



# Where Do We Go From Here

Initial Detail / Hull 2017

# Press

## Press Launch

*A choreographed spectacle of theatre and urban takeover where dormant robots awaken throughout the heart of the old town and become curious of their surroundings.*

The intervention explores the unification of the city's inhabitants and technology through light and wonder in a way never experienced before in Hull.

A one of a kind light spectacle which will allow the people of Hull and its many visitors to witness a playful manipulation of light, responding to the city's unique geometries, architecture and imbedded history.

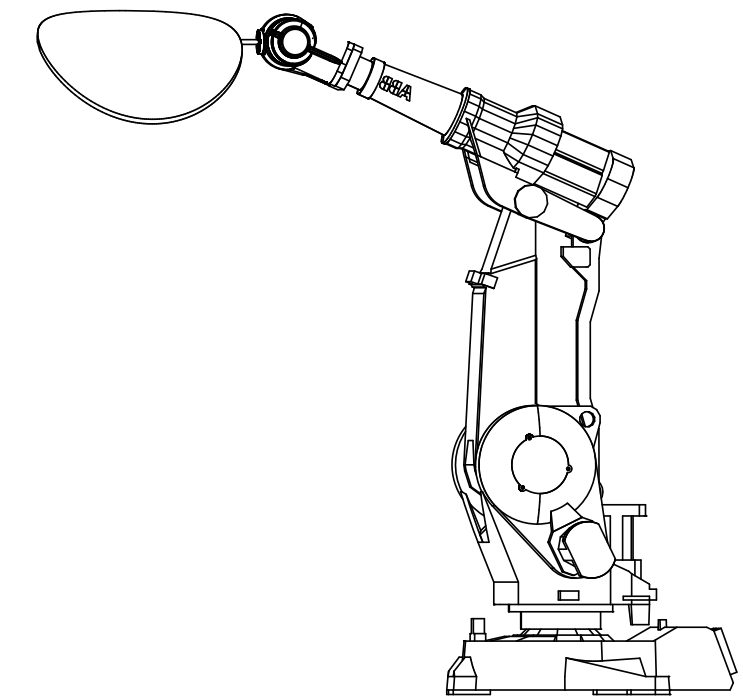
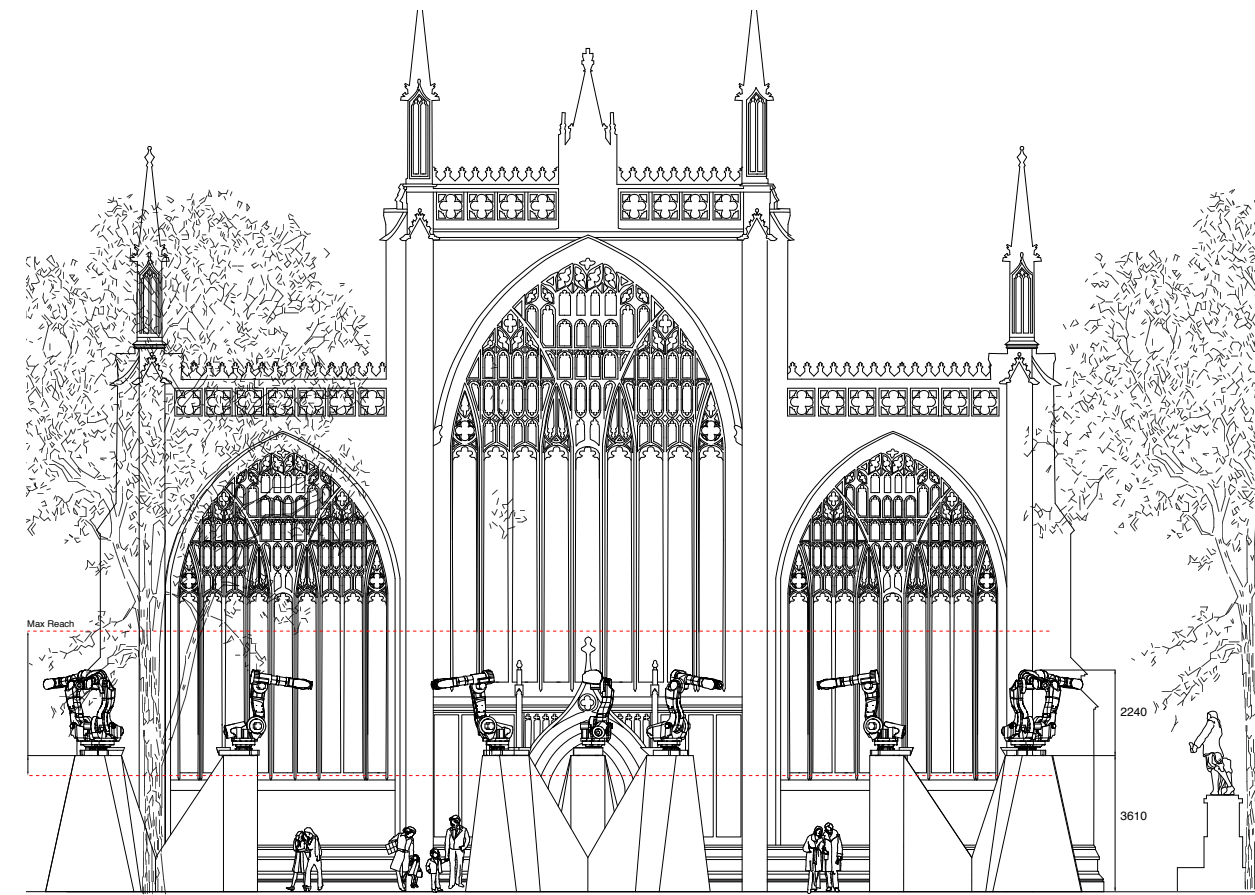
The robots will communicate through woven networks and act as light guides to create kinetic animations resulting in an inquisitive acquaintance with the city.

**Where do we go from here** will signal not only the end of a great year for the city, but the beginning of a brighter, more confident future.



# Where Do We Go From Here?

Narrative



## Lighthouses and Bells

At dusk the bells and light beacons across the city will be calling the robots to work and invite the people of Hull and its visitors to joint and witness the performances.

## Locations

In 3 different areas of the city the robots will be performing, guiding and engaging themselves with the inhabitants and visitors of Hull. These performances will take into account the past and current functions of the spaces, to create spectacles and raise the question, Where do we go from here?

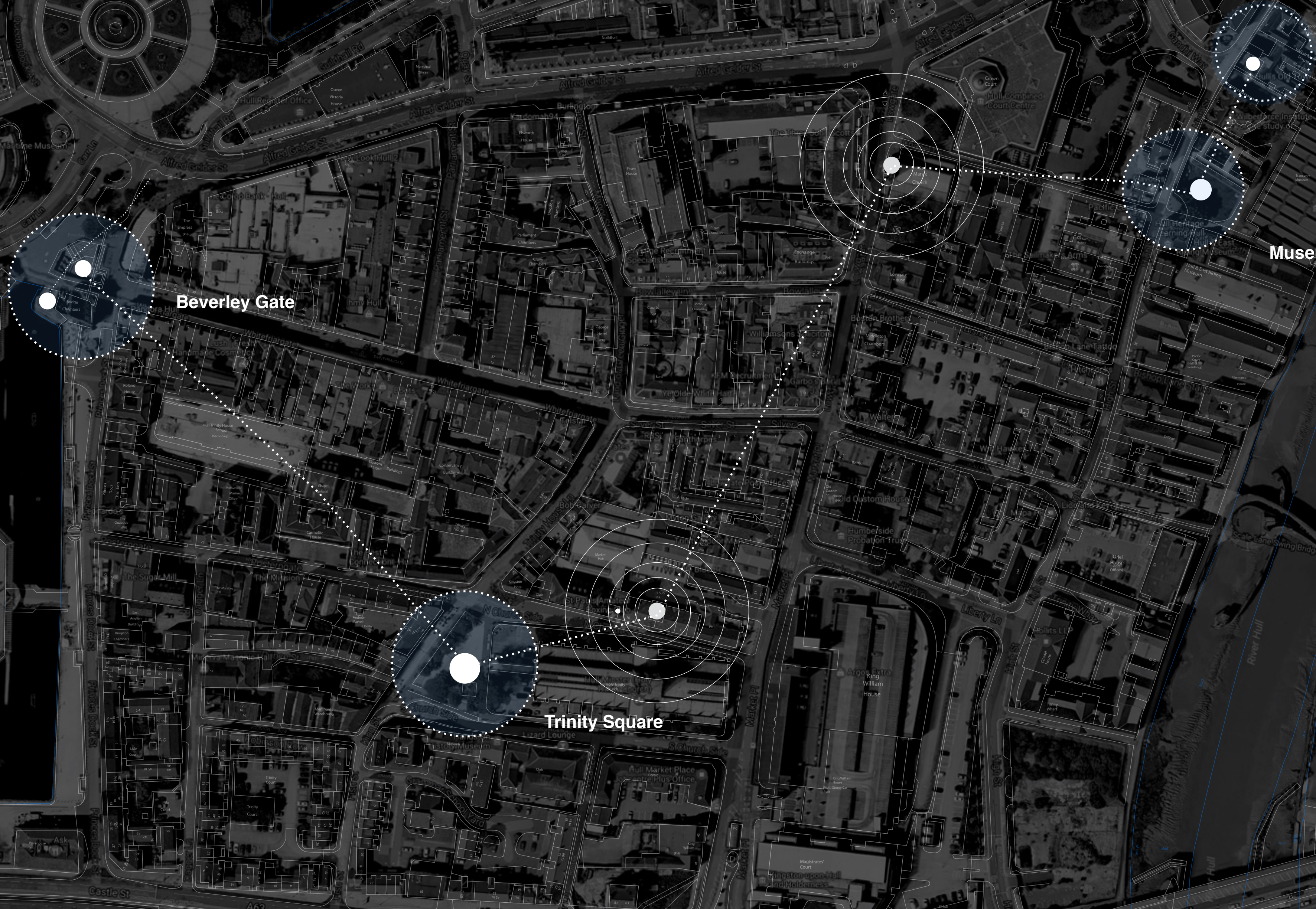
## Robot

After having served their time in the production line the robots are now being reprogrammed to take on characters related to key locations staging features and function of the city, casting light on details and interaction within public space.

While performing their new task for the audience the robots keeps a distant memory of their past production life that keeps returning as a default behaviour when the lights turns off as an echo of their many working hours.



# Sites



Beverley Gate

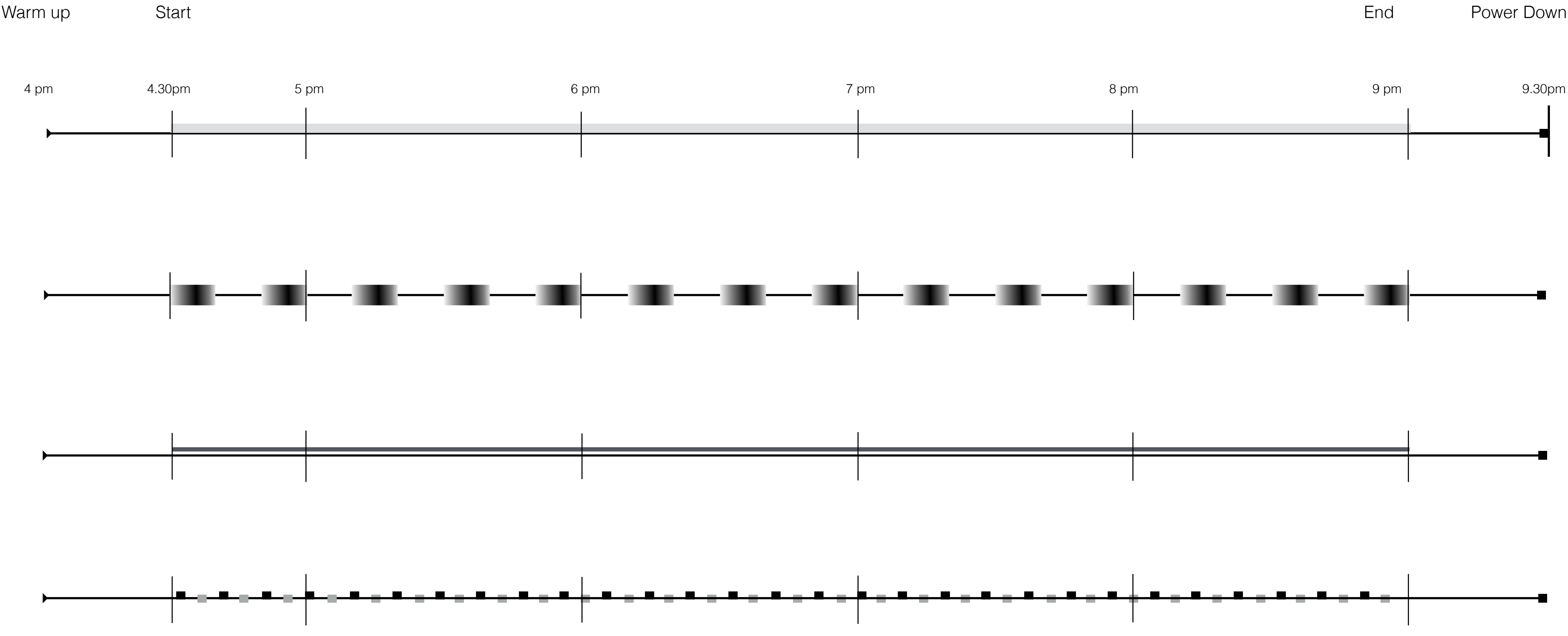
Trinity Square

Wilberforce House

Museum Quarters

# Schedule

Daily



# Sites

## Narratives

### 1 / Beverly Gate

#### The Gate Keepers

Marking the entrance to the city the 6 gate keepers will be drawing visitors in with light signals visible across the quay and Victoria Square from their position at the old city gate.

Taking inspiration from navigation beacons and maritime signalling devices the robots will be a modern interpretation of these devices helping to communicate and stage the entrance to the experience.

*long distant communication / docks / masts beacons / gates*

#### Setup;

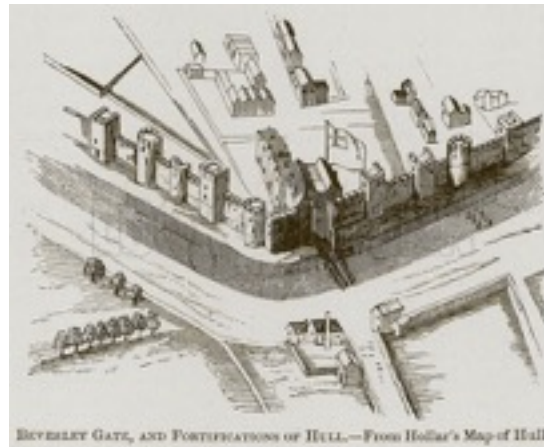
6x IRB 6400

6x Robot controllers Integrated in Plinths

#### Sound;

General PA

Local robot speakers



# Sites

## Narratives

### Effects

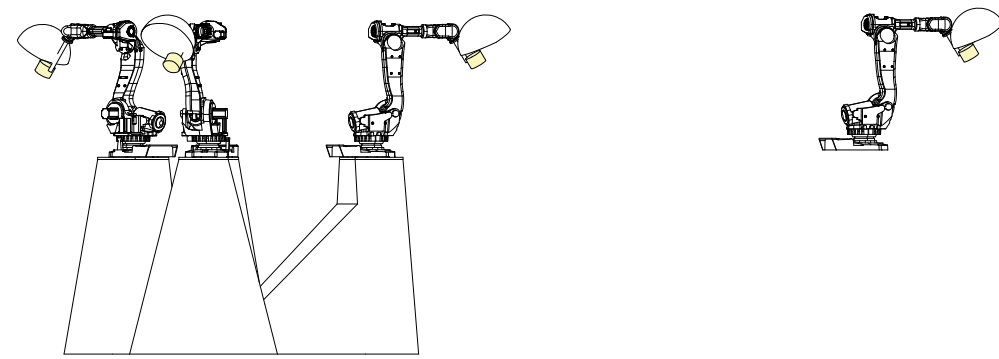
#### / Beverley Gate

Beverley gate will be experienced from various long distance views as well as close proximity when entering the old town at Whitefriar Gate.

When approaching the robots from afar the robots will be visible distance light signals welcoming the audience into the city.

When approaching the more contextual effects will be the effects created between the two groups of robots creating gateways and highlighting nearby features as the remains of the city wall, as well as the maritime museum and the docks.

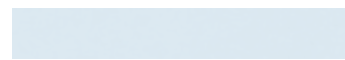
The sequences will be switching in-between the long distance effects and the more contextual effects to ensure a richer experience from the piece as you enter.



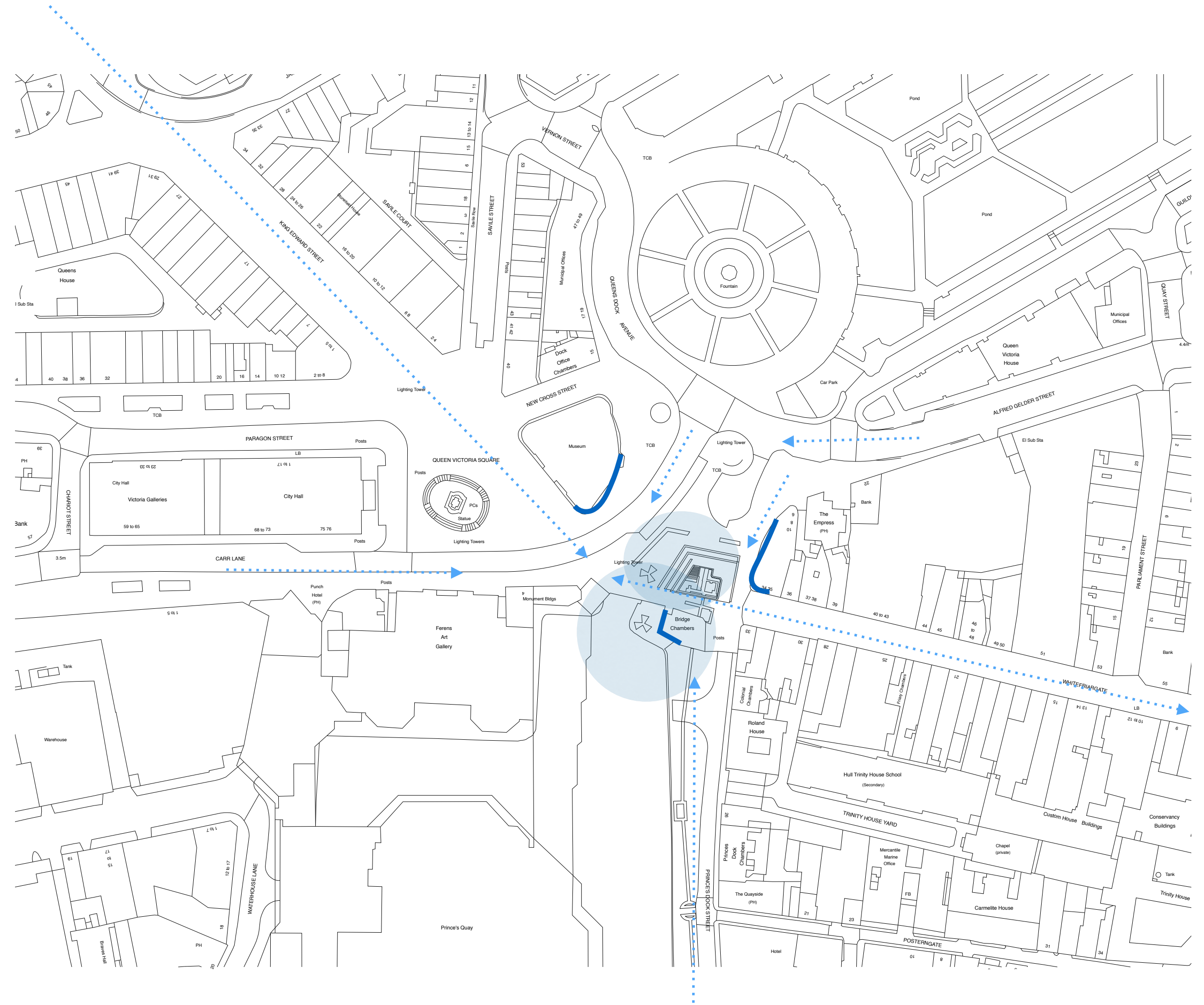
Audience Views



Ground Based Effects



Wall Based Effects





# Sites

## Narratives

### 2 / Trinity Square

#### An Inquisitive Acquaintance

As the main meeting point in the old town Trinity Square will be a crowd reactive piece focusing on responding to the movement of the crowd.

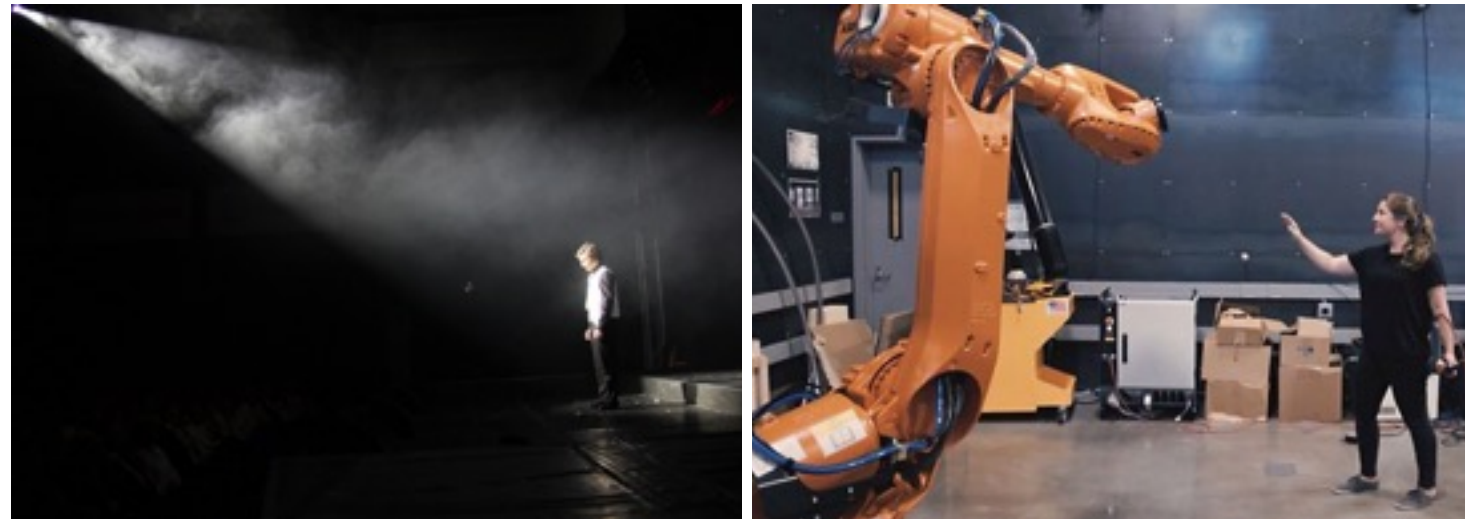
The setup will be laid out according to its geometrical design featuring the robots in a grid with a light column each facing towards its audience.

When approached the robots will awaken from their default factory mode by the lights turning on and performing a sequence in response reflecting and manipulating the light to engage with the movement below.

*crowd movement / reflection / sound within light / exploring*

**Setup;**  
9x IRB 6400  
9x Robot controllers Integrated in Plinths

**Sound;**  
General PA  
Directional Speakers in end effector



# Sites

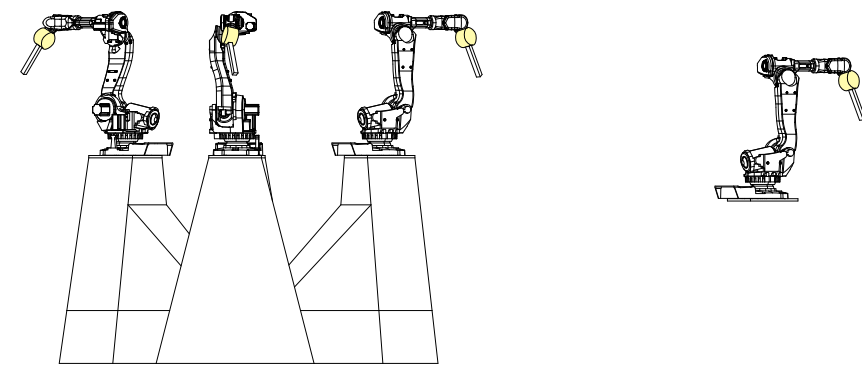
## Narratives

### Effects

#### / Trinity Square

In the square the robots will awaken from their default factory mode by the lights turning on and performing a sequence in response, reflecting and manipulating the light to engage with the movement below and highlight features in its immediate context.

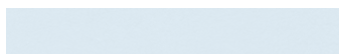
When walking around in the square the audience will find additional sound layers as they move in between the spotlights and directional sounds coming from the robot as positioned in the middle of a choir performing an improvised symphony. Listening to the individual voices the audience will be encouraged to explore a more direct relation to the robots.



Audience Views



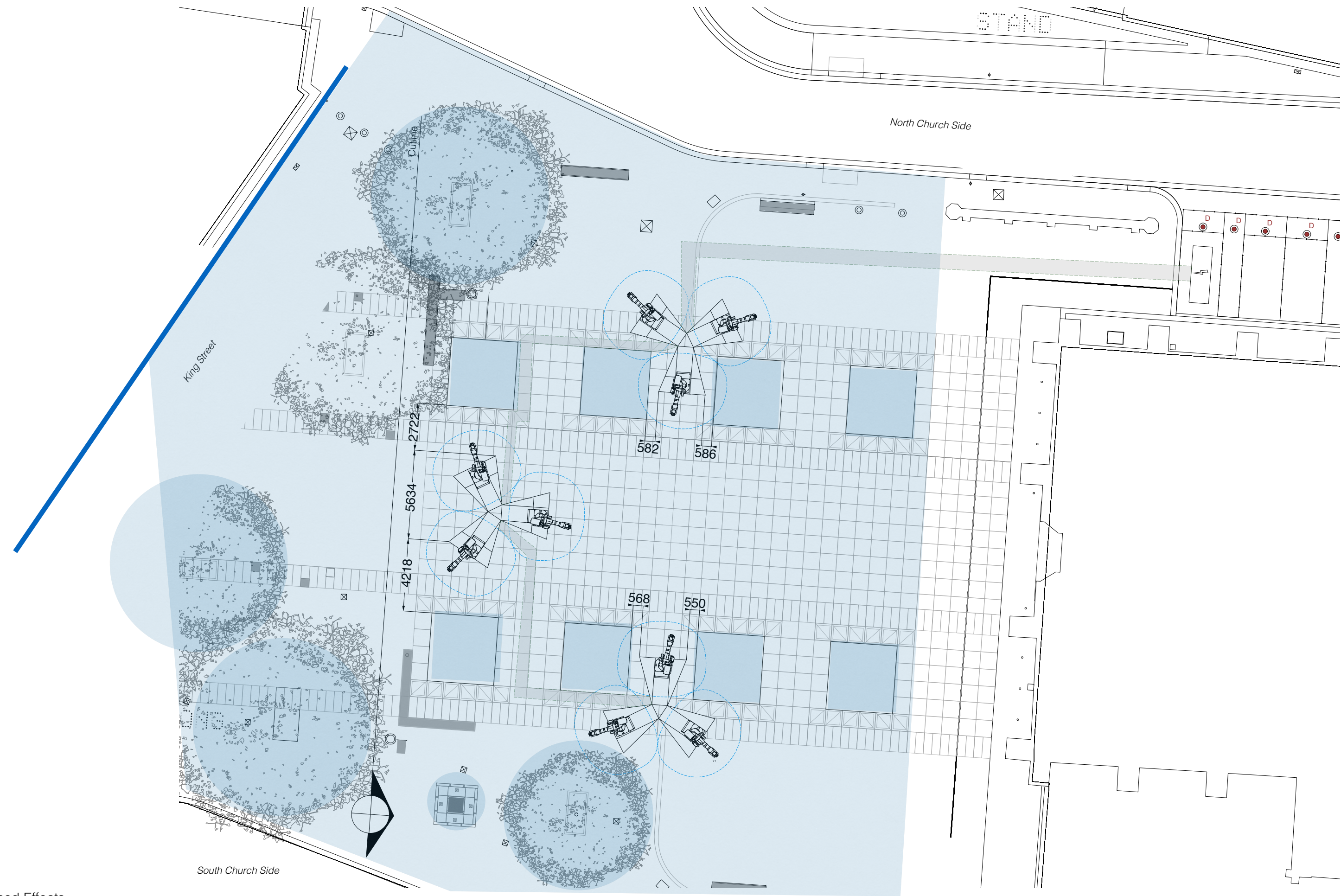
Ground Based Effects



Wall Based Effects



Wall Based Effects



# Sites

## Narratives

### 3 / Museum Quarters

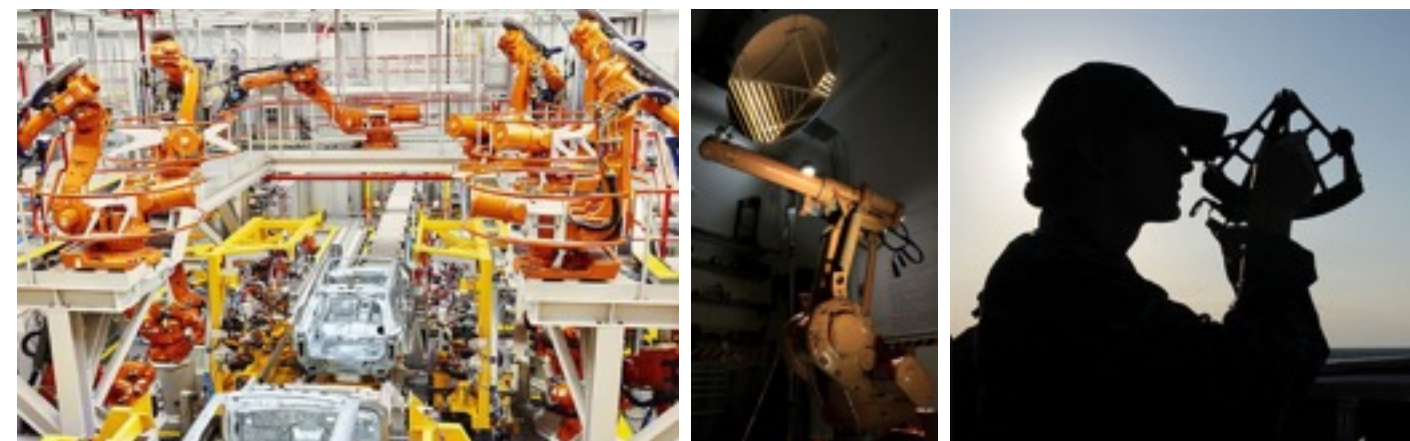
#### Collaboration

In the garden setting by the Street Life museum 5 robots will performing together to demonstrating intelligence through collaborating. The robots will be passing light beams between each other and forming large moving objects in space, that can be witnessed from the surrounding areas.

*Where Do We Go From Here? Navigation and collaboration*

**Setup;**  
5x IRB 6600  
5x Robot controllers Integrated in Plinths

**Sound;**  
General PA  
Local robot speakers



# Sites

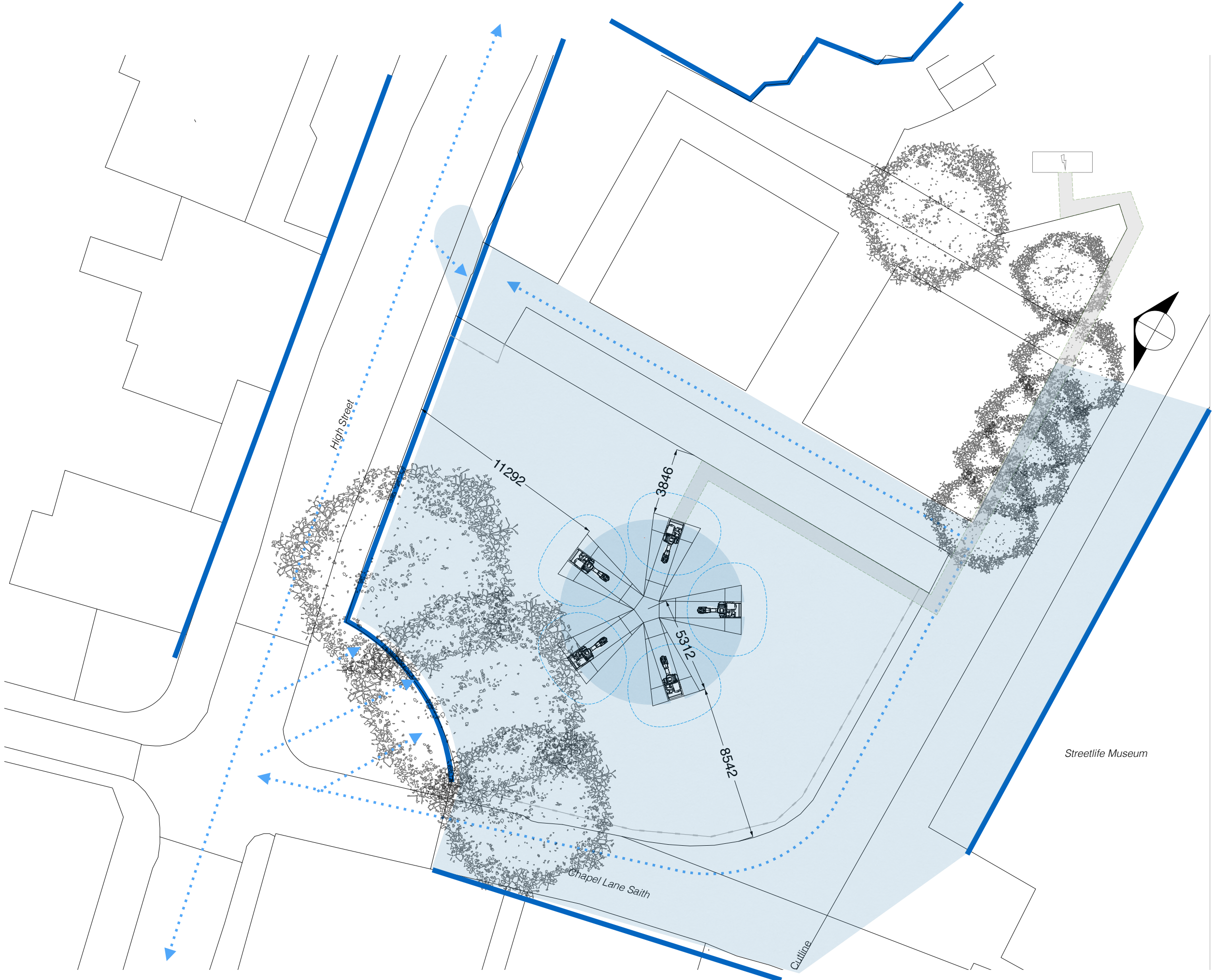
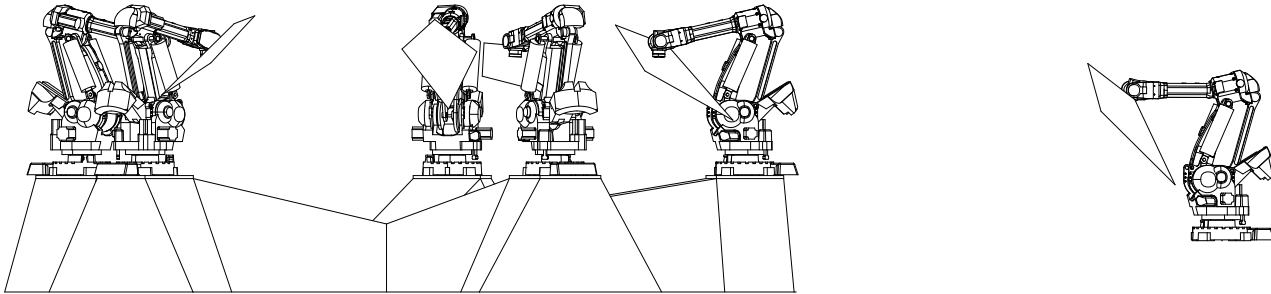
Narratives

## Effects

### / Museum Gardens

From the surrounding pavement and through the gates in the walled garden the audience will be experiencing a performance of 5 robots collaborating to create effects across the site and amongst them self.

The performance will be on 3 times every hour starting with the individual robots slowly waking up and becoming aware of their surrounding casting light on their context. Once awake they will start picking up on each others presence and engage themselves on collaborating to create grand effects reaching to the sky.



# Sites

## Narratives

### 4 / Wilberforce House

#### Conversation

Behind the walls of the enclosed garden space at the entrance to Wilberforce house a shadow play stages the conversation between the robot and Wilberforce.

Curiously hidden behind the walls the audience will witness the scene partly play out through light and shadow if not peeking through the gate or catch the robot revealing itself above the wall.

*Shadow play, curious to detail, highlight and reflections*

Setup;  
1x IRB 2400  
1 x Robot controller located outside garden wall.

Sound;  
General PA



# Sites

Narratives

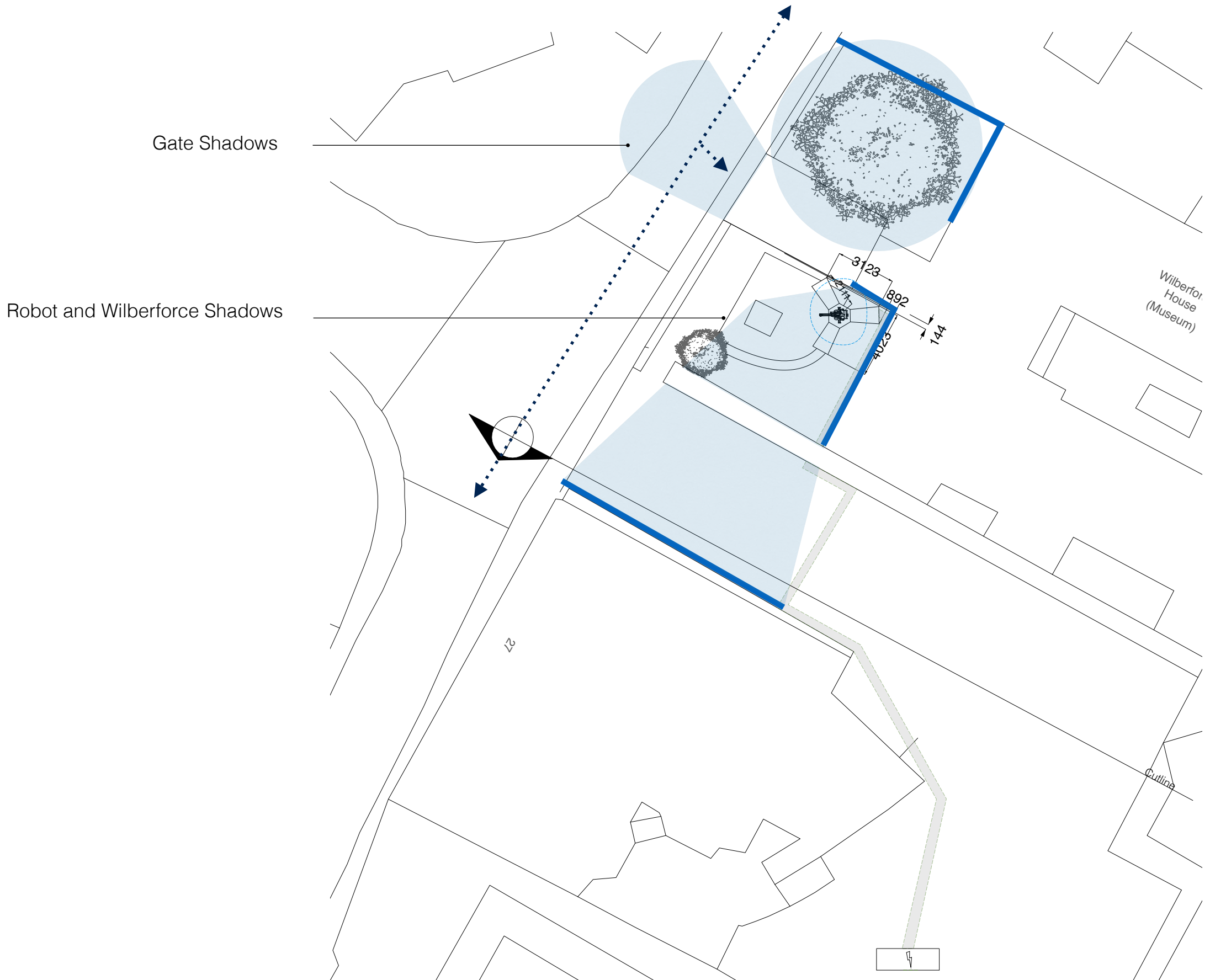
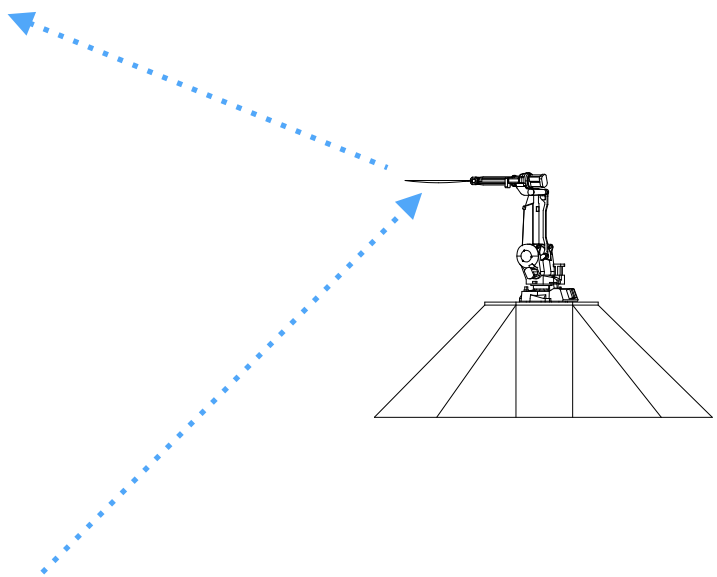
## Effects

### / Wilberforce House

The effects of the shadowily will be experienced from High Street Where it will be visible on the facades surrounding Wilberforce House.

The main shadow effects will be those of Wilberforce and the robot projected from lights positioned in the garden none visible for the audience and the reflections created by the robot.

Secondary effects will be created from the tree and through the gate.

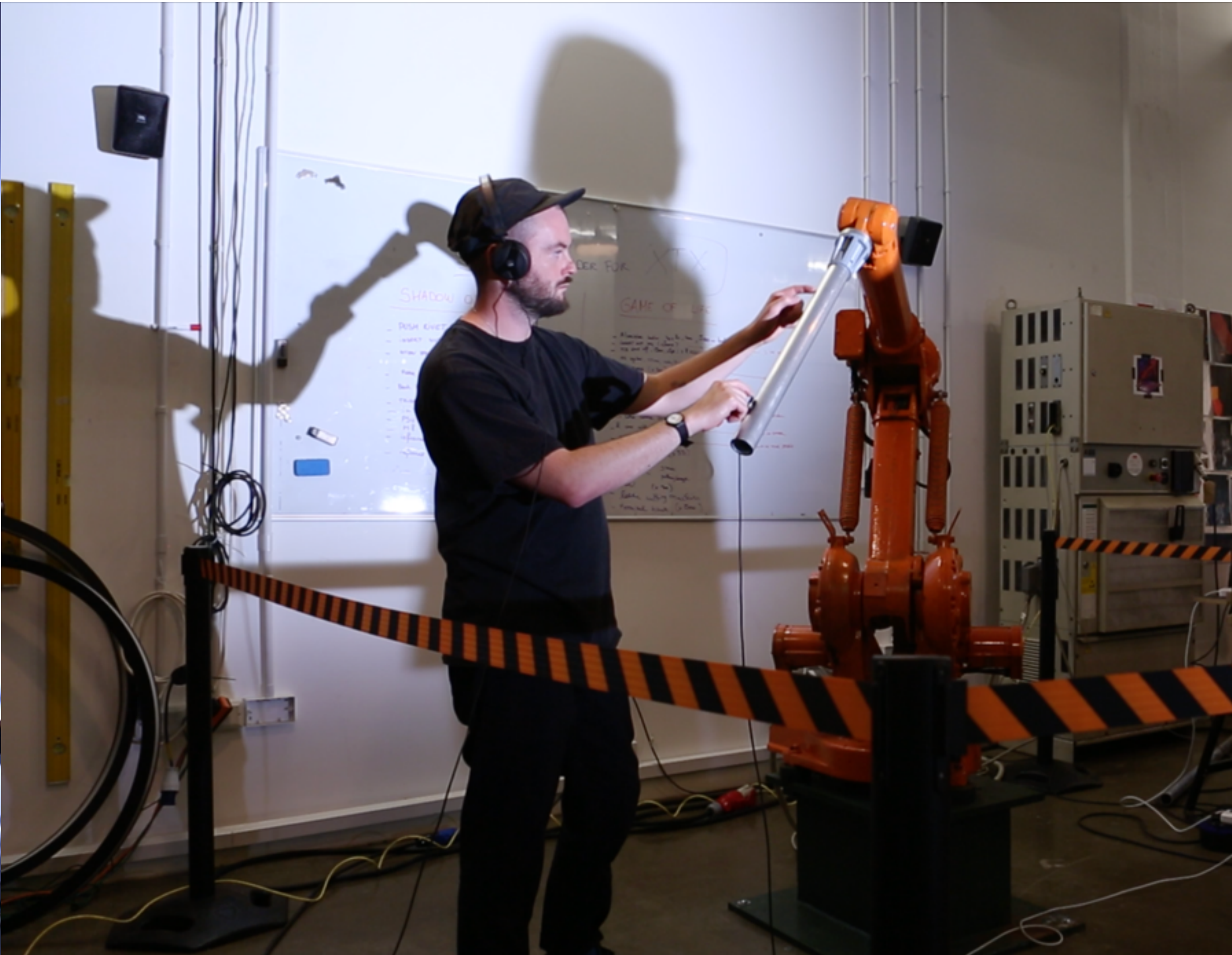


# Performance

Hull2017



Lighting



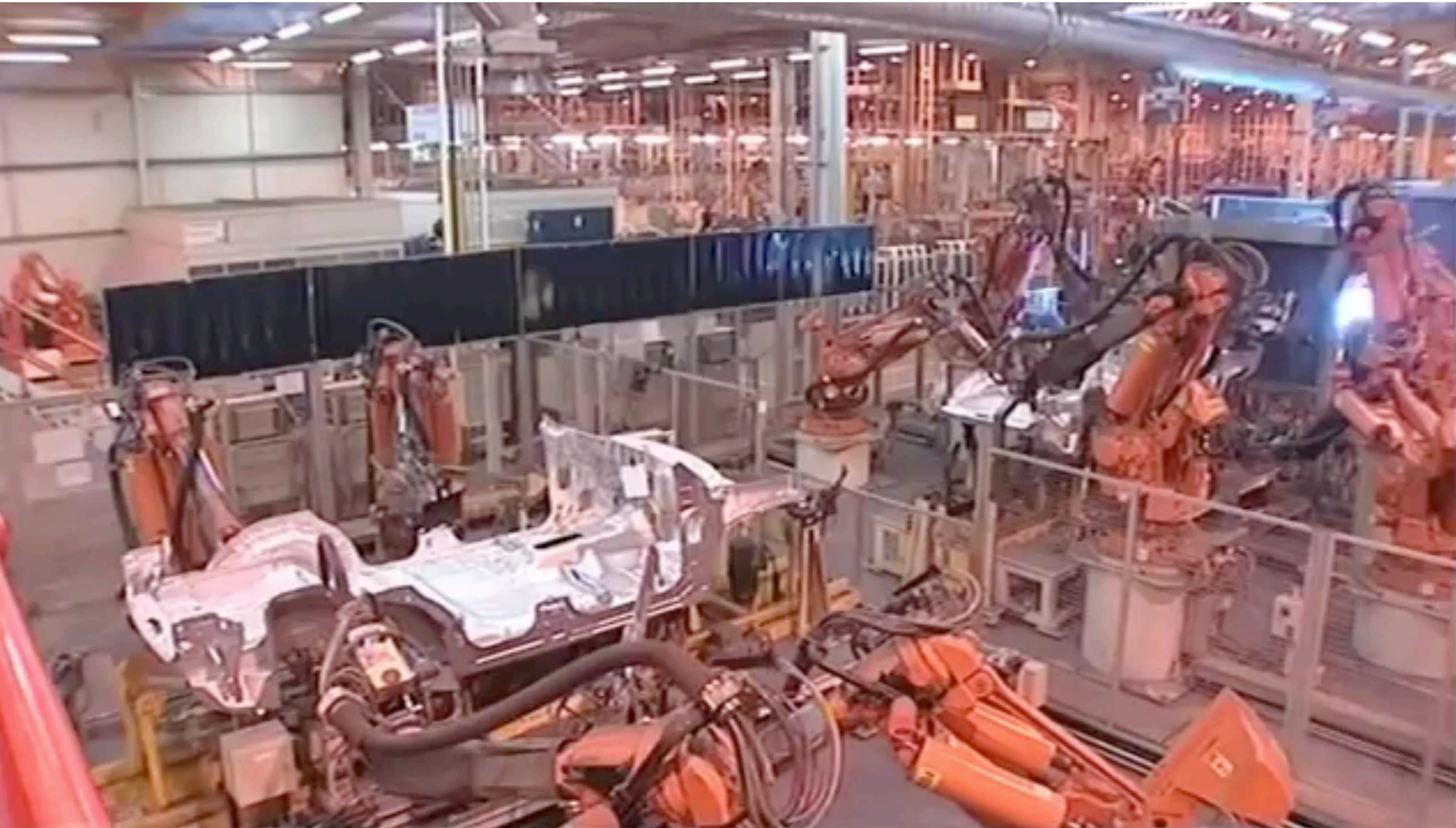
Found Sound / Amplification and Composition



Ambience, Sites and Narratives

# Robot Origin

Jaguar, Solihull



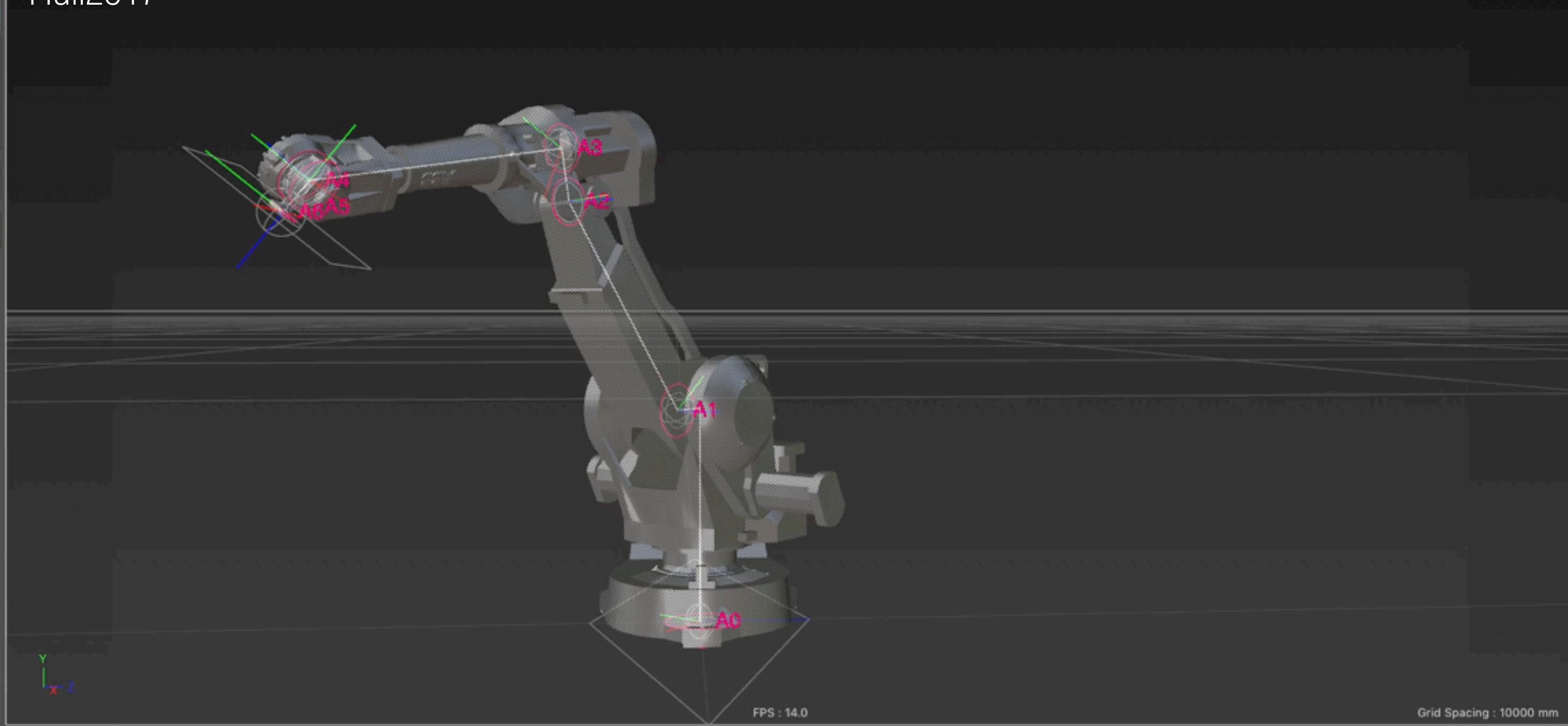
Rhythmic Sound





# Performance

## Hull2017



FPS : 14.0

Grid Spacing : 10000 mm

Console

```
File
v_tcp : 2.96830958266 || v_ori : 1.12980672462
v_tcp : 2.96830958266 || v_ori : 1.12980672462
v_tcp : 3.04573462484 || v_ori : 1.14501550476
v_tcp : 3.12408784136 || v_ori : 1.15942166692
v_tcp : 3.20586158172 || v_ori : 1.17299224977
v_tcp : 3.2886782067 || v_ori : 1.187745671
v_tcp : 3.37253104877 || v_ori : 1.20167161707
v_tcp : 3.45741304596 || v_ori : 1.21473822538
v_tcp : 3.54331673855 || v_ori : 1.22903546369
v_tcp : 3.6329467429 || v_ori : 1.24176657874
v_tcp : 3.72371112368 || v_ori : 1.25575926638
v_tcp : 3.8156015103 || v_ori : 1.26888488283
v_tcp : 3.90860904221 || v_ori : 1.2811339664
```

Python C.O.F.F.E.E.

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 70 F

0 F 299 F 299 F

Create Edit Function Texture

- Material\_1
- Material\_2
- Material\_2

World Scale Apply

X 0 mm X 0 mm H 0 °

Y 0 mm Y 0 mm P 0 °

Z 0 mm Z 0 mm B 0 °

```
Expression Editor
Load... Save... Compile... Execute

1 import c4d, math, random, PIP_utils
2 from c4d import utils as u, Matrix as m, Vector as v, Quaternion as q
3 from math import *
4
5 from PIP_3D_Matrix import *
6 from PIP_3D_Matrix import PIP_Matrix as pm
7 from PIP_3D_Vector import PIP_Vector as pv
8
9 class TCP_Data:
10
11     def __init__(self, mat):
12
13         self.mat = mat
14         self.pos = mat.off
15         self.rot = q()
16         self.conf = None
17         self.v_tcp = 0
18         self.v_ori = 0
19
20         self.update(mat)
21
22     def update(self, mat):
23
24         last_mat = self.mat
25
26         pos = mat.off
27         rot = q()
28         rot.SetMatrix(mat)
29
30
31         self.v_tcp = (pos-self.pos).GetLength()
32         self.v_ori = MatrixAngle(self.mat,last_mat)
33
34         self.pos = pos
35         self.rot = rot
36         self.mat = mat
37
38     def __str__(self):
39         return "v_tcp : " + str(self.v_tcp) + " || v_ori : " + str(self.v_ori)
40
41     def MatrixAngle(m1,m2):
42
43         q1 = q()
44         q2 = q()
45
46         m2 *= ~m1
47         m1 *= ~m1
48
49         q1.SetMatrix(m1)
50         q2.SetMatrix(m2)
51
52         a = QuaternionAngle(q1,q2)
53         return a
54
55     def QuaternionAngle(q1,q2):
56
57         q3 = u.QMul(q1,q2)
58         a = u.Deg(2 * acos(q3.w))
59
60         return a
61
62     def drawAxes(bd, mat,size = 100):
63
64
65         p0 = mat.off
66         px = (mat * m( v(size, 0, 0) )).off
67         py = (mat * m( v(0, size, 0) )).off
68         pz = (mat * m( v(0, 0, size) )).off
69
70         bd.SetPen(v(1,0,0))
71         bd.DrawLine(p0 ,px, c4d.NOCLIP_Z)
72
73         bd.SetPen(v(0,1,0))
74         bd.DrawLine(p0 ,py, c4d.NOCLIP_Z)
75
76         bd.SetPen(v(0,0,1))
77         bd.DrawLine(p0 ,pz, c4d.NOCLIP_Z)
78
79         return True
80
81
82 tcp = None
83
84 def draw(bd):
85
```

File Edit View Objects Tags Bookmarks

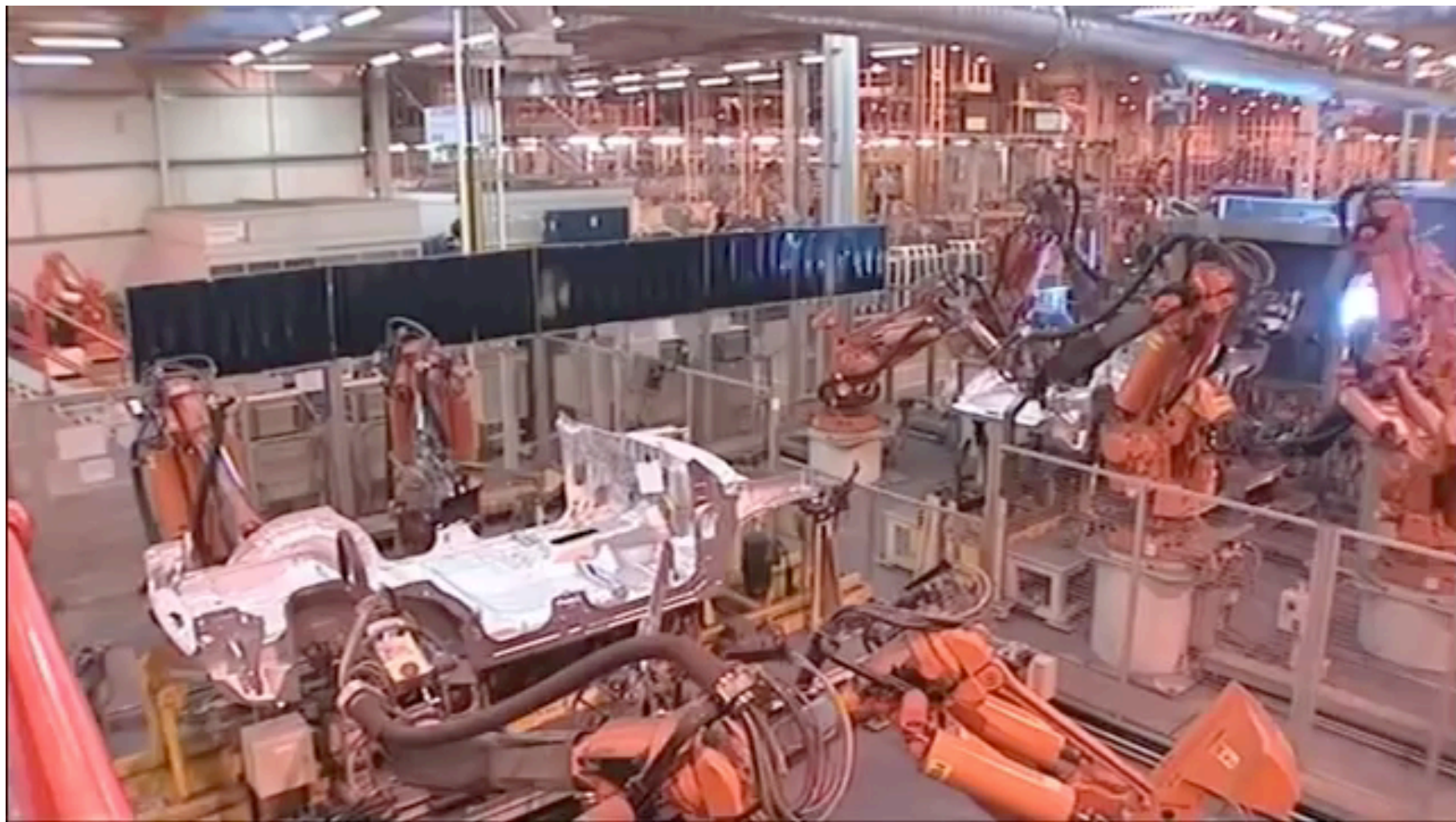
- Location
- Link\_00
- Null.3
- EndEffector
- IRB2400\_12kg

Mode Edit User Data

No Errors!

Line: - Position: -

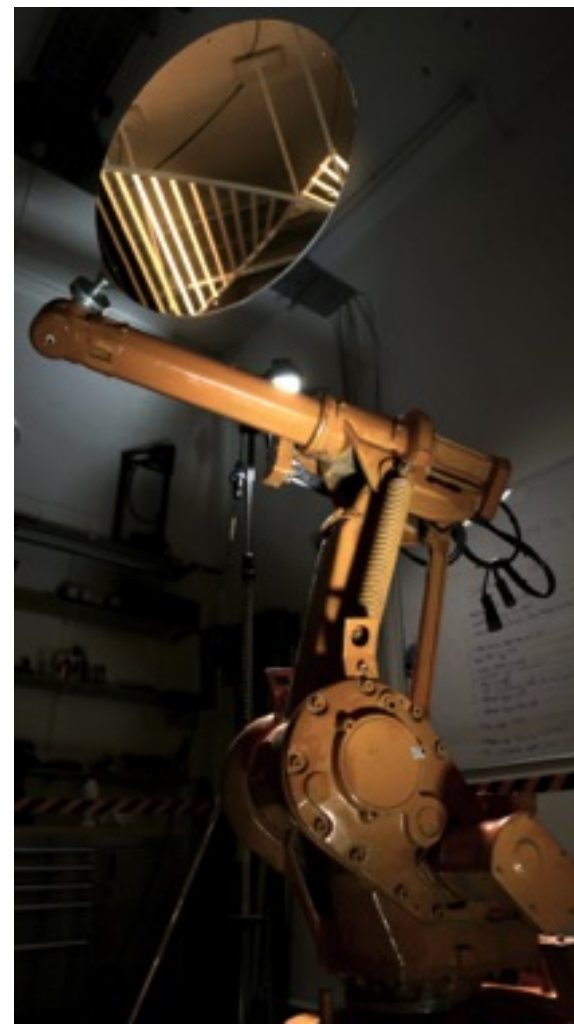
Line 54, Pos. 1



Jaguar, Solihull



Robotraders



JBS



Hull2017

# Sound

## Components

### Installation Audio

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#### Ambience

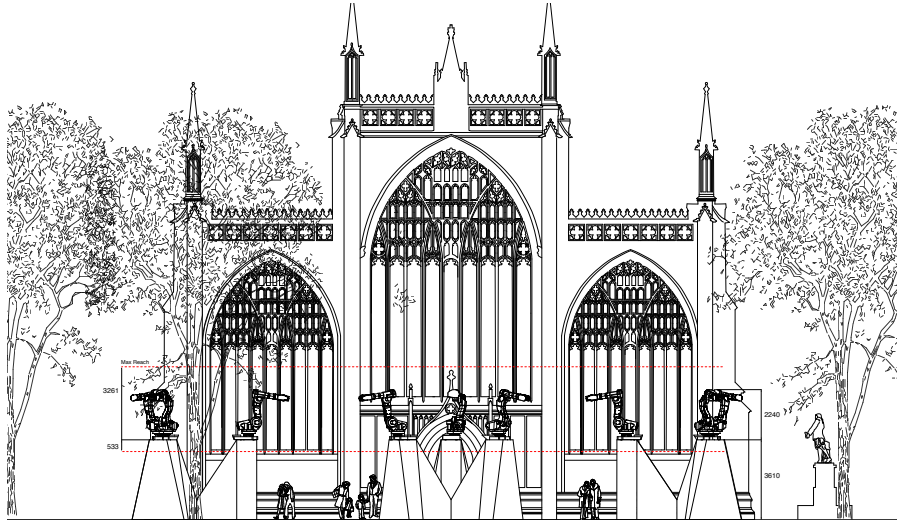
General PA at each site

#### Site Specific

Abstract atmospheric soundscape defining spatial ambience

Composed from;

- Found sounds, robot movements / Joe Reeves, Jez Riley French
- Founds sounds, of the spaces / Sounds of Hull



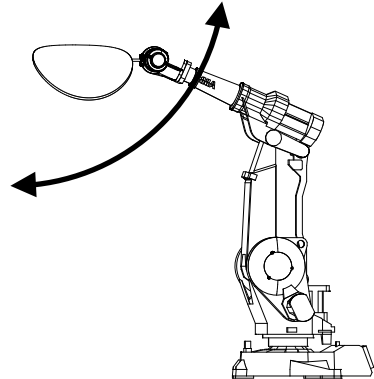
#### Movement

Embedded in plinth or directional sound on robot

#### Robots

Enhancing the kinetic animation local to each robot

- Found sounds



### Special Events

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#### Additional commissions

Live performances in response to installation

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