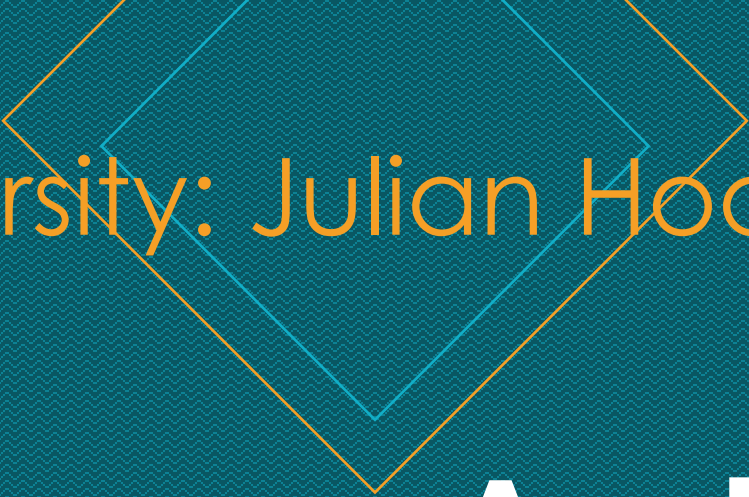




Cardiff University: Julian Hodge Building

Energy Audit Investigation

5/4/23 - 3pm

R. Thomas: 170484

Approach...

1. Desktop Survey

2. Site Visit



Image 1: Julian Hodge Building (Cardiff University, 2023)

1. Desktop Survey

Site Details

Occupancy Info

Records of Consumption

Energy Costs

Variables affecting consumption

Benchmarking - TM46 document

KPI's

DEC

CIBSE Guide F – Energy Auditing

1. Desktop Survey

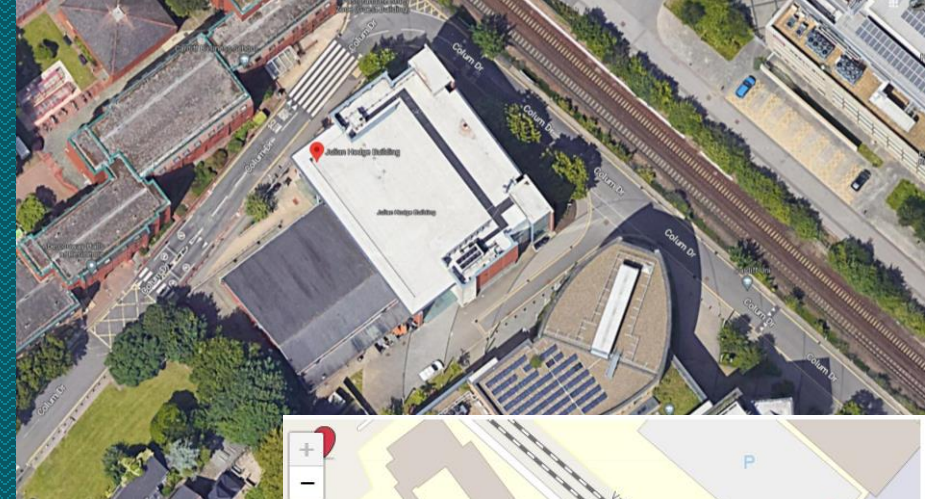
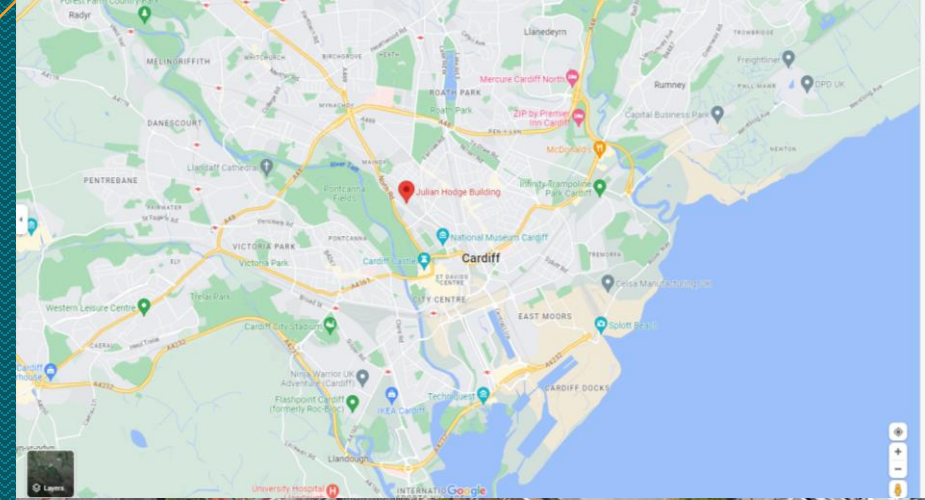
Site Details:

Formerly 2 separate buildings, now linked together by a central atrium (in 2001). Located between the Aberconwy building and the Postgraduate teaching Centre.

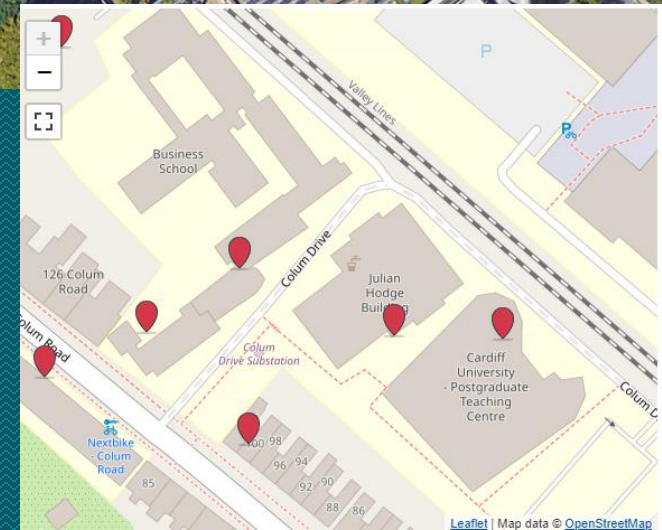
Facilities:

136 Networked computers (Cardiff University, 2023)
460 seater lecture theatre with state-of-the-art AV facilities and full disabled access?
A number of IT training suites?
24 hour access?
Restaurant and the JHB café?

(Wikimapia, 2014)



Google maps, 2023



1. Desktop Survey

Facilities:

136 Networked computers (Cardiff University, 2023)
460 seater lecture theatre with state-of-the-art AV
facilities and full disabled access?
A number of IT training suites?
24 hour access?
Restaurant and the JHB café?

(Wikimapia, 2014)

Search results for Cardiff University. The top result is the Julian Hodge Building - Visit us page. The page content includes a search bar, navigation links, and a table of opening hours.

Cardiff University
<https://www.cardiff.ac.uk> · visit · cathays-park-campus

Julian Hodge Building - Visit us

Julian Hodge Building ... Vehicular access to the Julian Hodge Building is via Colum Drive, through a barrier entrance that is operated with a Cardiff University ... You've visited this page 3 times. Last visit: 04/04/23

<https://www.cardiff.ac.uk/business-school/about-us>

Facilities - Cardiff Business School

In addition to a large lecture theatre and refectory, the Julian Hodge Building offers a resource centre with 136 networked computers loaded with a wide range ...

Open 24 hours ▾

Julian Hodge Building, Wednesday hours

Cardiff University Students' Union
<https://www.cardiffstudents.com/health-and-wellbeing>

Study Spaces

22 Nov 2022 — The Centre for Student Life is located on Park Place opposite Main Building. It is open during term time: Monday to Friday 08:00-20:00 and ...

People also search for

Cardiff University
<https://www.cardiff.ac.uk> · visit · cathays-park-campus

Julian Hodge Building - Visit us

Julian Hodge Building ... Vehicular access to the Julian Hodge Building is via Colum Drive, through a barrier entrance that is operated with a Cardiff University ... You've visited this page 3 times. Last visit: 04/04/23

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Facilities - Cardiff Business School

In addition to a large lecture theatre and refectory, the Julian Hodge Building offers a resource centre with 136 networked computers loaded with a wide range ...

Wednesday	Open 24 hours
Thursday	Open 24 hours
Friday	Open 24 hours
(Good Friday)	Hours might differ
Saturday	Closed
Sunday	Closed
Monday	Open 24 hours
Tuesday	Open 24 hours

Cardiff University Students' Union
<https://www.cardiffstudents.com/health-and-wellbeing>

Study Spaces

1. Desktop Survey

Occupancy Details:

Typically, Students, staff using the facilities provided, primarily, lectures, eating and office facilities. Unable to find information on whether facilities are leased for private events or training.

Dolce Vita gallery consists of a coffee shop on the first floor overlooking the canteen.

(Cardiff Uni Coffee Shops, 2012)

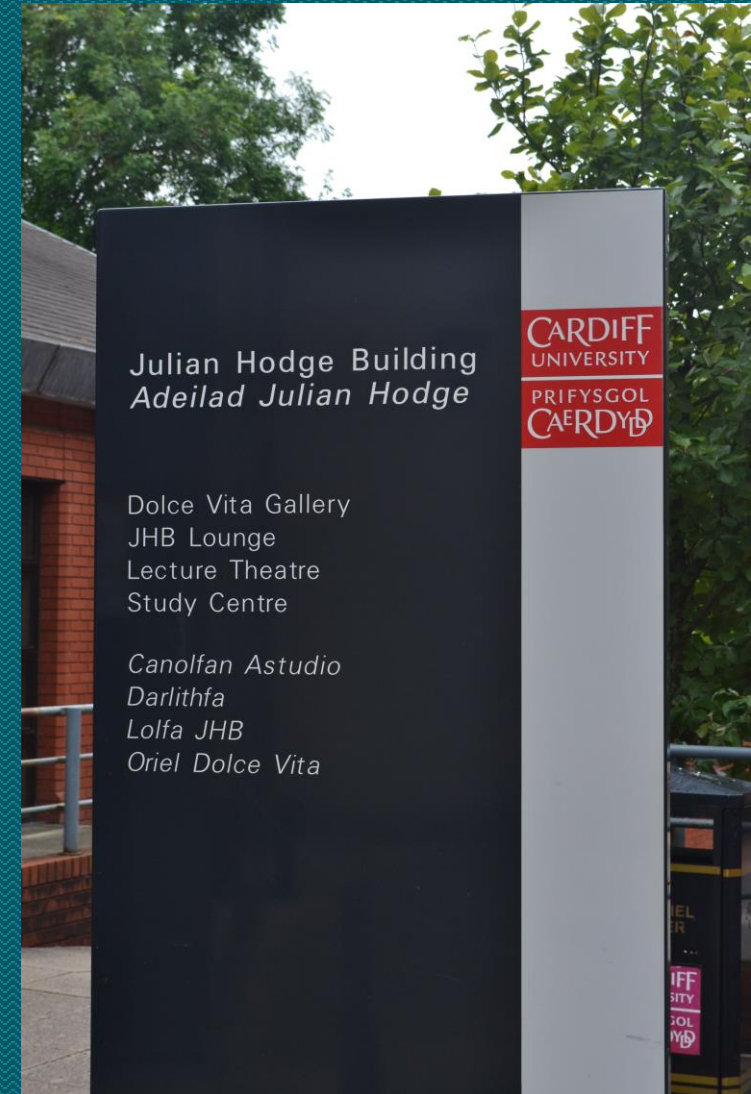


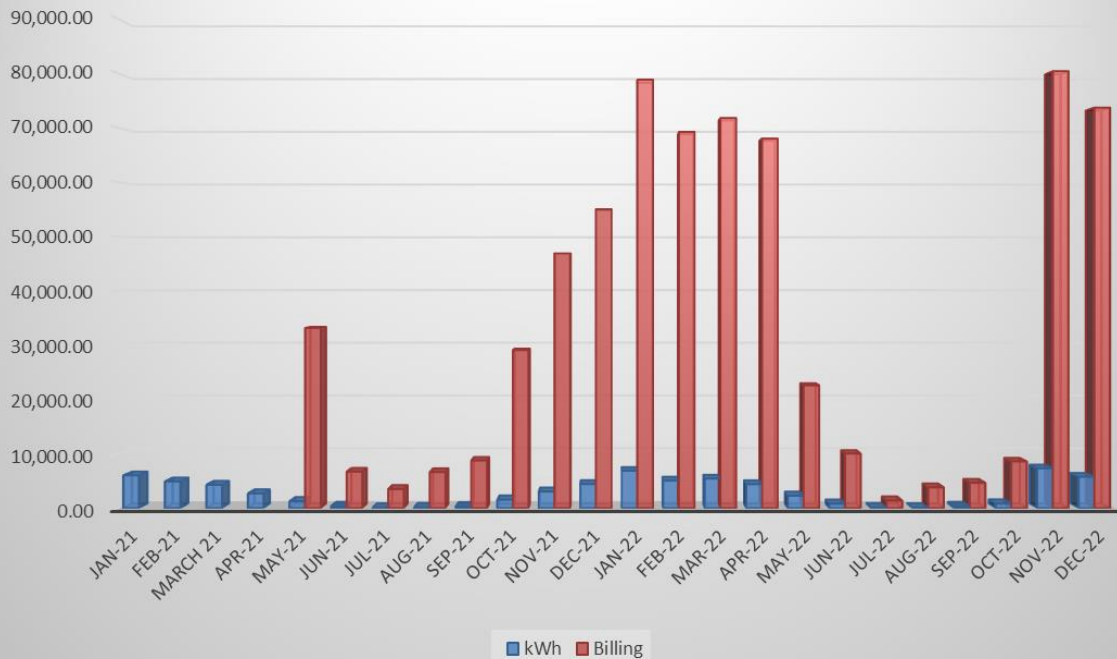
Image 5, (Pinterest, 2023)

1. Desktop Survey

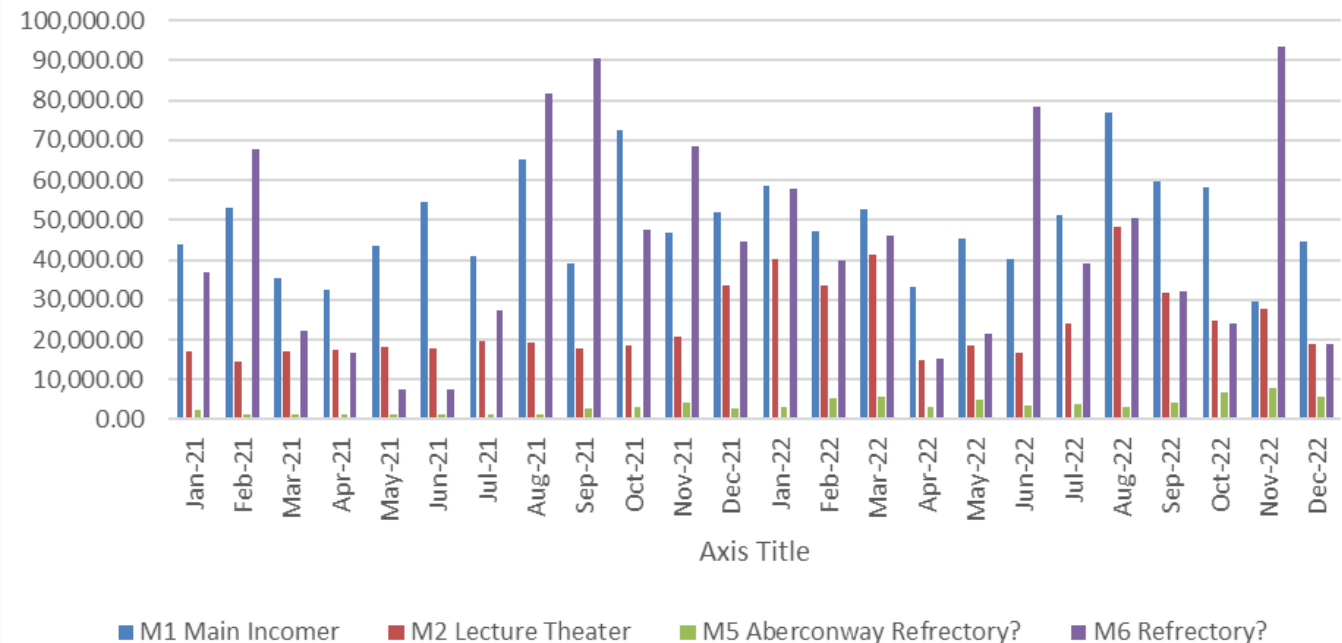
Records of Consumption

- Data Provided by Mark Durdin, for Gas and Electrical showing consumption 2021/2022.

Julian Hodge Gas



Julian Hodge Electricity



1. Desktop Survey

Energy Costs

- Gas 9.5p/kWh
- Electricity 24.5p/kWh

Variables affecting consumption:

Educational building, term times. Weather, seasons, opening hours. Global Pandemic?

1. Desktop Survey

Benchmarking: CIBSE TM46

Table 1 Benchmark categories and values; (b) benchmarks and building size metrics

[A]	[B]	[C]	[K]	[L]	[M]	[N]	[O]	[P]	[Q]	[R]
Name and description			Energy benchmarks		Illustrative CO ₂ benchmarks calculated from the energy benchmarks (see Table 3)			Building size metric for use by assessors		
Category	Name	Brief description	Electricity typical benchmark (kW·h/m ²)	Fossil-thermal typical benchmark (kW·h/m ²)	Illustrative electricity typical benchmark (kgCO ₂ /m ²)	Illustrative fossil-thermal typical benchmark (kgCO ₂ /m ²)	Illustrative total typical benchmark (kgCO ₂ /m ²)	Primary metric (as in energy benchmarks)	Approved alternate metric	Default multiplier (applied to alternate metric to obtain primary metric)
18	University campus	University campus	80	240	44.0	45.6	89.6	Gross floor area measured as RICS gross internal area (GIA)	(none)	
19	Clinic	Health centres, clinics and surgeries	70	200	38.5	38.0	76.5	Gross floor area measured as RICS gross internal area (GIA)	(none)	
20	Hospital (clinical and research)	Clinical and research hospital	90	420	49.5	79.8	129.3	Gross floor area measured as RICS gross internal area (GIA)	(none)	
21	Long term	Long term residential	65	420	35.8	79.8	115.6	Gross floor area	(none)	

(CIBSE TM46, 2008)

1. Desktop Survey

Display energy certificate (DEC) recommendation report

Cardiff University
Julian Hodge Building
Colum Drive
CARDIFF
CF10 3EU

Report number
9139-2078-0182-0100-8501

Valid until
11 February 2026

Operational rating and DEC

This building's operational rating is D.

For more information on the building's energy performance, [see the DEC for this building \(/energy-certificate/0080-1915-0128-3870-1090\)](https://energy-certificate/0080-1915-0128-3870-1090).

! A new certificate has replaced this one. [See the new certificate.](#)

Cardiff University
Julian Hodge Building
Colum Drive
CARDIFF
CF10 3EU

Operational
rating
D

This certificate expired on
29 June 2019

Certificate number
0080-1915-0128-3870-1090

Energy performance operational rating

The building's energy performance operational rating is based on its carbon dioxide (CO2) emissions for the last year.

It is given a score and an operational rating on a scale from A (lowest emissions) to G (highest emissions).

The typical score for a public building is 100. This typical score gives an operational rating of D.

Score	Operational rating	This building	Typical
0-25	A		
26-50	B		
51-75	C		
76-100	D	81 D	100
101-125	E		
126-150	F		
150+	G		

You can read [guidance on DEC's and advisory reports for public buildings](#).

(DEC, 2019) Issued 12th Feb 2019

Display energy certificate (DEC) – Find an energy certificate – GOV.UK (find-energy-certificate.service.gov.uk)

1. Desktop Survey

CIBSE Guide F – Energy Audit

-We can compare the data gathered against Guide F

Building type	Energy consumption benchmarks for existing buildings / (kW·h·m ⁻²) per year (unless stated otherwise)				Basis of benchmark
	Good practice		Typical practice		
	Fossil fuels	Electricity	Fossil fuels	Electricity	
Entertainment: (continued)					
— social clubs	140	60	250	110	Gross floor area ^[b]
— bingo clubs	440	190	540	230	Gross floor area ^[b]
Education (further and higher) ^{(3)[c]} :					
— catering, bar/restaurant	182	137	257	149	Gross floor area
— catering, fast food	438	200	618	218	Gross floor area
— lecture room, arts	100	67	120	76	Gross floor area
— lecture room, science	110	113	132	129	Gross floor area
— library, air conditioned	173	292	245	404	Gross floor area
— library, naturally ventilated	115	46	161	64	Gross floor area
— residential, halls of residence	240	85	290	100	Gross floor area
— residential, self catering/flats	200	45	240	54	Gross floor area
— science laboratory	110	155	132	175	Gross floor area

Energy efficiency in buildings

CIBSE Guide F

This building's energy use

Main heating fuel	Natural Gas
Building environment	Air Conditioning
Total useful floor area	3700.48 square metres
Asset rating	Not applicable

Energy use	Electricity	Other fuels
Annual energy use (kWh/m2/year)	171	162
Typical energy use (kWh/m2/year)	81	237
Energy from renewables	0%	0%

(CIBSE Guide F, 2018)

2. Site Visit

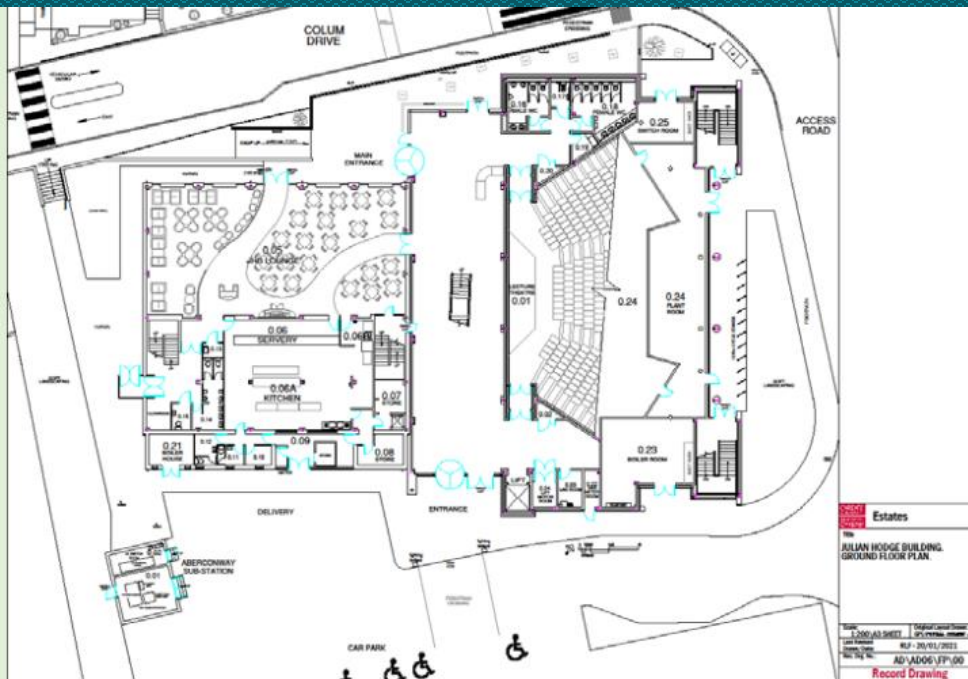
Initial Status Review...

- Check building usage is as per desktop survey – any alterations or adaptations, make notes of building floorplan.
- Investigate building accessibility – Any different to what is advertised online.
- Check building equipment – Any specialist equipment or machinery being used.
- Check building services – Boilers, Chillers, Air Conditioning. Locations and readings of all visible meters.

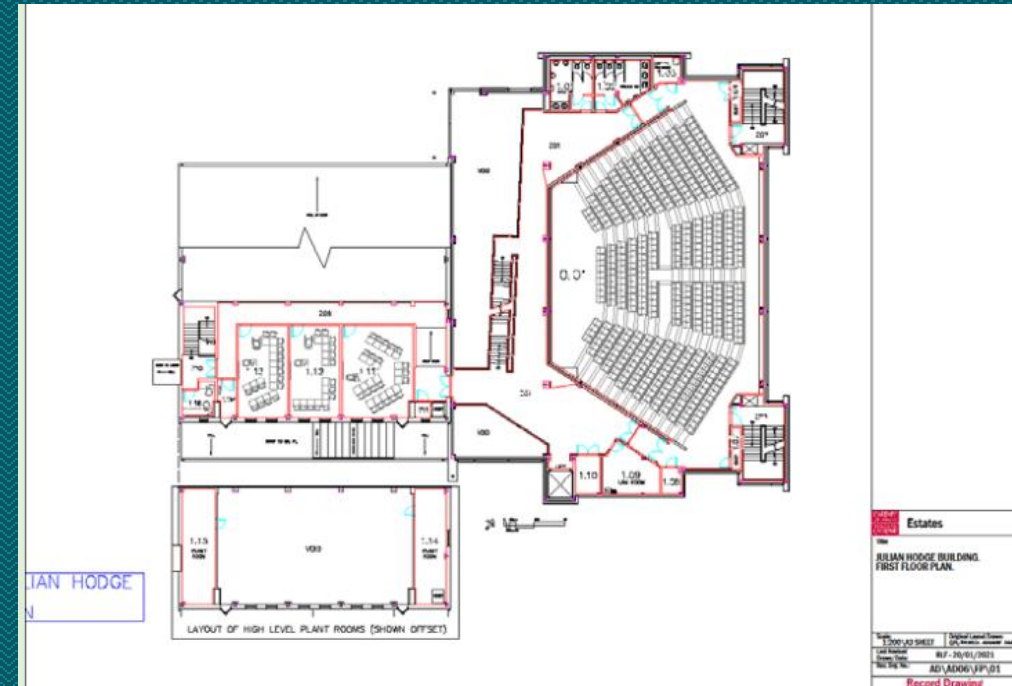
2. Site Visit

Initial Status Review...

- Adaptations made to refectory, eating areas and coffee shop causing confusion (see next slide). It is likely that this information is pre 2001 refurbishment work.



Floorplans provided
by Mark Durdin

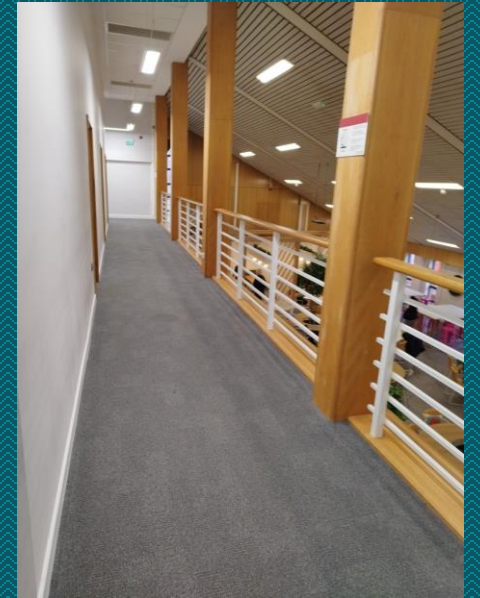


2. Site Visit

-Check building usage is as per desktop survey – any alterations or adaptations, make notes of building floorplan.

(Cardiff Uni Coffee Shops, 2012)

Canteen was modernised in 2018



2. Site Visit

-Check building usage is as per desktop survey – any alterations or adaptations, make notes of building floorplan.

Larger Building –

Ground + First floor mainly lecture theatre and plant rooms

2nd floor Library / Study room & Plant Room

3rd floor IT Rooms / Offices & Plant Room

Smaller Building –

Kitchens and eating area on ground floor, radiators

1st floor, 3 small classrooms and mezzanine + AHU

2. Site Visit

- Investigate building accessibility – Any different to what is advertised online?



CARDIFF UNIVERSITY
PRIFYSGOL CARDIFF

University Library Service
Gwasanaeth Llyfrgell y Brifysgol

ARDAI DAWEL QUIET ZONE

Dewch i mewn! Come in!

- Cyfrifiaduron y gellir ac na ellir eu cadw ymlaen llaw
- Desglau astudio â socolodi
- Dyfeisiau argraffu/copio/scanio
- Mannau astudio galw i mewn
- Bookable and non-bookable PCs
- Study desks with sockets
- Print/copy/scan devices
- Walk-in study spaces

Orlau agor | Opening hours

Dydd Llun–Dydd Gwener Monday–Friday	08:45–17:30
Dydd Sadwrn–Dydd Sul Saturday–Sunday	Ar gau Closed

Mynediad gyda cherdyn adnabod dily yn unig Access with valid ID card only



CARDIFF UNIVERSITY
PRIFYSGOL CARDIFF

University Library Service
Gwasanaeth Llyfrgell y Brifysgol

A yw'r drws ar gau? Is the door shut?

Os yw'r drws hwn ar gau rhwng 08.45 - 17.30 o ddydd Llun i ddydd Gwener, ffoniwch

029 2087 4971

If this door is closed between 08.45 - 17.30 Monday to Friday telephone

029 2087 4971

Building accessible from 7am – 8pm

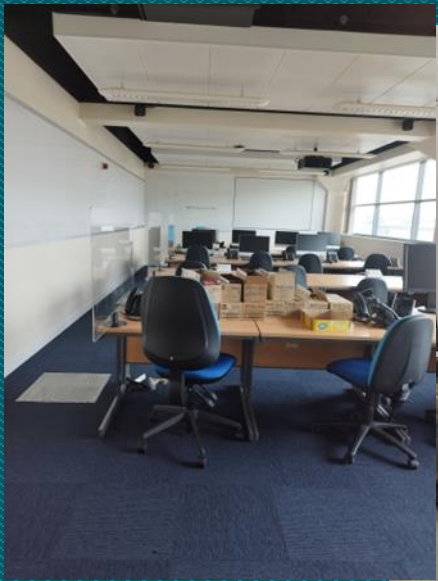
2. Site Visit

-Check building equipment – Any specialist equipment or machinery being used.



2. Site Visit

-Check building services – Boilers, Chillers, Air Conditioning.
Locations and readings of all visible meters.



- 2 mains gasses in
- one electrical supply that branches off
- 2 plant rooms (for each "original" building)

2. Site Visit

-Check building services – Boilers, Chillers, Air Conditioning.
Locations and readings of all visible meters.

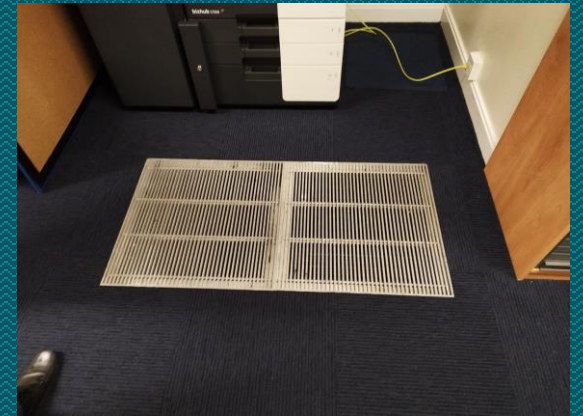


2. Site Visit

-Check building services – Boilers, Chillers, Air Conditioning.
Locations and readings of all visible meters.



Air heating on one side, wet system on the other



Floor Vents – Displacement Ventilation

3. Recommendations?

- Whichever recommendations are made, I feel it is critical that the systems are sympathetic with the nature of the use of the building.
- While there may be more efficient systems on the market, this system may not necessarily have to be mechanical, but may be a system of more efficient timetabling.

4. References

Cardiff Uni Coffee Shops, 2012	Notes on Coffee Shop Visits. Available from: https://pats.cs.cf.ac.uk/@archive_file?p=174&n=interim&f=Appendix_1-Appendix_1.pdf&SIG=79baedd7ef746e5b621aab252e16adc17b00fbd8843c65e831f0667e26472fcd Accessed on: 9/3/23
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Wikimapia, 2014.	Julian Hodge Building (Cardiff). Wikimapia. Available from: http://wikimapia.org/1007368/Julian-Hodge-Building Accessed on: 10/3/23



Thank You