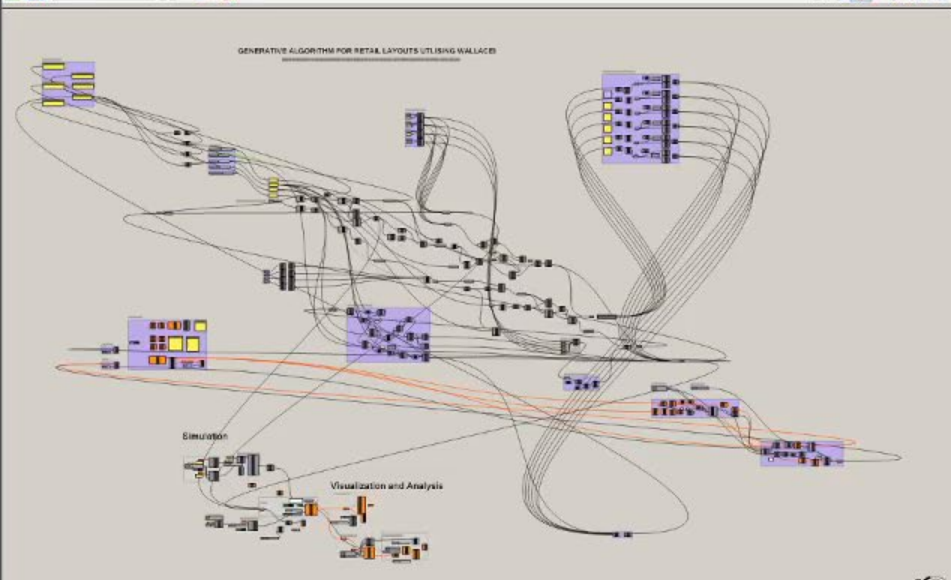
Location Place...

Wallpaper

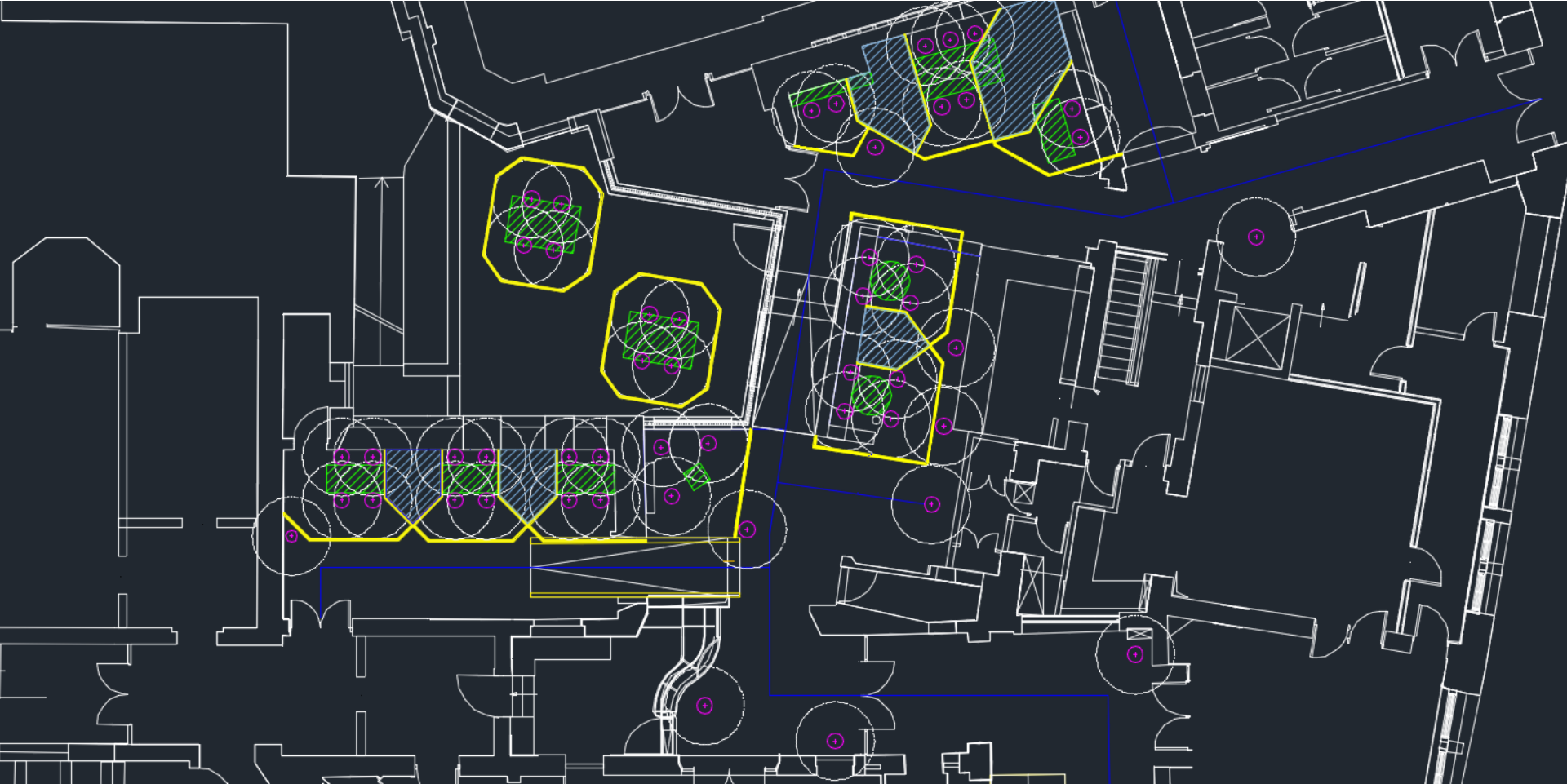
Filename (none)

Show

Gray



ALGORITHM PLAN OUTCOME





VINYL CUTTING AND ASSEMBLY



FLOOR VINYL STICKERS



COMPLETED SOCIAL DISTANCE LAB



OPENING WEEK SCHEDULE OF LOCAL BUSINESS APPOINTMENTS



SOCIAL DISTANCE LAB @ THE STOREY

Appointment Time 60mins

TIME	THU June 25, 2020		FRI June 26, 2020		MON June 29, 2020		TUE June 30, 2020		WED July 1, 2020		THU July 2, 2020	
10:00am	Name/s:	Kim Hodges & Julie Hodges	Name/s:	Joanne Roberts	Name/s:	Will Griffiths & Simon Kirby	Name/s:	Nicola Smith	Name/s:		Name/s:	2 x people (names TBC)
	Business Name:	Sage Café	Business Name:	Bells Cottage Tea Rooms	Business Name:	Lancaster City Council	Business Name:	Grandmas Puppets	Business Name:		Business Name:	Lancaster University
11:00am	Name/s:	Chris Eagle	Name/s:	Deborah Buckley	Name/s:		Name/s:	2 x names TBC	Name/s:	Lucie Carrington	Name/s:	11:30am Simon Auty
	Business Name:	Aquilla Pizza	Business Name:	Mighty Bites	Business Name:		Business Name:	Royal Kings Arms Hotel	Business Name:	Herbarium	Business Name:	Selectweb Computers
12:00pm	Name/s:	Robert Nixon	Name/s:	Lauren Akister	Name/s:	2 x people (names TBC)	Name/s:	2 x names TBC	Name/s:		Name/s:	
	Business Name:	Wray Post Office & Village Store	Business Name:	Lancaster Search & Rescue	Business Name:	Lancaster University	Business Name:	Royal Kings Arms Hotel	Business Name:		Business Name:	
1:00pm	Name/s:	Mirian Calco & Louise Mullagh	Name/s:		Name/s:		Name/s:		Name/s:	2 x people (names TBC)	Name/s:	2 x people (names TBC)
	Business Name:	Lancaster University	Business Name:		Business Name:		Business Name:		Business Name:	Lancaster University	Business Name:	Lancaster City Council
2:00pm	Name/s:		Name/s:		Name/s:	Carolyn Dalton	Name/s:	Chloe	Name/s:		Name/s:	
	Business Name:		Business Name:		Business Name:	Lancaster City Council Museums	Business Name:	Holm Café	Business Name:		Business Name:	
3:00pm	Name/s:	2 x people (names TBC)	Name/s:	2 x people (names TBC)	Name/s:	Tom Robinson	Name/s:		Name/s:	2 x people (names TBC)	Name/s:	2 x people (names TBC)
	Business Name:	Lancaster Council	Business Name:	Hornby Tearooms	Business Name:	The Wobbly Cobbler	Business Name:		Business Name:	Lancaster University	Business Name:	Lancaster City Council
4:00pm	Name/s:	2 x people (names TBC)	Name/s:		Name/s:	Luiza Wood	Name/s:		Name/s:		Name/s:	
	Business Name:	Lancaster City	Business Name:		Business Name:	Brew	Business Name:		Business Name:		Business Name:	

BUSINESS CONSULTATIONS IN THE SOCIAL DISTANCING LAB

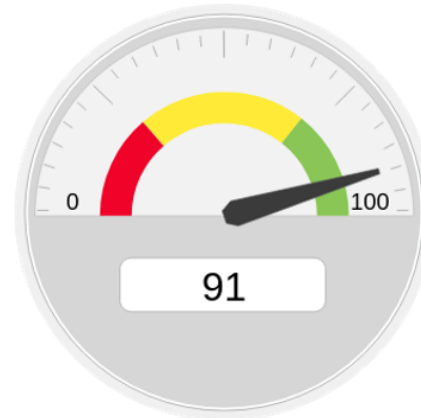


QUESTION 3

Q.3 How important is signage to maintain the government advised distance to reduce the risk of infection?

91%

BELIEVE SIGNAGE IS
IMPORTANT



QUESTION 4

Q.4 How EFFECTIVE is the signage at Storey?

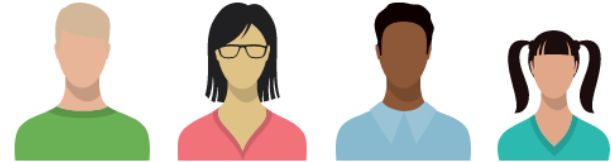
93%

BELIEVE THE DISTANCING
SIGNAGE @ STOREY IS
EFFECTIVE



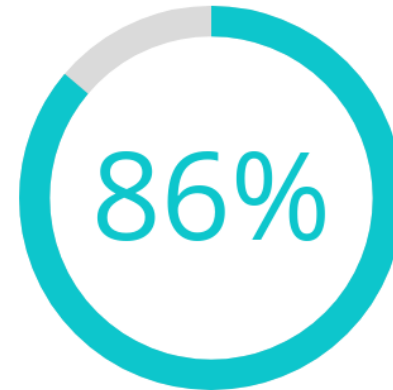
QUESTION 8A

Q.8A DO YOU BELIEVE THE CUSTOMER HAS SOME RESPONSIBILITY FOR SOCIAL DISTANCING?



86%

BELIEVE THE CUSTOMER
HAS SOME
RESPONSIBILITY



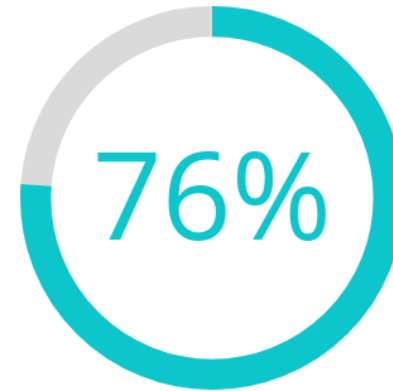
QUESTION 8B

Q.8B DO YOU BELIEVE THE CUSTODIAN HAS SOME RESPONSIBILITY FOR SOCIAL DISTANCING?



76%

BELIEVE THE CUSTODIAN
HAS SOME
RESPONSIBILITY



Hello.

Social Distancing Signage Pack.

Open Source Designs for
Social Distancing.

Design

Pull up banners (PULL1)

Off the shelf size for **PULL01** 800mmx2000mm **PAGE 27**.

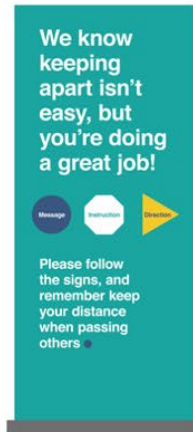
Off the shelf size for **PULL02** 800mmx2000mm **PAGE 28**.

Off the shelf size for **PULL03** 800mmx2000mm **PAGE 29**.

Off the shelf size for **PULL04** 800mmx2000mm **PAGE 30**.

Off the shelf size for **PULL05** 800mmx2000mm **PAGE 31**.

For bespoke sizes please read the instructions section.



PULL01



PULL02



PULL03



PULL04



PULL05

Design

Hanging banners (HANG1)

- On the shelf size for HANG01 600mmx1200mm PAGE 32.
- On the shelf size for HANG02 600mmx1200mm PAGE 33.
- On the shelf size for HANG03 600mmx1200mm PAGE 34.
- On the shelf size for HANG04 600mmx1200mm PAGE 35.
- On the shelf size for HANG05 600mmx1200mm PAGE 36.

For bespoke sizes please read the instructions section.

HANG01 PAGE 32 HANG02 PAGE 33 HANG03 PAGE 34 HANG04 PAGE 35 HANG05 PAGE 36

Design

Hanging banners (HANG2)

- On the shelf size for HANG06 600mmx1200mm PAGE 37.
- On the shelf size for HANG07 600mmx1200mm PAGE 38.
- On the shelf size for HANG08 600mmx1200mm PAGE 39.
- On the shelf size for HANG09 600mmx1200mm PAGE 40.
- On the shelf size for HANG10 600mmx1200mm PAGE 41.

For bespoke sizes please read the instructions section.

HANG06 PAGE 37 HANG07 PAGE 38 HANG08 PAGE 39 HANG09 PAGE 40 HANG10 PAGE 41

Design

Digital screen animation (DSRN)

Fulling frame animation of three designs, 16:9 ratio.
 On the shelf size: DSRN1 PAGE 41-45.
 For bespoke sizes please read the instructions section.

DSRN1 PAGE 41-45

Design

Cut-out Vinyl (VIN1)

- On the shelf size VIN01 1200mmx1200mm PAGE 44.
- On the shelf size VIN02 1200mmx1200mm PAGE 45.
- On the shelf size VIN03 900mmx500mm PAGE 46.

For bespoke sizes please read the instructions section.

VIN01 PAGE 44

Design

Cut-out Wall and Floor Vinyls (VIN)

- On the shelf size VIN06 500mmx500mm PAGE 51.
- On the shelf size VIN07 500mmx500mm PAGE 52.
- On the shelf size VIN08 500mmx500mm PAGE 53.
- On the shelf size VIN09 500mmx500mm PAGE 54.
- On the shelf size VIN10 500mmx500mm PAGE 55.
- On the shelf size VIN11 500mmx500mm PAGE 56.
- On the shelf size VIN12 100mmx100mm PAGE 56.
- On the shelf size VIN13 200mmx100mm PAGE 56.
- On the shelf size VIN14 200mmx100mm PAGE 57.
- On the shelf size VIN14 500mmx100mm PAGE 58.
- On the shelf size VIN15 500mmx500mm PAGE 58.
- On the shelf size VIN16 500mmx500mm PAGE 62.
- On the shelf size VIN17 500mmx500mm PAGE 61.
- On the shelf size VIN18 500mmx500mm PAGE 62.
- On the shelf size VIN19 500mmx500mm PAGE 62.
- On the shelf size VIN19 500mmx500mm PAGE 63.

VIN06 PAGE 51 VIN07 PAGE 52 VIN08 PAGE 53 VIN09 PAGE 54 VIN10 PAGE 55 VIN11 PAGE 56 VIN12 PAGE 56 VIN13 PAGE 56 VIN14 PAGE 57 VIN14 PAGE 58 VIN15 PAGE 58 VIN16 PAGE 62 VIN17 PAGE 61 VIN18 PAGE 62 VIN19 PAGE 62 VIN19 PAGE 63

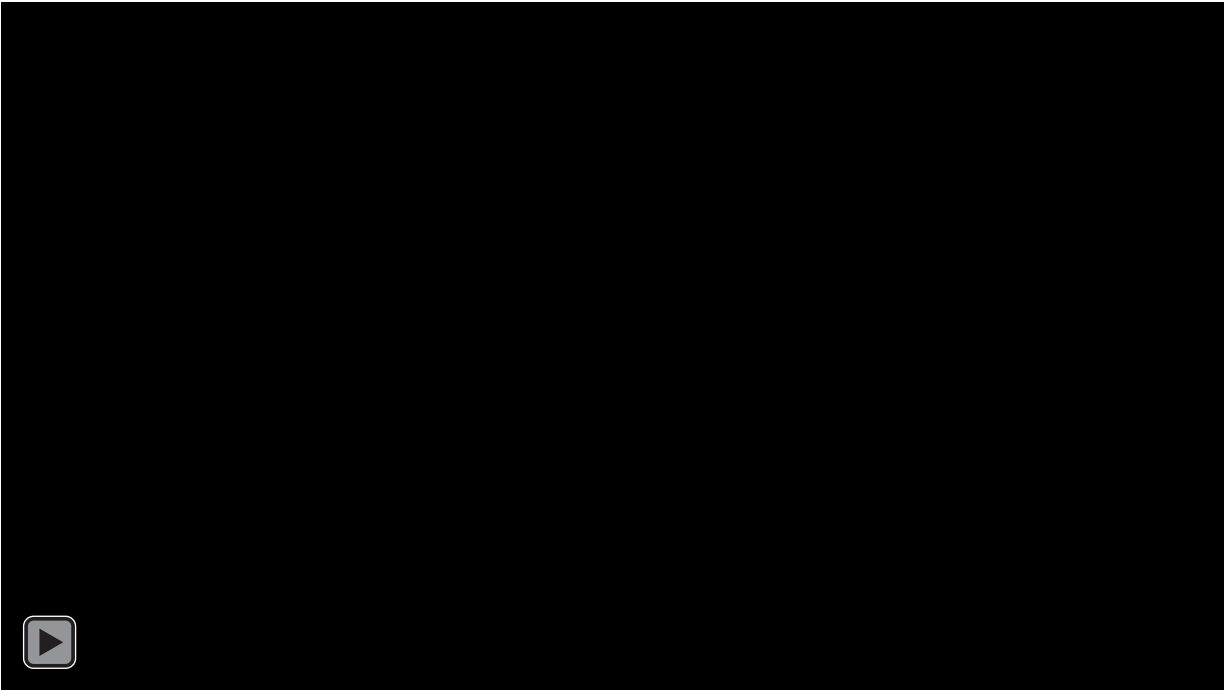
Design

Wall boards (IBRD)

- On the shelf size IBRD01 210mmx270mm PAGE 67.
- On the shelf size IBRD02 210mmx270mm PAGE 68.
- On the shelf size IBRD03 210mmx270mm PAGE 69.
- On the shelf size IBRD04 210mmx270mm PAGE 70.
- On the shelf size IBRD05 210mmx270mm PAGE 71.
- On the shelf size IBRD06 210mmx270mm PAGE 72.

For bespoke sizes please read the instructions section.

IBRD01 PAGE 67 IBRD02 PAGE 68 IBRD03 PAGE 69 IBRD04 PAGE 70 IBRD05 PAGE 71 IBRD06 PAGE 72



*An image of the Storey
Building, Lancaster, UK*

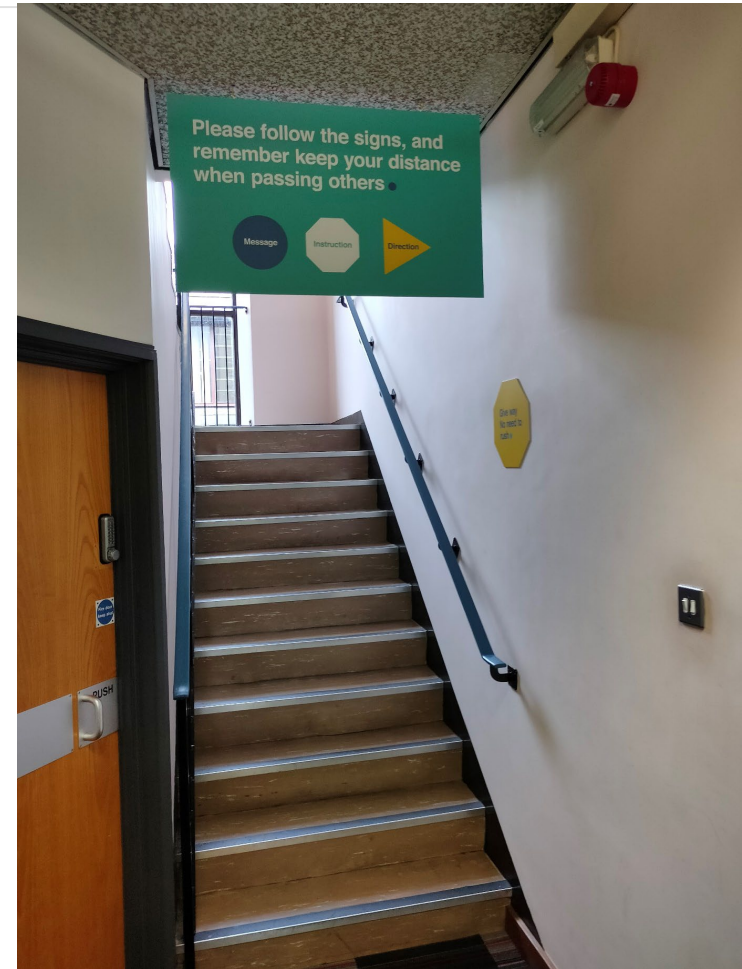


We know keeping
apart isn't easy, but
you're doing a great
job. Thank you 🍷

IMPACT: SIGNS IN USE AROUND LANCASTER



IMPACT: SIGNS IN USE AROUND LANCASTER



IMPACT: SIGNS IN USE AROUND LANCASTER



CONCLUSION

EVALUATION, FUTURE, QUESTIONS



REFLECTION ON RESULTS



FUTURE OF SOCIAL DISTANCING?



THANK YOU