



Management of Integrated Work Environment

Themes:

Sustainable Energy

Health and Safety Facilities for Management

Space distribution

Innovative Workspace Design

BIM Solutions

***Future-proofing** is the process of anticipating the future and developing methods of minimizing the effects of shocks and stresses of future events. Future-proofing is used in industries such as electronics, medical industry, industrial design, and, more recently, in design for climate change. The principles of future-proofing are extracted from other industries and codified as a system for approaching an intervention in an historic building.*

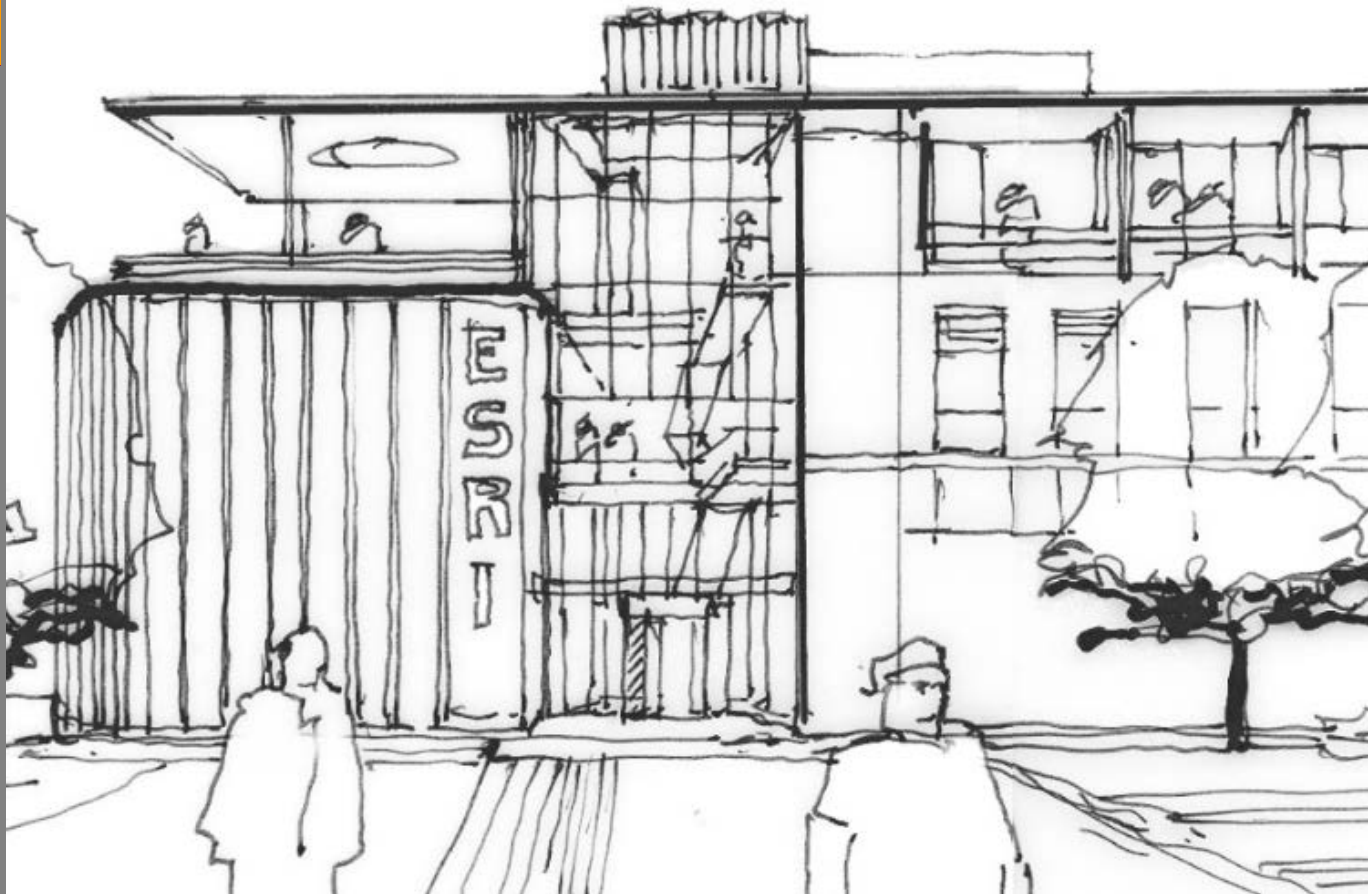
https://en.wikipedia.org/wiki/Future_proof

What is future proofing?

Future proofing is a broad term that can encompass not only buildings and infrastructure but also communities, cities, countries or the whole planet. It has adopted different meanings within these different contexts, ranging from resilience to climate change to demographic change and resource security.

In terms of sustainability issues, life-cycle costing and even well-being. Whilst these may be relevant areas of consideration, here they are part of a more specific assessment process.

In relation to buildings, future proofing is an assessment process aimed at maximising whole-life value in the face of unpredictable, ongoing change.



ESRI

ENERGY SAFETY RESEARCH INSTITUTE

Innovation by design

presented by **Ian Standen**

 Stride Treglown



‘We provide award winning,
well considered, sustainable and
innovative design and technical
solutions’

The Practice

- AJ100 14th largest practice in the UK (90 architects and 270 staff)
- 9 offices in the UK and UAE
- £14.43m turnover in 2013
- Sunday Times British Homes Awards Architect of the Year 2013
- Expert BIM users with 9 years experience
- Quality Assured to ISO 9001 / ISO 14001 and BS OHSAS 1800
- Shortlisted 3 times for AJ 100 Sustainability Practice of the Year
- Developed our own carbon neutral office in Cardiff (first in the UK)
- Investor in People and Building Top 50 Good Employer for 3 years

Our Offices





ESRI

ENERGY SAFETY RESEARCH INSTITUTE

This BREEAM 'Outstanding' building is the centrepiece of Swansea University's research into renewable and alternative energy production. It is also the new home of SPECIFIC, a renewable energy joint venture with Indian steel manufacturer, TATA.

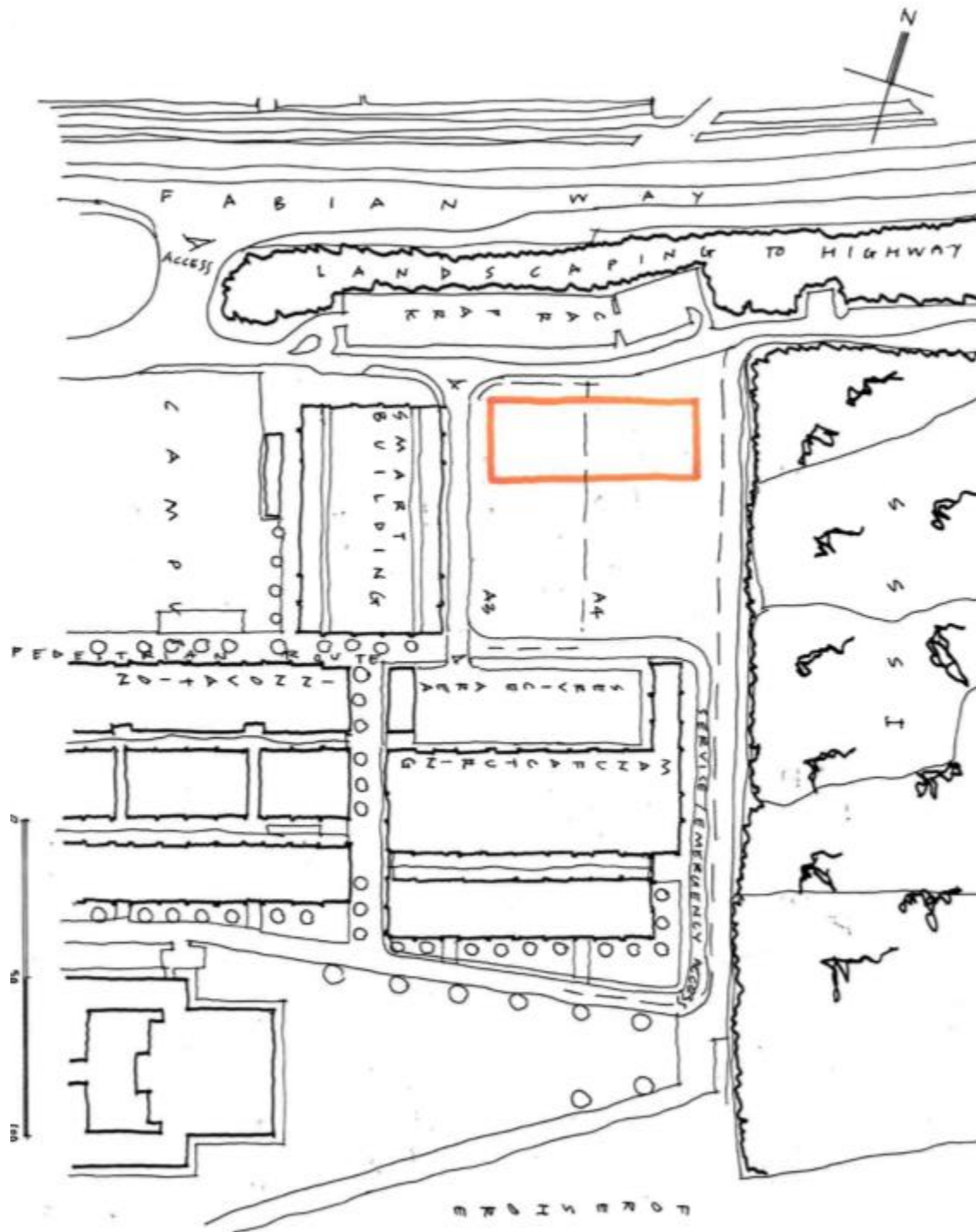
Setting the scene

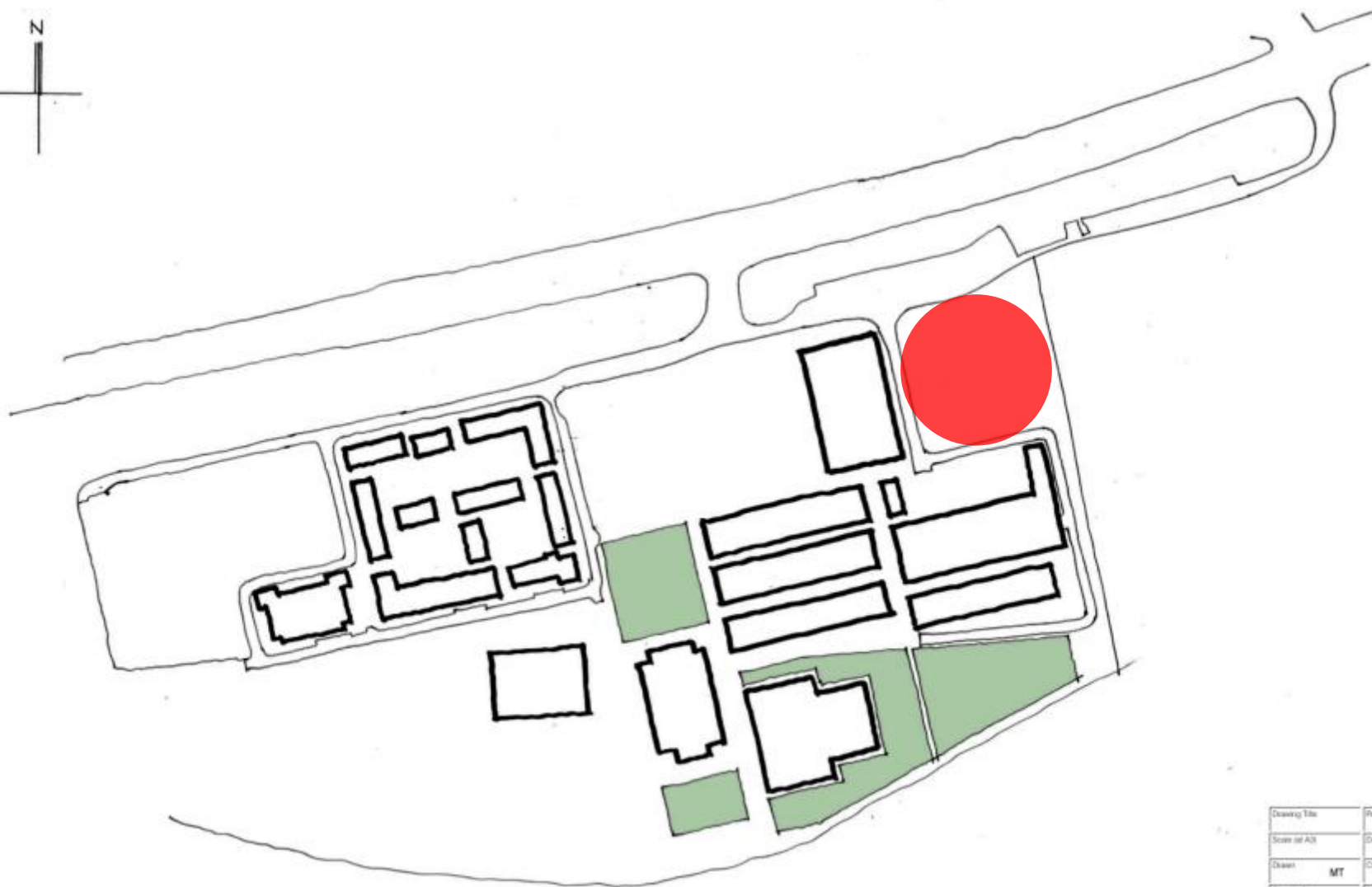


70076 ESRI
Aerial View

Drawing Title	Project
Scale of A3	Date
Drawn	CHe
Drawing No.	Rev
Regtown Court, Downside Road, Down Park, Cardiff CF24 5LQ	
T: 019 2043 0990 F: 019 2047 0422 E: enquiries@stride-treglown.com www.stride-treglown.com	

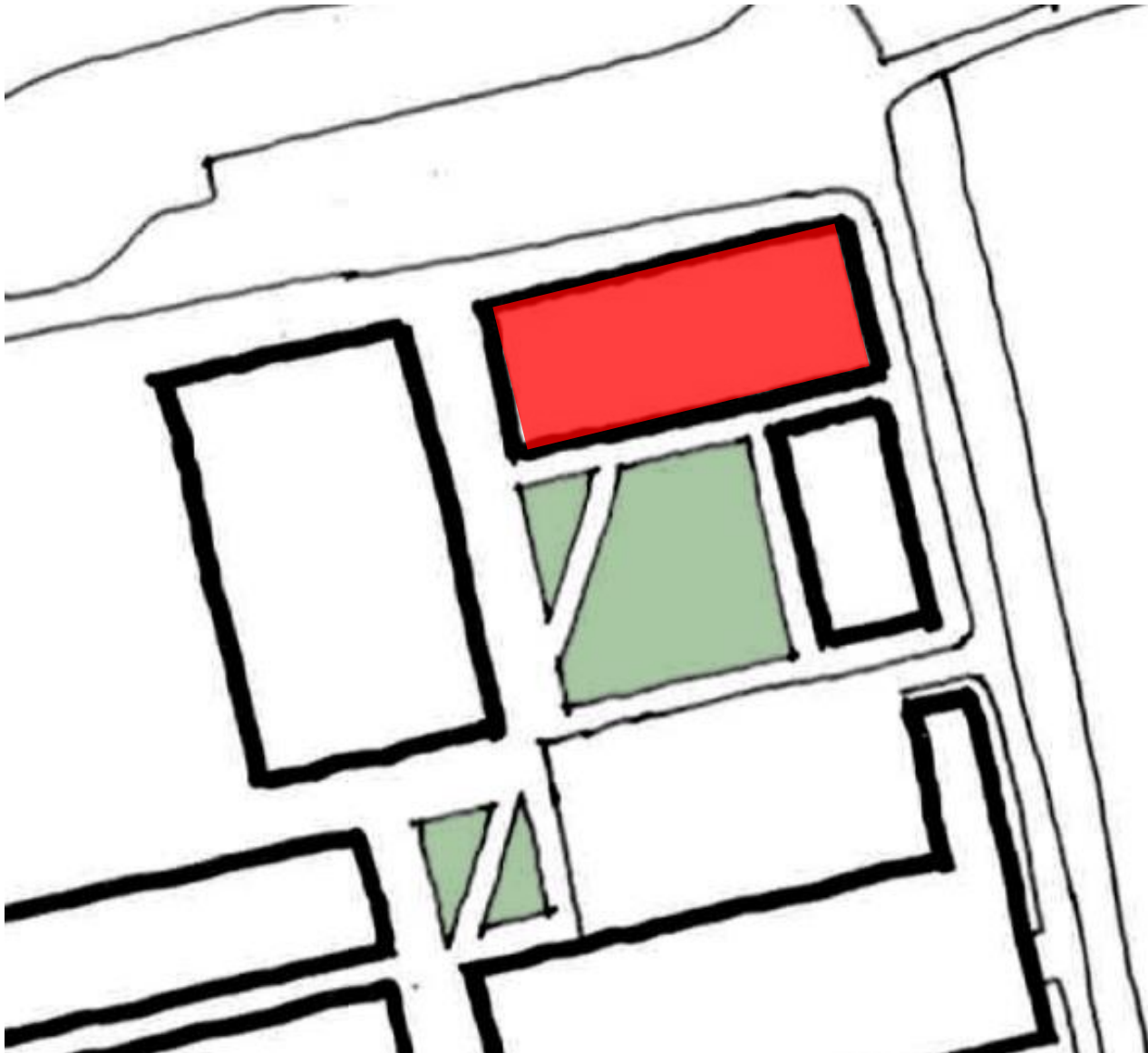






70076_ESRI
Masterplan - Existing

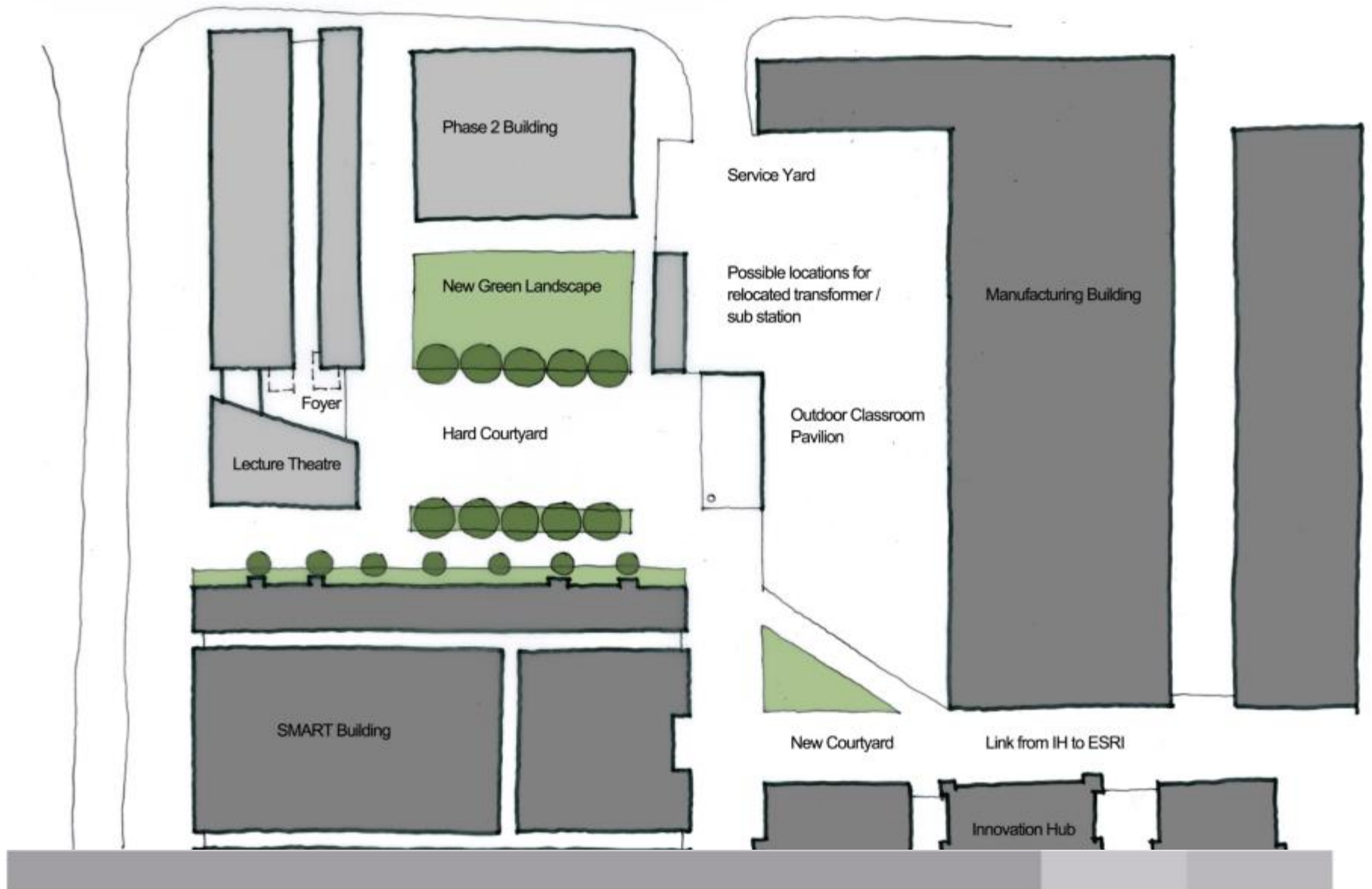
Drawing Title	Project
Scale of A3	Date
Client	City
Drawing No.	Rev
Englewood Coast Overlook Road, Ocean Park Council CP24 S&G	
T 089 2043 0800 F 089 2047 0422 E greg@stride.com W www.stride.com.au	



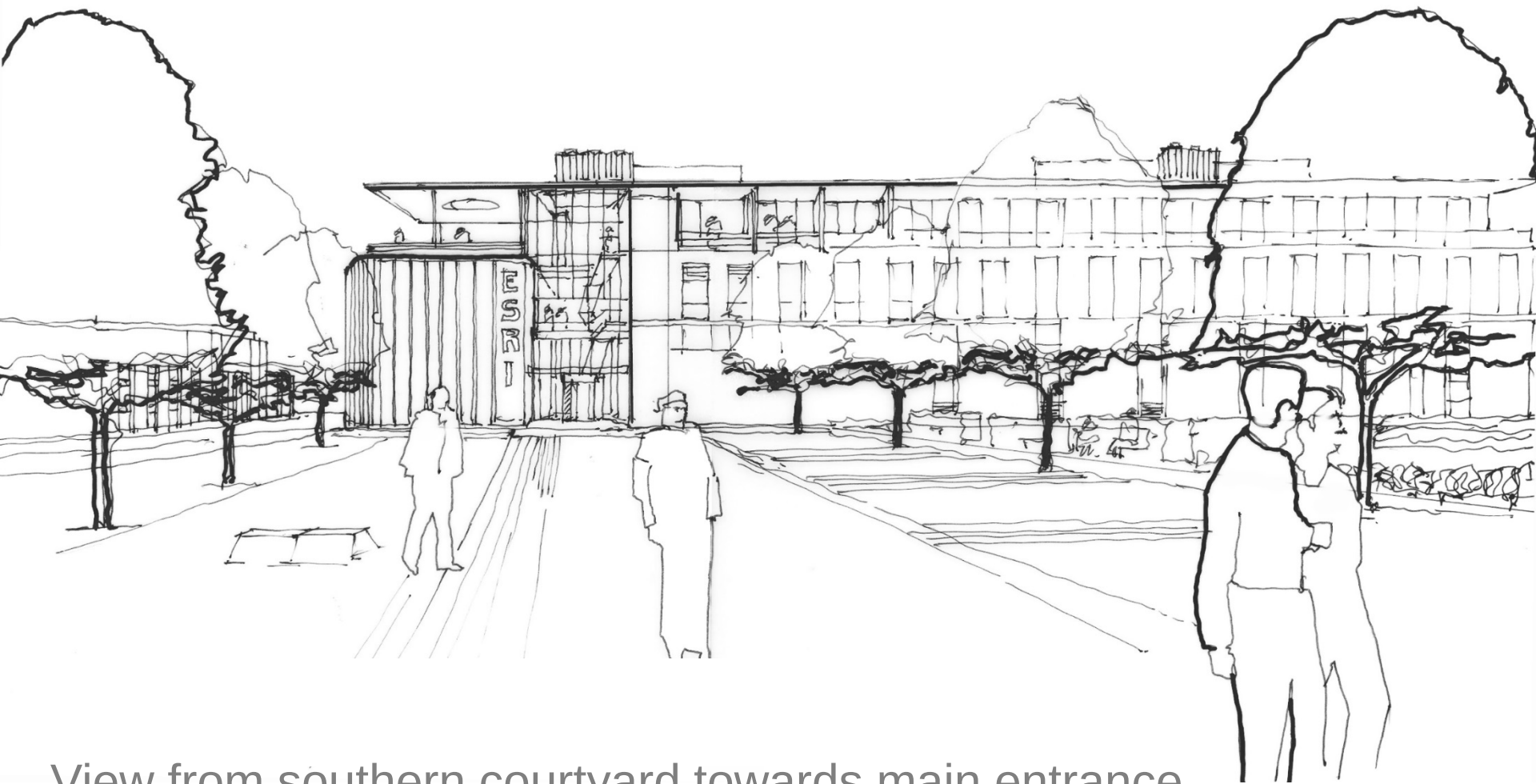
70076_ESRI
Masterplan - Proposed

Drawing Title	Project
Scale: as A3	70076
Drawn	Date
MT	04/03/13
Drawing No.	City
SK 077	IS
Region: Coast	Rev
Drawn: Road, Green Park	
Client: CP24 SLQ	
	T: 020 2543 0660 M: 020 2547 0420 E: green@stride.com www.stride-treglown.com

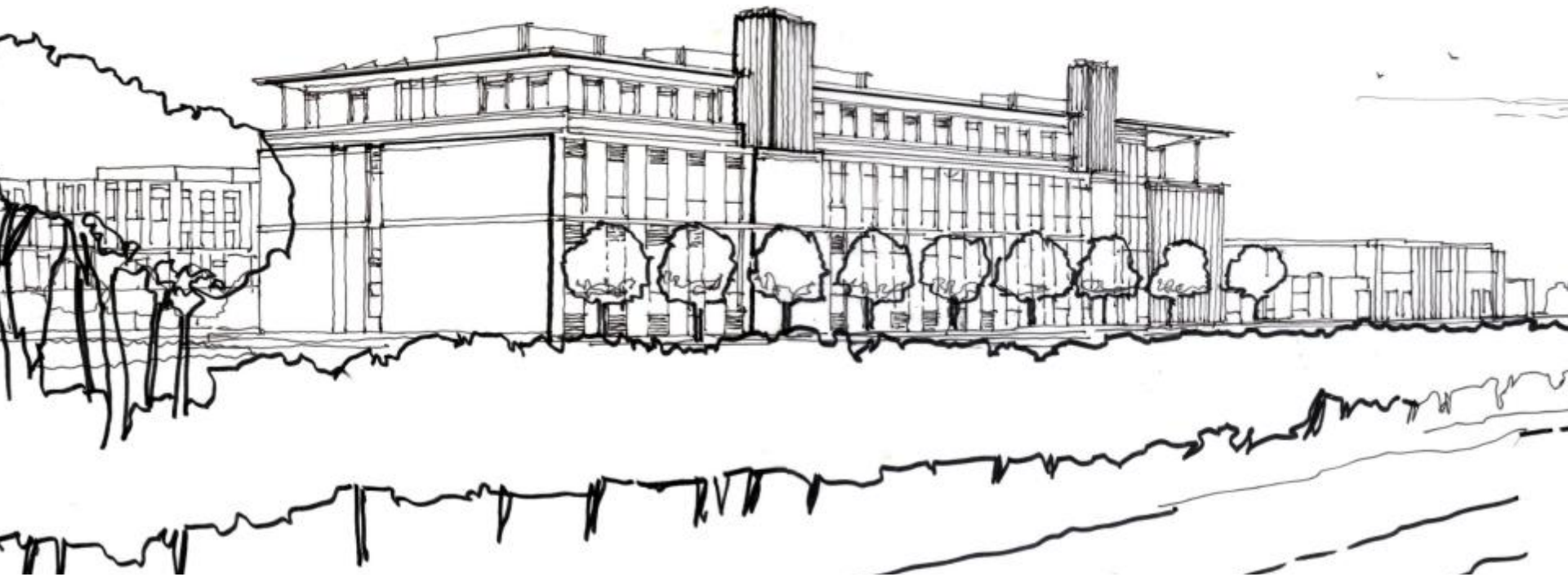
SSSI site



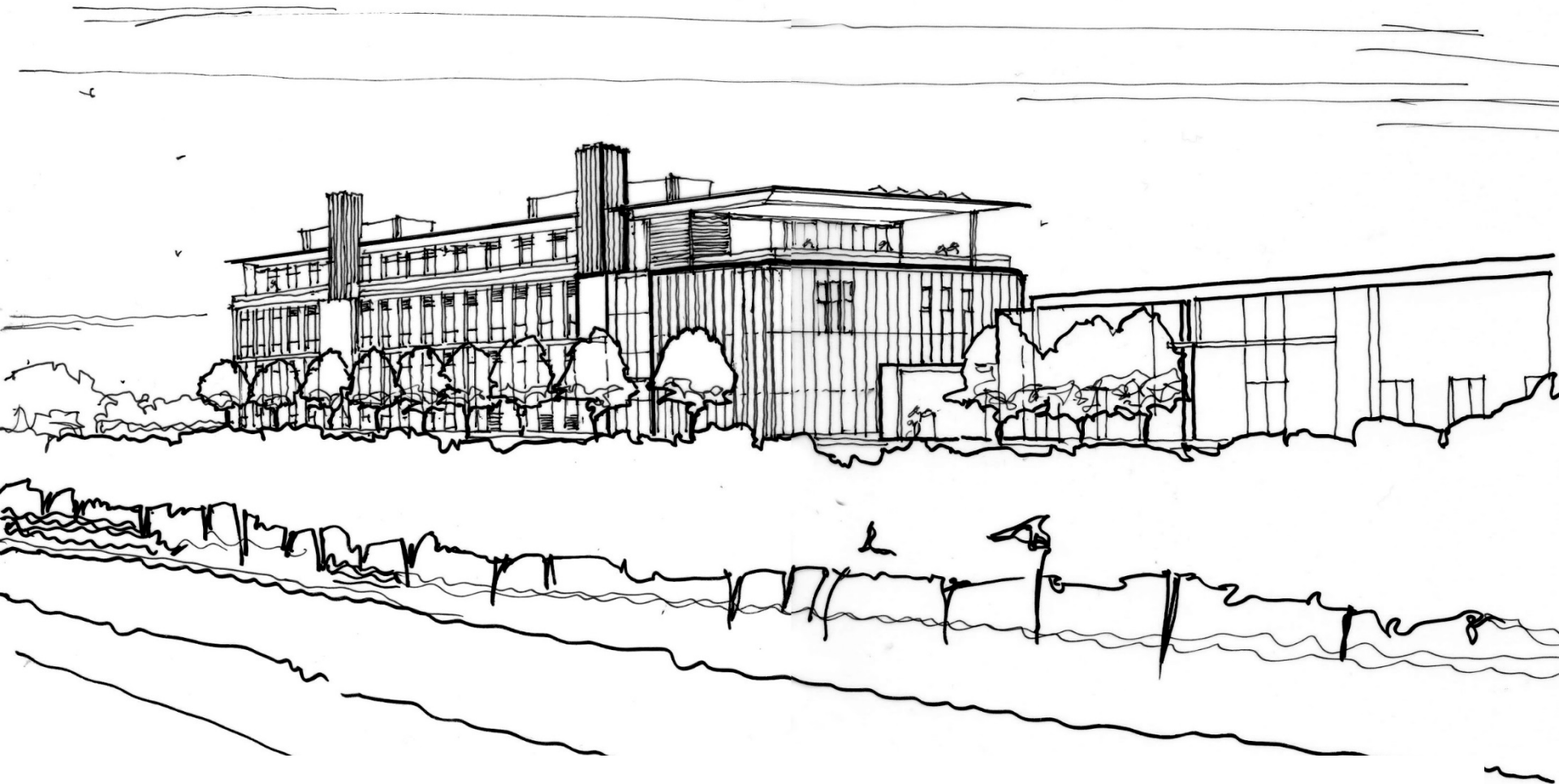
Design evolution



View from southern courtyard towards main entrance



View from Fabian Way



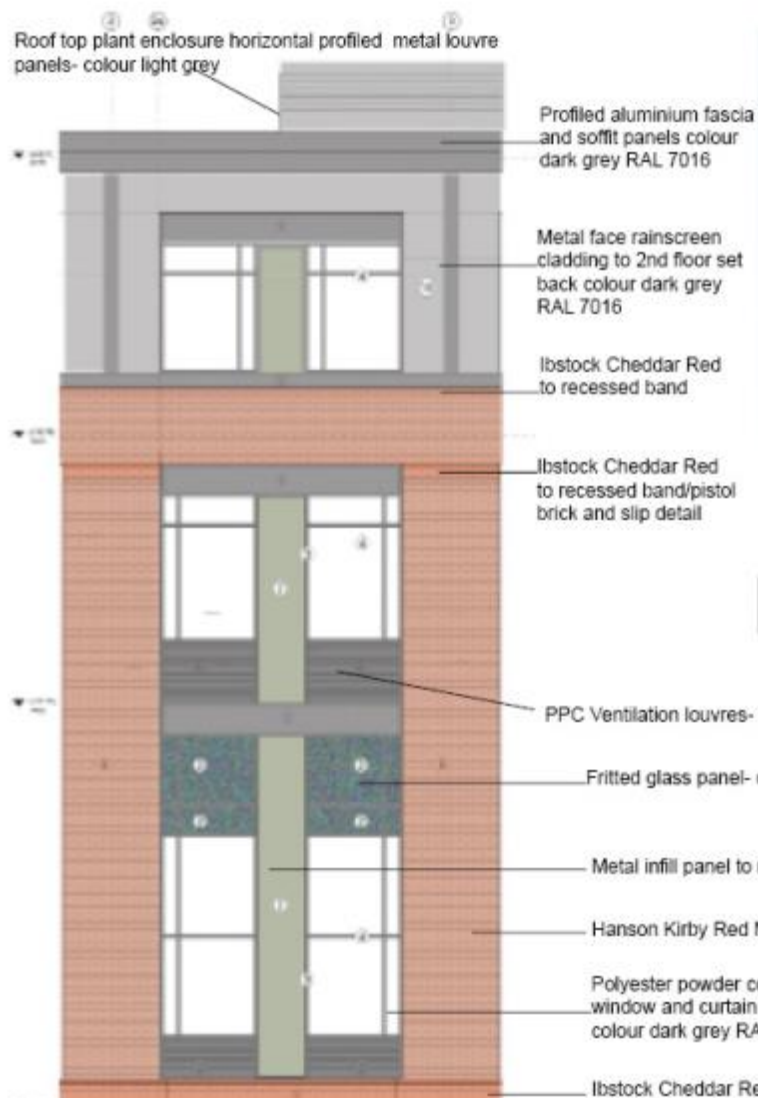
View from Fabian Way

Design Material Selection Considerations

Planning

Durability

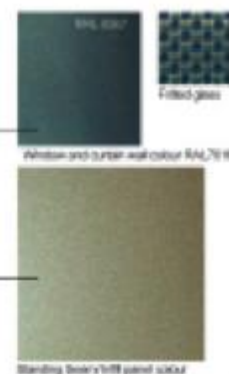
**Breeam Outstanding –material source,
locality and recycled content**

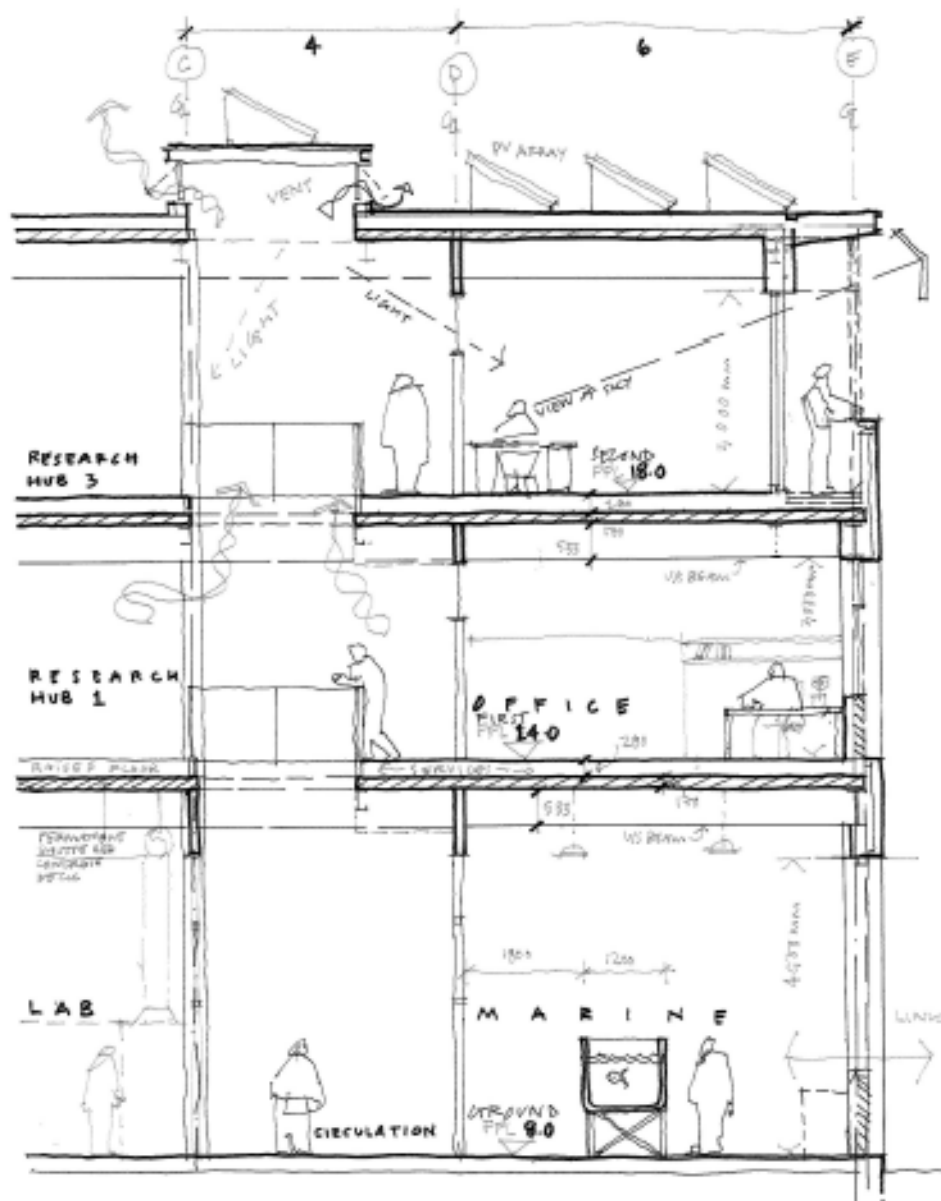


TYPICAL BAY EXTRACT



PART ELEVATION EXTRACT

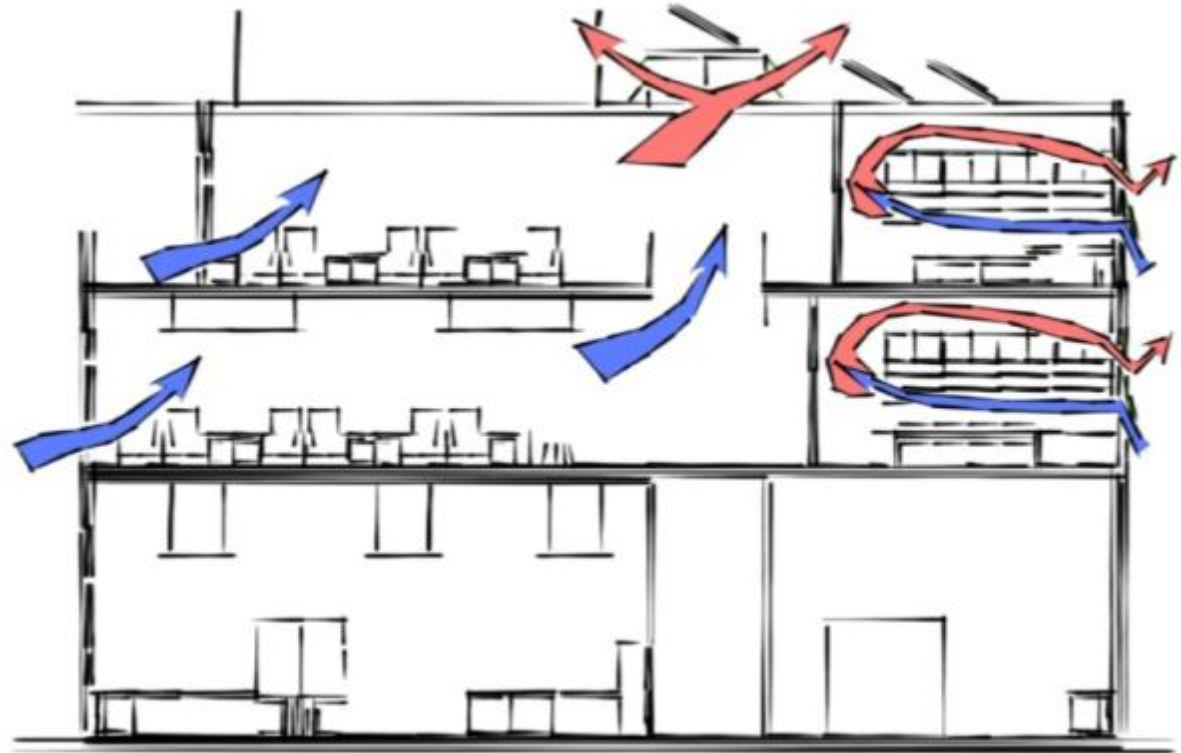




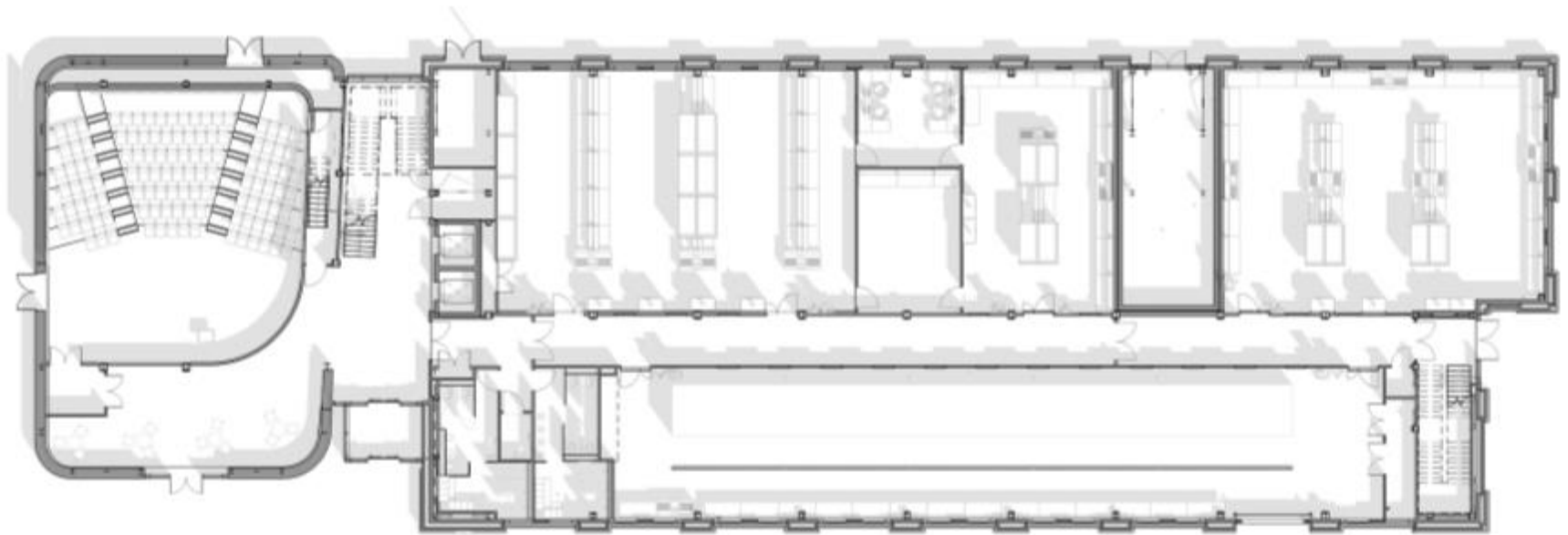
Concept building section

Natural Ventilation Strategy

- High level pop ups with BMS controlled windows
- Innovative Acoustic louvre system
- Night purge system
- System provides fresh air and utilises stack effect

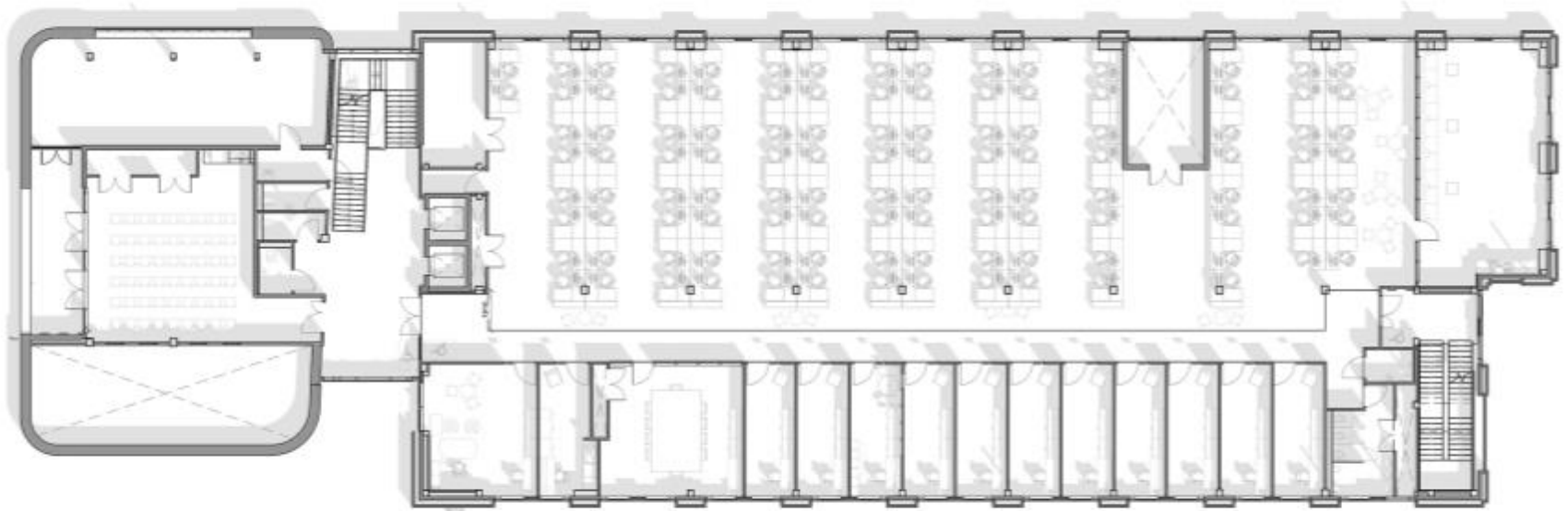


Airflow Through ESRI Building

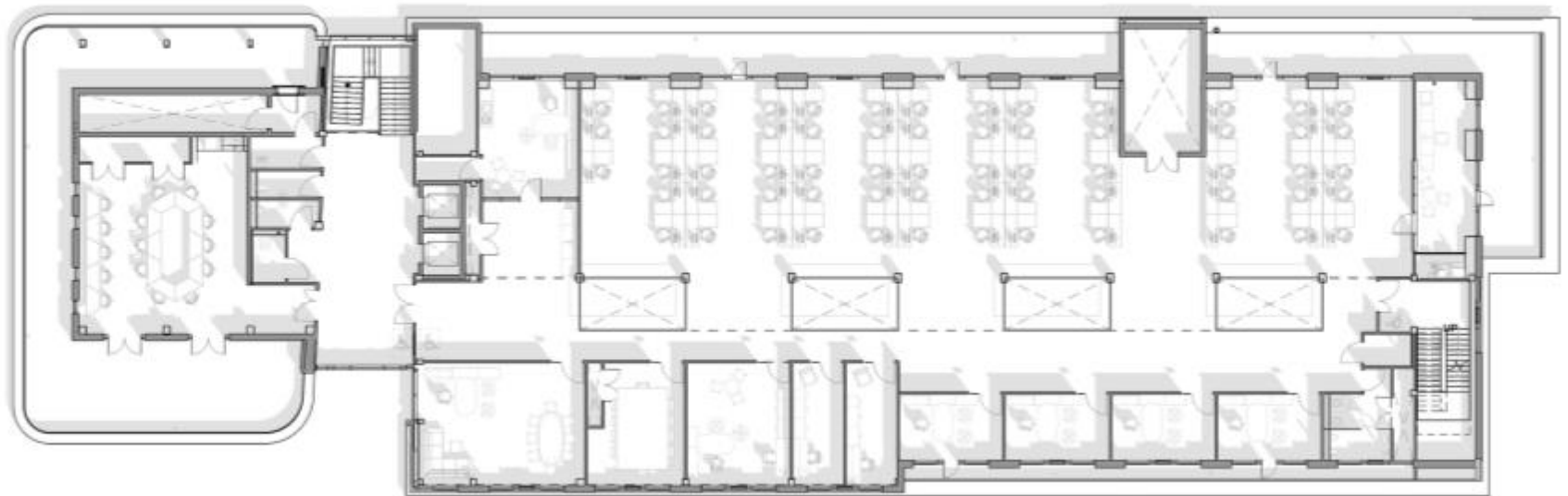


GROUND FLOOR PLAN

ESRI Plans



FIRST FLOOR PLAN



SECOND FLOOR PLAN

ESRI Plans





Laboratories

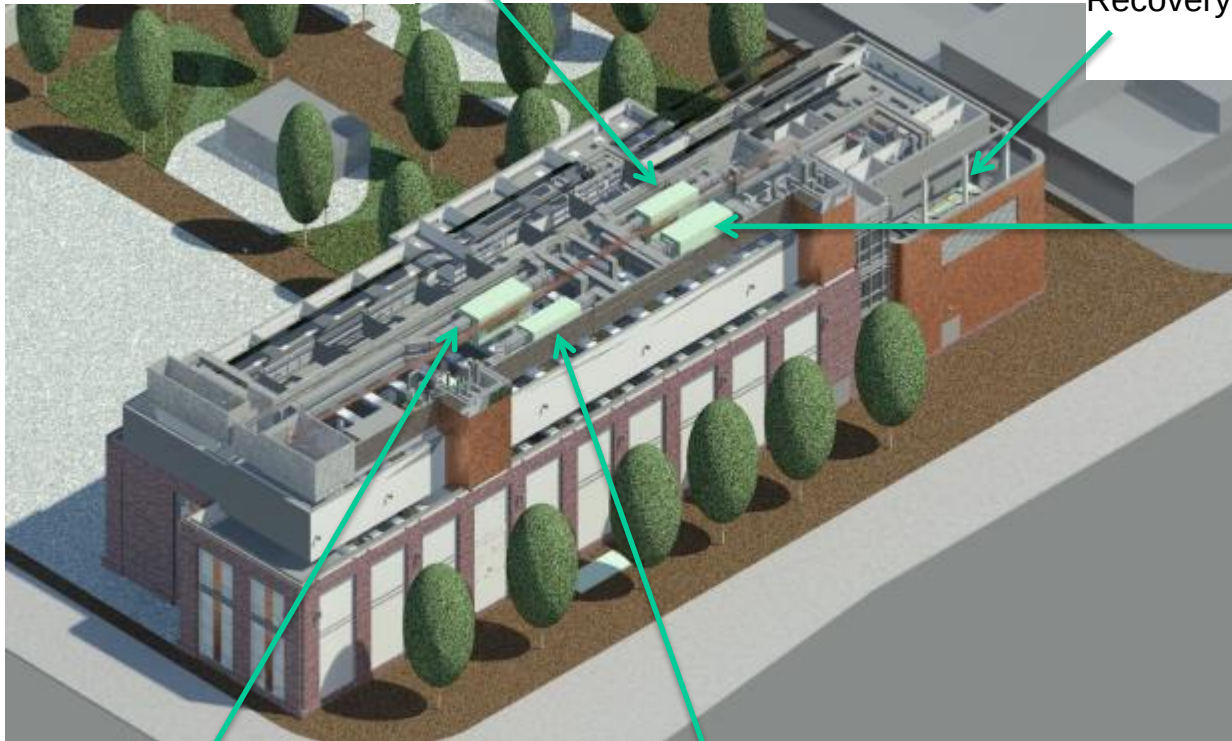


Lecture Theatre

AHU locations purposes

AHU-04 : General, Supply & Extract
with Heat Recovery

AHU-03 : Lecture Theatre,
Displacement Low Level Supply &
High Level Extract with Heat
Recovery



AHU-01 : Marine Lab, Supply &
Extract with Heat Recovery

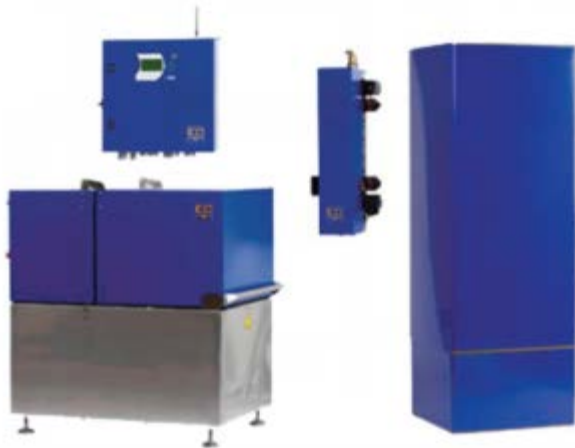
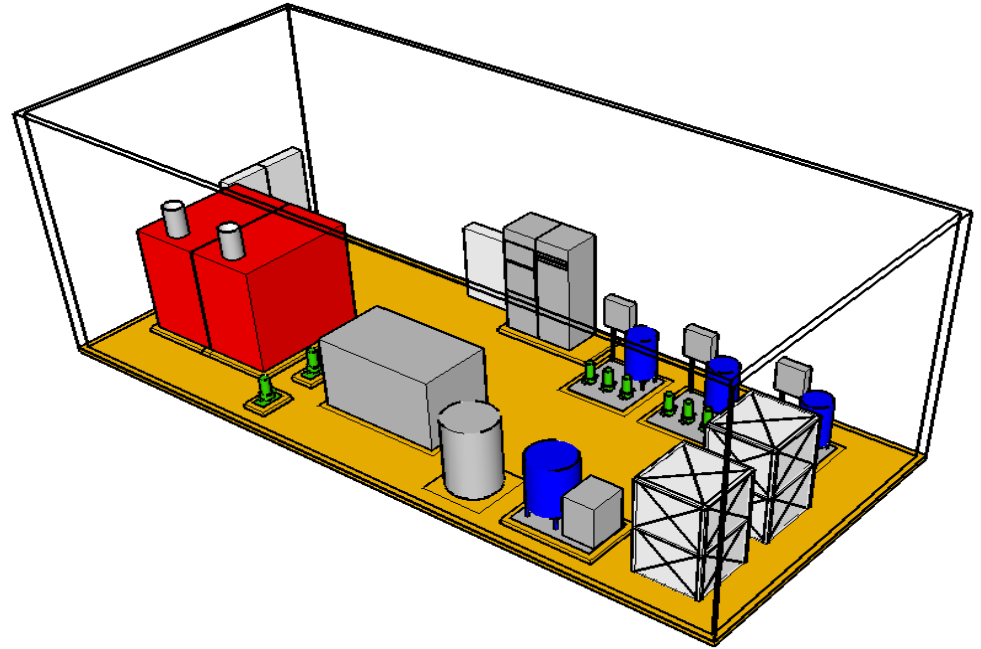
AHU-05 : Chemical & PV Lab, Supply
& Extract with Heat Recovery

AHU-02 :
Chemical Lab 1,
Supply & Extract
with Heat
Recovery

CHP & Boilers

Combined Heat & Power - SAV
Load Tracker

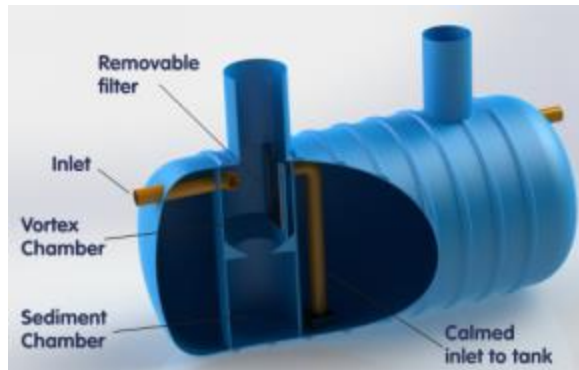
- 6 – 15kW Power Output
(Modulating)
- 17 – 30kW Thermal Output



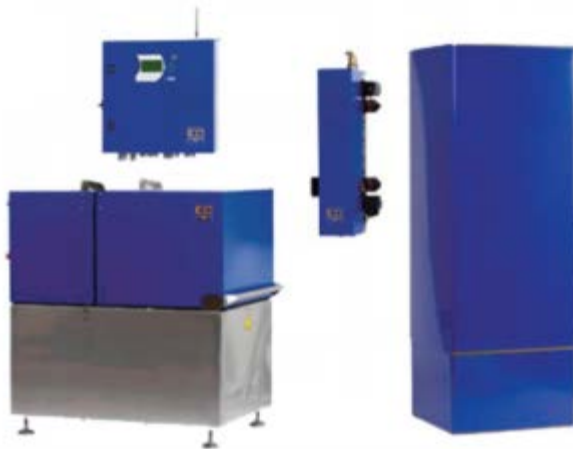
Condensing Boiler – 2 No. Hoval
UltraGas

- 460kW Rating per Boiler
- High Relative Efficiency

Renewable Technologies

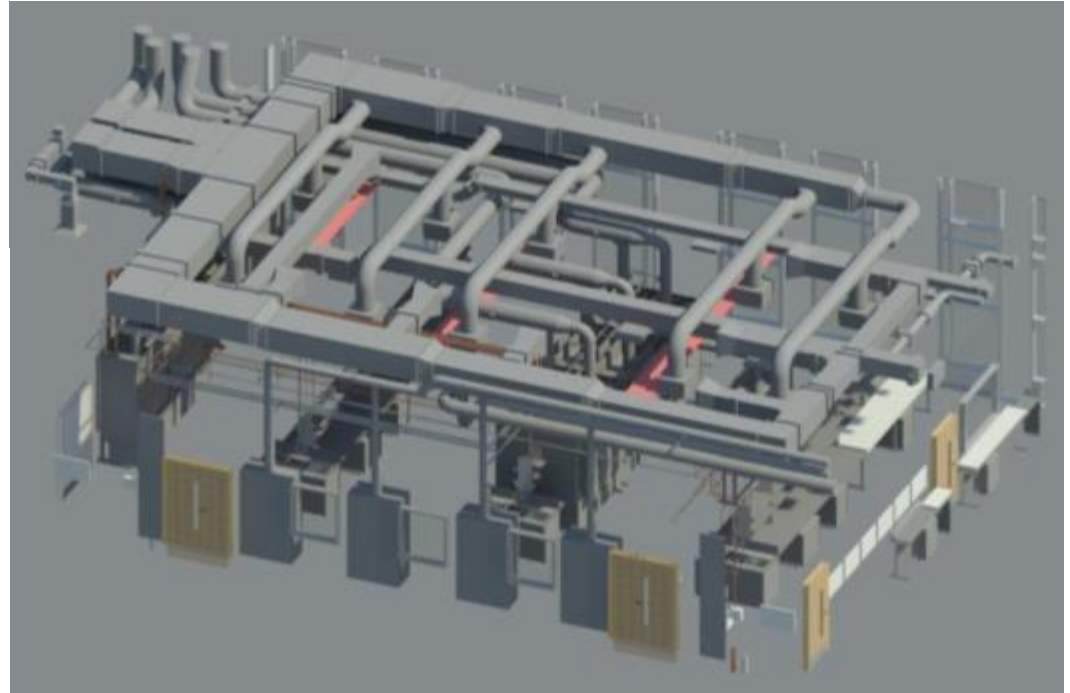
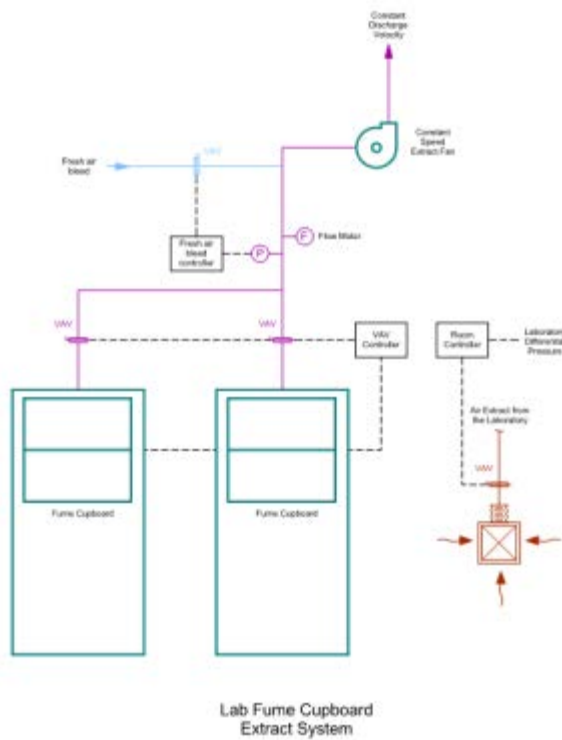


- Rainwater Harvesting – Reducing Flushing water consumption
- Photo Voltaic – Reduction in electricity required from grid, can even be sold back to grid.
- Combined Heat and Power Reduction in electricity required from grid.



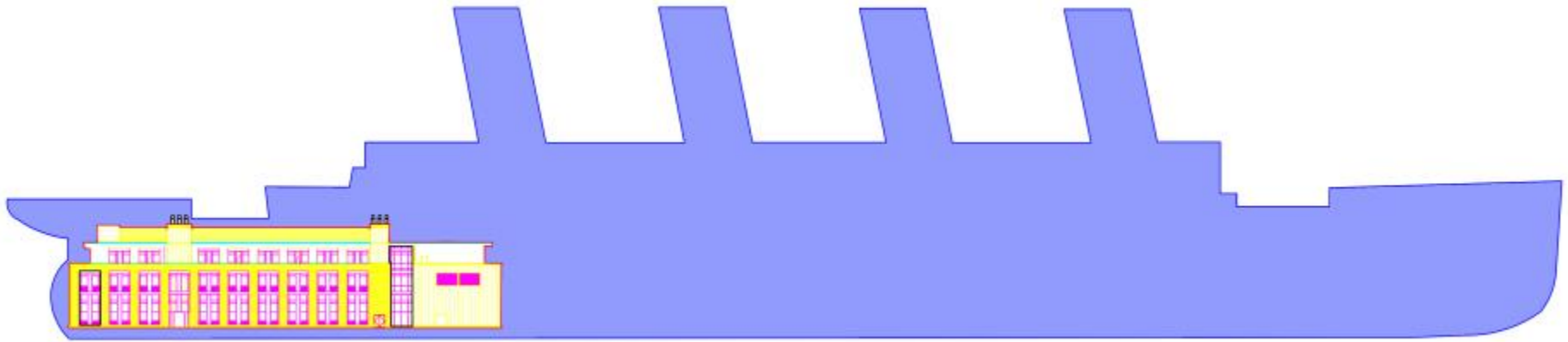
Chemical Lab One and Fume Cupboards

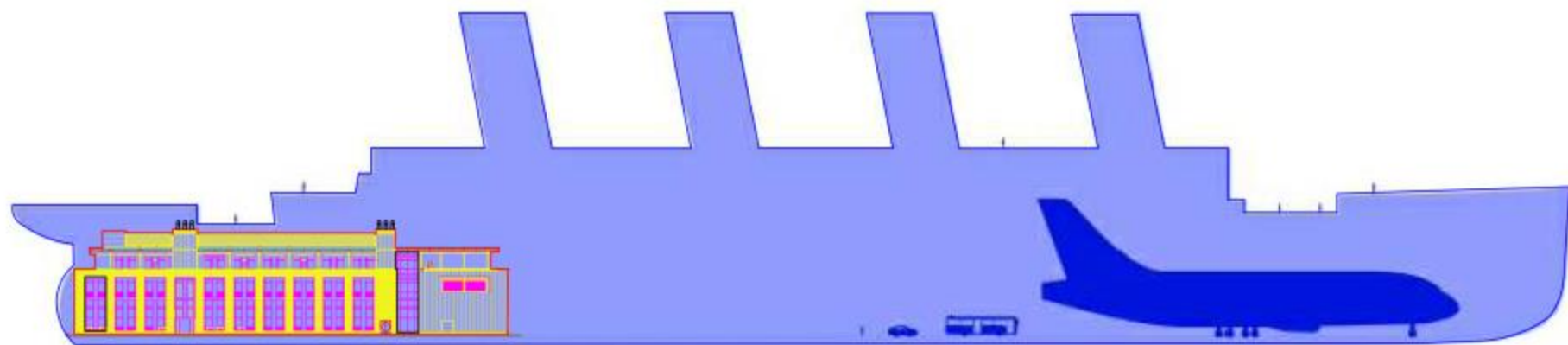
- Fully modulated fume cupboard sash



- Radiant panels provides thermal comfort not affecting air temperature
- Cooling provided by air system from dedicated lab AHU

ESRI compared to the Titanic

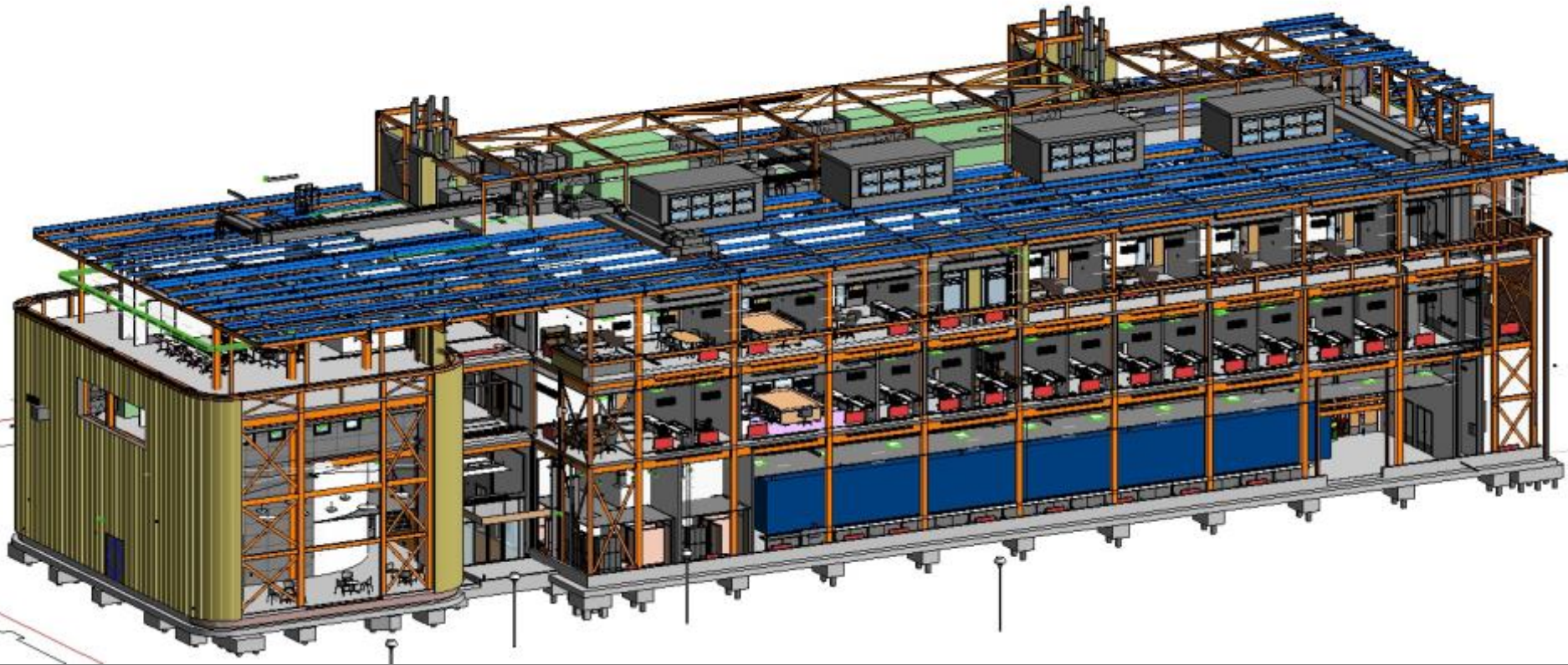




Developing the BIM



Integrating structure and mechanical/ electrical strategies



Designing layouts for flexibility



The building functional anatomy revealed



Construction phase

ESRI - steel skeletal frame



ESRI - skeletal frame – lecture theatre





ESRI – structural information

The areas of main building materials are as follows;

- Structural Frame – Steelwork S355 **365 tonnes**
- Cold rolled purlins **6.3 tonnes**
- Ground floor – 150mm thick reinforced concrete floor slab **1364m**
- Upper floors –170mm thick concrete on PMD, Level 01 & 02 **2680m²**
- 150mm thick concrete on perm/met/deck PMD, Level 03 **413m²**
- Foundation/substructure – reinforced concrete ground beams **129m³**
- Pile caps **91m**
- Precast concrete piles **300mm
Square piles**
- The upper floor slabs are constructed from 170mm thick concrete on Metfloor 55 profile metal deck





490

980

Corrugated
Recycles







Fume cupboard extracts























Completion and occupation







Architecture

















