Education Estates®

Sustainability Conference

05 February 2026 | ExCeL London

EDUCATION ESTATES® SUSTAINABILITY CONFERENCE PARTNERS

AECOM ARCADIS Barker Building Spatial Intelligence Eddisons good energy mace

Higher Education Project Showcase: Design & Innovation

CHAIR: Julian Robinson, Director of Estates - London School of Economics and Political Science

Speakers:

Trevor Wills, Director of Estates & Facilities, University of Plymouth, University of Plymouth
Colin Cobb, Partner, Feilden Clegg Bradley Studios
Darren Hewitt, Managing Director, Iconic Project Management Ltd
Oliver Moore, Senior Associate, Design Engine Architects

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FeildenCleggBradleyStudios

UNIVERSITY OF PLYMOUTH

BABBAGE BUILDING
UNIVERSITY OF PLYMOUTH

UNIVERSITY NEEDS AND AMBITIONS

→ ADDRESS POOR CONDITION OF BUILDING

→ PROVIDE BETTER OFFER IN COMPETITIVE ENGINEERING SECTOR

→ CO-LOCATE VARIOUS RELATED FACILITIES IN ONE BUILDING

→ PROVIDE OPPORTUNITIES FOR CROSS-DISPLINARY WORKING

→ CREATE A STRONG SENSE OF PLACE AND CAMPUS IDENTITY

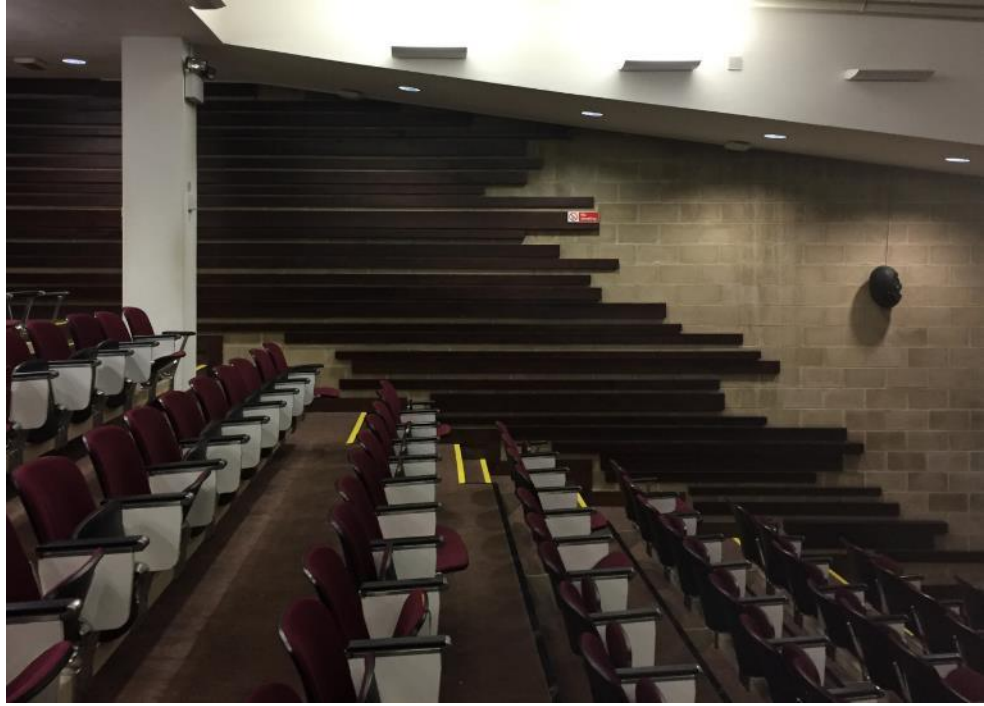
→ DELIVER BEST-PRACTICE BUILDING PERFORMANCE AND SUSTAINABILITY


1973
GENERAL TEACHING BLOCK


1995


2023

2019



HEADLINES

NEW ENGINEERING AND DESIGN FACILITY

10,600m²

- 6400m2 (60%) Extensive Refurb
- 4200m2 (40%) New Build

MATERIALS

- Retained existing concrete frame
- Steel Frame Extension
- Structural composite panel with ceramic cladding or Masonry veneer

COST

- Approx £34,000,000
- Blended rate of £3,200 /m²

PROGRAMME

- FCBS Appointed Dec 2019
- Planning Award Dec 2020
- RIBA S4 under PCSA Commenced Sept 2020
- Start on-site Sep 2021
- PC Dec 2023

PREVIOUS NEW-BUILD PROPOSALS BY

OTHERS


STOP

BRIEF

School of Engineering, Computing & Mathematics

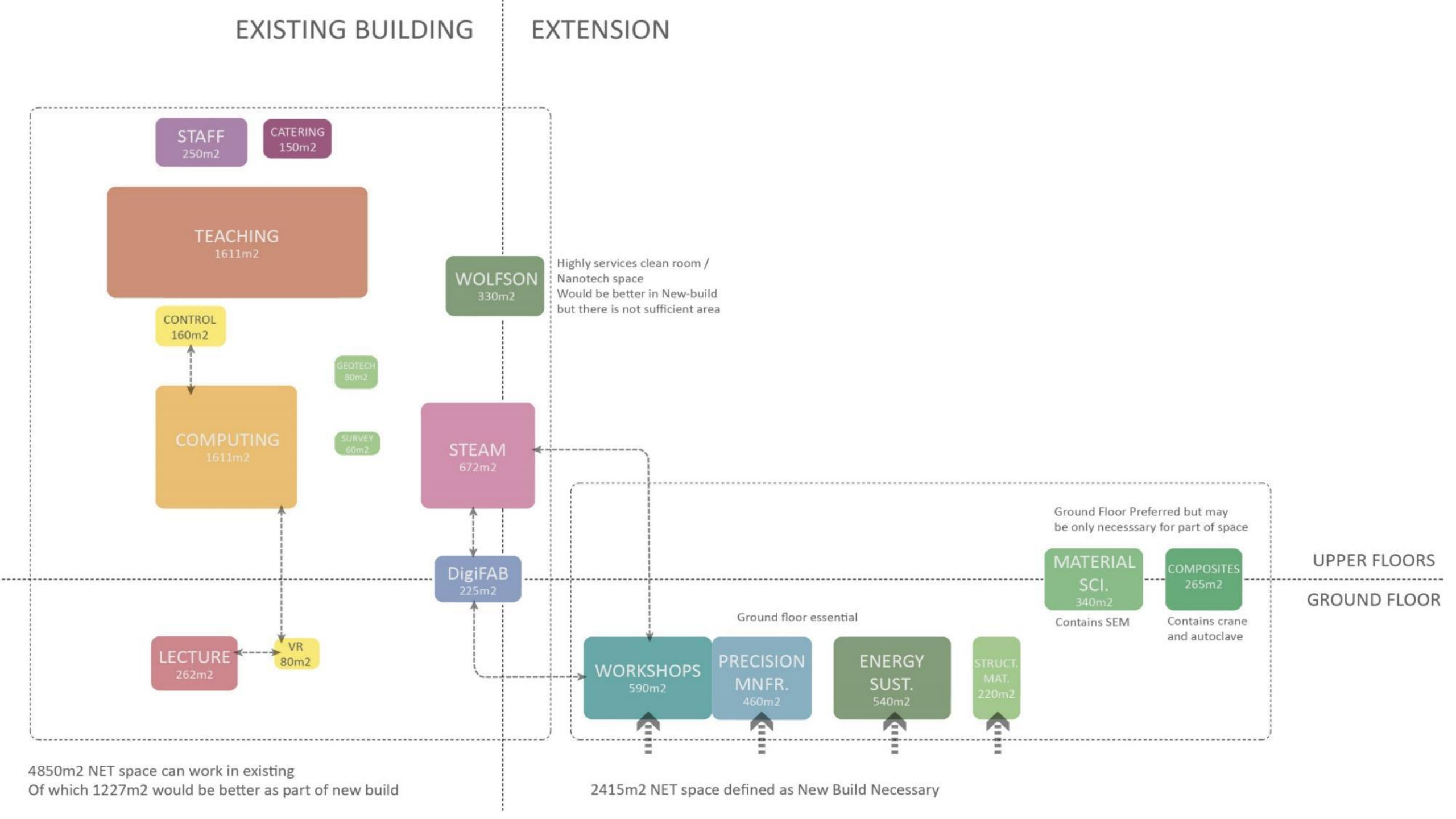
- → STEAM²
- → DigiFab: Design and Realisation Lab
- → Virtual Engineering and Immersive Visualisation Laboratory
- → Heavy Structure Laboratory
- → Geotechnics Laboratory
- → Materials Analysis and Characterisation Laboratory
- → Composites Laboratory
- → Control and Autonomous systems Laboratory
- → Energy and Sustainability Laboratory
- → Large Specialist Computing Laboratory
- → Precision Manufacturing: Fabrication and Material Processing.
- → Wolfson Nanotechnology Centre

School of Art, Design & Architecture

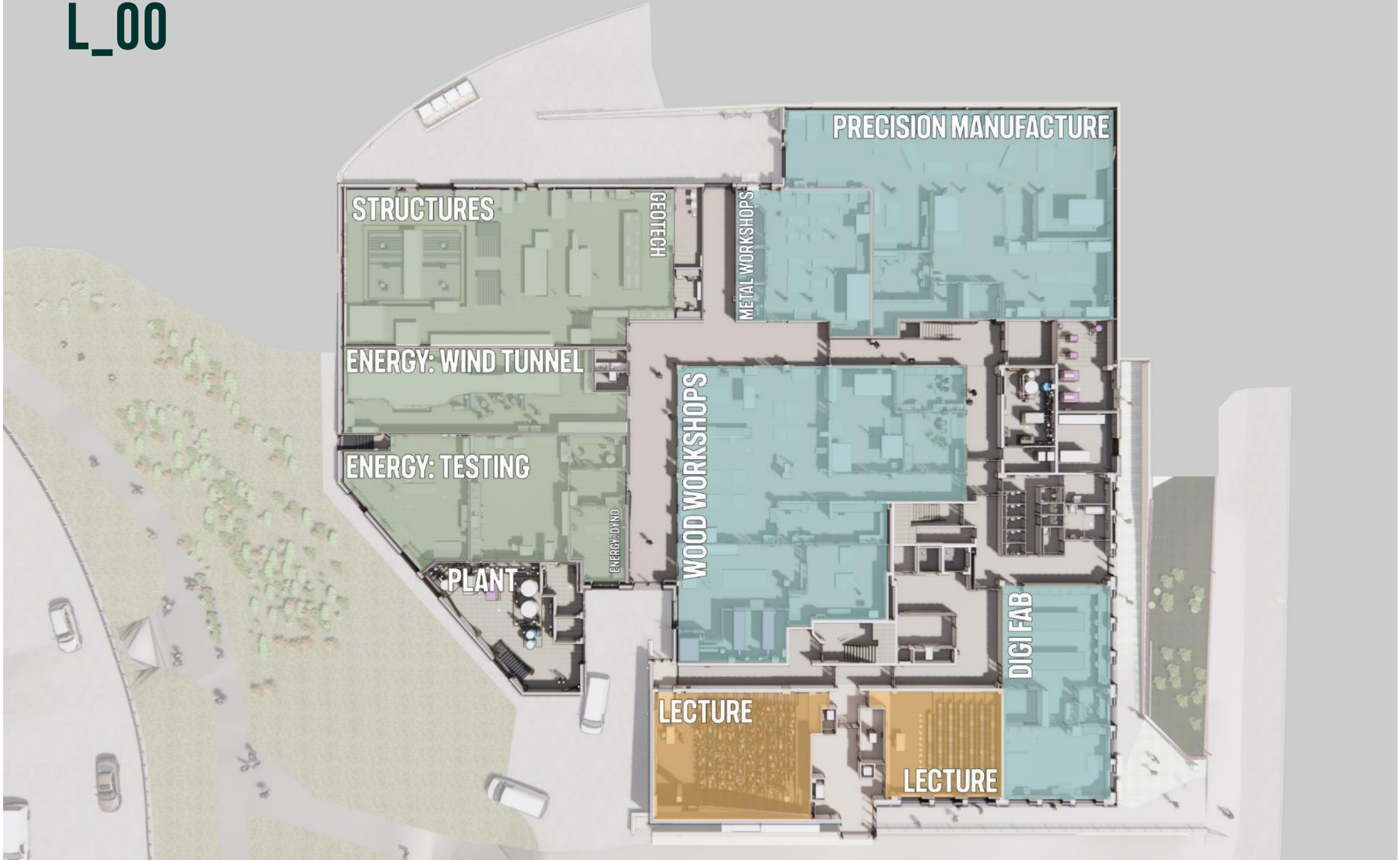
- → Wood Workshops
- → Metals Workshop
- → CNC Suite
- → CAD Suite

Shared

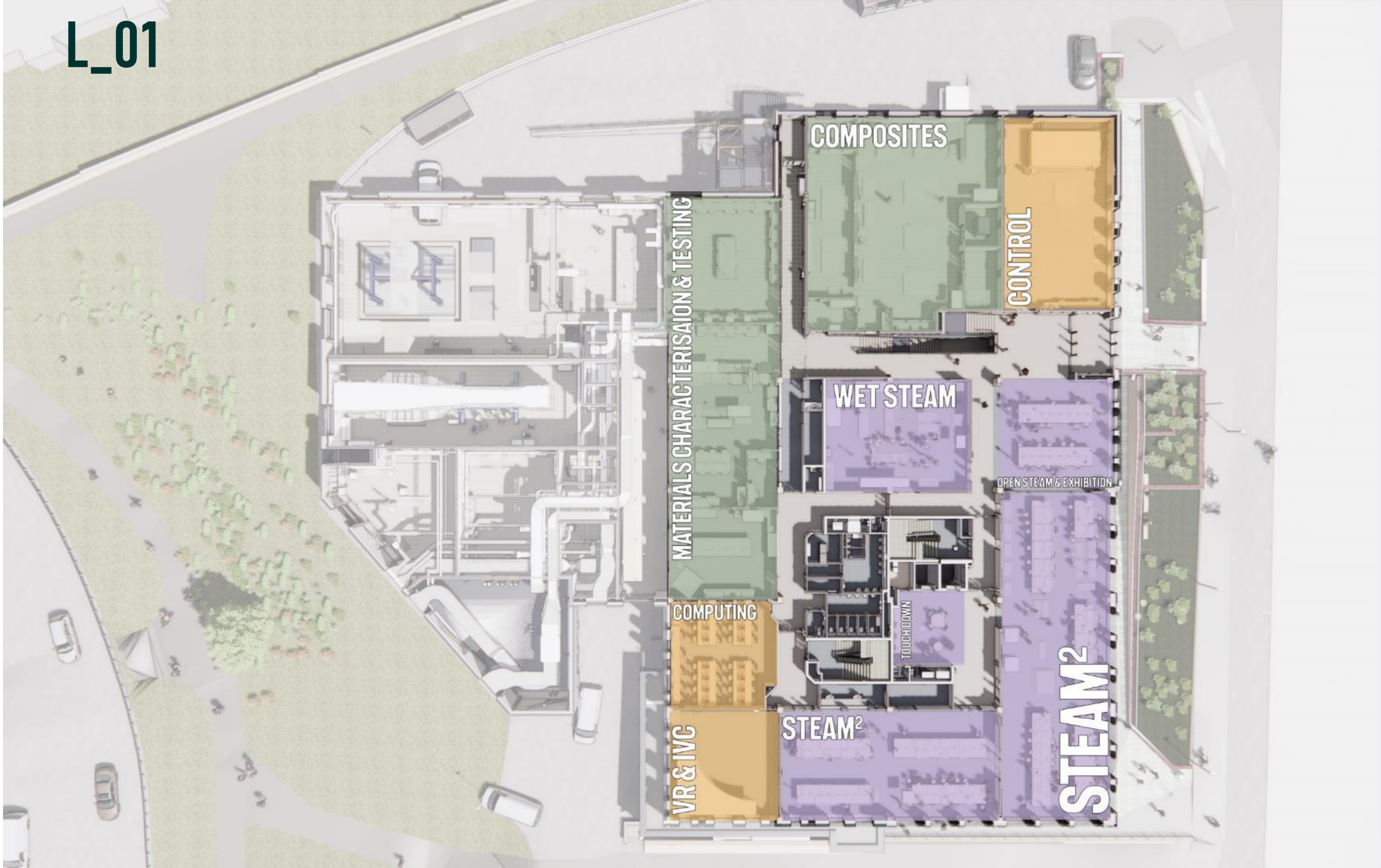
- → General Teaching
- → Innovative Teaching
- → Lecture Theatre
- → Open Social Learning
- → Cafe


EXISTING BUILDING
EXTENSION
STAFF
250m2
CATERING
150m2
TEACHING
1611m2
CONTROL
160m2
COMPUTING
1611m2
GEOTECH
80m2
SURVEY
60m2
LECTURE
262m2
VR
80m2
WOLFSON
330m2
Highly services clean room /
Nanotech space
Would be better in New-build
but there is not sufficient area
STEAM
672m2
DigiFAB
225m2
Ground floor essential
WORKSHOPS
590m2
PRECISION
MNFR.
460m2
ENERGY
SUST.
540m2
STRUCT.
MAT.
220m2
Ground Floor Preferred but may
be only necesssary for part of space
MATERIAL
SCI.
340m2
Contains SEM
COMPOSITES
265m2
Contains crane
and autoclave
UPPER FLOORS
GROUND FLOOR
4850m2 NET space can work in existing
Of which 1227m2 would be better as part of new build
2415m2 NET space defined as New Build Necessary

L_00

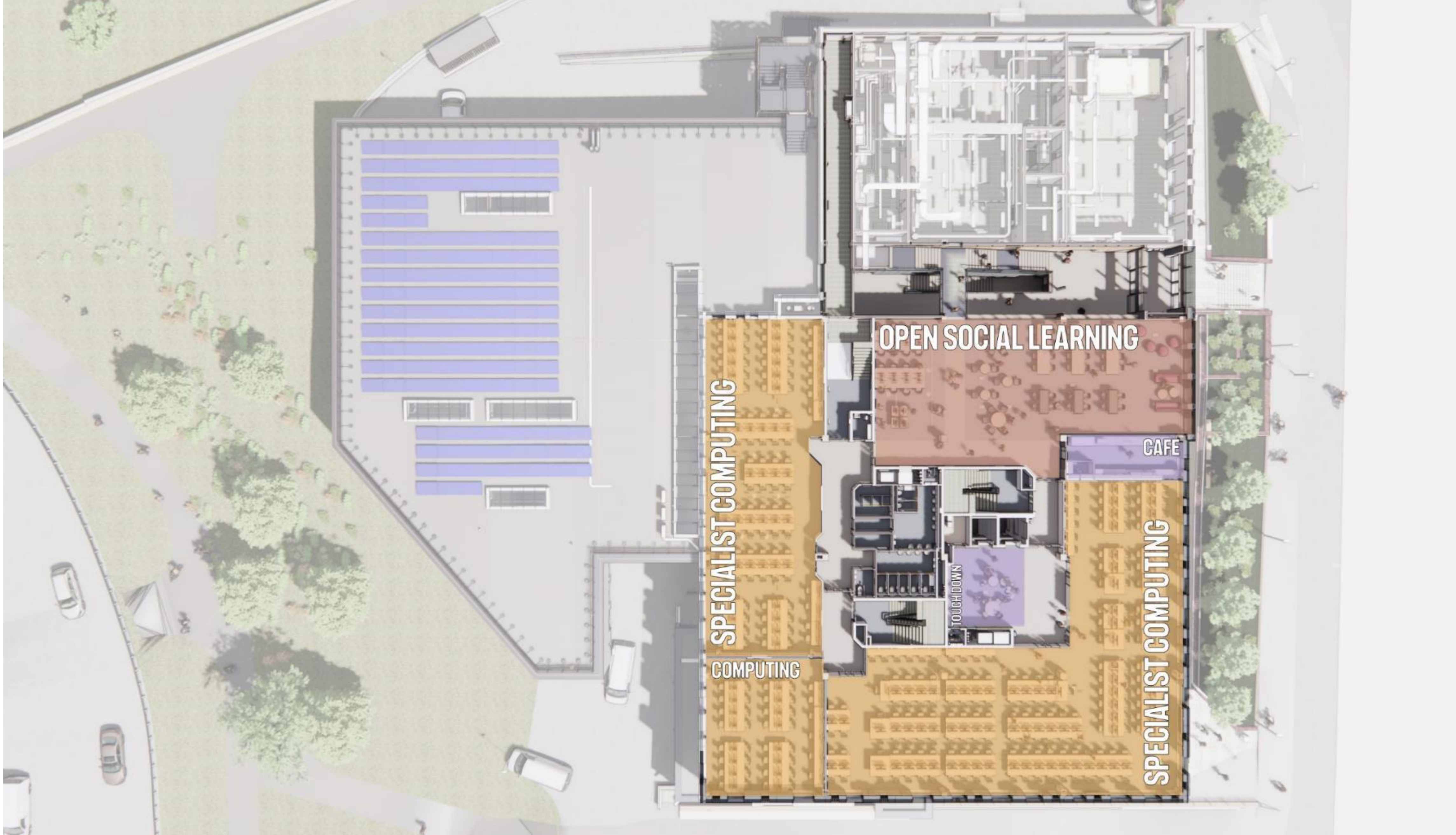

PRECISION MANUFACTURE
STRUCTURES
GEOTECH
METAL WORKSHOPS
ENERGY: WIND TUNNEL
ENERGY: TESTING
ENERGY: DYNO
WOOD WORKSHOPS
PLANT
DIGI FAB
LECTURE
LECTURE

L_01

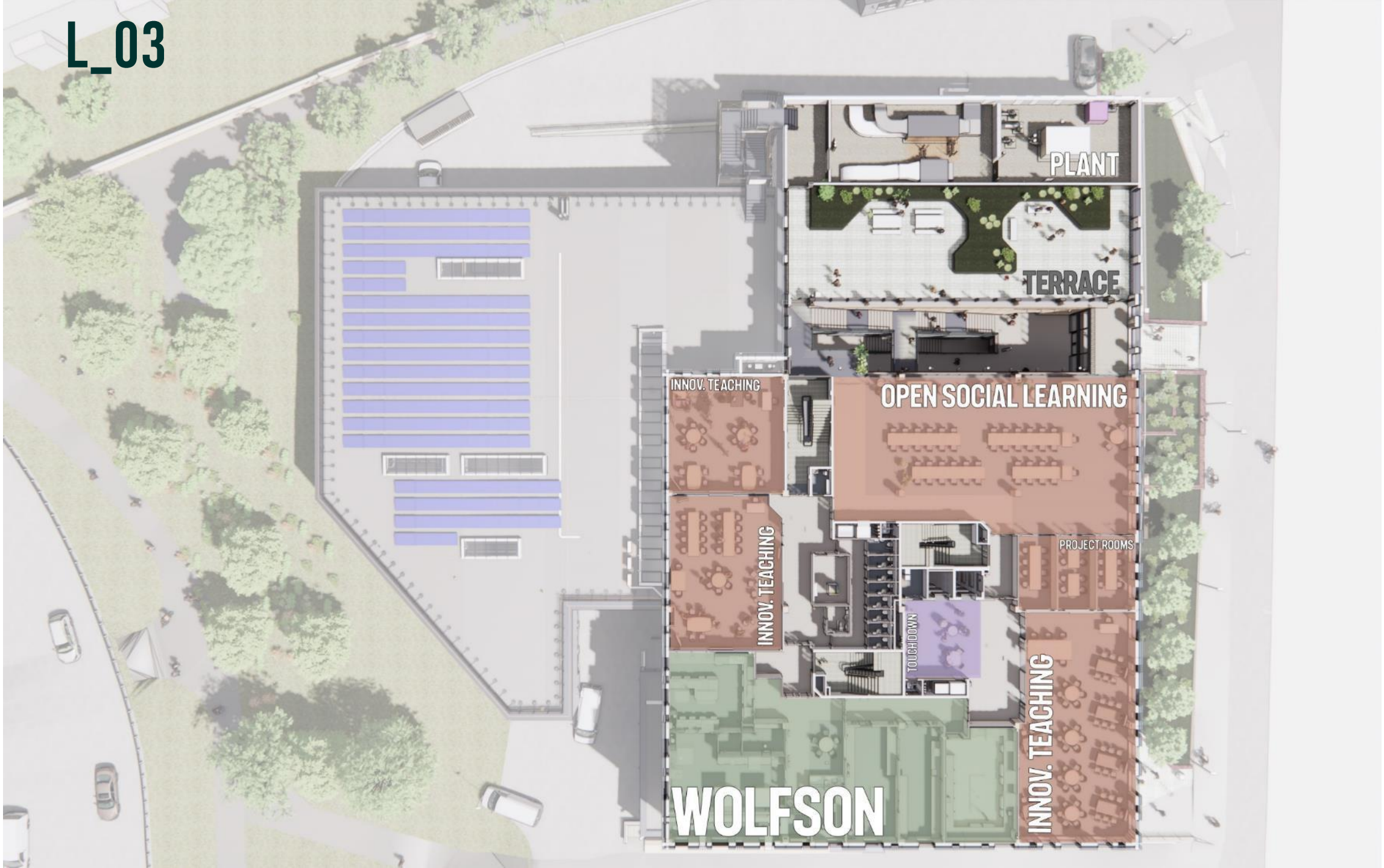


COMPOSITES
CONTROL
MATERIALS CHARACTERISAION & TESTING
WET STEAM
OPEN STEAM & EXHIBITION
TOUCH DOWN
COMPUTING
VR & IVC
STEAM²
STEAM²

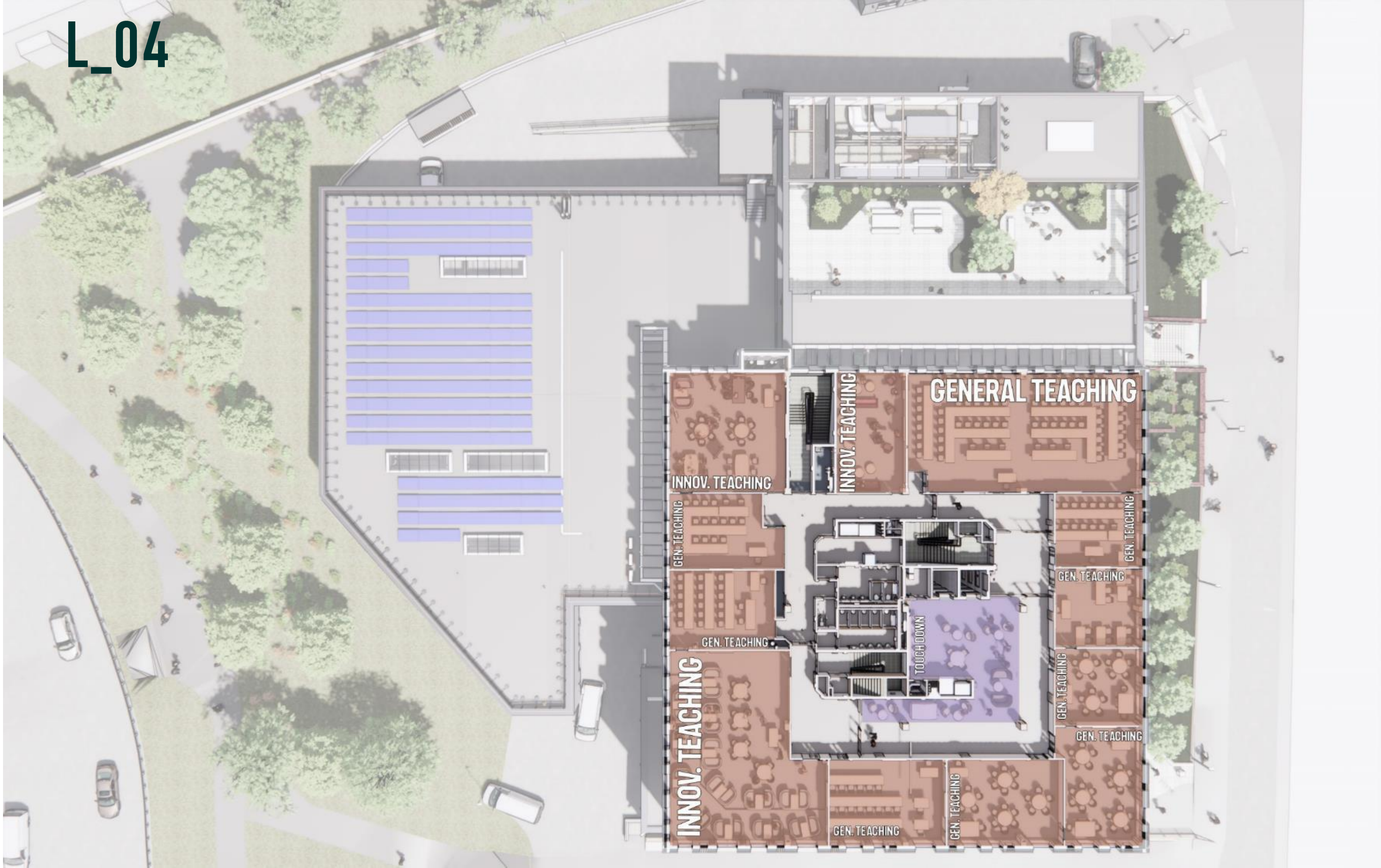
L_02


OPEN SOCIAL LEARNING
CAFE
SPECIALIST COMPUTING
COMPUTING
TOUCHDOWN
SPECIALIST COMPUTING

L_03


PLANT
TERRACE
INNOV. TEACHING
OPEN SOCIAL LEARNING
INNOV. TEACHING
PROJECT ROOMS
TOUCHDOWN
INNOV. TEACHING
WOLFSON

L_04


GENERAL TEACHING
INNOV. TEACHING
INNOV. TEACHING
GEN. TEACHING
GEN. TEACHING
GEN. TEACHING
GEN. TEACHING
TOUCH DOWN
INNOV. TEACHING
GEN. TEACHING
GEN. TEACHING
GEN. TEACHING
GEN. TEACHING
GEN. TEACHING

ENVIRONMENTAL STRATEGIES

1. PV Panels = 36,000KWH/yr

2. Ambient Loop heat distribution

3. Planned connection to heat network.

4. New high-performance façade

5. High efficiency MVHR

6. Balanced glazing levels

7. Excellent levels of daylighting

ENVIRONMENTAL STRATEGIES

Function and performance led design.

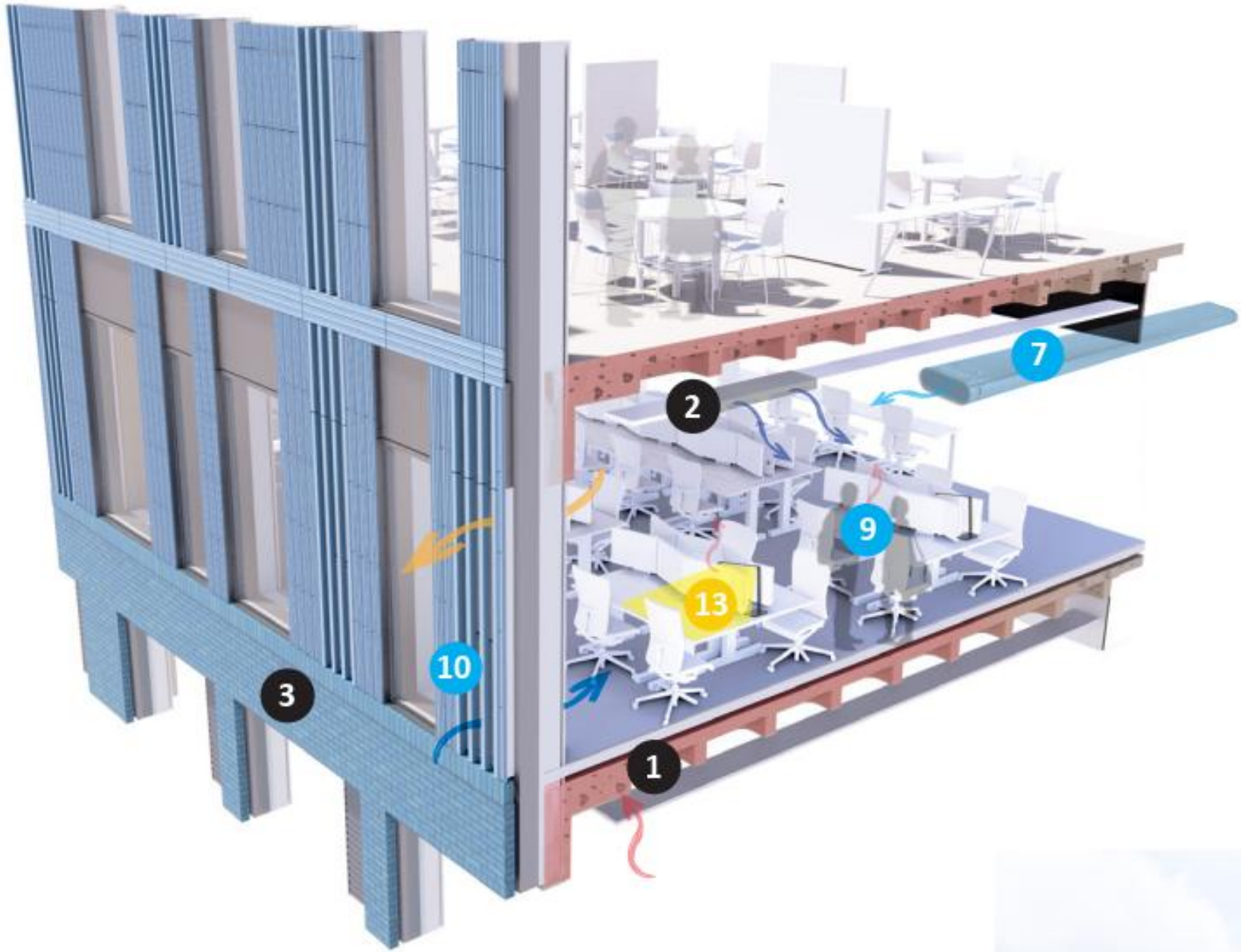
Ambitiously low space heating target drove mech-vent solution with heat recovery

Pragmatic, passive and lower cost solutions where possible

Balanced glazing, high thermal mass, night cooling.

Building solutions as learning tools (ie. performance monitoring)

Major embodied carbon savings through building re-use



ENERGY

Predicted (BRUKL Model)

79 kWH/m2/yr

Does not include laboratory and research loads

Actual measured total use

96 kWH/m2/yr

Including all specialist loads

OPERATIONAL CARBON

Modelled figures

Annual CO_2 Emissions **Pre Refurbishment**

56.5 $kgCO_2e/m^2$

Annual CO_2 Emissions **Post Refurbishment**

43.35 $kgCO_2e/m^2$

23% REDUCTION

DESPITE MUCH MORE ENERGY INTENSIVE USE

EMBODIED CARBON

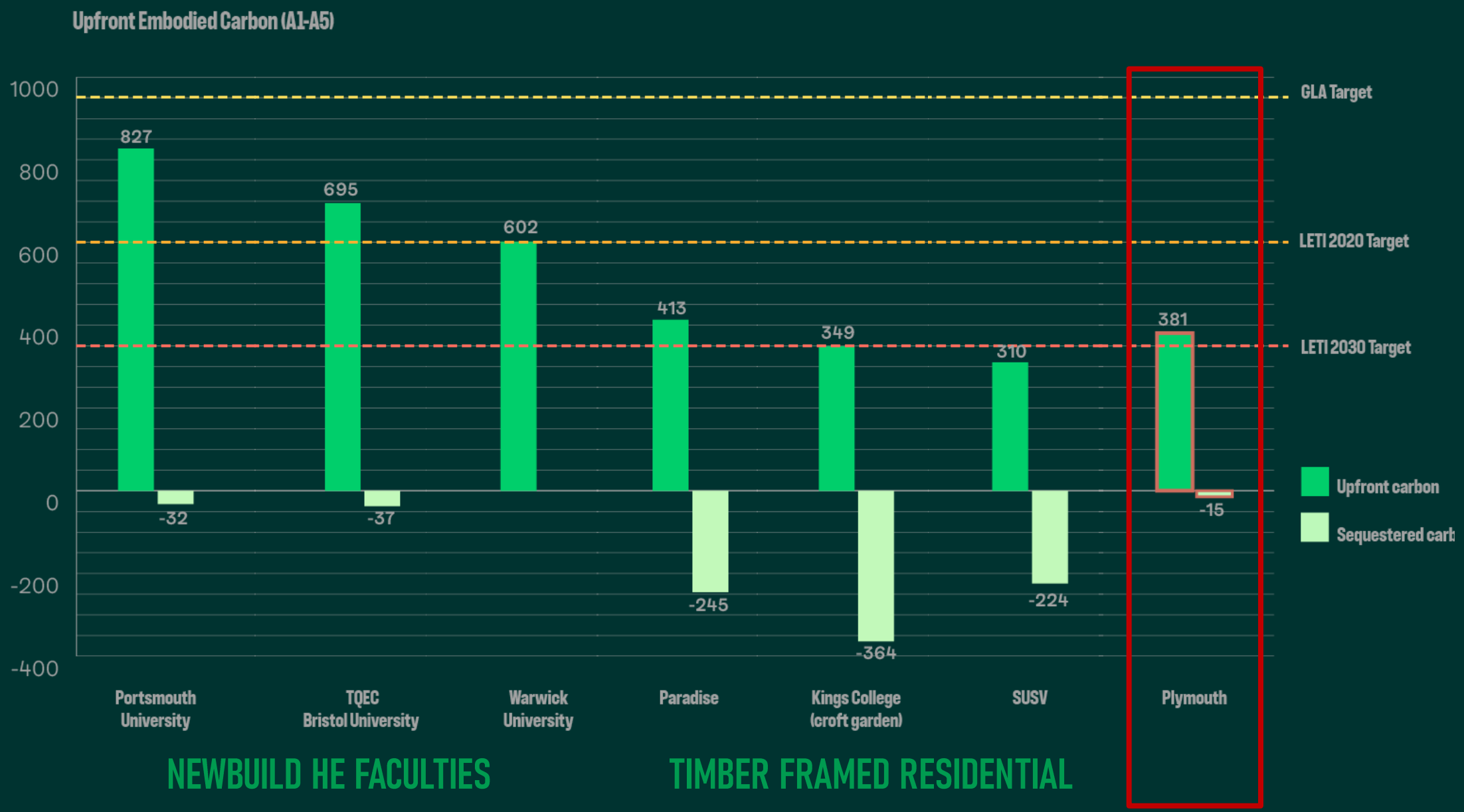
Upfront Embodied (A1-A5)

381 $kgCO_2e/m^2$

Lifecycle Embodied (A1-5,B1-5,C1-4)

520 $kgCO_2e/m^2$

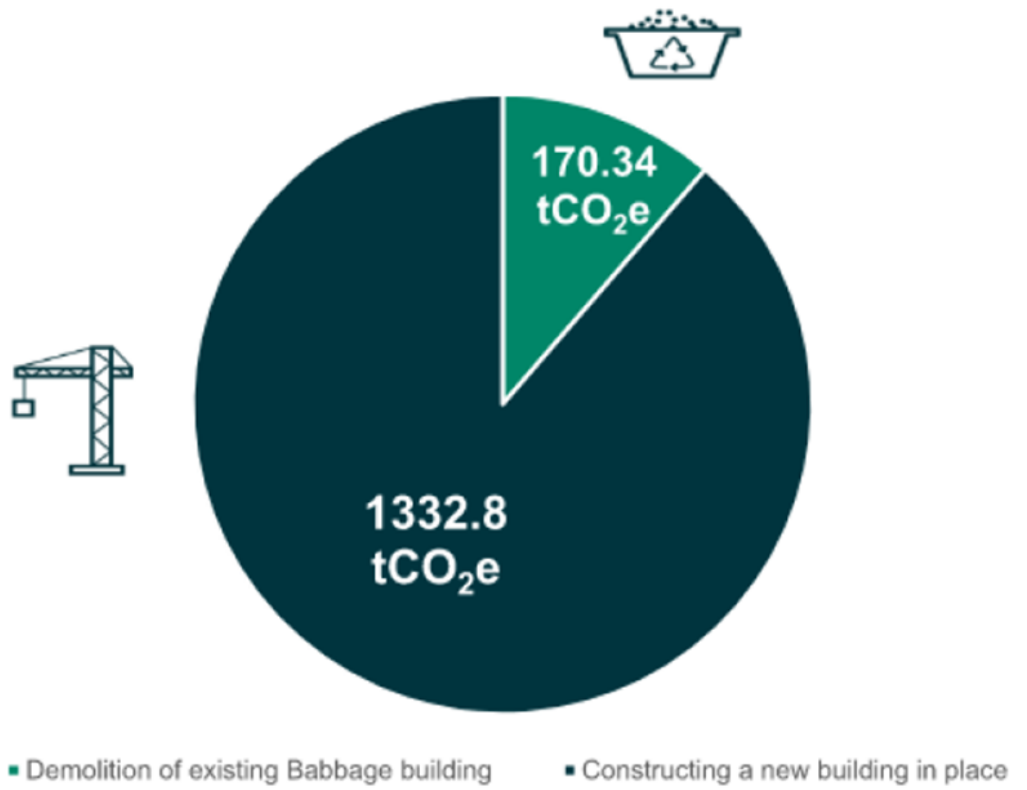
Comparison...


Upfront Embodied Carbon (A1-A5)
1000
800
600
400
200
0
-200
-400
GLA Target
LETI 2020 Target
LETI 2030 Target
827
-32
695
-37
602
413
-245
349
-364
310
-224
381
-15
Upfront carbon
Sequestered carb
Portsmouth University
TQEC Bristol University
Warwick University
Paradise
Kings College (croft garden)
SUSV
Plymouth
NEWBUILD HE FACULTIES
TIMBER FRAMED RESIDENTIAL

Embodied Carbon Assessment – Methodology

Existing Babbage Building Summary

Structural Embodied carbon saved from retaining the Babbage building (tCO2e)



1,768 one-way flights from London to New York

3,480 barrels of oil consumed

486 average family cars running for 1 year

OLD BUILDING

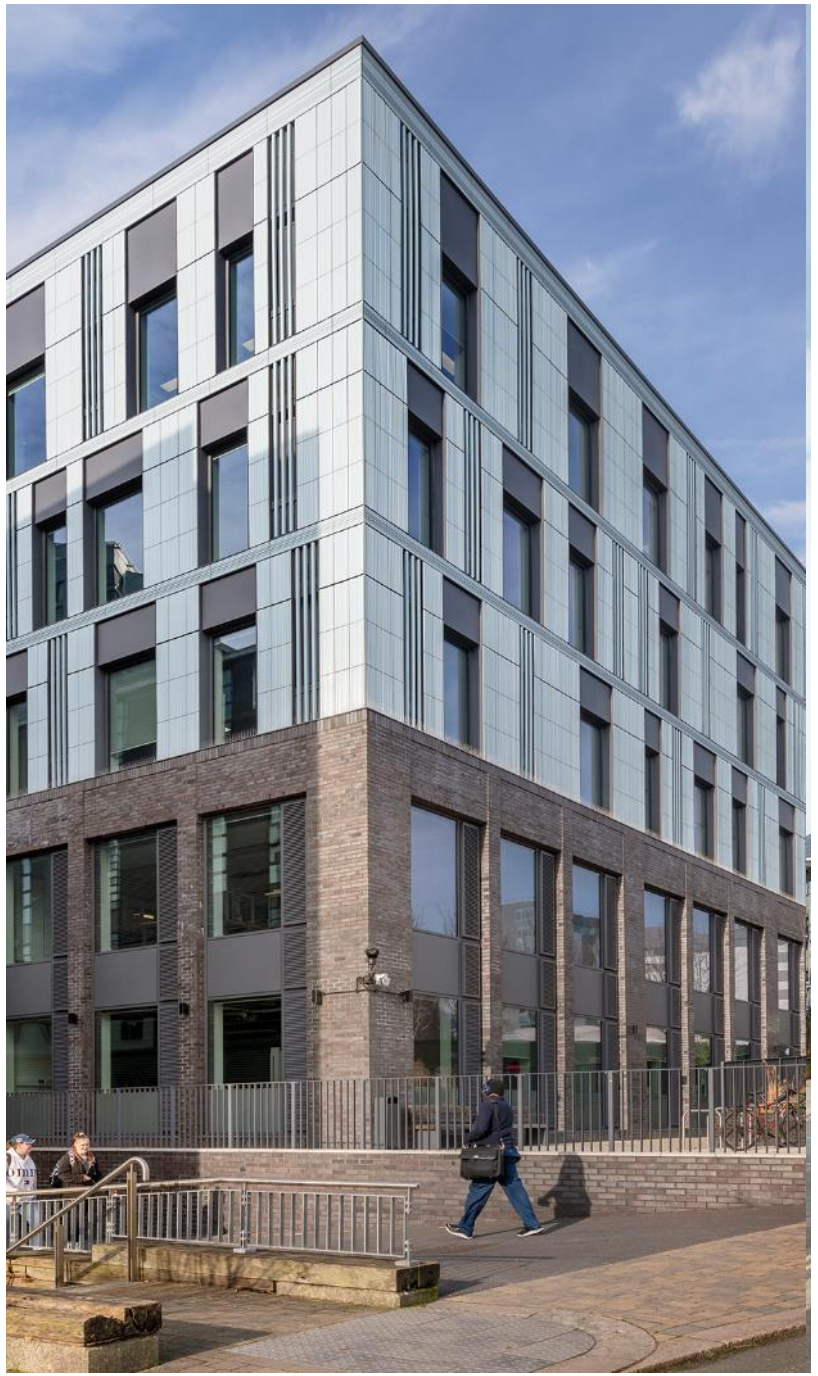
NEW SCHOOL

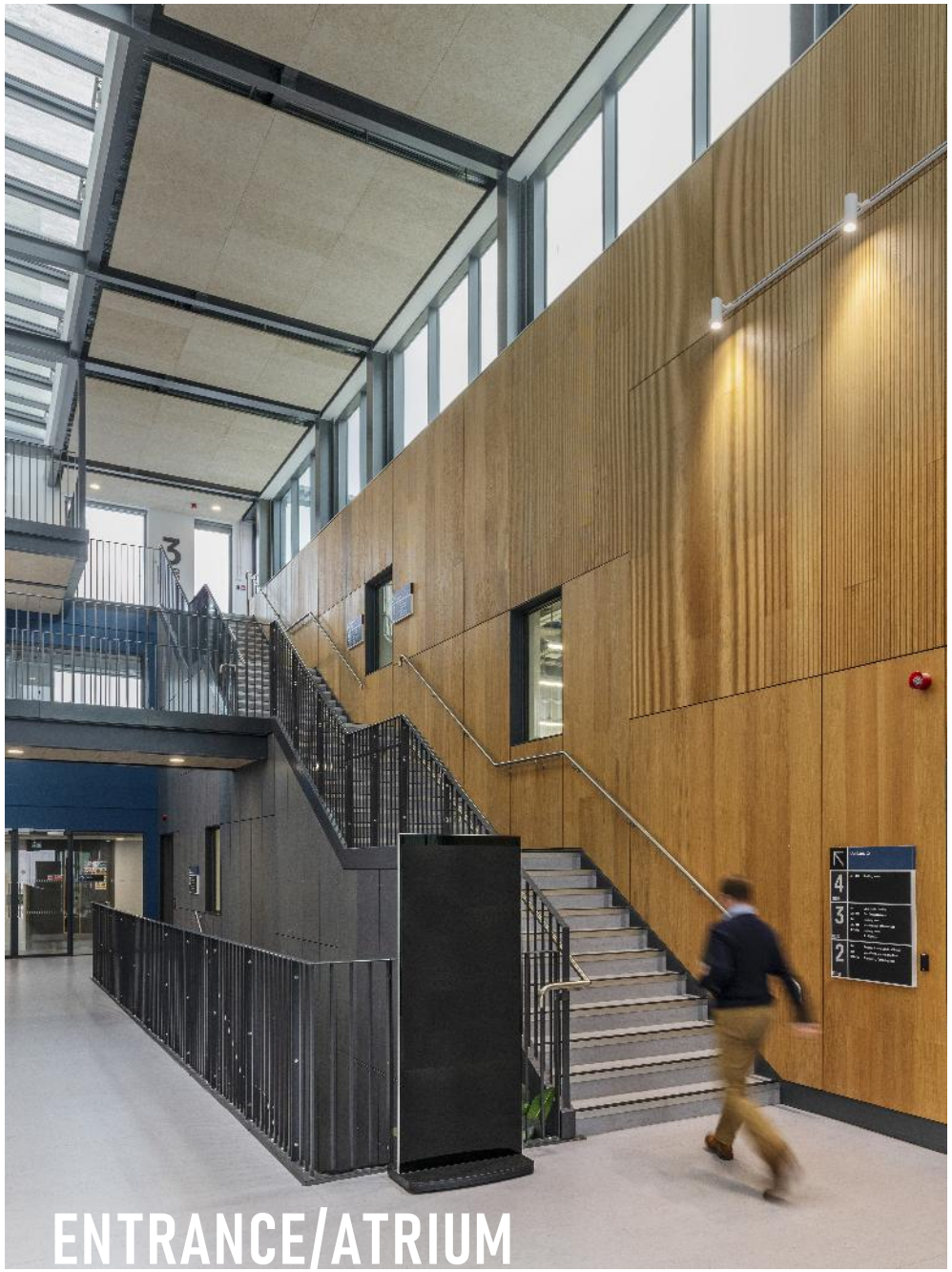
OLD BUILDING

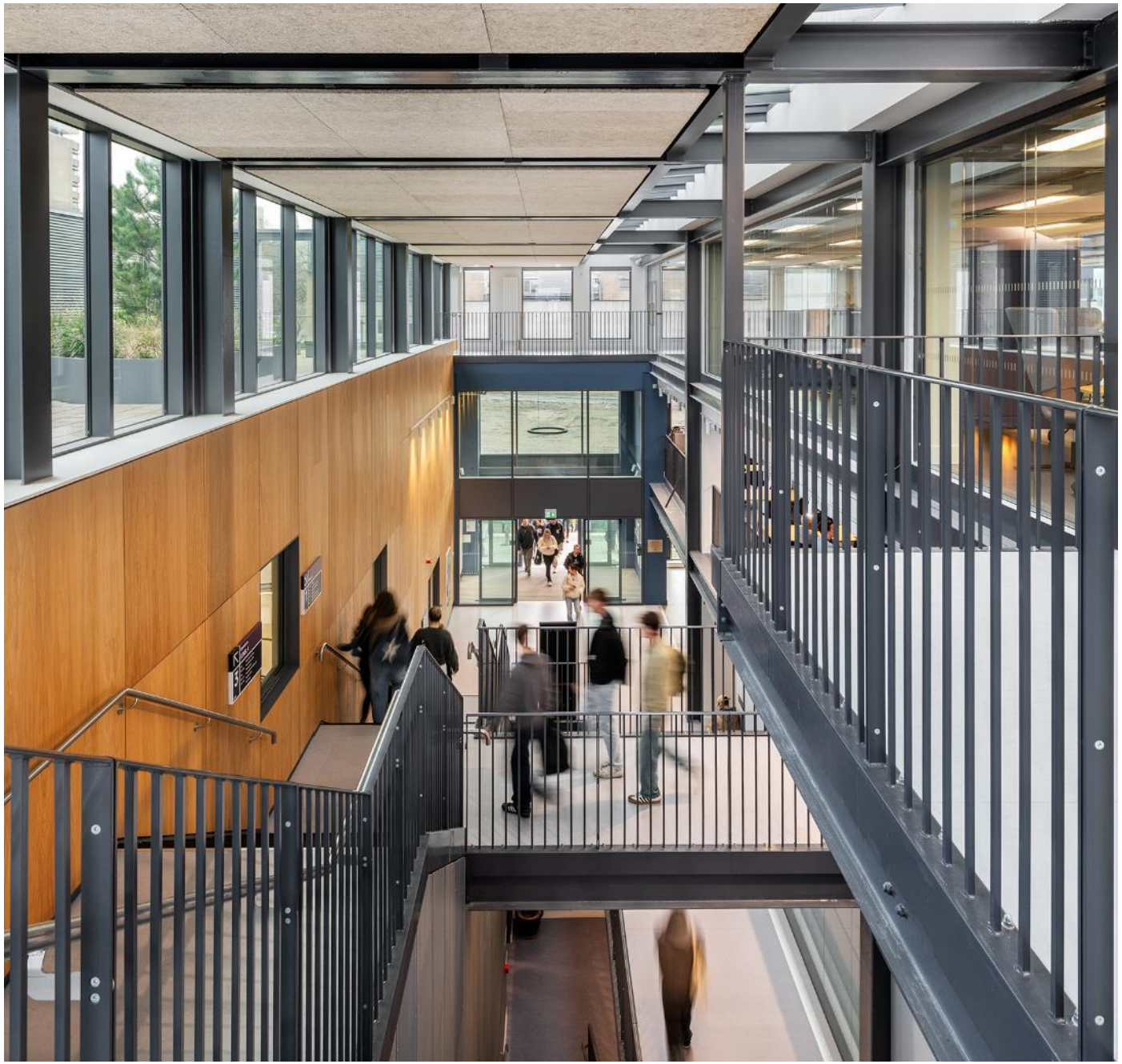
NEW SCHOOL

OLD BUILDING

NEW SCHOOL




ENTRANCE/ATRIUM



SOCIAL LEARNING

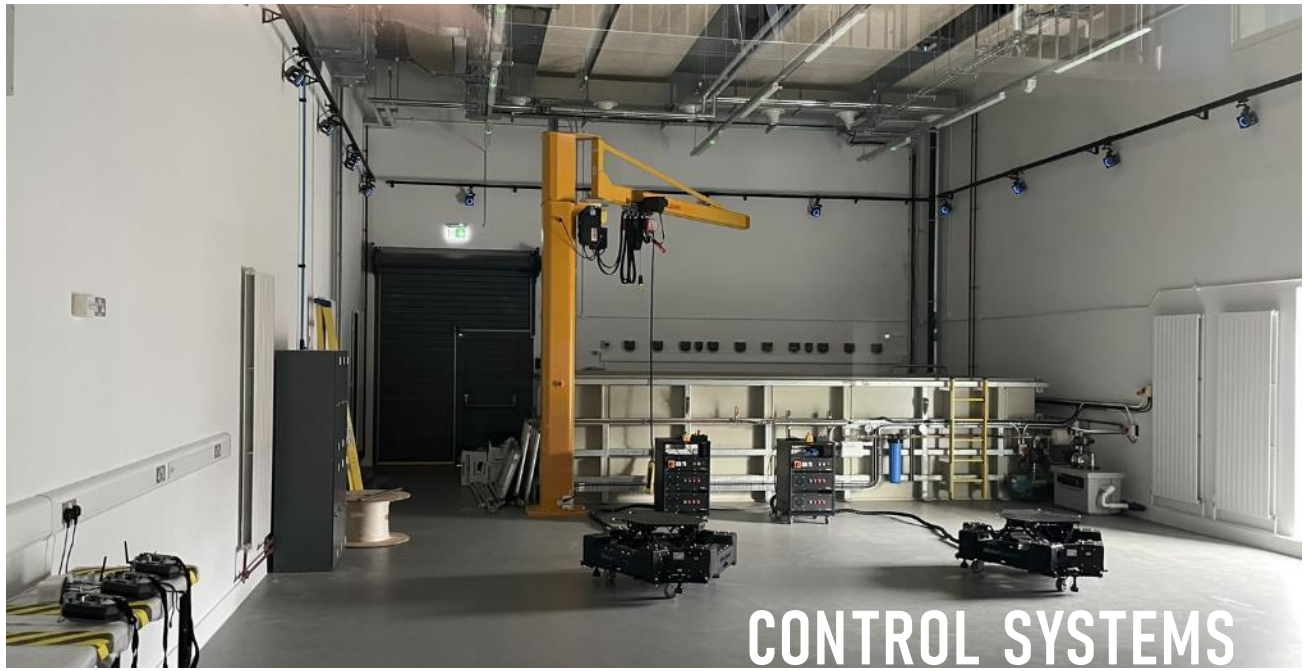

WIND TUNNEL


VR ROOM


STEAM2


KONECRANES
5.0 t


PRECISION MNFR.

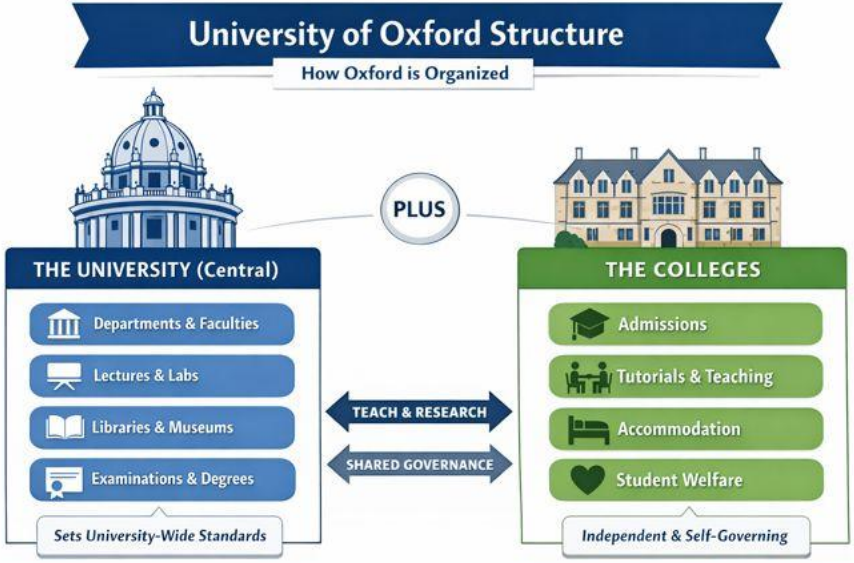

CONTROL SYSTEMS

THANK YOU

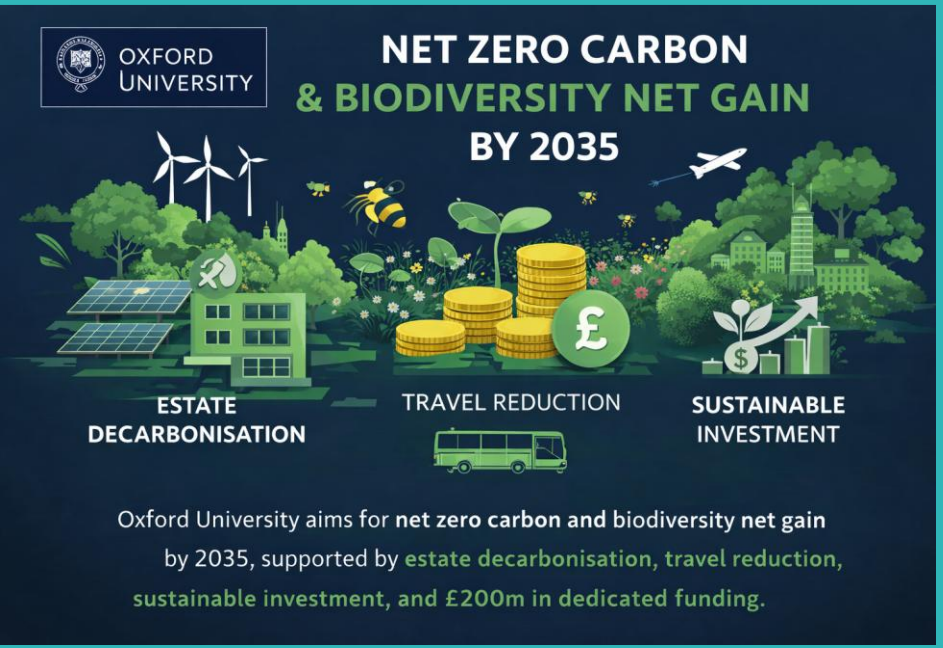
ICONIC
PROJECT MANAGEMENT

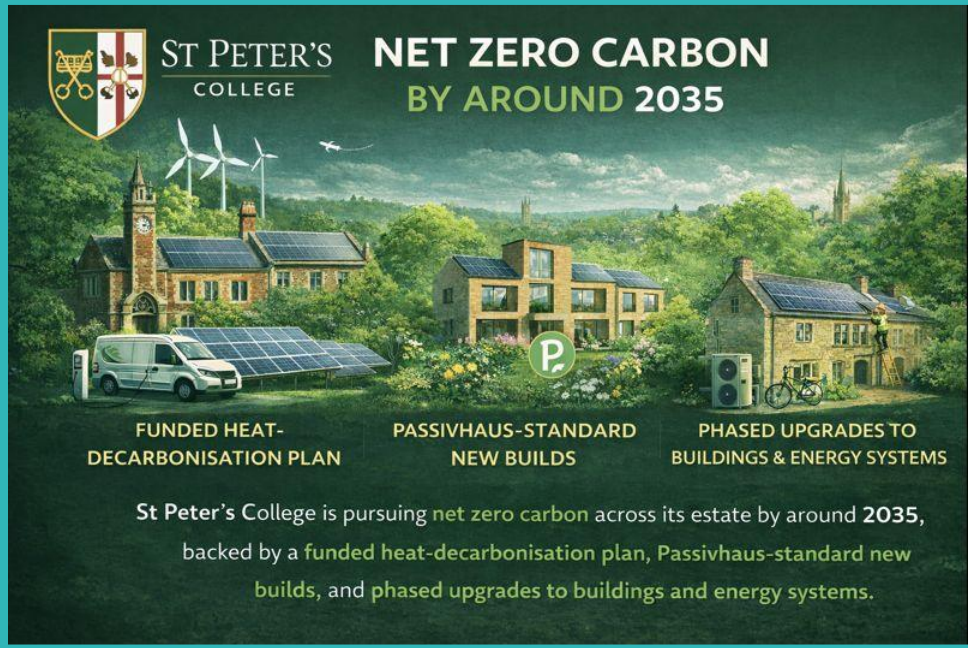
St Peter’s College
Castle Bailey Quad

Background


University of Oxford Structure
How Oxford is Organized
PLUS
THE UNIVERSITY (Central)
Departments & Faculties
Lectures & Labs
Libraries & Museums
Examinations & Degrees
Sets University-Wide Standards
TEACH & RESEARCH
SHARED GOVERNANCE
THE COLLEGES
Admissions
Tutorials & Teaching
Accommodation
Student Welfare
Independent & Self-Governing

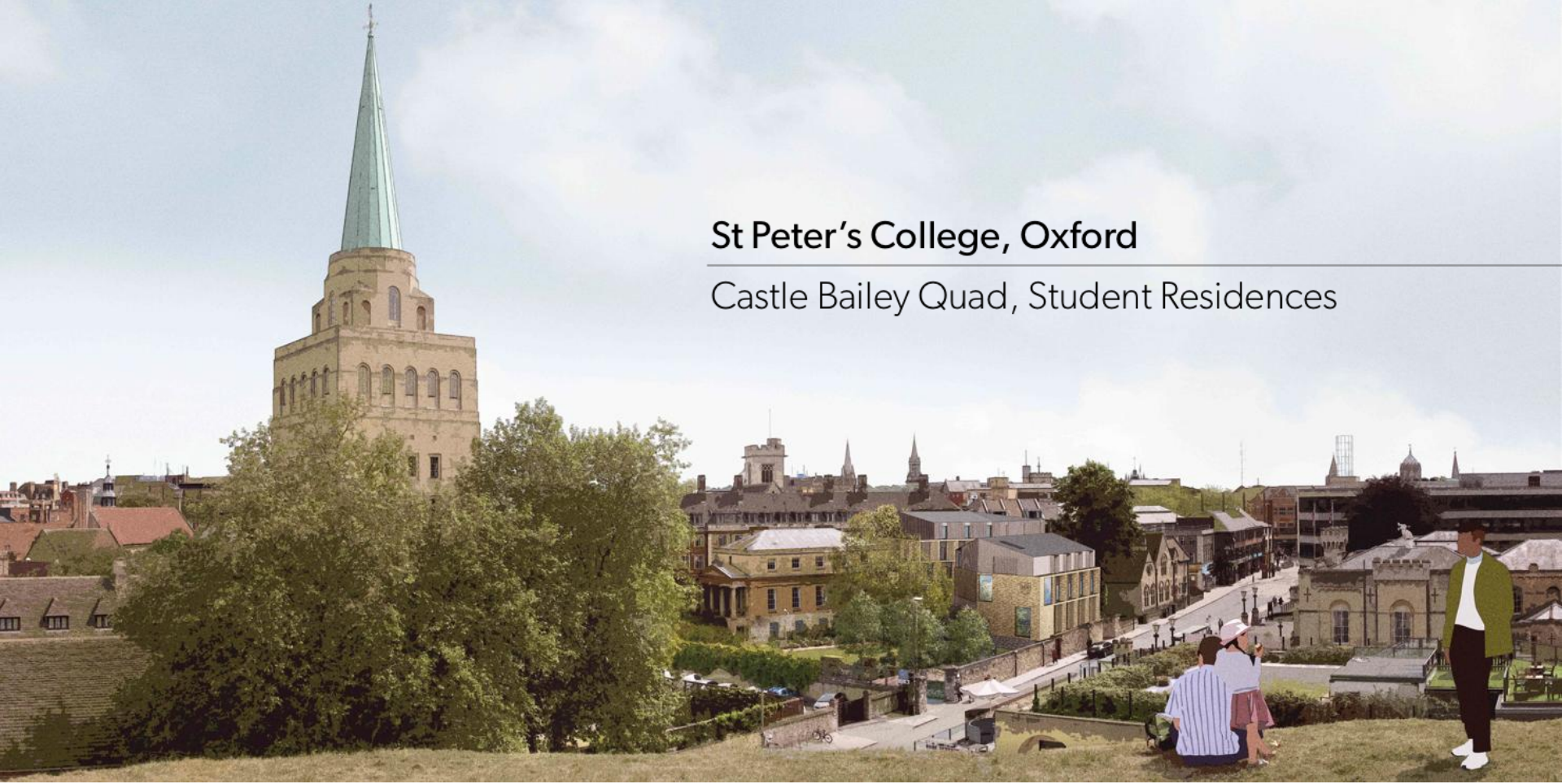
The Driving Factors





ICONIC
PROJECT MANAGEMENT

THANK YOU AND OVER TO OLIVER

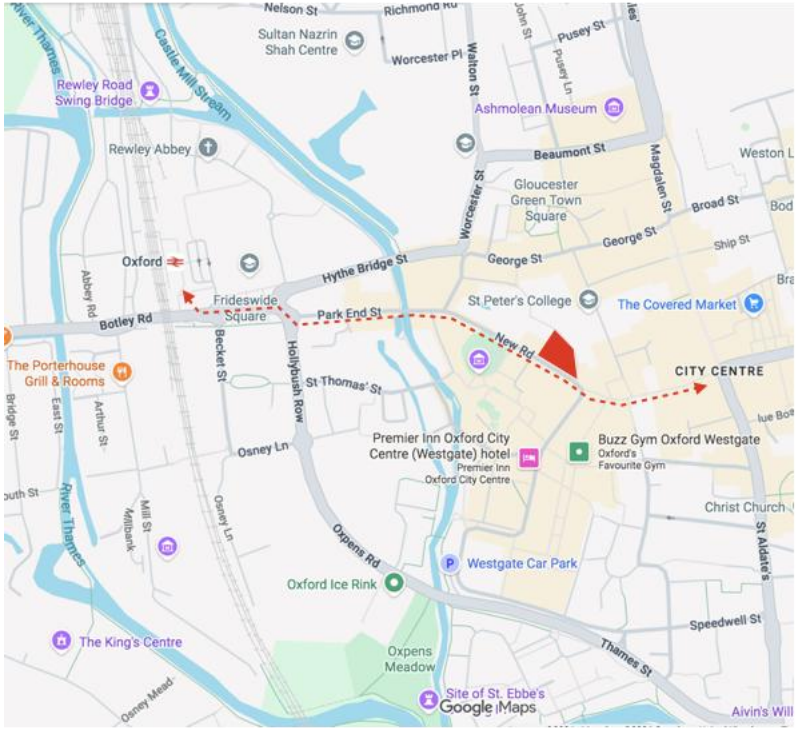


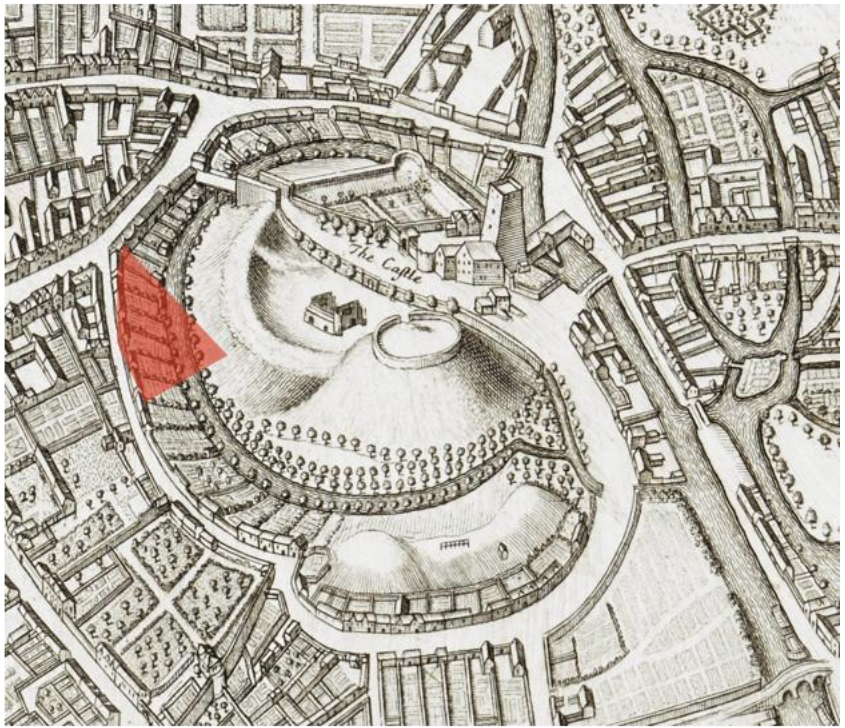
St Peter's College, Oxford

Castle Bailey Quad, Student Residences

DESIGNENGINE
ARCHITECTS

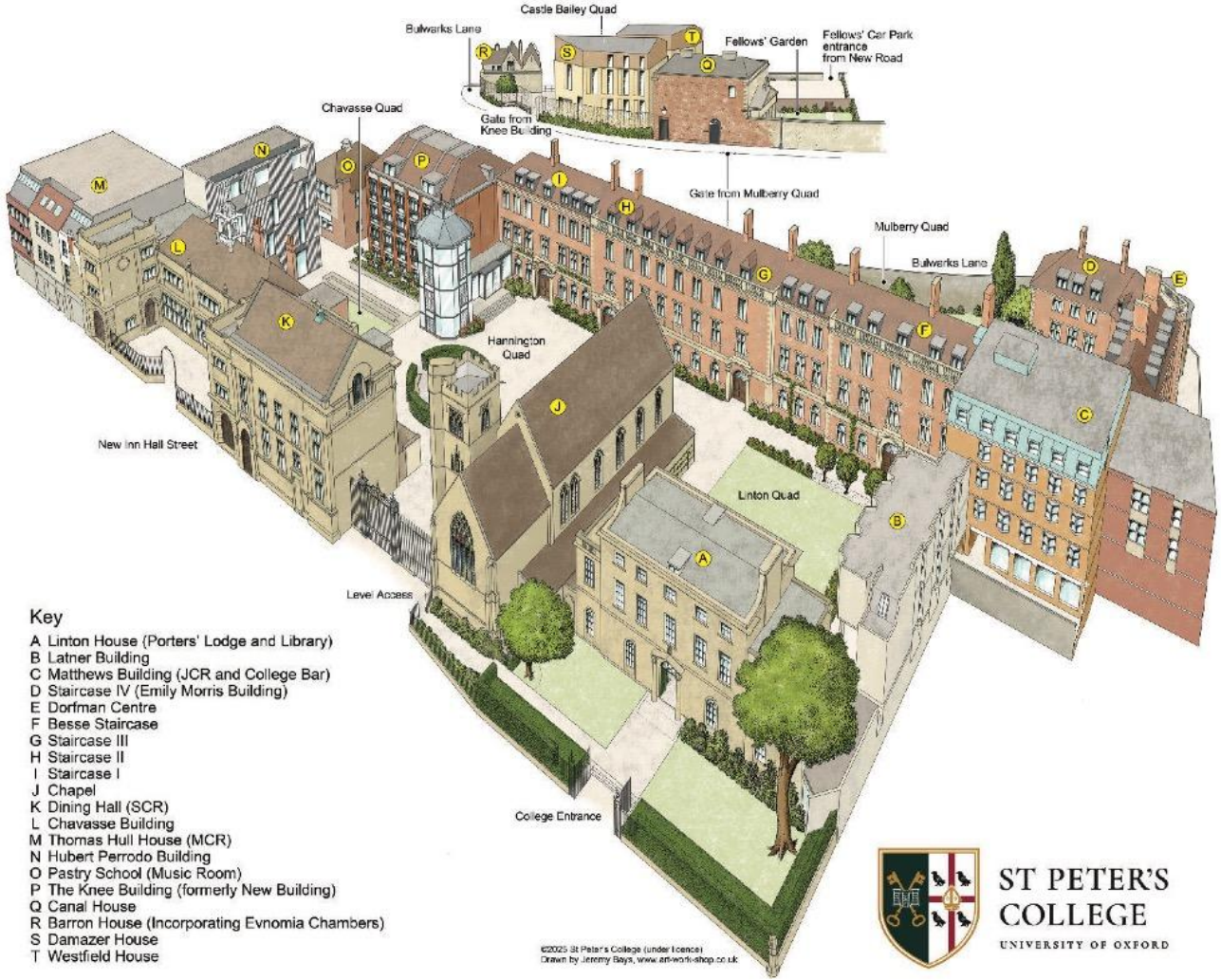
CONTEXT





Google map, 2025

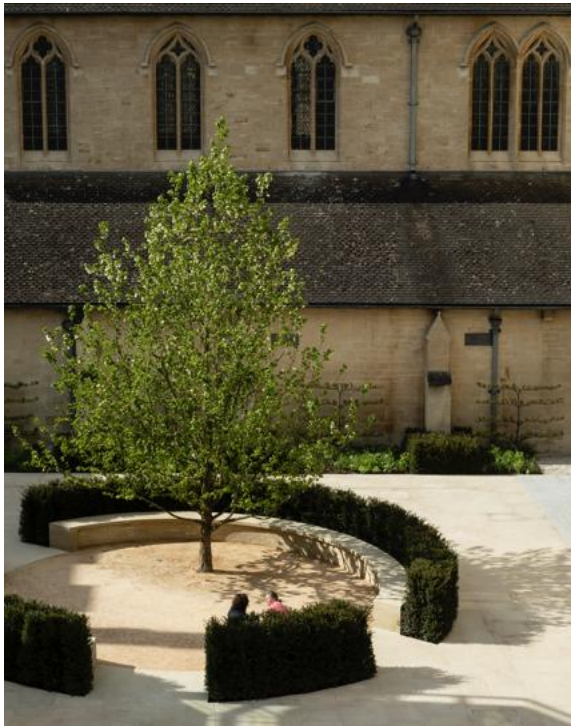
Loggan map, 1675



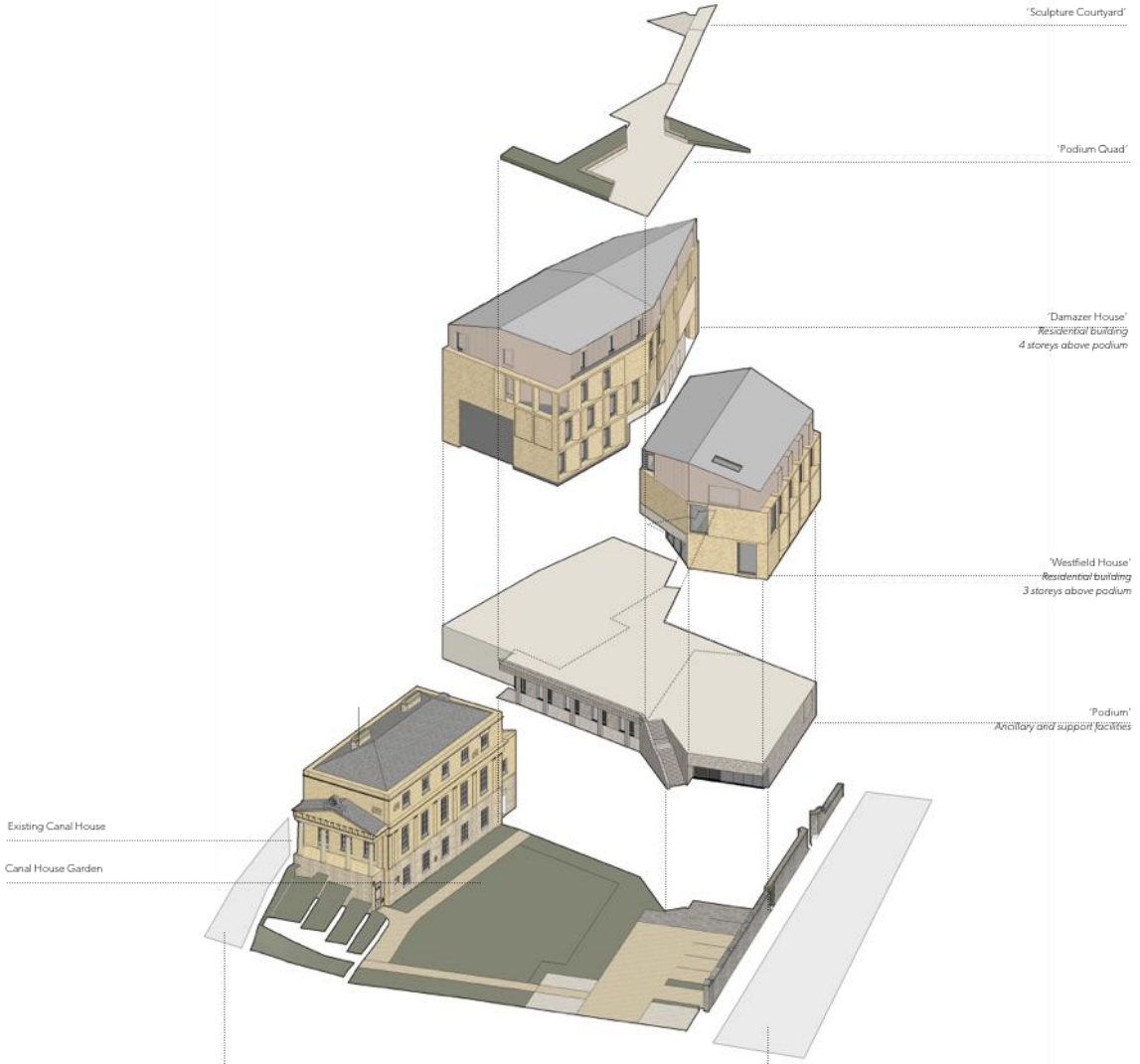
Key

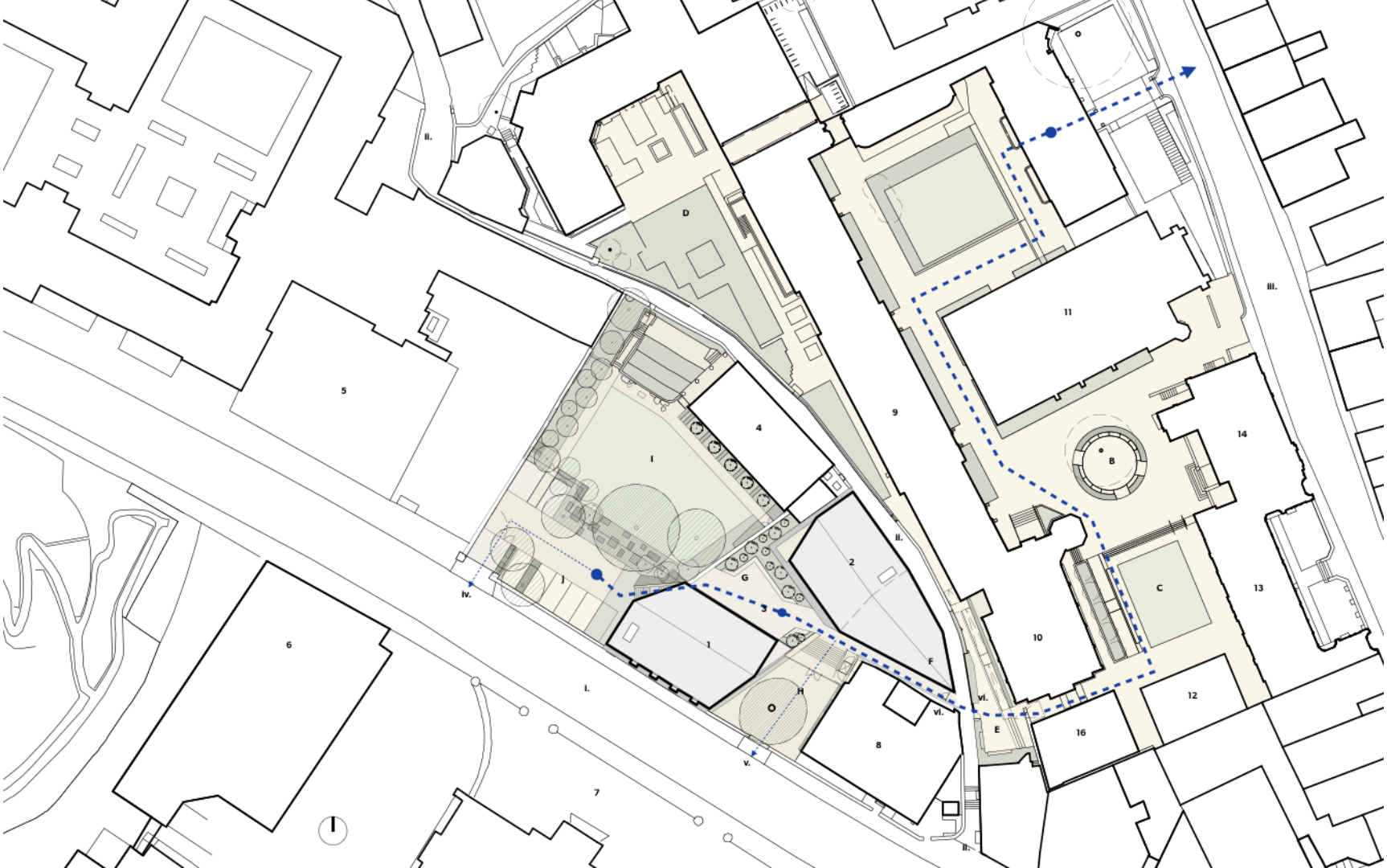
A Linton House (Porters' Lodge and Library)
B Latner Building
C Matthews Building (JCR and College Bar)
D Staircase IV (Emily Morris Building)
E Dorfman Centre
F Besse Staircase
G Staircase III
H Staircase II
I Staircase I
J Chapel
K Dining Hall (SCR)
L Chavasse Building
M Thomas Hull House (MCR)
N Hubert Perrodo Building
O Pastry School (Music Room)
P The Knee Building (formerly New Building)
Q Canal House
R Barron House (Incorporating Evnomia Chambers)
S Damazer House
T Westfield House

ST PETER'S COLLEGE
UNIVERSITY OF OXFORD



DESIGN


'Sculpture Courtyard'
'Podium Quad'
'Damazer House'
Residential building
4 storeys above podium
'Westfield House'
Residential building
3 storeys above podium
'Podium'
Ancillary and support facilities
Existing Canal House
Canal House Garden


I
II.
III.
IV.
V.
VI.
A
B
C
D
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H
1
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16


C
B
A
E
F


D

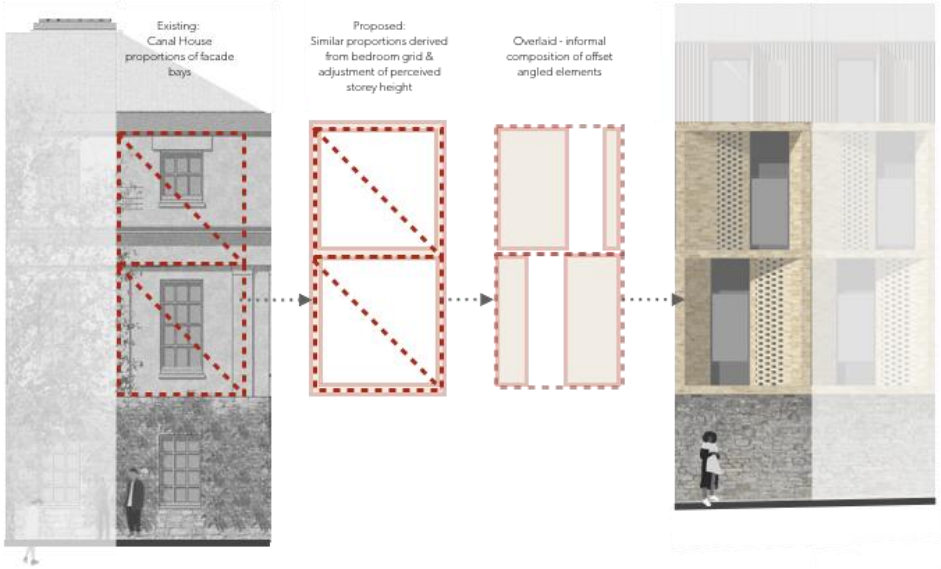

C

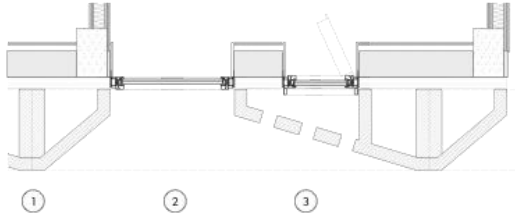

B


E


A


E





Key

1. Brick pilaster
2. Aluminium window system (Grey powder-coated).
3. Hit and Miss brickwork with opening vent behind.


BELOW GROUND LEVEL
Existing Canal House
Existing Law Centre
Canal House Garden
BELOW GROUND LEVEL
Fellow's Forecourt
New Road
7
10
8
15
10
10
15
3
14
9
11
16
10
13
12
Floor plan level 1
Building Entrances
Lift
Servicing/Plant room
College facility
Communal facility
Accommodation
1. Study bedroom
2. Accessible study bedroom
3. Kitchen
4. Accessible kitchen
5. Laundry & store
6. Common room
1. WCs
2. Workshop
3. Office
4. Store
5. Plant
6. Cycle store
1. Refuse & Recycling
2. External colonnade.
3. Fellow's Rooms
4. 'Set' - warden's flat


Bulwarks Lane
Reception Court
Sculpture Court
Existing Canal House
Damazer House
5
5
7
11
6
1
1
1
Existing Law Centre
Podium Quad
Canal House Garden
Law Centre Court
4
Alexander Mosley House
1
1
1
1
Fellow's Forecourt
New Road
Floor plan level 1
Building Entrances
Lift
Servicing/Plant room
College facility
Communal facility
Accommodation
1. Study bedroom
2. Accessible study bedroom
3. Kitchen
4. Accessible kitchen
5. Laundry & store
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Bulwarks Lane
Reception Court
Existing Canal House
Damazer House
Existing Law Centre
Canal House Garden
Podium Quad
Law Centre Court
Alexander Mosley House
Fellow's Forecourt
New Road
Floor plan level 1
Building Entrances
Lift
Servicing/Plant room
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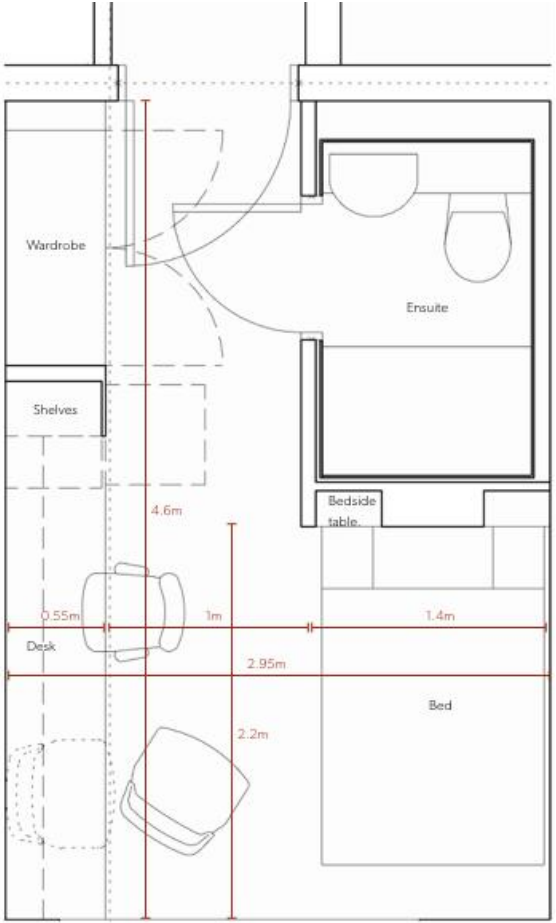
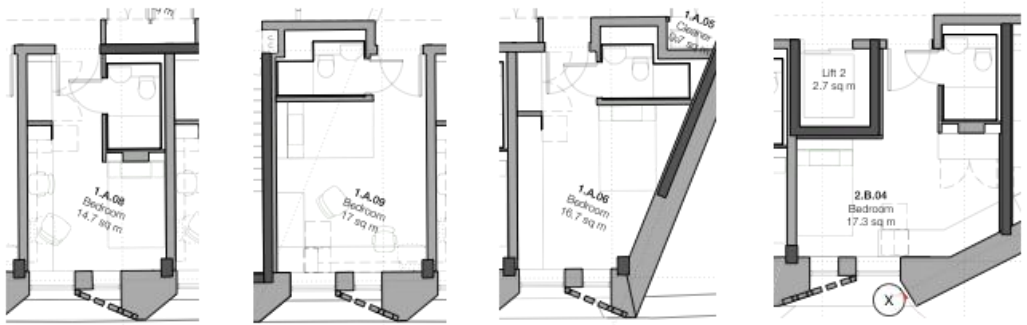




Examples of the alternative bedroom layouts

PASSIVHAUS (Low Energy Building)

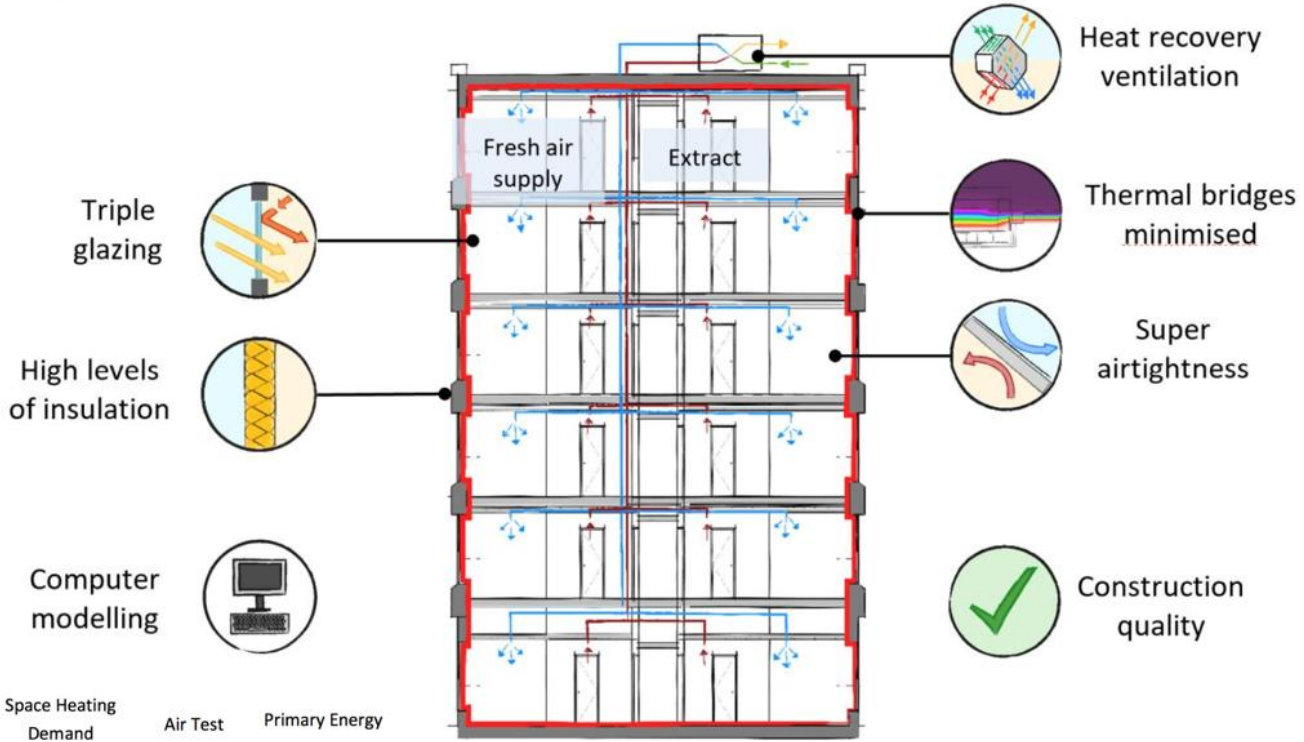


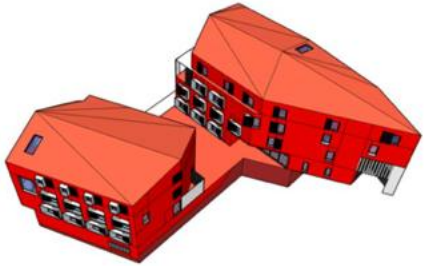
Figure 1: Key features of a Passivhaus

QODA

3 Strategy Summary

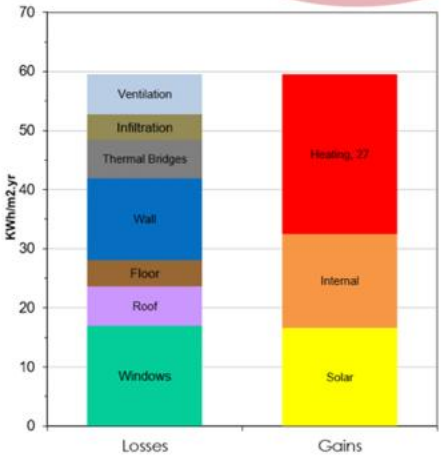
The Passivhaus strategy for the project is summarised below. The data presented here is that currently within the PHPP model.

Building Model Results



Space Heating

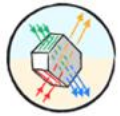
27 kWh/m²/yr



Ventilation

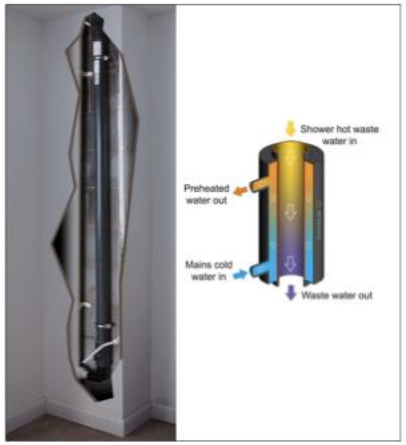
Mechanical ventilation with heat recovery

>91% Heat recovery



For central AHU

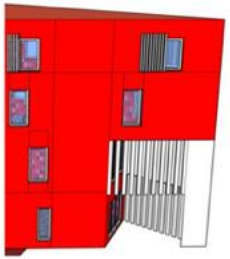
Heat recovery



Form Factor

2.13

TFA 1622m²



Walls

U=0.16 W/m²/K

Average

Windows & Doors

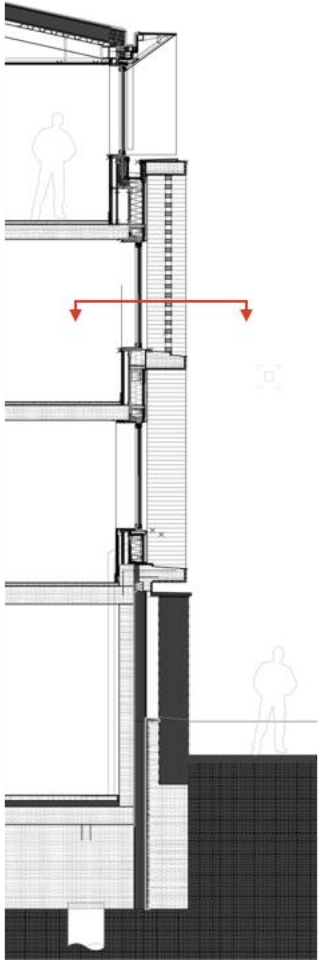
U=0.73 W/m²/K

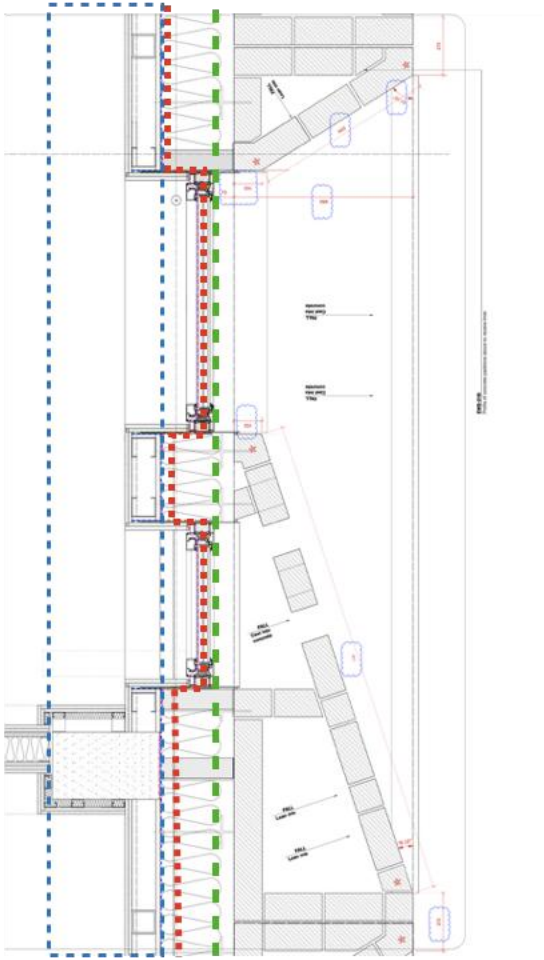
g=0.47

0.81 including thermal bridges.

QODA

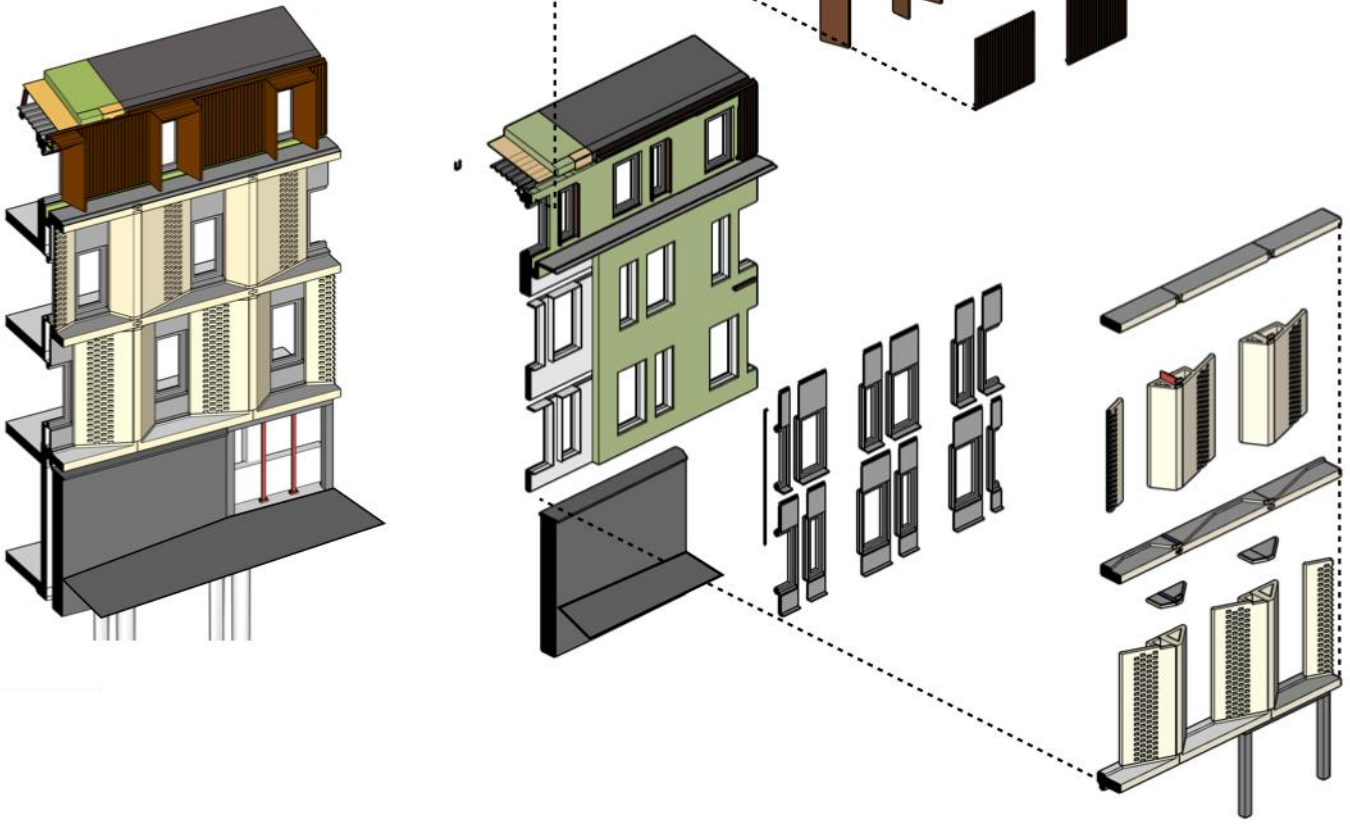

Section A





CONSTRUCTION


TAXIS




ROCKWOOL SP Fire Stop
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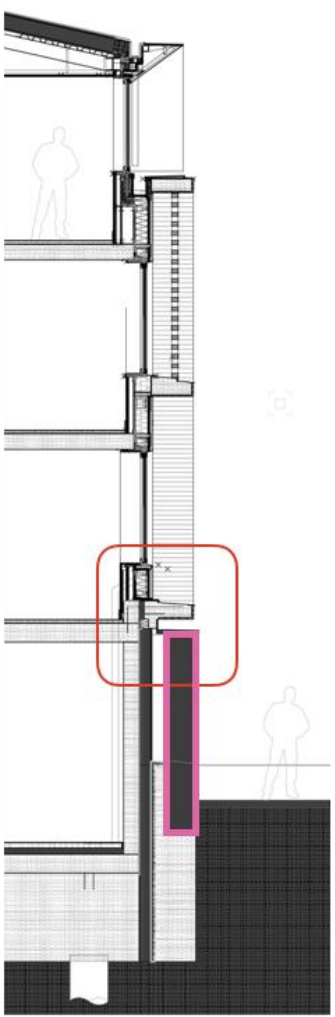
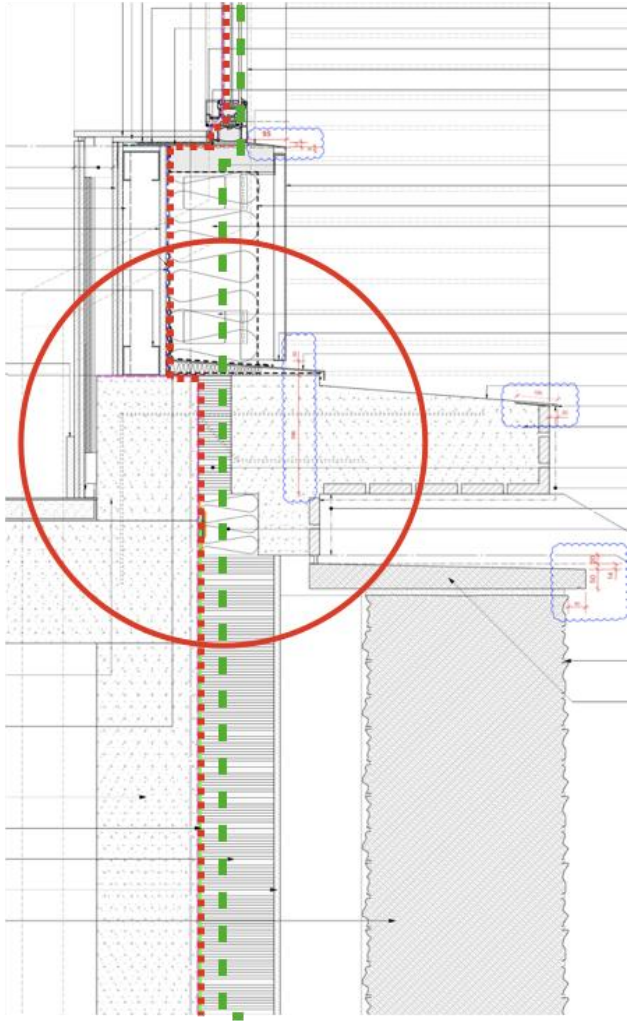
Section A






SCHUCK

FINISHED BUILDING


ENTRY TO SITE
No parking
STOP


WILLMOTT DIXON

DESIGNENGINE
ARCHITECTS