

THE DEPOT

Creative sustainable re-use of one of Cardiff's most complete industrial buildings

Introduction

In this document ideas for the re-use of the depot are explored. It is emphatically not a full feasibility study but it is meant to prompt discussion and further studies.

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'The Depot is a large Victorian building in the centre of Cardiff. It has been in continuous use throughout its 100-year life, and its interior is like a small settlement. The main brick walls and concrete floor register the position of many previous dividing walls and ground trenches, and record the shift in the building's role as a repair shop for Cardiff's trams to a maintenance shop for its municipal vehicles.'

The idea of reuse has been around at least since 2005. Because of its spatial potential within walking distance of the City Centre it presents a unique opportunity to contribute to the cultural 'offer' for Wales's capital city.

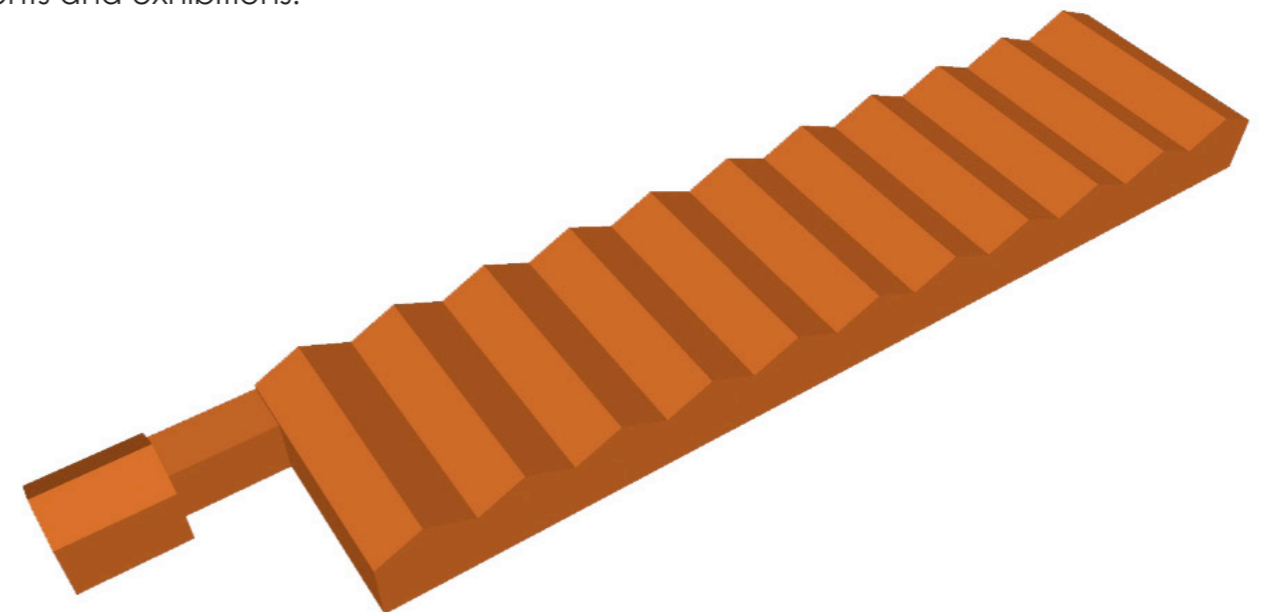
Rather than proposing an 'orthodox' refurbishment of the building or brutal and destructive carving of the site for commercial opportunity, this proposal is based on dealing with the necessity to repair, combined with the freedom to imagine what the Depot offers future users given space, form and possible function. The Depot will give Cardiff a unique space with the potential to accommodate international events and exhibitions.

The strategy for the future of the building is based on three principles

1. To adopt a financial and constructional model appropriate to enable the creative re-use of the building. This is based on combining new space for Innovation Companies alongside public facing facilities whilst demonstrating renewable technologies. The aim is to make a building that is flexible and adaptable in order to maximise revenue through its ability to house a wide range of events/users.

1. Exploit the spatial and functional opportunities offered by the existing building based on how other international class European Cities have benefited from creative re-use, rather than erasing their industrial heritage.

2. Disposal of new spaces within the existing shell in a way that an architecture of 'continuity and accretion' is allowed to develop. This means accepting that the building is never finished as a single compositional statement and is a conglomerate order.



THE DEPOT

The existing building



The building has a spectacular daylight, open space



South (Street) Elevation - Victorian brickwork at it's best



Interior has been in use as a vehicle maintenance shed for over a century



Entrance is now cluttered and a visual mess



The building buffers Grangetown from the railway and is within east reach of the railway station and all City Centre Facilities

THE DEPOT

Learning from others - creative re-use - Palais de Tokyo - Paris
 Deonstrating how a building can be resurrected for public use with minimal intervention



redundant and neglected for three decades this former is now a vibrant cultural attraction owned and run by the city close to the Eiffel Tower



The large daylight volumes present a range of possible ways of using the building



the design strategy was to accommodate the signs of previous uses of the building to add to - rather than erase the character of the building

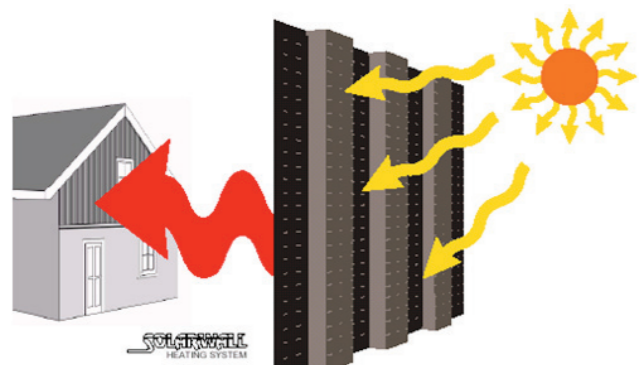
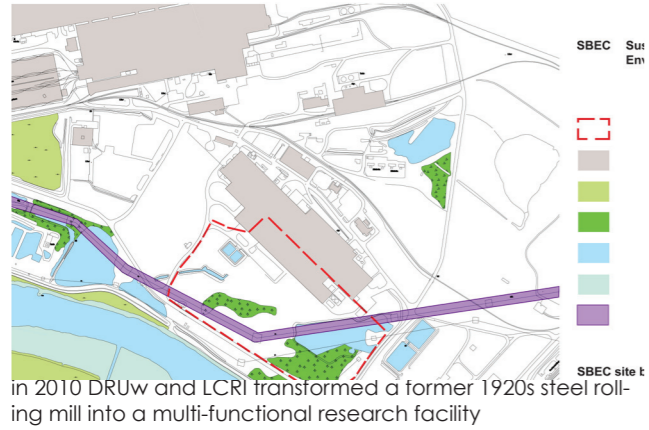


In French a makeover is known as a 're-looking', and this strikes as a better, if not more conceptual, way to understand the recent changes as the Palais de Tokyo still comes across as very much unfinished. Walls are still unpainted and it was unclear whether a pile of timber, cordoned off by caution tape, was rubbish or an art installation (likely the former).

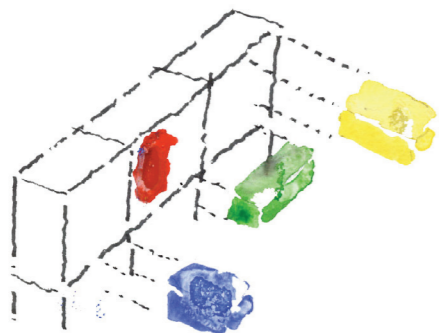


THE DEPOT

Learning from others - Building Envelope Centre, Shotton
 Demonstrating repair of an existing industrial shed and insertion of r&d offices



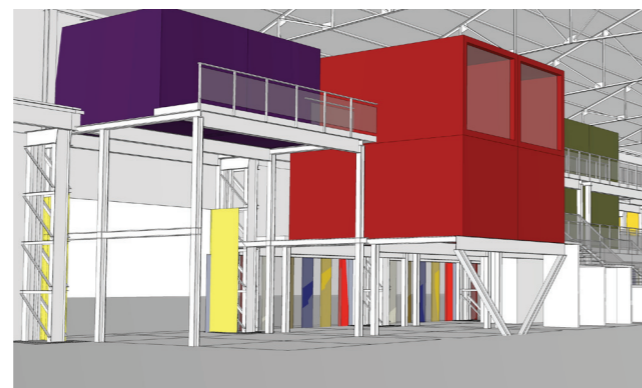
The refurbished building now demonstrates and tests energy producing building elements



Pre-fabricated steel office modules were inserted into the existing shed to provide high spec research spaces



Completed from inception in only 15 months the building still underwent extensive testing in the design phase - photo of daylighting models at the wsa sky and heliodon



The building is also a demonstration of TATA colours



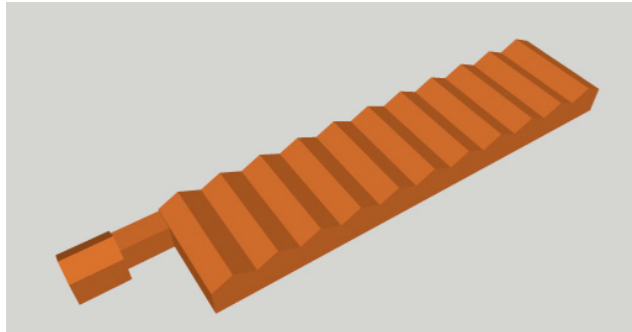
The existing



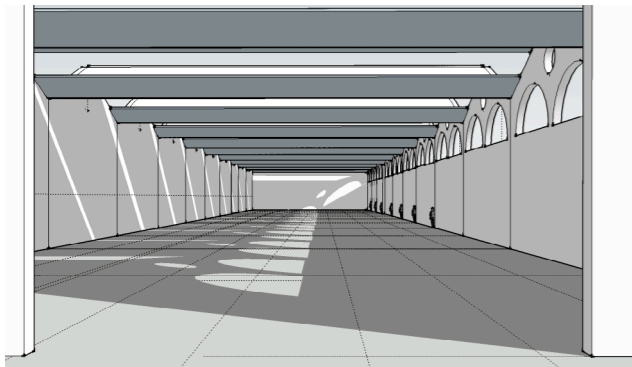
New south facing energy producing facade

THE DEPOT

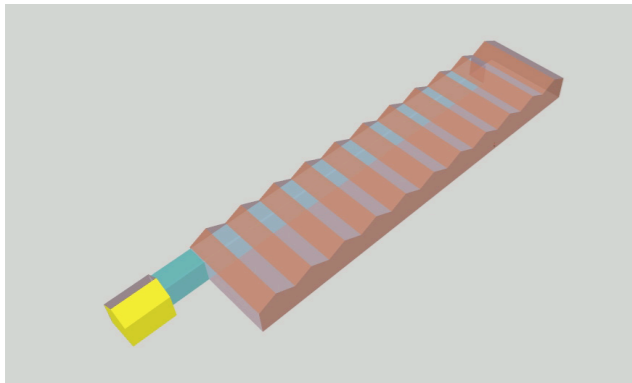
Existing building - spatial potential



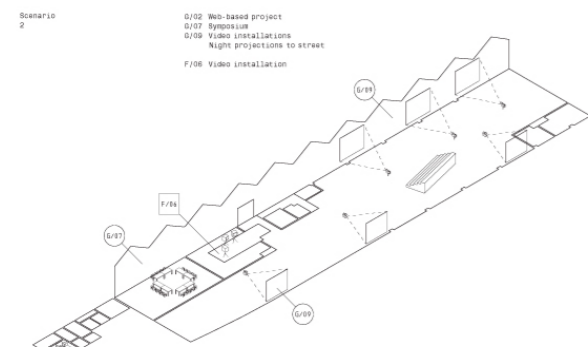
The building provides a unique opportunity to use a large flexible space close to the city centre - and is already 'iconic'



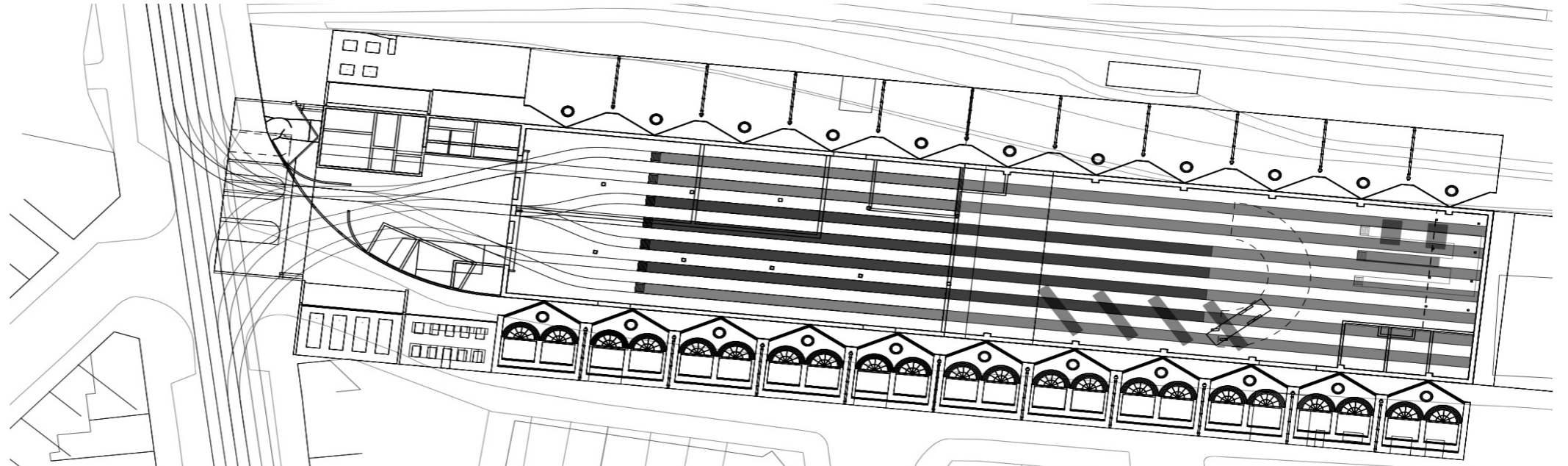
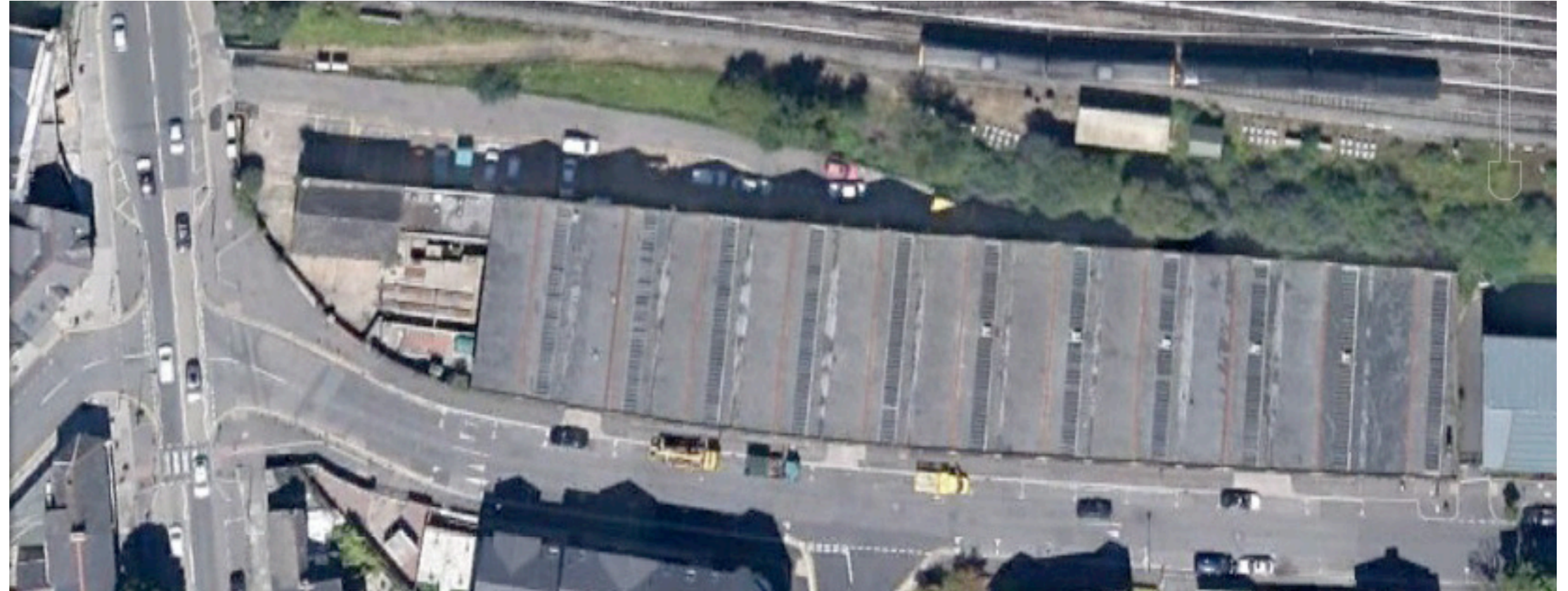
Over 100m long and 23m wide the building has the potential to accommodate a range of offices and public facing activities



The building is big enough to 'swallow' substantial interventions such as offices for organisations without compromising the volumetric sense



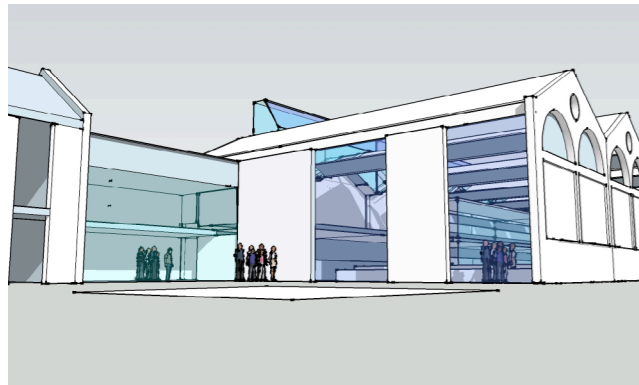
Caruso St John demonstrated how the building could work for a range of exhibition and public events back in 2006



DEPOT is a great building. It has all of the attributes (or clichés) of the archetypal Victorian structure. It is big, 120 metres long, 23 metres wide, 10 metres high, and has a toughness and scale that could accom'modate the largest and heaviest installation. It has been in continuous use throughout its 100 year life and its interior is like a small settlement with solid masonry walls supporting the house-like two storey vehicle reception and mess room, and less substantial clad timber structures make other subdivisions. The main brick walls and concrete floor register the position of many previous dividing walls and ground trenches, and record the shift in the building's role as a repair shop for Cardiff's trams to the maintenance shop for its municipal vehicles.

THE DEPOT

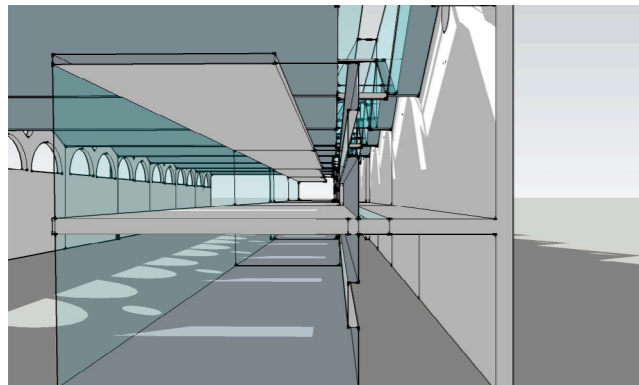
Re-use



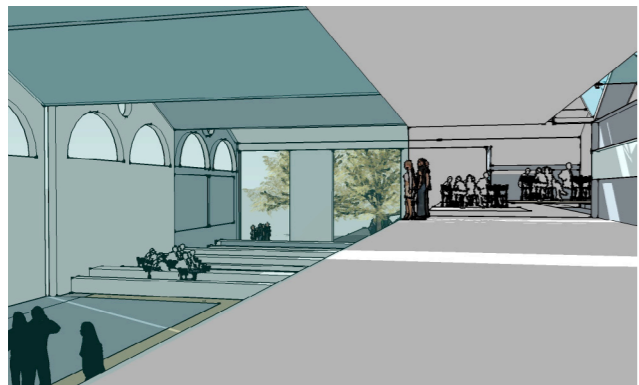
arrival at exhibition entry court - and exhibition space



view of the shop and cafe from flexible exhibition space

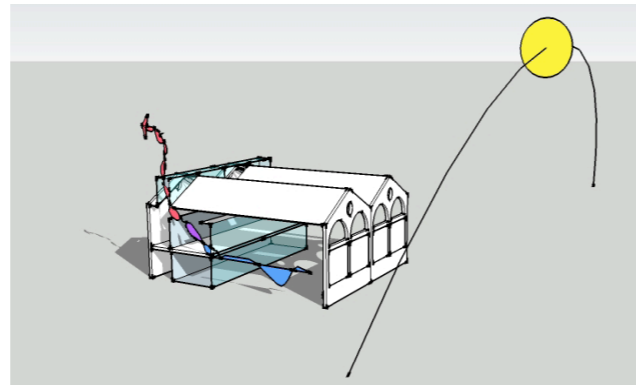


view down office circulation spine, through lettable offices to exhibition spaces

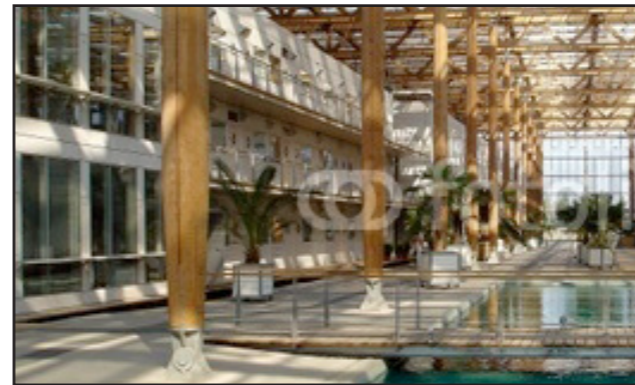


Lettable office space runs along the Northern edge of the existing building

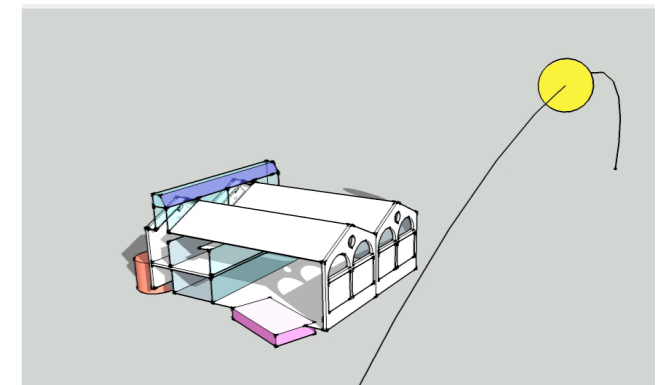
Energy and environment - a near zero carbon strategy



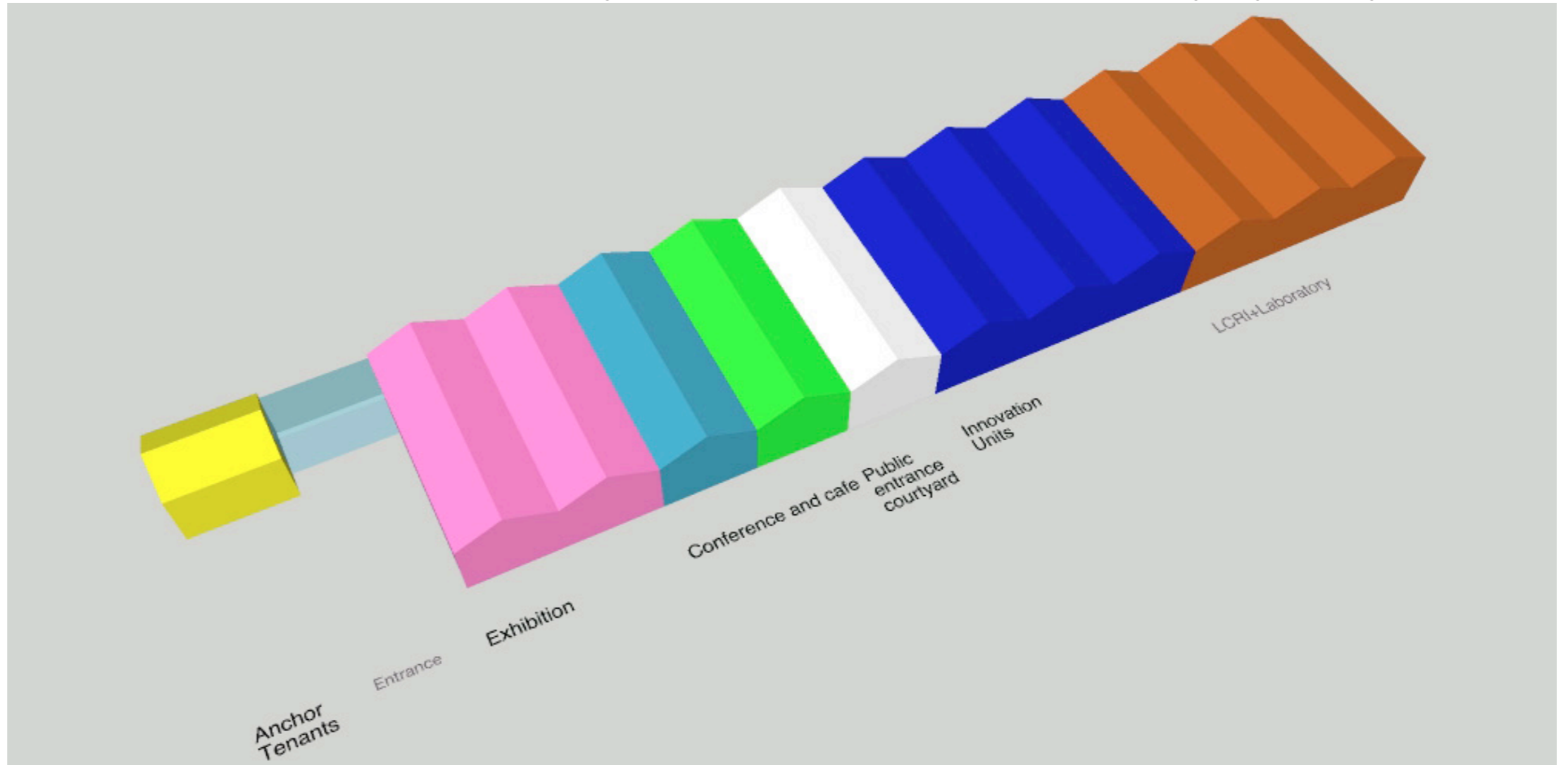
The building benefits from the potential for daylight, natural ventilation and solar gain whilst being buffered from the North by the railway embankment



The existing envelope and fabric will act as an environmental umbrella and accommodate new buildings within the existing shell. The main volume will be transitional space.



Energy for the whole project is generated by a CHP energy centre using locally grown renewable bio-fuel plus solar PVs and storage through use of existing and new pits.



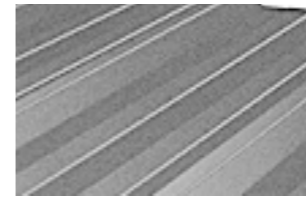
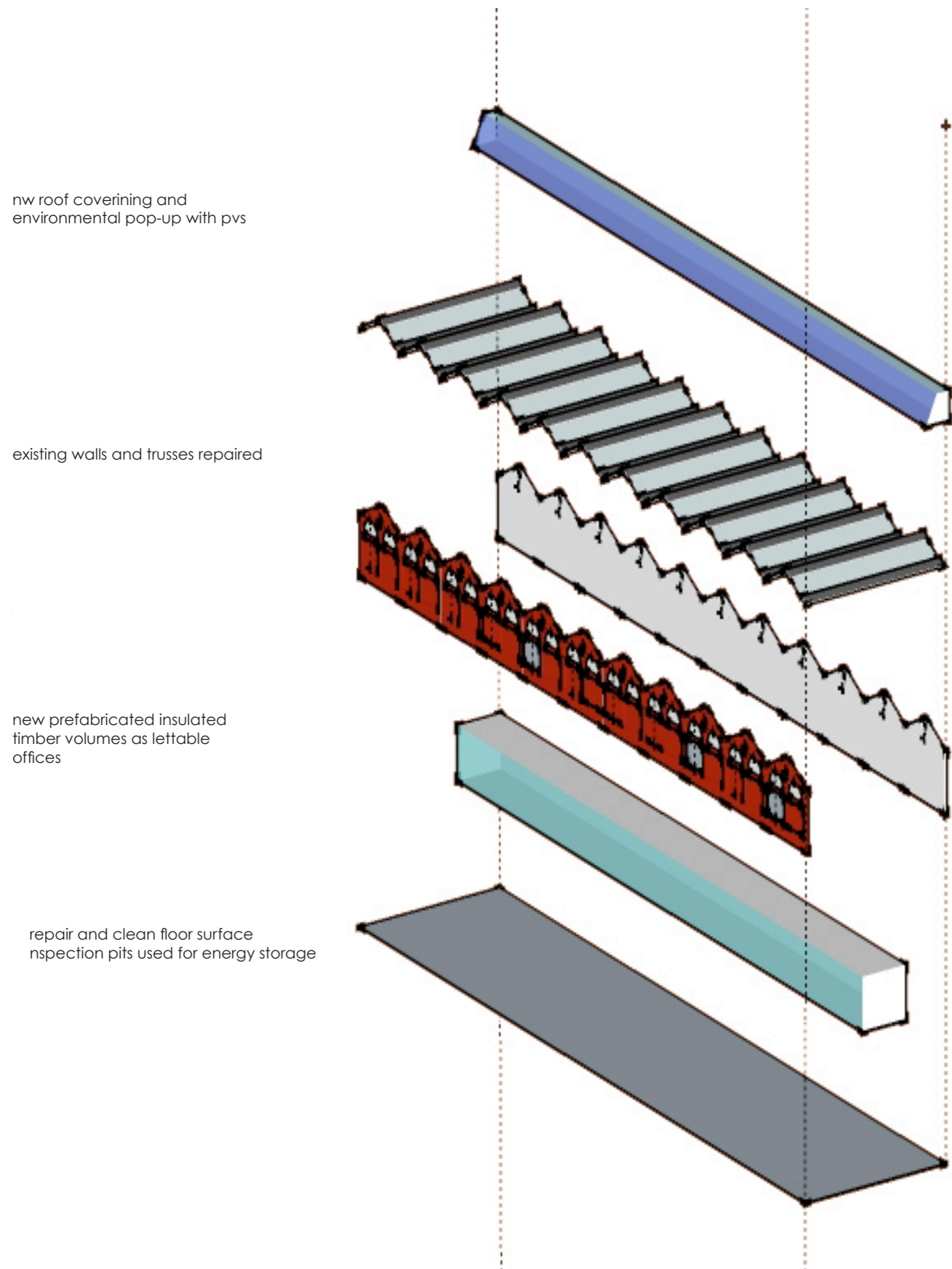
'DEPOT is big enough to accommodate a number of separate but complementary uses and tenants - from R&D to public exhibition.

For the purposes of this study it is developed as an Urban Centre for Sustainable Technologies -

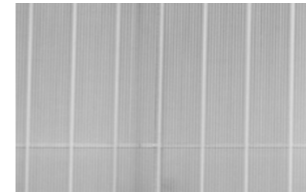
Offices for anchor tenants, Exhibitor entrance. Bay 2 Exhibition, Bay 3&4 Conference and Cafe, Bay 5 Entrance Court, Bay 6-8 Innovation Centre, Bay 9-11 LCRI Offices and laboratory

THE DEPOT

Construction, materiality and costs



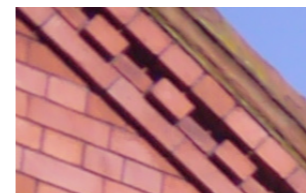
Replace slate with new composite steel roof cover



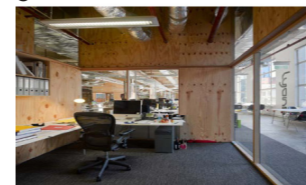
Replace single glazing to roof with insulated Polycarbonate



Clean, repair and decorate trusses and structure



Clean and repair brickwork and replace cast iron roof goods



Prefabricated timber and OSB offices

The economic strategy for the new building is based on the architectural strategy. Therefore those elements which are critical to the low carbon performance, spatial arrangement and appearance of the building – the 'climatic roof, and biomass combined heat and power plant are the costliest items. These are balanced by a very pragmatic and economic approach to the other elements – exposed steel simple, repair of the existing and inexpensive new interventions. It is anticipated that the largely day lit and naturally ventilated interiors plus the financial benefit of renewable heat incentive will help run the building.

The Depot

Jan-13

Ground Floor footprint	2,665 m ²
New offices/facilities	600 m ²
Remainder of shed area	2,065 m ²
Approx site area	3,390 m ²
Approx building footprint	2,640 m ²
Approx external works area	750 m ²

BUDGET CONSTRUCTION COST ESTIMATE-SUMMARY

	Quantity	Unit	Rate £	Total £	Total £/m ²
Demolitions and asbestos removal	say	say	say	25,000	12.11
Ground Floor	2,665	m ²	40.00	106,600	51.62
Superstructure					
New office space	1,200	m ²	1,000.00	1,200,000	581.11
Roof cover	2665	m ²	100.00	266,500	129.06
Shutters/doors	4	Nr.	5,500.00	22,000	10.65
Commercial Kitchen	1	Nr.	60,000.00	60,000	29.06
Conference seating 500	1	Nr.	75,000.00	75,000	36.32
Reception	110.0	m ²	2,000.00	220,000	82.55
Shed area	2,665.0	m ²	100.00	266,500	129.06
Energy Centre	81	m ²	1,450.00	117,450	56.88
External Works and Drainage	750	m ²	75.00	56,250	27.24
Main Services	2,665	m ²	25.00	66,625	32.26
NET CONSTRUCTION COST				2,481,925	1201.90
Glazed pop-up and pvs	216	m ²	2,500.00	540,000	
Total without renewables				3,021,925	1463.40
Main Contractor's Profit and Preliminaries 15%	0			453,289	
BUDGET CONSTRUCTION COST ESTIMATE as at Jan 2013				£3,475,213.75	£1,682.91

Notes and exclusions:

Budget costs based on £/m² using Gross Floor Areas produced by Welsh School of Architecture's current sketch proposal drawings.

The costs are based on recent tender costs for similar schemes. As such, no specific allowance is made for particular site conditions, site abnormalities, contamination, abnormal mains services supply/diversion costs and the like.

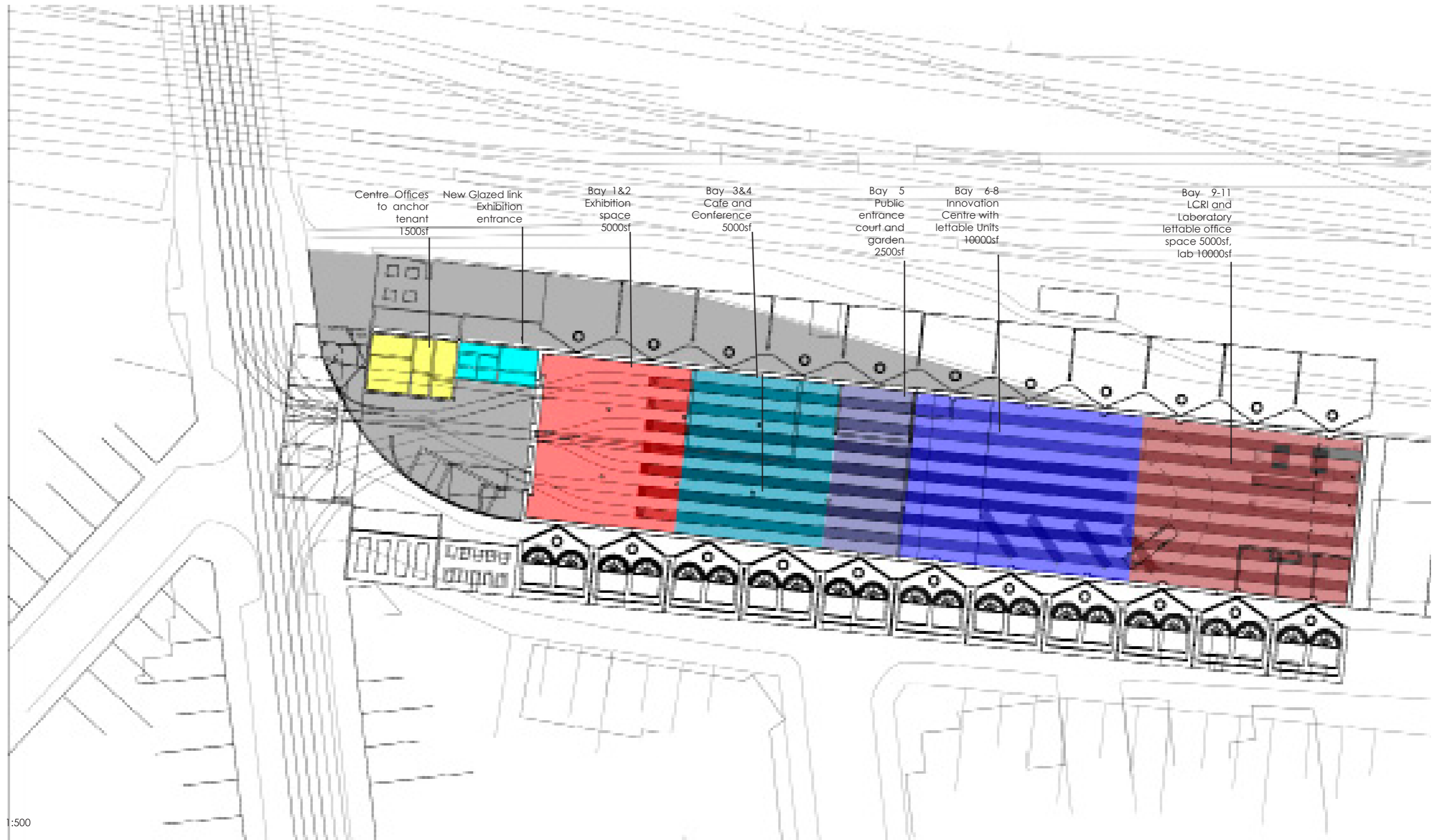
Construction costs represent:

Current prices as at Jan 2013

The design approach allows phasing of the construction. After the general repair of the building and heating system to create a waterproof covering then each bay can be inhabited. The design allows for flexibility with additional uses and associated pavilions to be built or existing ones to be extended in the future if the centre requires more accommodation. These could be easily built as inserts later.

THE DEPOT

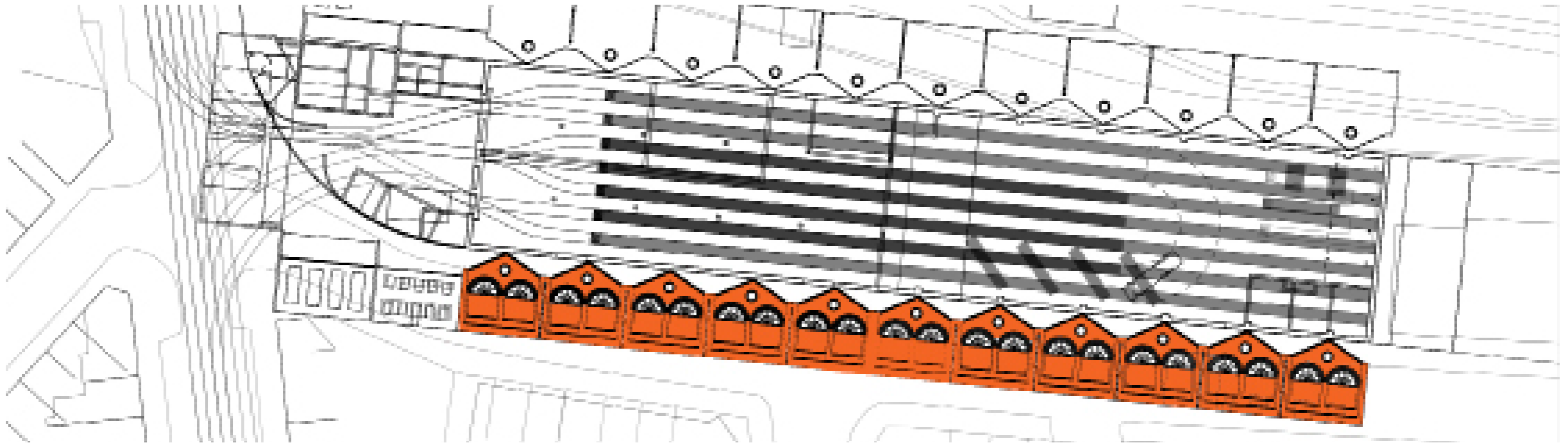
Spatial plan



1:500

THE DEPOT

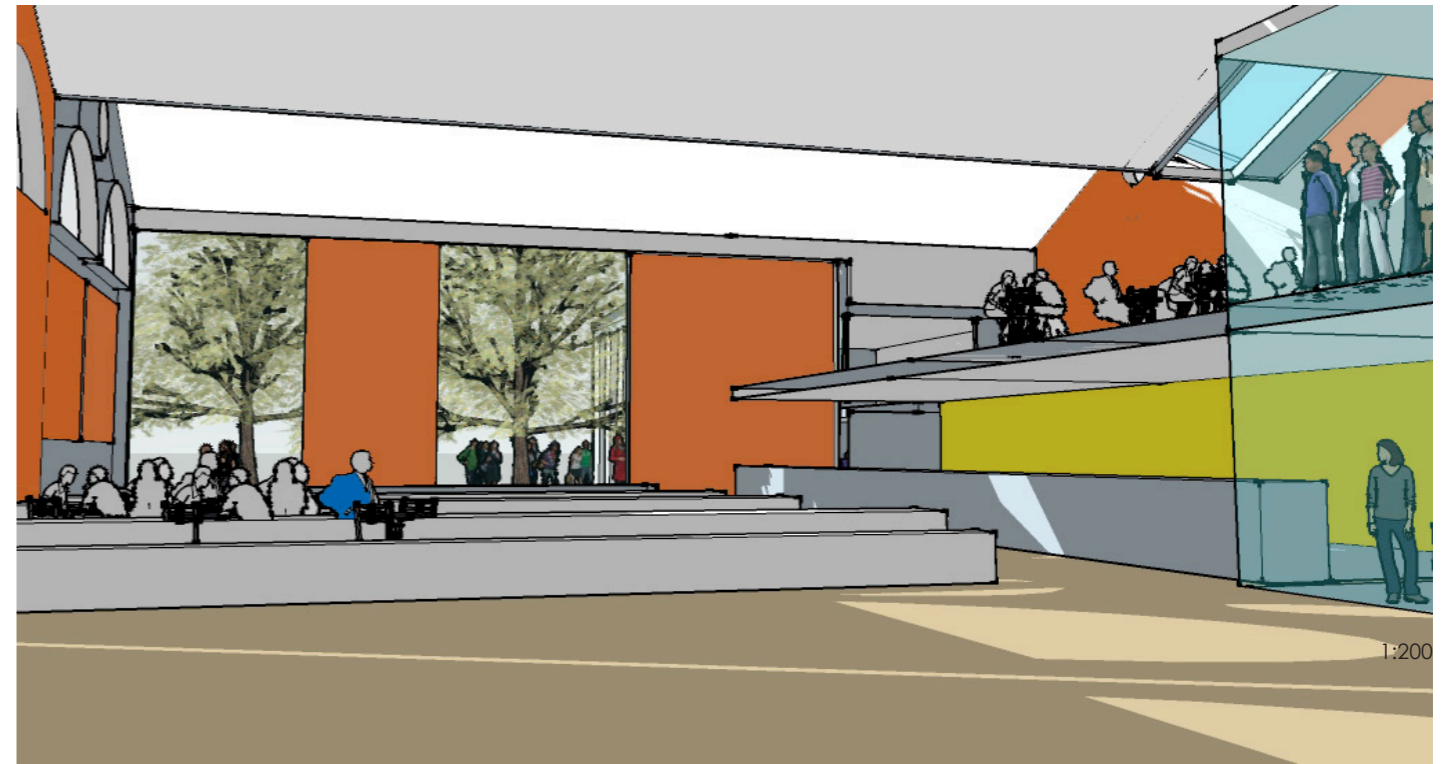
Protecting and enhancing context



North elevation



Exhibitor Entrance and exhibition spaces



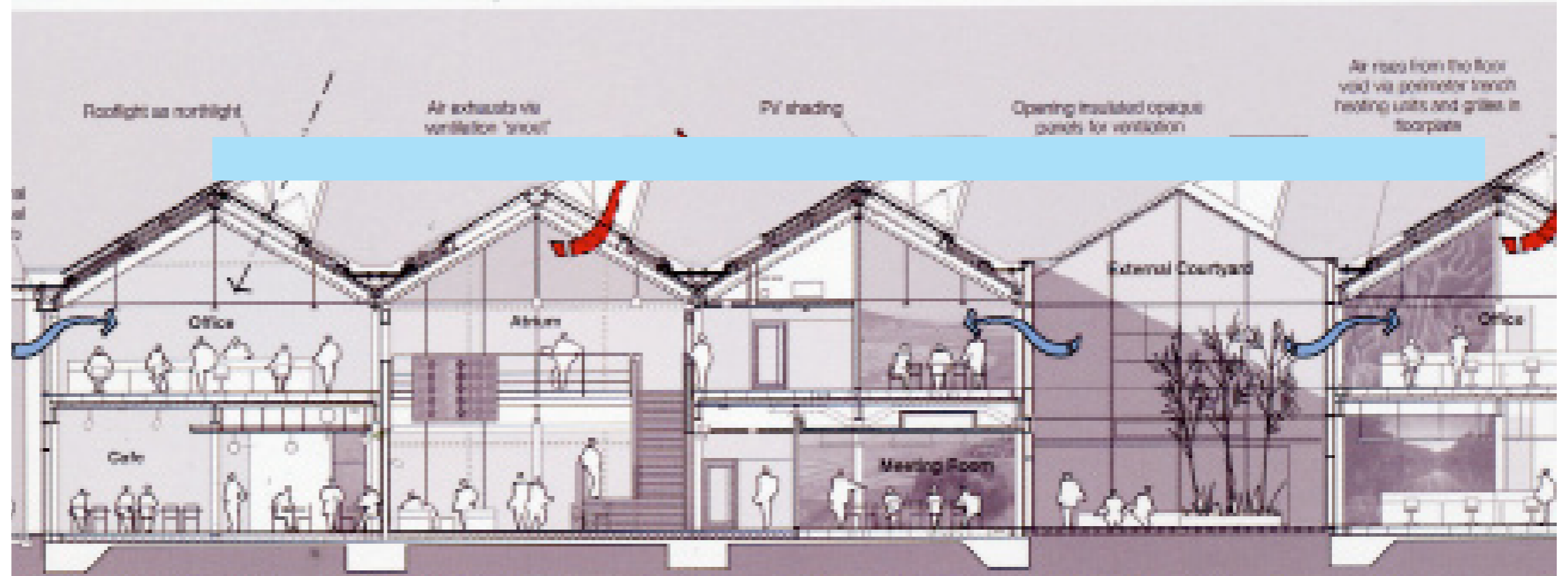
Cafe and garden court

THE DEPOT

Low Energy offices - precedent the National Trust, Swindon
Feilden Clegg



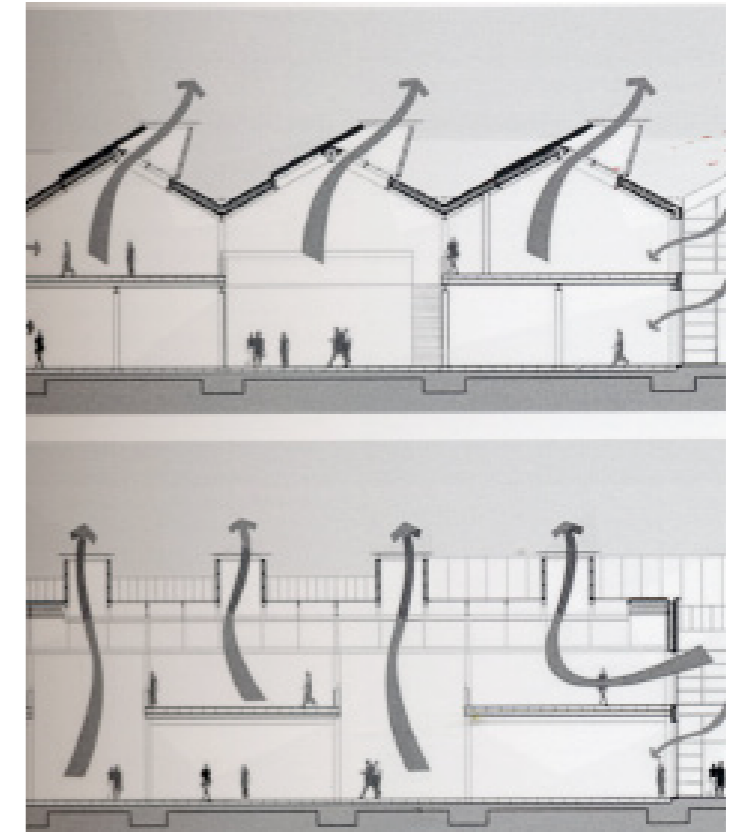
Over 100m long and 23m wide the building has the potential to accommodate a range of offices and public facing activities



Over 100m long and 23m wide the building has the potential to accommodate a range of offices - in this form 2 bats of office share an atrium space to provide daylight and natural ventilation

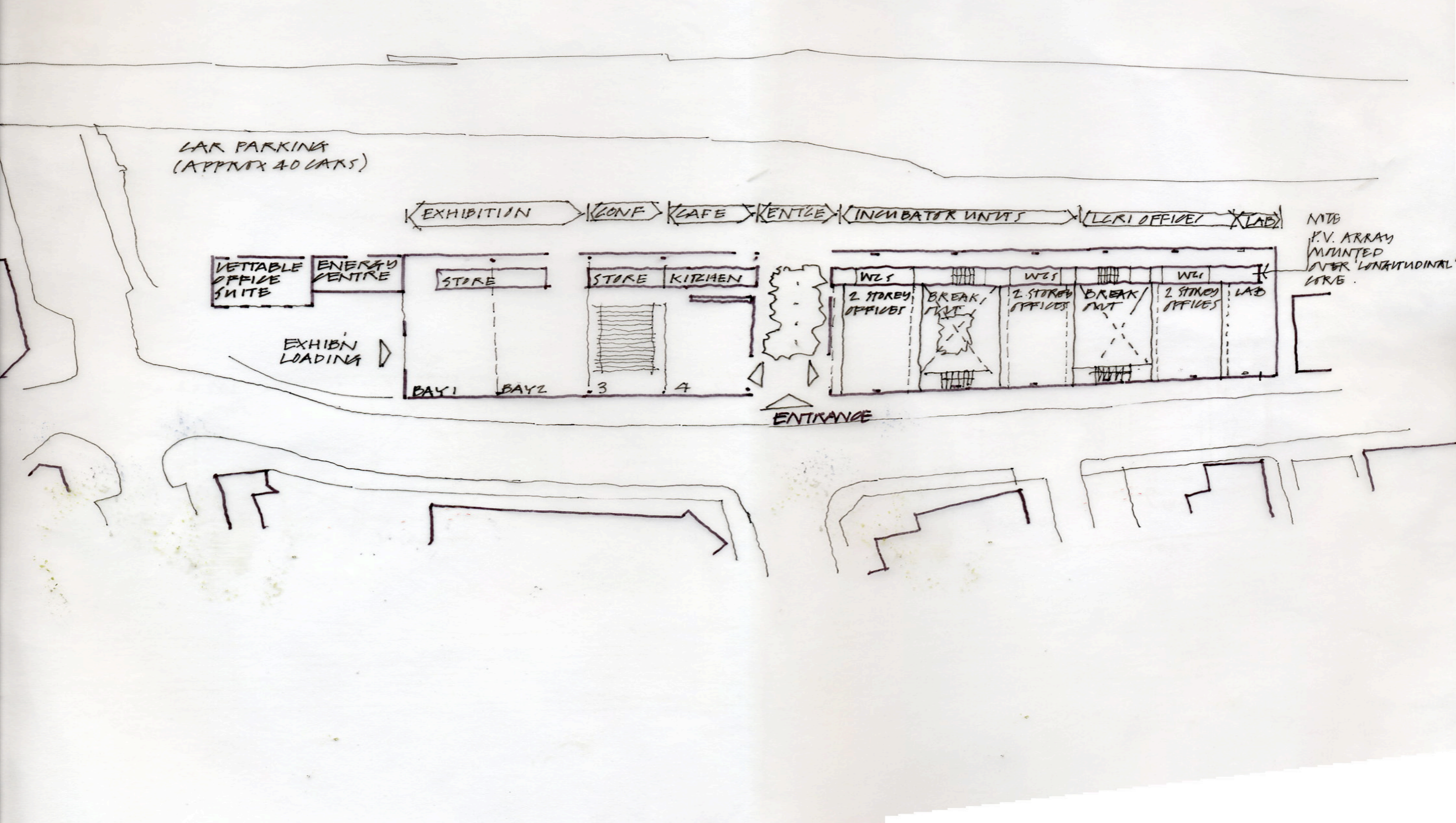


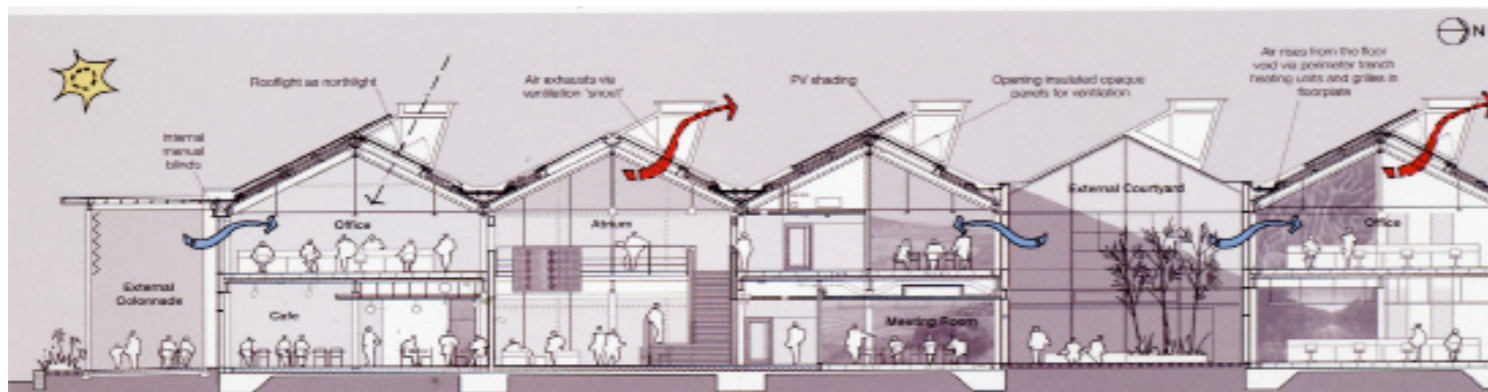
The atrium and offices constructed from sustainable timber



THE DEPOT

Indicative plan showing functional us based on zonal diagram (p9)





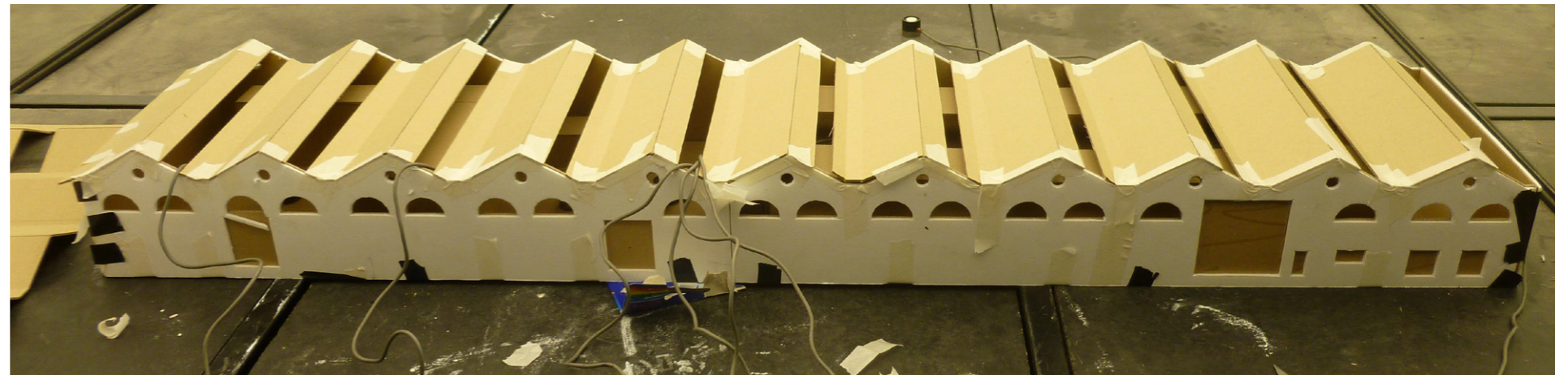
THE DEPOT

Aerial view, interior and section through offices

THE DEPOT

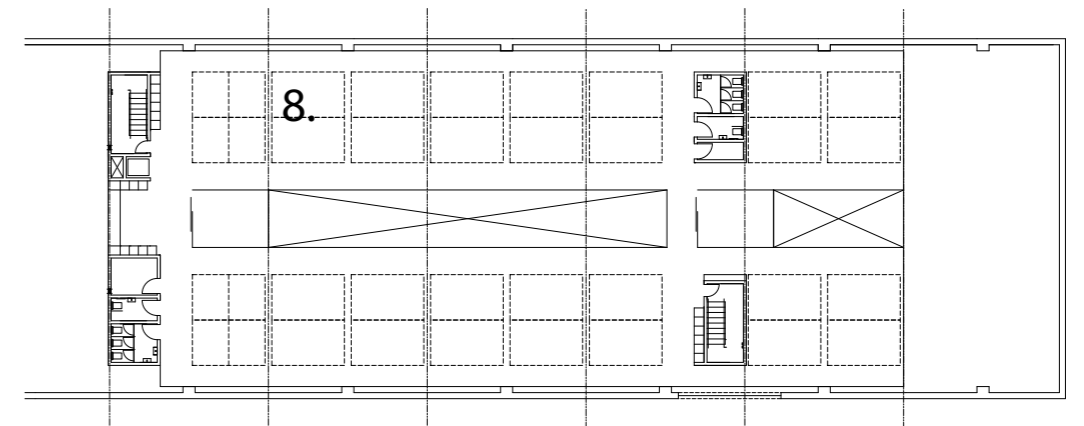
Lighting Test 1

- A - Existing roof openings retained (15 % glazing)
- 1 - opaque ceiling to 1st Floor units (no partitions)



Megatron Readings

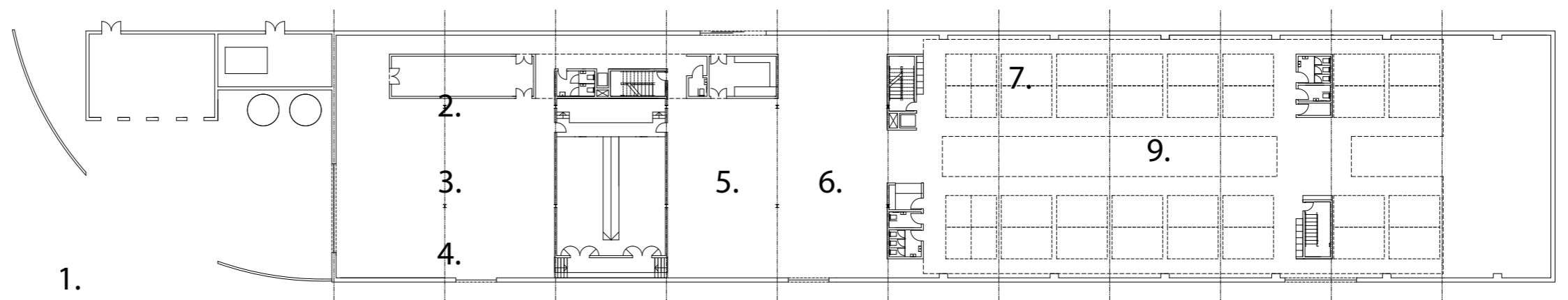
- 1. 7,600 lx
- 2. 700 lx
- 3. 820 lx
- 4. 805 lx
- 5. 1,200 lx
- 6. 1,000 lx
- 7. 8.5 lx
- 8. 30 lx
- 9. 1,000 lx



First Floor Plan Scale 1:500

% Daylight Factor

- 2. 9.2 %
- 3. 10.8 %
- 4. 10.6%
- 5. 15.8 %
- 6. 13.2 %
- 7. 0.1 %
- 8. 0.4 %
- 9. 13.2 %



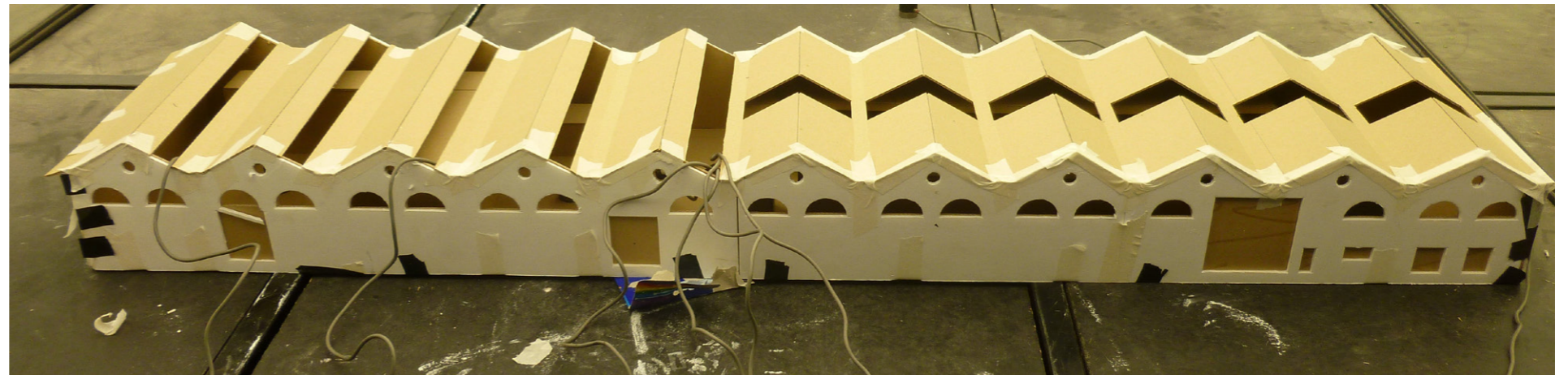
Ground Floor Plan Scale 1:500

THE DEPOT

Lighting Test 2

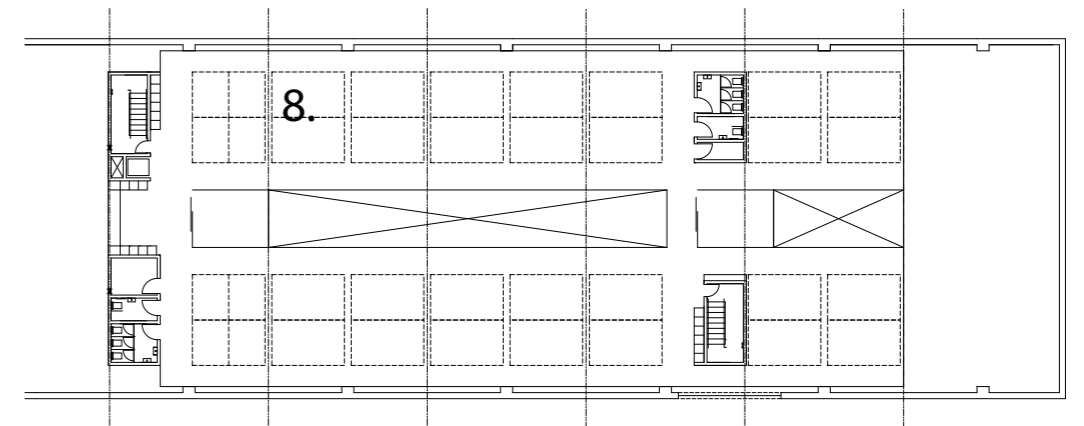
B - 3.6m central strip glazing
(15 % glazing)

1 - Opaque ceiling to 1st Floor units
(no partitions)



Megatron Readings

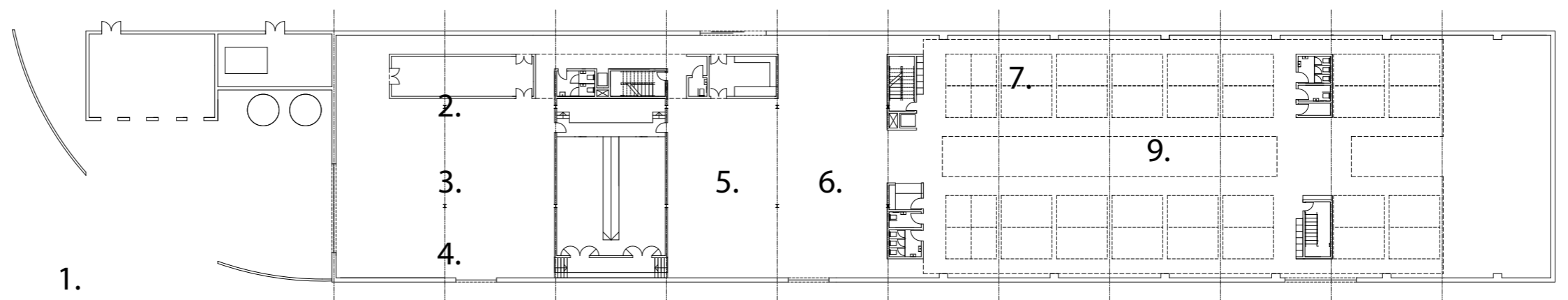
1. 7,800 lx
2. 700 lx
3. 840 lx
4. 805 lx
5. 1,380 lx
6. 1,400 lx
7. 22 lx
8. 56 lx
9. 2,140 lx



First Floor Plan Scale
1:500

% Daylight Factor

2. 9.2 %
3. 10.8 %
4. 10.6 %
5. 17.7 %
6. 17.9 %
7. 0.3 %
8. 0.7 %
9. 27.4 %



Ground Floor Plan
Scale 1:500

THE DEPOT

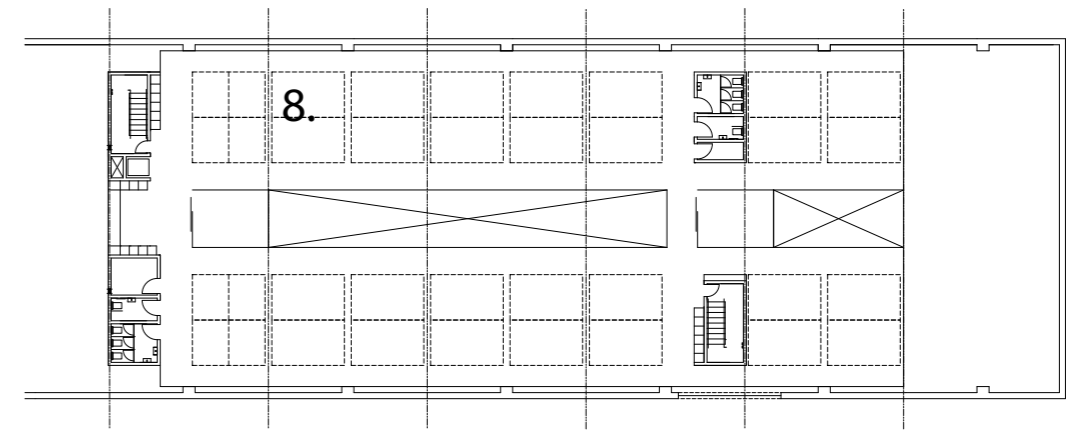
Lighting Test 3

- A - Existing roof openings retained (15% glazing)
- 2 - **Transparent ceiling** to 1st Floor units (without partitions)



Megatron Readings

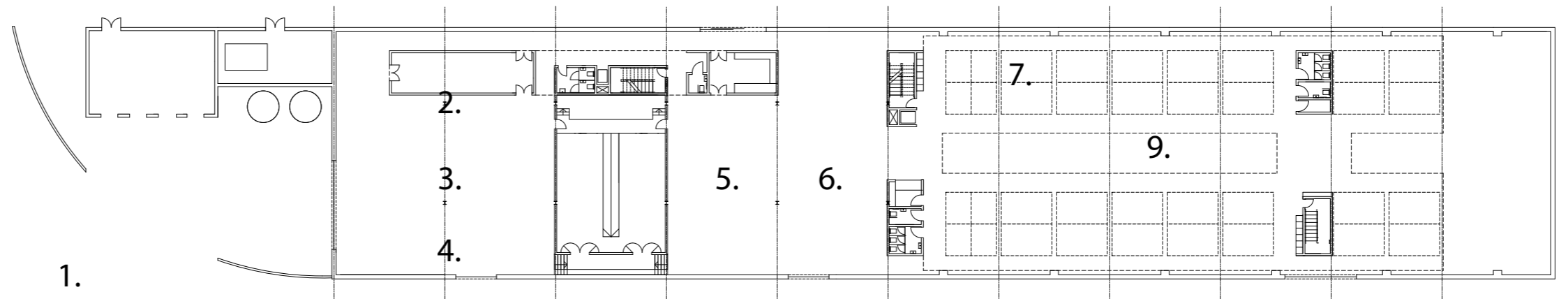
- 1. 7,600 lx
- 2. 700 lx
- 3. 820 lx
- 4. 805 lx
- 5. 1,200 lx
- 6. 1,000 lx
- 7. 9.5 lx
- 8. **380 lx**
- 9. 1,050 lx



First Floor Plan Scale 1:500

% Daylight Factor

- 2. 9.2 %
- 3. 10.8 %
- 4. 10.6 %
- 5. 15.8 %
- 6. 13.2 %
- 7. 0.1 %
- 8. **5 %**
- 9. 13.8 %



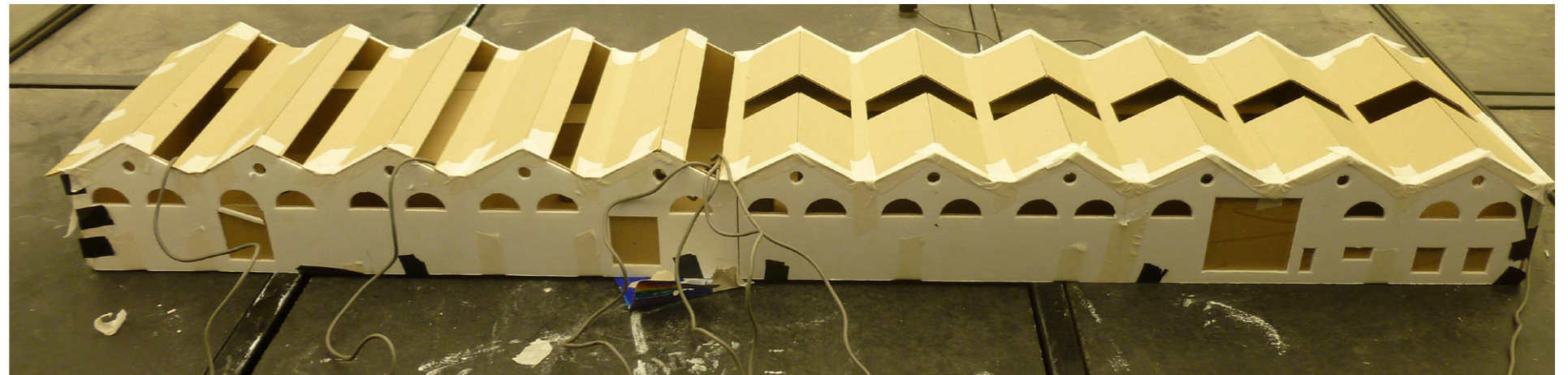
Ground Floor Plan Scale 1:500

THE DEPOT

Lighting Test 4

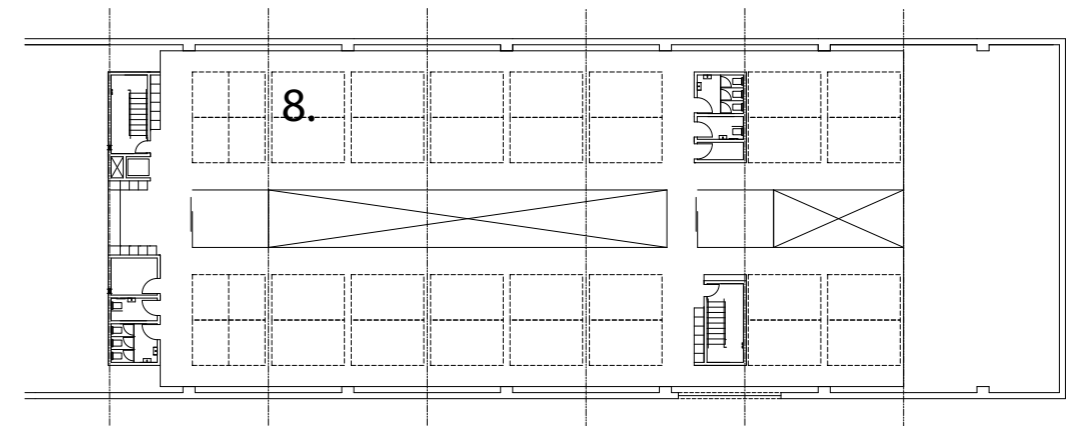
B - 3.6m central strip glazing
(15 % glazing)

2 - **Transparent ceiling** to 1st Floor units
(without partitions)



Megatron Readings

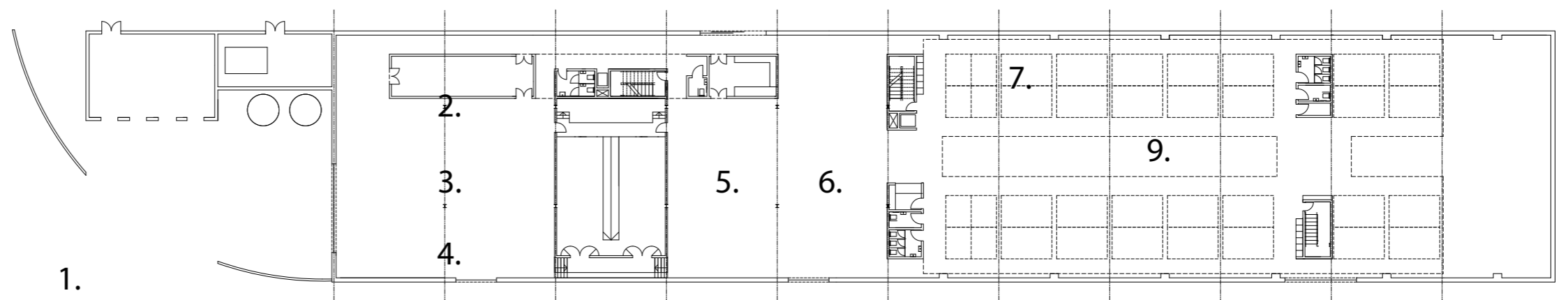
1. 7,600 lx
2. 700 lx
3. 820 lx
4. 805 lx
5. 1,250 lx
6. 1,400 lx
7. 24 lx
8. **100 lx**
9. 2100 lx



First Floor Plan Scale
1:500

% Daylight Factor

2. 9.2 %
3. 10.8 %
4. 10.6 %
5. 16.4 %
6. 18.4 %
7. 0.3 %
8. **1.3 %**
9. 27.6 %



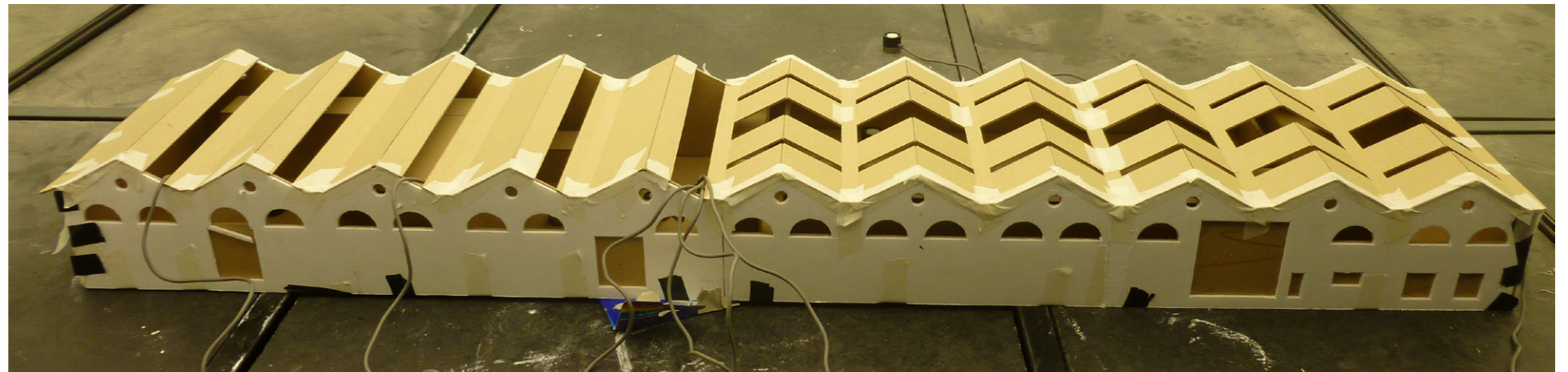
Ground Floor Plan
Scale 1:500

THE DEPOT

Lighting Test 5

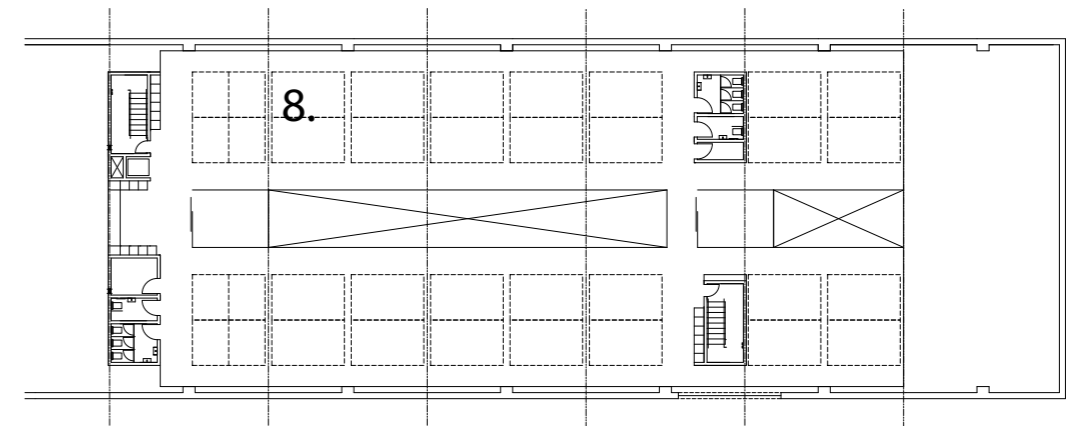
C - 3.6m central strip glazing
+ 1m strip above units
(20 % glazing)

2 - **Transparent ceiling** to 1st Floor units
(without partitions)



Megatron Readings

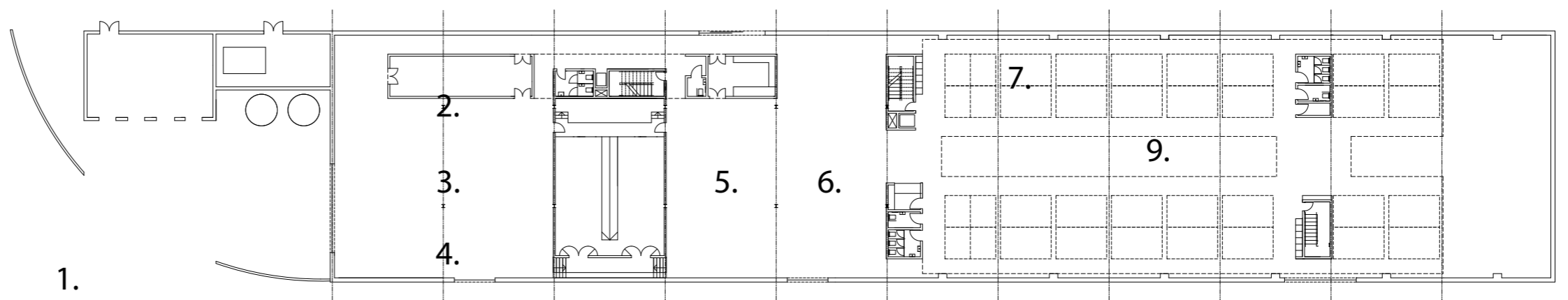
1. 8,000 lx
2. 740 lx
3. 865 lx
4. 850 lx
5. 1,200 lx
6. 1,250 lx
7. 26 lx
8. **1,200 lx**
9. 2,300 lx



First Floor Plan Scale
1:500

% Daylight Factor

2. 9.2%
3. 10.8 %
4. 10.6 %
5. 15 %
6. 15.6 %
7. 0.3 %
8. **15 %**
9. 28.8 %



Ground Floor Plan
Scale 1:500