SWITCH HARBOURSIDE

South Wales Industrial Transition from Carbon Hub

Design and Access Statement
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Document Control Sheet

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P02	Amendment to Site Boundary line	2024.04.19	Ainslie Plews	Ainslie Plews
P03	Amendment to External Stair Core	2024.06.21	Ainslie Plews	Ainslie Plews
P04	Amendment to Site Layout	2024.09.20	Ainslie Plews	Ainslie Plews
P05	Update to text in reference to stakeholders	2024.10.31	Ainslie Plews	Ainslie Plews
P06	Issue for Planning	2024.11.18	Ainslie Plews	Ainslie Plews
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Section 1

Introduction

1.0 Introduction

1.1 Executive Summary

The new facility is a collaborative innovation centre working with academia, namely Swansea University as a key stakeholder to help end users from the steel industry to decarbonise the steel industry towards a net zero carbon future.

The core theme of the SWITCH (South Wales Industrial Transition from Carbon Hub) programme is to assist decarbonisation of the steel and metals industry, to strengthen collaboration between industry and academia and to future proof the steel and metals industry in Wales and the UK.

The construction will consist of a mix of office space, laboratories, research and production area, storage areas and external works.

The site identified has a recently completed highway scheme within the available red line boundary.

The scheme is to achieve Net Zero Carbon targets in Construction and Operation as set out in the Works Information and a BREEAM Excellent rating.

1.2 Brief

The project brief is to create a RD&I Facility for the decarbonisation of the Steel & other foundation industries.

The South Wales Industrial Transition from Carbon Hub (SWITCH) is a collaborative innovation centre working with academia and industry partners to develop and deploy new technologies, products and processes to move towards a net zero carbon future.

The Hub will be run by Swansea University to deliver academic and industrial research seeking to reduce carbon footprint through transforming raw materials supply, process and product development and energy consumption within the steel and metals industries and their supply chains across the UK.

Proposals should follow the Active Building principles, as outlined in "Net-Zero Carbon (Building) Outline Design Brief" and incorporate low carbon technologies where appropriate.

The building is to act as a demonstrator for the UK manufacturing sector, with a large emphasis on the UK Steel Industry, utilising as far as possible steel and other materials produced by the UK steel supply chain and other UK produced materials.

The facility is to promote active/net zero travel by providing cycle storage and shower facilities, plus electric charge points (managed by third party provider).

1.3 Vision

- Net Zero Carbon Base Build

- BREEAM Excellent

- Accommodate collaboration by academia, researchers and industry partners

- To be a beacon for new research in the steel industry

- Maximising the use of Roof and Facade mounted PV to achieve the desired Net Zero Carbon targets

- Representative materials of the UK Steel industry where poossible

- SUDs design that aids drainage attenuation on the site

- Potential for future expansion.

- A design that showcases the UK steel Industry

Neath Port Talbot
Castell-nedd Port Talbot
County Borough Council Cyngor Bwrdeistref Sirol

Swansea University
Prifysgol Abertawe

Project Stakeholders



1.4 Client Schedule of Accommodation

Client Schedule of Accommodation

The Schedule of Accommodation has been developed from the employers requirements for each of the departments within the facility. The Zones are as follows.

Pilot

- 4 areas: melting, rolling, heat treatment and circular materials.

SINTEC (Simulation and Integrity Testing in Extreme Conditions)

- 5 rooms: flexible room with walk-in fume cupboards; dual-fan ventilated room; analytical room; blast-proof room; raw material processing plus equipment storage room.

Workshop

Welding and Joining

Materials Characterisation

- 5 rooms: dirty room, clean room, analytical room, SEM room and additional lab space

Mechanical Testing

Office space

- 95 people including: 80 office-based staff working hybrid 2-3 days in the office weekly and 15 operational staff in the facility Monday – Friday, using desks 30- 50% of the time.

Through reviewing the draft schedule with the team from SaMI it was agreed that the need for a large 50-person meeting/conference room was no longer required. In lieu of this the 2 smaller meeting rooms are to have the function of being capable of opening up into a larger meeting space by means of an acoustic folding partition.

The occupancy levels and staff numbers to be accommodated in the office spaces was also clarified as follows;

Cohort	Number of Staff	Occupancy Rates	Design Occupancy
Indusrtrial Partners	30	60%	18
University Staff	8	60%	5
Operational Staff	12	50%	6
Research / Academic Staff	30	30%	10

Through consultation and RFI's, the Schedule of Accommodation was agreed and then used as the basis for early design development. The agreed plans at RIBA 2 stage have informed a comparison between the agreed schedule and the as drawn areas.

ARCADIS

SWITCH Schedule of Accomodation

Zone	Room	Floor Level	No	Occupancy	Area PPm2	Size	Total	As Drawn 17.08.23	Comments
Office and Administration	Office Space 80*								*80 staff working on various hybrid models depending on role. Area pp/m2 is based on the AUDE standard for shared workplaces for Academic and Support Staff. **Can be all part of same single open plan office space. Note: Open plan space will required spaces for focussed work, online meetings, phone calls, collaborative working and general desk work. Detail from Office and communal_RDS_Finishes_FFE_template OCS.xls Check as conflict with Outline Specification to create a RD&I Facility for the decarbonisation of the Steel & other foundation industries Document - 95 staff 80 Office based and 15 Operational.
Office and Administration	Industrial Staff**	01+	1	18	7.5	135	**135**	**150.3**	30 Staff working in office 2-3 days/wk. Desk space for 18 required based on 3 day working model - Confirm Occupancy Assumption
Office and Administration	University Staff**	01+	1	5	7.5	37.5	**37.5**	**46.8**	8 Staff working in office 2-3 days/wk. Desk space for 5 required based on 3 day working model - Confirm Occupancy Assumption
Office and Administration	Operational Staff	0	1	6	7.5	45	**45**	**45.4**	12 Staff working in office based on 30-50% occupancy. Calculation based on 50% occupancy - Confirm Occupancy Assumption
Office and Administration	Research / Academic Staff	01+	1	10	7.5	75	**75**	**83.9**	30 staff working in office based on 30% occupancy. 10 desks minimum.
~~Office and Administration~~	~~Meeting Room~~	~~01+~~	~~0~~	~~50~~	~~2.25~~	~~112.5~~	**0**	**0**	~~Area based on AUDE area for a seminar/tutorial room (2.25m2/pp). The room needs to be divided to a (8-10 person and 10-15 person) CONFIRMED NOT REQUIRED 8.6.23 Meeting~~
Office and Administration	Breakout	0	1					**47.3**	Accommodation added
Office and Administration	Meeting Pod	01+	1					**7.3**	Accommodation added
Office and Administration	Meeting Pod	01+	1					**7.6**	Accommodation added
Office and Administration	Meeting Room	01+	1	10	2.25	22.5	**22.5**	**22.2**	Area based on AUDE area for a seminar/tutorial room (2.25m2/pp). The room needs to be divided to a (8-10 person and 10-15 person) - Ideally first floor with view into Pilot/SINTEC space. Confirmed 29.0623
Office and Administration	Meeting Room	01+	1	15	2.25	33.75	**33.75**	**33.3**	Area based on AUDE area for a seminar/tutorial room (2.25m2/pp). The room needs to be divided to a (8-10 person and 10-15 person) - Ideally first floor with view into Pilot/SINTEC space. Confirmed 29.0623
Office and Administration	Meeting Room Storage	01+	1	0	0	10	**10**	**10.2**	Storage for 50 chairs off Meeting Room
					Sub total :		**358.8**	**454.3**	
					Planning	**5%**	**17.9**	**40.8**	
					Sub Total		**376.7**	**495.1**	
					Engineering	**3%**	**11.3**	**0.0**	
					Circulation	**15%**	**56.5**	**40.6**	
					Departmental Total		**444.5**	**535.7**	
Entrance & Amenities	WC	multiple	8	1	2.5	2.5	**20**	**34.4**	based on individual unisex toilets (numbers based on full occupancy and equal split m/f ratio)
Entrance & Amenities	Disabled WC	multiple	4	1	5	5	**20**	**14.2**	Number will depend of travel distances and number of floors
~~Entrance & Amenities~~	~~Changing Spaces~~	~~0~~	~~0~~	~~1~~	~~12~~	~~12~~	**0**	**0**	~~All public buildings should have a Changing Places facility. Maybe required as linked to Swansea University. Is this required? Confirmed not required 29.06.23~~
Entrance & Amenities	Showers	multiple	2	1	3	3	**6**	**0**	Guide is 1 shower per 10 cycle stores. Could potential lose 1 shower if changing spaces remain, although good practice to have separate male/female shower.
Entrance & Amenities	Independent Wheelchair Accessible Shower	01+	1	1	4	4	**4**	**11.4**	Wheelchair accessible shoer requested meeting 29.06.23
Entrance & Amenities	Storage	multiple	1	1	2	2	**2**	**0**	It is assumed storage will be within work spaces (requirements: Storage Cupboard per floor, Lockers for personal equipment / Lockers for workwear -labs / Lockers for BA kit. Small 2m2 store requested 29.06.23
Entrance & Amenities	Cleaner's Room	multiple	2	1	6	6	**12**	**10.2**	
Entrance & Amenities	Kitchen	01+	2	15	0	40	**80**	**62.8**	Area based on creating a kitchen/seating/informal work space similar to others created in HE facilities. Area can be reviewed. Also scope to introduce multiple or intergate within circulation area - Ground, first or split and distributed across levels?
Entrance & Amenities	Entrance Lobby	0	1	0	0	10	**10**	**14.6**	Entrance lobby can be omitted with Circleslide style entrance door
Entrance & Amenities	Reception	0	1	1	12	12	**12**	**9.7**	HBN 13.5-16m² - Is waiting area required? How many people?
					Sub total :		**166.0**	**157.3**	
					Planning	**5%**	**8.3**	**13.9**	
					Sub Total		**174.3**	**171.2**	
					Engineering	**3%**	**5.2**	**5.2**	
					Circulation	**15%**	**26.1**	**35.2**	
					Departmental Total		**205.7**	**211.6**	
SINTEC	Room 1	0	1	varies	n/a	195	**195**	**200.2**	4m Height. Equipment 500kg/m2. Forklift access requirement. Walk in fume cupboards. Furnace working zone 40m2 / 7x6m dimension. Open plan arrangement for flexibility. Mulitple gases. Hydraulic pack(s) needed for SIN008's to be located externally due to noise. Emergency Shower nearby required.
SINTEC	Room 2	0	1	varies	n/a	96	**96**	**100.8**	4m Height. Forklift access requirement. Furnace. Open plan arrangement for flexibility. Emergency Shower nearby requirement.
SINTEC	Room 3	0	1	varies	n/a	64	**64**	**64.7**	Desktop/Analytical. 3m ceiling height. Assumed horizontal connection required to other SINTEC spaces
SINTEC	Room 4	0	1	varies	n/a	30	**30**	**37.9**	Room subdivided into 3 with blast proof partitions. Equipment operated from 'control room'. Footprint 6x6m (6x2m control room plus 2 no. 3x3m equipment rooms)
SINTEC	Materials Processing	0	1	varies	n/a	42	**42**	**43**	Mix of bench top and free standing equipment. 3m ceiling height. Assumed horizontal connection required to other SINTEC spaces
SINTEC	SINTEC Storage/Plant	0	1	varies	n/a	42	**42**	**42.5**	Note: can be replaced by lab Storage Room. Store for SINTEC equipment, particularly for Room 1.
Refer to Sintec_Equipment_v1.2 for equipment information					Sub total :		**469.0**	**489.1**	
					Planning	**5%**	**23.5**	**74.1**	
					Sub Total		**492.5**	**563.2**	
					Engineering	**3%**	**14.8**	**0.0**	
					Circulation	**15%**	**73.9**	**69.1**	
					Departmental Total		**581.1**	**632.3**	

Zone	Room	Floor Level	No	Occupancy	Area PPm2	Size	Total	As Drawn 17.08.23	Comments
Materials Characterisation	Clean Room	01+	1	varies	n/a	75	**75**	**78.3**	Potential to be located on Level 1+ (this is not stated in docs). Vibration critical due to microscope use etc. Concrete table tops required in room. Emergency shower requirement
Materials Characterisation	Dirty Room	01+	1	varies	n/a	12	**12**	**13.8**	
Materials Characterisation	Analysis Room	01+	1	varies	n/a	16	**16**	**25**	
Materials Characterisation	SEM Room	01+	1	varies	n/a	25	**25**	**28.8**	Separate concrete floor required to minimise construction. Linked to external SEM Water Chiller Compound. Room requires sound proofing. Need to maximise distance from any EMI sources. Note: has to be colocated with all other Material Characterisation rooms, so confirmation required on floor level suitability.
Materials Characterisation	Lab Room	01+	1	varies	n/a	85	**85**	**90.1**	No details provided on room bar room has to be min. 14m in depth or length.
					Sub total :		**213.0**	**236.0**	
					Planning	**5%**	**10.7**	**26.6**	
					Sub Total		**223.7**	**262.6**	
					Engineering	**3%**	**6.7**	**16.1**	
					Circulation	**15%**	**33.5**	**45.5**	May not be required depending on Lab configuration
					Departmental Total		**263.9**	**324.2**	
Pilot	Rolling	0	1	varies	n/a				
Pilot	Heat Treatment	0	1	varies	n/a				
Pilot	PPE Room	0	1	varies	n/a	700	**700**	**798.9**	Layout can change from documentation. No areas given for each zone. 10t Gantry crane access. External access via 2 no. Roller Shutter doors 4m x 4m?? Internal modular rooms likely required
Pilot	Melting & Circular Economy	0	1	varies	n/a				
Pilot	Store Room	0	1	n/a	n/a	24	**24**	**25.7**	Cool, Dry Air Storage. 4 x 6m proportion. Outside of lab area
Welding and Joining	Welding & Joining	0	1	varies	n/a	180	**180**	**190**	External Access Required. Rollershutter 2-3m wide x 3m high. 4m height. Space can be split if required. Gantry required 3t load. Option to use single gantry, but 10t required. Separate space required for adhesive bonding, wash and storage. Curtain seperation required. Large space needed in middle to move and work on prototypes etc.
Welding and Joining	Workshop	0	1	varies	n/a	300	**300**	**296.1**	External access required. Plan indicated direct flow from Welding. 4m height. 3t Gantry required - although 10t needed if single gantry connected to Pilot (Workflow indicates Welding - Workshop - Pilot). Separate CAD-CAM office required directly off workshop.
					Sub total :		**1204.0**	**1310.7**	
					Planning	**5%**	**60.2**	**10.1**	
					Sub Total		**1264.2**	**1320.8**	
					Engineering	**3%**	**37.9**	**13.6**	
					Circulation	**0%**	**0.0**	**0.0**	Open plan space so no circulation included
					Departmental Total		**1302.1**	**1334.4**	
Mechanical Testing	Mechanical Testing Lab	0	1	varies	n/a	204	**204**	**206.3**	Heavy duty equipment requiring forklift / pallet truck access. Overhead Gantry (weight not stated). 4m wide opening required. Appears to be open plan space.
Mechanical Testing	Pump Room for Mechanical Testing Lab	0	1	varies	n/a	24	**24**	**29.7**	Size not stated. 4 Pumps plus cooling indicated. References potential link in requirements to SINTEC room 1 and 4
					Sub total :		**228.0**	**236.0**	
					Planning	**5%**	**11.4**	**0.9**	
					Sub Total		**239.4**	**236.9**	
					Engineering	**3%**	**7.2**	**91.1**	
					Circulation	**0%**	**0.0**	**0.0**	Open plan space so no circulation included
					Departmental Total		**246.6**	**328.0**	
	Net Departmental Total m2						**3043.9**	**3366.2**	
	Communication allowance (10%)					**10%**	**304.4**	**381.7**	Inter departmental circulation
	Stair and Lift Allowance						**204.0**	**226.1**	3 no. Stairs including feature atrium stair @50m2/stair. Lift core including 2 lifts @ 54m2 (determined by layout and applicable regulations)
	Ground Floor Plant (4%)					**4%**	**121.8**	**0.0**	(TBC by M&E engineers) - could be shared plant for building so this can reduce
	Firtst/Roof Plant (4%)					**4%**	**121.8**	**101.4**	(TBC by M&E engineers) - could be shared plant for building so this can reduce
	Total GIFA m2						**3795.77**	**4075.40**	
External									
SINTEC external gas distribution								**15.00**	Size not stated. Can serve whole site. 15m length. Depth subject to manovability
Cycle Storage									1 stand per 5 building occupants - taken from NPT LDP 2011-2026 Parking Standards Supplementary Parking Standards 2016. 16 Stands
Car Parking									Note this based on 1 space for every 20m2 of office accomodation - taken from NPT LDP 2011-2026 Parking Standards Supplementary Parking Standards 2016. 21 Spaces (standard) +5% for disabled (+1 space). Consideration to provide 2, for visitor provision.
External Material Store								**149.7**	144m2 (12 x 12m) / 4m internal height. 4m (w) x 3m (h) Roller shutter access. Forklift access.
External Substation								**29.20**	20.25m2 (4.5m x 4.5m)
External Gas Store								**62.1**	
Sprinkler Tank								**70.9**	
Roof Plant Screened Enclosure								**71.7**	
	Total External GIFA m2							**398.60**	

Section 2

Site and Context

2.1 Site Location / Context

Introduction

This section provides an overview analysis of the contextual, physical, and environmental factors influencing the proposed development. It looks at site's topography, surroundings, historical significance and any constraints, offering a foundation for informed design decisions.

Site Location and Context - Port Talbot

Situated in Wales, approximately 8 miles from Swansea, Port Talbot has a distinct context shaped by its industrial heritage and scenic coastal surroundings. The town is characterised by its proximity to the Port Talbot Steelworks, contributing to a dynamic blend of urban development and natural landscapes. The juxtaposition of industrial structures against a pictureque Welsh coast forms a unique context that influences the area's character and development considerations.

Site Description

Site is in a strategic location, the area has excellent infrastructure links, such as Port Talbot Parkway Station and M4 motorway nearby. the area also has a mix of commercial establishments and residential accommodation.



Site Context Plan (Image taken from Google Earth)

Photographs

1. View across the site towards the Port Talbot Parkway train station.

2. View across the site towards the Port Talbot Steelworks.

3. View across the site towards the HMCTS Port Talbot Justice Centre.

4. View of SuDS at the south east corner of the site.

5. Photo of an existing road that splits the site.

6. Access to south part of the site.













2.2 Existing Facility

Existing SaMI Facility

The Steel and Metals Institute (SaMI) at Swansea University, Singleton Campus, currently houses the majority of the equipment that will be transfered to the proposed facility of the SWITCH building. The equipment will be moved to create a dedicated facility with room to grow. The location of the proposed site is in close proximity to industry partners, working with the University to research ways to decarbonise the steel industry.

Site visits to the current SaMI facility aided the design process, reviewing the different uses within the building and specific requirements related to the machinery that was input into the design.

The images show examples of the equipment that will be housed in the new SWITCH proposed building, from large scale pilot equipment down to desktop microscopes.

Photographs

1. 10T Gantry Crane
2. AD005 - Lewis Strip Mill
3. MT008 - Instron 200kN Universal Testing Machine
4. AD002 - New Consarc VIM
5. SINTEC 50kN Fatigue Machine
6. WS5 - Brenner Turret Miller

1.



2.



3.



4.



5.



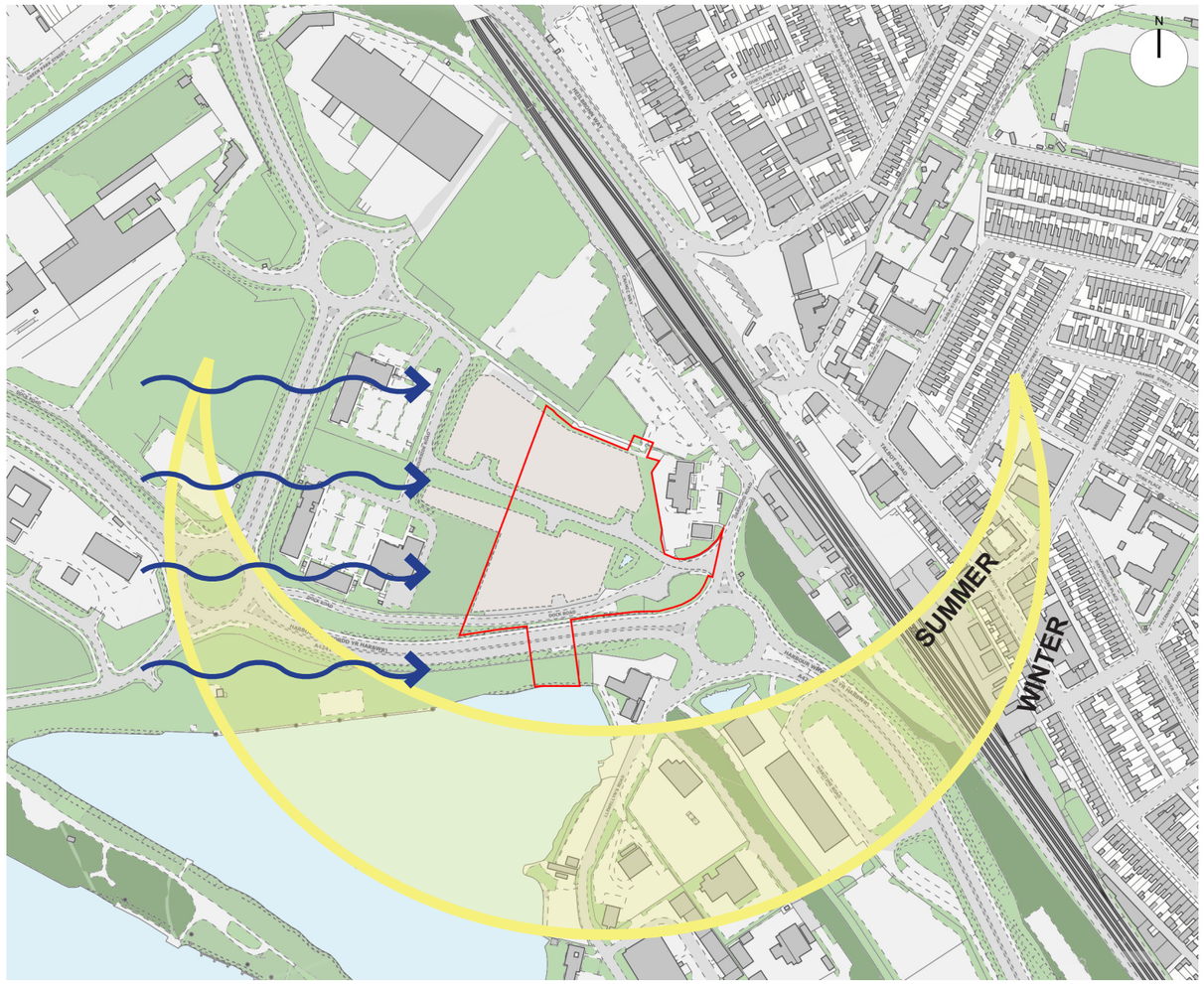
6.



2.3 Site Analysis

Sun and Wind

In general, South Wales often experiences westerly winds coming from the Atlantic Ocean, however it can vary depending on the prevailing weather patterns in the region.



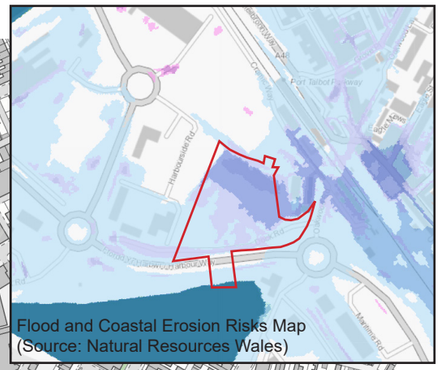
Legend

- Site Boundary
- Wind Direction
- Sun Path

Landscape

Port Talbot landscape has a mix of industrial, residential and natural elements. The town is historically linked to steelworks, contributing to an industrial backdrop. Amidst this, pockets of green spaces and scenic areas break through, providing a diverse landscape.

Site is in the flood risk zone, Flood and Coastal Erosion Risk Map notes that site is in a low to medium risk of flood from rivers and low to medium risk of flooding from surface water.



Flood and Coastal Erosion Risks Map
(Source: Natural Resources Wales)

Legend

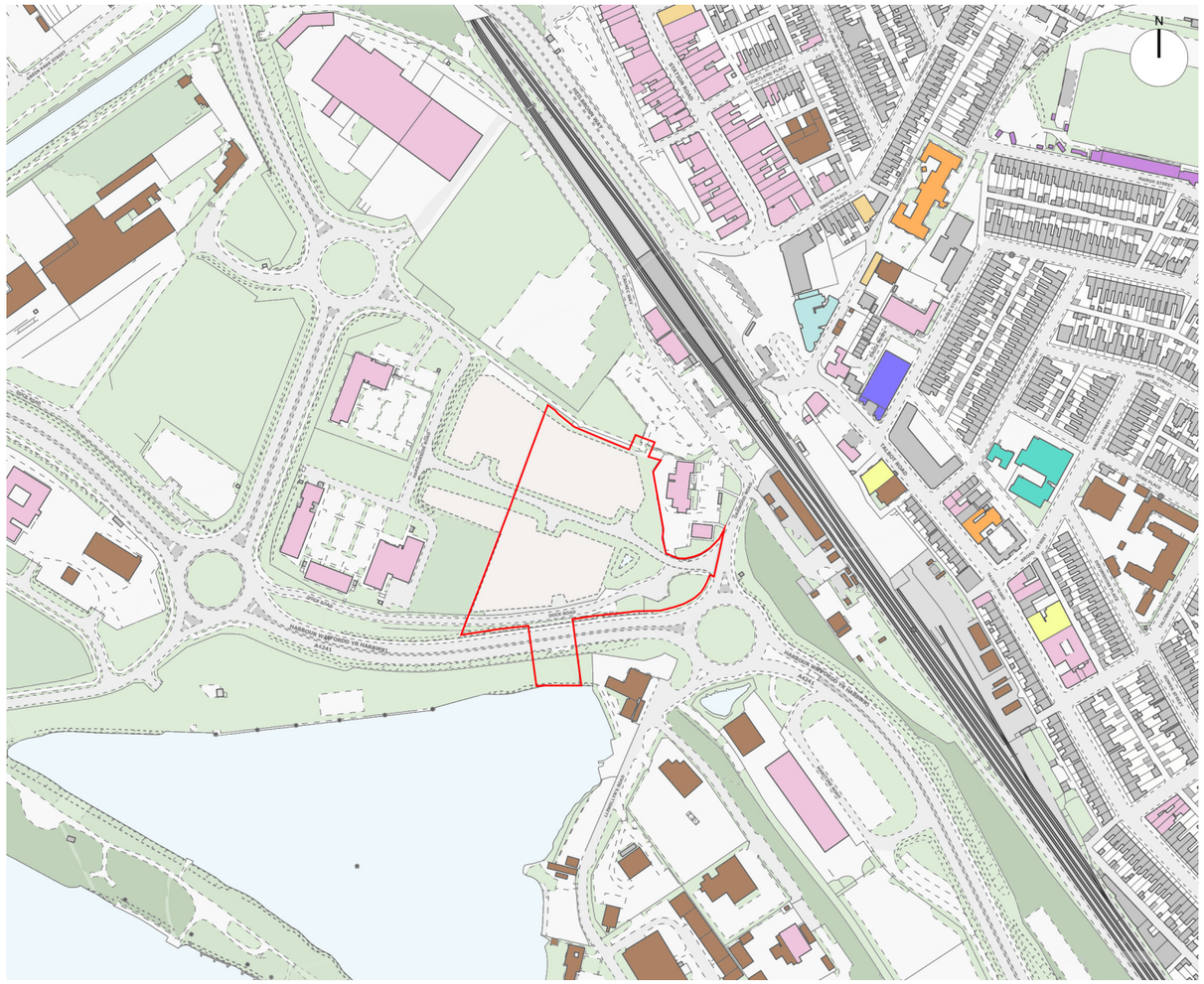
- Site Boundary
- Roads
- Grassland
- Woodland
- Cleared Land

2.3 Site Analysis

Land Use

The land use in Port Talbot primarily consists of a mix of residential, commercial, and industrial areas. Areas around the site are primarily commercial and industrial buildings.

Site is Strategic Regeneration Area (SRA) and is a Strategic Employment Site (EC1).



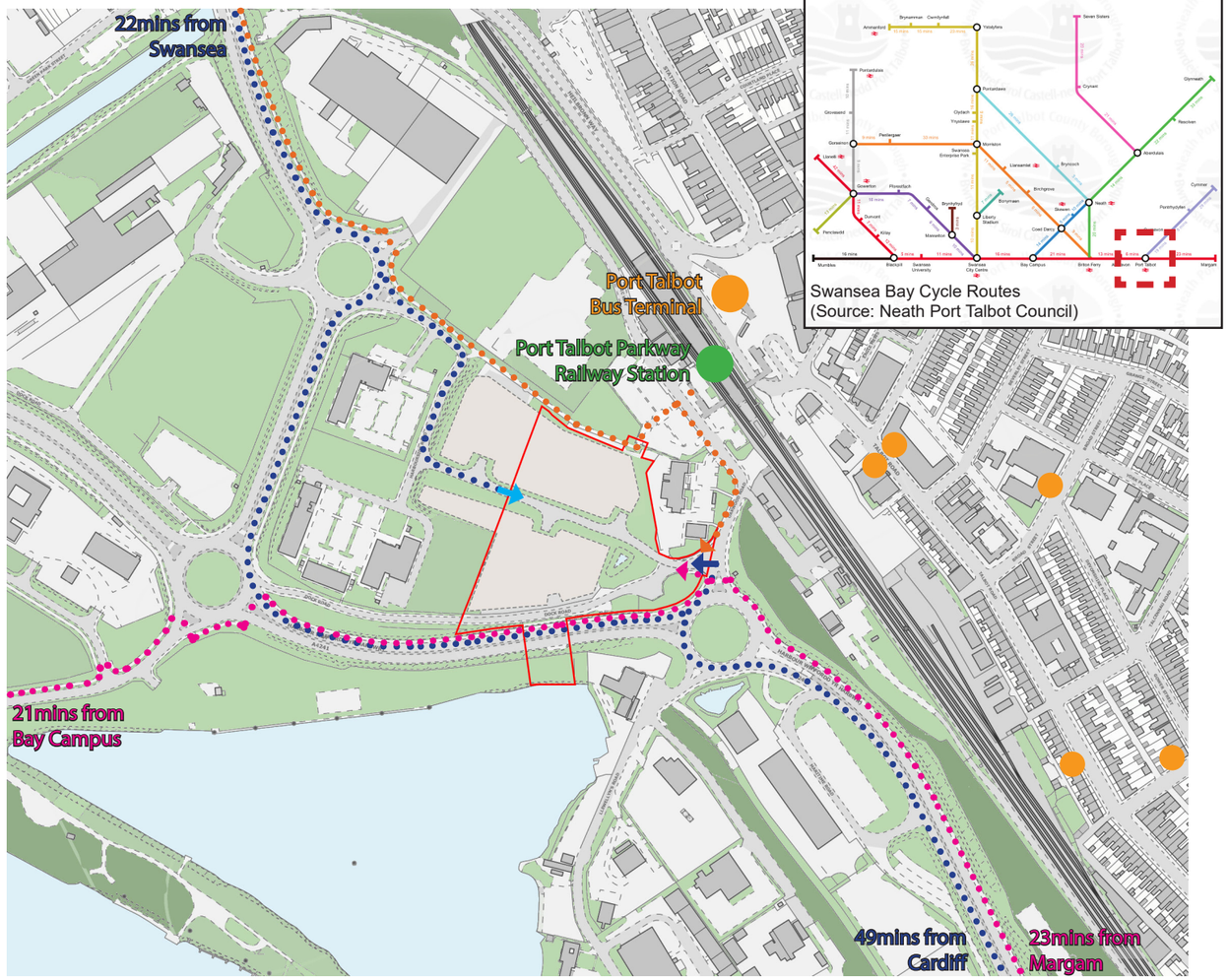
Legend

- Site Boundary
- Residential
- Commercial/Retail
- Entertainment
- Hotel
- Care Home
- Education
- Charity
- Public Services
- Religious
- Other/Industrial

Access and Movement

Port Talbot is well-connected by roads, with M4 motorway nearby, making it accessible by car. Additionally, there's a Port Talbot Parkway railway station, providing train services. Local buses further facilitate movement within the town and nearby areas.

Port Talbot is connected to a cycle network that connects it to Swansea and towns nearby. Neath Port Talbot Council and The City & County of Swansea have developed a map (shown below), showing cycle routes to encourage commuters in the nearby areas to use the bike for their journey to work, and also to promote health and sustainability.



Swansea Bay Cycle Routes
(Source: Neath Port Talbot Council)

Legend

- Site Boundary
- Vehicular Routes
- Pedestrian Routes
- Cycle Routes
- Train Station
- Bus Station & Bus Stops
- Main Site Entrance
- Secondary Site Entrance

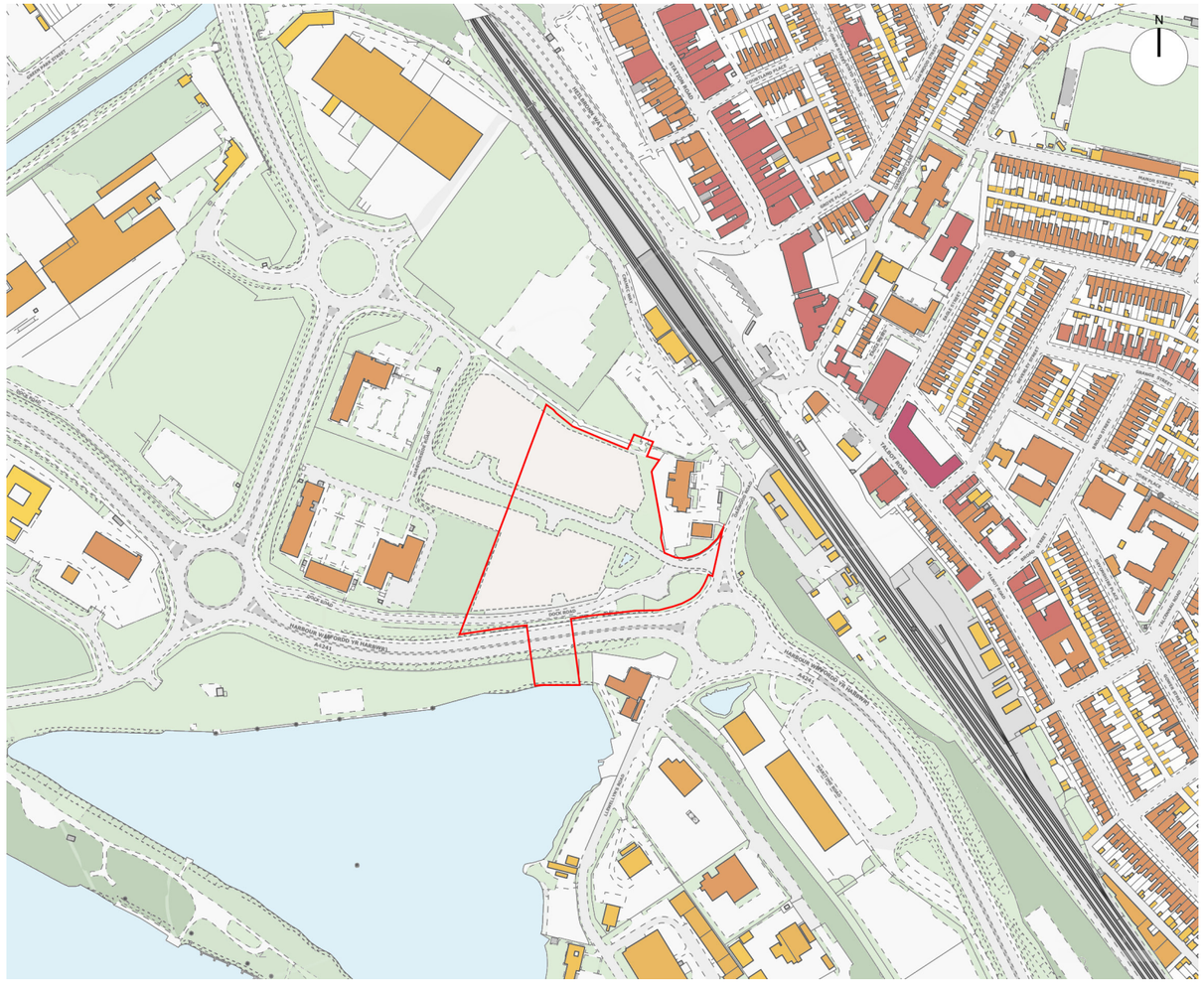
2.3 Site Analysis

Scale and Building Height

The scale and building heights in Port Talbot vary, with a mix residential, commercial and industrial structures. Resdiential areas typically feature low to medium height buildings, while industrial zones may include taller structures.Buildings in an immediate vicinity to the site are commercial 2 storey buildings, and single storey double height industrial warehouses.

Historical Buildings

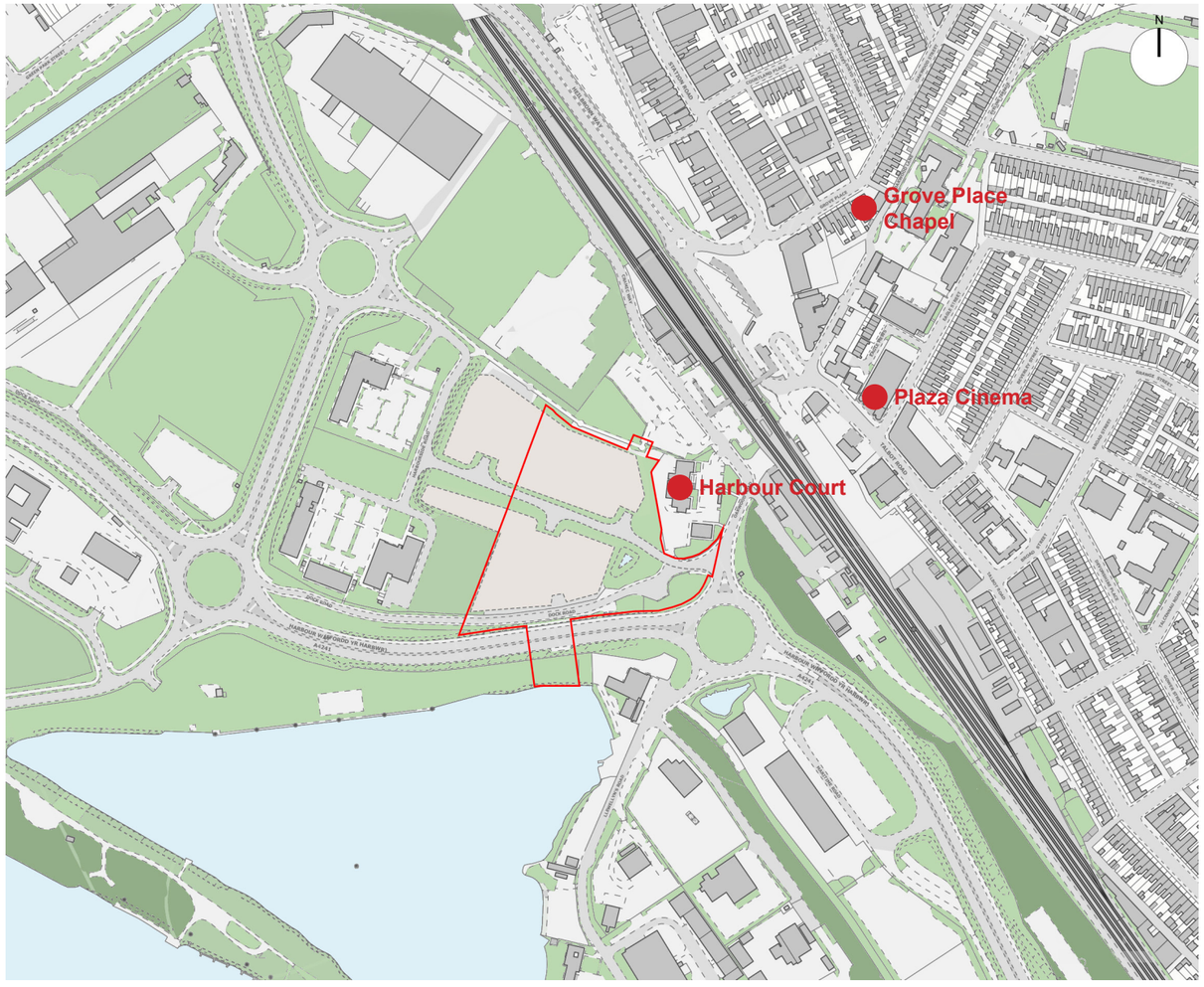
Port Talbot boasts a rich history reflected in its architectural heritage. Some notable historical buildings include Aberafan House, a Victorian era structure, and St. Theordore's Church, known for its medieval origins. The town also features several listed properties, such as Tywyn Cottage and the former Glyncorrwg Infants School. Next to the site, at the corner of Oakwood Road and Cramic Way, is a Harbour Court Grade II listed building.



Legend

Site Boundary

Building Heights



Legend

Site Boundary

Grade II Listed Building

2.4 Site Constraints & Opportunities

OPPORTUNITIES

Close proximity to the railway station.

Public footpath running along the site perimeter with connection to the railway station.

Site can utilise access from the East and West via the existing access road if the site is considered as one.

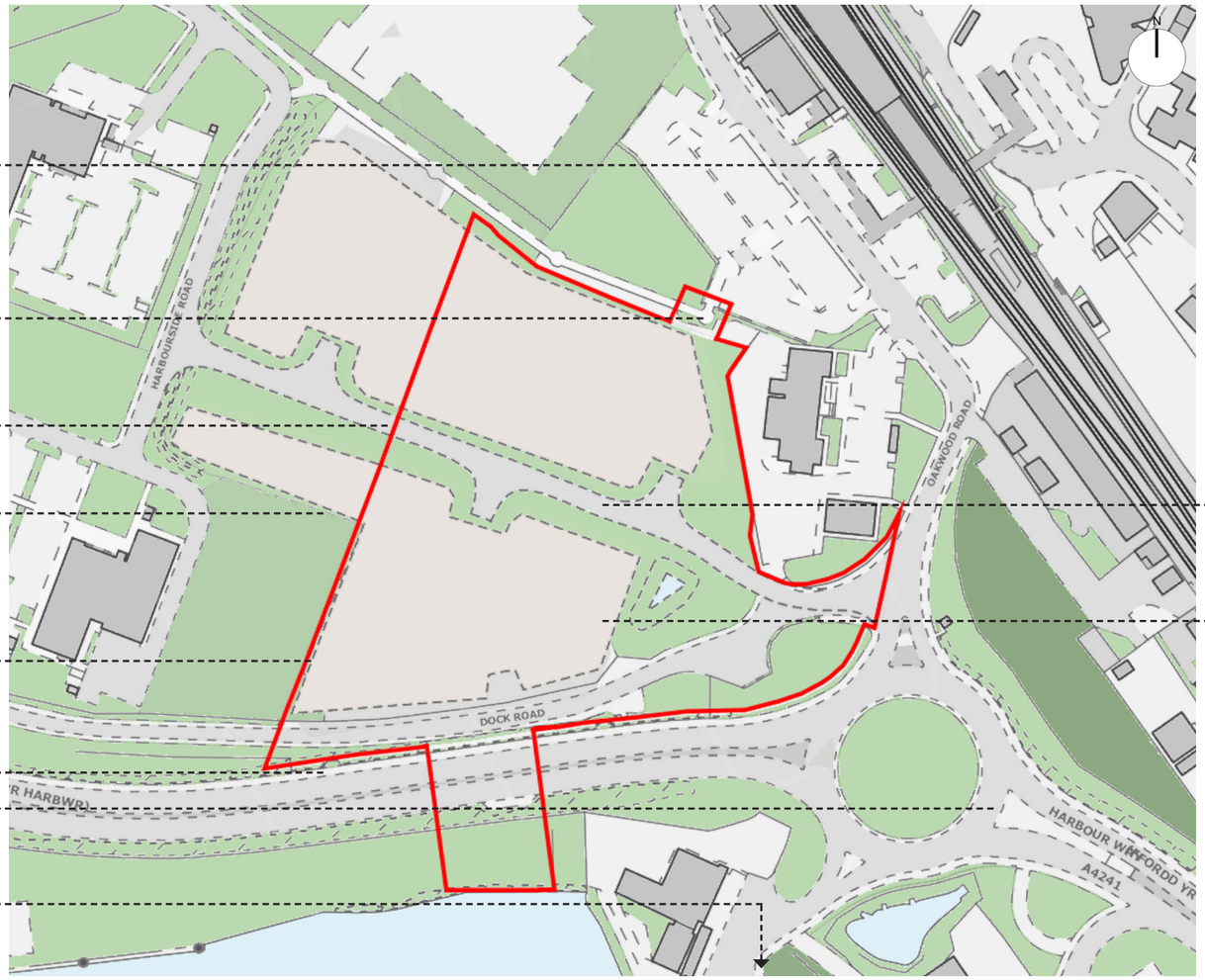
Opportunity for the building to form a buffer against the south westerly coastal breeze and noise impact from the road.

Views from all sides of the site, opportunities to optimise building orientation on the site.

Developed cycling infrastructure.

Developed road infrastructure.

Clese proximity to Port Talbot Steelworks.



CONSTRAINTS

Site is split into two by the access road, which effectively creates two development sites.

Majority of the site in is a river and surface water flood zone.

Legend

Site Boundary

2.5 Interpretation

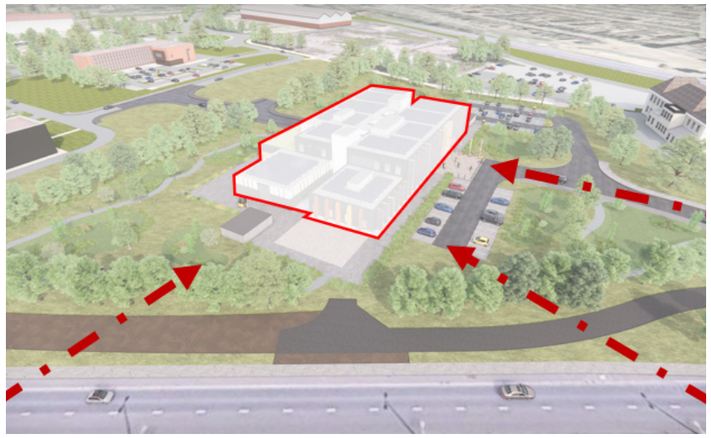
Site Interpretation

Site analysis interpretation and application in the context of the brief and the vision for the site.

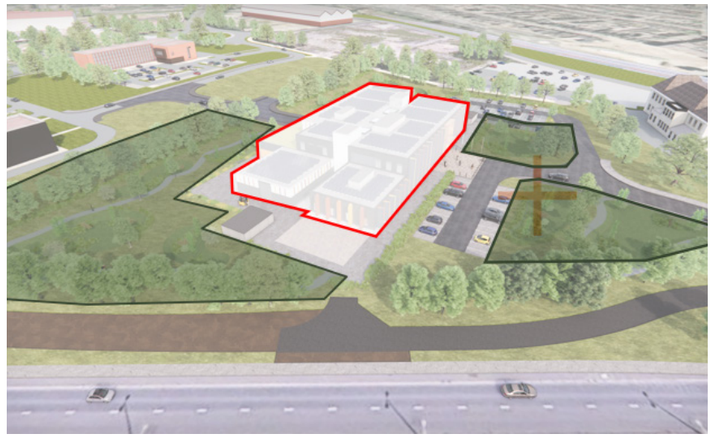
Our study of the site and its characteristics identified some key considerations when developing the site design. They were predominantly, the existing access road to and through the site, the civic elements of the listed magistrates court, the town centre and railway, site orientation, the adjacent road and finally the impact from potential flooding.



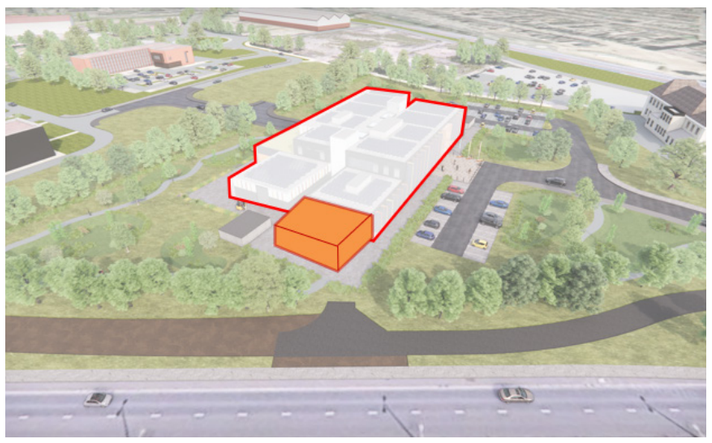
Site boundary



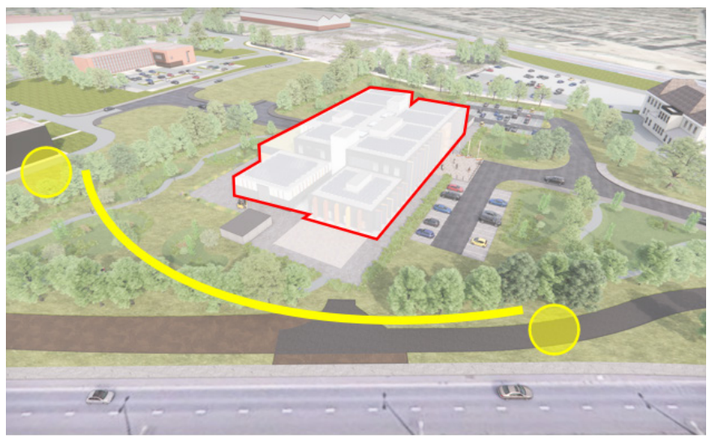
Views of the building from the road



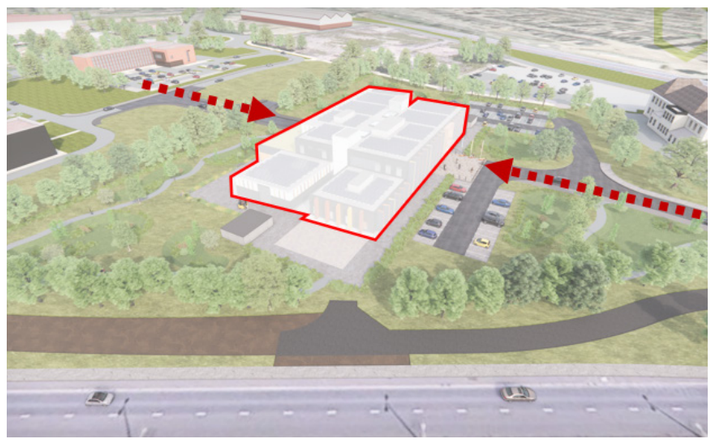
Landscape / Biodiversity / Flood mitigation



Future expansion potential



Orientation for solar energy gains



Site and building access

2.6 Relevant Planning Policy

Planning Policy Wales

The National Planning Policy is the determinig planning policy for the application in discussion, which is contained within the 12th Edition of the Planning Policy Wales (PPW) and the relevant Technical Advice Notes (TANs), alongside the Local Planning Policy.

The planning policy context for this application is provided in detail in the Planning Statement that accompanies this application. For a full review of pertinent policies please refer to the Planning Statement.

PPW is the Welsh Government's principal planning policy document, setting out the context for sustainable land use planning policy, within which Development Plans are prepared and development.

Section 3.17 of PPW relates to design and access statements (DAS) discussing that a DAS should communicate "what development is proposed, demonstrate the design process that has been undertaken and explains how the objectives of good design and placemaking have been considered from the outset of the development process."

Technical Advice Notes

The application has been prepared with consideration of Tan 12: Design, Tan 18: Transport and Tan 23: Economic Development. The suitability of the scheme is demonstrated through the design development and proposals.

Neath Port Talbot Local Development Plan

Neath Port Talbot's Adopted Local Development Plan (LDP) 2011-2026 identifies the site as a Strategic Regeneration Area (SRA1 & SRA2). Section 2.5.21 identifies the Harbourside for education and business uses including light industry. The SWITCH use responds directly to the strategy for the site identified in the LDP, bringing opportunities for economic growth and environmental regeneration.

Policy SRA 2: Harbourside Strategic Regeneration Area identifies the site as a development opportunity during phase 3 of the LDP's regeneration proposals.

Supplementary Planning Guidance

The following supplementary planning guidance are also relevant to the proposed development:

- Parking standards (October 2016)

- Pollution (October 2016)

- Design (July 2017)

- Renewable and Low Carbon Energy in New Development (July 2017)

- Biodiversity and Geodiversity (May 2018)

Section 3

Design Development

3.1 Approach to Site Development

A variety of site options were considered early in the process. Three approaches were developed that focused on varying orientations of the building on site. Two proposals experimented developing the existing plots north and south of the current access road. The third option considered the removal of the current access road and developing the site as one plot.

The whole site approach was preferred for a few reasons. The existing plot sizes were not sufficient to accommodate the building footprint, car parking and SuDS features and required space on the other plot to accommodate some of these elements. On that basis the preferred approach removes the through road and develops the whole site available.

Access

The 2 existing access points are to be maintained to offer a primary and secondary access to the site. The access to the west of the site will provide a deliveries and collections access only and maintains the main access to the east for all other purposes and the primary gateway to the facility.

Relationship to Civic

The building's main entrance and staff entrances have been positioned to be clearly visible and address the civic spaces to the Northeast of the site. The Northeast corner of the building contains the office spaces for staff, researchers and industry partners and looks back towards the train station, town centre and magistrates' court. This corner of the building along with main entrance are detailed to reflect this prominence.

Views into the Site

In addition to the prominence of the main entrance elevation and the North-East corner the building responds to the 360-degree views into the site. The Elevations to the South and West have their own opportunity to create interest, character, and identity appropriate to the context.

Massing and Orientation

The brief requirement and aspiration to develop an energy positive facility has directly influenced the massing and partly the building orientation. The footprint of the building has optimised floor to external area. The requirement for maximising roof mounted photovoltaic cells informed the decision to terrace the building with single storey elements to the south and stepping up to the north thereby negating overshadowing. The orientation of the building was established to respond to the grain of the wider harbourside site development as well as the existing entrances to the East and West and the Civic qualities to the North. Finally, the location of the building to the West places the building away from flood risk enabling the east of the site to be remodelled to mitigate this risk.

Biodiversity

The requirements of the SuDS Approving Body together with the brief to deliver spaces for staff and building user wellbeing are not insignificant. The remainder of the site not occupied by built form or hard landscaping provide opportunity to develop the site biodiversity, create buffers and deliver these key requirements of the brief and statutory bodies.

3.2 Site Options Study

Option 1 - List of Considerations:

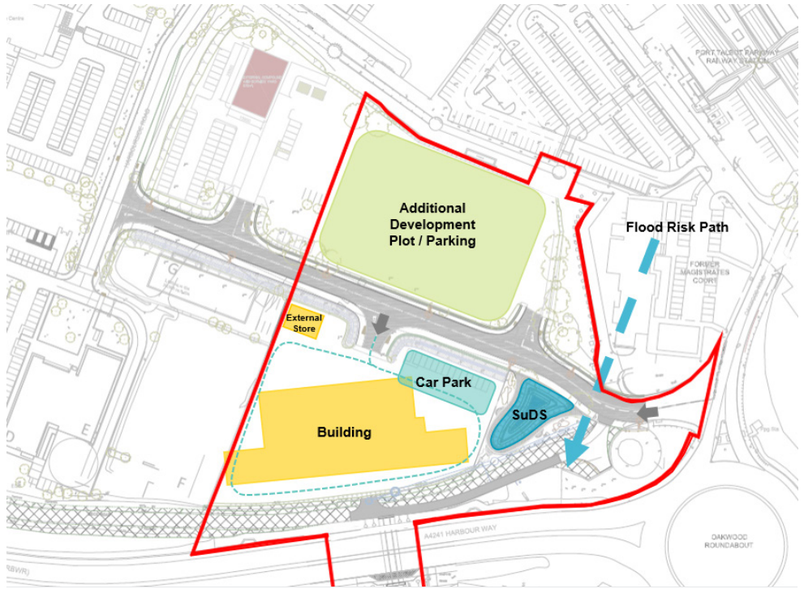
- Pilot/Workshop Length Requirements
- Maintains Future Development Plot
- Insufficient Car Parking
- Vehicular Tracking Clashes with Site and Proposed Building Footprint
- Lower Area of the Site with Flood Risk Path
- Limited Delivery Access to Pilot/Workshop Area of the Building
- Retains existing road network
- Limited space for expansion

Option 2 - List of Considerations:

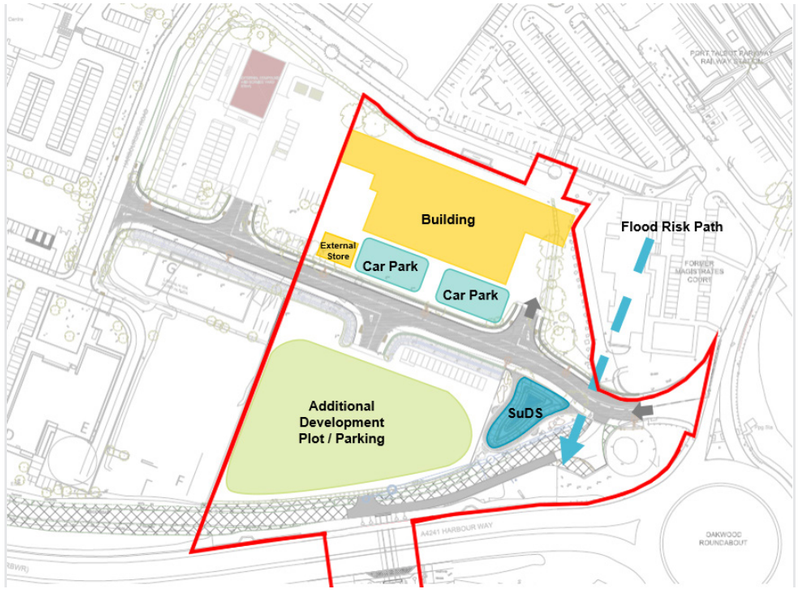
- Retains existing road network
- Maintains Future Development Plot
- Insufficient Car Parking
- Limited space for expansion
- Limited vehicular circulation around the building
- Limited Delivery Access to Pilot/Workshop Area of the Building
- Does not meet client requirement of being flagship building seen from arrival roads

Option 3 - List of Considerations:

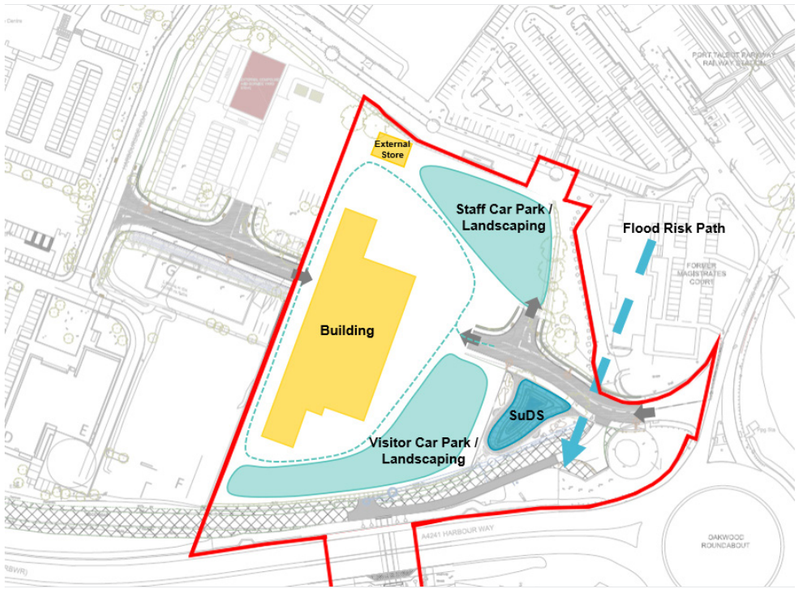
- Flood Risk / Consequences Assessment
- Adjacent Land Implications
- Opportunity for Expansion at both ends of the building
- Opportunity to Optimise Orientation for Energy Modelling
- Existing Road Network Removed
- Space to incorporate flood risk remediation
- Opportunities to enhance Landscape on the site
- Delivery Access available to Pilot/Workshop



Option 1 - South Site



Option 2 - North Site

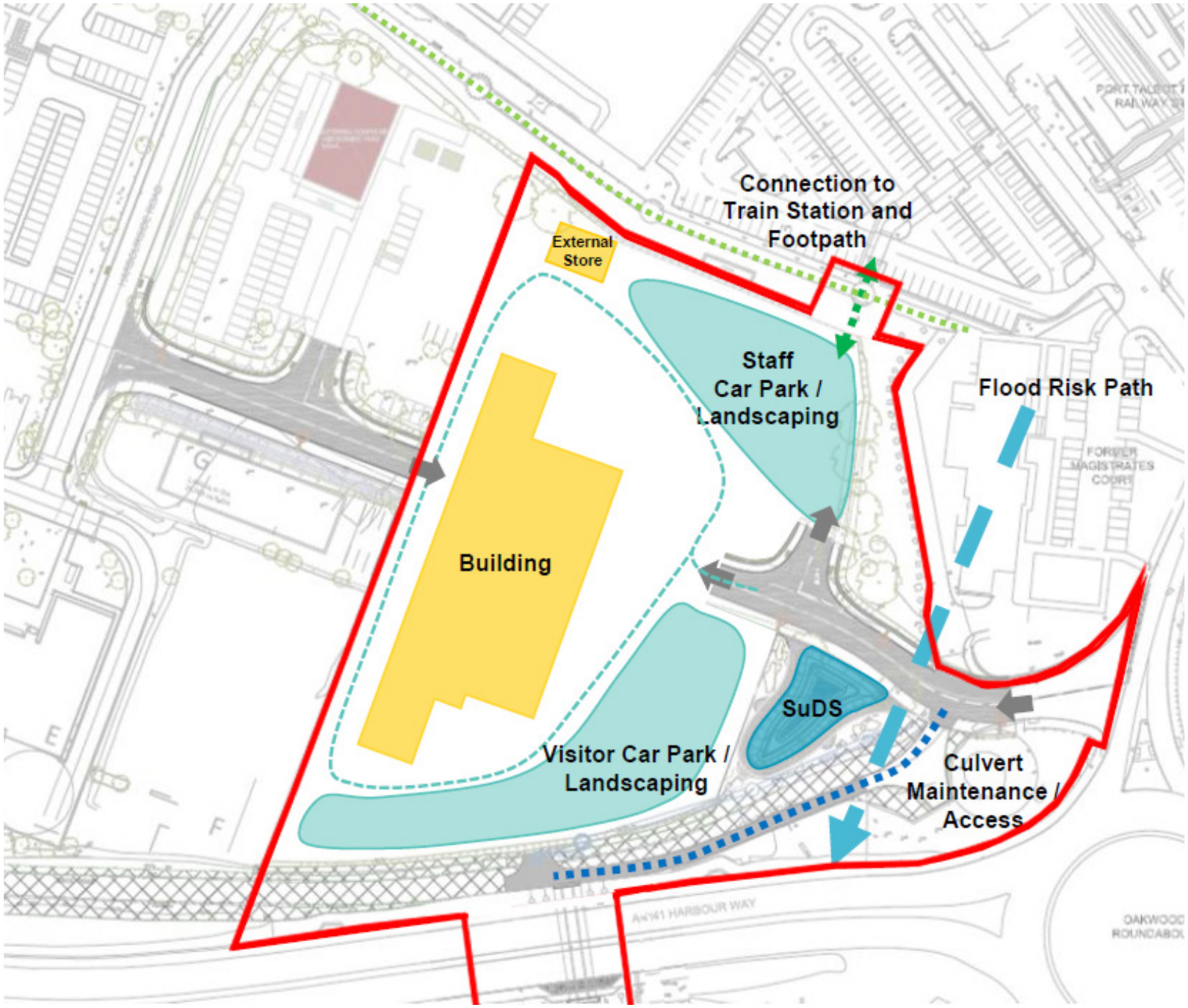


Option 3 - Whole Site

3.2 Site Options Study

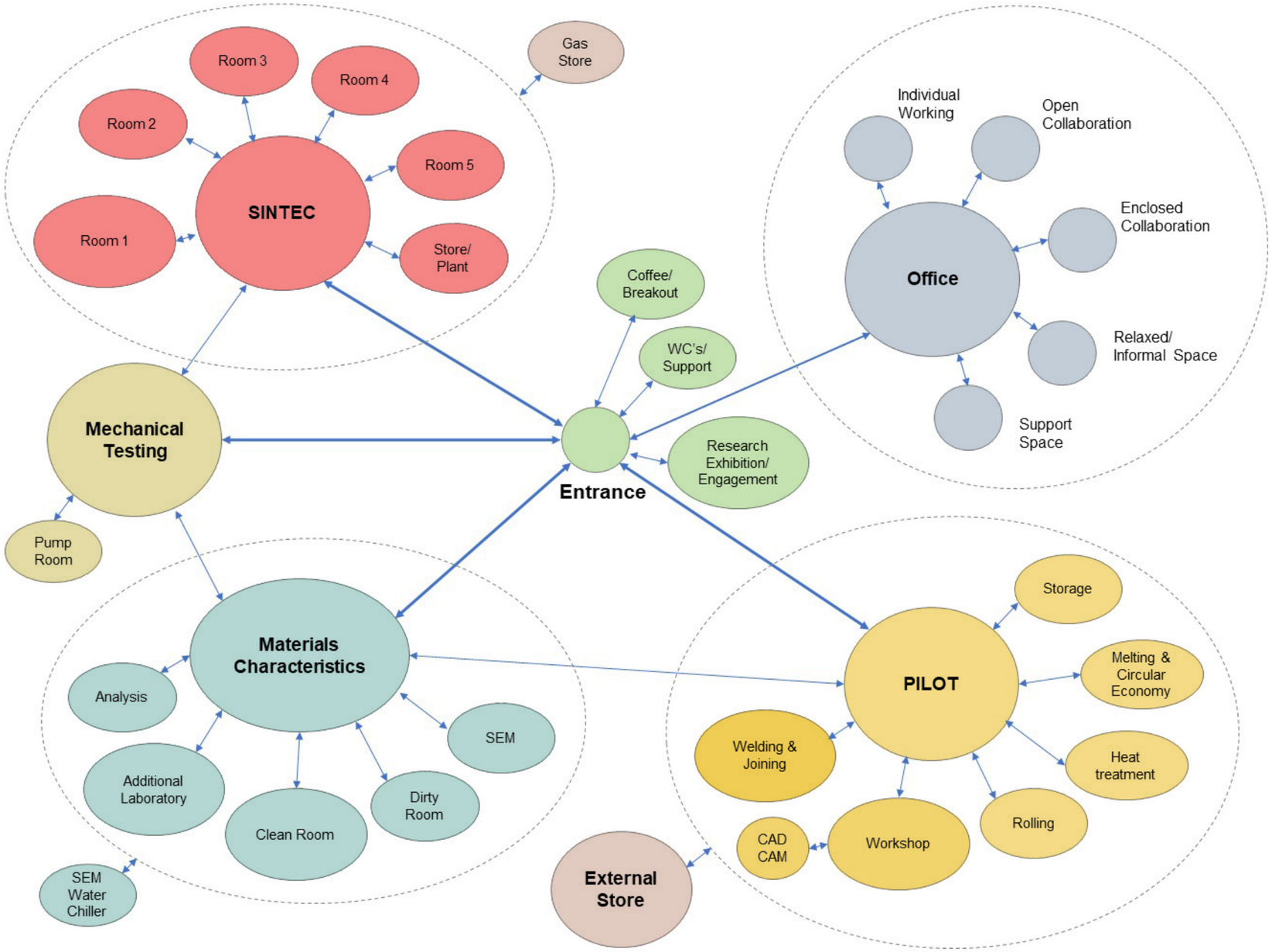
Chosen Option:

Option 3 has been chosen due to the specialist labratory accommodation required on the ground floor, which has created a footprint larger than the smaller sites offer when surporting amenities and hard landscaping are designed for parking, and movement around the building.



Prefered Option - Whole Site

3.3 Adjacencies



Adjacencies Diagram

3.4 Spatial Planning

The 5 zones within the project brief all have their own distinct identity. This is particularly the case for the Pilot, Workshop and Welding Zone. Due to the activities and processes being undertaken in these spaces, together with footprint required, this zone was key to the spatial planning. The result was an optimised linear flow between the 3 areas of the Zone and long almost continuous room with significant head room. It was paramount that this was located at ground floor for deliveries and movement of materials and loading of the structural slab.

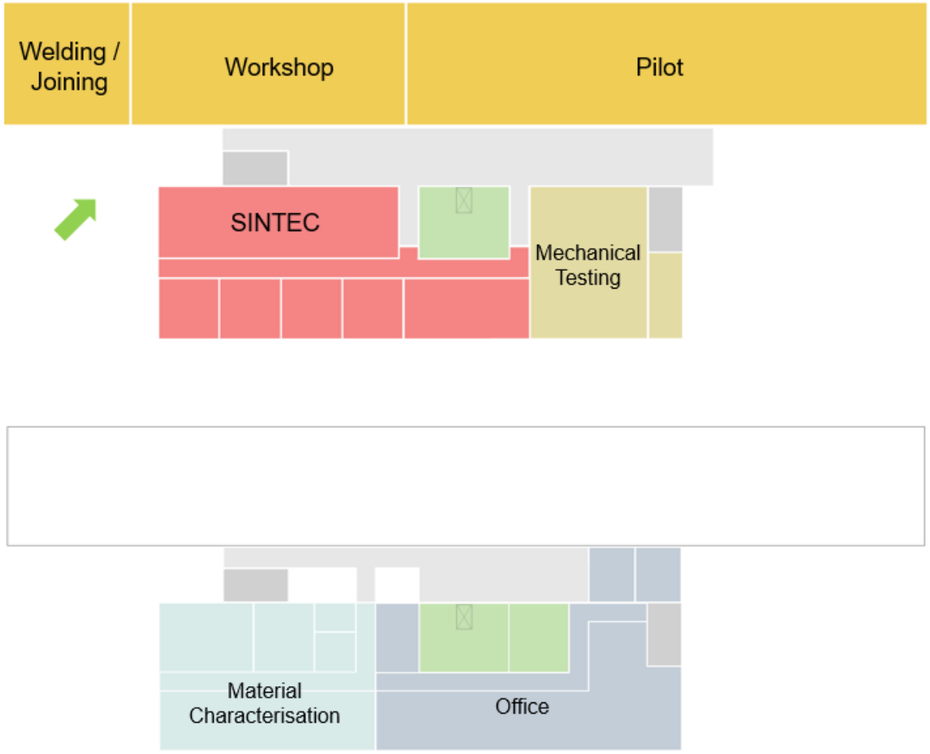
Also demanding ground floor presence was the SINTEC and Mechanical Testing Zones. This again due to slab loads and headroom required. In addition to this one of the rooms in SINTEC have 'blast potential' which is located at the southwest corner of the site and away from pedestrian or vehicular movement and has 2 external walls.

These 3 ground floor zones are stitched together by a 'T' shaped circulation area. This space is wider than typical circulation allowances to provide opportunity for reception and break out spaces for staff and industry partners. Within these circulation areas there is opportunity to showcase the research by providing glazing into the spaces. Natural light is brought into the ground floor by creating voids in the circulation above and bringing daylight down through the upper level.

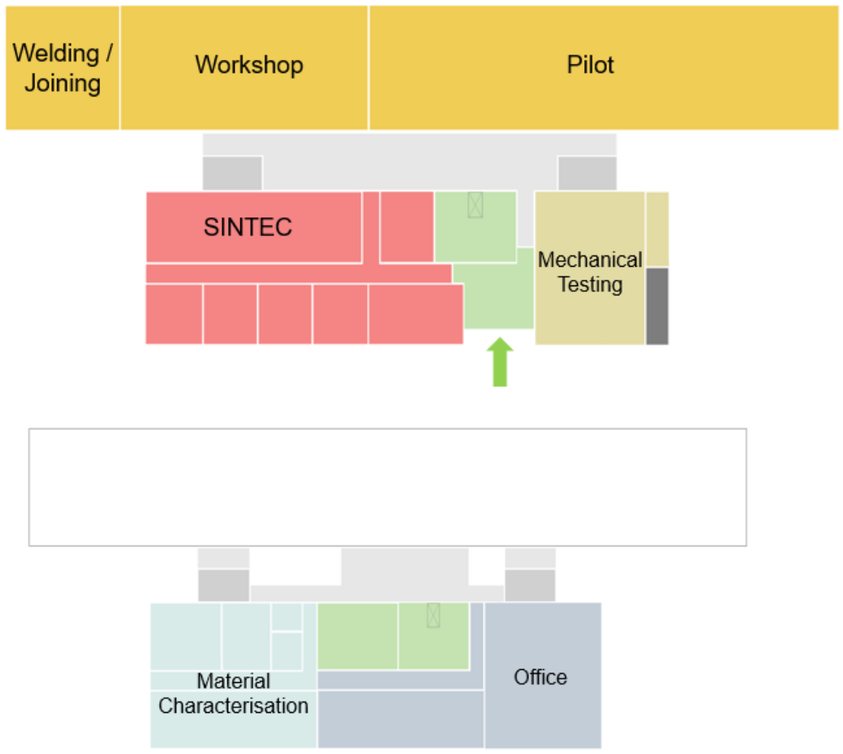
At either end of the North/South circulation zone are staircases for fire escape and rooftop access.

To create an efficient building and to minimise the floor to external wall ratio we worked closely with the client team to establish the zones that could be located at first floor. The Materials Characterisation and Office zones were both agreed to not be essential ground floor accommodation and adjustments made ensure this was possible. The SEM and Operational Staff Offices have both been located at ground floor and supported by close vertical circulation and a lift.

Plantrooms, roof top plant enclosures, communications rooms and risers have been placed in coordination with the services engineers.



Option 1



Option 2

3.5 Equipment Arrangement Exercise

To understand the requirements of the specialist equipment planned for the building, we undertook the following tasks to spatially test the layout of each space.

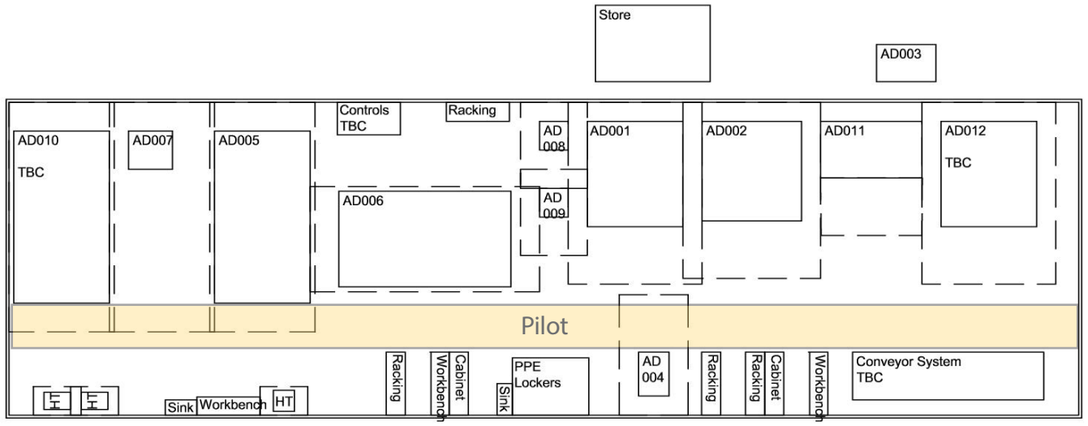
- Documenting the existing machinery at SaMI being transferred to the new build with photographs

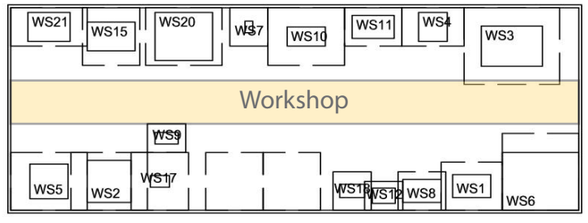
- Drawing the mass of each piece of equipment and the operating areas required

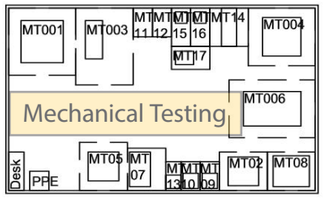
- Testing the Stakeholders proposed layouts against the allocated areas in the Schedule of Accommodation.

- Testing the layout of equipment against Forklift routes through Pilot, Workshop and Welding areas.

The exercise allowed us to understand the use of the spaces and find the information that we further required, which formed the list of questions for the users.







Equipment Questions

		Question
Pilot	1	Dimensions and operational dimensions for AD010
	2	Dimensions and operational dimensions for AD012
	3	Dimensions and operational dimensions for conveyor system
	4	Operational dimensions of AD007. Does this sit in the same operational area as AD005 & AD006?
	5	Are the designated racking and workbench areas to be in an open plan space? Or internal rooms off the Pilot space?
	6	When operational dimensions state Back and Side, does the equiptment require access both sides or just one?
	7	Is there an overall height requirement for the space?
	8	Clarification on Rapid Alloy Prototyping Requirement
Workshop	1	Dimensions and operational area for WS16
	2	Location of WS22 in the workflow of the Workshop
	3	Does the operational area include the equiptment or is It additional area to the equiptment?
	4	Does the CAD/CAM space require DDA Compliance? Can the space have a stepped access?
	5	Is there an overall height requirement for the space?
Welding & Joining	1	Adhesive Bonding separate room requirements and equiptment
	2	Fume extraction area size
	3	Dimensions for all equiptment - only zones currently shown
	4	Is there an overall height requirement for the space?
Mehanical Testing	1	Hydraulic pump and cooling enclosure dimension requirements
SINTEC Room 2	1	What are the dimension requirements for keep clear zone
	2	Is an Emergency Exit required on External Wall?
SINTEC Room 5	1	Material Processing equiptment dimensions and operational areas
Analysis Room	1	Dimension of MC22 Ultrasonic material tester
	2	Is there a required operational space?
	3	Is there an overall height requirement for the space?
Dirty Room	1	Size of Cutting Wheel?
	2	Size of Auto Grinder ?
	3	Is there a required operational space?
	4	Is there an overall height requirement for the space?
Clean Room	1	Is there a required operational space?
	2	Is there an overall height requirement for the space?
	3	Does the PC space just require a PC or further space around them?
SEM Room	1	MC18 SEM - Dimensions of equiptment, stated as "huge" in the equiptment schedule
	2	Is there a required operational space?
	3	Is there an overall height requirement for the space?
	4	Varying PC sizes, are these standard and require table top space around the PC?
General	1	Can Operational areas overlap? With adjacent equipment operating space and central access spine?
	2	When an Operational area is given, does the equipment sit central?
	3	Workflow of each area, where is the potential to adjust room sizes?
	4	Decision on the crane requirement for each space?

Section 4

The Proposal

4.1 Access and Maintenance

Site Access & Maintenance

Public transport routes are available to this site upon which the site proposal utilises to encourage this mode of transport to and from the site. Pedestrain acccess to the main entrance of the building is connected from the public footpath and Port Talbot Parkway Station.

The site is surrounded by existing pedestrian and cycle routes that allow the node of connection into the site to be utilised for active travel which is encouraged by Neath Port Talbot. Bike stores are available within the design and showers provided on the ground floor of the building to encourage access to users through this means.

The site has specific features designed for users access and maintenanence of the site and external building, these include:

- Hard standing access around the site for building use and maintenance

- Vehicular access for deliveries and movement of materials around the building

- Parking provision segregated on site with consideration of user building entrance locations. Staff parking located by a Staff entrance within the Atrium Stair Core. Visitor parking located in front of the main entrance.

- Level access parthway around the building extents

- Suitable split of Disabled Parking, EV Charging and Able Parking bays provided.

Building Access

The Access points for the building have been designed to create a formal entrance to the building for greeting visitors, and a secondary more functional entrance for staff who are aquainted witht eh building already.

An inclusive experience has been designed for disabled users with vertical access via a lift within the main entrance atrium space, and horizontal access throughout the building via level thresholds. Internal stairs, corridors and doors have been designed to Part M of the building regulations with refuge locations provided on general access floors within the building and adequate sanitary provision on all floors. As part of the entrances arrangement, push button access for wheelchair use has been designed.

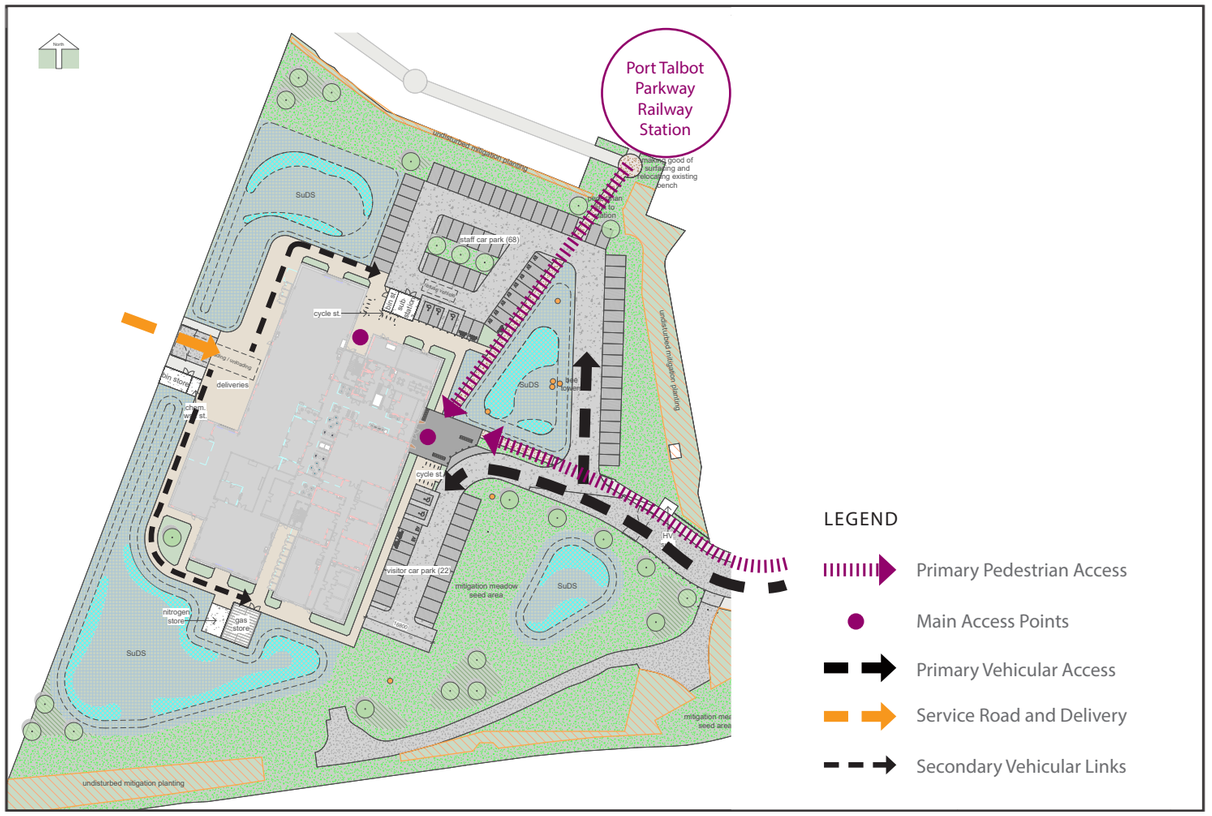
Building Maintenance

Maintenance of the building has been designed with access to the roof levels via the main stair core, via the first floor atrium and secondary cat ladders for escape provision.

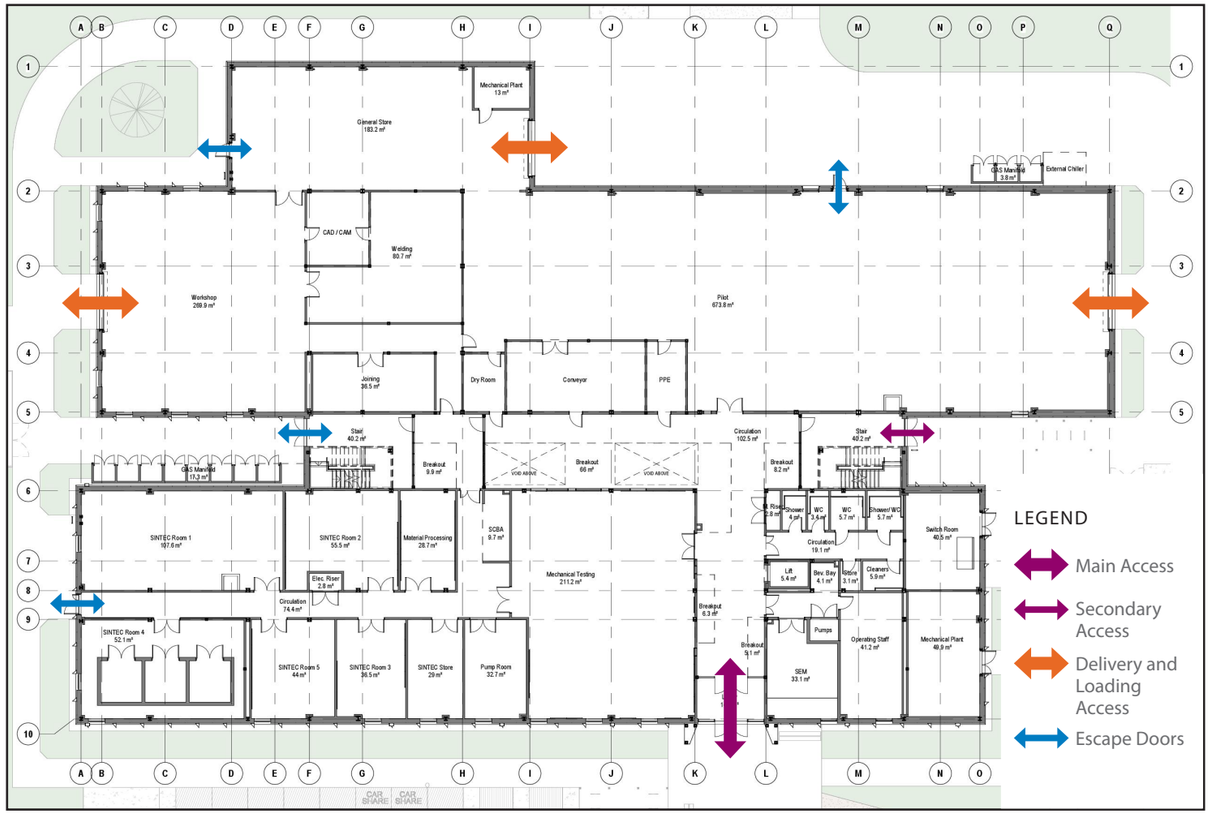
Additional consideration for roof maintenance access includes:

- Plant screens on the roof to allow the majority of maintenance to be completed within an enclosed safety zone.

- Mansafe system to the remainder of the roof for maintenance of roof and facade mounted PV panels.



Access Strategy - Site Plan



Access Strategy - Ground Floor Plan

4.2 Use & Layout

The SWITCH proposal includes varied uses within the buidling. The specialist research and processes required for the research undertaken within the building is specific in layout and adjacencies.

Labratory spaces include:

- Pilot, Workshop, Welding & Joining

- Simulation and Integrity Testing in Extreme Conditions

- Mechanical Testing

- Materials Characterisation

Office Accommodation includes:

- Open Plan Offices

- Meeting Rooms

- Breakout Space

To understand the layout adjacencies for the building, several workshops were held with Swansea University to understand the required spaces. User group meetings were held with each department to ensure the proposed design meets their needs.

A key design requirement included the need for labratory spaces on the ground floor. To achieve this, accommodation able to stack above the labratory space was identified, which determined the overall building footprint. Due to the equipment size, the majority of Material Characterisation and the Offices spaces were designed on the First Floor.

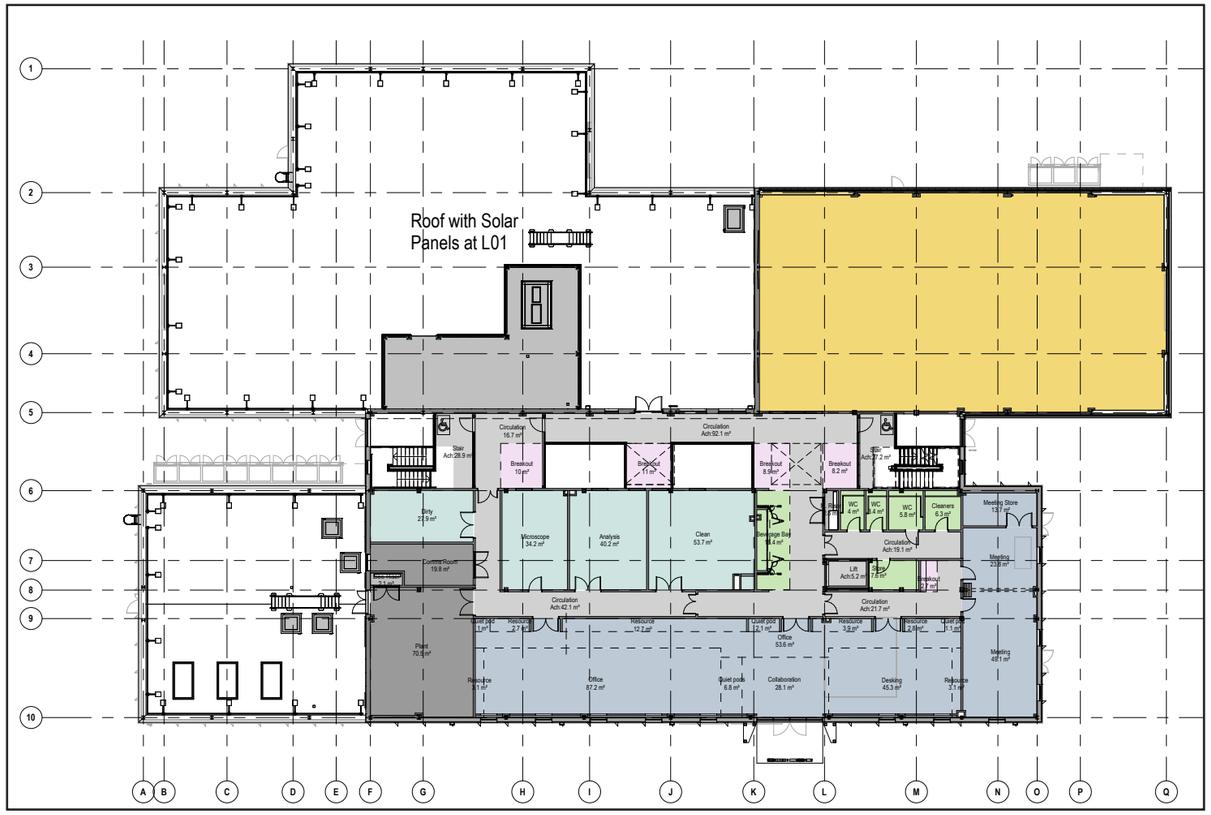
The breakout spaces within the atrium at Ground and First floor, create flexible working environments for varied working styles. This concept was designed to create greater experience into the collaborative working model. Allowing flexibility in this space creates room for adaptable layouts which can accommodate exhibition or event space when required.

DEPARTMENT:

- Amenities
- Breakout / collaboration
- Circulation
- External Store
- Material Characterisation
- Mechanical Testing Lab
- Office
- Pilot, Workshop, Welding & Joining
- Plant
- SINTEC
- User Plant



Ground Floor Plan



First Floor Plan

4.3 Landscape Strategy

Landscape and Vision Strategy

The restoration of brownfield sites is an opportunity to create contrast, interest and sense of place.

There are many examples of how old industrial sites and places of industry have been rejuvenated by sympathetic landscape design.

By championing local, context driven landscape it can reinstate lost habitat, create new open green spaces and strengthen a local sense of identity.

The following pages look at the landscape strategy, the character of the site and the opportunities to create a new sustainable setting to the SWITCH building at Harbourside, Port Talbot

Open Mosaic Habitat

The Neath Port Talbot Local Nature Partnership (NPT LNP)

Reinstating the native landscape character.

Inspired by Crymlyn Burrows SSSI at the Bay Campus.



New native woodland planting



New SUD's floodplain meadows



New wildflower margins



4.3 Landscape Strategy

Landscape and Vision Strategy

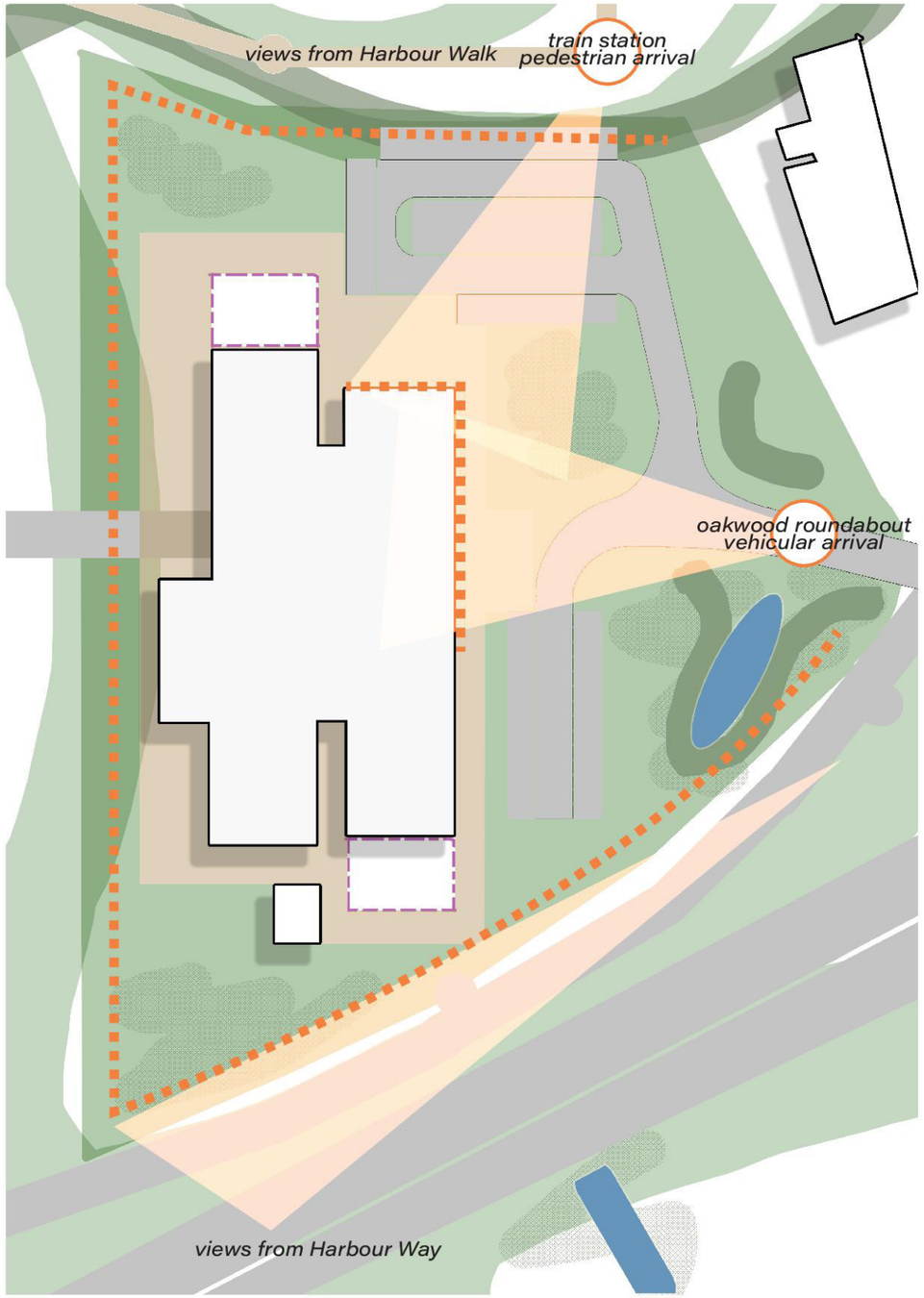
The site has views from nearly all its boundaries, creating a gateway site. Some views are connected to key access routes, as shown below:



View south from the train station

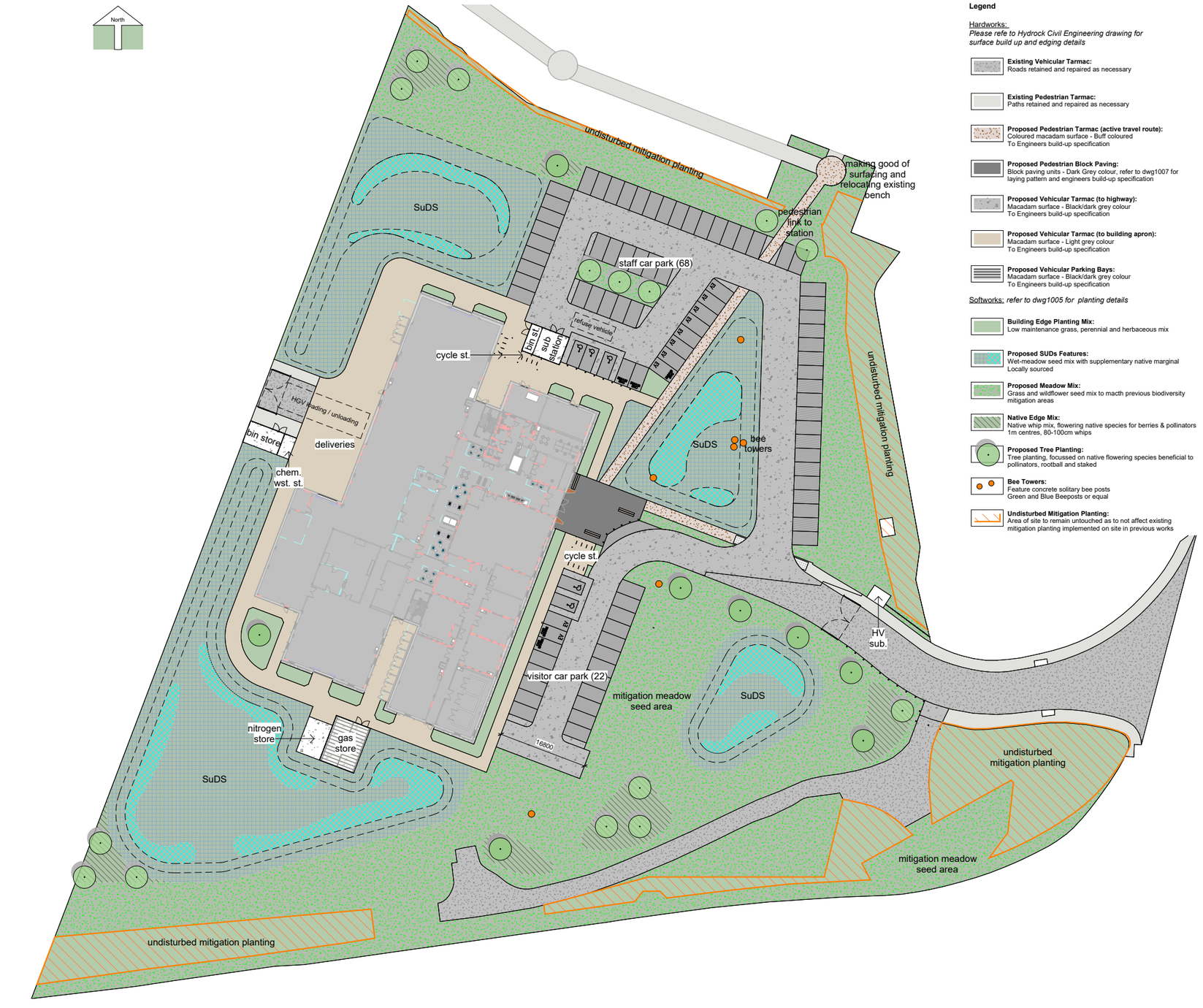


View west



Initial site concept diagram

4.3 Site Plan



Legend

Hardworks:
Please refe to Hydrock Civil Engineering drawing for surface build up and edging details

- **Existing Vehicular Tarmac:** Roads retained and repaired as necessary
- **Existing Pedestrian Tarmac:** Paths retained and repaired as necessary
- **Proposed Pedestrian Tarmac (active travel route):** Coloured macadam surface - Buff coloured To Engineers build-up specification
- **Proposed Pedestrian Block Paving:** Block paving units - Dark Grey colour, refer to dwg1007 for laying pattern and engineers build-up specification
- **Proposed Vehicular Tarmac (to highway):** Macadam surface - Black/dark grey colour To Engineers build-up specification
- **Proposed Vehicular Tarmac (to building apron):** Macadam surface - Light grey colour To Engineers build-up specification
- **Proposed Vehicular Parking Bays:** Macadam surface - Black/dark grey colour To Engineers build-up specification

Softworks: *refer to dwg1005 for planting details*

- **Building Edge Planting Mix:** Low maintenance grass, perennial and herbaceous mix
- **Proposed SUDs Features:** Wet-meadow seed mix with supplementary native marginal Locally sourced
- **Proposed Meadow Mix:** Grass and wildflower seed mix to macth previous biodiversity mitigation areas
- **Native Edge Mix:** Native whip mix, flowering native species for berries & pollinators 1m centres, 80-100cm whips
- **Proposed Tree Planting:** Tree planting, focussed on native flowering species beneficial to pollinators, rootball and staked
- **Bee Towers:** Feature concrete solitary bee posts Green and Blue Beeposts or equal
- **Undisturbed Mitigation Planting:** Area of site to remain untouched as to not affect existing mitigation planting implemented on site in previous works

Proposed Site Plan (Prepared by Fenton + Reece)

4.4 Character

The proposal responds to the character of the site and surrounding context while maintaining the purpose of the build. The prupose of SWITCH is to create a research and testing facility in which collaboration between Swansea University and relevant industry partners can participate. The locality to the Port Talbot Steel Works and expression of steel within the design highlights the relevance of the work being completed in the building. Additionally to the expression of steel within the building materiality, the decarbonising vision for the research being carried out continues with the base build of Net Zero Carbon Targets, expressed through the extent of Roof anf Facade mounted PV panels to achieve these targets.

- Net Zero Carbon Base Build with BREEAM Excellent design targets

- Materiality of the proposal responds to the Steel Industry connections as a building to showcase steel design capabilities.

- Utalisation of South and West Facing Facades for mounted PV

- Exposed Steel Structure through translucent materials used wihtin the design

- Vertical Metal Fin features break up the Horizontality of the building and create a flagship building for the site.

- Colour palette and materiality that responds to adjacent buildings, but maintains a unique point of interest for the SWITCH proposal.

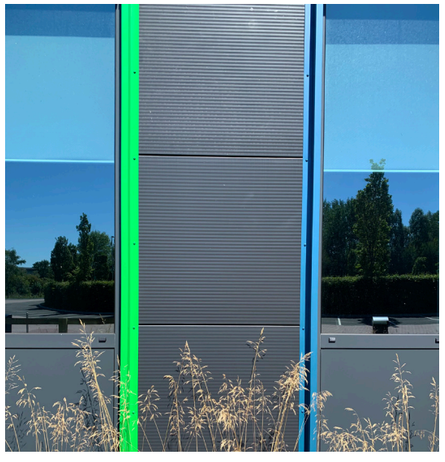
Key Design Characteristics:



Ground Floor Plan

Material Palette

Dark Coloured Metal Cladding



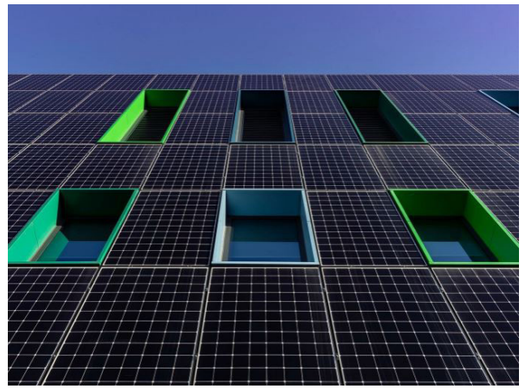
Louvre Panels



Translucent Building Element



Facade and Roof Mounted PV



4.5 Form, Massing & Materiality



4.5 Form, Massing & Materiality



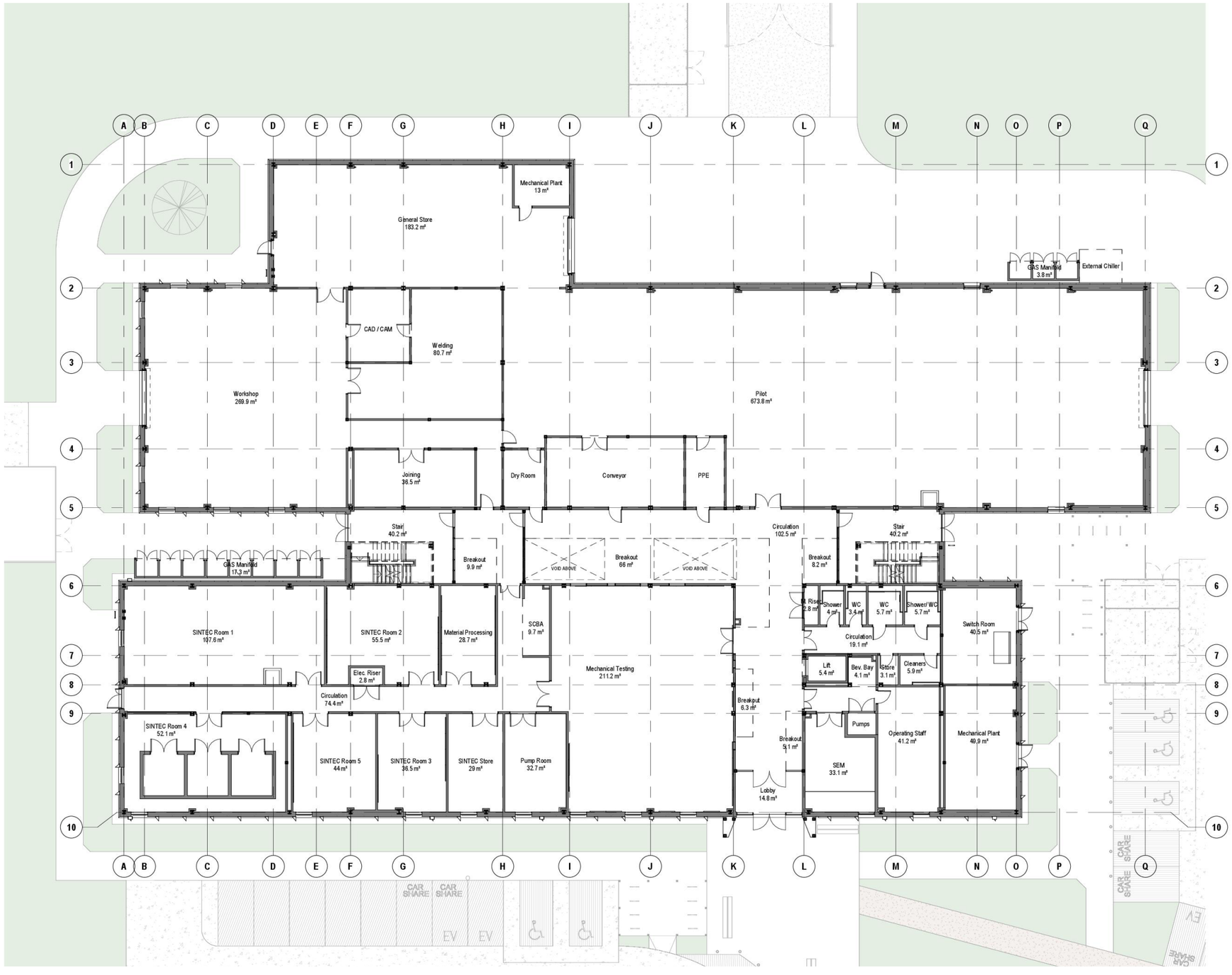
4.5 Form, Massing & Materiality



4.5 Form, Massing & Materiality

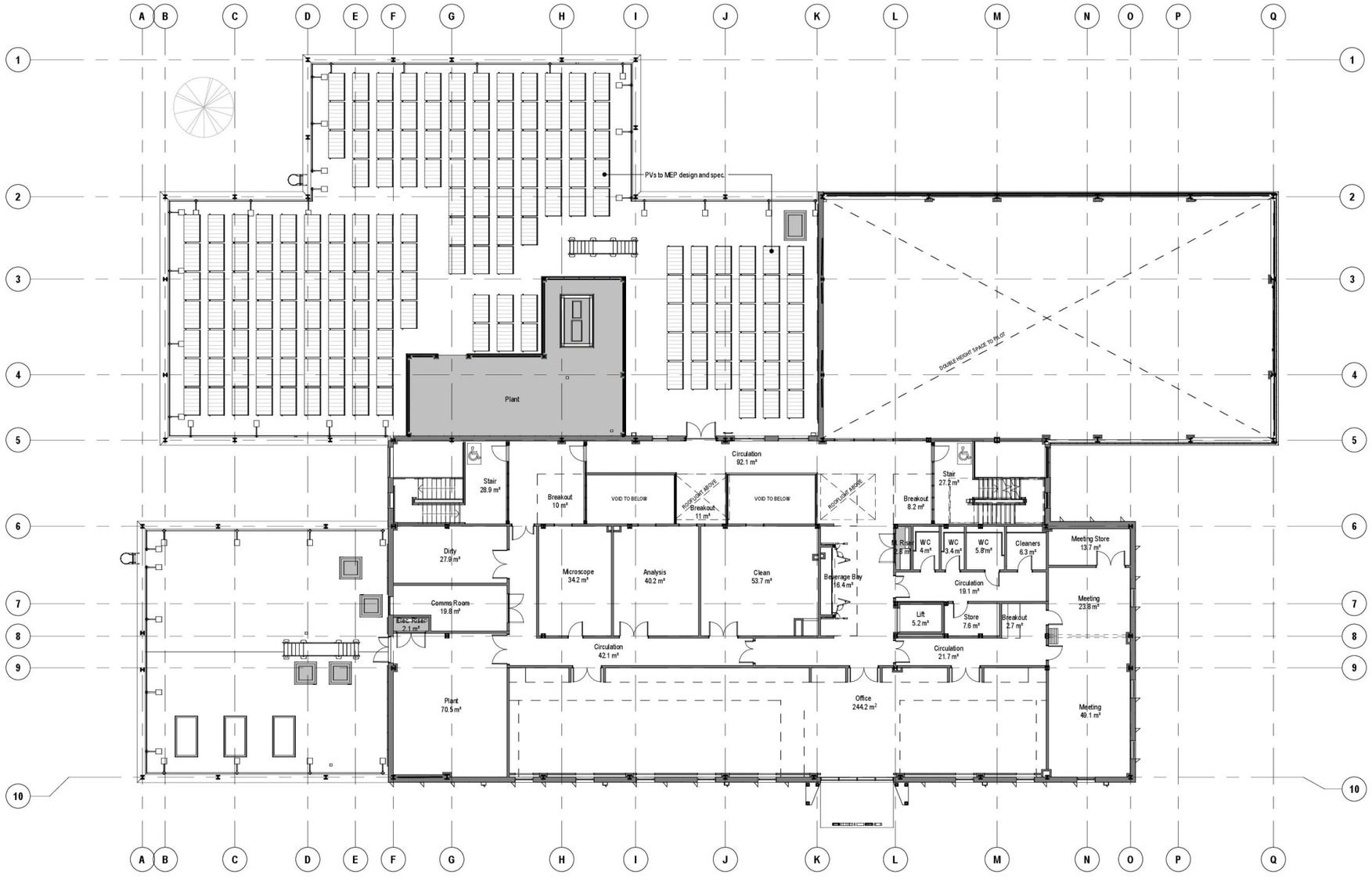


4.6 Plans



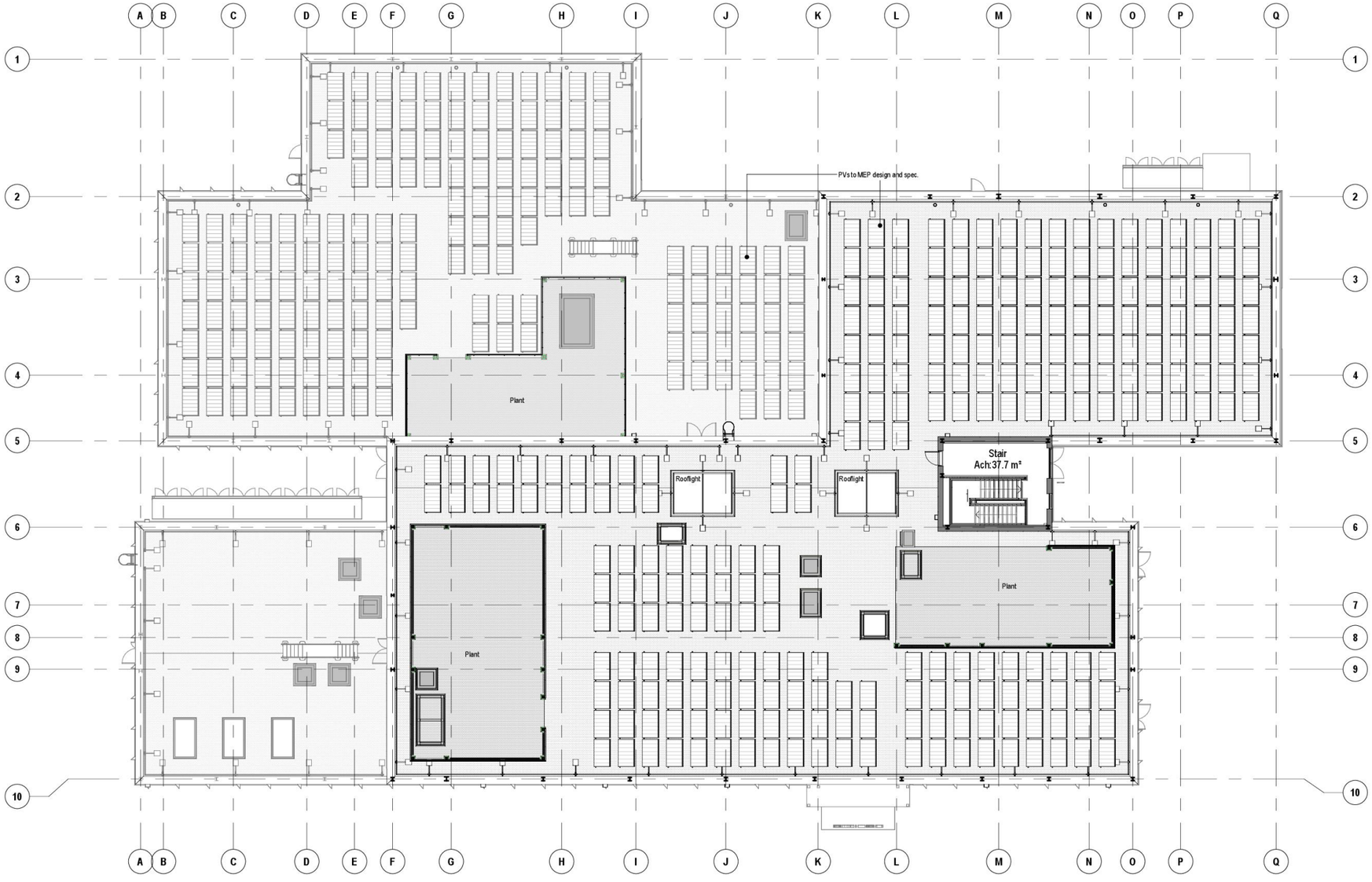
GA Plan - Level 00

4.6 Plans



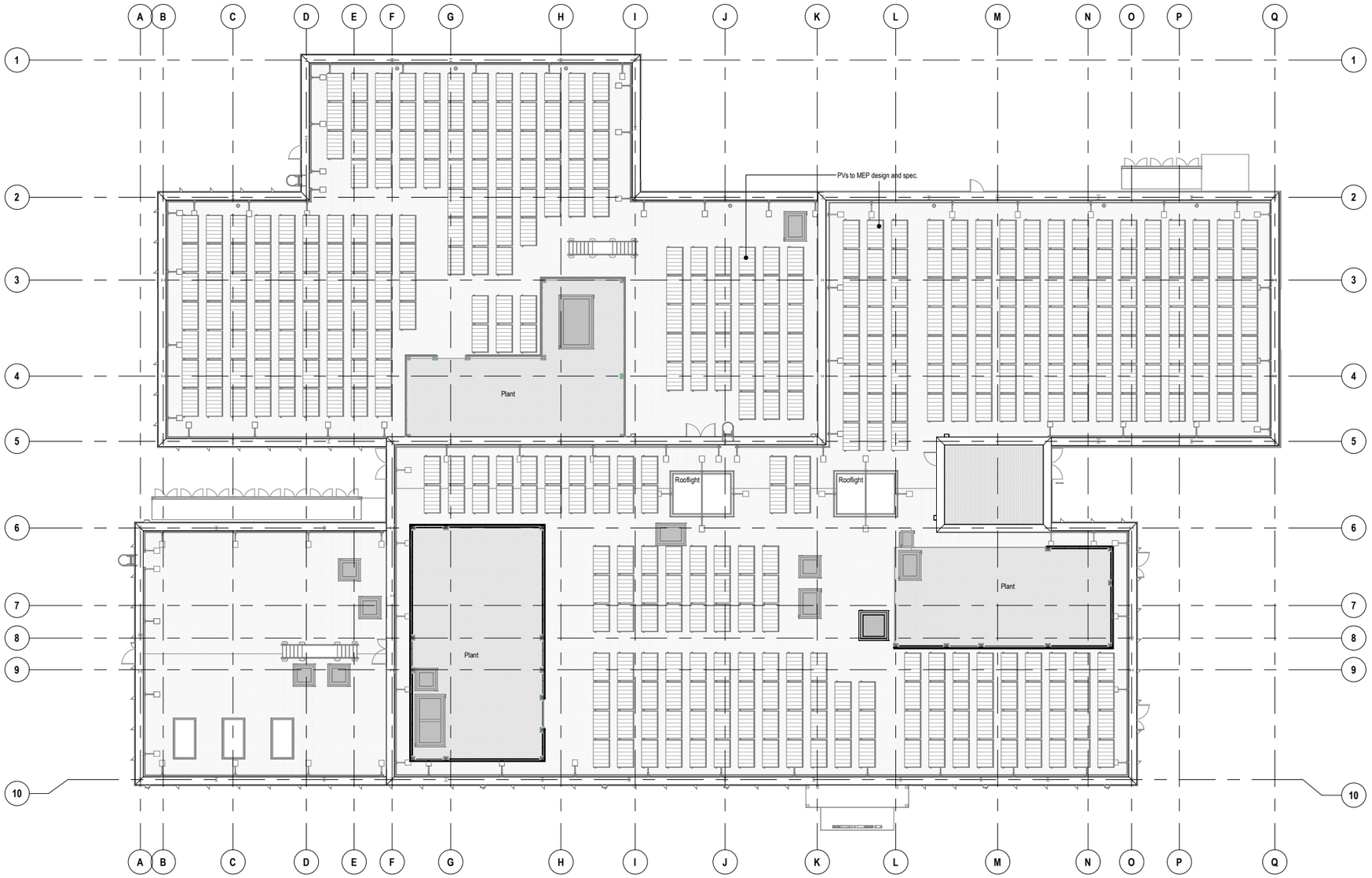
GA Plan - Level 01

4.6 Plans



GA Plan - Level 02

4.6 Plans



GA Plan - Roof Level

4.7 Concept Elevations



East Elevation

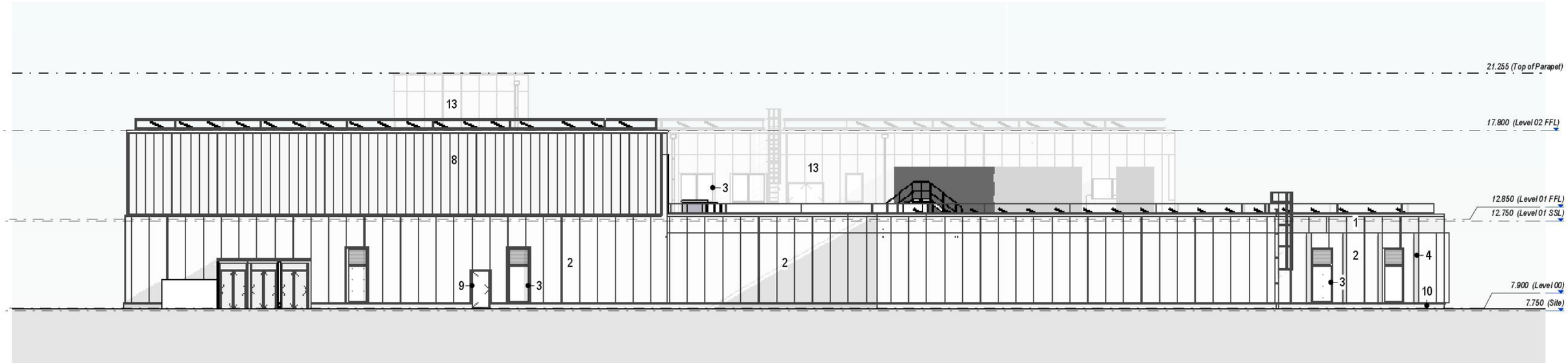


South Elevation

Material Key

1. Vertical metal cladding panels, ribbed texture, dark in colour. (Refer to 3D images for indicative finish and spacing)
2. Vertical metal cladding panels, panelled texture, dark in colour. (Refer to 3D images for indicative finish and spacing)
3. Polyester Powder Coated aluminium window frames and curtain walling, dark colour, final RAL to be confirmed. Include for glazed, blanking or louvred panels. (Refer to 3D images for indicative finish and spacing).
4. Folded Metal Feature Fins, multicoloured, final RAL's to be confirmed. (Refer to 3D images for indicative finish and spacing).
5. Folded Metal Entrance Surround and Canopy, final RAL to be confirmed.
6. Louvred Plant Screen. RAL to be confirmed.
7. Facade mounted PV panels, fixed to external wall panels, fixed to structure. (Refer to 3D images for indicative finish and spacing).
8. Translucent Cladding. Final finish to be confirmed. (Refer to 3D images for indicative finish and spacing).
9. Polyester Powder Coated Aluminium door frames, dark colour, final RAL to be confirmed. Include for glazed or louvred panels. (Refer to 3D images for indicative finish and spacing).
10. Brick plinth, stretcher bond, colour to be confirmed.
11. Vertical hit and miss treated timber cladding, dark in colour, colour to be confirmed. Timber structure support to be exposed.
12. Louvre Panel, dark colour, RAL to be confirmed.
13. Vertical metal cladding panels, ribbed texture, light in colour. (Refer to 3D images for indicative finish and spacing)

4.7 Concept Elevations



West Elevation

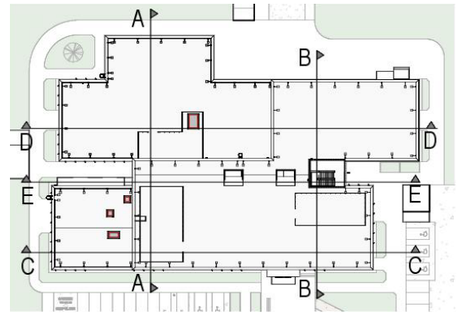


North Elevation

Material Key

1. Vertical metal cladding panels, ribbed texture, dark in colour. (Refer to 3D images for indicative finish and spacing)
2. Vertical metal cladding panels, panelled texture, dark in colour. (Refer to 3D images for indicative finish and spacing)
3. Polyester Powder Coated aluminium window frames and curtain walling, dark colour, final RAL to be confirmed. Include for glazed, blanking or louvred panels. (Refer to 3D images for indicative finish and spacing).
4. Folded Metal Feature Fins, multicoloured, final RAL's to be confirmed. (Refer to 3D images for indicative finish and spacing).
5. Folded Metal Entrance Surround and Canopy, final RAL to be confirmed.
6. Louvred Plant Screen. RAL to be confirmed.
7. Facade mounted PV panels, fixed to external wall panels, fixed to structure. (Refer to 3D images for indicative finish and spacing).
8. Translucent Cladding. Final finish to be confirmed. (Refer to 3D images for indicative finish and spacing).
9. Polyester Powder Coated Aluminium door frames, dark colour, final RAL to be confirmed. Include for glazed or louvred panels. (Refer to 3D images for indicative finish and spacing).
10. Brick plinth, stretcher bond, colour to be confirmed.
11. Vertical hit and miss treated timber cladding, dark in colour, colour to be confirmed. Timber structure support to be exposed.
12. Louvre Panel, dark colour, RAL to be confirmed.
13. Vertical metal cladding panels, ribbed texture, light in colour. (Refe to 3D images for indicative finish and spacing)

4.8 Concept Sections



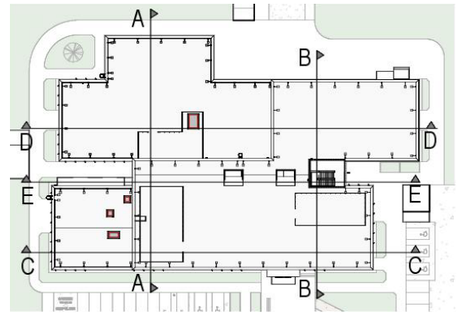


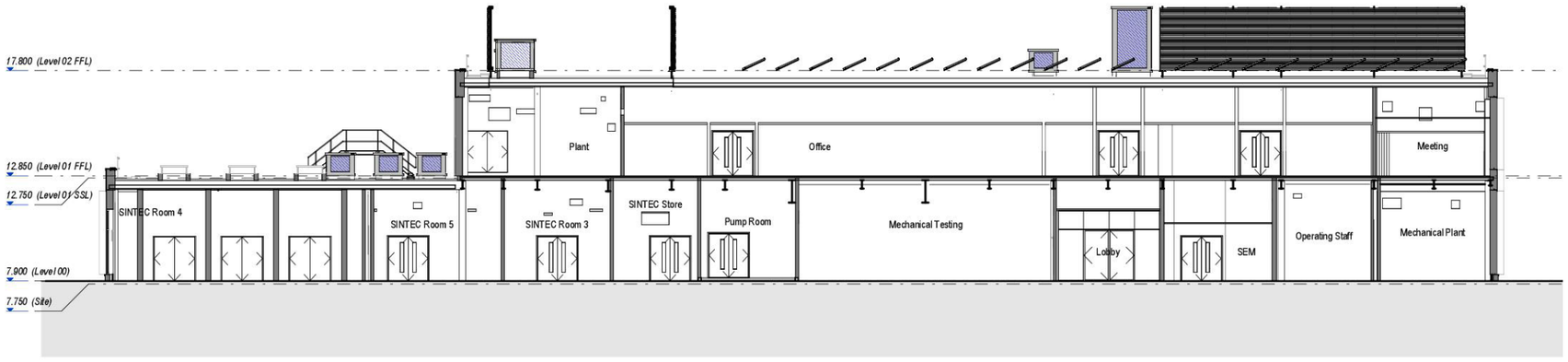
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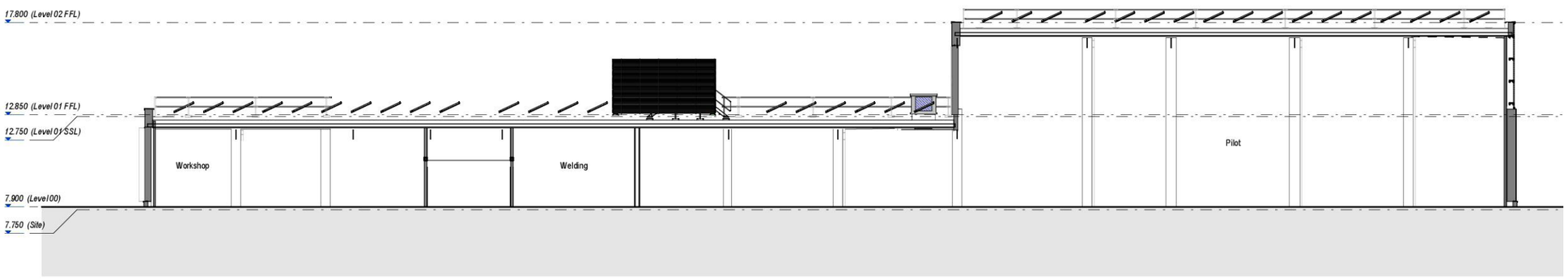
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4.8 Concept Sections



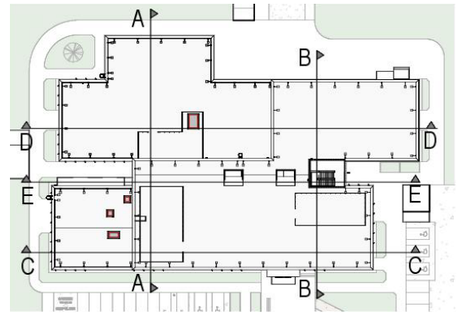


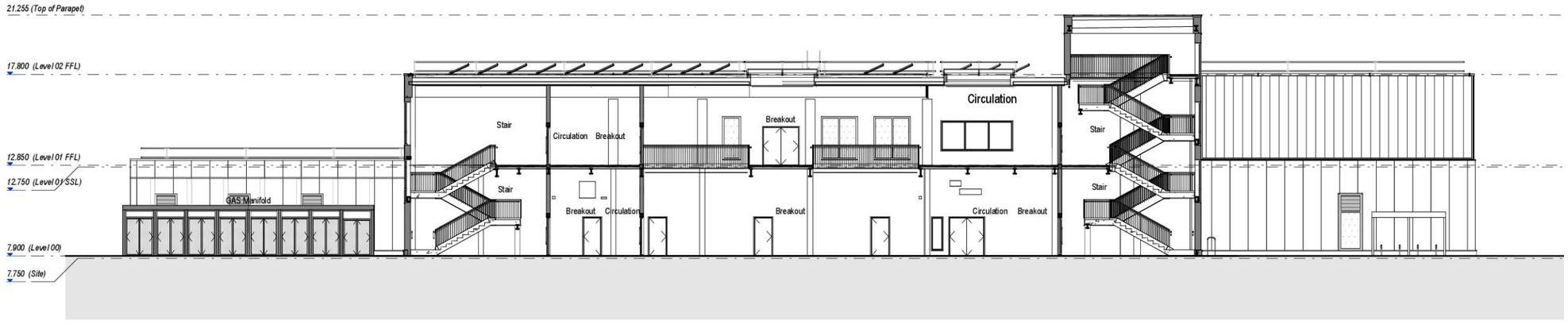
Section CC



Section DD

4.8 Concept Sections





Section EE