

ALEXANDRA ROAD ESTATE

Environmental Evaluation - Hadeel Mohammed,
Penny Tan, Karan Patel, Daniel Owen



WHO?

Sydney Cook new borough architect for Camden and **Neave Brown**

WHAT?

Council housing, build high-density, low-rise social housing

WHERE?

Located besides the Overground railway tracks inbetween **South Hampstead** and Kilburn High Road

WHEN?

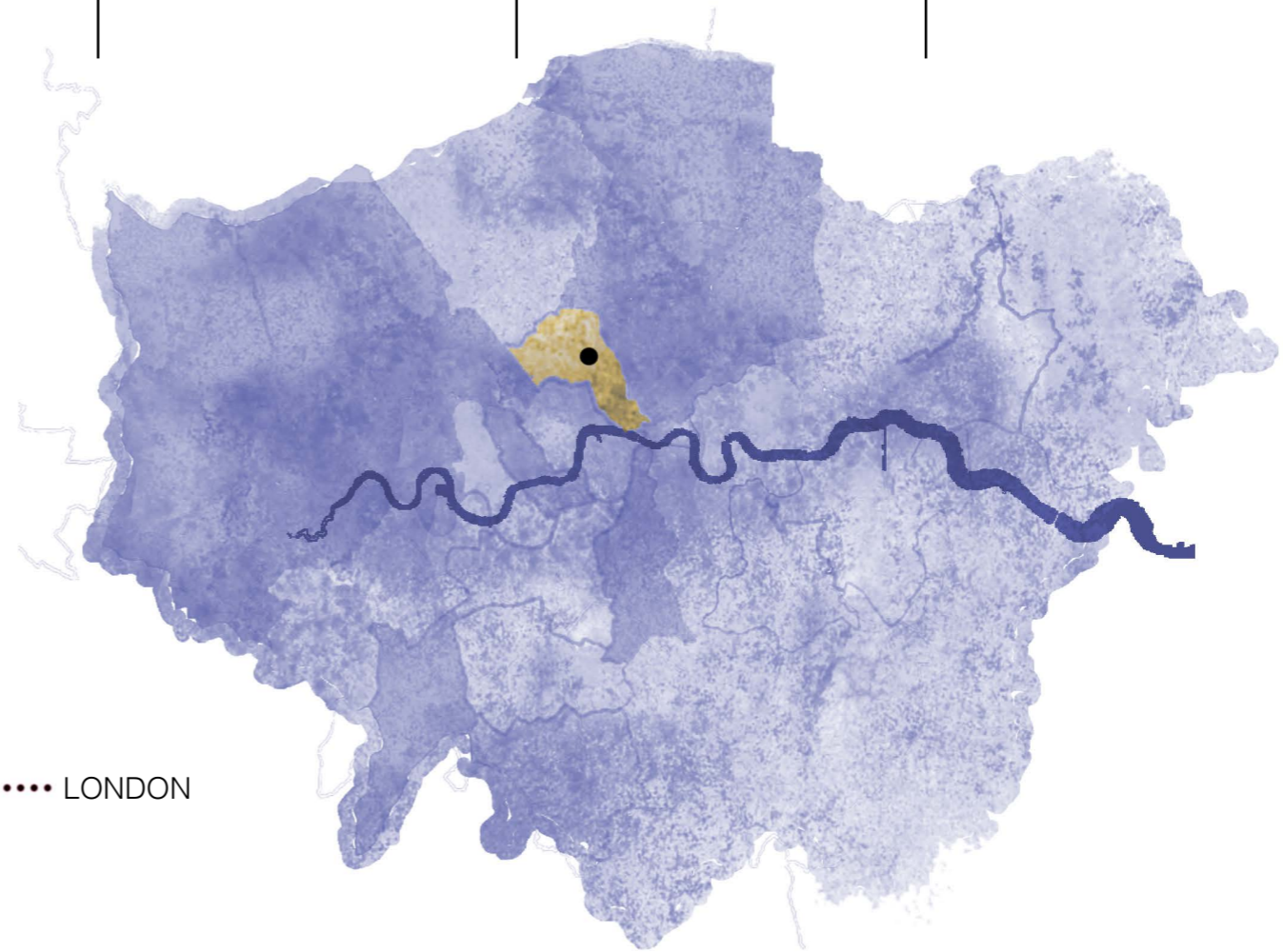
Building began in **1972**, the first residents moved in in 1978 and the estate as a whole was completed in **1979**

WHY?

Metropolitan **Borough of Camden** was formed in 1964

5W's

SITE LOCATION



● LONDON

The London Borough of Camden is a borough in north west London, and forms part of Inner London. The southern reaches of Camden form part of central London. The local authority is Camden London Borough Council.

Latitude: 55.3781° N, 3.4360° W

ALEXANDRA ROAD ESTATE

Neave Brown, 1968 - Post War Modernist Social Housing



Linear Stepped Form - Precedent

Linear stepped form was influenced by Patrick Hodgkinson and Denys Lasdun's University of East Anglia (One of several post war university's) Ziggurats student accommodation building also Grade II* listed.



Patrick Hodgkinson - Brunswick Centre ,
Bloomsbury (1967 - 72)



Sir Denys Lasdun - Ziggurats, UEA Student
Accommodation (1962-68)



Neave Brown - Alexandra Road,
Camden (1968 - 78)

HISTORY OF SITE

The Metropolitan Borough of Camden was formed in 1964 and comprised the former boroughs of Hampstead, Holborn and St Pancras – respectively intellectual, wealthy and radical. It was also the third richest borough in London in terms of rateable value. Add the politics of a young and ambitious Labour council, for whom ‘the main aim was more housing – beginning and end’ and conscious of its flagship role, and that made for some of the most exciting council housing of modern times.

Sydney Cook was appointed as the new borough architect for Camden from 1965 to 1973. As borough architect, Cook embarked on an ambitious programme to build high-density, low-rise social housing. The housing projects were designed by architects appointed by Cook. In only eight years they managed to realise 47 social housing projects of a quality, scale and ambition that has arguably not been surpassed, despite subsequent spending booms. These include Alexandra Road, the Brunswick Centre, Highgate New Town and Branch Hill designed by a roll call of talent including Neave Brown, Patrick Hodgkinson, Peter Tabori, Gordon Benson and Alan Forsyth. Individual buildings are famous locally and often loved by their residents, of which I must admit to being one. However, up until now there has been a conspicuous lack of documentation about the wider building project.



Brunswick Centre



Highgate New Town

Before the development, Alexandra Road was an area of some 600 decaying Victorian villas, scheduled for demolition. Residents mounted fierce opposition to a commercial redevelopment plan which projected three fourteen-storey high tower blocks. The developer withdrew and the Council purchased the 13.5 acres for social housing purposes in 1966.

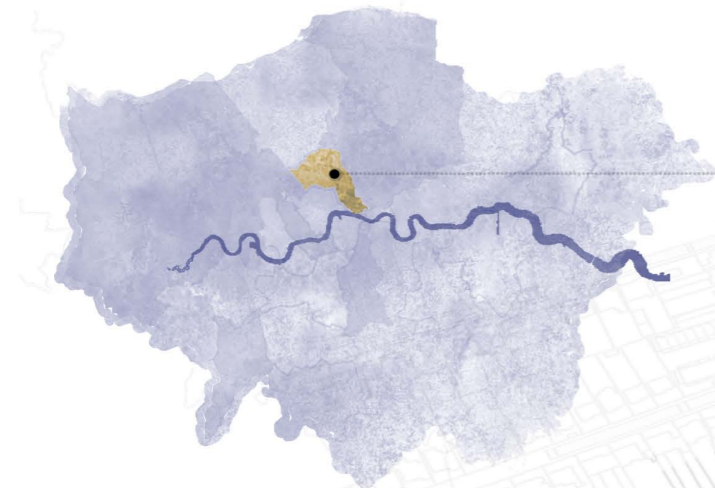
The basic design of the finished estate was determined in 1968 but met resolute opposition from Camden’s Planning Department which believed a low-rise development could not achieve the population density required. The policy brief stipulated 136 persons per acre, Planning asked for 150, Brown won the day by promising 210 – a figure higher than most high-rise schemes achieve.

A final budget was set at £7.15m. Building began in 1972, the first residents moved in in 1978 and the estate as a whole was completed in 1979. But not before myriad difficulties involving the 175 contractors, a layer of soft clay causing huge problems with foundations and a massive burst water main. Construction costs were also raised by the shortages of materials and labour. The overall price of the scheme ballooned to £20.9m – though this did include significant additional works in the provision of a youth club and play centre, for



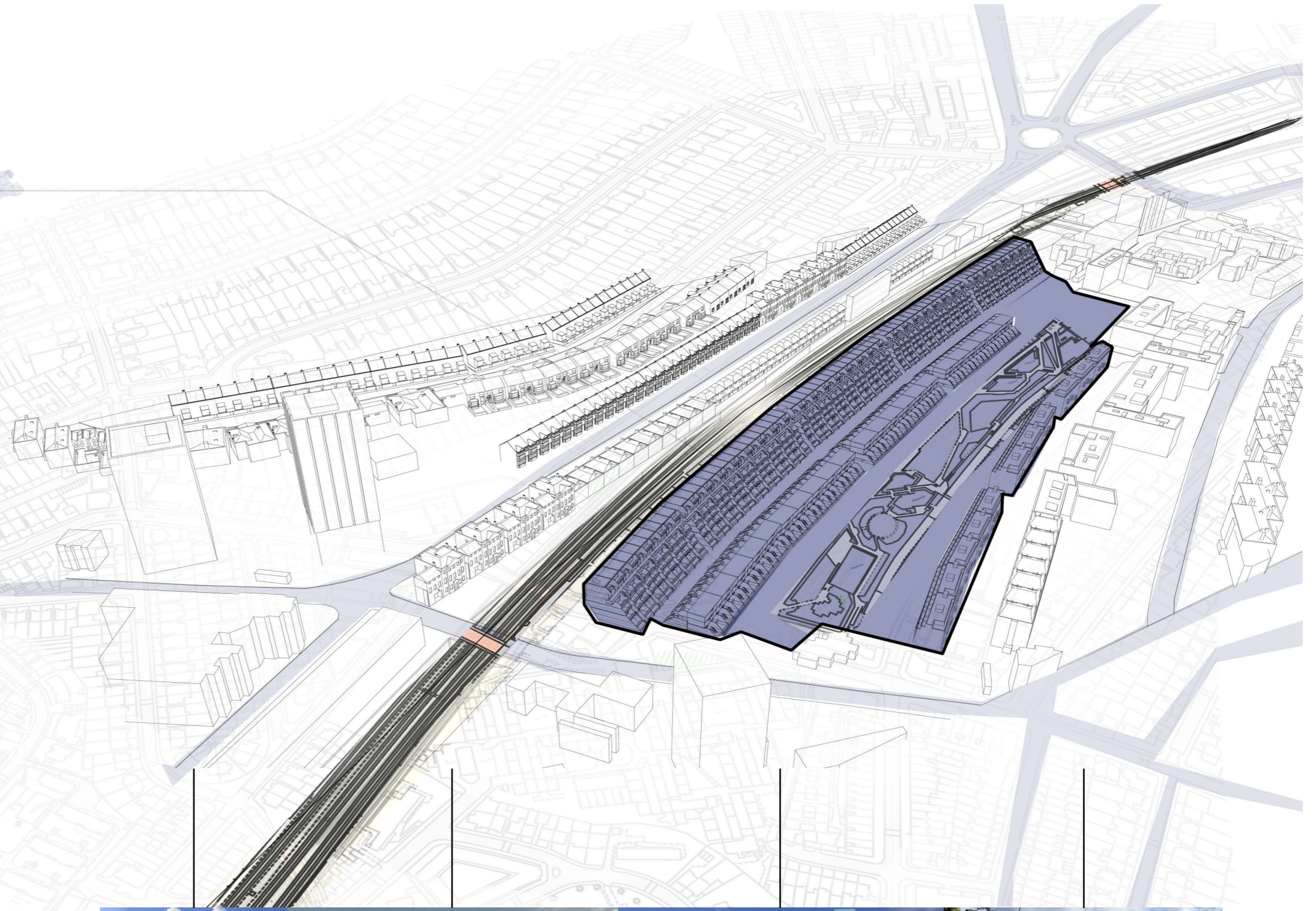
Alexandra Road in its heyday

SITE CONTEXT



The Alexandra Road estate, properly known as the Alexandra and Ainsworth estate, but more commonly, and erroneously, referred to as simply Rowley Way, is a housing estate in the London Borough of Camden, North West London, England.

It is constructed from site-cast, board-marked white, unpainted reinforced concrete. Along with 520 apartments, the site also includes a school, community centre, youth club, heating complex, and parkland.

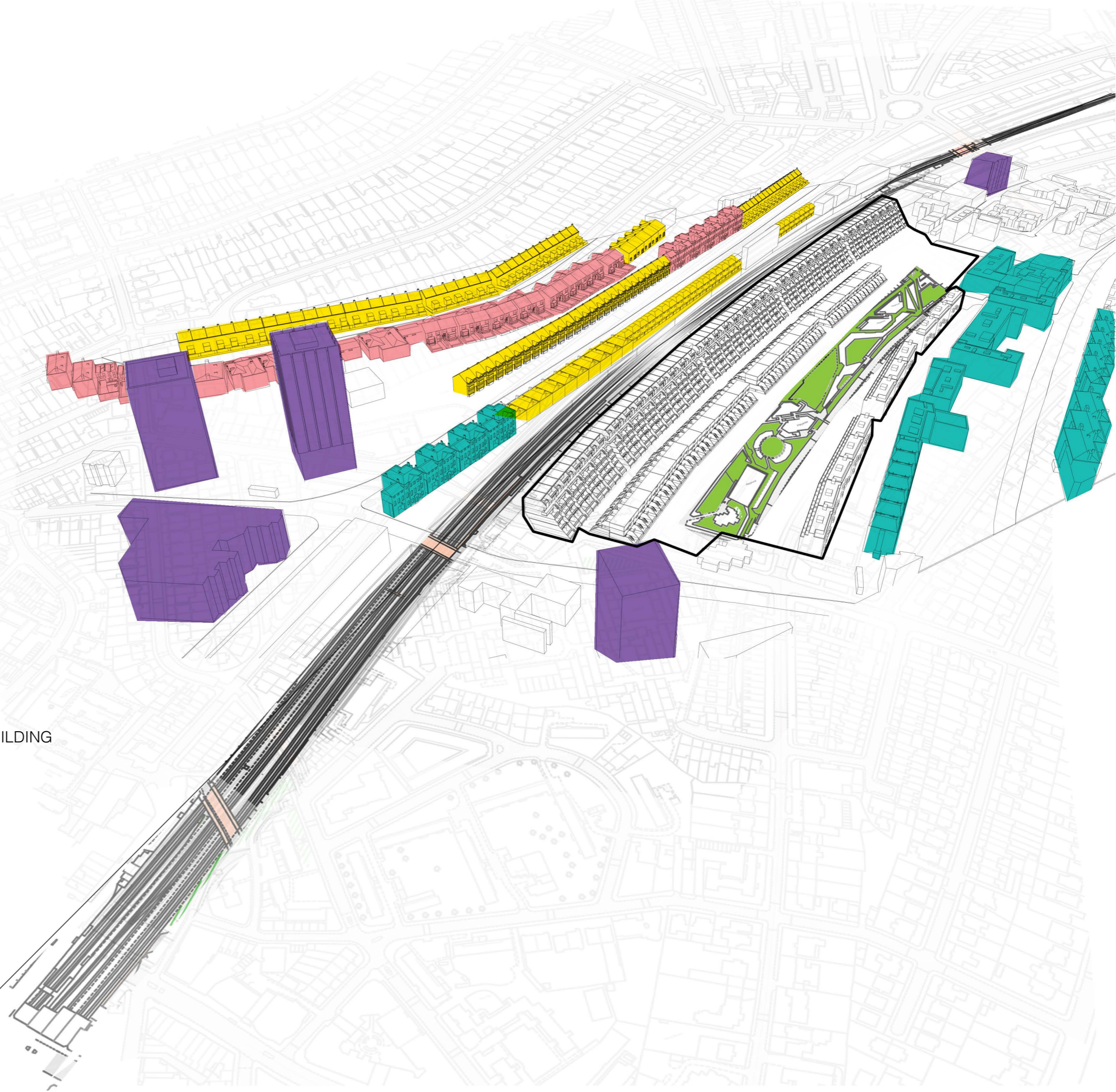




● ROAD TRAFFIC

● RAILWAY TRANSPORTATION LINK

The site is connected by several public transportation links which make the place easily accessible for public and also the local of the area. The transportation links consists of South Hampstead Overground, Swiss Cottage Underground station and convenient bus transportation links.



● HIGH RISE RESIDENTIAL BUILDING

● SEMI-DETACH HOUSE

● TERRACE HOUSE

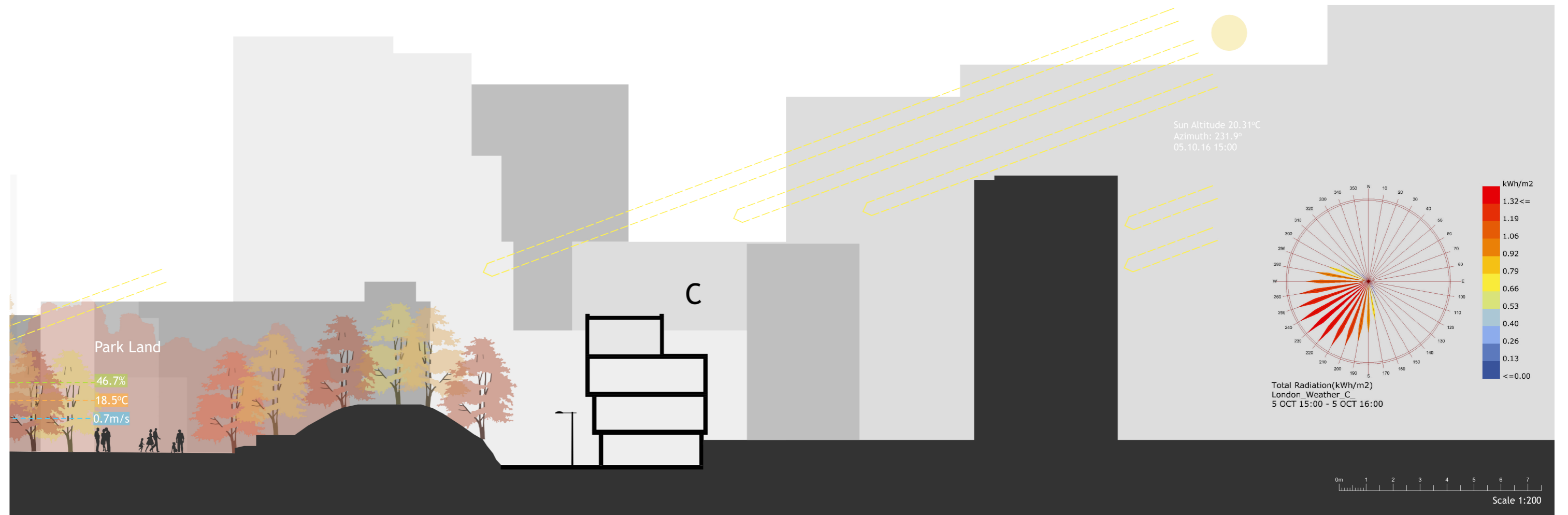
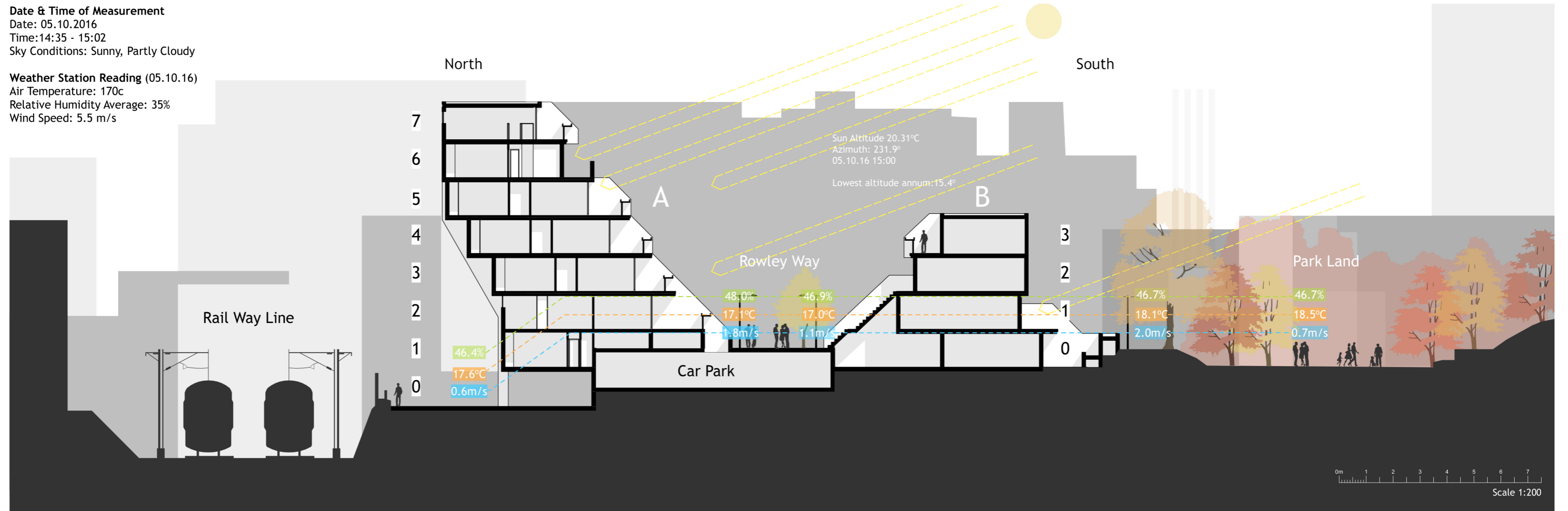
● LOW-RISE FLAT

● PARK

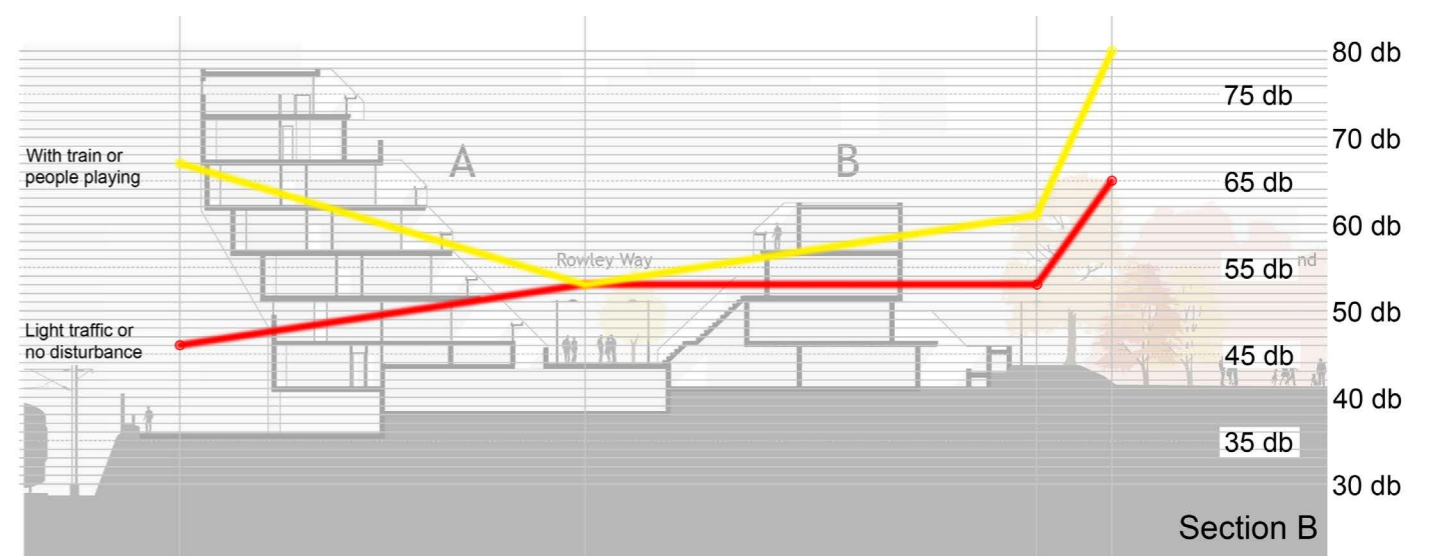
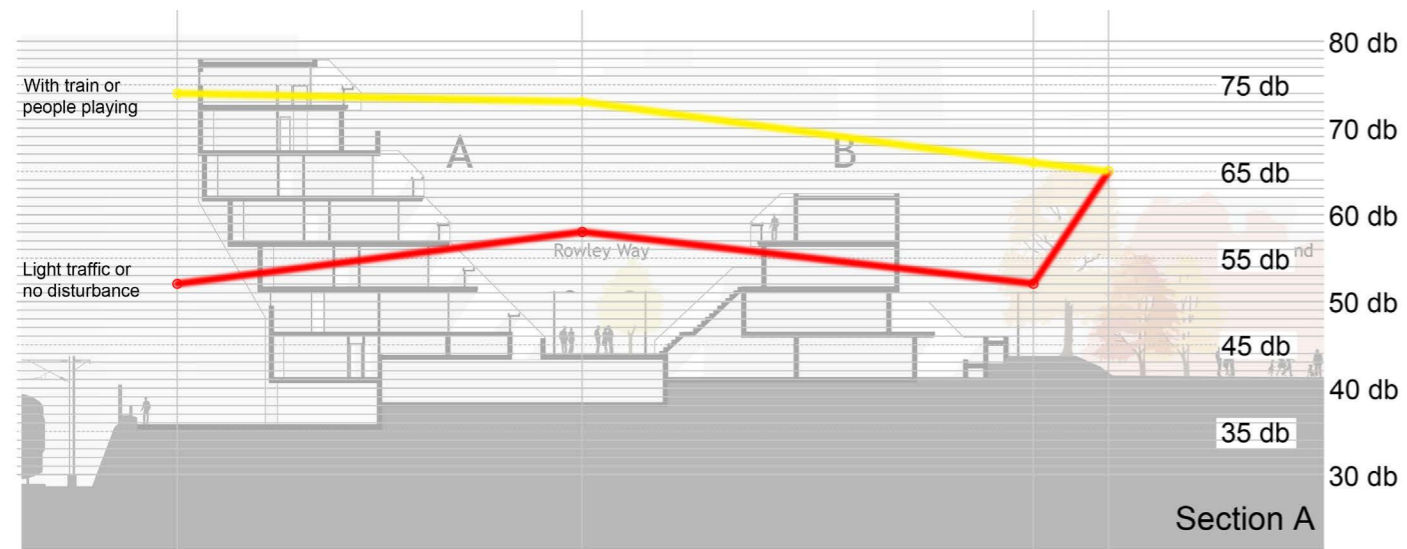
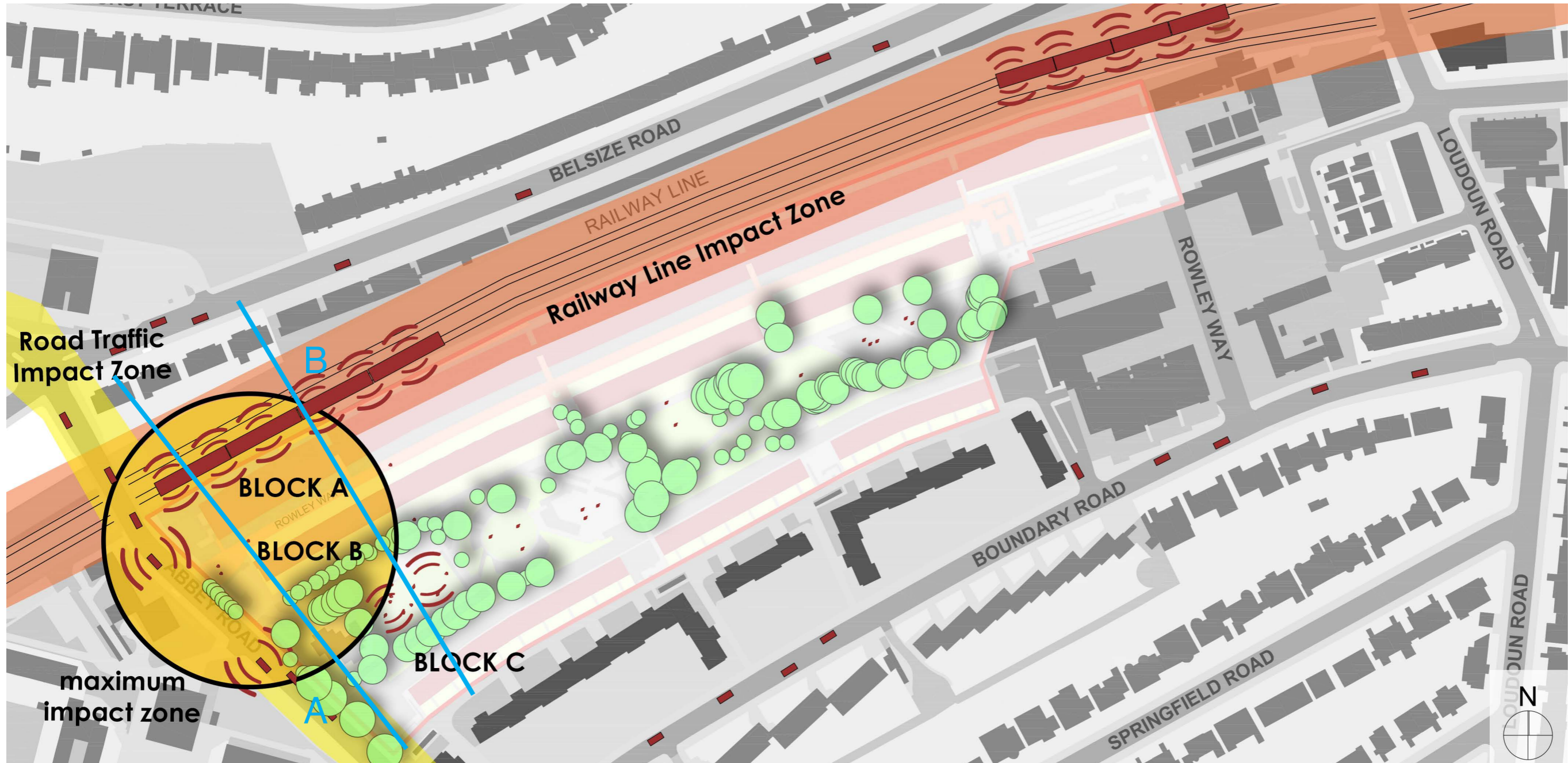
SITE SECTION

Date & Time of Measurement
 Date: 05.10.2016
 Time: 14:35 - 15:02
 Sky Conditions: Sunny, Partly Cloudy

Weather Station Reading (05.10.16)
 Air Temperature: 17.0c
 Relative Humidity Average: 35%
 Wind Speed: 5.5 m/s



NOISE ANALYSIS



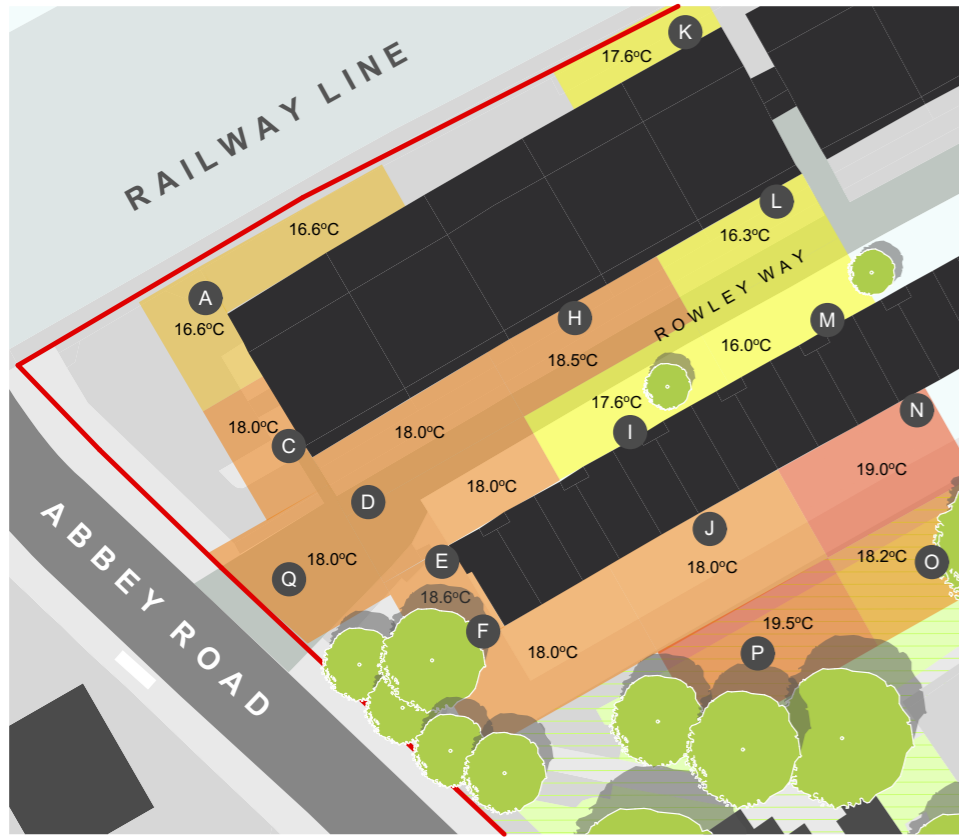
MICRO CLIMATE ANALYSIS

MORNING

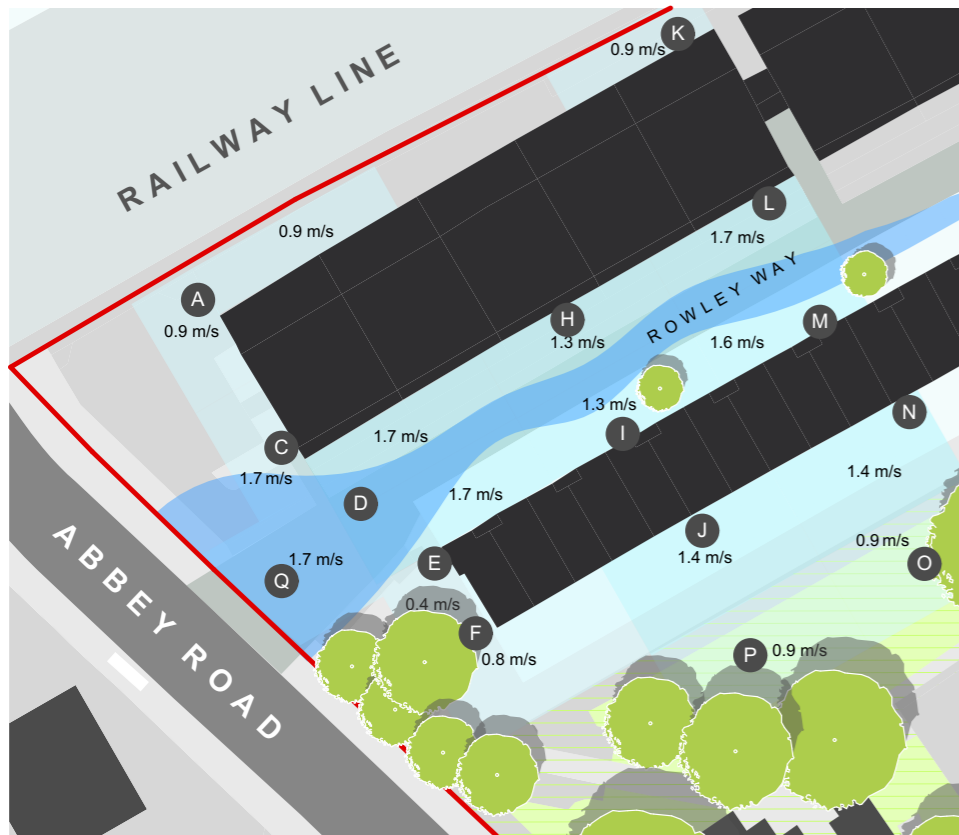
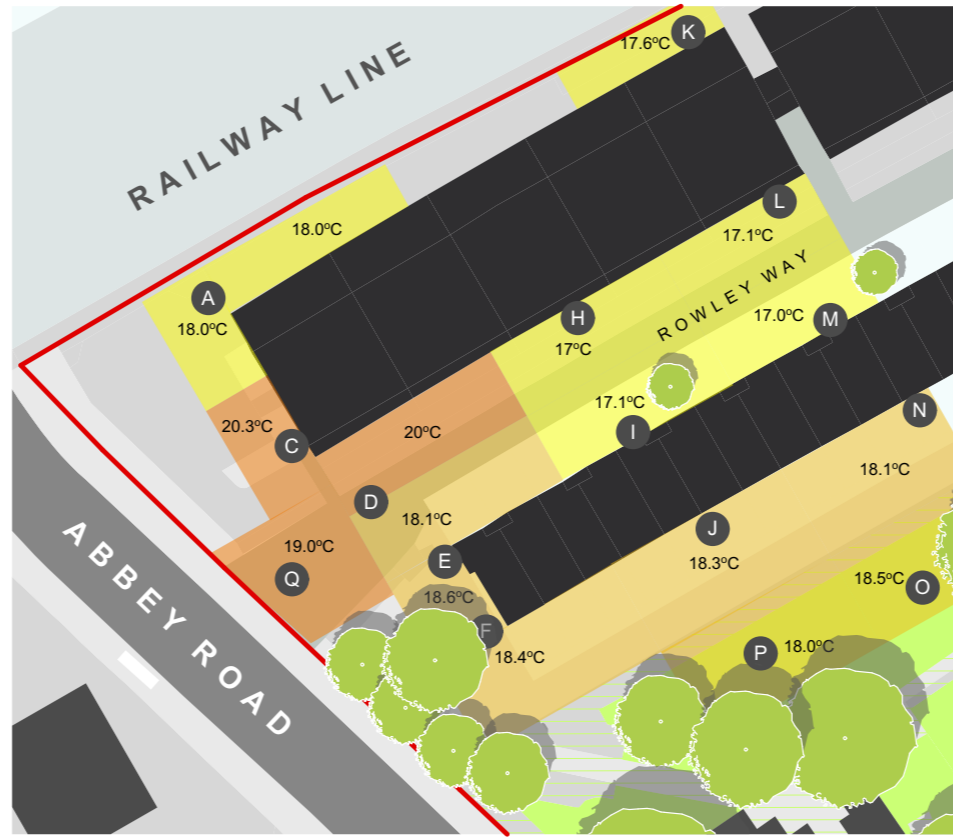
Time: 09:56 - 10:27

AFTERNOON

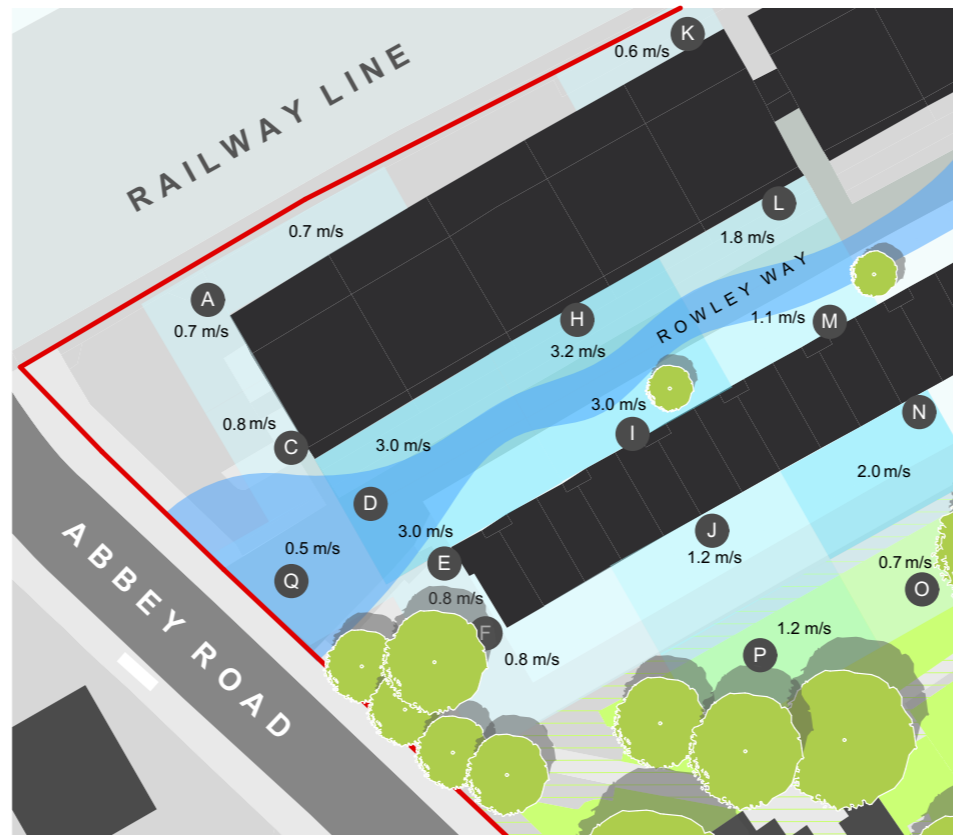
Time: 14:35 - 15:02



AIR TEMPRATURE (°C)



WIND VELOCITY (m/s)

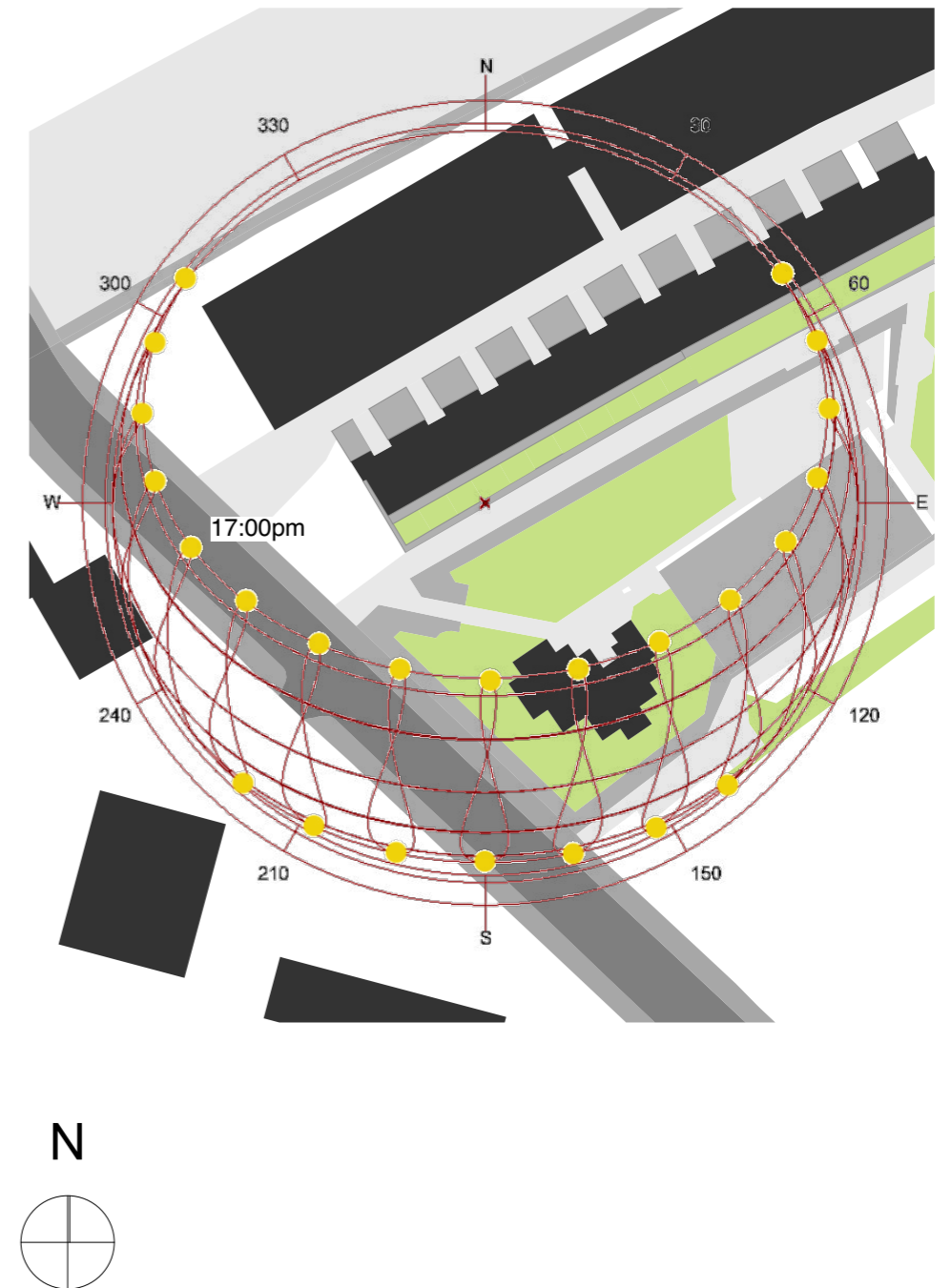


SITE WEATHER CONDITIONS

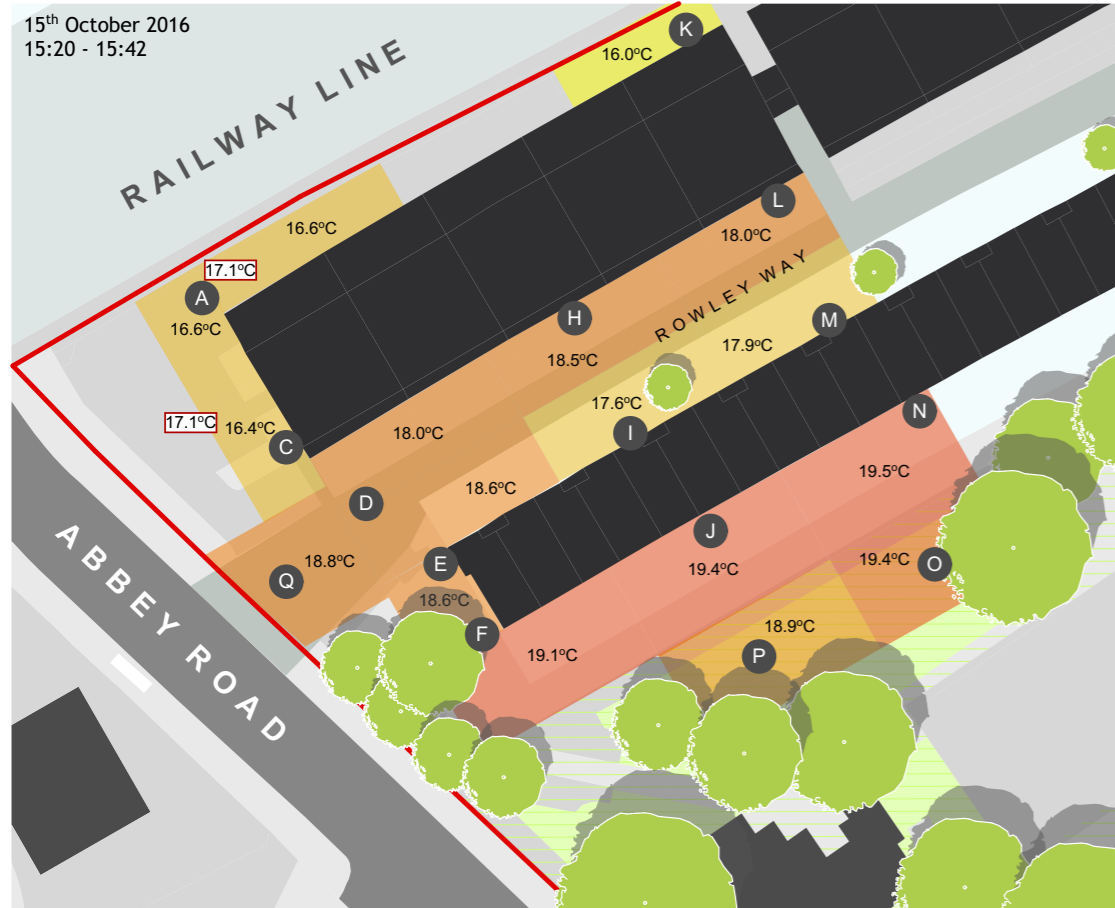
Date: 05.10.2016
Sky Conditions: Sunny, Partly Cloudy

WEATHER STATION

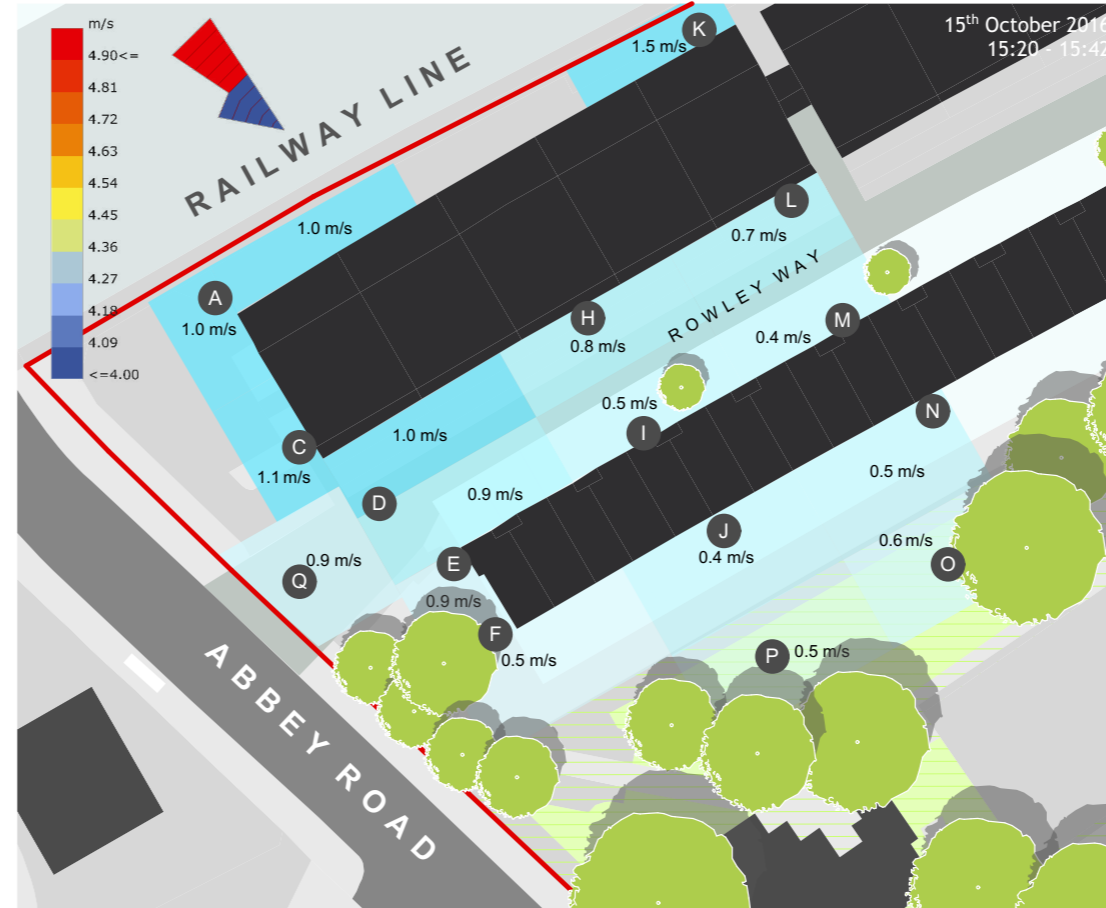
Weather Station Reading (05.10.16)
Air Temperature: 17°C
Relative Humidity Average: 35%
Wind Speed: 5.5 m/s



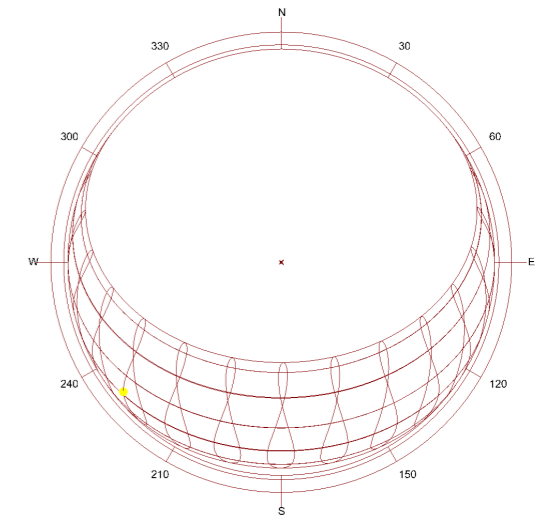
PERSONAL PERCEPTION



DRY BULB TEMPERATURE



AIR VELOCITY



PARAMETERS

Date & Time of Spot Measurement
Date: 15.10.2016
Time: 15:20 - 15:42
Sky Conditions: Sunny, Partly Cloudy

Weather Station Reading (15.10.16)
Air Temperature: 18.0°C
Relative Humidity Average: 45%
Wind Speed: 4.5 m/s

X % Relative Humidity

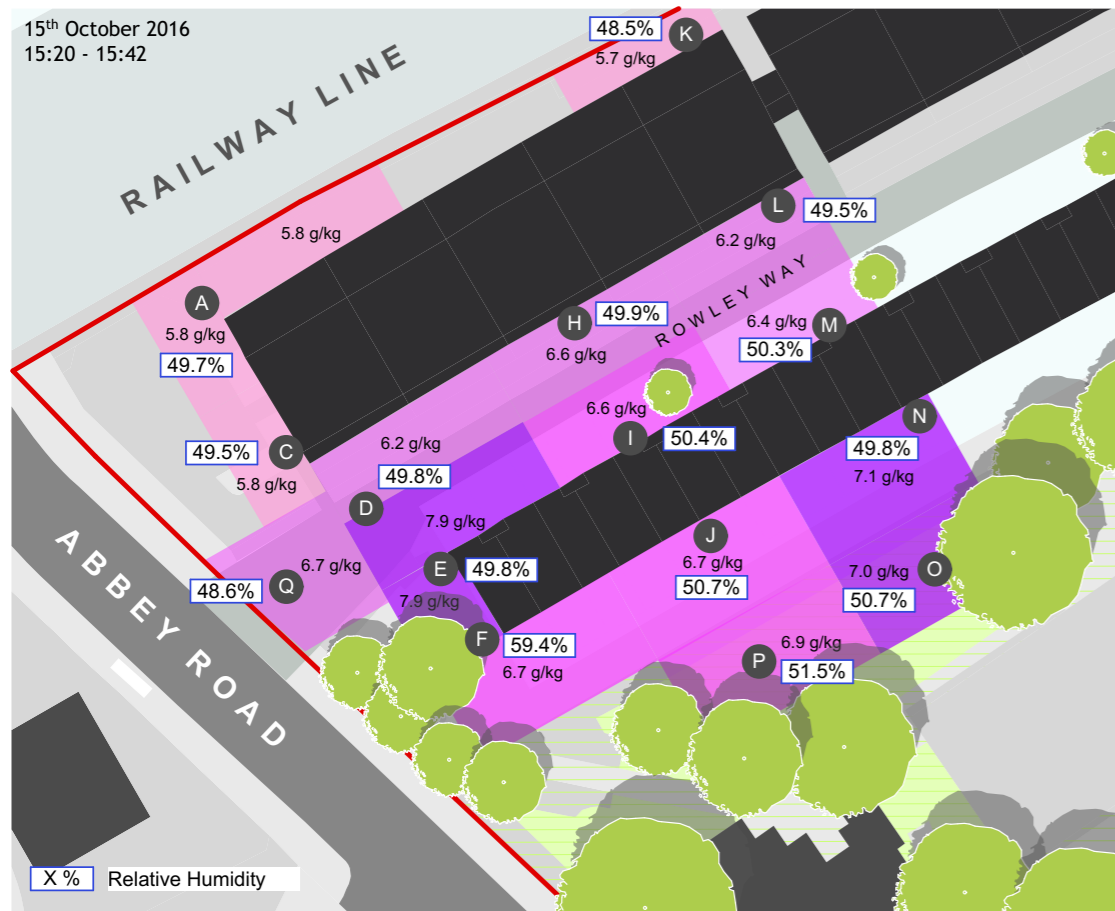
X Universal Thermal Climate Index

X°C Mean Radiant Temperature (MRT):
Calculated Ladybug Solar Adjustment Temperature Component based on hourly weather data for simulated manikin on each spot. Considering context shading, body posture and clothing absorption.

Clothing Absorptivity:
0.7 Lighter Colours (0.7 used - worst case)
0.8 Darker Colours (CIBSE Guide A, 1.6.6.8)

Body Posture: calculated based on people standing at points. (i.e. not sitting)

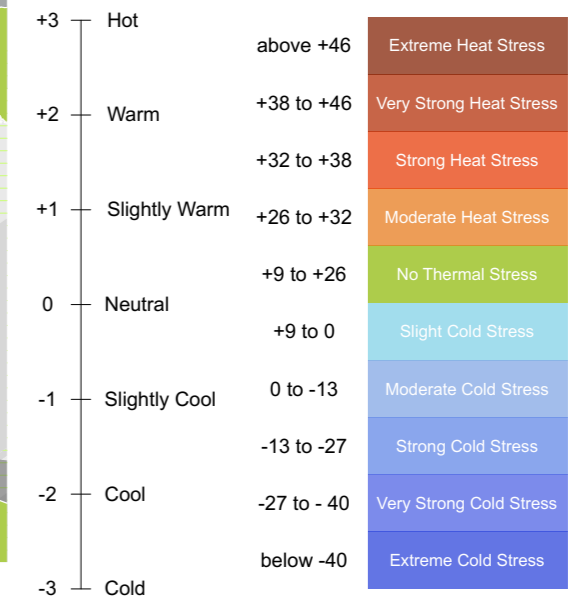
Calculation analysis period: 15.10.16, 15:00 - 16:00



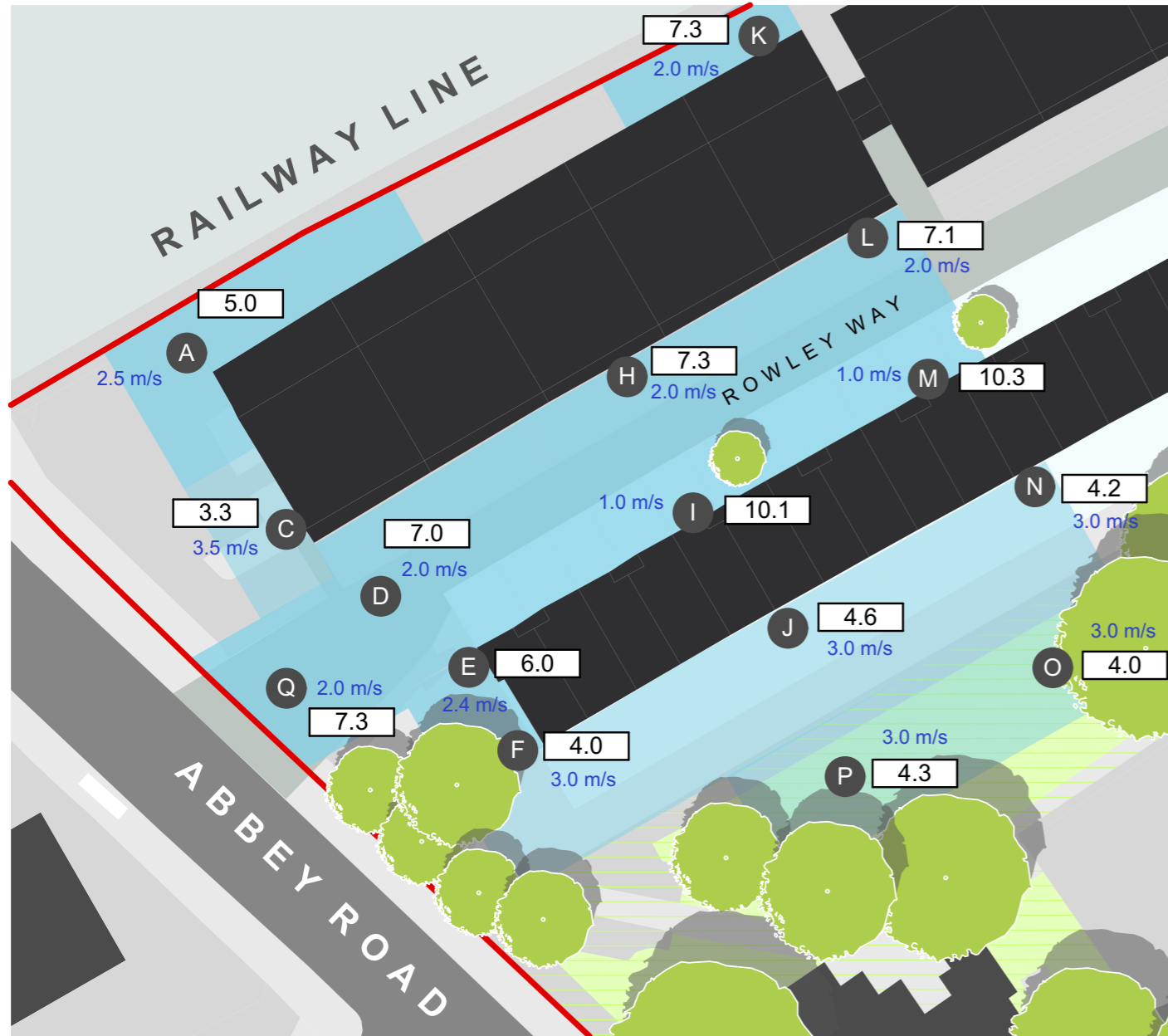
ABSOLUTE HUMIDITY



UTCI + PERSONAL PERCEPTION PLAN (AUTUMN)



UTCI PREDICTION - SUMMER & WINTER



WINTER UTCI

Simulated Prediction (Ladybug + Autodesk Flow Design)

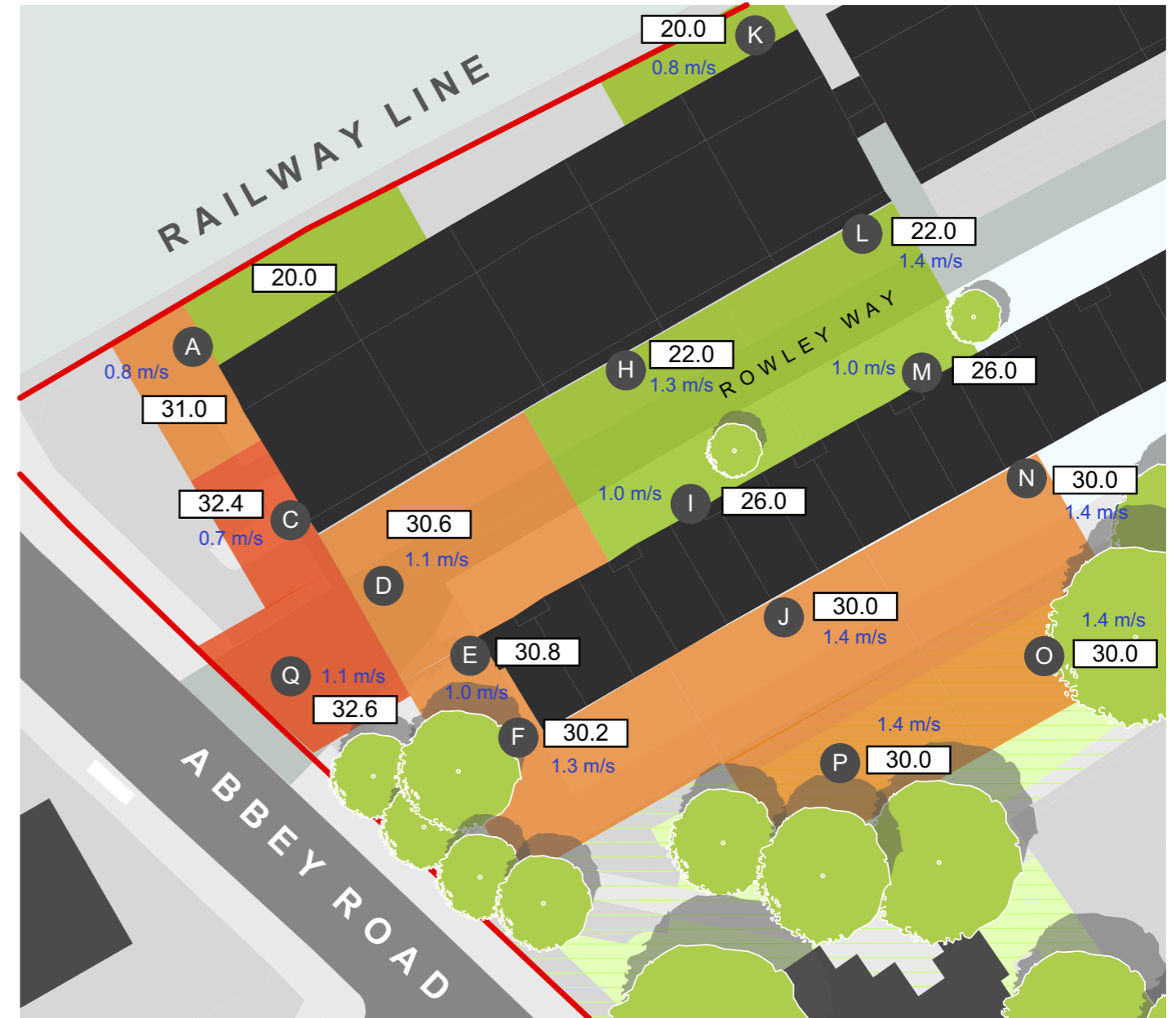
PARAMETERS

Date & Time

Date: 21.12.2016 (Winter Solstice)
Time: 15:00 - 16:00

Environmental Parameters

(Daily average hourly climate data)
Dry Bulb Temperature: 8.6°C
Relative Humidity (RH): 69%
Wind Velocity: 3.5 m/s
Spot point wind velocity predicted using Autodesk Flow Designer (see plan).



SUMMER UTCI

Simulated Prediction (Ladybug + Autodesk Flow Design)

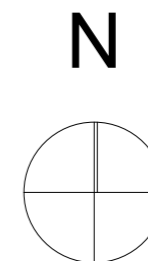
PARAMETERS

Date & Time

Date: 21.06.2016 (Summer Solstice)
Time: 15:00 - 16:00

Environmental Parameters

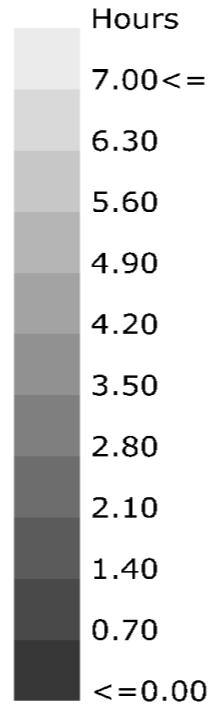
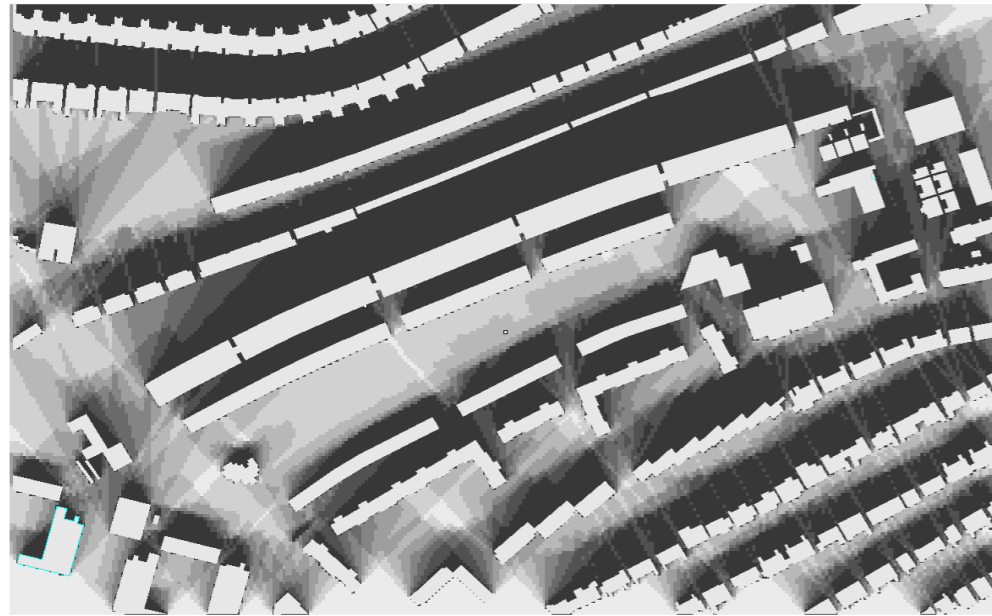
(Daily average hourly climate data)
Dry Bulb Temperature: 20.7°C
Relative Humidity (RH): 50%
Wind Velocity: 3.2 m/s
Spot point wind velocity predicted using Autodesk Flow Designer (see plan).



above +46	Extreme Heat Stress
+38 to +46	Very Strong Heat Stress
+32 to +38	Strong Heat Stress
+26 to +32	Moderate Heat Stress
+9 to +26	No Thermal Stress
+9 to 0	Slight Cold Stress
0 to -13	Moderate Cold Stress
-13 to -27	Strong Cold Stress
-27 to -40	Very Strong Cold Stress
below -40	Extreme Cold Stress

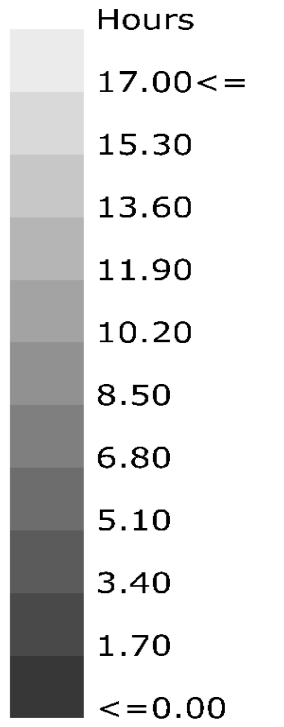
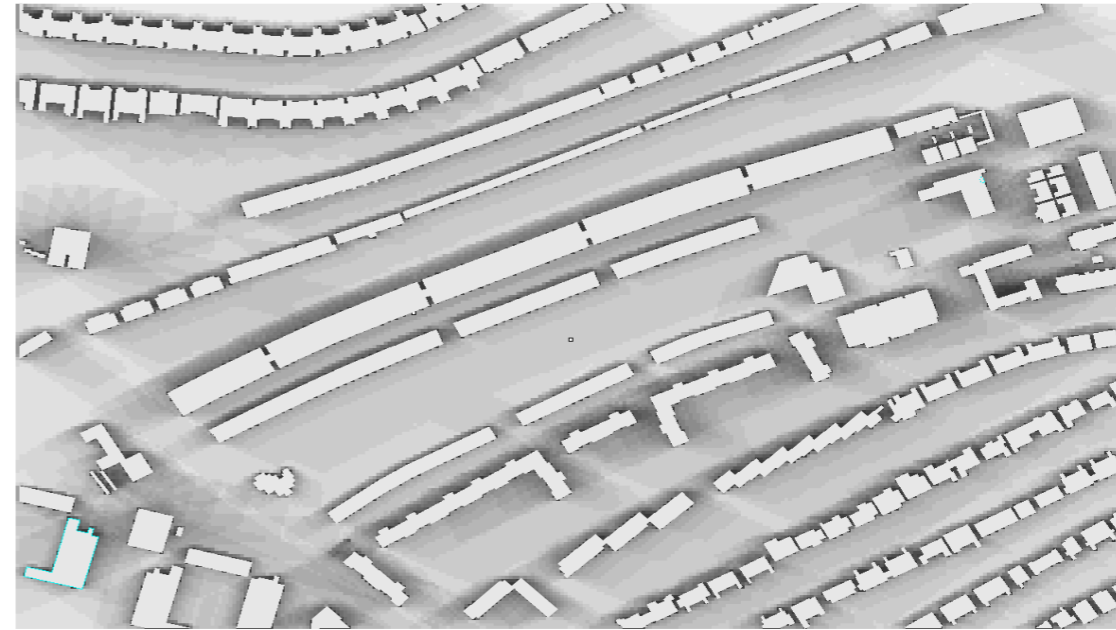
SUNLIGHT HOURS + SOLAR RADIATION

Winter Solstice

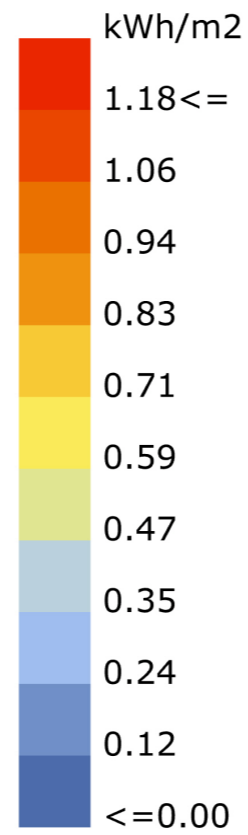
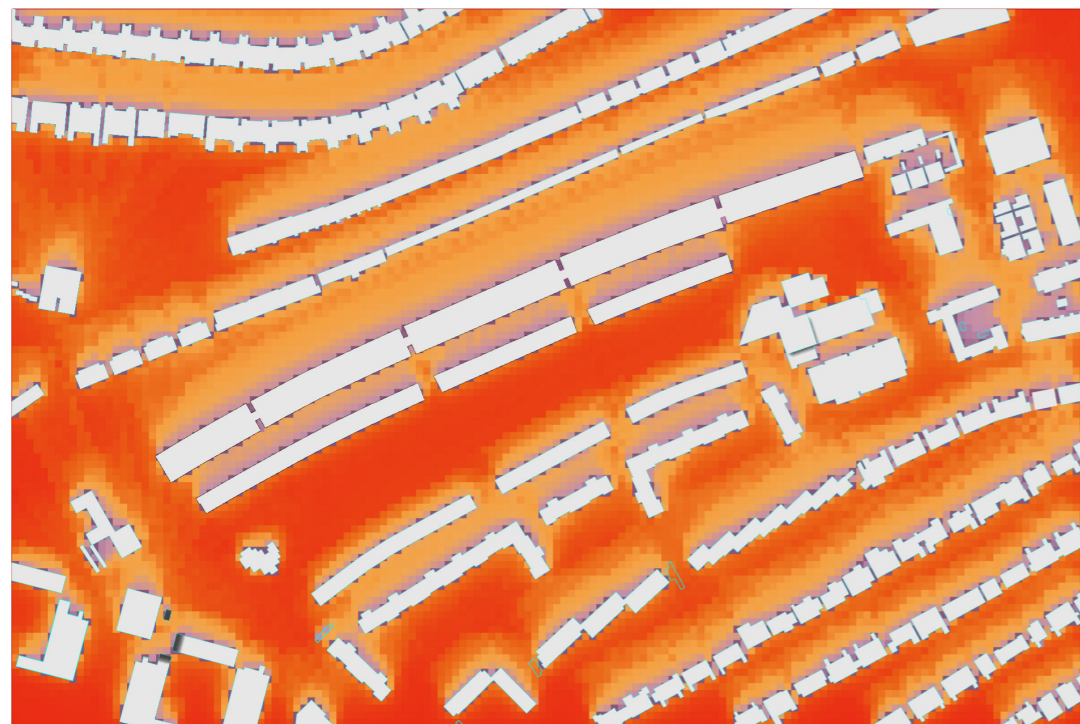


SunlightHours Analysis

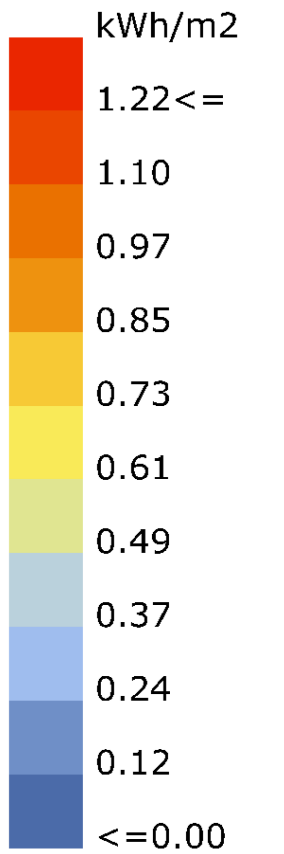
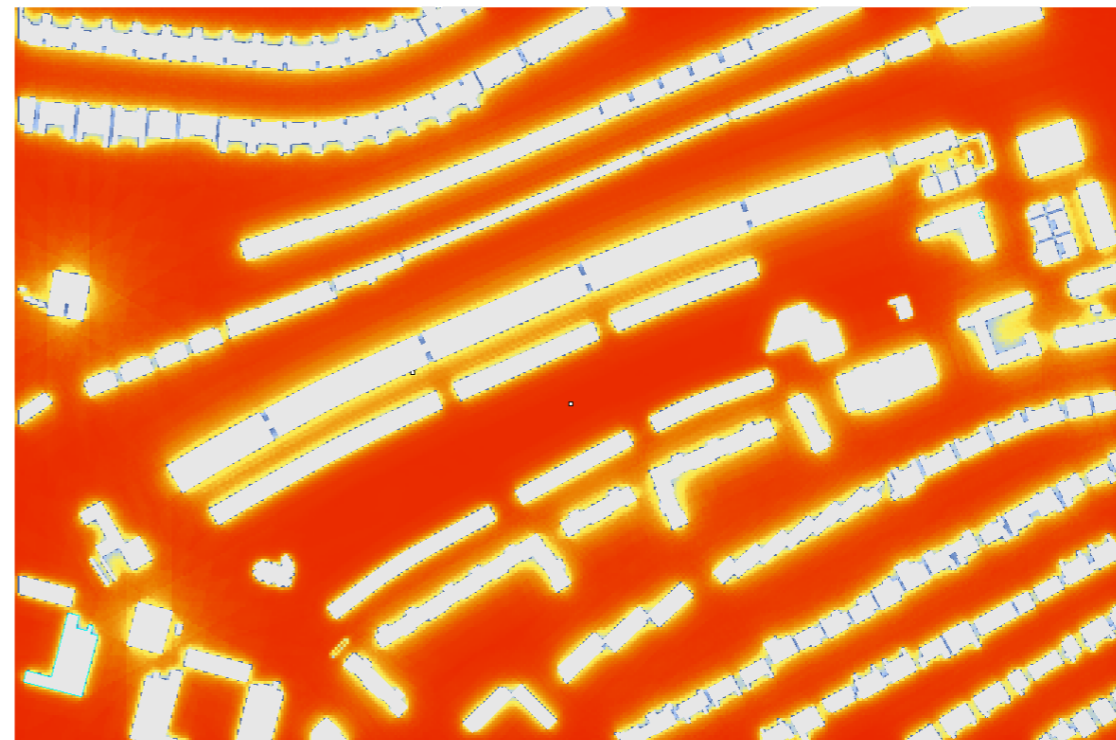
Summer Solstice



SunlightHours Analysis

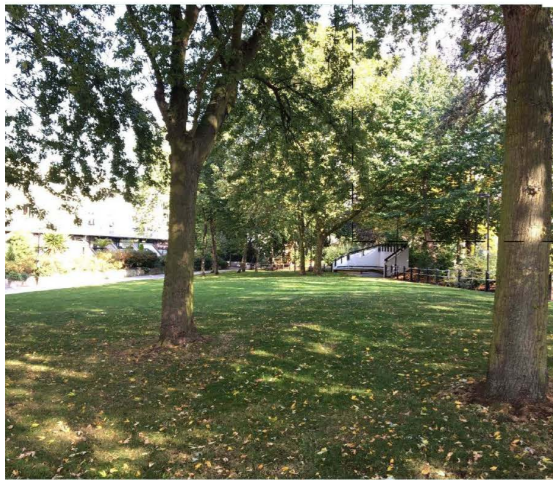


Radiation Analysis
London_Weather_C_
21 DEC 1:00 - 22 DEC 24:00

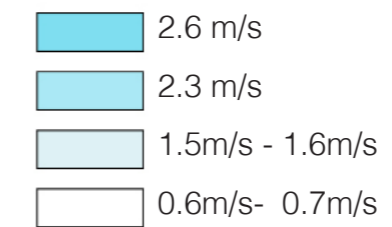
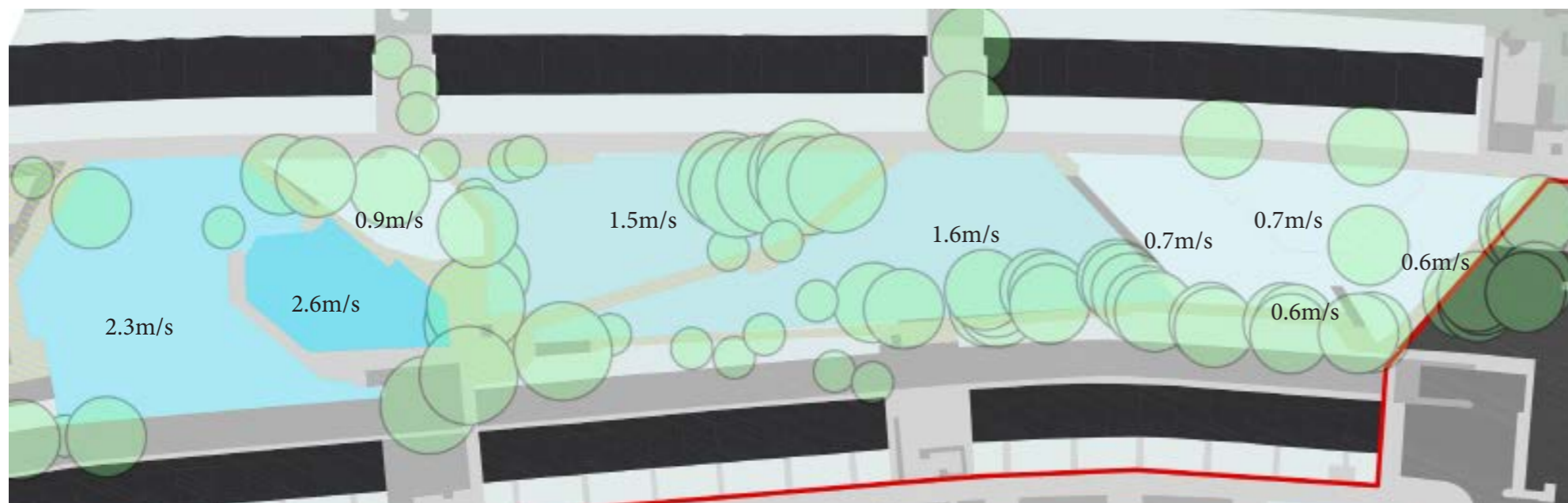
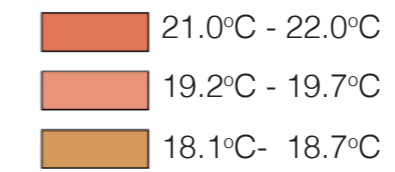
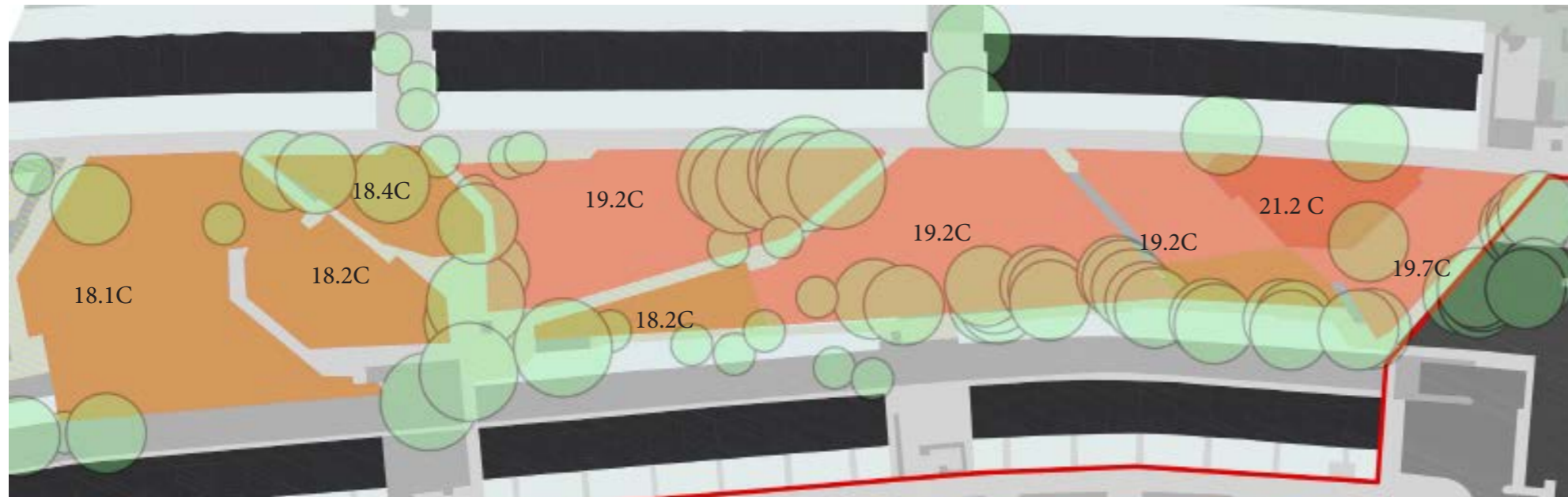
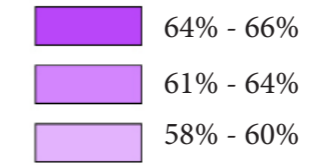
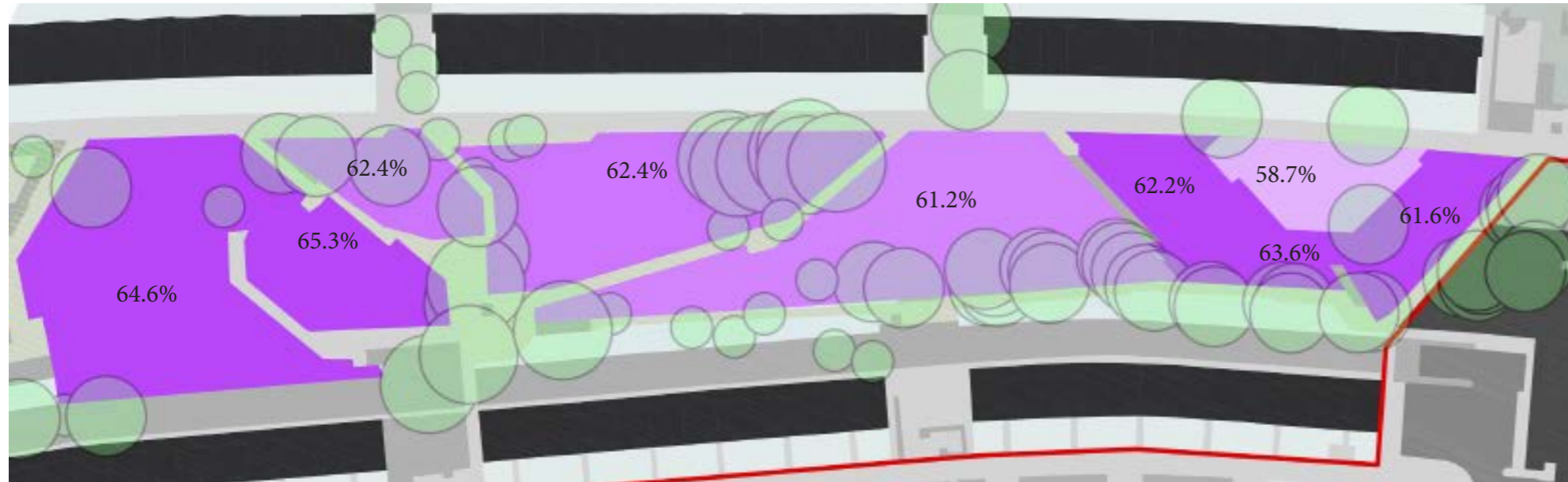


Radiation Analysis
London_Weather_C_
21 JUN 1:00 - 21 JUN 24:00

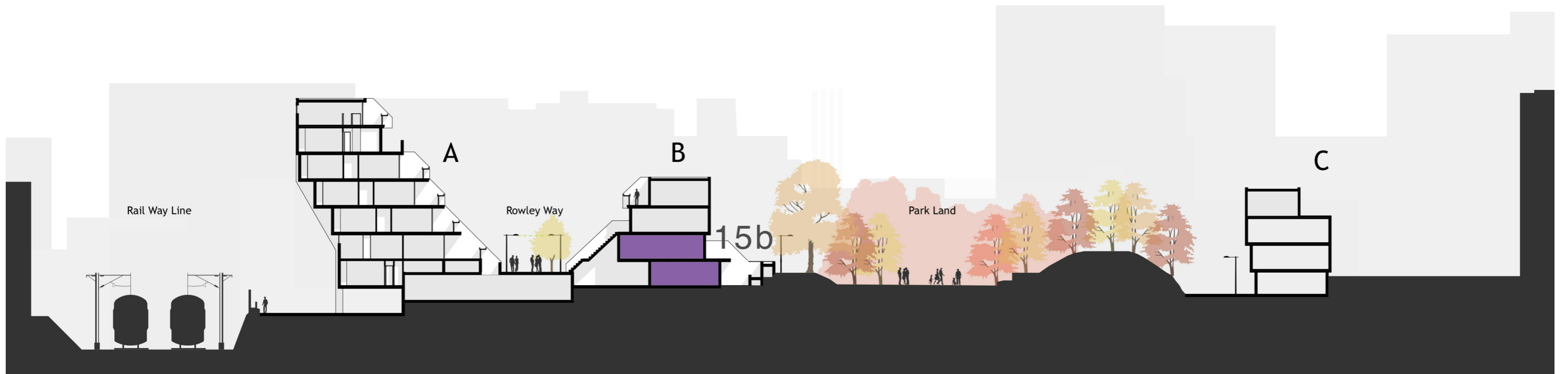
PARK LAND



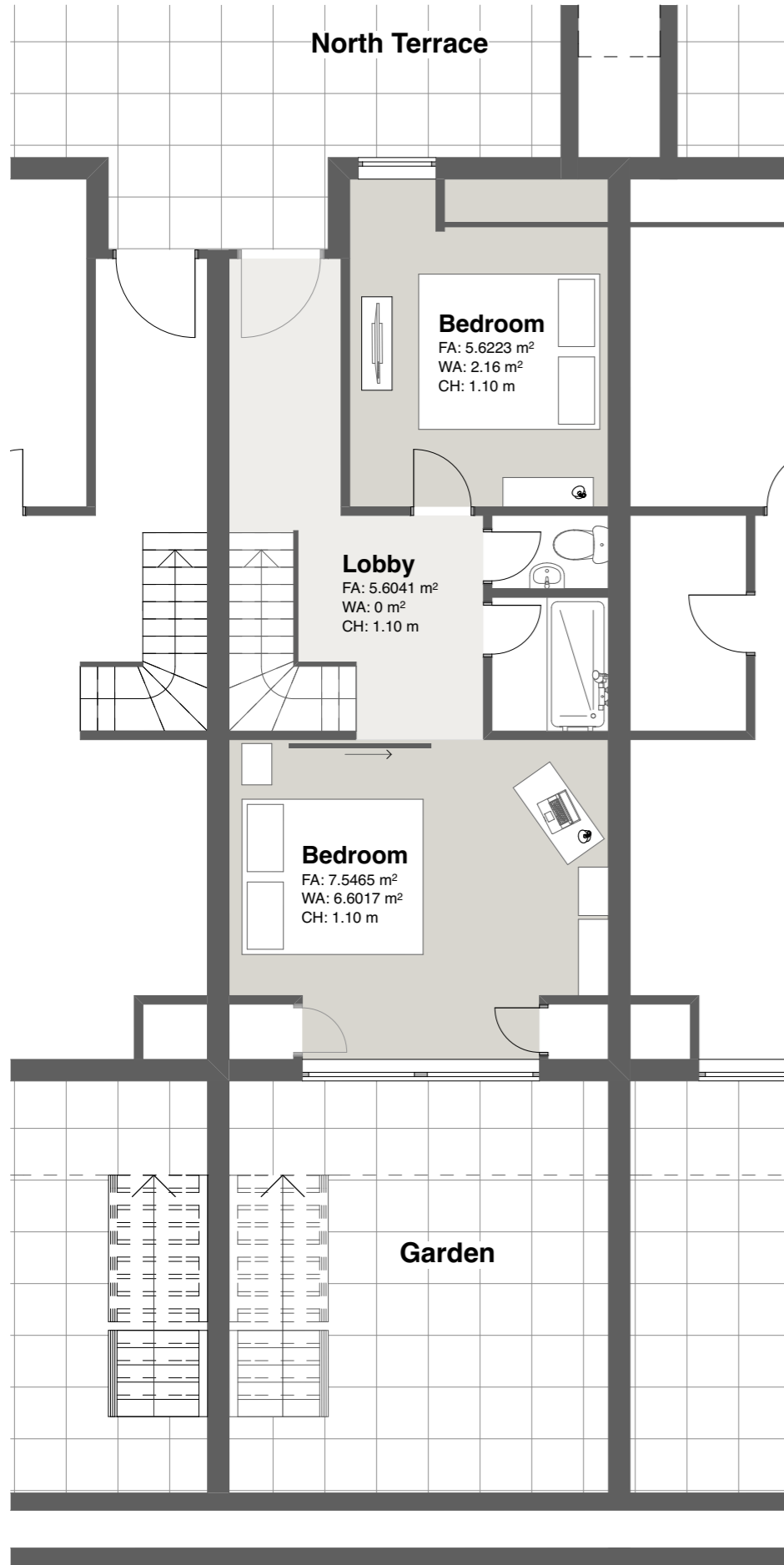
PARK LAND - MICRO CLIMATE



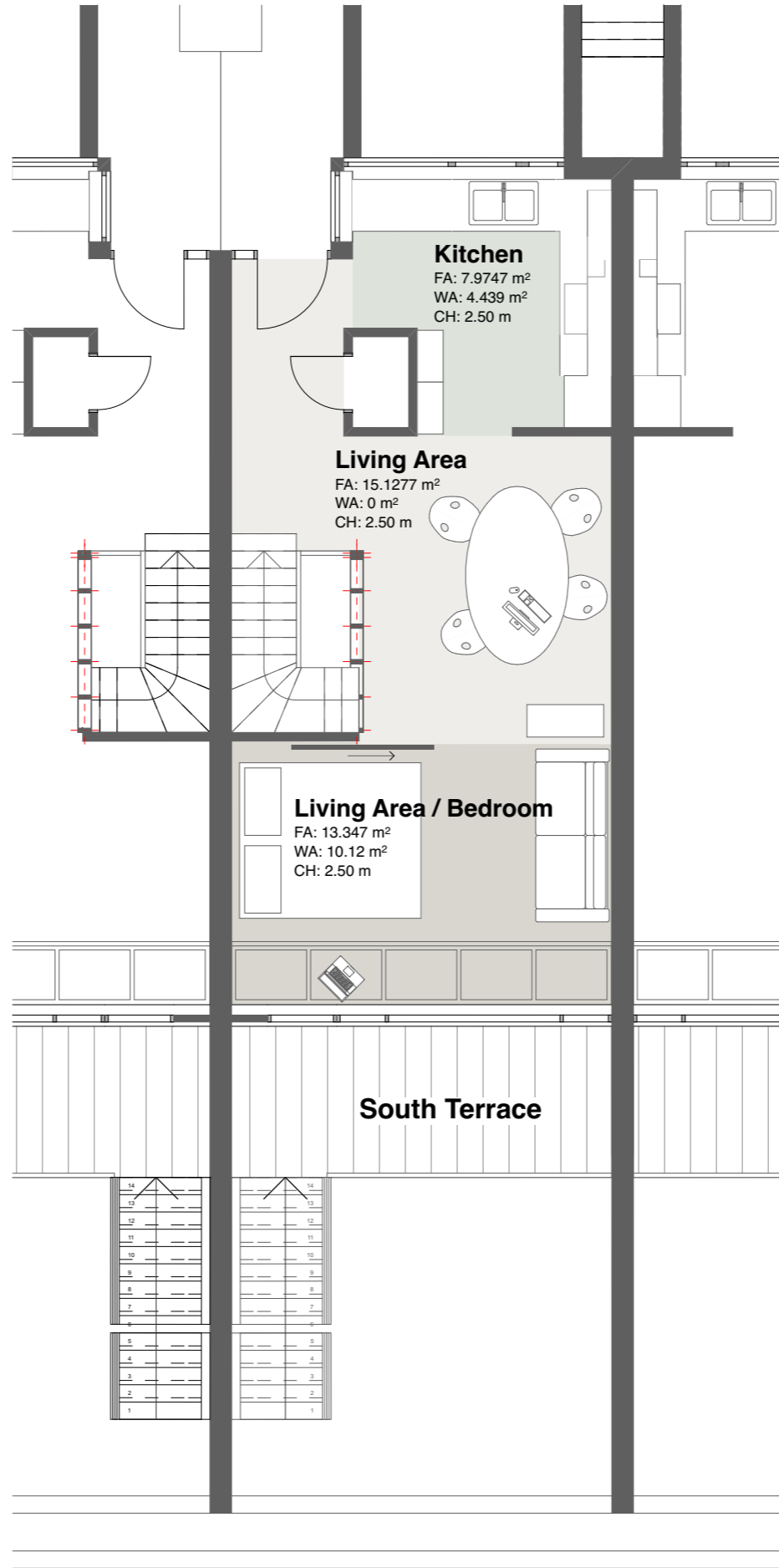
LOCATION OF APARTMENT



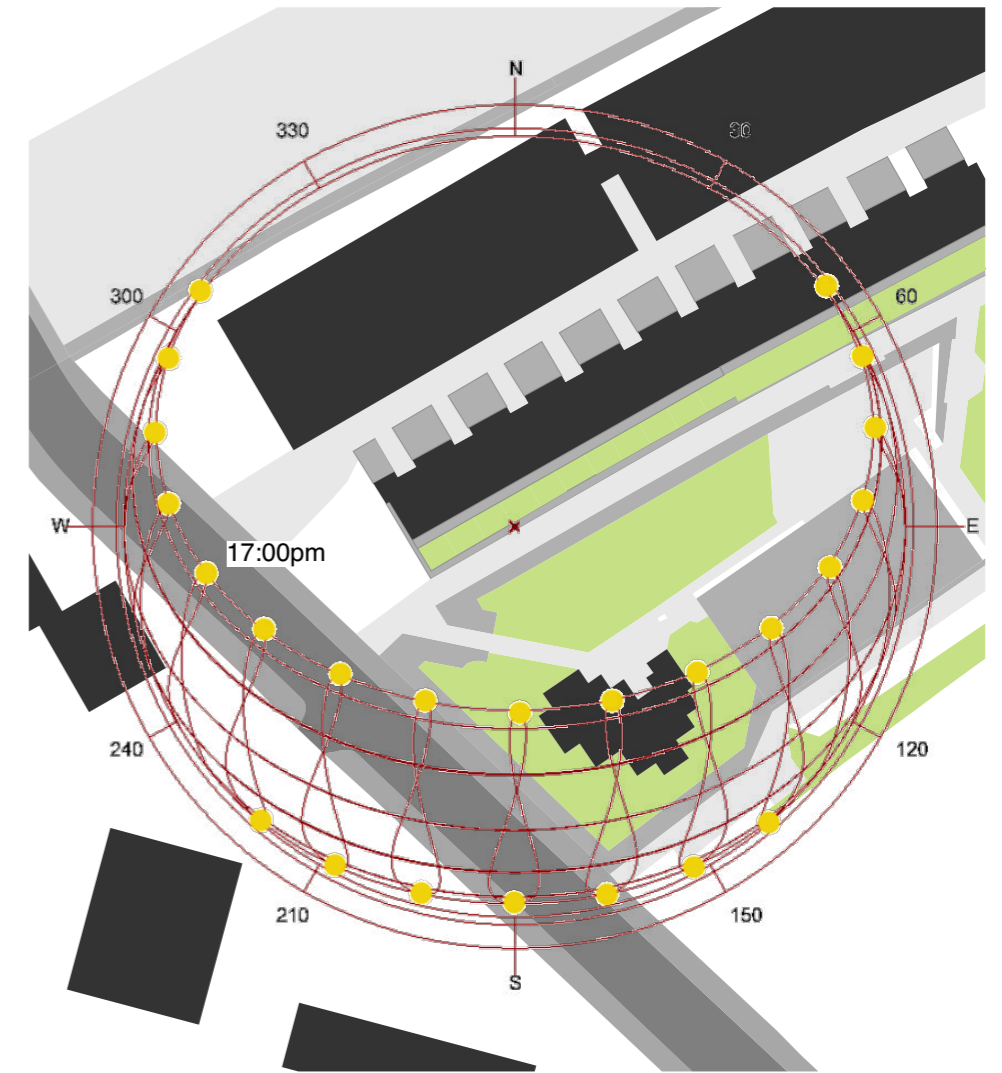
FLOOR PLANS



Lower Floor Plan

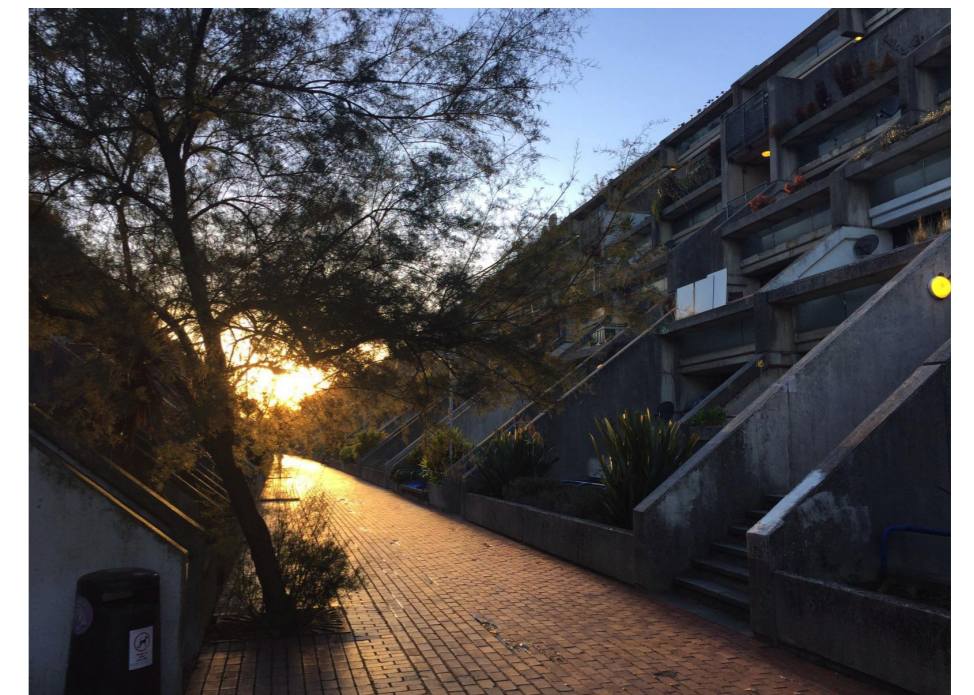


Upper Floor Plan



Key Plan - Solar Access

Sun Path Diagram 21.06.2016 & 21.12.2016
Latitude: 51.517



Sun - 17:00pm 15.10.2016

INTERNAL STUDIES

Layout

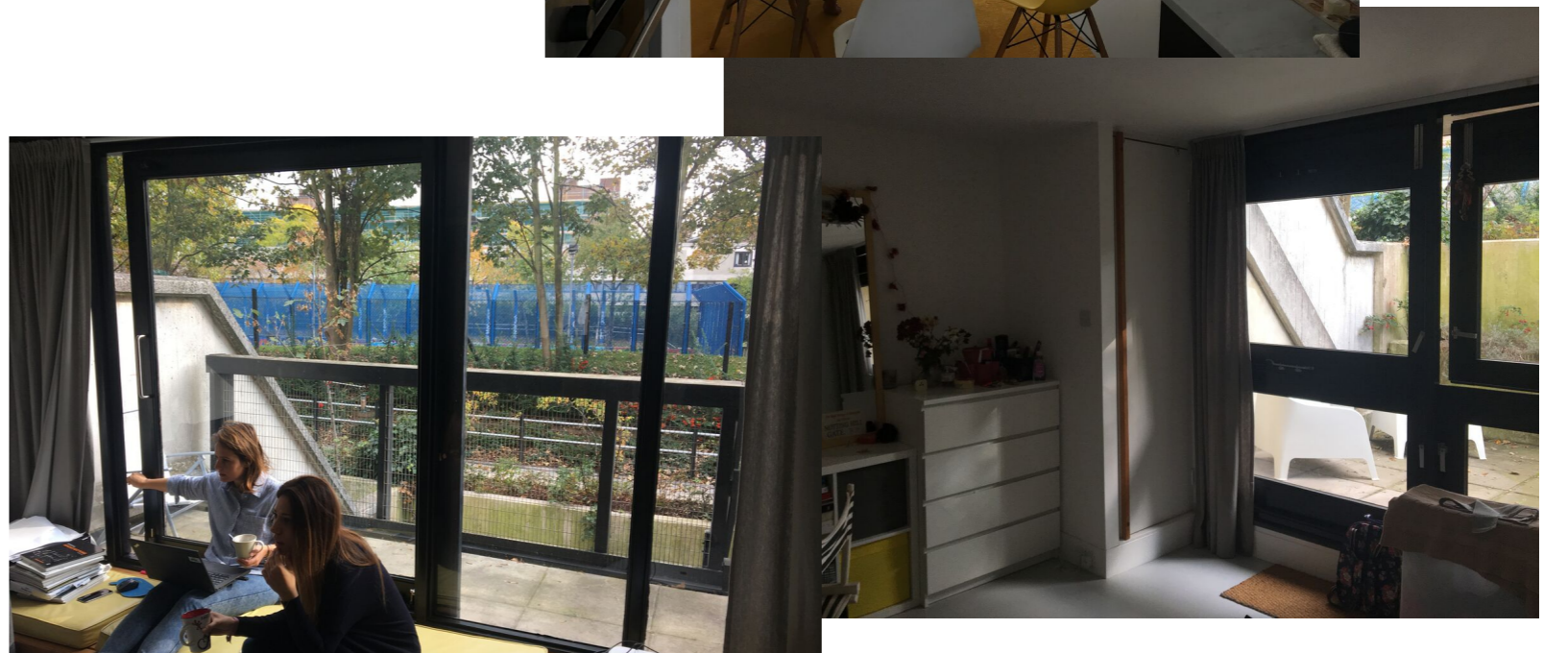
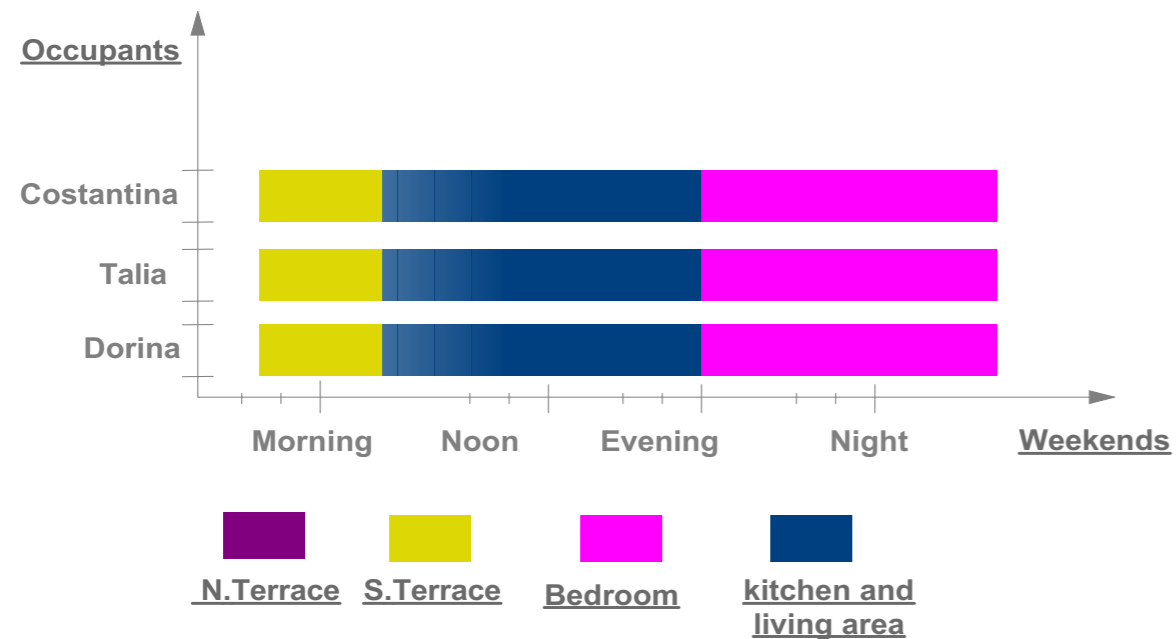
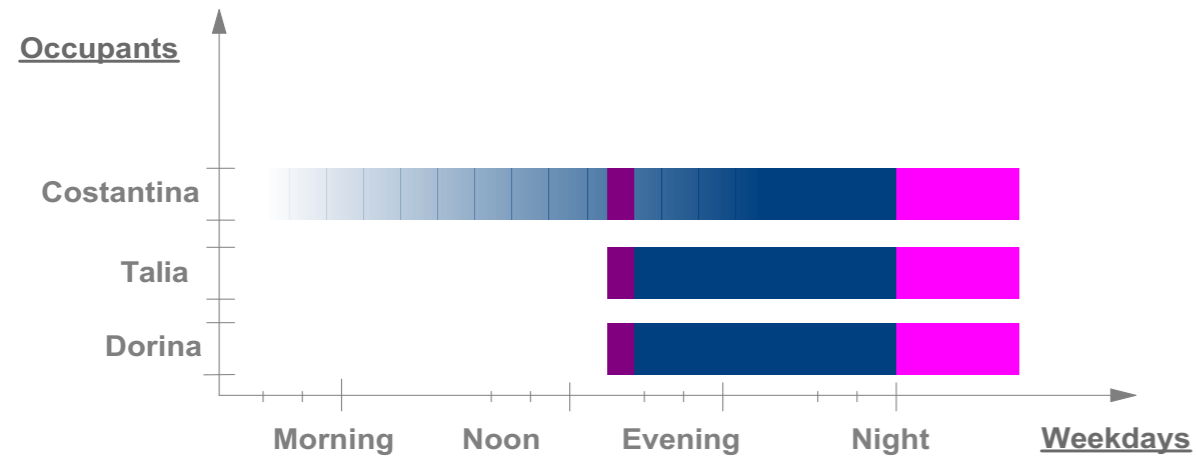
- Apartment - 2 Floors
- Upper Floor - Kitchen, Living and Flexible Bedroom
- Lower Floor - Bedrooms and Bathroom / Shower

Occupants

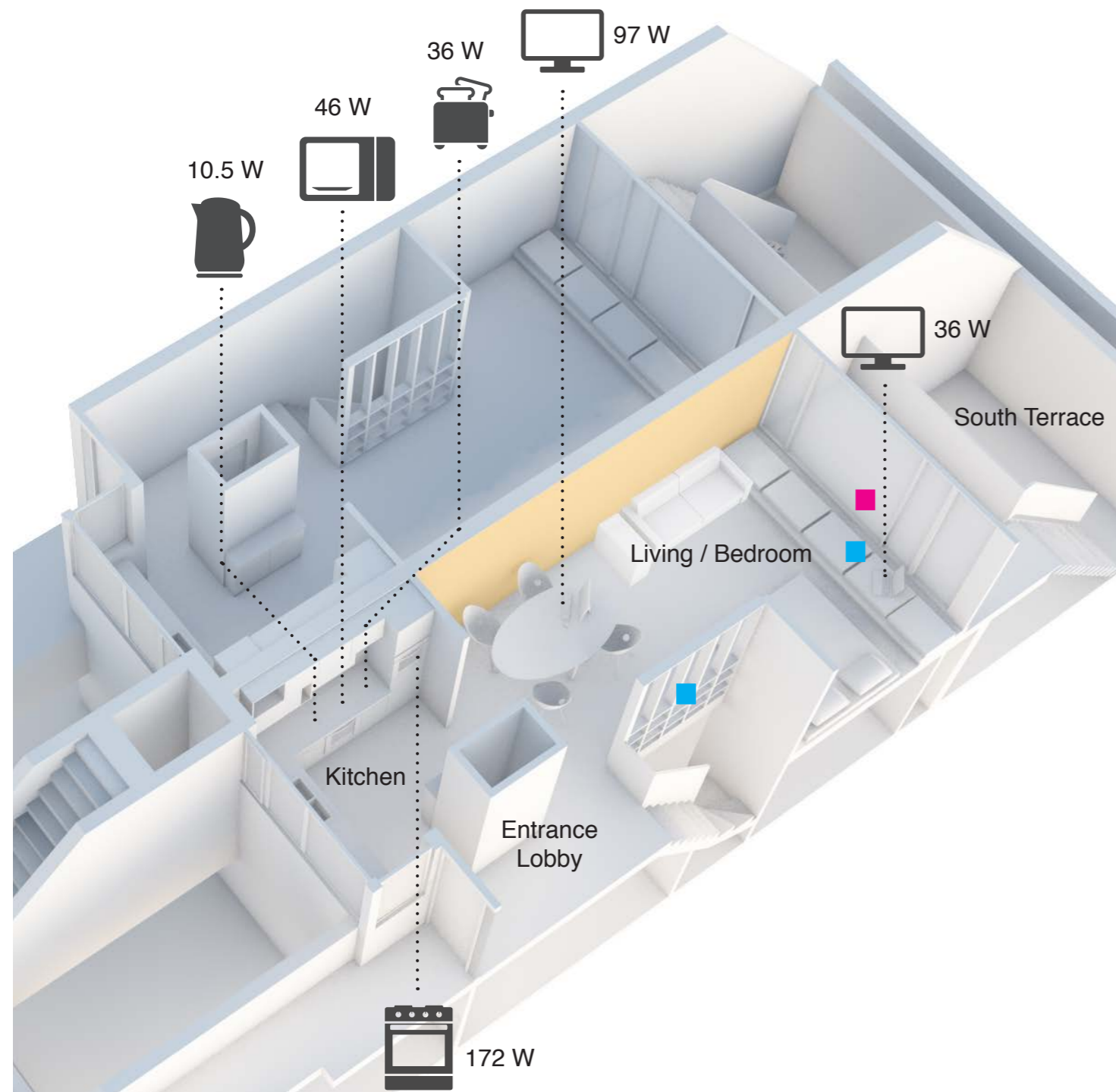
- 3 people - Female aged 20's
- 1 Student
- 2 in Full Time Work

Occupancy Patterns

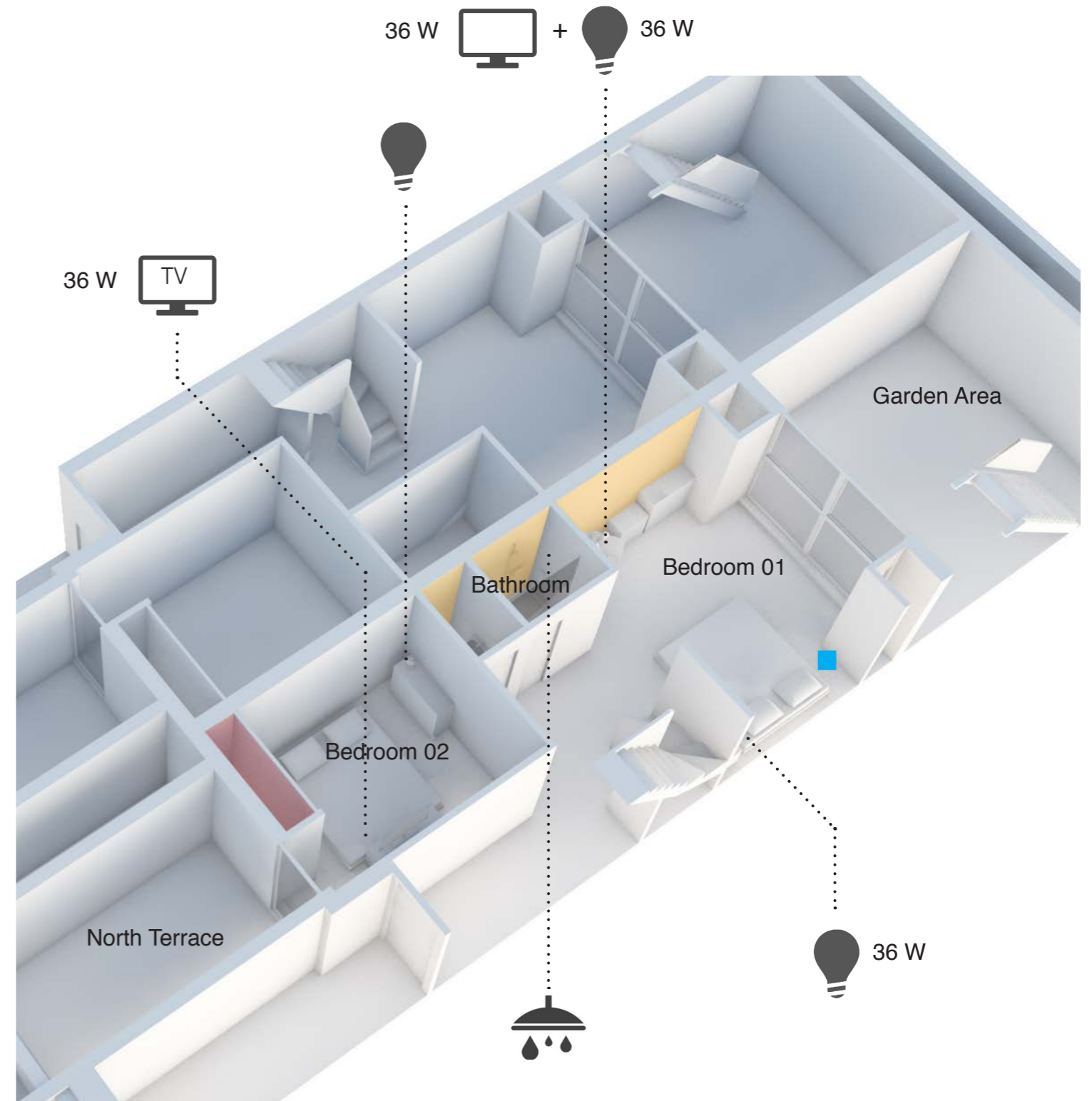
Occupancy Patterns vary between Weekdays and Weekends,



INTERNAL SPACE



Upper Floor



Lower Floor

Key

- External Data Logger
- Internal Data Logger
- Heated Radiant Wall
- Hot Water Heater

Heat Gain Rate, Sensible (W) x Usage



Convection Oven
410 W x 0.42



Toaster
59 W x 0.49



Desk Lamp
15 W



Steam Kettle
528 W x 0.02



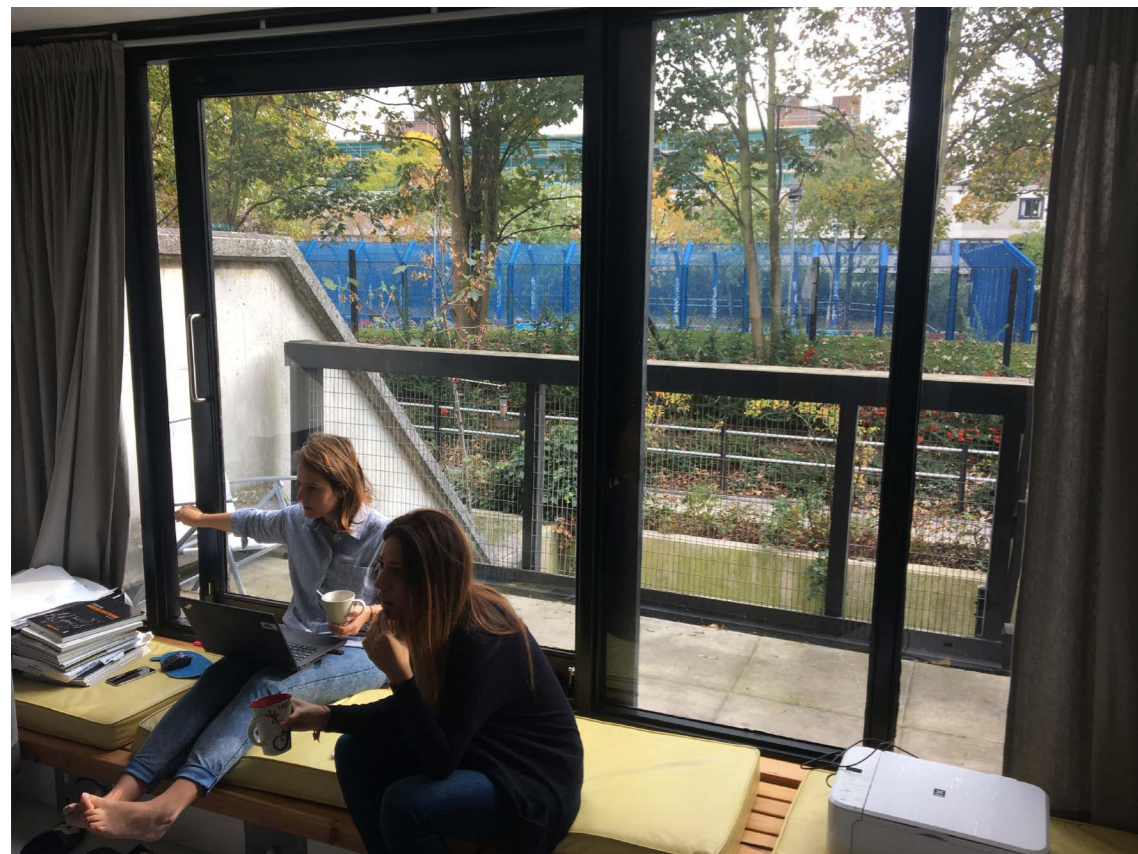
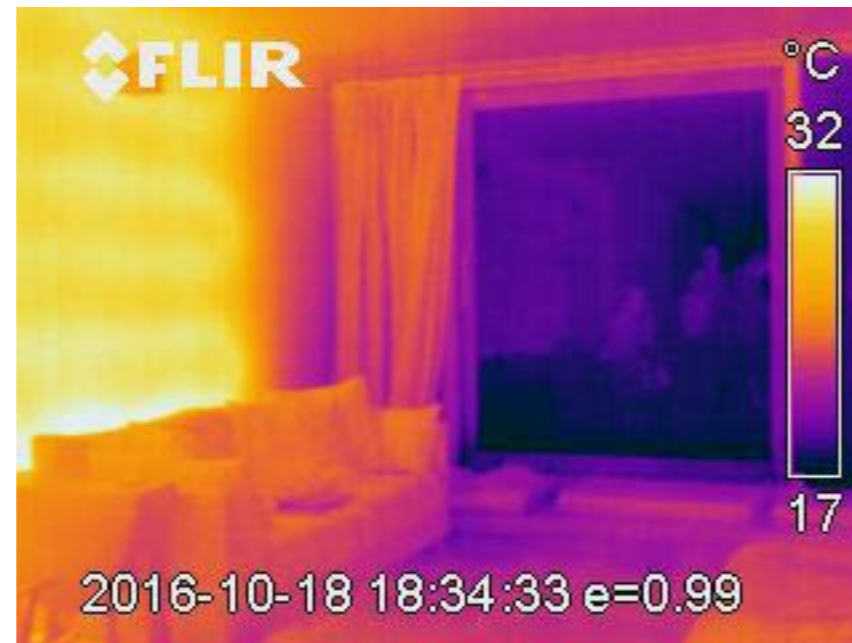
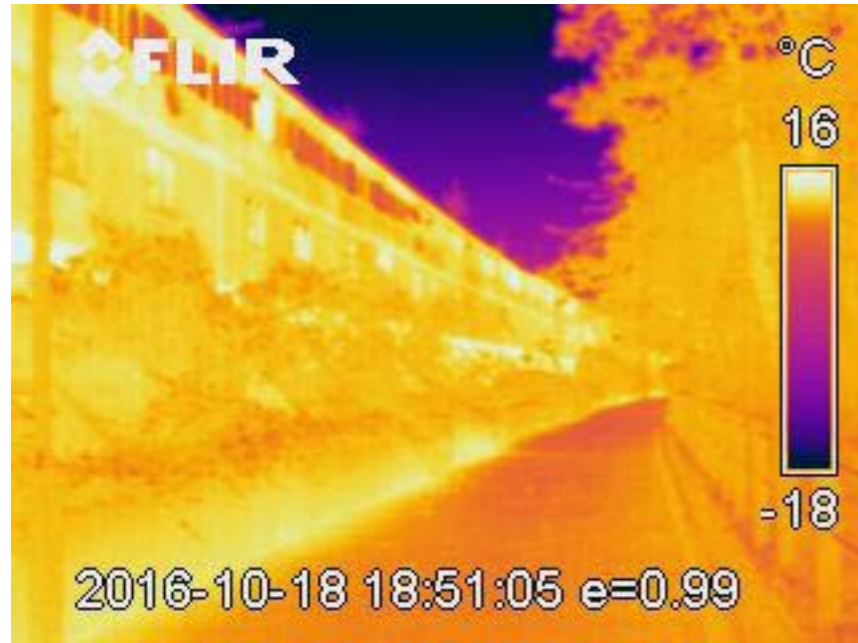
Microwave Oven
293 W x 0.16

Heat gains are based on figures published within CIBSE Guide A. (6.10)

Heat gains for cooking appliances are subjective due to variety of appliances, application and time in use.

Heat gains calculated based upon usage factors (CIBSE Guide A).

THERMAL IMAGING ANALYSIS



SECTION



Existing Fabric - Thermal Performance

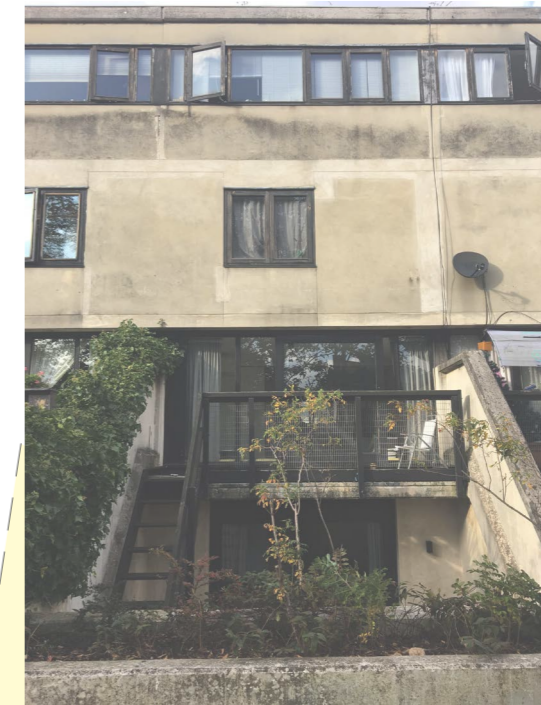
- ① 1.0 W/m²K 300mm RC concrete wall + 15mm plaster finish internally
- ② 2.0 W/m²K Single glazed timber window
- ③ Un-insulated Ground Floor (heat loss to perimeter)
- ④ Intermediate RC concrete floor slab

- Internal Data Logger
- External Data Logger

Modern Fabric Standards - Thermal Performance (Part L UK)

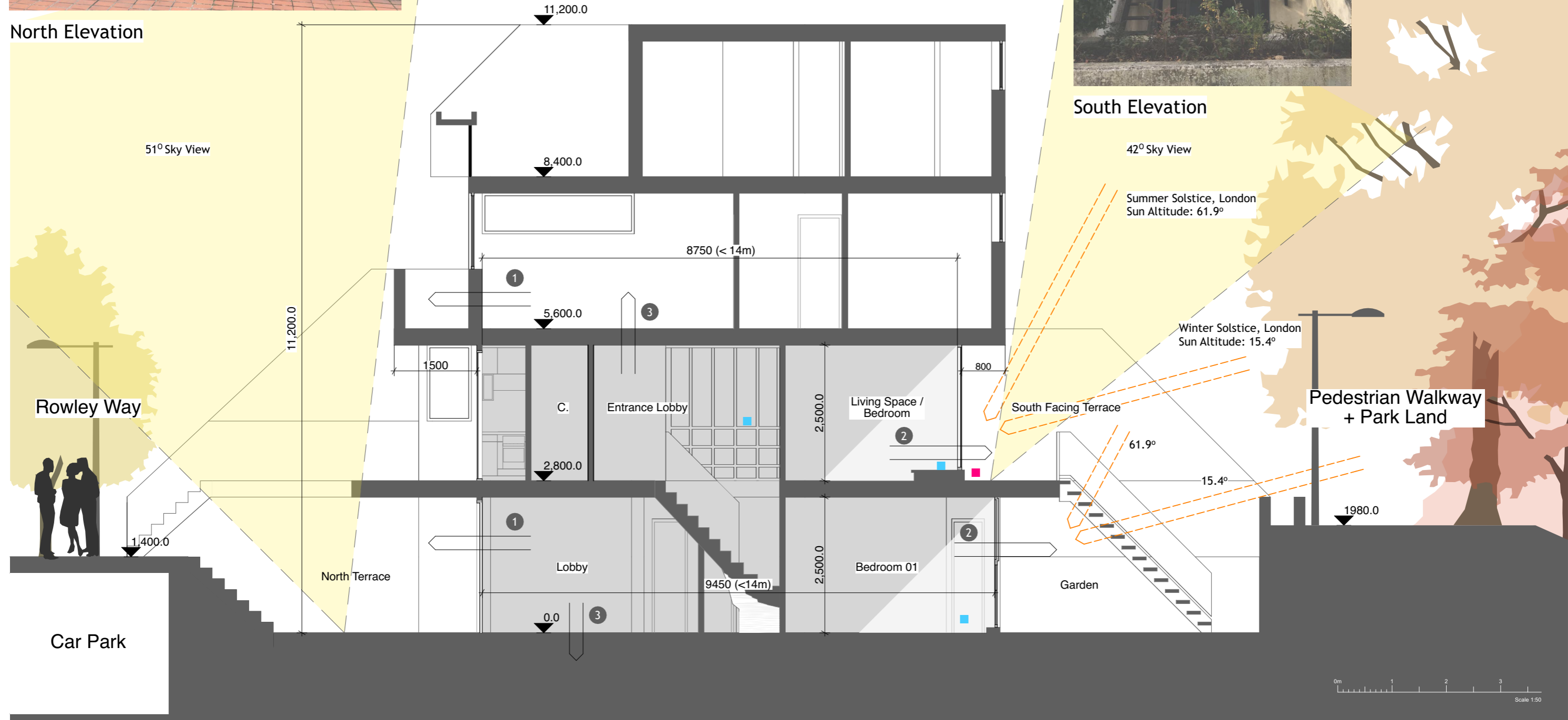
- ① 0.26 W/m²K
- ② 1.5 W/m²K - Double Glazing
- ③ No thermal requirement
- ④ 0.22 W/m²K

Minimum air tightness: 10 ach/h



North Elevation

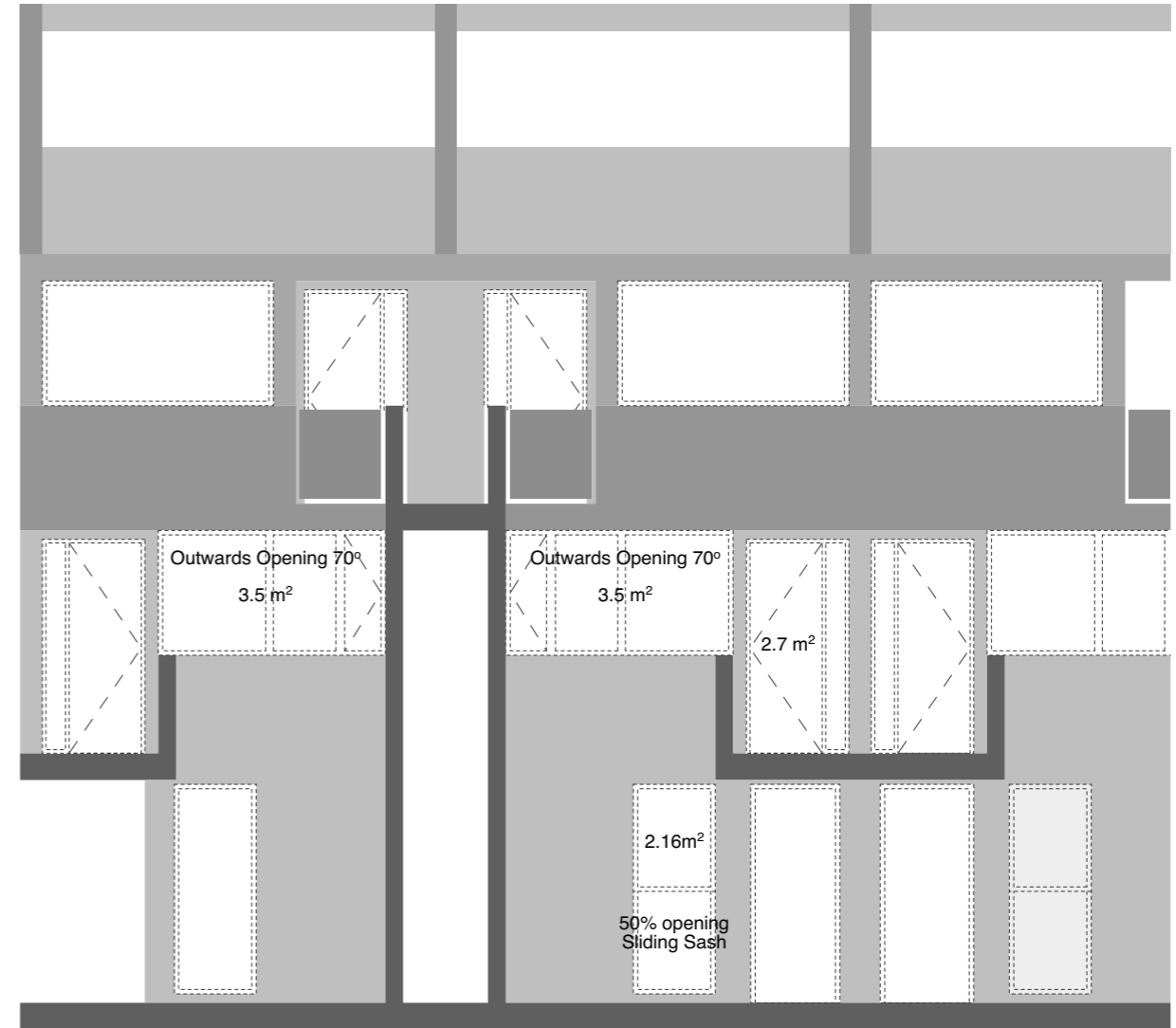
South Elevation



ELEVATIONS



South Elevation

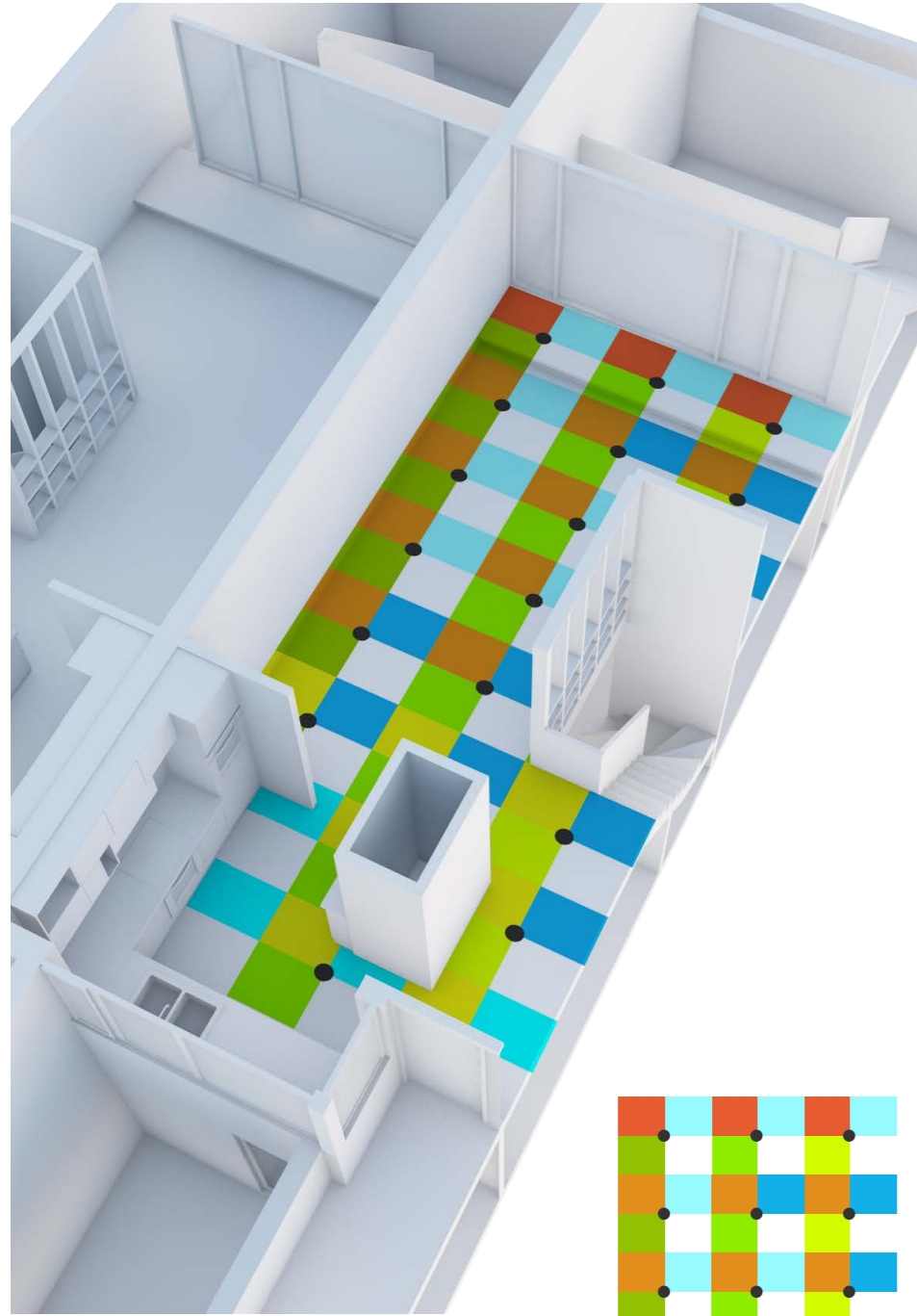


North Elevation

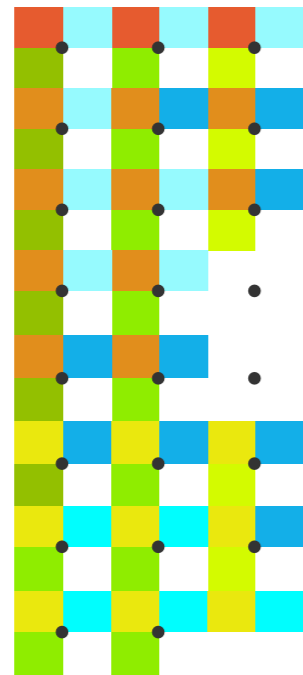


INTERNAL ENVIRONMENT

Spot Measurements



Spot Measurements
Upper Floor - Afternoon
Time: 13:30 - 14:00



Air Temperature (°C)

- 25°C +
- 24°C +
- 23°C +

Surface Temperature (°C)

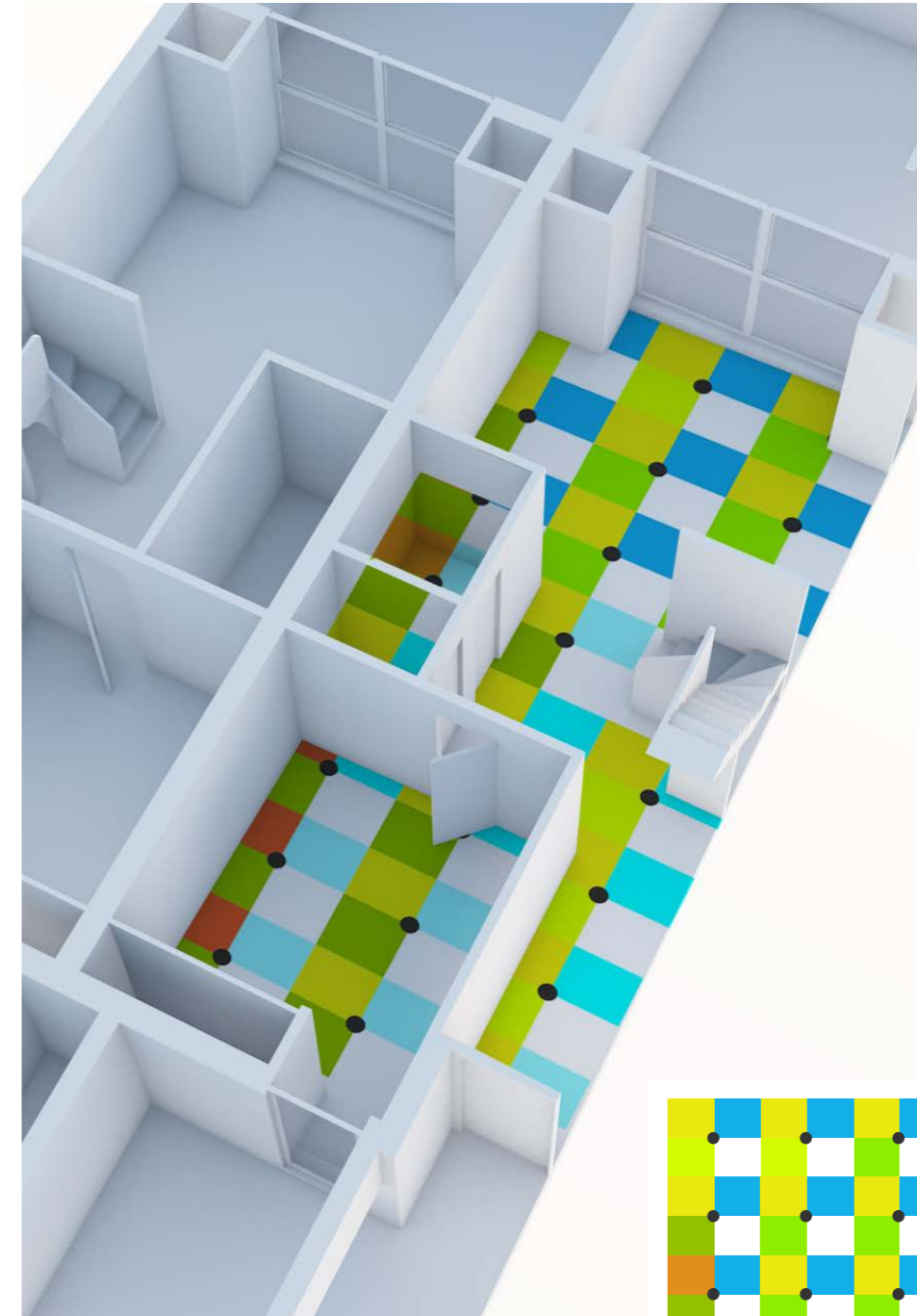
- 26 - 27°C
- 23 - 25°C
- 23°C +

Relative Humidity (%)

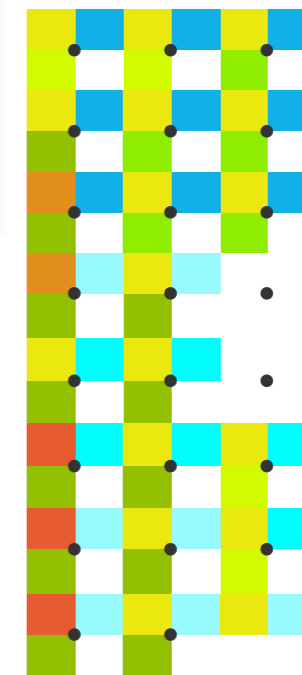
- 43% - 46%
- 38% +
- 35 - 36%

Spot Measurement Point

- AT °C
- RH %
- ST °C



Spot Measurements
Lower Floor - Afternoon
Time: 13:30 - 14:00



Air Temperature (°C)

- 26°C +
- 24-25°C +
- 21-24°C +

Surface Temperature (°C)

- 23 - 24°C
- 21 - 22°C
- 19°C +

Relative Humidity (%)

- 48% - 50%
- 45% - 46%
- 41% - 43%