Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

UWTSD Phase 1
Stage 3 Report

Prepared / Collated for University of Wales Trinity Saint David by Stride Treglown Limited
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SA1 Waterfront Innovation Quarter

UWTSD Phase 1

Stage 3 Report

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Prifysgol Cymru
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University of Wales
Trinity Saint David

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Swansea waterfront innovation quarter: vision statement

Transforming Education.. Transforming Lives

The opportunity to develop the Swansea Waterfront Innovation Quarter was identified in October 2013, secured during 2014, and, on 27th January 2015, the University concluded that the new estate should include activities currently located at Townhill, Mount Pleasant and Swansea Business Campus.

The development of the SA1 Waterfront Innovation Quarter will support the University's aim to inspire individuals and develop reflective graduates and practitioners who can make a difference in society. It will enhance the aim of the University to have an equally important role in advocating global citizenship and education for sustainable development.

The Swansea Waterfront Innovation Quarter will be situated in a vibrant, modern waterfront location with easy access to the city centre.

The intention will be to establish purpose-built facilities for learning, teaching and applied research as well as social, leisure and recreation space. As a University focussed upon sustainability, buildings will be designed and constructed in a visually pleasing and sustainable way, with green spaces being developed to create an inspiring social environment for students, staff and the wider community.

The development will combine UWTSD's existing presence in SA1 with Cyprium and the two Technium buildings, which are currently used for commercial purposes, and will be connected to the City's Cultural Quarter at Alexandra Road through the Dylan Thomas Centre situated at the heart of the City centre.

Delivering the vision will be developed through the University's unique partnership with the Welsh Government.

The aim of the partnership with the Welsh Government is to further define Swansea as an Innovation City through establishing a range of impact hubs in identified priority areas to deliver clear economic and commercial benefits and create a critical mass of expertise that can attract new companies, partnerships and investment. It will also build an integrated innovation and enterprise system that facilitates the transfer of knowledge and collaboration between industry and academia. It will bring worldwide best practice to Wales to link with, or complement the best of, Welsh creativity and innovation, thereby playing a major role in the regeneration of the City and the Swansea Bay City Region.

In addition, the Partnership will assist the University to fulfil its core mission of improving access to higher education and skills development that is relevant to local communities and employers; facilitating graduate employability, and ensuring that Higher Education and training provided by UWTSD contributes to the economic regeneration of the Swansea Bay City Region.

1.1 introduction...

Phase 1 Reserved Matters

The University of Wales Trinity Saint David (hereafter referred to as "UWTSD") has appointed Stride Treglown Limited to coordinate a multi-disciplinary team and provide Town Planning and Design services in respect to the first phase of development of the "Swansea Waterfront Innovation Quarter".

This Stage 3 report is prepared in support of a reserved matters planning submission following granting of the Section 73 planning application 2015/1584.

Reference is made to the Design & Development Framework Part 1 - Planning Design and Access Statement (Rev 2) and Design and Development Framework Part 2 - Design Code (Rev 5) that accompanied the 2015 Section 73 application.

Project Overview

The redevelopment and regeneration of the SA1 waterfront is seen as an opportunity to deliver positive and lasting impacts across a wide range of academic and development sectors, consistent with the Welsh Government's priorities, and the City and County of Swansea's emerging regeneration plans for the City.

The first phase of the development focuses on part of the Peninsula where the construction of the Library and the Faculty of Architecture, Computing and Engineering (FACE) and associated central teaching and faculty space is proposed.

The Library is part of Trinity Quarter, the heart of the SA1 peninsula and the focus for the academic uses associated with the University. FACE is contained in the Dockside, which forms the eastern face of Trinity Quarter bounded by Prince's Street. Its northern side fronts onto King's Road and its eastern side faces onto the former dry dock forming part of the existing tidal basin.

The project will therefore move all of the activities of the Faculty of Architecture, Computing and Engineering and part of the School of Digital Media down to SA1, vacating all academic activity from the Mount Pleasant campus.

This Stage 3 report sets out the design and access considerations that have shaped the proposals and includes the relevant legislative, technical and town planning background and justification to support the reserved matters submission.

Social and Economic Context

The Swansea Waterfront Innovation Quarter will deliver a programme of phased academic (operational) and privately funded commercial, residential and quasi-leisure (retail) construction projects to support the growth aspirations of the University and the newly created expansion of the Central Business District in which it will be located. The proposals seek to not only redress current academic accommodation deficiencies, but also to meet modest increases in student and staff projections over the masterplan period.

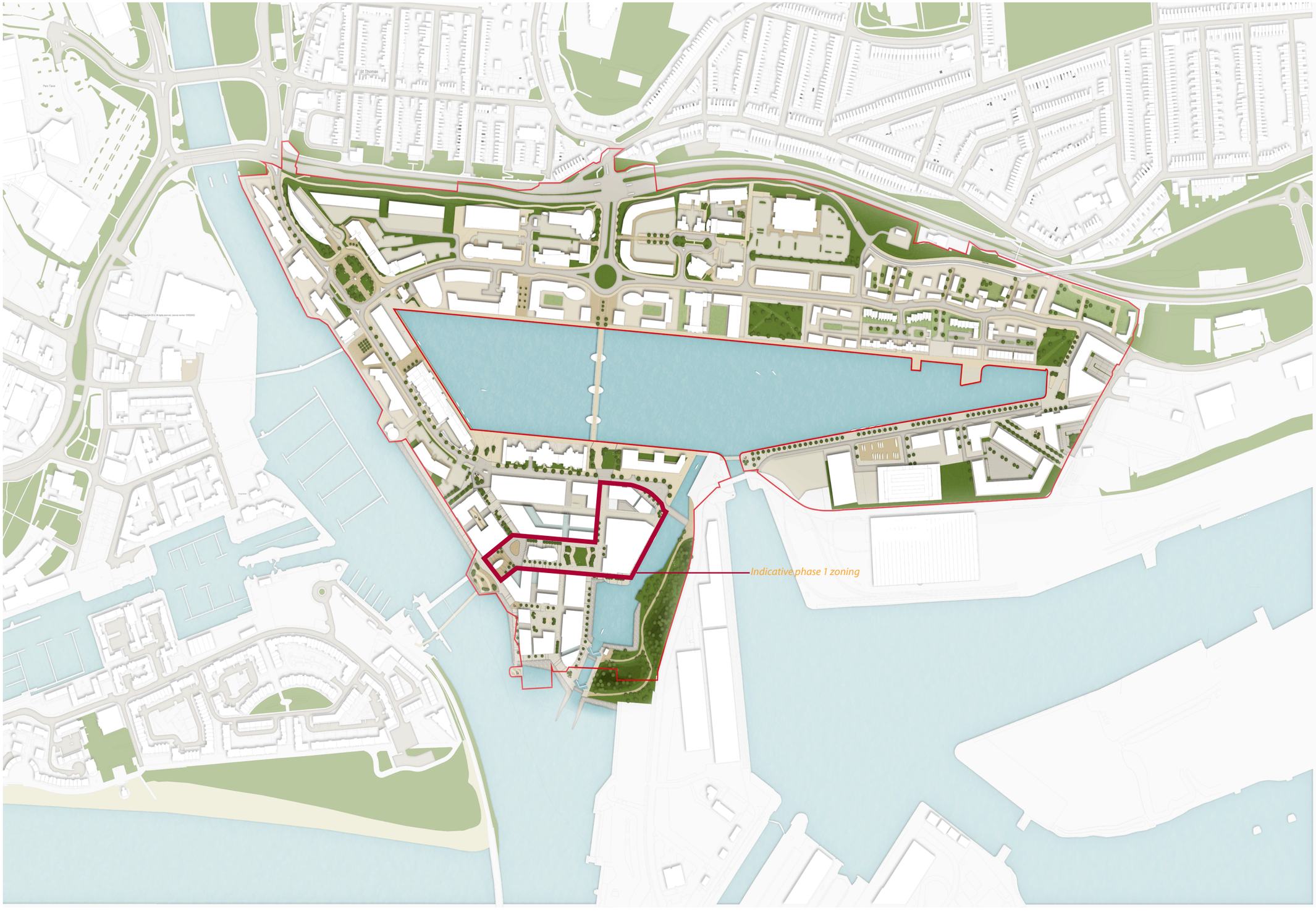
One objective of the masterplan is therefore to retain and enhance the strong position UWTSD has within the Higher Education sector in Wales. This will enable UWTSD to retain and attract new staff and students and support a balance of uses across the SA1 waterfront regeneration area to meet local needs. The masterplan proposals are therefore considered to lead to significant positive, permanent and long term economic benefit to the local, regional and UK economy and as such aligned with Unitary Development Plan and emerging Local Development Plan planning policy objectives.

Planning Application Submission

This Stage 3 report and the Planning Design and Access Statement is to be read in conjunction with the following supporting documentation.

- Surface Water Drainage Plan (Arup)
- Noise Assessment (MACH Acoustics)
- External Lighting Proposals (TB&A/ESHA)
- Construction Method Statement (Kier)

Figure 1 *2Site Location Plan*



2.0

Planning Context

Figure 2 *2003 approved masterplan*

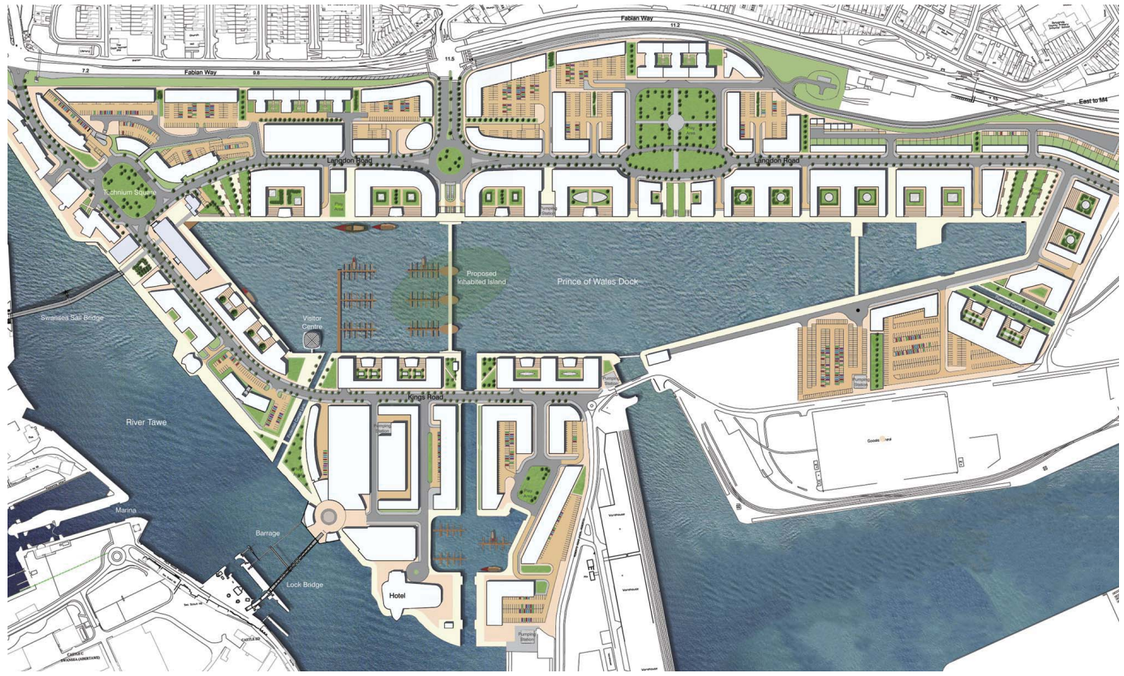
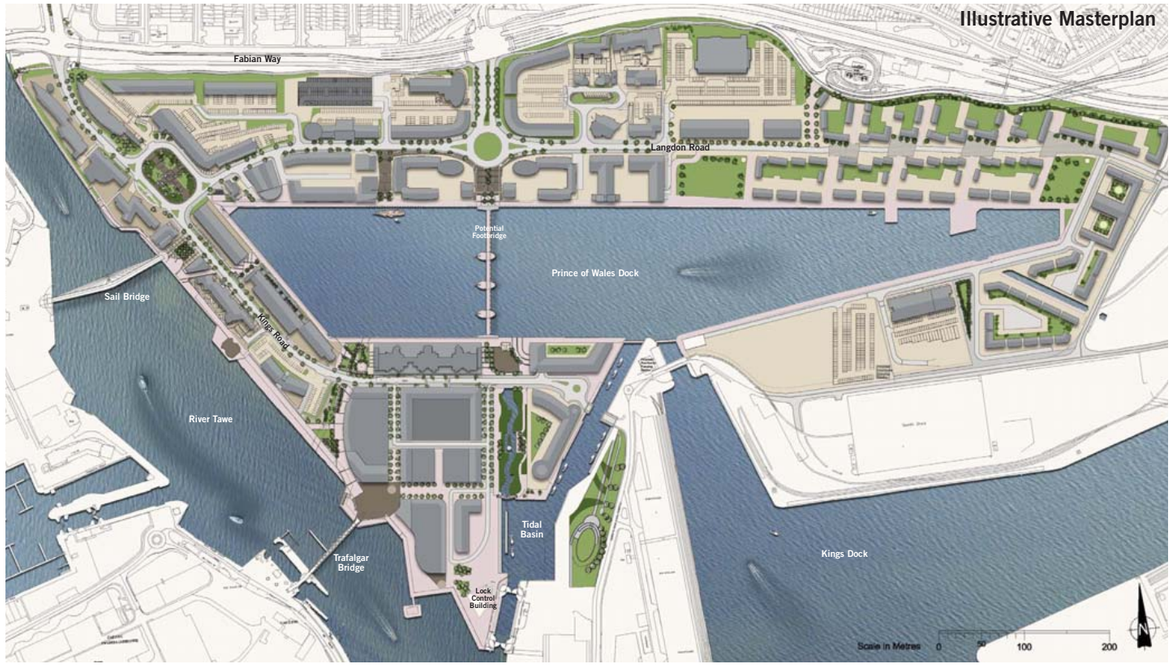


Figure 3 *2010 approved masterplan*



2.1 town planning history...

The redevelopment of the SA1 site is subject to a detailed planning history dating back to 1999. The following section provides a summary of the relevant planning applications that have been granted for the site.

14th June 2002

In June 2002 an outline planning application was submitted by the WDA (reference 2002/1000) for the wholesale redevelopment of the SA1 site including a mixed use development comprising employment (Use Class B1, B2) residential (C3), retail (A1), commercial leisure (D2), food and drink (A3), hotel (C1), and educational (D1/C3) uses, including associated infrastructure. The development was considered to be of a scale whereby an Environmental Impact Assessment was required in order to assess the developments significant impacts. Planning permission was granted in August 2003.

During the determination of the application a series of full planning applications for infrastructure works, changes of use and listed building consent applications were approved.

Post August 2003

Following the granting of outline planning permission for the site, full and reserved matters applications for some proposals contained within the masterplan were submitted and approved including applications for a new 116 bed hotel (Village Hotel), new offices (Langdon House and Cyprium) and residential developments (Altamar and South Quay). In 2004 a variation of condition (Section 73) application was approved (2004/1801) to vary conditions from the 2003 site wide outline planning permission relating to extending the time period for the submission/review of phasing and development framework documents (Conditions 1 and 3).

13th May 2008

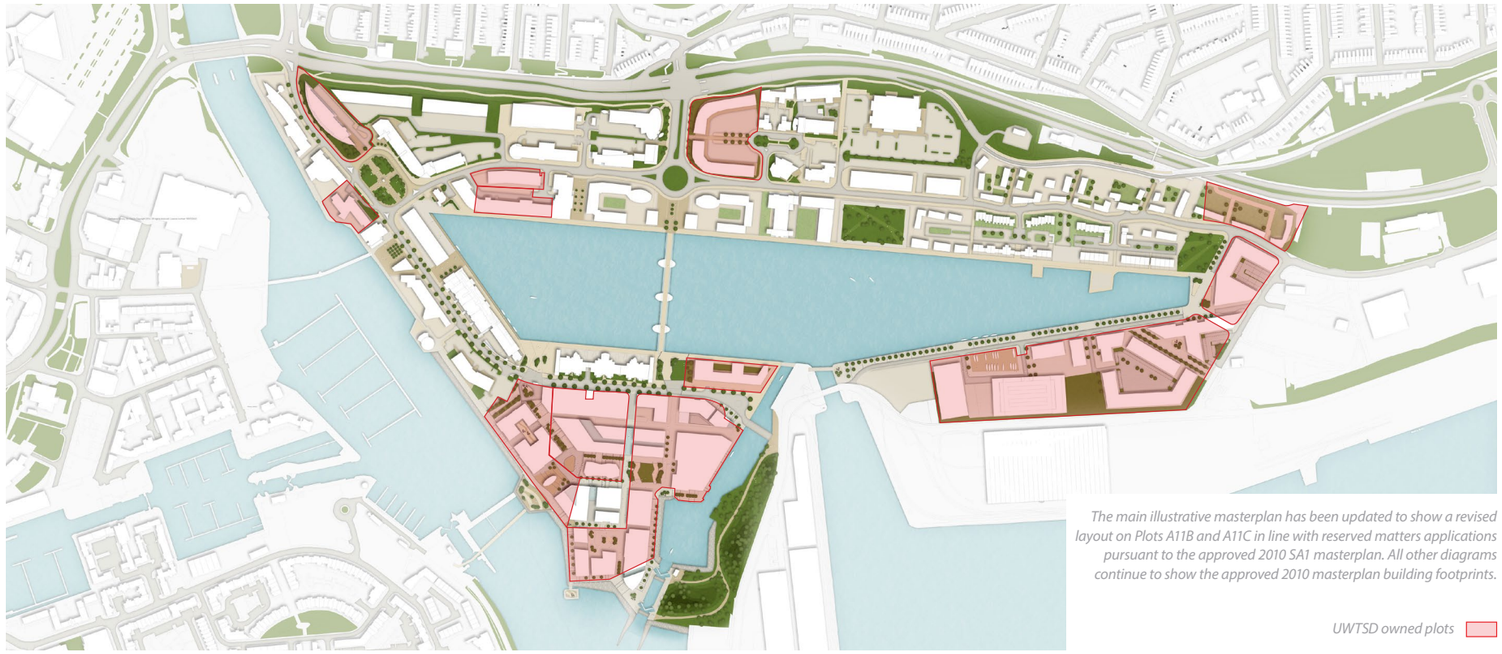
In May 2008 a variation of condition application (reference: 2008/0996) submitted by Welsh Government which proposed a series of changes to the approved conditions The application was supported by an Addendum to the original Environmental Statement and was granted planning permission on 11th October 2010. The decision notice includes 36 conditions, including the following:

- Condition 2 - which refers to development according with Figure A2.1 within the Addendum Environmental Statement (April 2010); and
- Condition 5 - which states that the total development capacities for SA1 shall not exceed the Current Framework capacities detailed in Table A2.1 of the Addendum Environmental Statement (April 2010).

Figure A2.1 identifies the type, distribution and scale of land uses on the site. Table A2.1 outlines the maximum extent of development for specific uses in each zone. In July 2015 a planning application (reference: 2015/1584) was submitted to vary conditions attached to the 2010 planning permission to to facilitate the implementation of the revised masterplan proposals for the 'Swansea Waterfront Innovation Quarter'. The approved proposals are shown opposite. Planning permission was in 2016. subject to a series of associated conditions including Condition 6 which requires the submission and approval of the 'reserved matters' for each phase.

In July 2015 a planning application (reference: 2015/1584) was submitted to vary conditions attached to the 2010 planning permission to to facilitate the implementation of the revised masterplan proposals for the 'Swansea Waterfront Innovation Quarter'. The approved proposals are shown overleaf. Planning permission was granted in 2016. subject to a series of associated conditions including Condition 6 which requires the submission and approval of the 'reserved matters' for each phase.

SA1 Illustrative Masterplan



The main illustrative masterplan has been updated to show a revised layout on Plots A11B and A11C in line with reserved matters applications pursuant to the approved 2010 SA1 masterplan. All other diagrams continue to show the approved 2010 masterplan building footprints.

UWTSD owned plots



2015 Schedule of floorspace

		Business	Leisure	Retail	Hotel	Healthcare	Church	Education	On shore marine	Residential
Zone	A	56360	0	3651	3468	3548	0	1036	0	37949
	B	16522	0	6661	0	0	0	20740	0	34595
	C	15025	0	1362	5000	0	0	10675	0	17841
	D	10912	0	0	8360	2000	647	0	0	31064
	E	0	0	440	0	1150	0	0	0	32363
	F	0	4790	0	0	0	0	1665	2000	0
	Total	98819	4790	12114	16828	6698	647	34116	2000	153812

Ground Floor Land Use at SA1



Building Heights at SA1

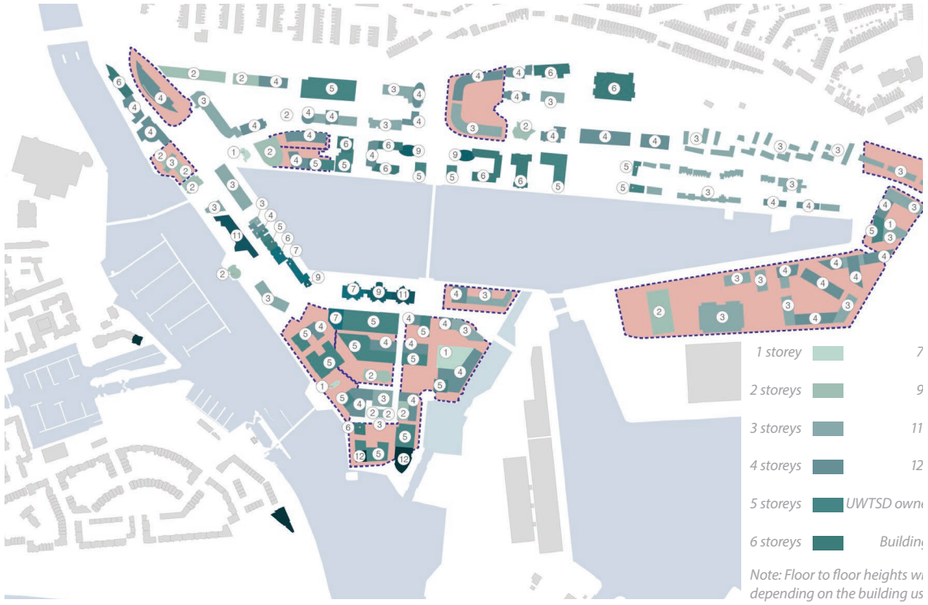
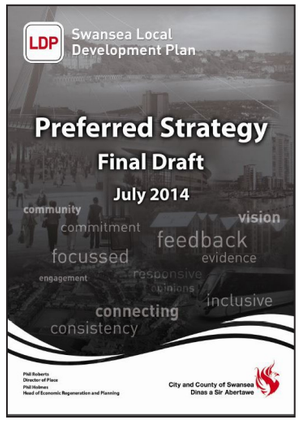
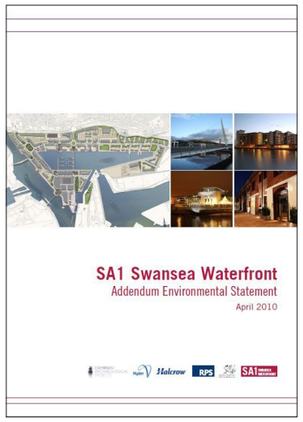


Figure 4 *2015 Summary of Masterplan Proposals*







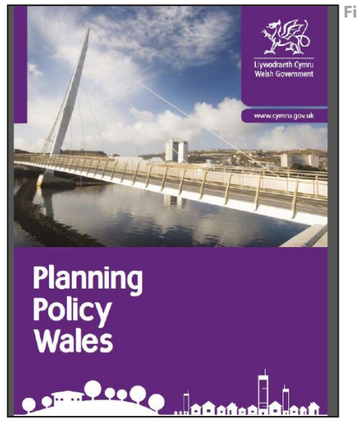


Figure 5 *Planning Policy Wales front cover*

Figure 6 *SA1 Environmental Statement*

Figure 7 *Swansea Local Development Plan*

Figure 8 *SA1 Design and Development Framework*

2.2 town planning policy framework...

Planning Policy Wales (Edition 8, January 2016)

Introduction

Planning Policy Wales (PPW) is the Welsh Government's principal statement of national policy and sets out the land use planning policies that should be taken into account by local planning authorities in Wales and may be material to decisions on individual planning applications.

PPW requires decisions on planning application to ensure that "*social, economic and environmental issues are balanced and integrated*" as part of a presumption in favour of sustainable development.

PPW refers to a series of topic areas and the most relevant parts to this reserved matters submission are summarised below.

Education

PPW supports a preference for the re-use of previously developed land and Paragraph 4.4.3 states that decisions and proposals should "*promote access to employment, shopping, education, health, community, leisure and sports facilities and open and green space, maximising opportunities for community development and social welfare*".

Paragraph 2.4.4 requires local planning authorities to make provision in their development plans for land for higher education and other community facilities.

Paragraph 4.6.2 refers to regeneration and identifies mixed use development "*comprising appropriate combinations of housing (including affordable housing), employment, retailing, education, leisure and recreation uses and open space*" as an effective way to achieve such aims through a process of integrating communities.

Ecology

Chapter 5 refers to the natural environment and requires biodiversity and landscape considerations to be taken into account in determining planning applications.

Historic Environment

Chapter 6 refers to the historic environment and notes that there should be a general presumption in favour of the preservation of listed buildings.

Where development proposals affect a listed building, the primary considerations is the "*special regard to the desirability of preserving the building, or its setting, or any features of special architectural or historic interest which it possesses*" (paragraph 6.5.9).

Transport

Chapter 8 refers to transport and paragraph 8.7.1 sets out the criteria by which applications for development that have transport implications should take into account.

This includes the impacts of the proposed development on travel demand; the level and nature of public transport provision; accessibility by a range of different transport modes and the effects on the safety and convenience of other users of the transport network.

Technical Advice Notes

PPW is supplemented by a series of topic specific Technical Advice Notes (TAN's).

Technical Advice Note 5 (TAN 5) Nature Conservation (2009) provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation.

Paragraph 4.1.1 refers to how the development control process can help achieve these objectives and supports

identifying ways to build nature conservation into the design of new development and applying the five-point approach to decision-making - information, avoidance, mitigation, compensation and new benefits.

Technical Advice Note 12 (TAN 12) Design (2014) includes advice on how promoting sustainability through good design may be facilitated through the planning system.

The TAN sets out a diagrammatic 'route to good design' which encompasses an initial review of planning policy, a vision/aim, through to a continuous approval and collaboration stage which involves assessing design issues and pre-application discussions. This leads into the detailed design, the submission of a planning application and the development management process.

Technical Advice Note 11 (TAN 11) Noise (1997) provides advice on how the planning system can be used to minimise the adverse impact of noise, including both noise sensitive development and noise generating development, without placing unreasonable restrictions on the development.

Technical Advice Note 15 (TAN 15) Development and Flood Risk (2004) sets out the precautionary framework to guide planning decisions in areas of flood risk. The site is located predominantly within Development Advice Map Zone B (areas known to have flooded in the past) and C2 (without significant flood defence infrastructure).

Public buildings such as schools are classified as "*highly vulnerable development*". Although not specifically referenced, it is considered that further education developments would also be classified in this category.

In terms of justifying the location of development, the TAN advises, "*new development should be directed away from zone C and towards suitable land in zone A, otherwise to zone B, where river or coastal flooding will be less of an issue*".

Technical Advice Note 19 (TAN 18) Transport (2007) contains advice on the location of development, parking design, walking cycling and public transport.

The Advice Notes states that major travel generating uses can significantly influence the number and length of journeys, journey mode and the potential for multi-purpose trips. TAN18 notes that such uses should be easily accessible by a range of transport modes and should be located in city, town and district centres and near public transport interchanges, as a means to reduce car dependency and increase social inclusion by ensuring that development is accessible by public transport for those without access to a car.

Technical Advice Note 23 (TAN23) Economic Development (2014) provides guidance for local planning authorities on developing high level economic planning objectives and assessing the economic benefits of new development.

The guidance notes that economic development should contribute to all dimensions of sustainability and where economic development would cause environmental or social harm which cannot be fully mitigated careful considerations of the economic benefit will be necessary. To weigh up the benefits and impacts LPAs are required to adopt a qualitative, criteria based approach.

Swansea Unitary Development Plan (UDP, adopted November 2008)

Introduction

The current development plan relevant to the determination of planning applications in Swansea is the Swansea Unitary Development Plan (UDP, adopted November 2008). The UDP covers the period between 2008 and 2016 and is the same development plan that was in place at the time of the 2010 permission.

The Council are currently in the process of preparing a Local Development Plan (LDP) which, once adopted, will replace the UDP as the Development Plan for Swansea. The LDP is not expected to be adopted until December 2016.

SA1

The following UDP policies have been identified as being of most relevance to the proposed development. A comprehensive list of other policies also of relevance is included in Appendix 3. The site is allocated in the UDP as part of the SA1 Waterfront mixed use development area. The site is identified to provide 18 hectares of employment land (Policy EC1 (2)) and 1500 dwellings (Policy HC1 (21)).

Policy EC2 of the UDP is considered to be the policy of most relevance and states that "*a major redevelopment area is identified at SA1 Swansea Waterfront for mixed employment and residential development together with supporting leisure, tourism, community uses and ancillary services.*" The development of the site should:

- *"Be comprehensive,*
- *Integrate with the Maritime Quarter,*
- *Complement and not compete with the City Centre,*
- *Be of a high standard of design,*
- *Embrace principles of sustainable development,*
- *Provide high quality employment opportunities,*
- *Increase the range of housing choice,*
- *Make appropriate provision for a network of pedestrian and cycle routes, and*
- *Safeguard the potential canal route corridor".*

Paragraph 2.3.5 of the UDP recognises that SA1 Swansea Waterfront is a key element in the Council's strategy for the regeneration of Swansea as a vibrant and distinctive Waterfront City.

Policy EV1 outlines a number of objectives that new developments should meet, including "*appropriateness to its local context, not result in a significant detrimental impact on local amenity and providing a safe environment by addressing issues of security.*"

Policy EV2 addresses the matter of "siting" and stresses the need to take into account the physical character and topography of the site and its surroundings.

Accessibility is addressed directly in Policy EV3 which requires new developments to provide access and facilities for all, satisfactory parking and contribute to a high quality public realm.

Policy EV4 requires relevant developments to integrate with the public realm and create people friendly places with high quality durable materials.

Policy EV6 outlines that the council will seek to protect, preserve and enhance "unscheduled" archaeological sites and monuments and their settings listed in the County Sites and Monuments Record held by the Glamorgan Gwent Archaeological Trust's Curatorial Division.

Policy EV34 required development proposals to demonstrate that they do not pose a significant risk to the quality and or quantity of controlled waters.

Policy EV35 addresses surface water runoff and encourages sustainable urban drainage systems (SUDS) where effective and feasible. Where SUDS are not provided then any conventional drainage system utilised must improve the status quo.

Policy EV36 states that developments in flood risk areas will need to demonstrate that its location is justified and the consequences associated with flooding are acceptable.

Policy EV38 outlines that where there is a risk from contamination, development proposals will not be permitted unless it can be demonstrated that measures can be taken to satisfactorily overcome any danger to life, health, property, controlled waters, or the natural and historic environment.

Policy EV39 addresses unstable or potentially unstable land and states that "*development which would create, affect or might be affected by this type of land will not be permitted where there would be a significant risk to life, health, property or the natural heritage on the site*".

Policy EV40 states "*proposals will not be permitted that cause or result in significant harm to health, local amenity .....or landscape character because of significant levels of air, noise or light pollution*"..

Policy AS1 requires new development to be located in areas that are highly accessible by a range of transport modes.

Policy AS2 provides detailed criteria for new developments in terms of their design and layout, and requests that developments promote and facilitate sustainable travel choices including provision of suitable facilities and the safe and non-intrusive movement of vehicles.

Policy AS4 encourages the creation/improvement of public access routes.

Policy AS5 required development proposals to consider the access requirements of pedestrians and cyclists.

Policy AS6 refers to developments according with adopted maximum parking standards.

Policy AS10 seeks "*appropriate traffic management measures to mitigate against significant adverse impacts that would otherwise be caused by traffic movements*" and supports improved road safety near traffic sensitive areas such as schools.

In terms of sustainability, strategic Policy SP1 indicates that this will be pursued as an integral principle of the planning and development process.

Supplementary Planning Guidance

Planning For Community Safety SPG (2012)

This SPG has been developed jointly by the City and County of Swansea Council and South Wales Police and seeks to establish principles for the design, layout and landscaping of the built and natural environment which creates a safer and more secure environment; increases the risk of detection of criminal and antisocial activity; and makes crime more difficult to commit.

Swansea Parking Standards SPG (2012)
Based on the CSS Wales Parking Standards 2008, this guide has been amended where necessary, to reflect changes in legislation and local circumstances in the City and County of Swansea.

Planning Obligations SPG (2010)
The above SPG explains how the Council will use obligations, identify the types of development for which obligations can be required, and explain both the legal content and the procedures involved when entering into obligations.

Places to Live - Residential Design Guide (January 2014)
The above SPG sets out the Council's expectations for those involved in new residential and mixed use areas and provides detailed design guidance on a number of areas including public spaces, streets as places,

The guidance refers to 4 strategic themes:

1) Putting People First – in respect of achieving good design in 'everyday' places.

2) Sense of Place – drawing on the local context to create a sense of place and creating spaces which are not dominated by vehicles.

3) Creating Sustainable Places – including creating mixed communities, places which are not dependant on private car use and open spaces and streets to encourage a healthy lifestyle.

4) Improving Quality – seeking to raise the design quality on all new developments.

Tall Building Strategy Swansea (October 2008)
The Strategy recognises that a 'maritime gateway' to the city is formed where the Tawe River meets the sea and that the 2003 planning permission granted for SA1 includes a group of tall buildings which would strengthen the 'city-water gateway'.

The document notes that the Sailbridge forms both a key approach and gateway for pedestrians and cyclists, while the linkage with Wind Street, connects the SA1 Swansea Waterfront with the heart of the city centre and signals an arrival into these districts.

The Strategy identifies the areas more likely to support tall buildings and includes the Swansea SA1 Waterfront, referring to the site as a unique opportunity on the waters edge and a major regeneration area.

Swansea City Centre Strategic Framework (2007, Adopted 2009)

The above document does not include the SA1 site from the area covered by the Framework but recognises the proximity of SA1 to the city centre and the importance of access between the two.

The document does make a number of references to the SA1 site and refers to the progression of development at SA1 which is "*contributing to a new focus of city life*". Reference is also made to SA1 helping to "*change the commercial profile of Swansea and building a modern office market, and through physical links such as the Sailbridge, integrating with the City Centre*".

The Sailbridge site is also recognised as contributing to an improved "gateway", facilitating an important link between the core of the City Centre and SA1 Swansea Waterfront, and creating a new focus of life on the riverfront.

Local Development Plan (LDP)

Introduction
Once adopted the **Swansea Local Development Plan** will replace policies in the UDP. The **Preferred Strategy (July 2014)** sets out the broad approach that the LDP intends to take in order to ensure that the County is developed in a sustainable manner. The LDP is expected to be adopted in December 2016.

The Vision of the LDP refers to Swansea being a "*desirable place to live, work and visit*" and a place which has "*sustainable, distinct communities, in both urban and rural locations, that benefit from sufficient good quality accommodation, supporting infrastructure, community facilities and opportunities for recreation*".

The LDP identifies 3 interlinking themes which are at the centre of the vision. These are:

- Enhancing Communities, Facilities and Infrastructure;
- Delivering Economic Growth and Prosperity; and
- Fostering a Quality Environment.

SA1
The Draft Proposals Map (2014) identifies the site within Strategic Site J "Fabian Way Corridor". The Draft Concept Masterplan focuses on developing the vacant sites between the two Universities (Swansea and UWTSD) with complementary uses that do not compete with the regeneration of Swansea City Centre. The Masterplan also seeks to create a new spine street links Langdon Road to the main street of the Bay Campus. This opens up the intervening vacant sites for complementary uses that are urban in scale and active in nature.

The Preferred Strategy states "*Further investment at SA1 Swansea Waterfront is needed in order to continue successful regeneration of the former dock area, whilst complementing the aims for City Centre regeneration*".

The Preferred Strategy refers to SA1 as part of the 'Urban Waterfront' which is described as the "*areas adjacent to the River Tawe and Swansea Bay within the main urban area of the County, including sites at the Tawe River corridor, SA1 Swansea Waterfront, Swansea Marina, and others adjoining Swansea Bay up to and including Mumbles*".

This combined area is referenced in respect to tourist facilities and paragraph 7.54 seeks development in the area to consider how they can maximise the benefits presented by other established waterfront developments already providing attractions and commercial operations for residents and visitors.

The urban waterfront is considered to be an ideal location to develop the city's cultural and leisure facilities, offering attractions that increase levels of 'City Break' tourism.

Policy 11 refers to the strategy for the city centre and waterfront and identifies the city centre as the preferred location for all significant retail, leisure and office development. The policy also encourages appropriate residential and education uses, in order to enhance the overall vibrancy and attractiveness of the City Centre and create a thriving daytime and evening economy.

Economic Growth and Employment
Policy 9 refers to the aim of delivering up to 14,000 additional jobs over the Plan period by promoting growth across employment sectors and in particular re-orientating the economy towards high quality, skilled and knowledge based sectors.

Swansea City Centre: Strategic Framework Review' (Consultation Draft January 2015)
The above document seeks to provide up to date guidance to facilitate future development and investment, and provide a robust evidence base and sound principles on which to plan future regeneration.

The document refers to the ambitious, strong, integrated and coherent city centre capable of supporting city region status and delivering a 24 hour economy, with the city striving to become *'an exemplar for how it approaches post-recession, mixed use, city centre regeneration'*. The Review identifies a need for a:

> *'vibrant mix of leisure, culture, retail, office and residential uses all delivered in a legible way with high quality buildings alongside public spaces which exhibit and celebrate the culture which differentiates Swansea from other cities'.*

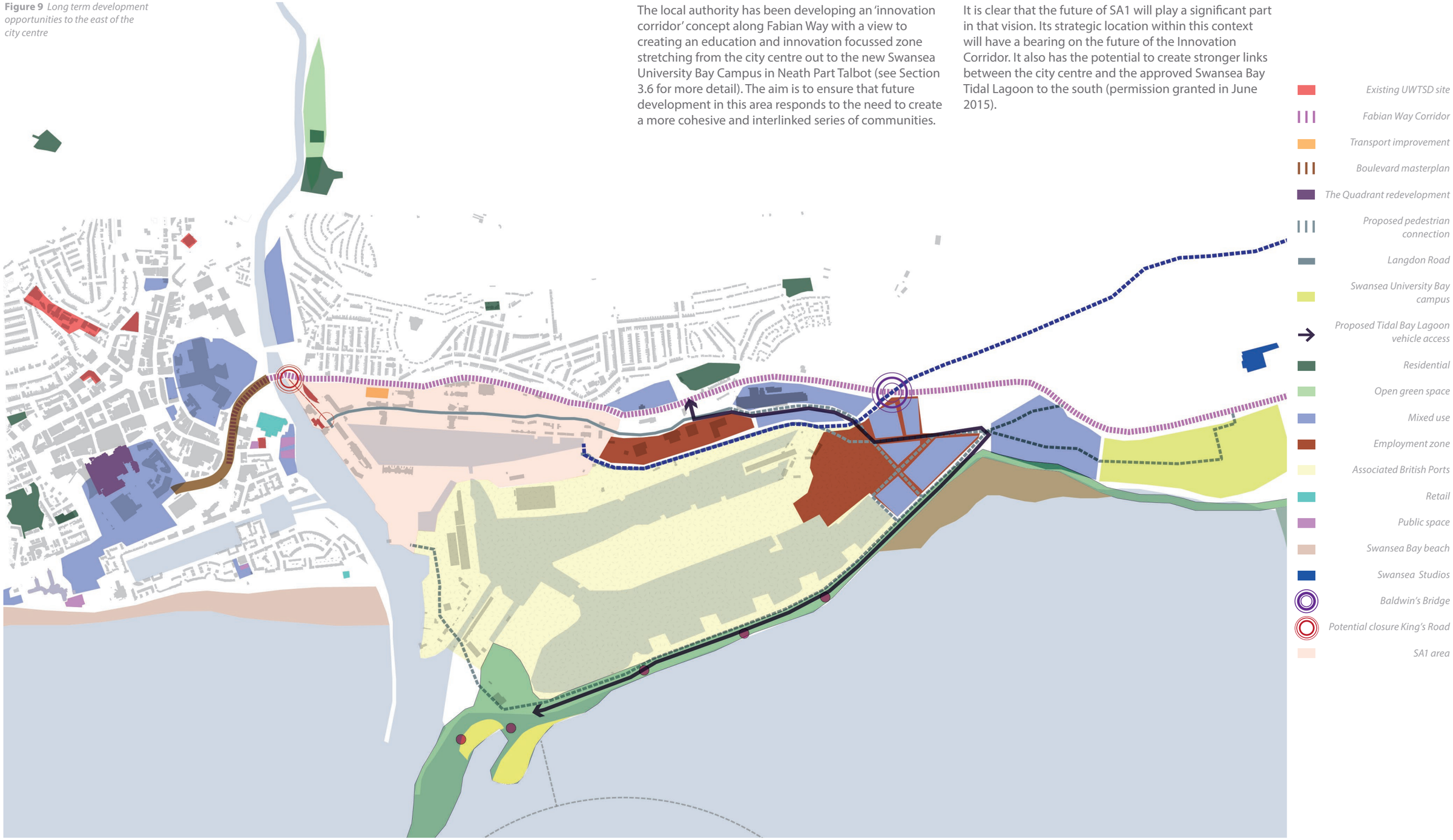
SA1 is identified as one of a number of areas that have a 'close relationship' to the city centre and reference is made to SA1 becoming the 'Innovation Quarter' of University of Wales Trinity Saint David. Section 2.4 notes:

> *'the SA1 area that is within walking distance of the City Centre had the potential to compete with the regeneration aspirations due to the significant quantum of leisure development that was approved as part of the masterplan for the former dock area. However the change in focus of SA1 to accommodate the 'innovation campus' of University of Wales Trinity Saint David and the re-masterplanning of the area will complement the City Centre through the mix of uses and will remove the potential for large scale leisure development'.*

The Review therefore provides support to an alternative use on the former SA1 'leisure quarter' in terms of uses "*diverted from the city centre*" as referenced in Paragraph 5.20 of the Port Tawe & Swansea Docks SPG.

The document also recognises the importance of the Maritime Quarter/ and Sailbridge as a key area connecting the city to the waterfront.

Figure 9 *Long term development opportunities to the east of the city centre*



The proposed development sites shown within this diagram have been extracted from a number of sources including the Local Development Plan, Fabian Way Innovation Corridor Draft Concept Masterplan (December 2014) and the Swansea Boulevard Masterplan.

The local authority has been developing an 'innovation corridor' concept along Fabian Way with a view to creating an education and innovation focussed zone stretching from the city centre out to the new Swansea University Bay Campus in Neath Part Talbot (see Section 3.6 for more detail). The aim is to ensure that future development in this area responds to the need to create a more cohesive and interlinked series of communities.

It is clear that the future of SA1 will play a significant part in that vision. Its strategic location within this context will have a bearing on the future of the Innovation Corridor. It also has the potential to create stronger links between the city centre and the approved Swansea Bay Tidal Lagoon to the south (permission granted in June 2015).

3.0

Site context and analysis



Figure 10 *Swansea and wider area*

3.1 site location...

SA1 is an historic dockland area to the east of Swansea city centre. The area measures 41.8ha in total. It is bounded to the south east by the operational port of Swansea, managed by Associated British Ports (ABP). To the north of the site is Fabian Way, a major vehicular route in and out of the city centre. This route separates the area from the neighbourhood of Saint Thomas. Along the western boundary is the River Tawe, which is divided into two parts by the barrage at Trafalgar Bridge (the Marina and the mouth of the river into the sea). The eastern edge of the site is defined by the access road into the ABP land off Langdon Road.

The site wraps around the Prince of Wales Dock, one of 3 large bodies of water that are owned by ABP. The Prince of Wales Dock is no longer a key operational dock for ABP, with minimal loading and unloading activities still taking place along its northern edge. It is anticipated that ABP will continues to reduce all operational activities here in the coming years.

In 2014, UWTSD purchased a number of undeveloped plots at SA1 from the Welsh Government with a view to developing a new learning and innovation community at SA1. The majority of these are located in the southern half of SA1 though a number are in the north western quadrant.

While the SA1 development zone is in close proximity to the city centre, it does not currently reflect the same level of density or scale of development. Much of the previously developed land is vacant brownfield. Many of the previous development projects on site have been delivered in isolation from each other, resulting in a lack of design coherence across the whole of the SA1 docklands.

The majority of developments at SA1 are of large scale housing blocks, in either apartment towers or townhouses. The taller buildings offer views of Swansea Bay and the Prince of Wales Dock. More recent developments include the Beacon Health Centre on Langdon Road and The Village Hotel along Fabian Way.

However, the layout of the road network, along with the dominating housing blocks, means that there is limited activity and engagement between buildings and streets at ground level.

The area around Technium Square forms an exception where there is a broader mix of activities drawing together J Shed, the Ice House and a number of public plazas. The quality of some of the spaces and routes already delivered around form the basis of a potentially attractive environment for pedestrians and cyclists. Though incomplete, the pedestrian and cycle path flanking the Prince of Wales Dock is an attractive environment and will be dramatically improved with the installation of a new pedestrian bridge along its southern edge. This will complement the existing riverside walk along the River Tawe.

UWTSD currently occupies a number of locations across Swansea and South Wales. Its presence in Swansea is currently somewhat fragmented, with main campuses at Townhill and Mount Pleasant, along with a number of buildings at Alexandra Road and the Swansea Business Campus (Ty Bryn Glas). The University also owns and occupies two buildings at SA1, both at Technium Square to the very north west of the site.

Whilst much of the docklands has yet to be built out, there are a range of existing uses and facilities provided in relatively close proximity to the site. The city centre provides a good retail choice, which is within walking distance of SA1. There are excellent transport links within the city centre, with both the bus station at West Way and the train station on High Street within a10 minute walk from Technium Square.

Public consultation responses as part of the 2015 masterplan included references to the prime waterfront setting presenting positive opportunities to strengthen the brand and profile of the University, the ability to deliver an attractive public realm and to encourage inward investment.

3.2 the peninsula...

SA1 has been subject to a number of approved masterplans in the past 12 years. However, these masterplans have only been partially implemented, which has resulted in a somewhat barren and lifeless environment in many parts of the site, most notably on the Peninsula. The areas that have been implemented, predominantly in the northwestern quadrant, are starting to show what the character of the rest of the SA1 area could be like in the future.

The peninsula is the southern part of the SA1 regeneration site and was previously referred to as the 'leisure quarter'. The site is accessed via Kings Road and is made up of a large expanse of land that has been levelled and prepared for development.

The site area for phase 1 covers 1.81 hectares and includes plots PD. PN and PL.

The site also encompasses part of plot PJ to allow temporary cycle and waste storage facilities to be provided to serve the development in the short term.

Figure 11 *Peninsula Aerial Photograph*

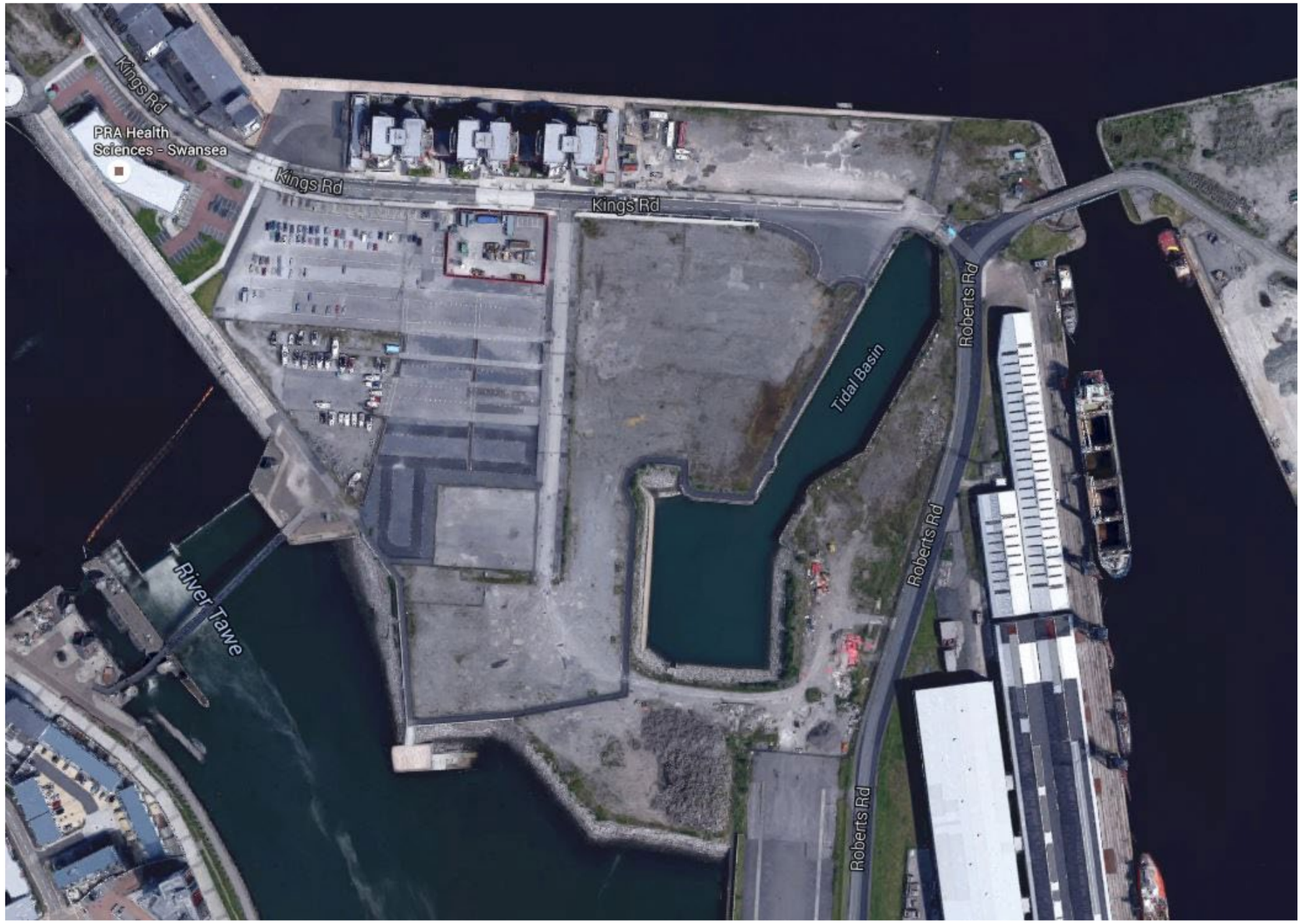
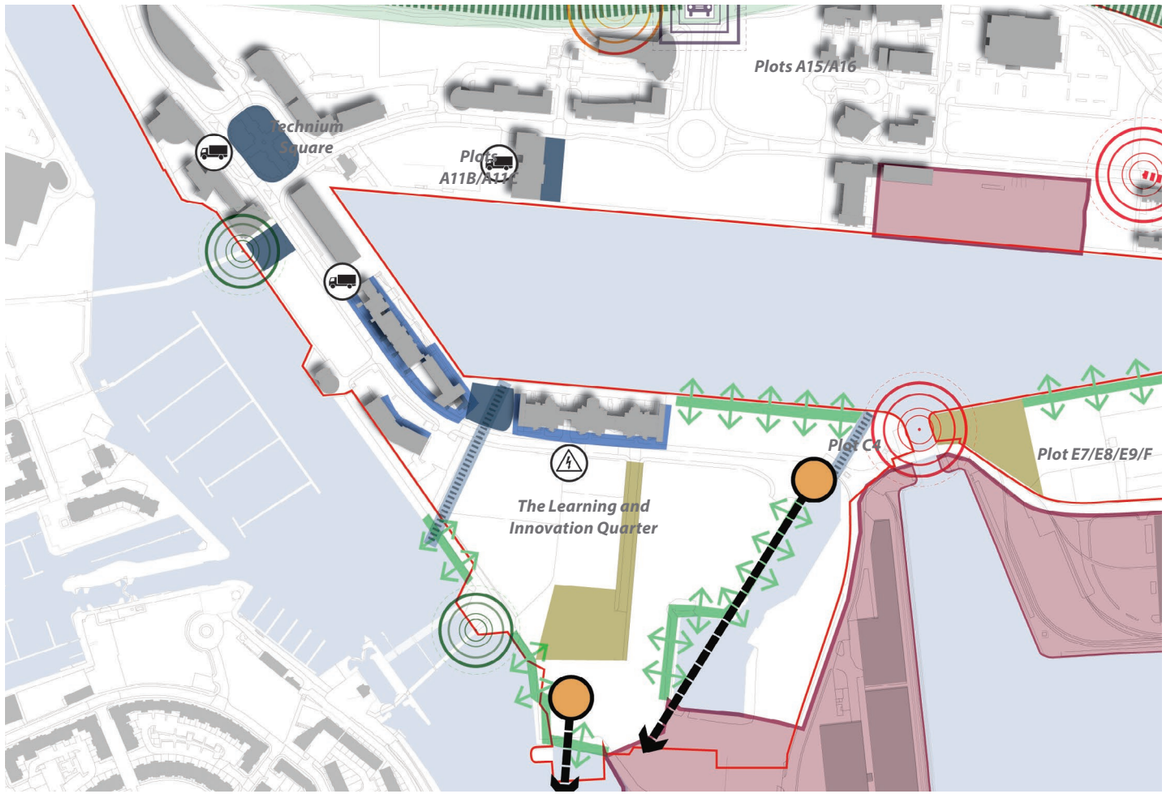
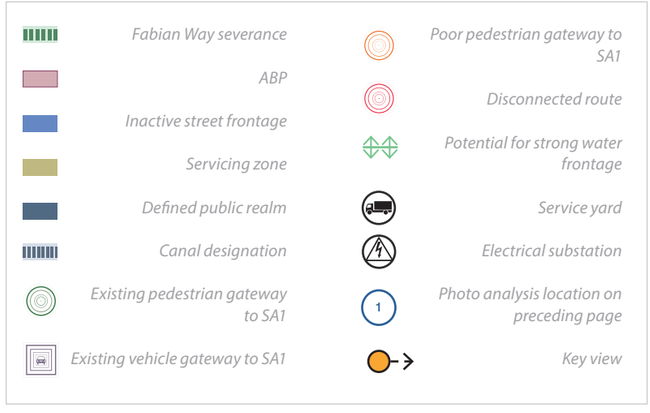


Figure 12 *Site characteristics summary plan*





3.3 site analysis summary...

An extensive site analysis exercise was completed as part of the development of the masterplan proposals. The major opportunities and constraints for the peninsula were identified as follows:

Opportunities: The site is the closest to Swansea Bay and the sea. and, as a result, there are uninterrupted views out towards the horizon which should be exploited wherever possible. It is easily accessible via King's Road and sits adjacent to the distinctive Tidal Basin. It will be important to maximise the large degree of waterside frontages within this area. Trafalgar Bridge provides effective pedestrian and cycling connections from the Maritime Quarter, along with the riverside walks up to the Sail Bridge. Should the Swansea Bay Tidal Lagoon be built, there will be the potential to extend pedestrian and cycling routes further south to connect the Lagoon facilities to the city centre.

Constraints: This a particularly complex site, mainly due to its location and surrounding land use. The space currently feels expansive but exposed. Development will need to respond to the climactic conditions. Combining a mix of activities with usable public open spaces that are appealing at all times of the year will need to be at the heart of proposed developments for the University and its commercial partners. Another aspect to consider is the existing parking provision for SA1. The existing temporary car parks on UWTSD owned land would be replaced with developments, therefore reducing parking figures, which will require further consideration.

View 01



This area was originally used for dock-related activities and was predominantly covered with railway tracks connecting cargo between the ships and the rest of the country. As well as the railway infrastructure, a number of goods sheds were also located here (K and L sheds). The Associated British Ports buildings in the right sit on the original footprints of A and B sheds. The existing buildings on Plots B4 and B5 start to frame views to more distant features including the Norwegian Church, St Thomas Church beyond and Kilvey Hill depending on the position of the viewer. The hill behind is a city-wide feature and dominates many of the northern views from the southern end of the site. The cranes along the dock edges with the Associated British Ports land also form interesting references to the past life of the overall SA1 area. Less obvious are the views to the east of the distant hills of Mynydd Dinas and Mynydd-y-Gaer beyond Port Talbot.

The only building of real significance and architectural interest near the site was the Weaver Building. Reputedly the first ferro-concrete building, it was designed by the French engineer Francois Hennebique and built in 1898. Unfortunately and quite surprisingly, it was demolished in 1984 in order to build the Sainsbury's supermarket and car park.



View 02



As part of the regeneration of the SA1 waterfront, a lot of the infrastructure necessary to service each of the individual plots around the docks has already been put in place. This includes the principal roads and underground service corridors for electricity, water, drainage, data and gas, though a number of key infrastructure projects remain outstanding. The surface finishes have not been completed in some of the more peripheral parts of the site. The completion of the surrounding development plots will include the finishing of these routes. The angle of the young trees planted along the street edge are an indication of the exposed nature of the site to the offshore winds.



Figure 13 *The character areas of SA1*

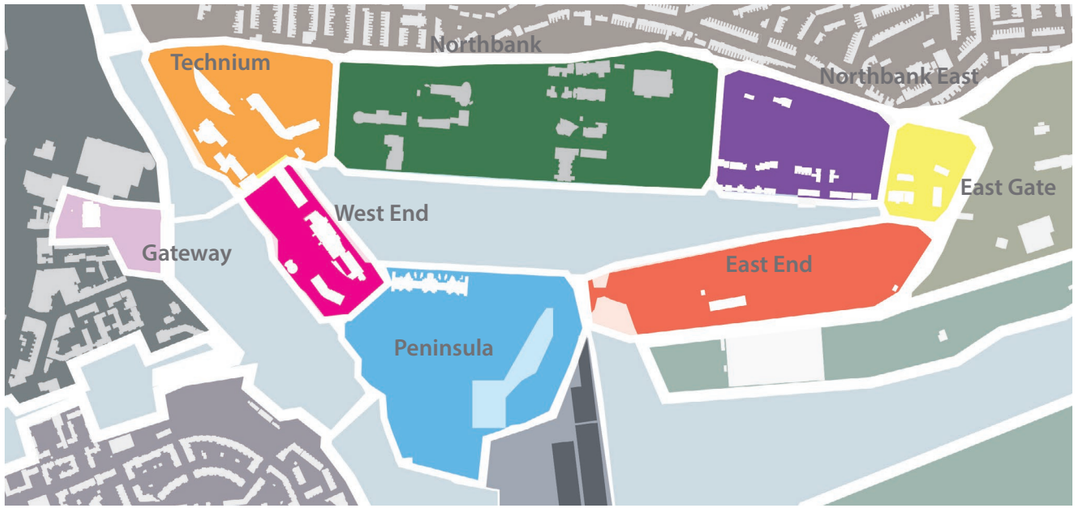


Figure 14: Peninsula Characer Area Study Extract



3.4 masterplan summary

The revised masterplan for the SA1 waterfront area, and in particular to the south and west of the Prince of Wales Dock, supports a mixed use development comprising the University, commercial offices, restaurants, small scale retail, hotel and leisure facilities, residential accommodation and sports and recreation opportunities. The Masterplan will provide a blueprint for completing the redevelopment of SA1 and for securing the inward investment from the private sector that will help secure a vibrant and complementary development located adjacent to the city centre.

The area of greatest change is around the southern end of SA1. The Peninsula will be the home to the majority of the University's facilities but in a manner that integrates it with a range of other complementary uses. This part of the site will become a thriving hub of activity where students, university staff, business employees and members of the public come together to learn, work and socialise.

The form of the Peninsula area proposals introduces a significantly different type of development at SA1. Instead of focussing on the delivery of individual plots, the masterplan places a greater emphasis on the delivery of lively streets and attractive public spaces. Pedestrianising large parts of the Peninsula's streets will help to create the sort of environment that will attract a diverse range of people to SA1.

The University and its consultant team has sought to develop an urban design strategy which enables the University to meet its needs and to attract new commercial partners willing to shape the expansion of the central business district and to maximise the available waterfront opportunities. A Design Code will help inform detailed future planning submissions. This is submitted under separate cover and forms part of the Design and Development Framework for SA1.

The masterplan therefore provides a 'once in a lifetime' opportunity to create real transformational change, both redefining the enterprise and innovation offer within the Swansea Bay City Region and complementing the related offer from other education providers in the city.

A series of different character areas at SA1 were identified at the masterplanning stage based on both existing characteristics and the potential for distinctive new identities.

Each character area provides the opportunity to create a series of key public spaces that will bring each area to life. Such spaces will provide environments for external activities that add vibrancy and a sense of place to each part of the docks. Public space will work as much for the local community as it will for the University, in that it allows for a variety of public activities to occur throughout the year. Creating a sense of neighbourhood will integrate the buildings, spaces and people together.

The nature of these spaces will differ depending on their location, function and relationship with the uses of the surrounding buildings.

One of the key defining features of SA1, and perhaps its greatest asset, is the water. It presents the University and the whole of the city with the opportunity to create an innovation quarter with a strong relationship with the water. The beauty of a dockside regeneration project lies in the historic importance of the water, and through a series of urban design movements, this relationship can be accentuated.

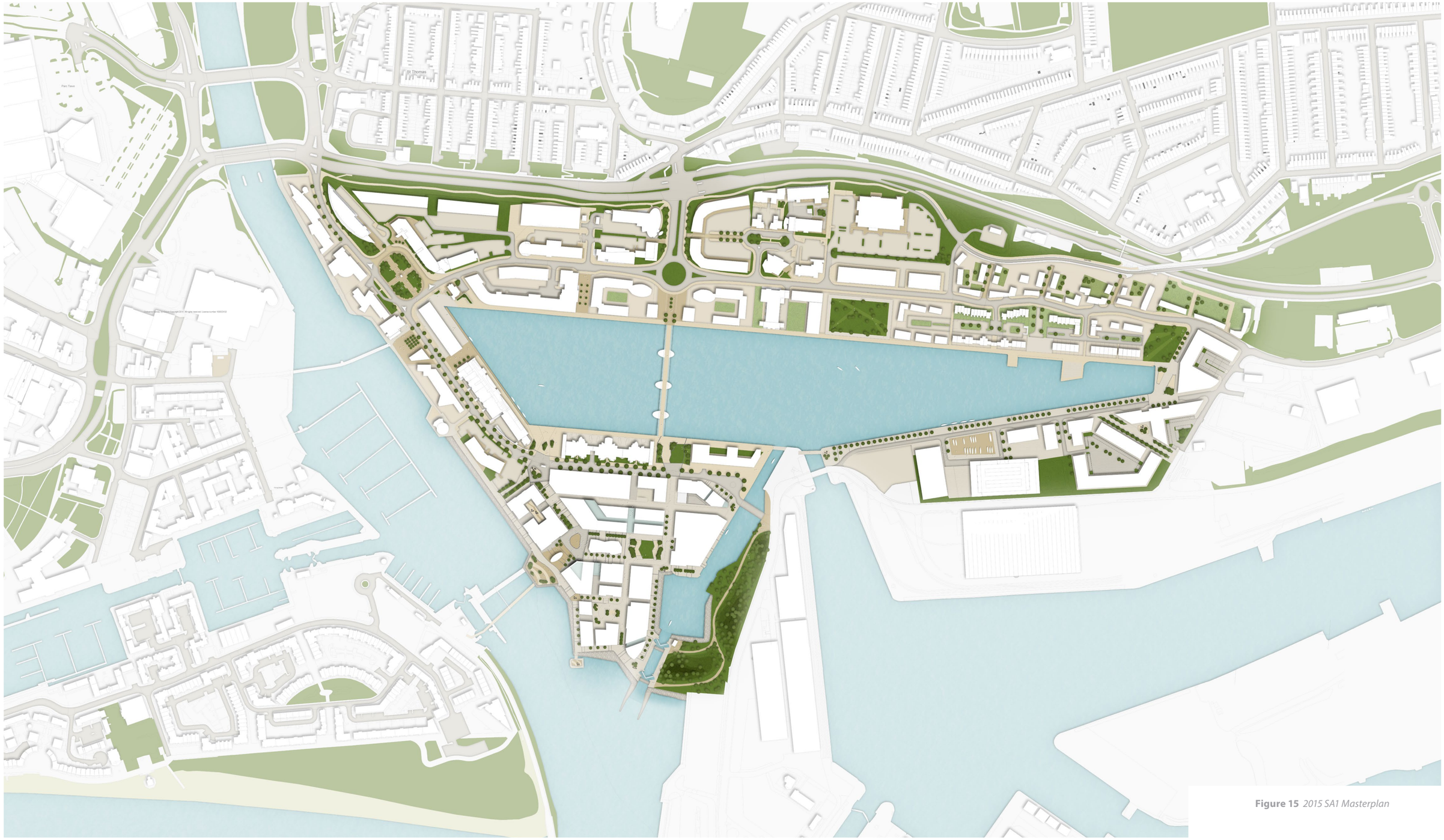


Figure 15 *2015 SA1 Masterplan*

Figure 16 *Masterplan Peninsula Image*



the peninsula...

The largest part of the proposed University facilities will be developed at the southern end of SA1. The University will occupy a number of buildings in the core of the site with most of the perimeter waterfront locations reserved for future expansion and partner development.

Most of the University buildings occupy the core of the Peninsula framing the principal public spaces. At the eastern side the University buildings frame a gateway to the waterfront at the end of Trafalgar Bridge.

On completion of the University buildings and public spaces the infrastructure for the entire peninsula site will have been established, with all remaining development plots having attractive waterfront aspect. This strategy has been developed to maximise the attractiveness of sites for development by University partners.

The architectural language for all the University and partner buildings will be a development of simple regular industrial architecture found elsewhere in SA1, and is expressive of the industrial history of this site. It is not envisaged that the buildings will slavishly copy historic forms but rather to work within the material and constructional logic of these simple robust structures.

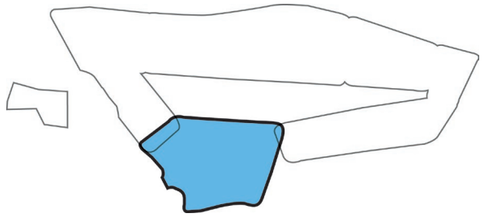
The ground level of all the buildings facing onto the central spaces are set back to provide a covered walkway around the perimeter of the spaces and a bad weather connection between all areas of the University.

The library and learning commons building is located in the centre of the Peninsula between Trafalgar Place and Trinity Garden. It is intended to be a special building within the masterplan designed to complement the regular engineering language of the surrounding buildings.

The masterplan for the peninsula has responded with a more appropriate urban form that better reflects the type of inspirational environment for the university and its development partners. The design builds upon the existing characteristics of the site and celebrates them. This includes a meaningful interaction with the 3 types of waterfronts surrounding this part of SA1, utilising the built infrastructure (both above and below ground), and improving general access to the area with a robust hierarchy of public open spaces, streets and development blocks. This is a marked change from the 2010 masterplan, which promoted a large leisure development that dominated the proposals.

Figure 17 *Peninsula masterplan*





Plots within 2010 masterplan not yet built

Plots controlled by UWTSD

The 2010 masterplan proposed a canal route here, which has informed the layout of the building footprints so as to allow for possible future implementation of the canal if required

A new, minor pedestrian link to the potential biodiversity park to encourage through-routes and permeability of the masterplan

Maintenance access for cranes to service Trafalgar Bridge is retained and will be managed as part of the delivery of the public realm strategy

This side of the Tidal Basin is much softer in appearance, filtering through from the potential biodiversity park and offering contrast to the hard landscape of the rest of Peninsula

It is proposed to relocate the lock control building to the eastern side of the Tidal Basin, to preserve the design of Peninsula Point within Peninsula

Peninsula Point

The Masterplan provides for an area of improved grassland on land to the east of the proposed Tidal Basin Cut. The latter is a long term aspiration of Welsh Government and, if delivered, will require land to be identified to meet dockside operational uses. Any residual land in this area not put to operational uses has the potential to remain as improved grassland in the form of a BioPark

Figure 18 *Design Code Front Cover*



3.5 design code summary...

The Design Code outlined six essential qualities of place that will inform the urban, architectural and academic brief going forwards. It sets out how the University sees itself and how it wants to be seen by the community.

1) A welcoming place of connected streets and squares.

2) A place with distinct focal points and distant views.

3) Human scaled protected built and natural environments.

4) Carefully modernised industrial heritage.

5) Vibrant human activity.

6) An individual and quirky character.

Due to the complexity and importance of future development at SA1, a separate design code document was produced.

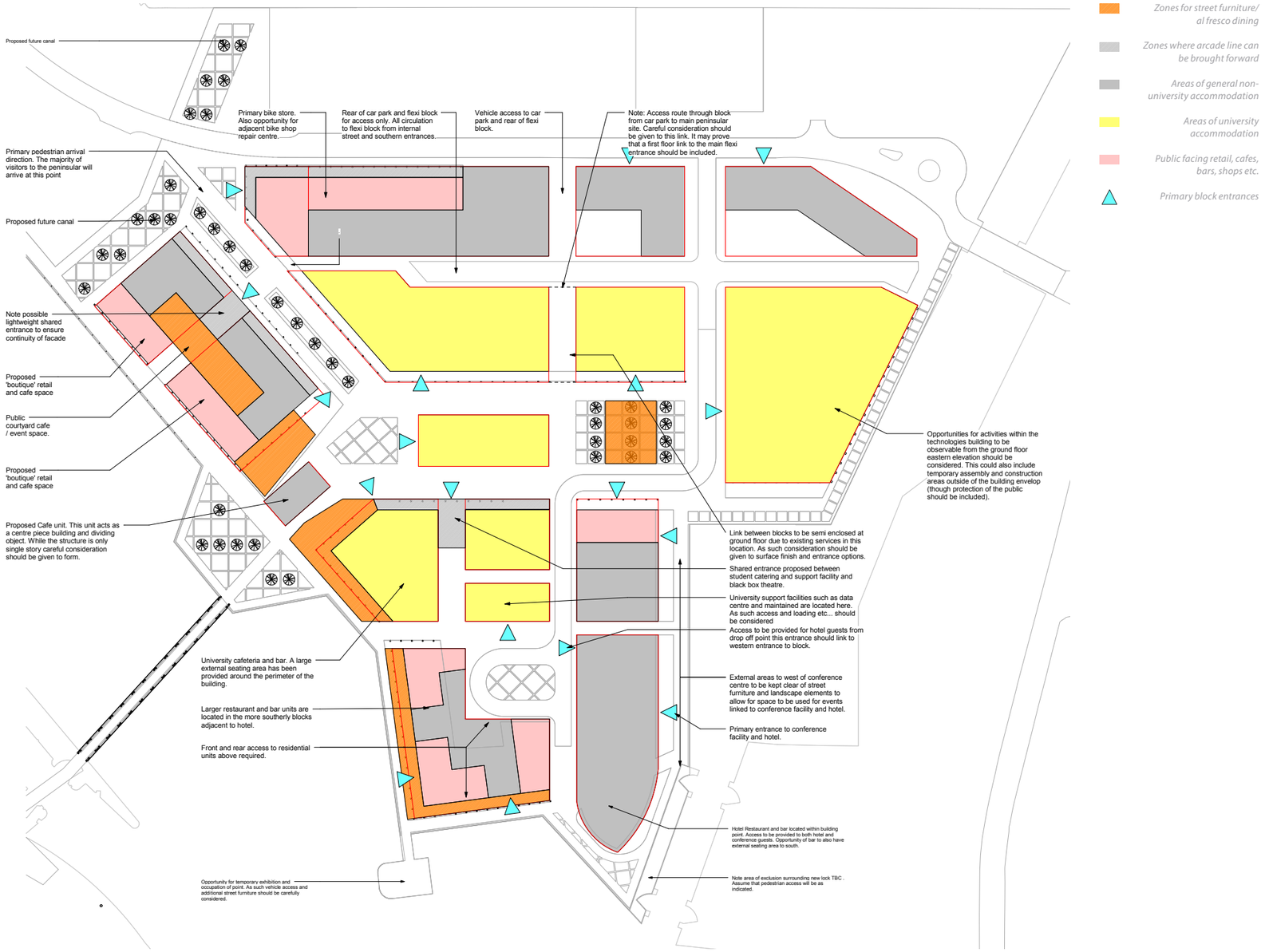
A design code is a set of specific rules or requirements to guide the physical development of a site or place. The aim of design coding is to provide clarity as to what constitutes acceptable design quality and thereby a level of certainty for developers and the local community alike that can help facilitate the delivery of good quality new development.

The design code sets out key principles (the 'must dos') alongside design guidance (the 'should dos' and 'could dos') towards the delivery of quality development. The design code therefore ensures consistency, quality and certainty as delivery mechanisms change over time.

In respect of the peninsula area of the site the following key elements were included.

- Dockside forms the eastern face of Trinity Quarter bounded by Prince's Street. Its northern side fronts onto King's Road and its eastern side faces onto the former dry dock forming part of the existing tidal basin.
- In the future it is planned that the tidal basin will be reconfigured with new channels extending north and south fitted with sea lock gates to allow for boats to navigate from the Tawe Estuary into the Prince of Wales Dock.
- Dockside includes two spaces:
- University Mews is an extension of the service road mews described in Trinity Quarter;
- The tidal basin waterfront that in the future will become the frontage to the proposed navigation channel. This area is to be designed as a robust working waterfront accessible by pedestrians with some limited service vehicle access.
- Dockside includes buildings of up to 5 storeys fronting onto the surrounding streets and spaces.

Figure 19 *Plan of Peninsula*



4.0

Consultation






Figure 59 *Photos from public consultation event*

4.1 consultation and engagement

Design Commission for Wales (DCfW)

The first phase projects have built on the excellent legacy of DCfW consultation during the Masterplan phases during 2015. The design team have met with the Commission several times during the development of the masterplan and design code for the site, which are now approved as a variation of condition on the original outline planning consent for the whole SA1 site.

A review was held in Cardiff on 14th January 2016, at which the emerging Stage 3 proposals were presented. This was the first review of particular buildings within the demise of the masterplan and which are to be delivered in accordance with the design code.

FACE

The following comments were made:

- The response of each façade to its orientation
- Lack of clarity over how sustainability principles have been embedded in the building.
- Responsiveness of the plans and elevations to varying natural daylighting requirements;
- Ventilation and the use of mechanical ventilation heat recovery units;
- Internal circulation and increasing the possibilities for interaction and collaboration;
- Appearance – the panel felt the design proposals do not, as yet, appear to satisfy the aspiration set out in the design code to create an 'elegant industrial building which also expresses a sympathetic modern style'.
- Window design, the rationale for wanting different parts of the building to appear to belong to separate buildings; coordination generally with the underlying building grid;
- In addition, the panel commented specifically on some of the proposed scheme's derogations from the Design Code:
- Colonnade – the panel commented that 'this was a strong and valuable design element of the masterplan and design code, indicating a continuous colonnade on the eastern edge of this plot'. They questioned why it stopped short of completing the full eastern run of the building, and asked the team to review.
- Route through the plot – the masterplan shows two separate buildings in this location with University Mews continuing through to the Tidal Basin Waterfront. The presented scheme shows a loss of east-west connectivity through the plot, as a result of being one building rather than two.
- Location of service area – the masterplan identified a main service access into the block from the west, which maintained a continuous building line along the eastern edge. The relocation of the service area to the east has weakened the eastern edge and particularly the north-east corner. The panel accepted that a new service access position may be needed, and to achieve this from the north may be preferable, but requested 'further consideration' of the the north-east corner of the scheme. and a continuous facade along the east elevation.
- Contemporary interpretation – the design code states that the design should 'draw inspiration from' the industrial traditions of the area rather than taking 'straight copies'. Insufficient evidence was presented of the exploration of traditional cues (particularly those specifically related to the Swansea legacy)

combined with contemporary design approaches which may successfully reinterpret tradition in a manner appropriate to the present day and the future legacy of the project.

- Eastern edge: The panel questioned whether a blank wall is the best option, or whether the service yard might be a point of interest to the public given its use, and so the approach may include some perforation or other solution.
- The panel were concerned about a pinch point being created between the south-west corner of the building and the dock edge and the need to maintain a 6m wide zone for cycles and pedestrians
- The panel wished to ensure the roof plant is properly incorporated with rooflights etc

Design response and evolution since the design review:

- Colonnade: The internal arrangements have been reconfigured to tallow the colonnade to extend the full length of the eastern flank of the building.
- Loss of east/ west continuity. The design team maintain that, given the regular vehicle movements and drop-offs required by TECH, the north-east service access is preferable to keep the interior of the quarter free of cars. There is little scope for a public thoroughfare through the service yard, because of legitimate concerns over health and safety and security.
- Contemporary interpretation: the design has incorporated more contemporary features, such as flat window heads, and stripped down cornice detailing.
- Eastern edge: the wall to the service yard is now a metal railing, rather than plain brick.
- South-west pinch-point: this has been resolved by replanning the south west vertical circulation element.
- Roof plant integration: the roof equipment is neatly incorporated among the roof-light pop-ups, and screened by the parapets.

Library

The Design Commission was 'comfortable with the integrity of the design' of the library, and commented the 'appropriate' choice of brick, and the fenestration patterns, but sought further distinction between the west and east elevations. The panel felt there was opportunity for a bolder, more contemporary approach. There was also discussion over the scale of the building, in particular the proposed three-storey height compared with the Design Code's two storeys.

Design response and evolution since the design review|:

The library design has since evolved to accommodate a reduced brief, with the extra storey being accommodated within the roof and it now matches the Design Code recommended storey height.

Local Planning Authority

A pre-application meeting was held with officers from the planning and urban design departments of the Council on the 16th February 2016.

The meeting focused on reviewing how the Phase 1 proposals have altered from the approved masterplan and what justification and clarifications were necessary to explain the changes.

In general, the changes were understood and supported.

5.0 Briefing and Design development

5.1 briefing requirements...

FACE & Technology Building

Tech Space: workshops and studios

The first phase of the SA1project consists of a project that will move all of the activities of the Faculty of Architecture, Computing and Engineering and part of the School of Digital Media down to SA1, vacating all academic activity from the Mount Pleasant campus.

The FACE Project will include all the technical spaces required by the Faculty including workshops, laboratories and architectural studios. It will also include all the general learning spaces required to support the Faculty's academic programme including seminar and classrooms, learning studios and informal learning spaces and work space for the academic and administrative staff in the Faculty. The FACE project should not be thought of as a stand alone facility. There will need to be strong connections between both the technical spaces and the flexible learning and work spaces with the subsequent phases of development.

The faculty comprises the subject disciplines of Architecture, Computing and Engineering and comprises the following schools:

- Applied Computing
- Automotive Engineering
- Architecture, Built and Natural Environments
- Engineering, Manufacturing and Logistics

It describes itself as…"*a multidisciplinary faculty, covering architecture, automotive and motorsport engineering, built environment, computing, electronics, environmental conservation, logistics and mechanical and manufacturing engineering…*" (UWTSD website - http://www.uwtsd.ac.uk/face/about-the-faculty).

The Faculty's motorsport engineering expertise is internationally recognized and they launched the world's first Motorsport degree programme with a BEng in Motorsport Engineering in 1998. This programme has now expanded to include HND, BSc and MEng programmes in Motorcycle and Motorsport Engineering.

The School of Applied Computing currently offer a wide range of full-time and part-time generalist courses in business information technology, applied computing, computing and information systems and electrical and electronic engineering. They also offer specialist programmes in fields such as software engineering, computer games development, robotics and intelligent systems, computer systems & electronics along with degrees related to specific industries like web development, mobile app development and computer networking.

The School of Applied Computing also includes the only CISCO Academy in Wales and offer computer network students the opportunity to study for CISCO industry based qualifications as part of their undergraduate studies

The School of Architecture, Built and Natural Environments covers two different disciplines, the built environment and the natural environment. Courses include architectural conservation, architectural technology, architectural technology & glass, building studies, building surveying, civil engineering, environmental conservation and sciences, habitat management, marine and coastal geography, property management, sustainable construction, quantity surveying and facilities management. The Architecture School will take its first intake of students in 2016-2017.

The School of Engineering, Manufacturing and Logistics is split in to two different disciplines. These are Logistics and Transport and Mechanical and Manufacturing Engineering.

Logistics courses include courses focusing on food, humanitarian, military and motorsport logistics. Engineering courses include Composites Engineering, energy and environmental engineering, extreme sports engineering, humanitarian engineering and mechanical engineering.

The Faculty has a strong track record for close collaboration with industry. Over £3M of research and development grants from EPSRC, EU and the private sector have been won in recent years to provide a Knowledge Transfer Centre that supports industry in Composites Manufacturing and Non-Destructive Test, especially in thermography and ultrasonics.

Figure 21 *Adjacency Diagram of FACE (Spaces That Work)*

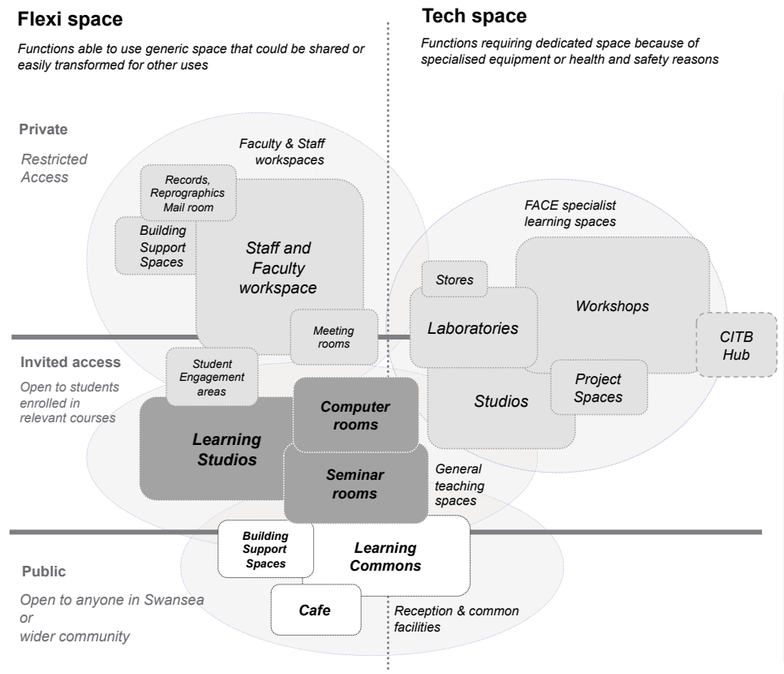


Figure 22 *Accommodation Schedule (Spaces That Work)*

	No. occupants	Size	No. required	NUA required	No. settngs provided
FACE/ Logistics & Manufacturing workshops					
Eng-Sci-30	30	180	1	180	*30*
Auto Centre	30	600	1	600	*30*
Engine Diagnostics Centre	20	250	1	250	*20*
NDT Room	10	68	1	68	*10*
Manufacturing Centre	30	650	1	650	*30*
PjT Room	30	180	1	180	*30*
Store	0	46	2	92	*0*
Technicians work area	1	10	6	60	*6*
				2080	
Architecture/ Built Environment					
Architecture learning zones	6	18	5	90	*30*
Tutorial rooms	6	18	2	36	*12*
UG Studio including base areas & computer teaching room	50	200	1	200	*50*
PG Studio including base areas & computer zone	30	150	1	150	*30*
Arch teaching room	100	150	0	0	*0*
Architecture Lab	30	150	1	150	*30*
Construction Lab/ Arch workshop	30	150	1	150	*30*
Environment Lab	30	100	1	100	*30*
Architecture store		100	1	100	
Technician work area		10	3	30	
External 'making and breaking' yard				0	
				1006	
Applied Computing					
Cisco Networking Laboratory	30	135	1	135	*30*
Electrical and Electronics Lab	30	180	1	180	*30*
Games Lab	20	90	1	90	*20*
Comp. Pjt Room	20	98	1	98	*20*
Qinetiq contract teaching room	30	79	1	79	*30*
Technician work area/ resources area		36	1	36	
				618	
TECH SPACE LEARNING HUB TOTAL :				**3704**	**498**

	No. occupants	Size	No. required	NUA required	No. settngs provided
Tech space learning commons					
Graduate Study area	10	54	1	54	*20*
Group collaboration table	4	9	6	54	*24*
Computer workstations	1	3.8	60	228	*60*
Soft seating/ informal learning settings	20	60	1	60	*20*
Learning Commons café (adjacent to soft seating)	20	54	1	54	*20*
Photocopiers		9	1	9	*0*
Student Hub/ Learning Commons subtotal (sqm)				**459**	***144***
Building support					
Cleaner's touchdown, store		18	1	18	
First aid room		9	1	9	
Waste/ recycling holding area		54	1	54	
Building support Total:				**81.0**	
TOTAL TECH SPACE REQUIREMENT:				**4244.0**	

TECH SPACE REQUIREMENT:	4244.0
TECH-SPACE REQUIREMENT NUA (including 3% fit factor)	4371
TECH SPACE Net Internal Area (includes circulation space at 12% of GIA)	**4967**
TECH SPACE Gross internal area (includes cores at 10% of GIA)	**5519**

FACE TOTAL SPACE REQUIREMENTS (sqm)	
Net usable area	**7,725**
Net internal area	**8,948**
Gross internal area	**10,202**

The Faculty has focused research in every school and participated in the 2014 UK Research Excellence Framework (REF) that measures the quality of research against international standards. In the last exercise in 2008, 75% of the Faculty's General Engineering research was recognised as being internationally recognised or better, including 10% at 'World-Class' grade. Much of their research is industrially focused and often 'near-to-market'.

The Faculty also participates in national research collaborations, including the Low Carbon Research Institute (LCRI), High Performance Computing (HPC) and the ASTUTE project in Manufacturing Engineering.

Library

The SA1 Digital Library

The library has always had an important place on a university campus - it is the signifier of learning, the repository of information and a meeting place for the entire academic community. These important roles continue today but are supplemented and enhanced by many other activities including access to technology and vast quantities of digital information, expertise on information retrieval, visualisation and analysis and the provision of space to support student project work and collaborative learning.

The SA1 Digital Library will provide a unique opportunity to consolidate the libraries from Mount Pleasant, Townhill and Ty Bryn Glas campuses as well as forging strong links with both the City and National Libraries.

The development of the library within the first phase of works will create a focal point for all students to visit the site and represents a major step in the transfer of UWTSD to SA1.

The library will become a core component of the SA1 site and will provide physical and digital resources and services to actively support learning, teaching and research for the university and the wider community.

A place for learning

The Library will play an important role as a 'hub', a lively, active and inviting space where students, staff and scholars can interact and where support for the use of the Library's resources and technology can be found.

The new Library can respond to the different ways in which students and scholars study (now and in the future) by providing a mix of open and enclosed workspace - for group working, individual study and collections study including the use of both physical book and journal collections and online and digital information sources and data sets.

A place for research

In addition to access to the University's physical collections, the Library will also provide the technology to enhance access to digital research materials owned by the university and external partners including large high-definition screens and audio-visual equipment.

A home for the collections

The SA1 library will eventually house the book and journal collections currently located in three Swansea campuses. The new library will integrate these collections into a single collection and maximise access to the university's e-book and ejournal collections.

Opportunities will also be found to exhibit and interpret items from the University's Special Collections that are housed in Lampeter.

A place for the wider community

The new Library, through the quality of its physical environment, collections and resources, can become a special place within the SA1 campus that will attract members of the wider community to participate in events and use its resources.

The university is currently exploring the possibilities of partnership with the National Library of Wales to provide access to the National Library's digital resources in the SA1 library and to host community events supporting the use of these materials.

Figure 23 *Adjacency Diagram of Library (Spaces That Work)*

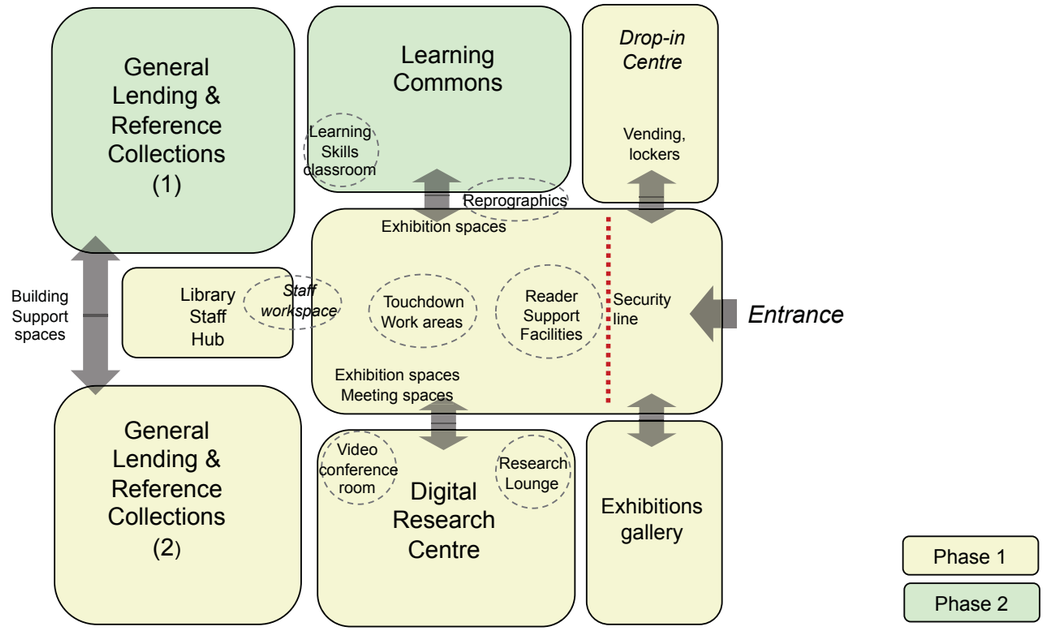


Figure 24 *Accommodation Schedule for Library (Spaces That Work)*

Library Skills Hub

	No. staff	Size	No. required	NUA required	Notes
Librarian/ Information specialist home base	12	7	12	84	Workspace model and library staffing model to be determined.
Library workroom (CSU)		54	1	54	Processing area for incoming books. Requires easy access to Goods In.
Store		27	1	27	
Computer/ server room		27	1	27	Data, video and sound servers
Multimedia equipment work room	1	13.5	1	13.5	
Multimedia store		13.5	1	13.5	
IT network room		13.5	2	27	
			Library Skills Hub subtotal	246	

Learning and Research Hub — *No. people* — Area — No. — Total

	No. occupants	Size	No. required	NUA required	No. settngs provided	Notes
University book stacks						
Integrated collection in open book stacks		400	1	400		40000 volumes in open stacks
		University book stacks subtotal:		400	0	
Front of house						
Circulation desk		18	1	18		
Catalogue PCs		3	3	9		
Reprographics		18	1	18		
Digital Research Centre						
Touchdown work area	5	26	1	26	5	Individual, short term work area
Group collaboration table	4	9	4	36	16	Group working, indiv study with laptop - too big?
Study carrel	1	2.25	10	22.5	10	Desk for laptop use
Quiet room	1	4.5	4	18	4	Rooms with computer or for laptop use
Computer workstations	1	4.5	6	27	6	Workstation with flat screen display
Small group collaboration room (4-6)	3	18	10	180	30	Meeting/ workroom with large display
Research lounge	20	70	1	70	20	Soft seating and a range of informal learning settings
Multipurpose research/ seminar room with VC	20	45	1	45	20	Technology rich classroom space
Information/ help desk centres	2	13.5	2	27		Help points for support. Also used for National Library information surgeries
Exhibition area (including exhibition storage)		200	1	200		
		Digital Research Centre subtotal:		696.5	???	
		Learning and Research Hub subtotal (sqm)		1,097	???	learning settings

Building support

	No. occupants	Size	No. required	NUA required	No. settngs provided	Notes
Cleaner's touchdown, store		13.5	2	27		Base for cleaning staff with lockers
Goods in/ storage		54	1	54		Includes loading bay office ?
Waste/ recycling holding area		18	1	18		Dry goods / empties / expl. & vending / refuse & empties
			Subtotal Other Spaces	99		
			PHASE ONE TOTAL	1442		
			LIBRARY PHASE 2 REQUIREMENT NUA (including 5% fit factor)	1514		Grossing up factors
			PHASE 2 Library Net Internal Area (includes circulation space at 12% of GIA)	1720		12%
			PHASE 2 Library Gross internal area (includes cores at 15% of GIA)	2023		15%

Learning and Research Hub — *No. people* — Area — No. — Total

	No. occupants	Size	No. required	NUA required	No. settngs provided	Notes
University book stacks						
Integrated collection in open book stacks		600	1	600		60000 volumes in open stacks
		University book stacks subtotal:		600	0	
Undergraduate Centre						
Information/ help desk centres	4	13.5	2	27		
Group collaboration table	4	9	4	36	16	Group working, indiv study with laptop
Study carrel	1	2.25	80	180	80	Desk for laptop use
Quiet room	1	4.5	10	45	10	Rooms with computer or for laptop use
Computer workstations	1	4.5	10	45	10	Workstation with flat screen display
Touchdown work area	5	26	3	78	15	Individual, short term work area
Computer browsery	1	2.25	6	13.5	6	Touchdown computer access
Library skills classroom	20	60	1	60	20	It enabled classroom for research skills and library training sessions
		Undergraduate Centre totals:		465	157	
		Learning and Research Hub subtotal (sqm)		1,065	157	learning settings
		PHASE TWO TOTAL		1085		
		LIBRARY PHASE 2 REQUIREMENT NUA (including 5% fit factor)		1139		Grossing up factors
		PHASE 2 Library Net Internal Area (includes circulation space at 12% of GIA)		1294		12%
		PHASE 2 Library Gross internal area (includes cores at 15% of GIA)		1522		15%

5.2 design evolution...

FACE & Technology Building

Introduction

Following the development of initial concept plans (opposite) an extensive design development process was undertaken with the Prince's Foundation and their architectural advisors ESHA architects.

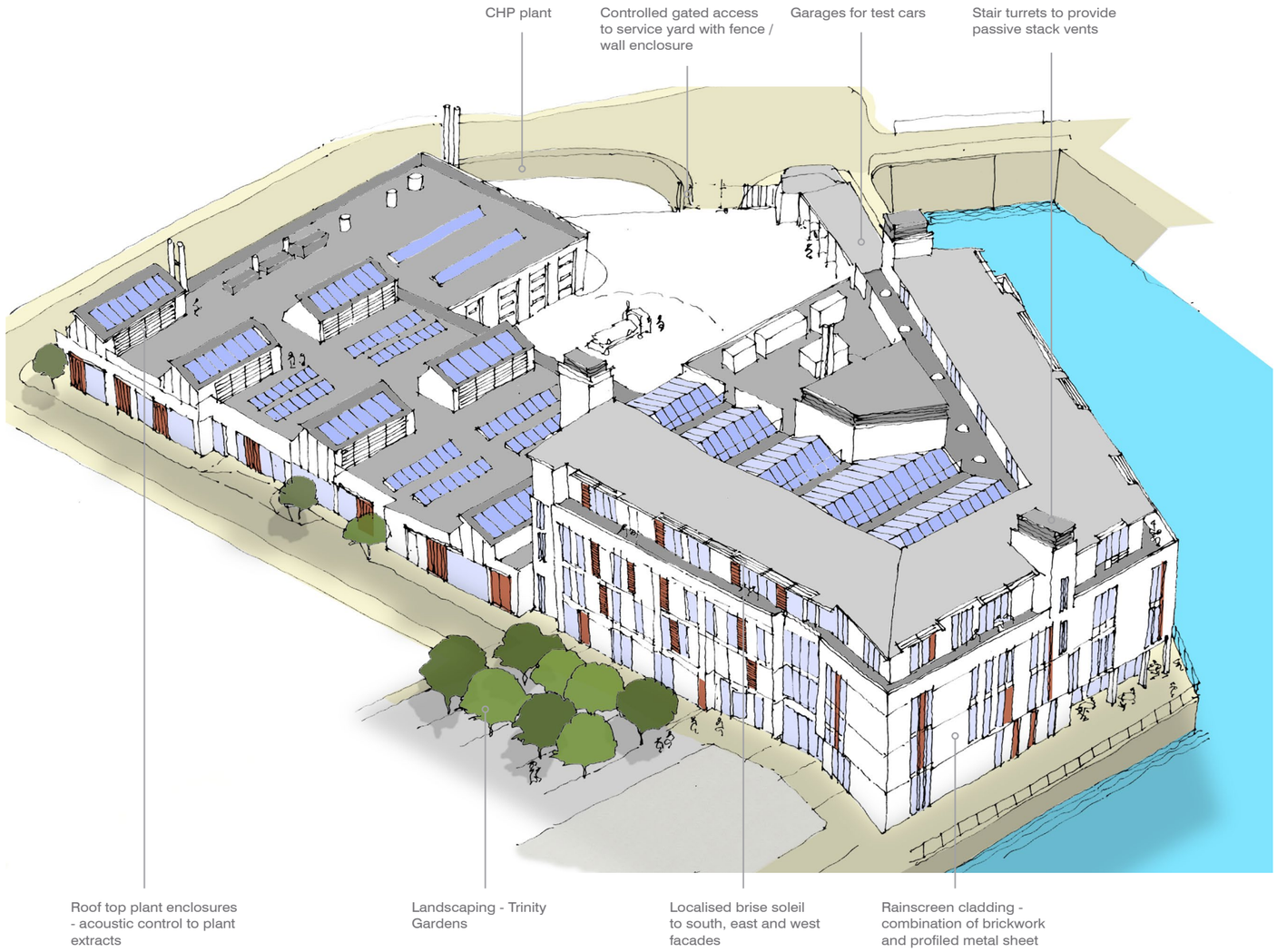
The design team and the university's advisors determined that the university's objectives towards design and placemaking would best be served by looking to former docklands and waterside areas that had been successfully redeveloped in recent years, so as to build on, and find resonance with, the industrial heritage of the site.

First Options (October 2015)

The first option produced by the team took the RIBA Stage 2 plan and looked at different ways of arranging the space and the massing. Options included:

- A service street through the development linking the road with the dockside.
- Moving the service yard away from the dockside, towards the road,
- Moving the service yard to the roadside in the north west corner of the site and relocation the tech blocks to the dockside.

This resulted in a first elevation option, indicated overleaf. This took the former contemporary approach and applied a more traditional palette of materials and window openings that was reminiscent of 19th century dockside and warehouse architecture.



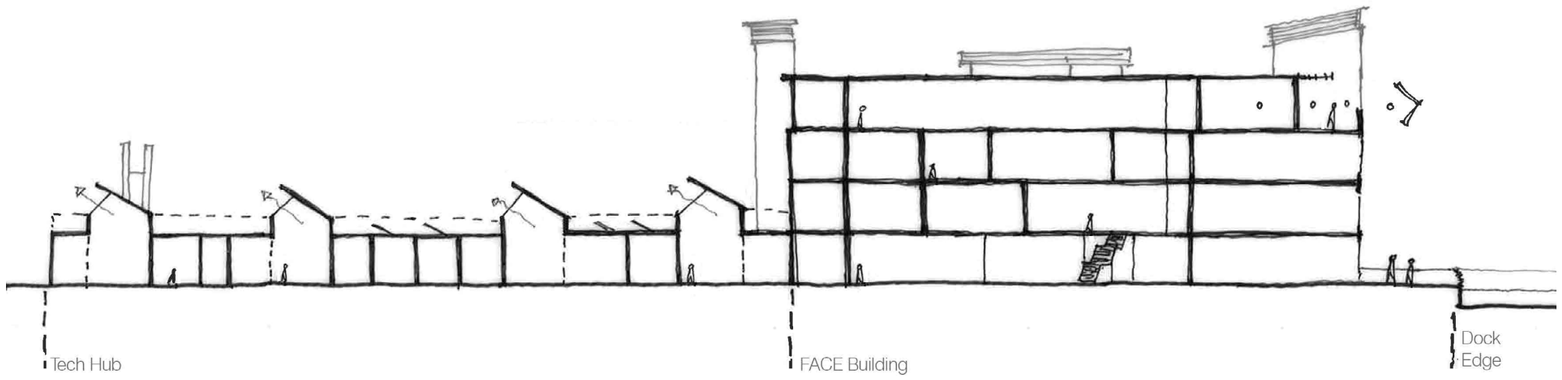


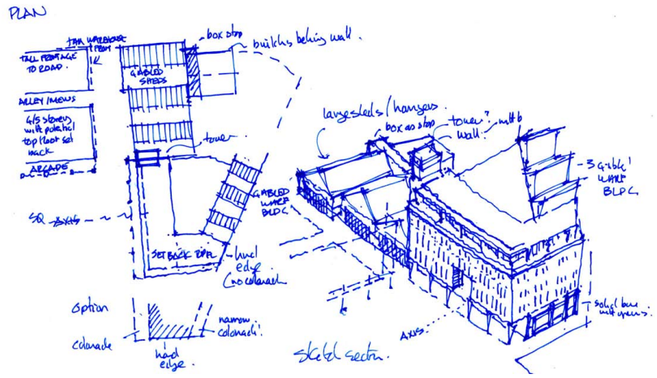
Figure 25 *Schematic Section*

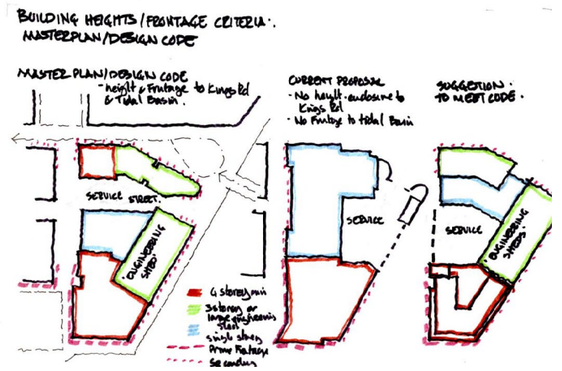
First Options (October 2015)

Additional elevation options were tabled as part of this initial study, all based around Victorian dockside buildings.

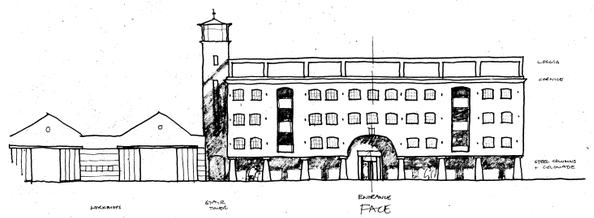
Each of the options considered different aspects of the design approach but kept the same overall principles in terms of the following:

- Colonnaded base.
- Mixture of window styles within a detailed masonry facade.
- Roof-top terrace.
- Corner feature tower.
- Varying proportion arched openings at major entrances.
- High level gabled sections against low level industrial type units.







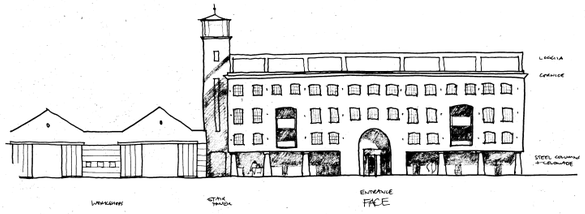


First Options (October 2015)

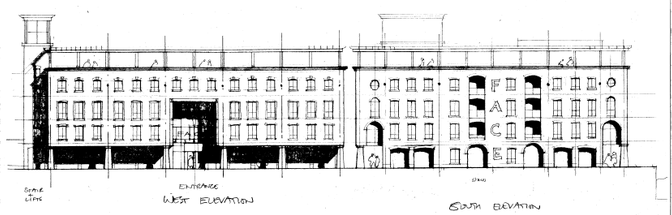
Option 4 explored the preferred alternative produced at this stage in the designs development, and included

- The accommodation split into three distinct blocks, each with its own character, based on the industrial design ethic.
- Service yard accessed from Princes Street and away from the tidal basin.
- Engineering and technology blocks pushed to the eastern and northern boundaries, fronting the tidal basin and Kings Road.
- Main entrance to FACE centralised on the square, opposite the proposed library.
- A mixture of heights and massing across the site.
- Colonnaded base.
- Mixture of window styles within a detailed masonry facade.
- Roof-top terrace.
- Corner feature tower.
- Varying proportion arched openings at major entrances.
- High level gabled sections against low level industrial type units.

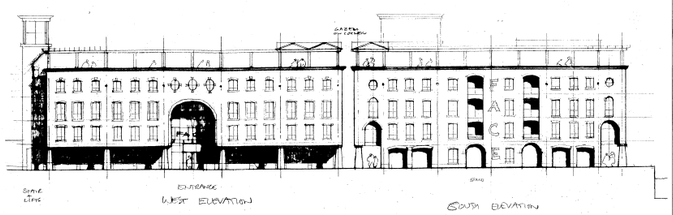
From the point of view of the basic arrangement of the buildings on the site, the team concluded that the principal service access should be from the north-east corner, off the King's Road roundabout.









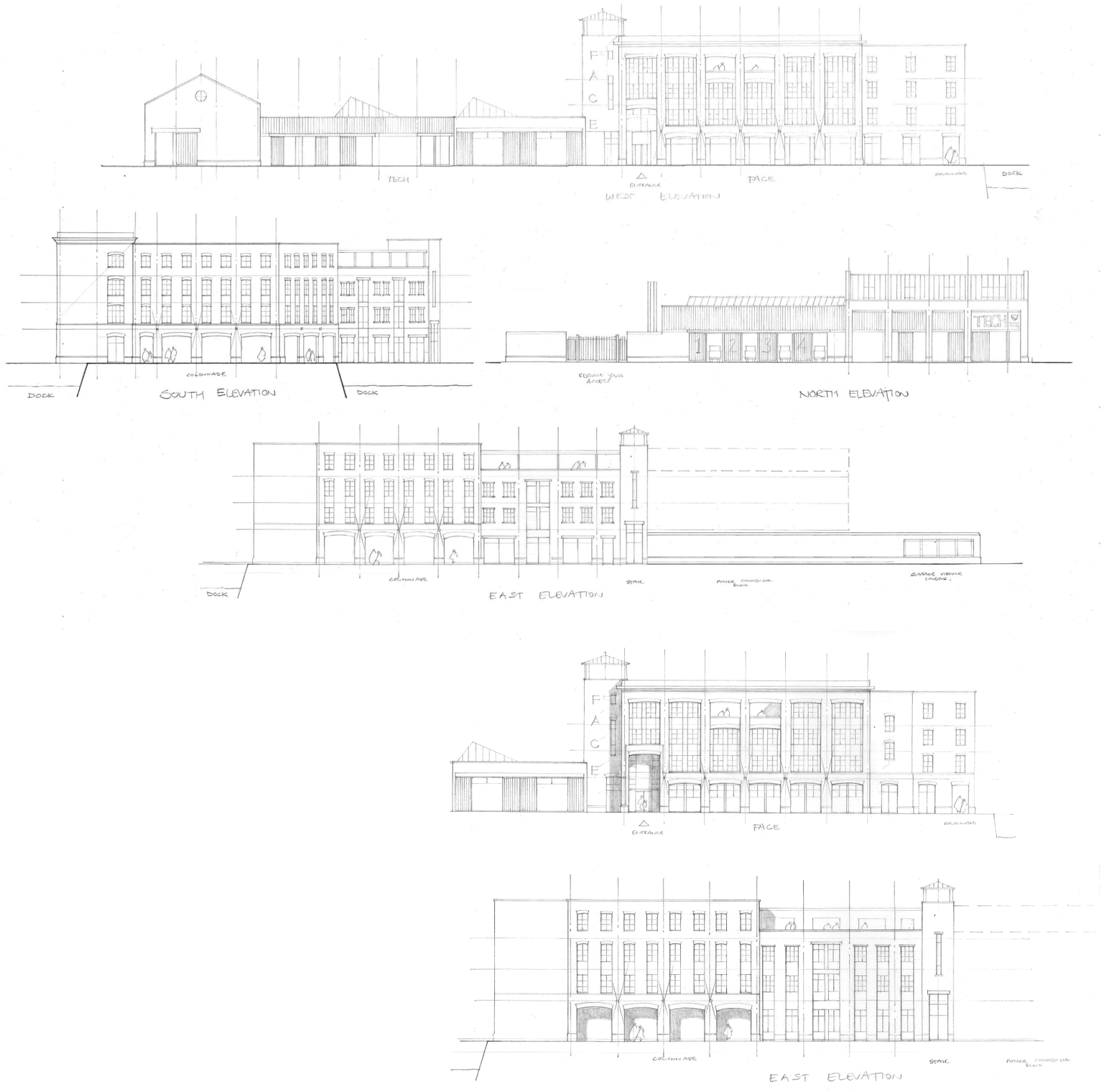




Developing Options (December 2015)

The option described above was refined and went through further design development and started to approach the final design solution and included the following:

- Material changes on the Tech block
- Stair towers expressed further with the addition of extensive lantern lights to the tops.
- Fenestration patterns amended, linking windows over a number of stories rather than having individual openings.
- Proportions of east elevation amended to a more balanced facade.
- West elevation main entrance expressed with upper level glazing.



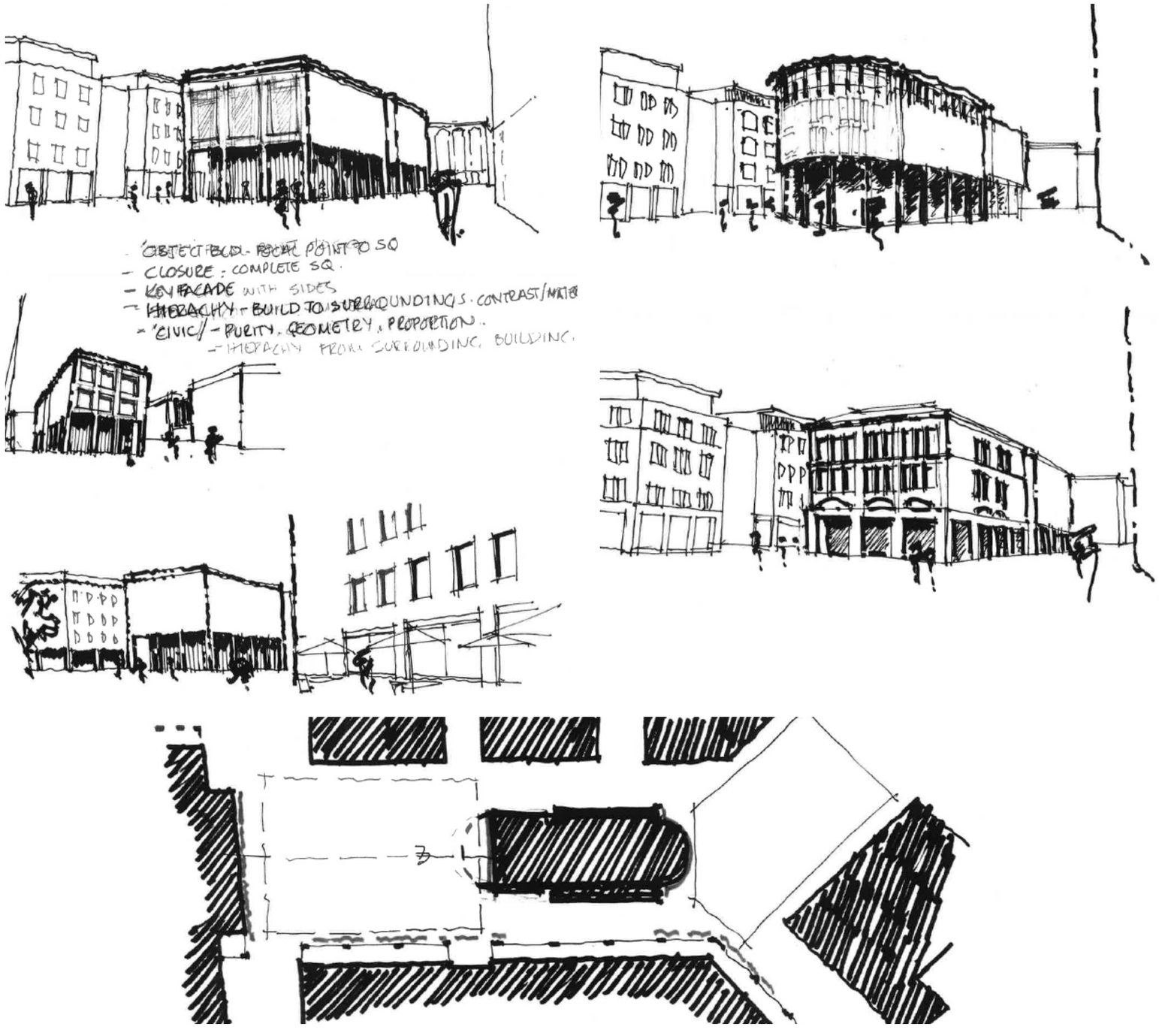
Developing Options (December 2015)

The option described above was refined and went through further design development and started to approach the final design solution and included the following

- Bays amended to align with new grid
- Further development of fenestration pattern to incorporate preferred ventilation solution

The above points highlight the majority of the changes to the design solution as the scheme has progressed towards a planning application.

Figure 28 *Development Options*



Library

Introduction

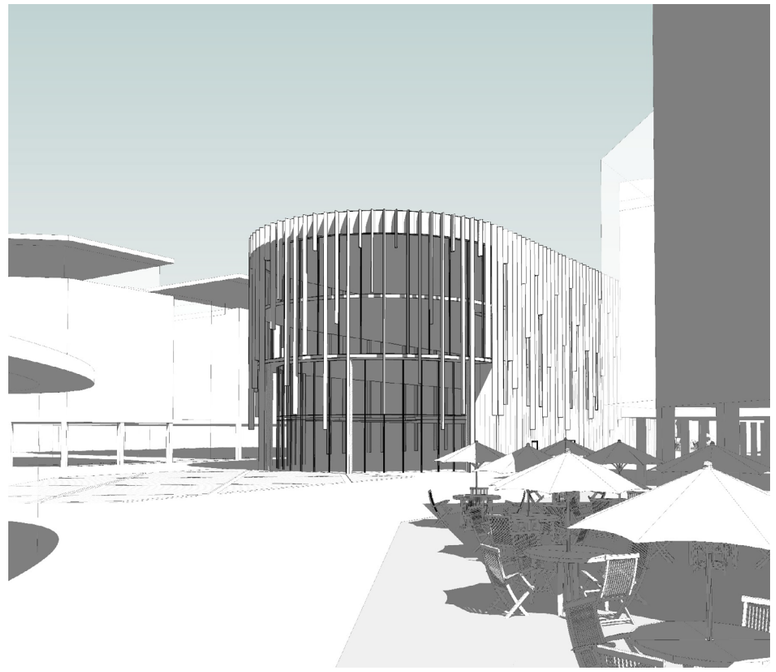
The Stage 2 conceptual sketches had developed the organic plan form suggested in the masterplan.

Whilst keeping the idea of a 'jewel' building at the heart of the campus, a more traditional plan form was investigated , based on a regular grid and an aesthetic that looked to Swansea's industrial and maritime heritage as a way of rooting the proposals within the wider site.

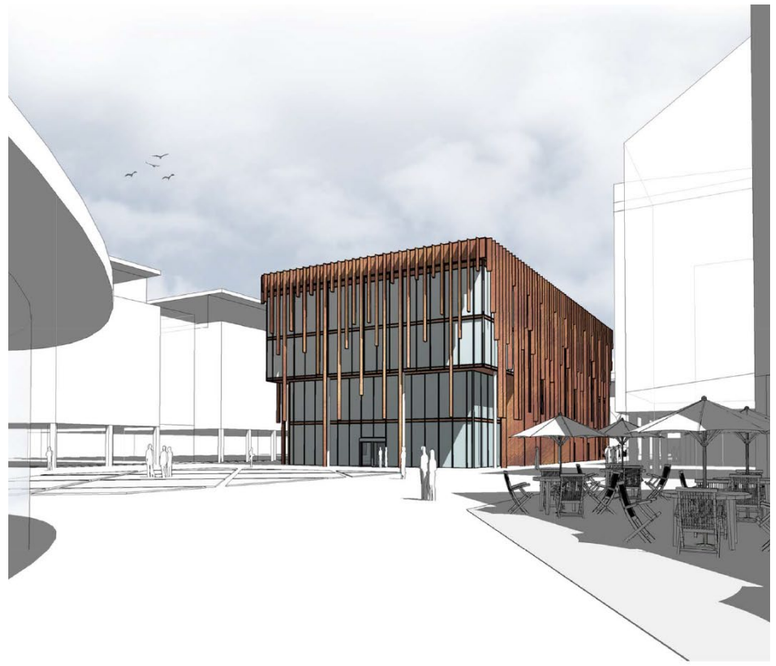
The team agreed to take the scheme forward and explore options based on discussed concept images (opposite)

Figure 29 *Development Options*









Several schemes were proposed that gave more prominence to the ends of the building and the way they addressed each of the public squares.

Two of the proposals presented a more civic appearance to the site, while the other two proposed a more modern approach.

All schemes allowed for an increased entrance and arrival experience with the lower two floors being recessed at each end to allow for a double height entrance space that would accommodate a feature stair, balcony and public seating area.

The sides of the building were also recessed at ground floor to allow for a colonnade effect and protection from the on-shore wind driven rain.

Figure 30 *Development Options*

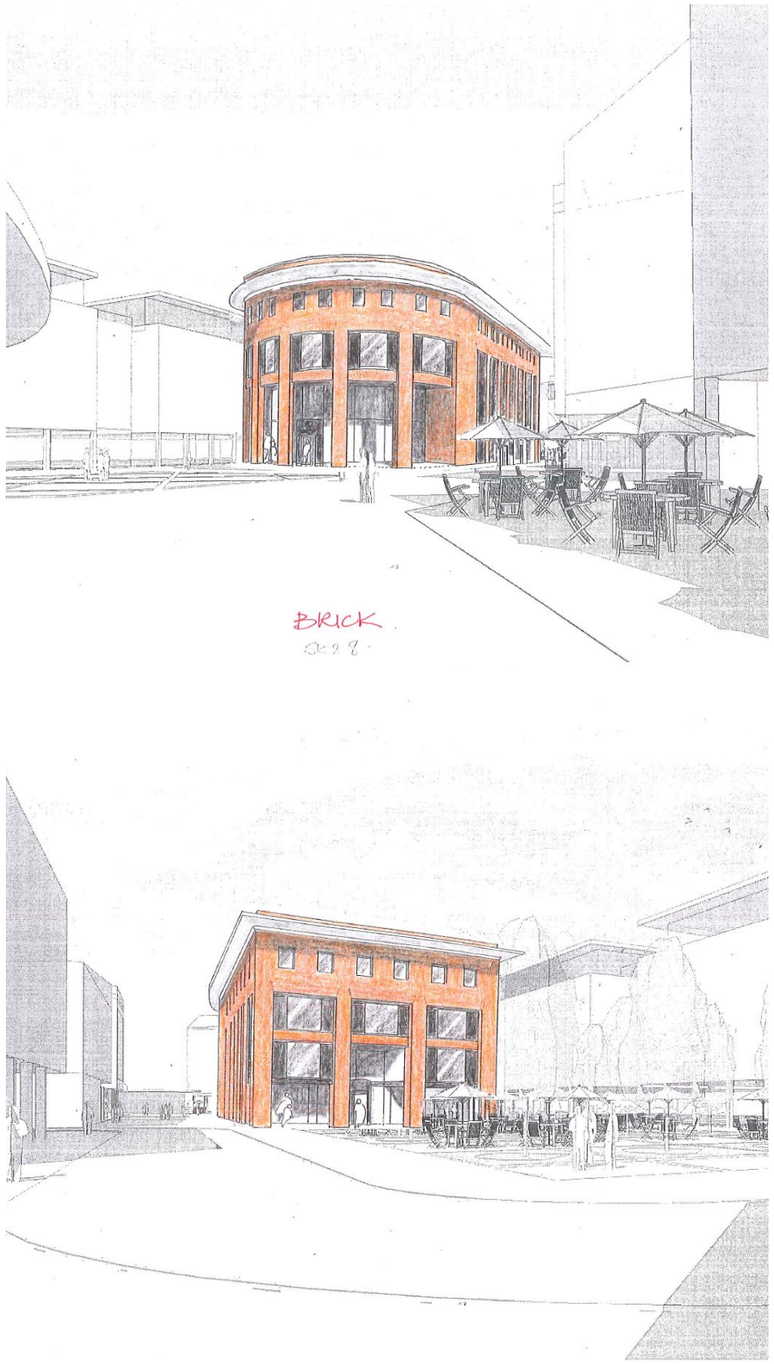
Following submission of the above proposals to the Prince's Foundation, the team furthered the designs based on the revised modelling as included opposite (hand drawn images).

The team took these designs forward and adapted them to suit the form, space and massing of the model.

This proposal sought to reduce the height and massing of the scheme by insetting the top floor and introducing an oversailing roof.

The proposals also retained the ground floor set back, expressed as a colonnade to the sides and rear of the building that flowed into the double height recessed entrance space.

As a response to the form of the courtyard enclosure between the library and FACE, the rear of the building was squared off, to provide a strong definition to the courtyard.











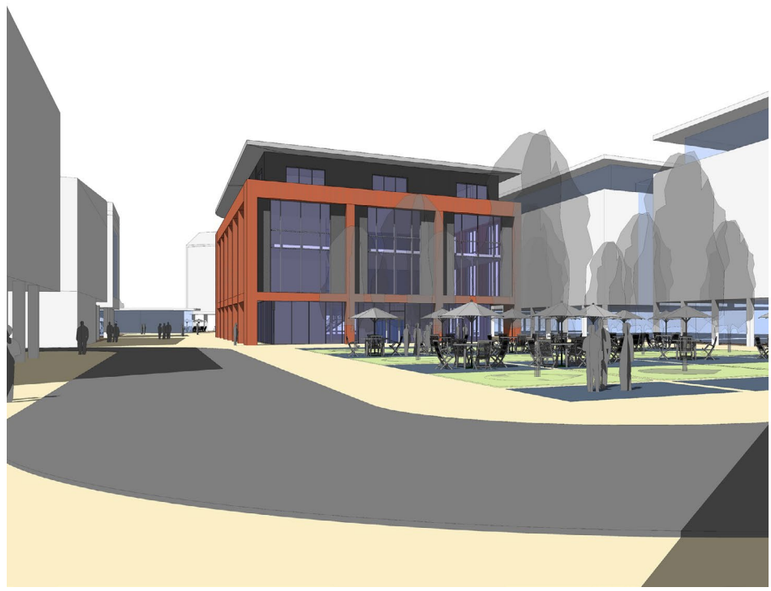
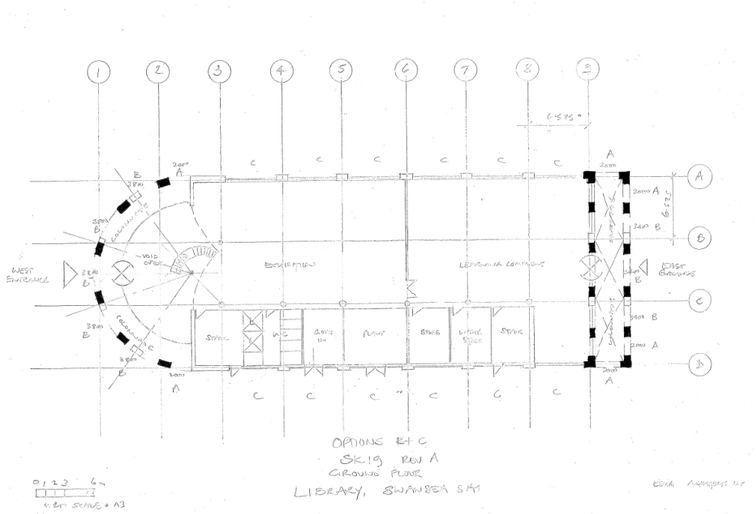


Figure 31 *Development Options*

The preceding iterations of the scheme were finalised into two proposals for a full presentation to the Vice Chancellor at the end of November 2015. The first of the proposals continued the previous approach of a masonry building, embellished with cornice and pediments.

The design called for a facing brickwork facade, complimented with pre-cast concrete and reconstituted stone details, a high roof parapet and deeply inset large format windows.

An extensive projecting brise soleil, set below the parapet provided a top hat to the building.









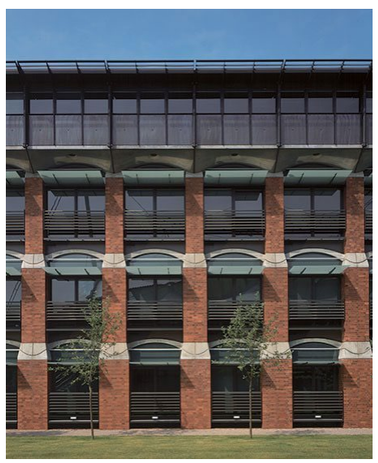
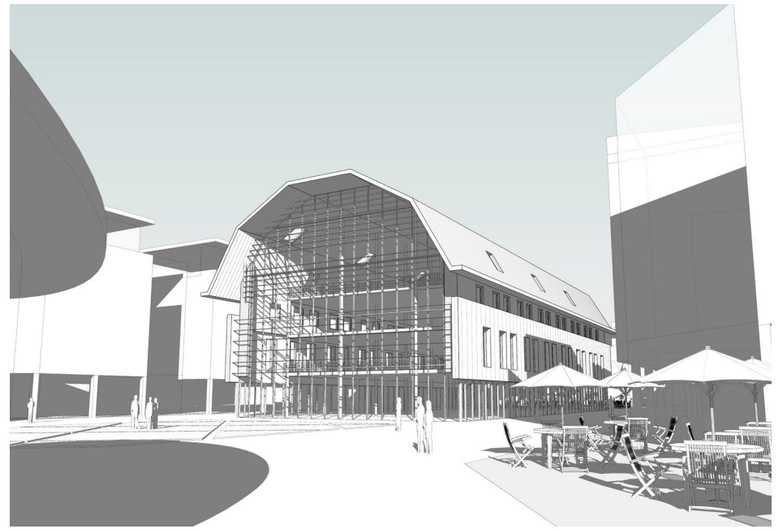


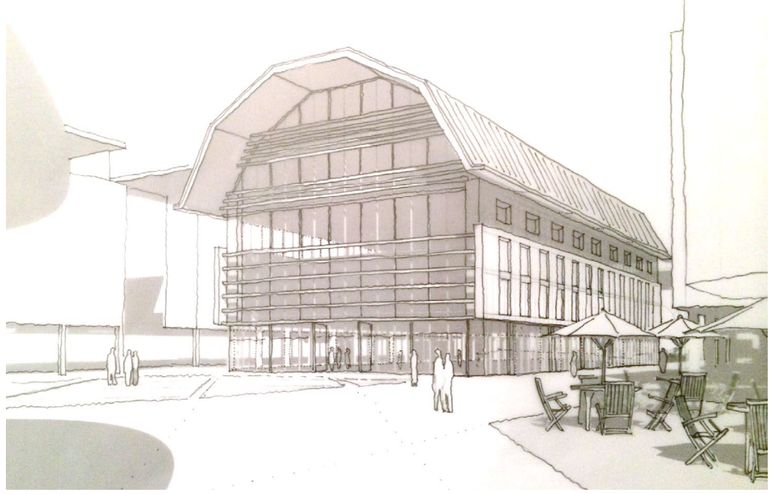


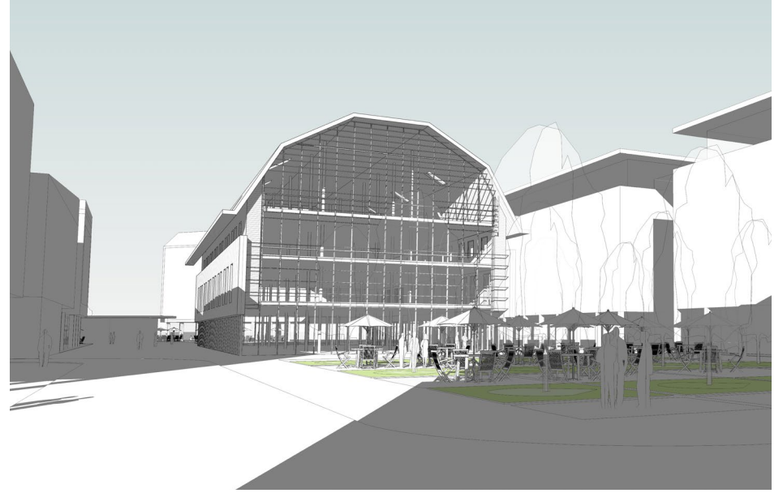


Figure 32 *Development Options*











Peter Behrens AEG Factory



Peter Behrens AEG Factory



Michael Hopkins Kroon Hall. Yale



Swansea Industrial Heritage

To provide an alternative elevation proposal, the designs opposite were prepared and presented to the Vice Chancellor and the Prince's Foundation. The design sought to provide a 'reinvented and reclaimed industrial shed' option that would accurately reflect the maritime and industrial heritage of this area of Swansea's docklands.

The design called for a heavyset, exposed structural frame, with lightweight cladding and glazing systems applied, finished off with a Behrens type roof, reminiscent of the AEG factory in Berlin.

The ground floor is fully glazed to provide light and visual connectivity throughout, with the amount of glazing to the sides of the building reducing, the higher one goes.

Each end of the building is fully expressed as glazed curtain walling, providing a strong visual link between the interior of the building and the pedestrian courtyards beyond.

The resulting proposals, expanded in the following section, seek to unify both proposals into a coherent, holistic approach.

6.0 Phase 1 Proposals

6.1 proposed derogations from the masterplan...

The two principal phase 1 buildings have specific spatial, massing and operational requirements which have led to a number of proposed derogations from the original masterplan. These are outlined in the plan adjacent.

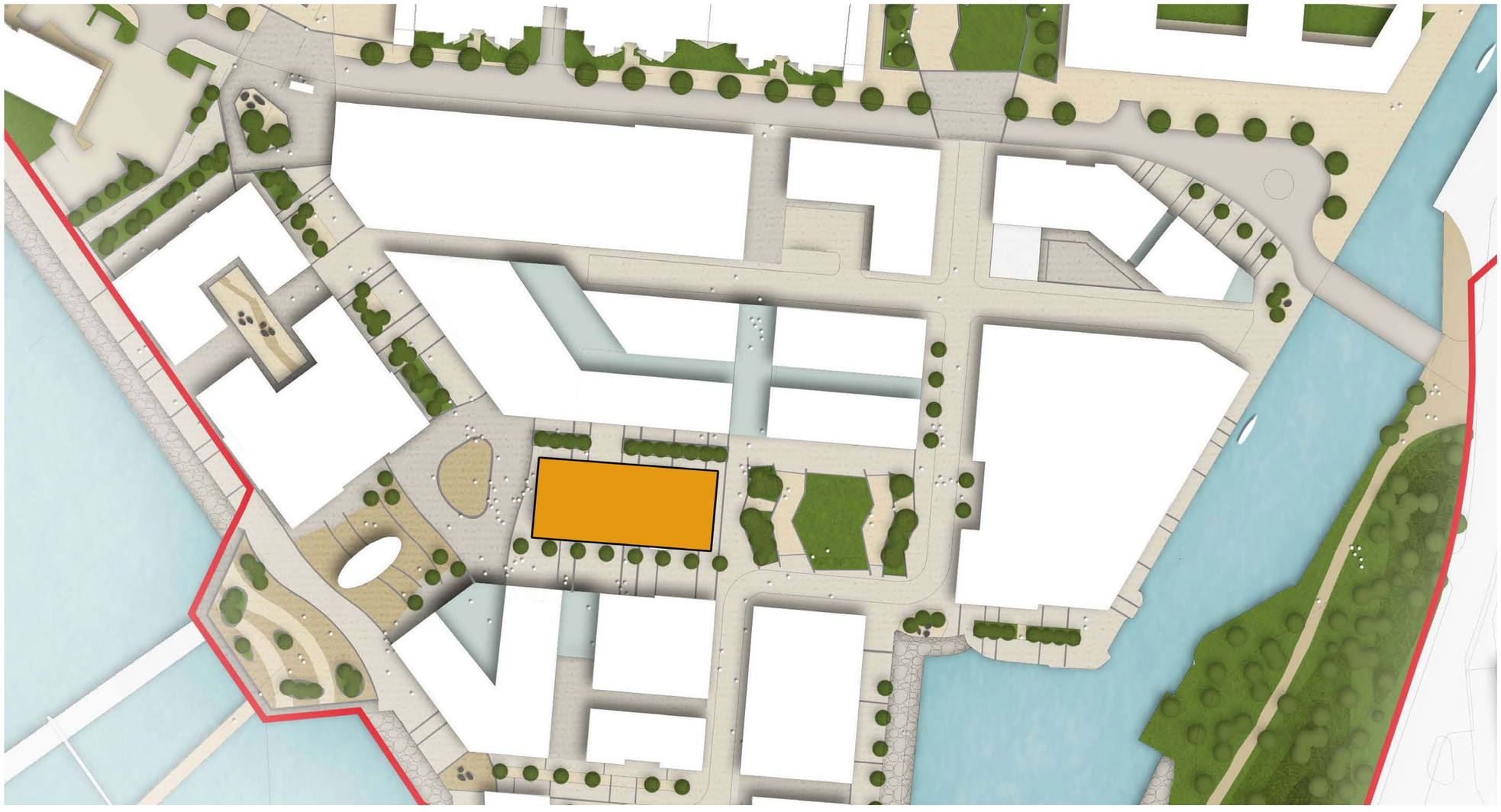
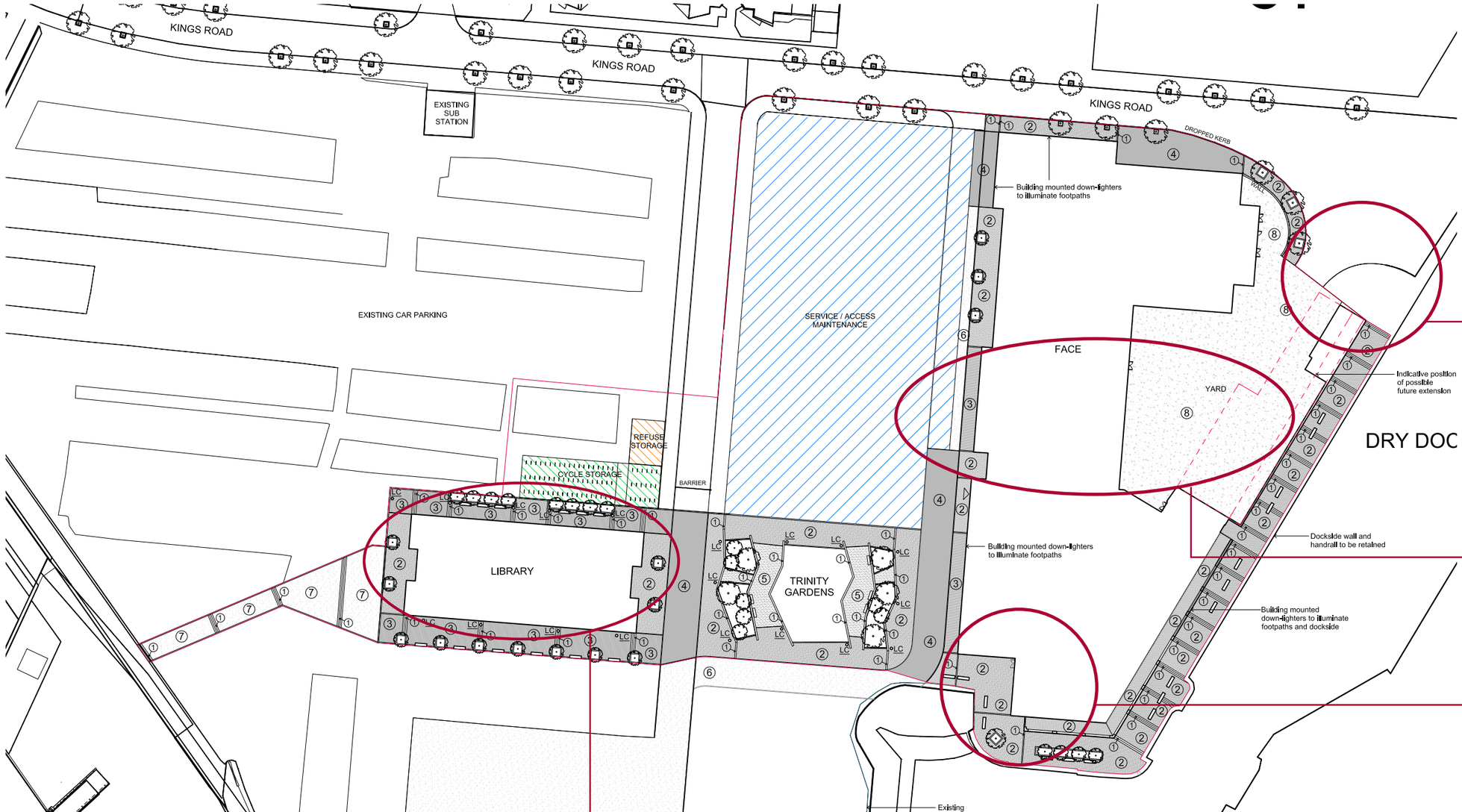


Figure 33 *Peninsula Masterplan*

Figure 34 *Phase 1 Plan*



The principal entrance to the service yard has been placed off the turning head at the end of King's Road

The masterplan indicated an east-west working mews creating a connection between Prince's Street and the Tidal Basin Waterfront. The massing of the buildings on Dockside now straddle this connection, creating a single combined plot.

The southern part of the plan extends approximately 3m further towards the southern boundary. This is to offset the setback from the south-west corner caused by the 6m clearance requirement from the dock edge.

The masterplan indicated a library massing of two storeys. The building is now proposed to be three storeys.

6.2 accordance with the Design Code...

Requirements of the Design Code

Rather than a 'campus', the University wants a vibrant new quarter, with a balanced mix of uses which will create a lively 'sense of place' and provide job opportunities for graduates. Buildings should be designed as if an elegant industrial building had been sympathetically modernised, reclaimed and reshaped – 'harmonised' to accommodate a range of contemporary uses. The Essential Qualities are defined as follows:

1. A Welcoming Place of Connected Streets and Squares

The SA1 Waterfront Innovation Quarter should be well connected to the city and designed as a network of well-defined streets and squares, to accommodate a mixture of uses and provide a welcoming environment.

2. A Place with Distinct Focal Points and Distant Views

The new quarter should be a strong destination in its own right and maximise the possibilities of its dockside setting and heritage.

3. Human Scaled Protected Built and Natural Environments

The new streets and buildings should provide attractive areas which are sheltered from the elements.

4. Carefully Modernised Industrial Heritage

The buildings and public realm should be design as a robust response to the rich industrial heritage of the area. The buildings should be beautifully designed robust masonry structures with ample natural light for modern uses, feeling both traditional but also fresh and modernised.

5. Vibrant Human Activity

The University wants the new creative quarter to be a diverse mixed-use area with emphasis on social, educational and employment activity, rather than solely an academic campus. The ground floor frontages in particular should contain a mixture of uses, including flexible workspaces where small businesses can flourish. The Paintworks in Bristol is a classic example.

6. An Individual and Quirky Character

The University wants the Quarter to be developed with buildings and spaces of real character and not the predicable corporate monotony. The buildings should demonstrate an individuality and quirkiness which brings life to the public realm.

The two buildings fulfil the requirements of the Essential Qualities as follows:

FACE

The building is designed as a robust response to the industrial, engineering and dockside character of Swansea. The main teaching block is articulated into three sections to respond to the setting and reinforce a 'sense of place':



Building Frontage Strategy

- Primary active frontage
- Secondary active frontage
- Passive frontage

- The grand main frontage facing west into Trinity Gardens and the Library.
- The simplified south and east elevations with the colonnade facing the Tidal Basin.

This in addition to the single storey TECH industrial wing which fills the north part of the site.

The architectural language is in the character of Swansea docks, in red multi brickwork with a powerful rhythm of wide openings at ground level and grouped fenestration above. The engineering requirements (to light and ventilate the building to Part L standards) are clearly expressed on the elevations, by means of a coordinated array of windows, louvres and panels which gives a varied yet contemporary common aesthetic to the building. The south and east elevations are colonnaded at ground floor level to give a vibrant active frontage onto the dock, whilst also creating covered access sheltered from the elements. The three staircases are horizontally drawn out of the main composition, in order to reinforce the articulation of the building and to express movement within. The building creates a strong 'sense of place' and robustly addresses its surroundings on all sides; Trinity Gardens and the Library to the west, the Tidal Basin to the south and east and the more intimate Kings Road and Prince's Street to the north.

In addition to the colonnade along the south and east elevations, the ground floor frontage of the building is opened up by generous studio-like windows to the west elevation and large industrial-scale windows/loading doors with sliding security screens to the engineering TECH block. The building is articulated and designed with a distinct individual expression and character, which will reflect the robust industrial character of the site.

FACE responds to the Essential Qualities of the Design Code in the following ways:

- Robust brick language which reflects Swansea's industrial heritage.
- Engineering solutions to assist occupant well-being.
- The building carefully addresses the spaces around it, thus creating a strong 'sense of place'.
- Large windows and colonnading at ground floor level to create a vibrant active frontage.
- Complemented by the single storey industrial TECH block, the building has its own individual character.

Library

The Library is a prominent freestanding building which defines the two urban squares at the heart of the Quarter; Trinity Square and Trinity Gardens. It provides the essential civic function and serves as the focal point and 'hub' within the Masterplan. The concept is of 'the converted engineering shed' which will resonate with the industrial heritage of the site.

The building has a simple 3-storey shed form, which has been 'modernised' for new uses by 'cutting out' openings from the side elevations at ground level and to the gable ends, in order to open up the interior and create the maximum transparency. What remains is a highly robust framework in red brickwork, infilled with glass and metal cladding and sheltered by a generous overhanging roof. The ground floor is near transparent, inviting in both students and visitors alike. The glazed gable ends allow views both into and through the building and create an appropriate setting for the display of coloured glass artefacts from the local glass industry.

The Library responds to the Essential Qualities of the Design Code in the following ways:

- Creating a civic sense of place, defining public squares at either end.
- Providing the focal point within the Quarter.
- Inviting users by means of the sense of openness and transparency.
- Providing sheltered entrances protected from the elements at each end.
- A carefully 'modernised' industrial 'relic' with a robust brick form, opened up and infilled with glass and metal cladding.
- Traditional form with modern expression and highly individual character.
- Vibrant hub of activity, open on all sides.

General Architectural Principles

The Design Code sets out guidance on the architectural character of individual buildings. The University wants all buildings to create a distinctive neighbourhood that is integrated into the fabric of the city and draws inspiration from the industrial, commercial and dockside architecture of Swansea.

The buildings must also implement the principles of the ecological/sustainability agenda, whilst being designed to mitigate the harsh coastal climate.

ARCHITECTURAL CODE – FACE

Precedent

The design of FACE has been inspired by industrial warehouses and factories – simple masonry forms with linear façades and repetitive patterns of windows.

Building Form

1. Enclosure

FACE contributes to the creation of a coherent set of connected spaces. The building fills the site completely and clearly defines the boundary between public and private space. The elevations relate to the character of the spaces surrounding the buildings.

2. Public Ground Floor Uses

The building has been planned with a mixture of active uses on the ground floor, including:

- Teaching rooms behind large studio/shop windows.
- Colonnade along the south and east elevations, with a café spilling out onto the waterfront promenade.
- The TECH industrial wing has many engineering operations visible through large windows.

3. Robust Fabric

The building is planned on a 6m grid and the elevational pattern is designed to allow further sub-division down to 3m wide bays, each of which has its own independent heating/ventilation unit. Certain teaching areas within the interior have been planned as column-free spaces, creating the most flexible arrangement to accommodate changing future uses.

4. Shallow Plan

The teaching rooms are planned with large windows and a maximum depth of 9m to ensure adequate natural daylighting and ventilation.

5. Hierarchy of Circulation

The building relates very closely to the external circulation route proposed within the Masterplan. The main entrance opens onto Trinity Gardens, directly opposite the Library. The entrance is on axis with the colonnade of the future teaching block on the north side of Trinity Gardens, so that pedestrians can circulate under cover, protected from the elements.

The service entrance for TECH is at the north end of the building, off King's Road.

ARCHITECTURAL CHARACTER – FACE

The dockside typologies (engineering shed, warehouse and office) should inform the character of the buildings.

1. Composition

FACE complies fully with the aspirations of the Design Code in this respect: "Each building elevation should be conceived as a single harmonious composition that responds to the internal organisation of the building, the public space that it fronts and the form and character of the neighbouring buildings".

2. Materials

FACE is designed in an extremely limited palette of materials – primarily robust red brickwork with metal cladding to the less vulnerable parts of the TECH industrial wing.

3. Architectural Detail

The robust brick cladding of the building is designed not only to reflect the Swansea dockside but also for longevity and resistance to the exposed marine climate. The design of the elevations is based around the principle of promoting legibility. For example, the main entrance is a recessed double-height volume opening onto Trinity Square. The treatment of the elevations carefully reflects the hierarchy – with the main/west frontage as the focus of architectural display and the secondary elevations given a more subdued treatment. The building has something of the square/angularity of the previous now demolished Weaver Building with its square/regular openings and concrete lintels.

4. Signage

The opportunity has been created to integrate signage into the design of the main staircase, directly alongside the main entrance.

5. Lighting

The external lighting is mounted onto the building centred on each pilaster and (lighting both upwards and downwards) accentuating the rhythm of the architecture.

6. Roofscape

We are conscious that the roofscape of the building will be visible not only from within the campus, but also from high points further afield. The plant enclosures are concentrated within the centre of the roof area – the whole neatly set out and coordinated behind the parapet. The main staircase is carried up to create an architectural accent, but also to provide maintenance access to the roof.

ARCHITECTURAL CODE – LIBRARY

Precedent

The precedent for the Library is the "engineering shed converted/modernised", chosen for its simplicity as a stand-alone building and its resonance with the industrial dockside tradition of Swansea.

Building Form

1. Enclosure

The Library sits within the 'corridor' of public open space at the heart of the Masterplan and actually defines Trinity Square to the west and Trinity Gardens to the east.

2. Public Ground Floor Uses

With the exception of the 'core' elements which occupy the southern elevation of the building, the ground floor of the Library is mostly an open plan area of teaching, study and entrance areas. The building is designed with the maximum amount of glass at ground floor level to make it as inviting/transparent as possible.

3. Robust Fabric

The Library is planned on a 6.3m grid and is 19.1m across. This creates a highly flexible interior which is open to future interpretation.

4. Shallow Plan

With an internal width of 19.1m and a circulation route down the middle, the depth of space on each side is kept to less than 8m, so that all areas have plentiful natural daylight. Furthermore, the main entrance at the west end is a double-height space which will create a powerful sense of arrival.

5. Hierarchy of Circulation

The building actually sits within the space and defines the circulation between and within the squares at each end. There is a 10m 'slot' between the Library and the future blocks on either side, wide enough to avoid unwelcome proximity but at the same time narrow enough to 'funnel' movement from one square to the other. The architecture of the side elevation is incidental and experienced only in passing. The fully glazed gable and entrance at each end of the building fully addresses the square at either end.

ARCHITECTURAL CHARACTER – LIBRARY

1. Composition

The Library is a single harmonious composition inspired by the concept of the 'modernised/humanised industrial shed'. It combines the familiar form of the shed with the civic function of arrival and welcome.

2. Materials

The building has a limited palette of materials: a skeleton framework of red brick with concrete details, infilled with glass and metal panels and sheltered by a generous oversailing metal roof.

3. Architectural Detail

The Library is designed to be robust and long lasting. The entrance at either end is recessed to create depth and a sense of arrival, but also to provide shelter from Swansea weather. In accordance with the Design Code, the front gable elevations have the focus of architectural display and modelling, whilst the side elevations are secondary/rationalised and repetitive.

4. Signage

There is ample scope for Library signage alongside the entrance at either end – coordinated into the design and creating visual interest.

5. Lighting

As can be seen from the Precedent Images of other glazed gable buildings, the Library will look superb and most inviting after dark when lit up. The external lighting will focus on the entrance recess, lighting both up and down, whilst the side elevations will have 'up and down' light fittings on each of the brick piers, reinforcing the regular rhythm of the brick frame.

6. Roofscape

The pitched roof has been chosen specifically to contrast with the surrounding buildings which will almost certainly have flat roofs. The roof has a generous oversail at both the eaves and the gable ends. It is covered with solar panels on the south side, with a large central louvre serving the plant room.

6.3 FACE/Technology Building

6.3 Amount & Scale...

The proposed FACE and Technology Building comprises a four storey FACE block and a single storey Technology block, each with the following floor areas:

- FACE GIA 7666m² (82517 sq.ft)
- Tech GIA 2443m² (26296 sq.ft)

The scale of the development is in keeping with the parameters set by the masterplan but the arrangement has altered as a result of combining the FACE and technology buildings.

The building has been designed to respond to the surrounding streets and dockside and so create a strong sense of place, as the first phase of the SA1 Waterfront Innovation Quarter.

The single storey workshop element contrasts with the larger FACE building and is brought together with a taller 2 storey 'engine' shed element at the end of the block.

The Tech Spaces will comprise clusters of specialised teaching spaces for Engineering, Automotive, Applied Computing and Architecture. These will be the specialist learning spaces that lie at the core of education in the creative and technical fields of study.

These spaces will include the Engineering, Construction & Automotive workshops, specialist computing laboratories and the architecture studios and studio base rooms.

Tech spaces are ideally suited to be housed in semi-industrial, simple structure buildings that can easily be reconfigured and with enhanced access for heavy equipment and the creation of experimental spaces.

These are an important part of the study of architecture, engineering and other courses of study in 3-dimensional design.

Workshops and studios are typically large spaces, often of high floor-to-ceiling heights. They will be equipped with specialised equipment to support the academic programme and research activities. Wherever possible workshops will be flexible spaces that can be shared across courses, departments and faculties.

The Applied Computing spaces will include the Cisco Networking lab, an electrical and electronics lab and a flexible laboratory space for Games development.

The studio has long been recognised as the key focus for art and design education – it is the place where work is generated, reviewed, displayed and stored. The intention at SA1 is to provide flexible studio space for both graduate and undergraduate architectural students and these studios will also be supplemented by laboratory spaces to facilitate critiques, presentations and exhibitions.

Gallery spaces will be included within the circulation routes to enliven the spaces generally and to reinforce the identity of the Schools and to inform visitors, students and staff of on-going projects. Shared cafés, learning commons and open access computing areas will also encourage students from across the Faculty, and the University as a whole, to interact and work together.

The development includes the following facilities

FACE

Faculty and Staff Workspace (998m2)

General Learning Spaces (2122m2) including

- 20 Seat Seminar Room (5no.)
- 30 Person Learning Studio (2no.)
- 60 Person Learning Studio (3no.)
- 90 Person Learning Studio
- 30 Seat Computer Lab (8no

Architecture & Built Environment (1031m2)

- Architecture Learning Zones (5no.)
- Tutorial Rooms (2no.)
- Under graduate and post graduate Studios
- Architecture Lab
- Construction Lab/Arch Workshop
- Environment Lab
- Architecture Store
- Technician Work Area

Applied Computing (624m2)

- Cisco Networking Lab
- Electrical and Electronics Lab
- Games Lab
- Computing Project Room
- Qinteciq Contract Teaching

Learning Commons (478m2)

- Graduate Study & Group Collab
- Computer Work & Photocopiers
- Soft Seating & Café
- In addition, building support facilities including 2 showers and showing rooms are also included.

Technology

Automotive Centre including:

- project rooms (4)
- fabrication and welding area
- car lift
- rolling roads

- Storage and simulator room (609m2)
- Manufacture Centre including (704m2)
- Engine Diagnostics (262.06m2)
- Engineering Services laboratories (203m2)
- Project Teaching (180m2)
- Manufacture Centre including workshop, cutting room and storage (704m2)

6.4 Layout

The layouts for the scheme have been developed from the various options produced as part of the design evolution of the project. Extensive consultation has been undertaken with UWTSD department heads and the project team as a whole.

The resulting design now allows for the majority of the accommodation to front Kings Road and Prince's Street, leaving the rear, dock facing service yard to be accessed from the existing turning head at the end of Kings Road.

FACE occupies the southern end of the site with entrances off Prince's Street and the dock side. The internal layout of the building allows for informal connections to the surrounding site, with the main entrance facing the proposed courtyard and new Library building. This approach allows passive surveillance to cover the public square from both buildings.

Tech occupies the northern end of the site with access off Prince's Street and links to the service courtyard beyond. Many of the internal functions of Tech will be on display to the general public through a series of large picture windows and secured openings, allowing the public to visually engage with the Formula 1 engineering operations within this building and providing a semi active frontage

The junction of Kings Road and Prince's Street has been accentuated within the Tech block by increasing the height of the corner through the addition of an 'engine shed' feature that contains engine stands and dyno cells.

Much of the ground floor of FACE is given over to communal and cafe areas with 'clean' spaces accessed from it. All dirty spaces have been seperated from the clean areas and located in the Tech part of the scheme.

External walls have been set back into the building at various points to provide a high degree of surface articulation, expressed on the elevations.

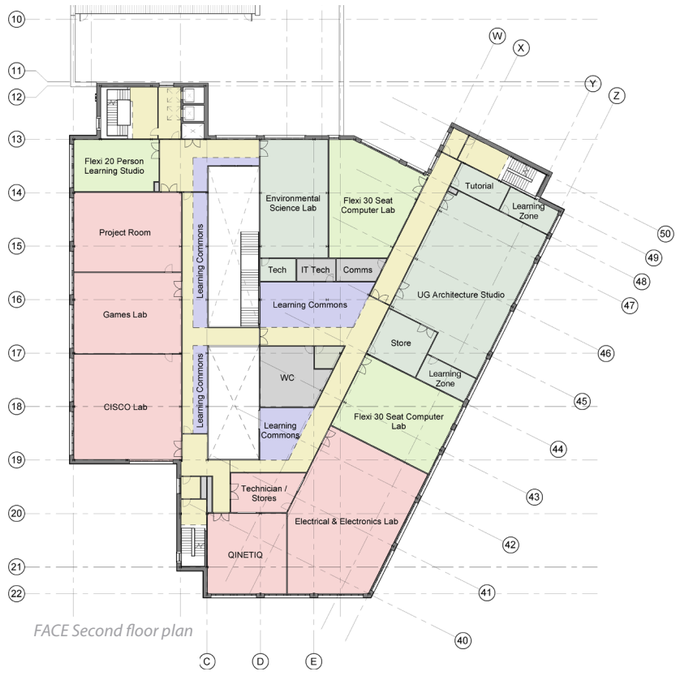
The main entrance and stairs to FACE have been further expressed by accentuating their vertical height by means of a double height entrance and tower for the stairs.

The building creates a strong 'sense of place' and robustly addresses its surroundings on all sides; Trinity Gardens and the Library to the west, the Tidal Basin to the south and east and the more intimate Kings Road and Prince's Street to the north.

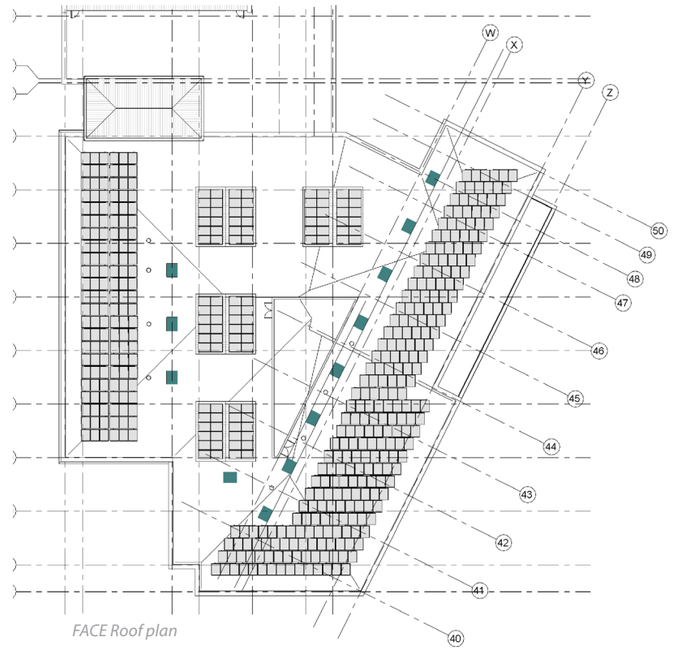
The ground floor frontage of the building is opened up by means of a colonnade on the southeast elevation, generous studio-like windows to the south and west elevations and large industrial-scale windows/loading doors and sliding security screens to the engineering TECH block. The building is articulated and designed with a distinct individual expression and character, which will reflect the robust industrial character of the site.



FACE/Tech Ground floor plan



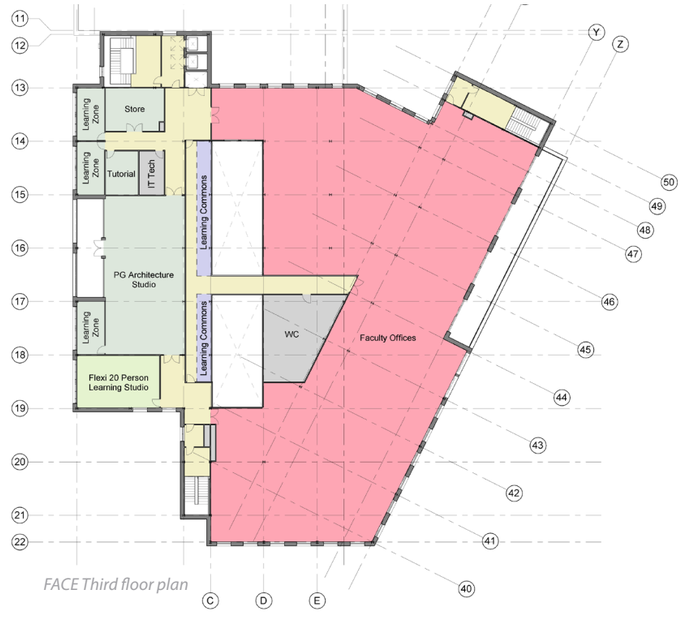
FACE Second floor plan



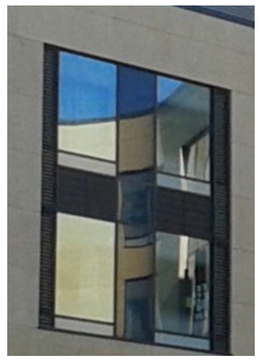
FACE Roof plan

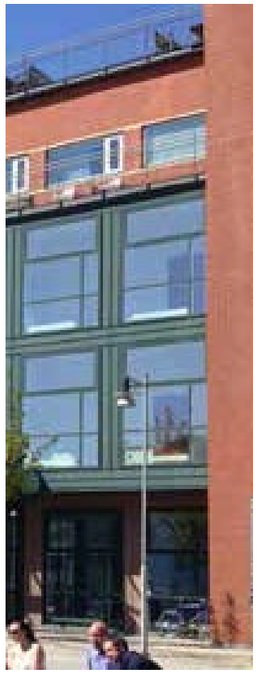


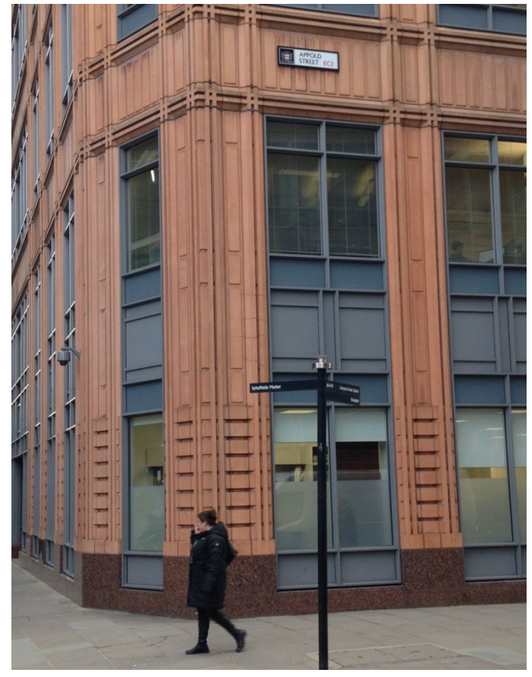
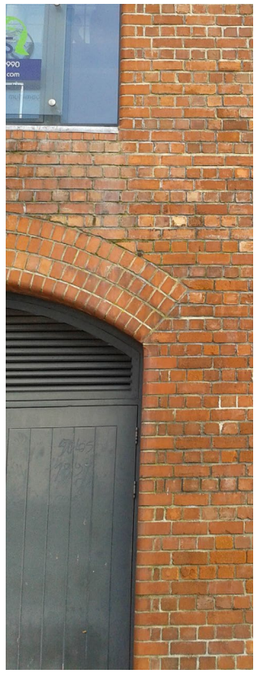
FACE First floor plan



FACE Third floor plan





6.5 Appearance

The building is designed as a robust response to the industrial, engineering and dockside character of Swansea. The main teaching block is articulated into three sections to respond to the setting and reinforce a 'sense of place':

- The grand main frontage facing west into Trinity Gardens and the Library.
- The simplified south and east elevation with the full length colonnade.

The single storey TECH industrial wing which fills the north part of the site.

The architectural language is a highly robust response to the industrial character of Swansea docks, in hard crusty red brickwork with a powerful rhythm of arched openings at ground level and grouped fenestration above. Concrete lintles and cills are used for a functional/ industrial character.

The engineering requirements, to light and ventilate the building to Part L standards, are clearly expressed on the elevations, by means of a coordinated array of windows, louvres and panels which creates a changing yet contemporary common aesthetic to the building.

The south and east elevations are colonnaded at ground floor level to give a vibrant active frontage onto the dock, whilst also creating covered access sheltered from the elements. The three staircases are horizontally drawn out of the main composition, in order to reinforce the articulation of the building and to express movement within.

FACE

West Elevation

The main front façade and entrance faces west onto Trinity Gardens and the Library beyond. The façade has three-storey high recesses of windows/louvres/panels above a ground floor base of large studio/shop windows, serving teaching spaces internally. The window/louvre assemblies will read as coordinated 'technical infill', providing natural daylighting and ventilation to the interior in response to the Welsh Government's Well-Being Agenda. The west elevation is capped off by a strong concrete cornice, to give it more emphasis, and bolstered by the main staircase tower alongside which is capped by a lantern at roof level. The main entrance is a double height recess at the north end, directly opposite the colonnade of the future block opposite.

South Elevation

The south elevation, which also extends along the east elevation, is a variant of the main façade design, with a colonnade at ground level and individual windows on the top floor.

East Elevation

In the middle of the east elevation the building steps down in height with a recessed terrace area. The west staircase is set back to allow the collonade to continue along the future proposed commercial block to the north. The high boundary railings continue to enclose the TECH service yard behind. At the north end there are four garages behind a brick wall marking the corner of the service yard.

Tech Block

The TECH block has largely a single-storey 'engineered industrial' character with metal cladding above a plinth of brickwork. The elevations comprise large glazed openings/ doors which are protected by sliding security shutters. The north-west corner has been increased in height as a brick engine shed to provide some emphasis onto the main spine route King's Road. The flat roof of TECH has angled 'pop-ups' which accommodate lifting and mechanical equipment, solar panels, skylighting and provide maintenance access from the main roof. The TECH block is a fine complement to the main 4 storey teaching block and together they create a powerful 'ensemble'.

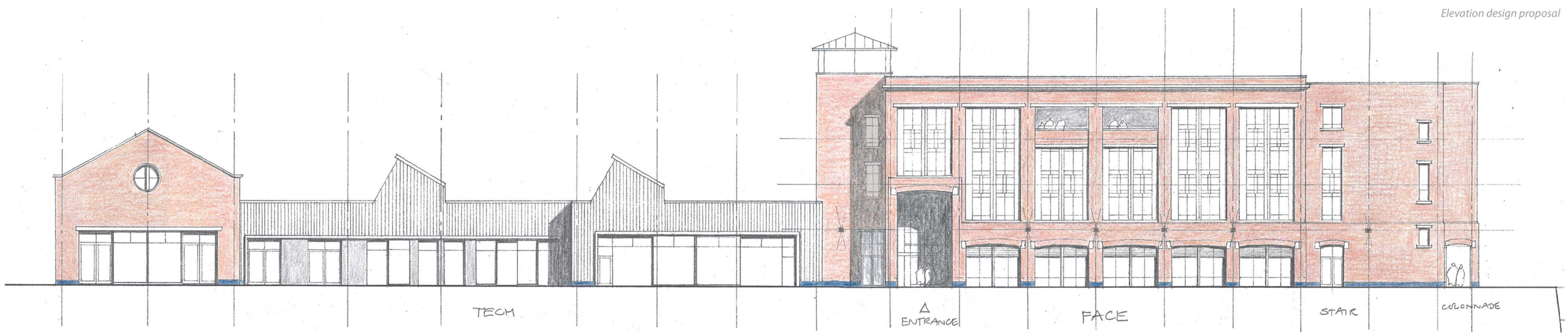


View from Tidal Basin



View from Kings Road

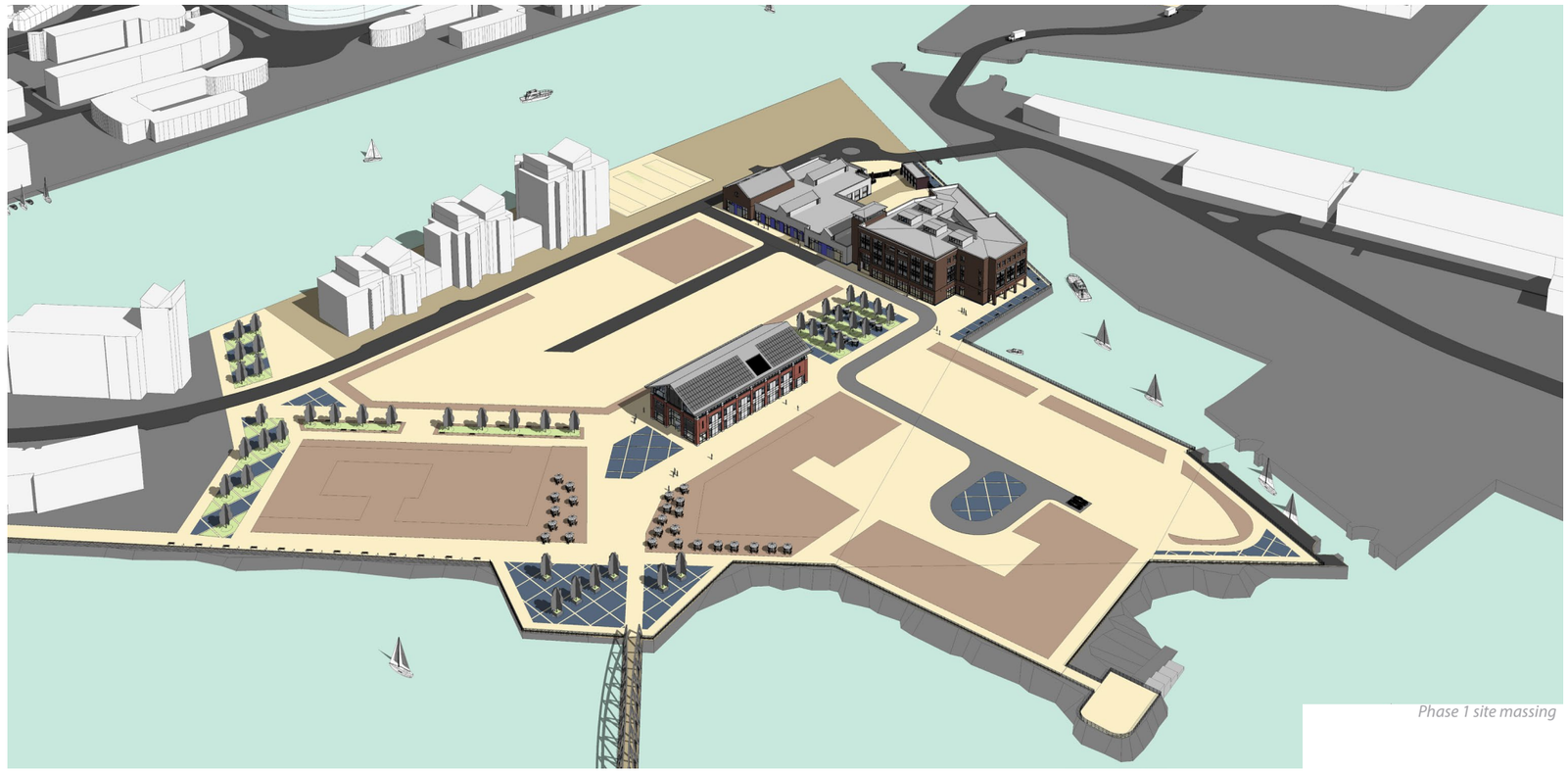
Elevation design proposal





FACE/ Tech - view across Trinity Gardens towards west entrance

Library



Phase 1 site massing

6.6 Amount & Scale

The proposed design has combined the approaches taken by the options prepared in the design development stage into a coherent proposal that meets the requirement of the revised brief, as agreed during the development of the previous stage.

The scale of the development is in keeping with the parameters set by the masterplan but the arrangement has altered as a result of design development. The scale of the building is comparable with the other recent and historic developments in the area, the highest of which are the residential accommodation blocks to the north of the site.

The building has been designed to respond to the surrounding streets and dockside and so create a strong sense of place, as the first phase of the SA1 Waterfront Innovation Quarter.

The building is now three storeys high with a GIA of 2705 M^2 and includes for a first floor atrium above the buildings western main entrance. Although greater in scale than the masterplan, the second floor is within the roof.

The reduction in height and massing of the building has allowed the provision of the required facilities to be confirmed, with what were originally perceived as 'extra' spaces now omitted from the brief, providing a lean building design that is ideally suited to its purpose.

The library is a prominent free-standing building which defines the two urban squares at the heart of the Quarter; Trinity Square and Trinity Gardens. It provides the essential civic function and serves as the focal point and 'hub' within the Masterplan.

6.7 Layout

It is proposed that the Library will occupy a central position in the Innovation Quarter and will support both the University and the wider community.

The book stacks form the central core of the layout with group rooms, servicing, cores and ancillary rooms to the sides of the building. The level of book space provision increases throughout the height of the building, with the majority of the second floor given over to book stacks.

During much of the academic year it will be open 24/7 to support students' diverse study requirements. Study settings will be provided in an Undergraduate Centre and a Graduate Research Centre. Within the Graduate Research Centre will be a multi-purpose research / seminar room with videoconferencing facilities and a 60-person classroom will be included in the Undergraduate Centre.

These rooms will be used to run library orientation and information skills development sessions, and can also be booked by researchers and faculty who want to work with library materials and collections as part of their course delivery.

Within each centre, the landscape will be zoned to separate more noisy collaborative and social learning spaces from quieter individual study areas.

There will be a diverse IT landscape within the library providing everything from drop-in internet access to highly specific graphics workstations, video and audio editing facilities and data visualisation facilities.

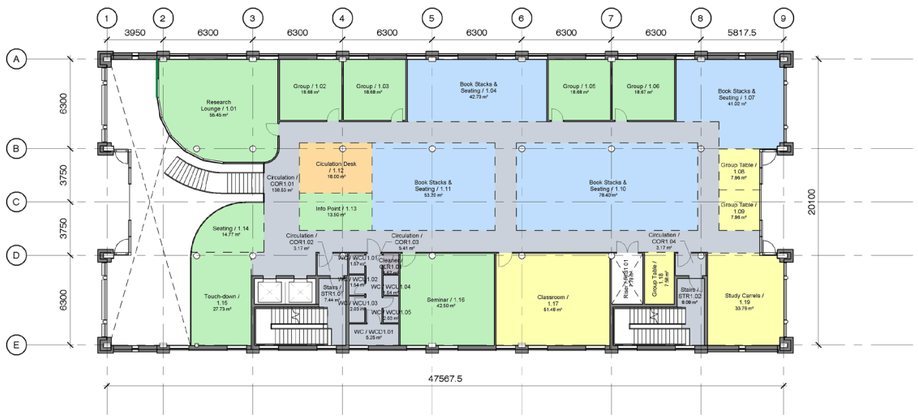
The University is also planning to create a Welsh Centre for Digital Scholarship within the library to focus on research on Digital Humanities, making accessible in digital format the world-class manuscript and rare documents collections held by the University.

Events and access to the digitised resources will connect the wider community to the University's collections.

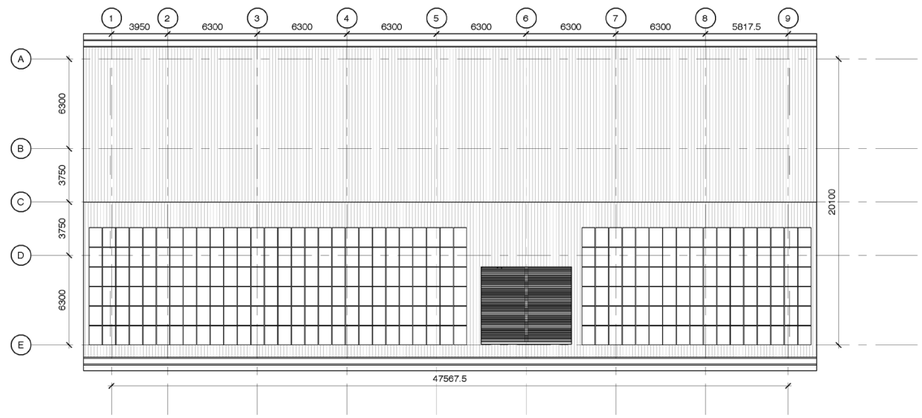
It will also function as the hub of a network of distributed physical and virtual information spaces (Learning Commons) that will be an extension of the Library. These will feature additional study settings and will supplement the provision of undergraduate study settings.

The library contains the following range of spaces and allows for:

- Individual study spaces
- Collaborative working areas
- Quiet reading areas adjacent to book stacks
- Small group collaboration rooms
- Informal reading area integrated with book stacks
- Range of open and enclosed working spaces
- Visual interaction between users on different floors
- Suspended exhibition partitions maintaining openness
- Feature space overlooking double height space



01 First Floor Level
1 : 200



03 Roof Level
1 : 200

- Book Stacks
- Building Support
- Circulation / Core
- DRC
- Learning Commons
- Riser/Void
- Staff



00 Ground Floor Level
1 : 200



02 Second Floor Level
1 : 200

- Book Stacks
- Building Support
- Circulation / Core
- DRC
- Learning Commons
- Plant
- Riser/Void
- Staff

Floor plans

6.8 Appearance

The design has progressed through a rigorous design process with regular meetings and presentations to the client and advisor team.

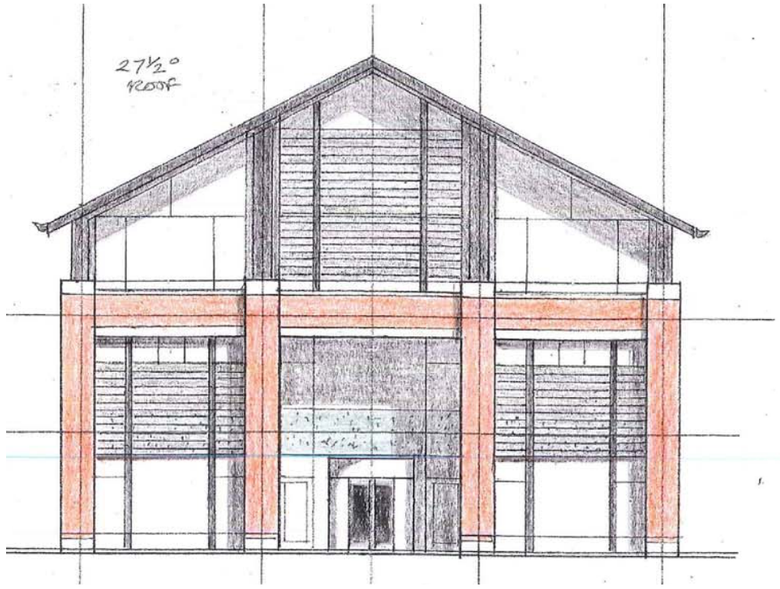
The building has a simple 3-storey shed form, which has been 'modernised' for new uses by cutting out openings from the side elevations at ground level and to the gable ends, in order to open up the interior and create the maximum transparency.

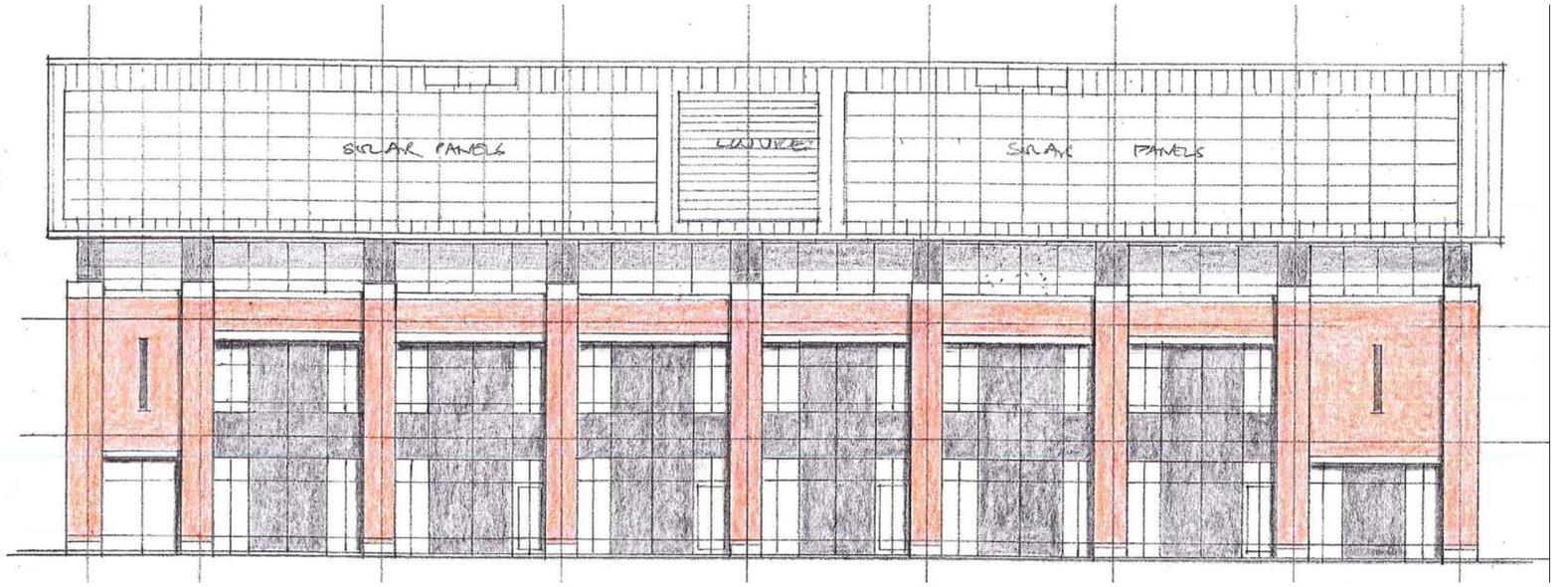
What remains is a highly robust framework in red engineering brickwork, infilled with glass and lightweight cladding and sheltered by a generous overhanging roof.

The ground floor is near transparent, inviting in both students and visitors alike. The glazed gable ends allow views both into and through the building and create a splendid setting for the display of local coloured glass artefacts from the local glass industry.

The library responds to the Design Code in the following ways;

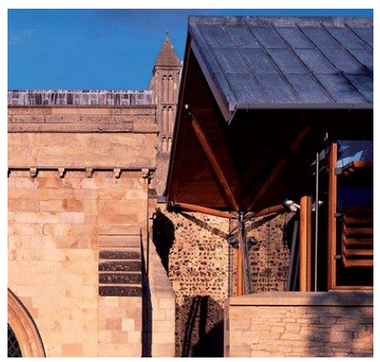
- Creating a civic sense of place whilst defining public squares at each end.
- Providing the focal point within the Quarter.
- Inviting users by means of the sense of openness and transparency.
- Providing sheltered entrances protected from the elements at each end.
- A carefully 'modernised' industrial 'relic' with a robust brick form, opened up and infilled with glass and lightweight cladding.
- Traditional form with modern expression and highly individual character.
- Vibrant hub of activity, open on all sides.





Design proposal

Precedent images







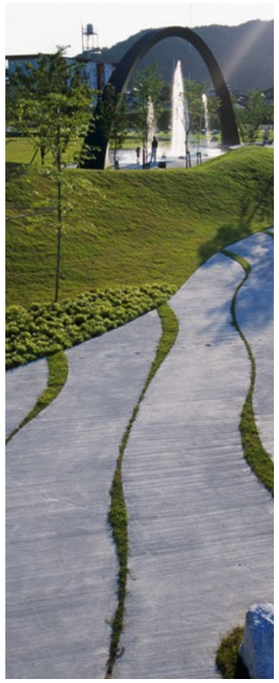


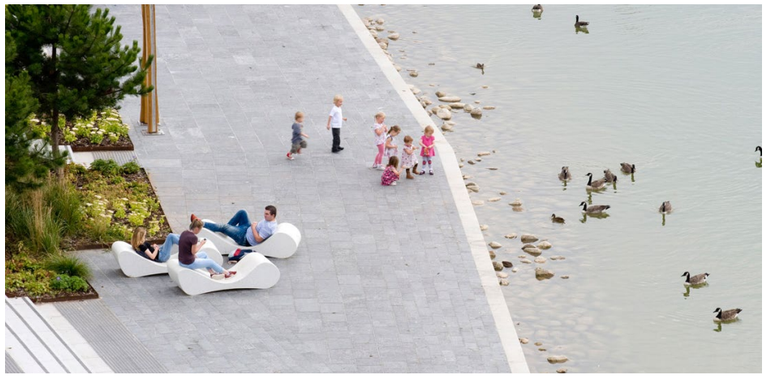
Library - view from Trafalgar Bridge towards west entrance



Phase 1 in context

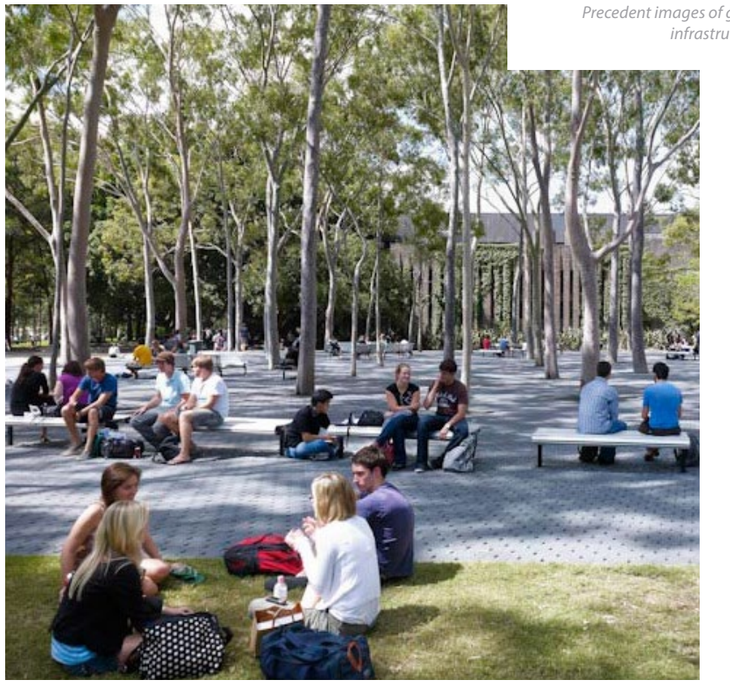
Landscape Design and Phasing











Precedent images of green infrastructure

6.9 landscape design...

The landscape strategy will ensure that the new development contributes to the green infrastructure of Swansea and beyond. This strategy acts as a guide to future development, demonstrate links between the site and wider areas and will inform management strategies once plots are delivered.

The landscape proposals for Phase One have, therefore, been designed with the existing environs and the future holistic masterplan in mind; taking into consideration the circulation routes, key public space nodes, use of materials and user experience.

The landscape design proposes the use of the final masterplan materials to Phase One, to provide a landscape that can be immediately enjoyed by the public, avoiding disruption from future construction phases and ultimately form the catalyst for the overall development.

A key element of this phase is the development of the Library building and the adjacent Trinity Gardens public space. This is a small 'pocket park' in the heart of the Phase One development, where it will be paved with high quality bound gravel, edgings, furniture, lighting and soft landscaping. Its pivotal role in Phase One helps pedestrian navigation through the site and improves links to the Tidal Basin, new Library building and Face building.

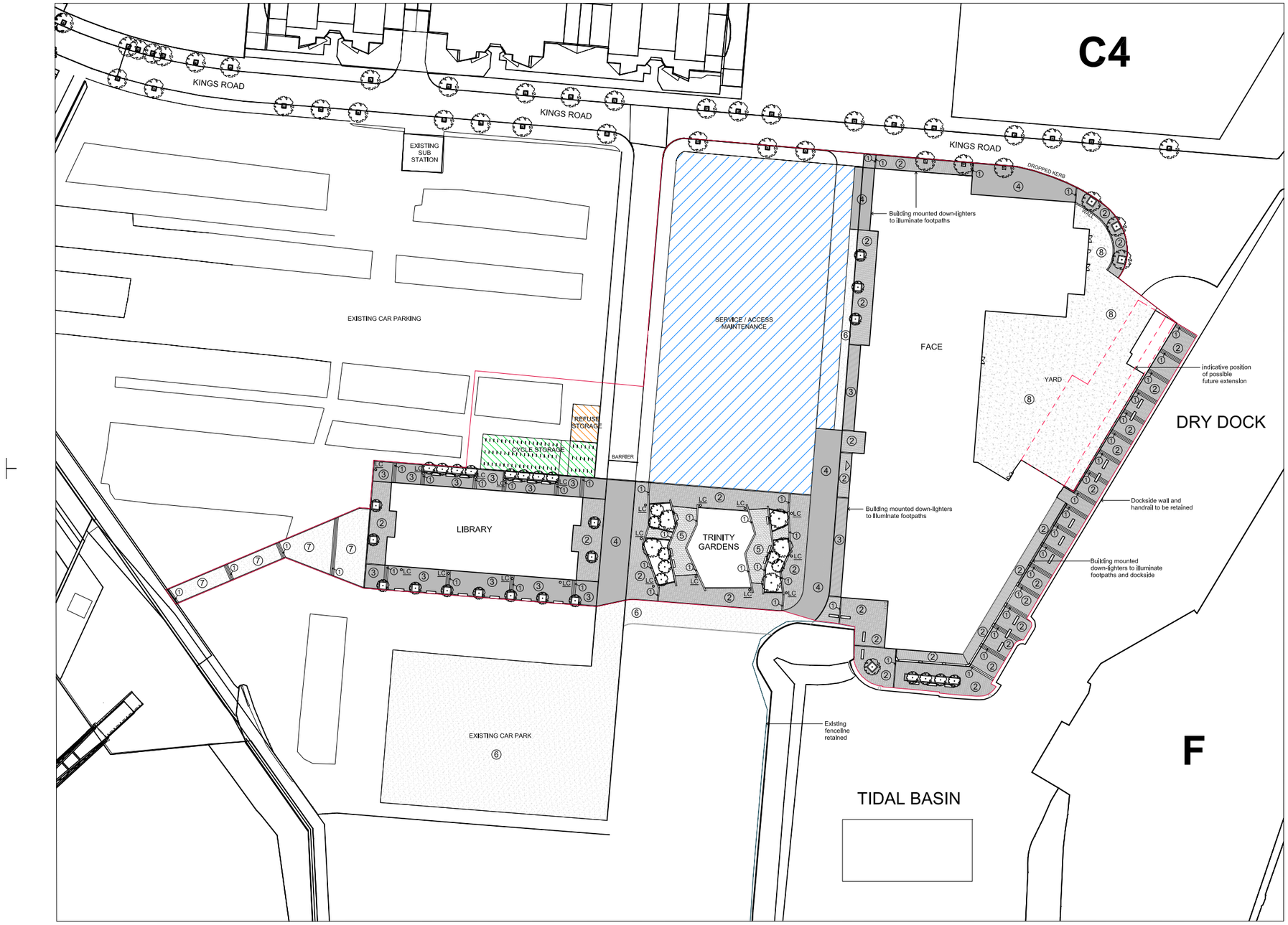
The waterside and internal footpaths will be paved to match the wider Swansea Bay environs, visually linking the spaces in the masterplan. Natural stone banding creates a rhythm along the footpaths and helps to break up the larger expanses of paving. Banding, where appropriate, is linked to the colonnade columns, an approach to marry the architecture to the landscape.

Where vehicular access is required, smaller block units in herringbone bond will be implemented, for robustness. For any temporary routes (those to be developed in future phases) tarmac paving will be implemented, e.g. link from the Library to the Bridge.

Tree and shrub planting, appropriate to the coastal location, provides vertical interest to the streets and spaces, whilst having the benefit of providing shelter against the climatic conditions of Swansea Bay. Planting will be set in raised or semi-raised planters appropriate to their location.

Street furniture will include robust and contemporary timber and steel benches, with back and arm rests. Litter bins will match the style and appearance of the benches.

Contemporary feature street lighting will be provided throughout, especially in Trinity Gardens and adjacent to the library. To avoid 'street clutter' along the narrower footpaths and, waterfront paths, building mounted lighting will be provided.



HARD LANDSCAPE

Paving Type 1
Natural Stone paving bands, to tie in with architectural or landscape features. Nominal 300x300x80mm paving units in rows as shown on plan.

Paving Type 2
To match pedestrian paving along Prince of Wales Dock edge.

Paving Type 3
Concrete paving units in a range of grey colours (30%mid grey, 30% light grey and 40% dark grey), evenly mixed when laid.

Paving Type 4
Small block concrete paving units in a range of grey colours for vehicular zones (50%mid grey, 20% light grey and 30% dark grey), evenly mixed when laid. Herringbone bond.

Paving Type 5
Resin bound gravel in Mocha colour

Paving Type 6
Vehicular grade (heavy duty) tarmac surfacing

Paving Type 7
Pedestrian grade tarmac surfacing

Paving Type 8
Reinforced concrete surfactng to Service Yard

Kerbs
'Countryside Classic' kerbs throughout

STREET FURNITURE & LIGHTING

Benches
Contemporary timber and concrete benches, 2400mm in length, with inbuilt strip lighting

Cycle parking
Stainless steel 'Sheffield' cycle hoops

Light columns
Contemporary feature lighting columns and lanterns, accent lighting for the keys spaces and footpaths.

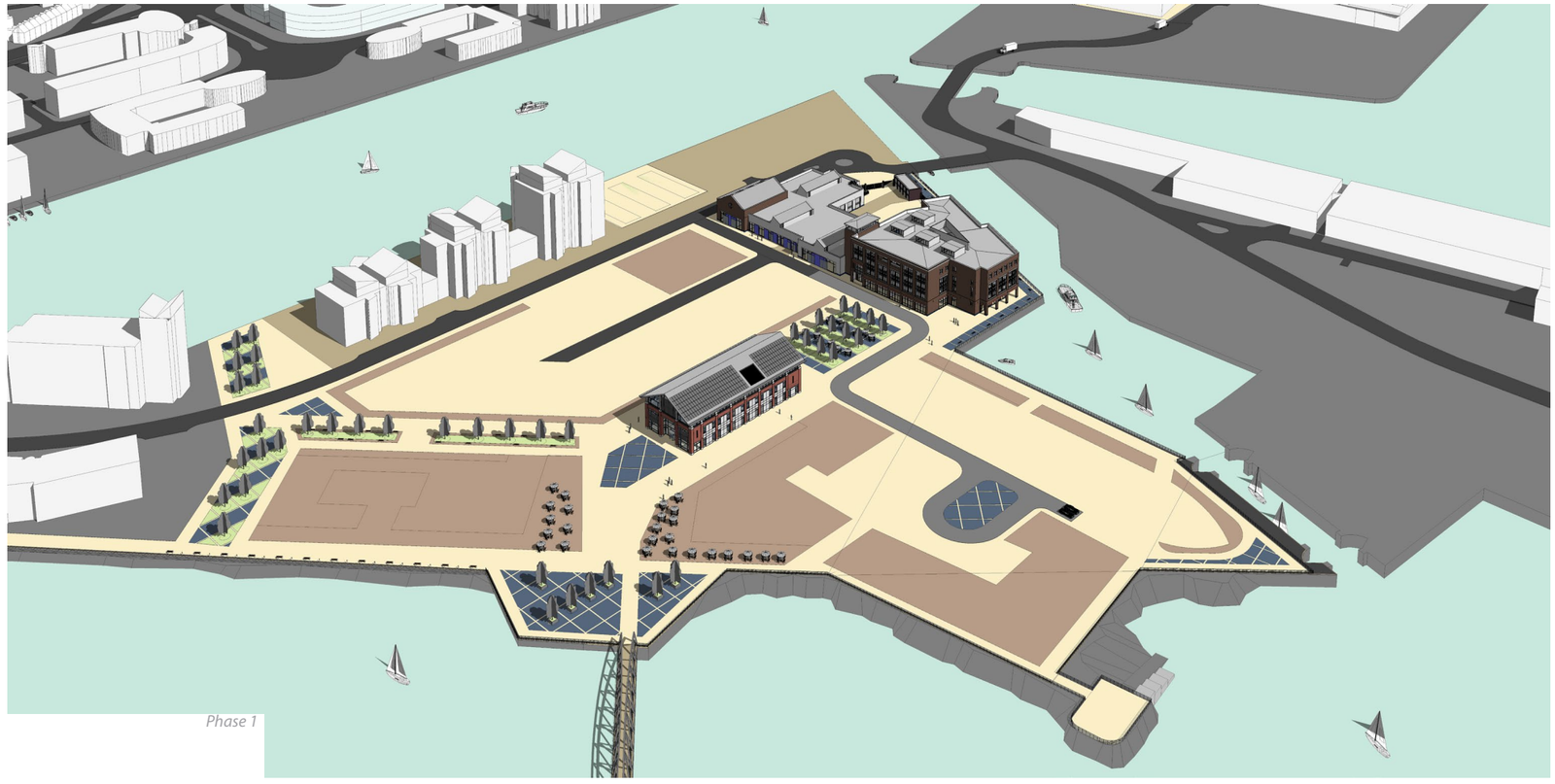
SOFT LANDSCAPE

New tree and shrub beds to Trinity Gardens
A mix of native and non-native trees and shrubs, set within planting beds.

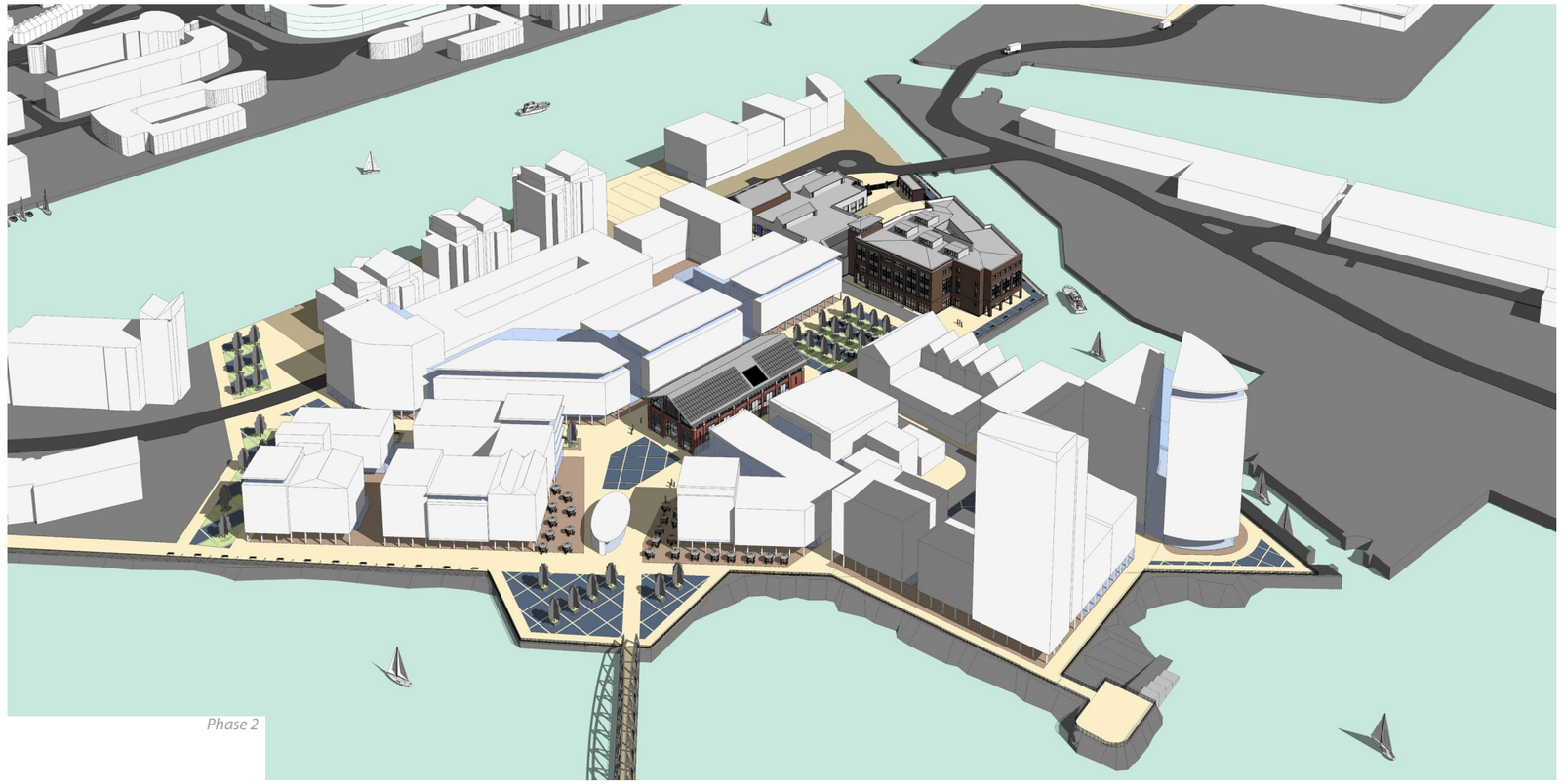
New trees in raised planters
Feature tree planters, in square metal planters, nominal 1000mm height.

New tree and shrub linear beds
A mix of native and non-native trees and shrubs, set within linear planting beds.

Existing street trees to be retained



Phase 1



Phase 2

6.10 phasing

The long term vision for SA1 is a regenerated mixed use environment with a combination of thriving hubs of activity and quieter residential areas. Getting to that point will take time and will require a flexible delivery strategy to enable different developments to come forward independently of each other. At this stage in the regeneration strategy, a number of sites have already been delivered but still require the transformation of the surrounding vacant plots to realise the regeneration vision for the Innovation Quarter.

The key areas of change in this masterplan have been driven by the University's desire to consolidate its existing learning environments at Mount Pleasant, Townhill and Swansea Business Campus at SA1. The programme for achieving this identifies 2018/19 as the current target date for completing the transfer of facilities to SA1. However, due to the need for the University to remain operational, the relocation of facilities will be staggered during that period. During this period, the University will provide a mix of facilities that will be scaled up as more activity is generated. The delivery of the first academic buildings will contain social and support facilities to create a suitable learning environment in the interim. As more University buildings are delivered, the mix of uses will expand to accommodate the increase in footfall and demand. The delivery of buildings and public realm as part of this stage of the regeneration strategy are collectively known as the Core-academic projects. These are the projects that the University has direct control over and have a more defined sequencing process at this stage.

Non-academic projects are those that are co-located with the Core-academic projects. These are the buildings and public realm projects that are to be delivered by the University's commercial partners. The University is already in the process of attracting partners to work alongside it in bringing forward the rest of the Peninsula proposals As each of these partners identifies their individual requirements for SA1, the University will work closely with them to integrate those needs into the wider development framework identified within this masterplan strategy. It is not envisaged that Non-academic projects will be delivered after the completion of the Core-academic projects. Instead, the goal is to deliver both batches concurrently with sufficient flexibility to enable the University to work with its partners to create the innovation and learning hub that underpins the overall masterplan for SA1.

A number of infrastructure projects are imminent or otherwise committed, including the completion of Langdon Road and the installation of a new pedestrian bridge crossing the docks between the Prince of Wales Dock and Kings Dock. The Welsh Government is committed to carrying out these projects in the short term, with the footbridge due to be in place once the University commences work in the sports hub area.

The phasing strategy for SA1 is not seen as a linear timeline of individual projects. The strategy needs to be much more flexible in order to respond to varying market conditions and new opportunities that arise over the course of the life of the masterplan. The creation of the innovation and learning environment at SA1 will dramatically transform the commercial prospects for the docks and will create opportunities that are not yet evident. Therefore, the delivery of all 3 types of projects described in this section will run in parallel but in a coordinated manner to ensure that the overall masterplan is successfully implemented in a timely fashion.

7.1

Specification

Introduction and Legislation Basis

INTRODUCTION

This Outline Specification sets out the Employers Requirements for UWTSD to develop the first phase of an agreed master-plan for the university at the SA1 site in Swansea.

The purpose of this Outline Specification is to describe the required standards of materials and components on a performance basis. Some materials and components have been specifically referenced to set out the minimum standard required. Should any discrepancies or anomalies be apparent, the contractor shall seek advice and clarification from the Project Manager.

For ease of reference this document has been divided into sections. It must be read as a complete document, bearing in mind that clauses contained in any one section may also relate to relevant items under other section headings.

PRODUCTS AND SERVICES GENERALLY

For the avoidance of doubt, where any manufacturer or product reference is specified in any of the clauses contained below, the phrase 'EQUAL OR APPROVED'is deemed to be included.

SCOPE OF WORKS

New Build Works

- Based on the work carried out at master-plan stage, and the implementation of the Spaces That Work document, the first phase of the university development will include:
- A new Faculty of Architecture, Computing and Engineering, (FACE) and associated technology building, housing c.300 engineering students and c.100 architecture students. The facility will have *inter alia* rapid prototyping, rolling roads; engine diagnostics and autoclave (with exhaust) facilities. The aspiration for the new facility will be one that combines visibility of the products processes active within the building from outside and functional effective servicing of the workshop areas from the service court.
- A new central academic library, which will include spaces to research, learn and share information with peers through teaching spaces and open areas that encourage collaborative activities, along with more intimate individual study areas.

External Works Include

- New hard and soft landscaping with new boundary treatment.

CONTRACTORS RESPONSIBILITIES

The contractor will be responsible for, and will be deemed to have included for:

- Developing these Employer's Requirements on the basis of Design and Build Contract, the details of which are set out in supplementary tender documents all of which must be read in conjunction with the Room Data Sheets, drawings and other documentation as noted in the Preliminaries
- Ensuring all prepared information meets current planning, building and environmental legislation prepared by both the UK government and where appropriate, the EU.
- Submitting all developments and Contractor's Proposals to the Project Manager for comment and approval - including all detailed drawings and NBS specification to the complete scope of works.
- All works as indicated on the tender drawings or referenced in other supplementary tender documents. This applies to all works both inside and, where relevant, outside of the site boundary.
- Submitting a finishes schedule for each room indicating the materials and colours selected for approval by the Project Manager and a sample board of all finishes for end user consultation
- making good after connecting into any adjacent external works elements and services affected by the new scope of works.

COMPLIANCE REQUIREMENTS SUMMARY

Compliance area	Target
Carbon Dioxide (Regulated)	Building Regulations
Energy Performance Certificate	A
BREEAM	Excellent Minimum of 55% in every BREEAM Category
Recycled Content	20% by value 35% by Weight or Volume
Renewables	25%
Ecological Enhancement	6 species
% NFA natural ventilation : Mixed Mode	60%
Water	$3m^3$ per person per year
Energy	BREEAM Excellent ENE credits
Air Permeability	$5m^3/hr/m^2@50pa$
Energy Performance	Part L compliance (2014 Building Regulations)
Secure By design	Compliance required
Soft Landings	SEWSCAPS criteria
BIM Level	Level 2

INFORMATION BASIS TO PROJECT

See Appendix for full list of information used as the basis for design

LEGISLATION BASIS

General Legislation & Codes of Practice

All elements of the works, materials and workmanship will be designed and constructed in accordance with the latest editions of the following "Standards" where relevant, applicable and current at the date of the Development Agreement:-

- The Building Regulations 2000 and current amendments thereto
- The British Standards and Codes of Practice as updated with Eurocodes.
- Requirements of the Building Control Officer
- Specific requirements of the Utility Supplies, Local Authorities and Local Planning authorities.
- Health and Safety at Work Act.
- Local Acts of Parliament and Local Authority Bye-laws and/or regulations.
- The Clean Air Act.
- The Factories Act.
- Construction (Design and Management) CDMC Regulations 2015.
- The Fire Officers Requirements.
- The Gas Safety (Installation and Use) Regulations.
- Good practice in the selection of Construction Materials. (1997 – Ove Arup and Partners)
- The Water Industry Act.
- The Environmental Protection Act.
- CIBSE Guides including Technical memorandums.
- Equality Act 2010.
- Environmental Health Officers requirements.
- Work Place Regulations.
- BSRIA.
- HVAC.
- Construction Stage Fire Risk Assessment (HSG168).
- All timber shall be FSC certified.

All materials used in the Works are to be of good, sound and suitable quality of their respective kinds. Samples are to be submitted for approval without charge. Each sample so submitted shall be identified and retained on the site until completion and used as the standard for all subsequent deliveries of materials or goods of the same types. Except where otherwise described and applicable, the materials are to comply with the latest appropriate British Standard Specification issued by the British Institutions, 2 Park Street, London, W1A 2BS.

For products and materials specified to British Standards, a Certificate of Compliance from the manufacturers shall be obtained when requested by the Employer's Agent.

Workmanship throughout shall be in accordance with good building practice and comply with the standards formulated by the various Codes of Practices and British Standards including Eurocodes.

The environmental M&E building services designs shall comply with the current editions of the following regulations:

- EU Energy performance of Buildings Directive
- The Building Regulations (in particular Part L: fuel and power conservation)
- BS 7671:2008 IEE Wiring Regulations 17th Edition
- The Gas Safety Regulations
- The Water Regulations
- Health and Safety at Work Act.
- The Construction (Design & Management) Regulations 2015
- BS 8900 Guidance for Managing Sustainable Development
- BS 9999:2008 Code of practice for fire safety in the design, management and use of buildings

CIBSE Guides

Where no specific guides are available then the following shall be used as the basis of the design.

- C.I.B.S.E / BSRIA Guides.
- C.I.B.S.E Codes of Practice.
- Institute of Plumbing Data Guide.
- C.I.B.S.E Code for Interior Lighting.
- C.I.B.S.E Technical Reports.
- C.I.B.S.E Technical Memoranda.
- SLL CODE FOR LIGHTING
- SLL LIGHTING GUIDE 4: Sports
- SSL LIGHTING GUIDE 5 Lecture, Teaching and Conference room Lighting
- SLL LIGHTING GUIDE 7: Office Lighting
- SLL LIGHTING GUIDE 11:Surface Reflectance and Colour
- SLL LIGHTING GUIDE 12: Emergency Lighting Design Guide
- Guide A: Environmental Design
- Guide B: Heating, Ventilating, Air Conditioning & Refrigeration
- Guide B3: Ductwork
- Guide B5: Noise and Vibration Control for HVCA
- Guide B4 Refrigeration and Heat Rejection
- Guide C: Reference data
- Guide D: Transportation systems in buildings
- Guide F: Energy efficiency in buildings
- Guide G: Public health engineering
- Guide H: Building Control Systems
- Guide J: Weather, solar and luminance data
- Guide K: Electricity in Buildings
- Guide L: Sustainability
- Guide M: Maintenance Engineering and Management
- Solar Heating Design and Installation Guide
- Electronic Protection and Security Systems 2nd Edition
- TM13 Minimising the risk of Legionnaires' disease
- TM39 Building Energy Metering (a guide to energy sub-metering in non-domestic buildings
- CIBSE Commissioning Codes Series

References shall also be made to:

- All current British Standards and European Directives
- Building Services Research and Information Association (BSRIA)

Application Guides

- AG 2/93 Water Treatment
- AG 8/91 Pre-commission cleaning of Water System
- AG 4/94 Guide to Legionellosis

CLAW

All Works to be in accordance with the CLAW Standard Specifications for Mechanical and Electrical Building Services, Lift Design Services, M&E Maintenance (modular specifications) and best practice guides. See..... (http://www.claw.gov.uk/index.php?id=80&L=0)

Quality

Where the manufacturer or product names are specified they are to be taken as an indication of the minimum quality and standard required.

SUSTAINABILITY

It is intended that contractor proposals should be highly energy efficient. The proposals should satisfy and comply with the statutory thermal performance and ventilation requirements of the Building Regulations. A preliminary Part L2A compliance calculation has been carried out by TB&A based upon the proposed building as detailed on the Architects drawings. For energy efficiency, there will be an array of photo voltaic cells attached to the standing seam roofs. The following sustainability issues must be incorporated in the Contractors Proposals

U Values (W/M^2 °C)

It is important to provide an average weighted U-Value for each area of the building ensuring that each element achieves at least compliance with Part 2L with a 25% improvement in thermal insulation as follows:

- External wall U-Value — As IES model
- Ground floor slab U-Value — As IES model
- Flat roof U-Value — As IES model
- Pitched Roof U-Value — As IES model
- Glazed doors and window overall U-Value — As IES model
- Opaque Doors U-Value — As IES model
- Louvre Panels U-Value — TBA

Volatile Organic Compounds (VOC's)

Avoid the incorporation of VOC products in any of the materials and components incorporated into the works.

Ozone Depletion

All thermal insulating materials are to avoid the use of ozone depleting and global warming substances in either manufacture or composition. Insulation to be Zero ODP, low GWP and low in CFC /HCFCs and will comply with all relevant environmental management systems ISO140001 or similar.

Target Emmission Rate (TER)

The entire construction fabric must be at least 25% better than the minimum determined in Part L2A of the Building Regulations 2010 on the external walls. Please note that some of the fabric performances will need to be greater than the minimum limiting fabric parameters set out in Table 4 of Approved Document Part L2A. For energy efficiency, there will be an array of photo voltaic cells attached to the standing seam roofs.

Air Permeability

This shall be no more than 5m^3/hr/m^2/ @ 50Pa. Air tightness testing shall be carried out by an ATTMA (Air Tightness Testing and Measurement Association) member and will be witnessed by an independent Consultant commissioned outside the Contract. The contractor shall give at least 4-weeks' notice of the proposed test date and shall provide all relevant drawings and calculations against which the test will be evaluated together with calibration certificates of all the testing equipment to be used

Sustainability

Timber Products

All structural and non-structural timber elements are to be obtained from sustainable managed sources as will all temporary timber used on site during construction. Where possible timber should be re-used or recycled.

Sustainable Sourcing

All timber and composite timber products used in structural and non-structural elements are to be obtained from sustainable managed sources. Similarly, all temporary timber used on site during construction is to be obtained from a managed and sustainable source. Where possible timber should be re-used or recycled.

Ventilation

Refer to TB&A report for detailed ventilation requirements. Ventilation provision within all buildings on the site has been been developed on passive grounds as far as possible. Where necessary, mechanically assisted ventilation has been used. Conditioned air is only being employed in highly temperature sensitive areas, such as main server rooms.

Within most rooms there is a comprehensive natural ventilation strategy incorporating occupant-operated windows at low level and high level, with supplemental heating provided by NVHR units installed in each room. Mechanical ventilation will be limited to essential areas such as ICT classrooms, assembly spaces and all WC and catering areas.

The contractor must satisfy the requirements of Part F of the Building Regulations. Additional measures shall be taken where ventilation is inadequate or where overheating may occur. Natural ventilation systems are to be employed to supplement natural lighting and ventilation to locations indicated on room data sheets and drawings and to any other areas as deemed necessary by the Contractor.

Thermal Insulation

Avoid the use of ozone depleting and global warming substances in either manufacture or composition. Insulation to be Zero ODP, low GWP and low in CFC /HCFCs and will comply with all relevant environmental management systems ISO140001 or similar.

CRIME PREVENTION MEASURES:

There is a formal requirement to achieve Secured By Design accreditation on this scheme. The Crime Prevention Design Advisor of South Wales Police has been consulted on crime prevention measures during the scheme design stage and the measures he has recommended have been implemented in the design. Further details relating to SBD are included at the Community Safety and Secured by Design section at the rear of the document.

ACCESSIBILITY REQUIREMENTS

All external entrances/exits and emergency egresses must be designed to provide flush level entry/exit. The Contractor will be responsible for meeting all regulations and guidelines for access for disabled people both internally and externally. The Contractor must comply with best practice in relation to access for disabled people including the following technical guidance:

- Approved Document to Part M of the Building Regulations, 2004
- BS 8300:2009+A1:2010
- Colour, Contrast & Perception, University of Reading, 1997
- Building Sight, RNIB, 1995
- Sign Design Guide, JMU Access Partnership/Sign Design Society, 2000
- Changing Places Design Standards

The contractor will be required to complete the design to include for both internal & external finishes, colour contrast and fitted furniture & fittings that will be well suited to users that are visually impaired (VI) and hearing impaired (HI) particular requirements for which are set out in Building Bulletin 102.

The Contractor is to ensure that all manually opened doors achieve the minimum opening force required of Part M, i.e. the opening force at the leading edge of the door must not exceed 20N. Particular care will need to be taken especially when selecting suitable closers for internal doors designated as fire doors. Internal doors will be of sufficient clear width and positioned with an unobstructed min. 300mm width to the pull side leading edge.

ARCHITECTURAL DESIGN REQUIREMENTS

Dimensions and room areas have been indicated on drawings and Room Data Sheets. The Contractor is permitted to adapt or modify these sizes to suit their selected construction design and details. All adaptations or modifications must be agreed with the Project Manager and they must never compromise any statutory requirements. The design must comply in all respects with the requirements of the Building Regulations extant at the time of submission in June 2014 - together with any specific 'Fire Officer' requirements - except where reference is specifically made elsewhere in the tender documents to a requirement for a higher standard.

Unless otherwise described the installation, all materials, and workmanship shall be in accordance with the latest British Standard Codes of Practice. The Client and initial designers will retain duties under CDM Regulations. The Principal Contractor and any appointed Subcontractors, designers and contractors will assume duties until completion of the built form with the exception of the CDM-Coordinator who will be provided by the client throughout the design and build contract.

Site Levels

Existing ground levels on the site are as indicated on the existing topographical survey drawing and the proposed ground floor datum level will be 7.20 AOD.

Sub-Stratum

A scheme specific Geo-Environmental Report has been prepared and has been included in the tender documents, Contractors will be required to allow for any additional ground investigation or testing necessary to complete their design or that may be needed during the works.

Ground Water, Ground Gasses and Contaminants

Refer to the following reports found in the appendicies for further information:

- White Young Green: Ground Conditions & Tier 1 Assessment (2009)
- White Young Green: TAN 15 Flood Consequences Assessment (2006)
- Integral Geotechnique Desk Study Report Ref: 11292/CF/14 (2014)
- Hyder Geology and Contamination Assessment (2015)

Easements

There are numerous services and drainage runs across the site, the majority of which are located under the pavements of the infrastructure works access road. The extent of likely easements to these services is currently being negotiated by the university and the main contractor.

FACE and Tech have been set back 6.0M from the dock edge to satisfy an easement from ABP.

Unexploded Ordnance

With reference to Regional Unexploded Bomb Risk Maps provided by Zetica the proposed development is indicated to be within an area denoted as a "High" bomb risk. These areas designated as high risk are those that have a high density of bombing hits (50+ bombs per 1000 acres) and abundant potential WWII targets.

The proposed development is located in close proximity to historical military strategic targets such as the Prince of Wales and Queens Docks, which would increase the risk of UXO being present. Therefore further assessment is required in relation to this risk. Notwithstanding this, the site has undergone extensive earthworks since WWII and therefore this risk is likely to already be understood / known

Flood Consequence

The proposed finished floor levels have been set so that the site is located with little or no risk of fluvial or coastal / tidal flooding (TAN 15).

Highways Requirements

Highways design and redevelopment has been carried out by the design team along with requirements of the transport strategy. The Contractor must continue with the liaison and consultations carried out as part of the current design development with The City and County of Swansea Highways Department regarding traffic control measures and Highway improvements.

Design Requirements

KEY DESIGN ELEMENTS

The scheme has been designed to respond to the specific site constraints and requirements, along with the agreed treatment set out in the approved Design Code. The following items are key to the quality of design and character of the new Campus

External Key Features

FACE/Tech

This is made up of a 4-storey teaching block with the single storey TECH industrial wing to the north. The building has been designed to respond to the surrounding streets and dockside, and so create a strong sense of place, as the first phase of the SA1 Waterfront Innovation Quarter. The building has three varied but complementary façade treatments:

- Front/west elevation.
- South and east elevation.
- TECH single storey industrial.

All Elevations

- Robust red-multi brickwork with blue engineering brick plinth.
- Brick arches at ground floor level with flat concrete lintols to upper levels.
- Composite panels of window/louvre and insulated panel to the upper levels, grouped in single large recessed openings.
- 50mm set back to brickwork at first floor level to emphasise depth of ground floor level.
- All elevations, with the exception of the west elevation, have a brick parapet at roof level, capped off with a simple aluminium coping.

West Elevation

- Three storey high recesses of window/louvres/panels, above a ground floor level with large arched windows, serving teaching spaces within.
- Recessed double-height entrance area at north end, directly opposite the proposed covered colonnade to the future block PJ opposite.
- Automatic sliding doors to main entrance.
- Tall brick parapet with a bold concrete cornice, to emphasise the main façade, addressing Trinity Gardens and the Library.
- Tall main staircase with a cupola at roof level, providing access to the roof as well as emphasis to the main entrance.
- Set back at the south-east corner of the building, to accommodate a re-entrant section of the dock.

South Elevation

- Ground floor arched colonnade.
- Two storey recesses with windows/louvres/panels with single windows at third floor level.

East Elevation

- General treatment as per south elevation above.
- The colonnade continues along the full length of the east elevation.
- The elevation comprises eight bays, with the upper floors dropping back to a terrace midway.
- The central bay is given subtle emphasis by means of a brick sub-division of the large glazed recess and two larger independent windows at top floor level.
- The east staircase sits back in line with the top floor terrace wall, allowing the colonnade to be continued as part of the possible future block proposed to the north.
- The line of the elevation is continued to the north with tall steel railings, set between brick piers, providing both security and visibility for the TECH service yard behind.
- At the far north end of the frontage, the railings become a high wall, screening garages behind.

North Elevation

- Main stair/lift core at west end, with cupola at roof level.
- Secondary escape stair at east end, with blank flank wall to receive possible future building.
- Large window/louvre/panel recesses at first and second floors with individual windows to the top floor.

TECH Block

- TECH block has a largely single storey 'engineered industrial' character.
- Silver sinusoidal vertical metal cladding over a plinth of blue engineering bricks.
- Openings are grouped beneath a metal surround. The walls between the openings are finished with blockwork panels in bold contrasting colours.
- External elevations have large glazed openings and feature coloured stack bonded blockwork, protected by sliding security screens.
- North-west corner increased in height to two storey, to address the main spine route, King's Road.
- North-west block is in red brickwork with raised parapets and a standing seam metal roof.
- The flat roof has 'pop-ups' accommodating lifting and mechanical equipment, solar panels and skylighting, which are accessed from the main roof.

LIBRARY

- Conceived as a 'converted/modernised engineering shed'.
- Three storeys high with an oversailing low-pitch metal roof.
- A framework of brick piers and lintols, to 'suggest' the structure of the original shed.
- The brick framework has concrete details and is lined with a skin of glass and metal cladding panels.
- The side elevations are highly rationalised and repetitive.
- The gable ends are heavily modelled, with a central recess for the entrance and large areas of glazing.
- The recesses on the ground floor level are mostly glazed, to create a sense of invitation and transparency.
- The entrances at either end have revolving entrance doors, to maximise protection from the weather.
- The east and west gable elevations are identical, except that the west end has three banks of solar screening protecting the major glazed areas.
- The south side of the roof is covered with P.V. solar panels and has a sloping louvre serving the ventilation plant room.
- The deep overhangs to the roof help to protect glazing, both from inclement weather and solar gain.

Internal Key Features

FACE/Tech

- Large central open atrium linking the ground floor learning commons to the teaching areas above.
- Café / social spaces with open access IT facilities Rapid prototyping rooms.
- Rolling roads.
- Engine diagnostics rooms
- Autoclave (with exhaust).
- Study areas linked to main circulation routes
- Welcoming entrance and feature staircase with visually linked working spaces
- Teaching spaces combined with open learning areas
- Vehicular access to yard from workshops and testing spaces
- Workshops with high level services
- Combined use of circulation and temporary exhibition/gallery spaces

Library Building

- Individual study spaces
- Collaborative working areas
- Quiet reading areas adjacent to book stacks
- Small group collaboration rooms
- Informal reading area integrated with book stacks
- Range of open and enclosed working spaces
- Visual interaction between users on different floors
- Suspended exhibition partitions maintaining openness
- Feature space overlooking double height space
- Welcoming lounge space by the entrance

OUTLINE SPECIFICATION - DEVELOPMENT CONSTRAINTS

Planning Approval/Reserved Matters Application

As the wider site has Outline Planning Permission for the master-plan, a reserved matters application is being submitted to cover the first phase of the development, containing FACE/Tech and the Library along with minimal associated external works.

Building Regulations Approval

The main contractor will be responsible for submitting a full plans application to Swansea City Building Control, under the 2013 Building Regulations. The Main Contractor will be responsible for continuing the submission of more detailed information as the scheme is developed through to commencement on site. The Main Contractor will be responsible for obtaining FULL Building Regulation Approval and meeting all additional and associated fees.

The scheme shall comply in all respects to the requirements of the Building Regulations and the Contractor is to obtain Building Regulation Approval. The Contractor will be deemed to have included for all aspects associated with the obtaining of Building Regulation approval regardless of whether particular reference is made to such matter within the tender documentation. The Contractor will be required to submit to Building Control notification where applicable of intended demolition(s) in accordance with the requirements of Section 80 of the Building Act 1984. Such notification to Building Control must be submitted within the relevant period of six weeks prior to commencement of demolition(s). The Contractor will also be expected to comply with all other additional requirements contained within Section 80 of The Building act 1984, and with any requirements contained within a Counter Notice issued by the Local Authority under Section 81 of the said Act

Drainage

The design proposals for this scheme have been developed by Arup. The contractor shall consult with Swansea City Building Control for compliance with Building Regulations and Dwr Cymru Welsh Water for all other requirements.

Acoustic Design

Consultation and detail design work has been undertaken with MACH Acoustics who have advised on break out and break in noise, and how the effects of both should be mitigated.

Their advice has been incorporated into FACE/Tech and the library regarding both wall and window build-ups, and acoustic dampening of plant.

Please refer to the acoustic summary report in the appendices at the end of this document.

Existing Services In General

The site currently benefits from access to the following services:

- 11KV high voltage Western Power Distribution cable
- Low voltage Western Power Distribution cable
- Gas mains
- Water mains
- BT
- Virgin Media

A new combined services route is planned for the site that will replace much of the existing provision and incorporate a number of substations within the development.

The Contractor is to include for the disconnection and/or diversion of any existing services, and shall allow for the phasing of service disconnection/diversion and maintain supplies to buildings/part buildings that will remain in occupation during the course of the Works. Underground services are required to suit design and statutory requirements. Initial information has been obtained from the Utility Companies regarding known existing services surrounding the site, and proposed diversions and new service runs have been proposed by TB&A.

It is the contractor's responsibility to ascertain the precise location, capacity and depths of all existing services prior to commencing works on site. See TB&A Stage 3 Design Report and associated drawings for current understanding of mains incoming services locations

Natural Resource Wales

The Contractor shall ensure that there is no possibility of contamination entering and polluting surface or underground waters. Note Contamination Report that shows there is a low subterranean flow of contaminants from adjoining sites. This risk has yet to be assessed as to its potential effect on future uses of the site. Excavations during the construction period should be reviewed by the Main Contractor to establish any potential risks to employees.

Any waste excavation material or building waste generated in the course of the development must be disposed of satisfactorily and in accordance with section 34 of the Environmental Protection Act 1990. Carriers transporting waste from the site must be registered waste carriers. If controlled wastes are to be utilised for construction purposes the Contractor must register the activity with the Natural Resource Wales. The Duty of Care Regulations apply to all movements of controlled waste

Refer to reports for further information:

- White Young Green: Ground Conditions & Tier 1 Assessment (2009)
- White Young Green: TAN 15 Flood Consequences Assessment (2006)
- Integral Geotechnique Desk Study Report Ref: 11292/CF/14 (2014)
- Hyder Geology and Contamination Assessment (2015)

Asbestos

The Contractors attention is brought to the potential of asbestos being present on site. The contractor shall refer to the contents of any Asbestos Survey findings supplied by the client and make appropriate allowances for the management or removal of affected materials by a contractor licensed by the HSE in strict accordance the Council's Asbestos Policy and Procedures. Should the contractor encounter any suspected materials containing asbestos other than that already identified; works should cease immediately and Project Manager /HSE notified for further instructions.

Room Data Sheets

Room Data Sheets have been prepared to provide a detailed brief for typical rooms in order to convey what is needed in detail for each room. If there is any discrepancy between the Room Data Sheets, the drawings or the Employer's Requirements the Contractor is to refer them to the Project Manager. Employer's Requirements and Room Data Sheets are to be read in conjunction with all the tender drawings.

Engineering Requirements

BUILDING MATERIALS & COMPONENTS

Underground Drainage

Locations and specification of ducts and service runs are to be in accordance with the engineer's drawings and the Statutory Authority's requirements. Precise locations must be agreed the consultant Engineer prior to commencing the work. The subcontractor must provide all necessary seals, draw strings, insulation, junctions etc

Note:

Unless specified otherwise, and agreed with the design team, all kitchen waste water shall be discharged via a grease trap. Unless specified otherwise, and agreed with the design team surface water drainage to vehicular parking areas shall have petrol interceptors before connecting to the mains surface water drainage. The contractor shall establish position, type and depth of drainage and service ducts required in foundation. Lintels shall be installed over drains passing through foundations and allow the movement joints in the pipeline in accordance with pipe manufacturers' recommendations.

Unless specified otherwise on the engineer's drawings all foul and surface water drainage shall be to BS8000 – 14:1989 and shall consist of grade A piping (Hepsleve or similar equivalent) on a granular bedding. All pipe sizes and falls to be in accordance with the Engineers design. All gullies shall have 75mm deep water traps. Drainage must discharge from site as shown on drawing. Pipe runs that are 100mm diameter or less must be back filled with granular material not exceeding 10mm. Unless specified otherwise on the engineer's drawings, where the distance between pipe trench and foundations is less than 1-metre either:

(i) take the foundations down to below level of invert, or

(ii) encase the pipe in concrete up to a level of the foundation base.

Pipes encased in concrete should be provided with flexible joints every 5-metres. Where the top of the pipe is within 300mm of the underside of the concrete slab the pipe shall be encased in concrete at least 150mm thick. All other drainage under the building shall be surrounded by 150mm pea gravel extending 2-metres beyond the building. Unless specified otherwise on the engineer's drawings, beddings and surrounds of drains to be pea gravel or equivalent unless within 600mm of ground surface, in which case they are to be laid on granular bed 150mm thick and covered in 150mm concrete.

Unless specified differently on the Engineer's drawings all inspection chambers will be built of 225mm class B engineering bricks in English Bond on a 150mm concrete slab. Drains in chambers are to be open channels discharging in direction of flow over impervious cement sand benching laid to encourage flow of wastes into the drainage channels. A proprietary prefabricated inspection chamber may be used at the discretion of the Building Inspector.

All works shall be undertaken in accordance with Sewers for Adoption 7.

OUTLINE SPECIFICATION - STRUCTURAL ELEMENTS

The structure of the FACE/Tech will generally consist of a hot rolled structural steel frame with concrete slabs. The lateral stability of the structure will be provided by vertical cross bracing with in-plane stability provided by the rigid floor/roof slab.

The structure of the Library is a hybrid system of reinforced in-situ concrete columns and in-situ concrete flat slab construction. The top floor and roof structure are of exposed steel beams and steel columns, with a partly exposed roof soffit. The lateral stability of the structure will be provided by reinforced concrete walls around the lift and stair cores with in-plane stability provided by the rigid floor slab and plan bracing at roof level. Alternative structural systems will be considered by UWTSD. In view of this it is essential that any changes to the structural design engineer's current design is fully considered and ultimately agreed with the Project Manager.

The Contractor shall provide 1 No. copy of the structural calculations to the Project Manager upon request in addition to any Building Control submission. No isolated columns will be permitted in any rooms unless shown on the tender drawings. Any building or structural element shall be designed and constructed by reference to appropriate Eurocodes to meet the requirements of the Building Regulations, so that the combined dead, imposed and wind loads are sustained and transmitted by it to the ground Safely and without causing such deflection or deformation of any part of the building.

The recommendations made in the soil investigation report shall be adopted as absolute requirements for the design and shall not be varied without the express written permission of the Project Manager. Alternative foundation solutions will be deemed non-compliant if they have not been agreed with the Project Manager. Foundations shall be designed so as to limit settlement or other movement of the building to that which will not cause damage or serviceability failures to the whole or part of the works or to any adjoining works. Adequate provision must be made during construction of the foundations and substructure to accommodate incoming services, drainage, etc.

Ground floor slabs are to be constructed as recommended in the Arup Stage 3 Structural Report. The recommendations made shall be adopted as absolute requirements for the design and shall not be varied without the express written permission of the Project Manager. Ground floors shall be constructed using concrete construction. Structural design to be such that a clear service void depth within ceiling and roof voids are sufficient to accommodate all equipment and associated services. Minimum ceiling height requirements are indicated on room data sheets. Ceilings shall be exposed structural soffit with exposed underslung services and independent lighting rafts, unless agreed in writing with the Project Manager.

Provide all necessary access points, walkways etc within the ceiling voids or on the roof as required to allow safe maintenance and inspection of all relevant mechanical and electrical engineering services. All exposed internal steelwork shall be suitably fire protected with a decorative finish to Architects requirements. Any exposed external steelwork shall be galvanised and painted to Architects requirements. Steelwork in contact with the outer skin of masonry shall be either stainless steel or galvanised in accordance with BS EN ISO 1461. All steelwork to be in accordance with the National Structural Steelwork Specification (5th Edition CE Marking Version). All concrete works to be in accordance with the National Structural Concrete Specification (4th Edition).

Foundations, Slabs and Structures

These shall be as the engineer's proposals, drawings and specification, and comprise piled foundations. Type of pile will be the choice of the piling specialist with due regard being given to adjacent dock walls and possible buried obstructions. The Specification for the works shall be the specification section only of the ICE Specification for Piling and Embedded Retaining Walls 2nd Edition, published by Thomas Telford Ltd in 2007, with information, amendments and particular requirements as set out in the Particular Project Specification. Where there is conflict with the ICE Specification for Piling and Embedded Retaining Walls, the Contract Documents, published standards and/or codes of practice, the requirements of the Particular Project Specification shall take precedence over other requirements.

Ground Floor Construction

The ground floor for all buildings will be a suspended insitu concrete slabs with non-structural screed topping where required. Cavity wall insulation will continue down to dpc level in all external walls to ensure that the void below suspended ground floor slabs is maintained at an even temperature. 75mm thick screed laid in accordance with BS 8204 part 1 on 75mm EPS insulation on the in-situ concrete slab with a blinding course and hardcore as shown on the engineers drawings. It is assumed that the Tech area will have structural slab level at FFL with applied painted or sealed finishes with no screed allowance. Actual finish as per the room data sheets. Where heavy machinery are located in the Tech building it is assumed sufficient spreader plates or plinths will be required to satisfy the local point loading allowance. Protect the Damp Proof Membrane throughout the works and ensure that any damage is repaired prior to covering up or building in. Provide a 300mm overlap to membranes and any adjacent dpcs or cavity trays. Seal the laps with adhesive tape or as recommended by the manufacturer of the membrane and use proprietary corners rather than fabricate on site. Seal around all dpm service penetrations with proprietary top hat components. Ensure gaps between service risers and ducts are to be sealed with a non-setting compound or expanding polyurethane foam

Upper Floor Construction (FACE)

To be long span composite steel beams on agreed steel column structural grid. Floor to be solid pre-cast concrete plank construction with structural screed topping to engineers design. Contractor to ensure floor build-up meets all sound absorption requirements in terms of impact and airborne sound transmission as identified and specified by MACH Acoustics. Contractor to ensure all upper floors and structure to adhere to any fire compartmentation, spread and resistance requirements, as specified by Fusion Fire Ltd, and all statutory requirements.

Upper Floor Construction (Library)

To be in-situ reinforced concrete flat slab construction with in-situ reinforced concrete structural frame. Frame and upper floor soffits to be in a high quality fair faced finish. The finish is to be to NSCS4 – Special finish as specified BS EN 13670 Execution of Concrete Structures, with formwork being Phenolic film faced (PFF) plywood Contractor to ensure floor build-up meets all sound absorption requirements in terms of impact and airborne sound transmission as identified and specified by MACH Acoustics. Contractor to ensure upper floors and structure also adhere to any fire compartmentation, spread and resistance requirements, as specified by Fusion Fire Ltd, and all statutory requirements.

Roof Structure (Tech)

The main roof structure to be an insitu concrete slab on a metal deck. The slab is to be integral with composite steel beams. The slab provides rigid diaphragm behaviour to spread the stability loads to the vertical bracing.

Roof Structure (FACE)

The main roof structure to be steel beams with structural metal decking. Plan bracing is provided to spread the stability loads to the vertical bracing.

Roof Structure (Library)

The main roof structure to be steel beams with purlins spanning between steelwork. Plan bracing is provided to spread the stability loads to the vertical bracing.

External Fabric

OUTLINE SPECIFICATION - EXTERNAL FABRIC - ROOFS

There are two types of roof, pitched standing seam and Insulated Flat Roofs:

Pitched Roofs to Library

Standing seam metal roofing system with external eaves overhang falling to a pressed metal gutter system. The standing seam external cladding will be part of a fully insulated built-up roofing system such as Euro Clad or KALZIP. It will achieve a U-value that is at least 25% better than the current building regulations this cladding system will be insulated to supplement the additional requirements. Rainwater drainage to be collected and discharged via conventional gutter and downpipe system. System to allow for 1 in 250 year storm capacity. RWP's to be external flush fixed to external wall within recesses in brickwork. Contractor to ensure design suitable for location and environment. If there is an acoustic requirement to reduce noise from rain impacting the metal standing seam roof cladding, allow for 15mm cement particle-board to provide additional acoustic density. Alternative systems will be considered where evidence is submitted to the approval of the Project Manager and acoustic consultant.

From outside to inside

- Aluminium standing seam roof on halter system (aluminium thickness to be confirmed)
- 300mm Rock fibre (compressed to 280mm) insulation quilt
- Fully air-sealed Vapour Barrier laid over the
- Steel Liner panel (thickness and acoustic perforations to be confirmed)
- Exposed ceiling and lighting rafts

Flat Roofs

These will be to FACE and Tech buildings and will permit regular and easy access for maintenance to plant etc. It will be either a high quality mechanically fixed single membrane system with compatible walkway surfaces the roof access doors and all around the plant areas or it will be a high performance rubberised bitumen on a rigid insulation (Derbigum or similar equivalent). Roof finish to be installed above tapered roof insulation with vapour control layer below allowing for a nominal 1:60 fall to outlets as indicated on drawings. Roof build up to be installed over in-situ concrete roof slab.Rainwater drainage to be collected and discharged via specialist designed syphonic system. System to allow for 1 in 250 year storm capacity. RWP's to be internal flush fixed to external wall. Contractor to ensure design suitable for location and environment.

From outside to inside

- 3mm Single Membrane Roofing Sheet
- 200mm (minimum) roofing grade tapered insulation
- Fully air-sealed Vapour Barrier.
- 200mm Concrete Slab
- Exposed ceiling and lighting rafts

Internal Roof Soffits

The roof liner will be partly hidden from view with suspended acoustic rafts

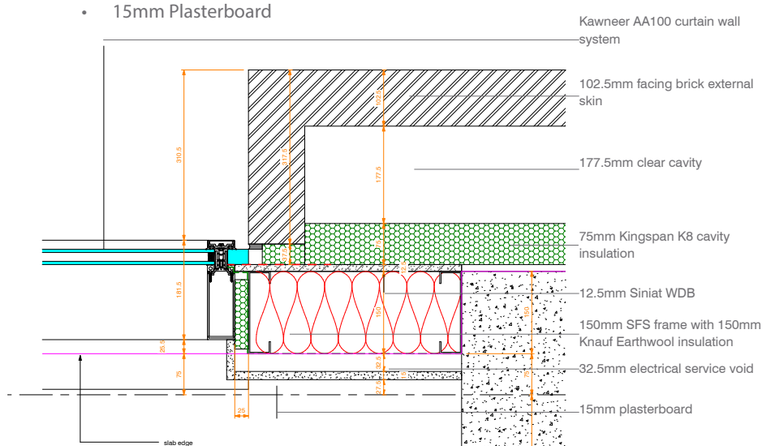
EXTERNAL & INTERNAL WALLS

Walls below dpc - Inner leaf of substructure shall be of dense concrete blockwork with a minimum compressive strength of 7.0 N/sq mm or concrete upstand. All blockwork below dpc must be suitable for use in ground conditions as specified in the Engineer's ground inspection report. Cavities below dpc level shall be back filled with 1:12 concrete, sloping to the external skin and to an even depth around the building. This level must be at least 225mm below the dpc with a fall to built-in proprietary weep holes at maximum 750mm centres horizontally. External walls to be constructed with rainscreen system with outer leaf secured by engineered wall ties fixed via the insulation back to the SFS framing system. Horizontal EPDM, cavity trays etc to external walls are to be located to suit external finished ground levels and internal finished floor levels. Partial fill cavity wall insulation to be used as necessary to achieve the specified U-Value requirement. Facing-brickwork outer leaf with tooled weatherstruck joints and minimum 75mm residual cavity to be in accordance with Approved Document Part C diagram 12 and table 4. Wall ties by ANCON are to be heavy duty 'safety type' in stainless steel with minimum embedment of 62.5mm and as required by manufacturer's recommendations. Ties in accordance with PD6697:2010, evenly distributed and staggered over the wall in accordance with AD Part A and manufacturers recommendations, except around openings where they shall be a maximum 300mm separation vertically.

455MM BRICKWORK WALLS TO FACE AND TECH:

From outside to inside

- Red-multi brickwork with precast concrete cills and lintles. *(Tech infill bays to be stack bonded blockwork with masonry paint finish.)*
- 75mm Unobstructed Cavity
- 75mm Kingspan K8 cavity insulation on
- Sealed Weather Defence Board on
- 150mm SFS Insulated Earthwool Cavity on
- Vapour and air seal barrier on
- 25mm Electrical service void
- 15mm Plasterboard



565MM BRICKWORK PIERS TO LIBRARY

505MM BRICKWORK WALLS TO FACE AND TECH:

From outside to inside

- Blue brickwork plinth
- 125mm Unobstructed Cavity
- 75mm Kingspan K8 cavity insulation on
- Sealed Weather Defence Board on
- 150mm SFS Insulated Earthwool Cavity on
- Vapour and air seal barrier on
- 25mm Electrical service void
- 15mm Plasterboard

565MM BRICKWORK PIERS TO LIBRARY:

From outside to inside

- Red-multi brickwork 'framework' with precast concrete cills, lintols, capitols and plinth
- 177.5mm Unobstructed Cavity
- 75mm Kingspan K8 cavirty insulation on
- Sealed Weather Defence Board on
- 150mm SFS Insulated Earthwool Cavity on
- Vapour and air seal barrier on
- 25mm Electrical service void
- 15mm Plasterboard

392.5MM CLADDING WALLS TO FACE, TECH AND THE LIBRARY.

From outside to inside

- 40mm PPC aluminium composite rainscreen cladding panel (aluminium thickness to be confirmed) *Tech icladding to be vertical sinusoidal profile.*
- 75mm Unobstructed Cavity
- 75mm Kingspan K15 rainscreen insulation
- Sealed Weather Defence Board on
- 150mm SFS Insulated Earthwool Cavity on
- Vapour and air seal barrier on
- 25mm Electrical service void
- 15mm Plasterboard

Prior to commencement of laying facing brickwork, the contractor is to construct a facing brick sample panel for approval by the Project Manager which shall be retained for the duration of the works - once approved the panel will establish the required standard for all facing brickwork to follow.

EXTERNAL WALLS:

External Leaf:

External elevations shall consist of a mixture of red multi and blue facing brick, glazed curtain walling, metal faced insulated composite cladding, and silver coloured vertical sinusoidal profiled metal cladding. Curtain walls to have horizontal and vertical louvres fully integrated. Coloured panels to Tech to be painted stack bonded blockwork. All coatings to aluminium curtain walling, windows, doors and composite/sinusoidal cladding to be finished with a BBA approved coating robust enough to withstand the maritime location. All trims and flashings to match host cladding.

Metal cladding to library to have recessed shadow gap joints and secret fixings to match the Engineering Building at Swansea University Bay Campus, finished with a BBA approved coating robust enough to withstand the maritime location. All trims and flashings to match host cladding.

Metal cladding to FACE to be insulated aluminium panels to curtain walling, finished with a BBA approved coating robust enough to withstand the maritime location. All trims and flashings to match host cladding

Metal cladding to Tech to vertical sinusoidal cladding, finished with a BBA approved coating robust enough to withstand the maritime location. All trims and flashings to match host cladding

Internal Leaf:

One layer of robust quality plasterboard (15mm) on a MF spacer, on an insulated structural metal frame system complete with a continuous vapour barrier sealed at all edges on the wall inner side and sealed with the roof vapour barrier to ensure air tightness and a severe duty rating. Siniat Weather Defence Board fixed to cavity side of insulated SFS and sealed in accordance with manufacturers instructions and current best practice.

WINDOWS

Window Frames And Curtain Walling

Curtain walling systems will be a high performance aluminium system such as the Kawneer AA100 system or similar equivalent. Window and window/door systems to be configured in accordance with the tender drawings including; plans, elevations & sections. Glazing and glazing sizes shall to be kept to the minimum compatible with requirements of lighting, surveillance and visibility. Window systems must comply with Building Regulations particularly Approved Document Part N.

They shall be fitted with security fastenings, and all fittings and accessories as required by Building Regulations Window frames shall be thermally broken, internally beaded, semi-gloss polyester powder aluminium systems coated to min. depth as appropriate to the exposed marine environment with a BBA Agrement Certificate backed minimum 25 year guarantee for the coating. Contractor to ensure all expandable foam filler installed to perimeter of glazing with all necessary EPDM at perimeter junctions to be provided. Internal cill boards to be 19mm low formaldehyde MDF, painted gloss white unless otherwise noted in the colour schedules.

Glazing types should be as the following:

- Clear solar glass to south and west elevations with fritting to west elevation only.
- Coloured solar glass to library second floor only of west elevation, colour blue/ green/grey.
- Insulated look-a-like glass spandrel panels to library gable ends, colour opal blue/ green.

The west elevation of the Library will have horizontal and vertical louvres integrated into the curtain walling system to comply with the requirements of the thermal model.

Windows Up To 1750mm AFFL

These will be fitted with lockable restrictors, above this level the windows will be opened by electronic actuators operated by the room occupants by using a wall switch. All openable area of windows to rooms shall be sufficient to meet design and statutory requirements, and shall be installed with 100mm anti-tamper lockable restrictors. unless otherwise required by ventilation strategy, thermal model or service engineer's specifications.

Window and window/door systems to be compliant with requirements including; SBD, thermal, acoustic, solar, day lighting and free air ventilation requirements as assessed by TB&A

Windows with cills below 1100mm AFFL to have anti-tamper locking restrictors limited to 100mm opening. Contractor to ensure glazing in these windows capable of being used for barrier protection (see below for further details).

Accessible And Vulnerable Windows

should be independently certificated to BS 7950 Windows of Enhanced Security or LPS 1175 SR 2 or 3 as well as the relevant performance standard:

- BS 644 for timber windows,
- BS 4873 for aluminium,
- BS 6510 for steel windows.

Ventilation:

For details of the ventilation strategy refer to the M+E specification and drawings. The strategy for FACE and Tech is for an assisted system, where natural ventilation is supplemented by NVHR units. The configuration of opening lights will be shown on the window schedules. Rooms that have particular acoustic requirements will preclude the use of natural ventilation. These rooms will be mechanically ventilated. The scope of these requirements is shown on the M+E drawings and specifications.

The FACE building contains a full height atrium, located in the middle of the building that connects all learning areas to the ground floor communal spaces. Ventilation of this area will be finalised with specialist subcontractor input that will take into account the requirements of the emerging fire strategy. The library is vented through a displacement system using the sealed raised access floor as a plenum to distribute heated/cooled air. All windows in the main spaces of the library are non-opening, with selected windows in the smaller rooms located around the buildings' perimeter being openable.

Internal Blinds

The contractor is to include for internal blinds to all occupied spaces of both FACE/Tech and the Library. Type of blind to be determined between contractor and client/project manager.

Solar Shading

External aluminium louvre solar shading mounted in recess of west elevation of Library. Polyester powder coated, colour pale grey. Blades to be 200mm long aerofoil section.

External Sliding Screens

Polyester powder coated metal sliding screens on wall mounted rails to be fitted to the exterior of Tech as per the elevations. Bottom main panel of screens to be decoratively perforated metal clad. Top panels to be left open, such that when the screens are closed they do not obscure the window fanlights behind.

GLAZING

Glazing to be clear in all areas other than WC's where frosted glass is required. Glazing to be capable of safe breakage in accordance with Approved Document Part N and BS6206:1981. Pane material of Insulating glass units to be to BS EN 1279 and Kitemark certified to SBD requirements on Ground Floor. Window supplier to provide whole window U value calculations, wind loading and glass thickness calculations for each window type.

Inner pane to be laminated safety glass - specialist subcontractor to determine final glass thickness and specification to comply with Building Regulations Part N, and to suit pane size, wind loading and barrier loading requirements. Outer pane to be toughened solar control glass - specialist subcontractor to determine final glass thickness and specification to comply with Building Regulations Part N, and to suit pane size, wind loading and barrier loading requirements .

Spacer to be anodized aluminium, colour: Silver. All sealed double glazed units to have at least 10 year guarantee against seal failure Surrounding window bead to be internal with proprietary clip fixing. Glazing system to be preformed gasket sections supplied by window manufacturer. Window and curtain wall glazing systems which provide edge guarding should be designed such that their transoms, mullions and infill glazing or spandrel panels can withstand the appropriate loadings as set out in BS6399:Part 1:1996,Table 4 Category 5 "Areas susceptible to overcrowding.

Window supplier to provide whole window U value calculations, wind loading and glass thickness calculations for each window type. Glazing to meet the requirements of Secured by Design and be certified to PAS 24:2012, LPS 1175 SR2 or equivalent. Method of calculating the thermal transmittance (U-value) of windows to be weighted U-value.

Window interfaces to be co-ordinated to achieve required average U-value. Method for assessing thermal transmittance (U-value) of assemblies: Method 1 - approximate method in accordance with CAB/CWCT publication 'The thermal assessment of window assemblies, curtain walling and non-traditional building envelopes'

Window supplier to provide whole window U value calculations, wind loading and glass thickness calculations for each window type.

- Maximum g-value: glazing only: 0.4
- Maximum g-value - solar control glass: glazing only: 0.4
- Minimum light transmission - glazing only: 70% across double glazed unit

Glazing installation: Insulating unit: Located centrally in surround using setting and location blocks. Gaskets and beads to be installed as recommended by frame manufacturer. Gasket fit at corners to be tight, without gaps, with unobstructed drainage and ventilation holes.

External Cills and Lintles

Cills to be precast concrete with hard crystalline finish and should be steeply angled to prevent them being used as climbing aids, seats or litter points. Window protection to ground floor and easily accessible locations to be certified to BS7950:1997. Lintles to be precast concrete with hard crystalline finish.

Protection Barriers

Barrier protection to be provided to all external door openings projecting externally in accordance with Approved Document Part K. Where window and curtain wall glazing systems can be used to provide edge guarding the main contractor should ensure that all transoms, mullions and infill glazing or spandrel panels can withstand the appropriate loadings as set out in BS6399:Part 1: 1996, Table 4 – Category 5 "Areas susceptible to overcrowding" and under the requirements of Part K of the approved documents.

Specialist subcontractor to determine final glass thickness and specification to comply with Building Regulations Part N, and to suit pane size, wind loading, and barrier loading requirements. Glazing specialist must undertake and confirm all thermal stress calculations; and retain responsibility for design of the glazing systems.

VERTICAL CIRCULATION

Lifts

FACE contains two thirteen person lifts, both required for accessibility purposes. Preliminary calculations and traffic assessment has been carried out by Kone UK Ltd, but will have to be confirmed by the main contractor when the contractors preferred lift supplier and installer has been determined. Neither of the lifts are currently identified as evacuation lifts, therefore will be designed to fail safe to the ground floor with doors open. Tech is a single storey building and as such no lift provision has allowed for. The Library contains two thirteen person lifts, both required for accessibility purposes. Preliminary calculations and traffic assessment has been carried out by Kone UK Ltd, but will have to be confirmed by the main contractor when the contractors preferred lift supplier and installer has been determined. Neither of the lifts are currently identified as evacuation lifts, therefore will be designed to fail safe to the ground floor with doors open.

Staircases

FACE contains three fire escape and accommodation staircases and one isolated accommodation stair. Staircase and guardrails to landings shall all be in accordance with Part B, Part K, and Part M of the building regulations. Stairs in the main stair and lift core have been taken up to roof level to provide for roof maintenance access.

The Library contains two fire escape and accommodation staircases and one isolated accommodation stair. Staircase and guardrails to landings shall all be in accordance with Part B, Part K, and Part M of the building regulations.

Stairs

Staircases to FACE and the Library shall be fabricated from precast concrete units to comply with Part K of the building regulations. Treads will be minimum 280mm and Risers will be maximum 150mm. Staircases shall have walls and ceilings built from materials having Class 0 spread of flame and provide a minimum of 30-minutes fire resistance from both sides.

There will be a requirement for a smooth face to the soffits, suitable for the application of emulsion paint with non slip inserts to the nosings in a contrasting colour and texture to comply with Part M of the Building Regulations. There will be at least a minimum vertical 2000mm clearance between the stair pitch line and the finished surface of ceiling or sloping soffit.

Balusters and Handrails

All internal balustrades shall be glazed into a simple structural steel guardrail system with a Satin finish Stainless Steel handrail. Details should be prepared by a specialist subcontractor such as CONCEPT Balustrades Cardiff. Glazed panels will be held in place by pressure plates at each baluster. Base plates to be fixed directly to slab/tread via recessed pockets and countersunk anti-tamper fixings. All landings will have a guarding screen that must be at least 1100mm above the adjacent floor level. All staircases will have handrails at 900mm above the stair nosings. There shall be no gap greater than 100mm between any components forming the balustrade and handrails. Clear stair widths between the walls are specified in the FIRE STRATEGY report. They are generally not greater than 1200mm, between the faces of enclosing walls. Particular dimensions are given on the drawings. Main contractor to ensure all stair balustrades shall resist a horizontal loading of 1.5 kN/M run in accordance with BS 6399 Part 1.

EXTERNAL DOOR AND IRONMONGERY

Minimum Specification for Security

External doors to comply with PAS24: Product Assessment Specification for enhanced security performance of doors (BSI) or independently certificated to the recognised security standard Loss Prevention Standard LPS1175 issue 7 security rating 2

External Single Swing Doors

These are to be incorporated into the proposed Kawneer AA100 curtain wall system, and comply with the requirements of BS4873:2009 'Aluminium Alloy Windows & Doorsets Specification'. They will be Kawneer AA541 polyester powder coated aluminium doors, (coated to a suitable specification to suit the marine environment colour tbc), thermally broken complete with fitted security fastenings.

Main Entrance Doors

The library has two main entrances, located at each end of the building, each comprising both revolving doors and pass doors incorporated into the AA100 curtain wall system. Revolving doors will be Dorma KTV Secure Revolving Door System or similar approved, and the pass doors will be Kawneer AA541 as noted above.

FACE and Tech Main entrance doors are to be lobbied automatic sliding polyester powder coated aluminium units, (coated to a suitable specification to suit the marine environment colour tbc), thermally broken complete with fitted security fastenings. sliding doors by Kawneer, able to be built in to to the AA100 curtain walling system.

Escape doors from the base of stairwells to be Kawneer AA541 polyester powder coated aluminium units, (coated to a suitable specification to suit the marine environment colour tbc), thermally broken complete with fitted security fastenings.

Large openings in Tech will be fitted with acoustically dampened, insulated , polyester powder coated steel roller shutter doors, (coated to a suitable specification to suit the marine environment colour tbc).

Thresholds

All external doors shall have a level threshold and a level platform of at least width of the door beyond the limit of the doors in an open position to comply with part M3. The threshold detail will allow for discharge of water away from the building. All external hard landscape surfaces will be laid to falls away from the building. Tactile paving will be provided at the top and bottom of all changes of level that are stepped or ramped at gradient greater than 1:20.

Louvre Doors

Plantroom external doors will be integral with the adjacent proprietary curtain wall system and will be polyester powder coated aluminium to a suitable specification to suit the marine environment. Aluminium powder coated fully clear or acid etched glazed doors integral with curtain walling/window specification with stainless steel heavy-duty ironmongery Access control system to the electrical engineers design and specification.

Glazed Apertures

Glazing to be capable of safe breakage in accordance with Approved Document Part N and BS6206:1981. Pane material of Insulating glass units to be to BS EN 1279 and Kitemark certified to SBD requirements on Ground Floor. Window supplier to provide whole window U value calculations, wind loading and glass thickness calculations for each window type. Inner pane to be laminated safety glass - specialist subcontractor to determine final glass thickness and specification to comply with Building Regulations Part N, and to suit pane size, wind loading and barrier loading requirements. Outer pane to be toughened solar control glass - specialist subcontractor to determine final glass thickness and specification to comply with Building Regulations Part N, and to suit pane size, wind loading and barrier loading requirements .

Spacer to be anodized aluminium, colour: Silver. All sealed double glazed units to have at least 10 year guarantee against seal failure. Surrounding window bead location to be internal with proprietary clip fixing. Glazing system to be preformed gasket sections supplied by window manufacturer.

Window and curtain wall glazing systems which provide edge guarding should be designed such that their transoms, mullions and infill glazing or spandrel panels can withstand the appropriate loadings as set out in BS6399:Part 1:1996,Table 4 Category 5 "Areas susceptible to overcrowding. Window supplier to provide whole window U value calculations, wind loading and glass thickness calculations for each window type. Glazing to meet the requirements of Secured by Design and be certified to PAS 24:2012, LPS 1175 SR2 or equivalent. Method of calculating the thermal transmittance (U-value) of windows to be weighted U-value.

Window interfaces to be co-ordinated to achieve required average U-value. Method for assessing thermal transmittance (U-value) of assemblies: Method 1 - approximate method in accordance with CAB/CWCT publication 'The thermal assessment of window assemblies, curtain walling and non-traditional building envelopes' Window supplier to provide whole window U value calculations, wind loading and glass thickness calculations for each window type.

Glazing installation: Insulating unit: Located centrally in surround using setting and location blocks. Gaskets and beads to be installed as recommended by frame manufacturer. Gasket fit at corners to be tight, without gaps, with unobstructed drainage and ventilation holes.

Handles

Doors not designated as fire exits to be fitted with 'D' handles and concealed closers. Doors designated as fire exits to be fitted with a key operated externally with a concealed panic bolt push pad device internally which can be 'dogged' in an open position

Ironmongery

All door ironmongery, locks, section sizes and frame reinforcements shall be suitable for the size type and location of the unit. Security 5-lever locks complying with BS3621 shall be fitted to all external doors with a suiting arrangement to allow for a grand master and a master to each of the three separate buildings and a suit for each department within the schools. All final exit doors shall be fitted with push plate or bar ironmongery that over rides any external locking system to facilitate easy egress in the event of fire.

Internal Fabric

INTERNAL WALLS

Plasterboard Faced Walls

These shall be plasterboard faced MF partitions to specifications prepared by MACH Acoustics, as shown on internal wall type drawings. External wall linings to be plasterboard faced MF linings fixed back to external wall SFS. Plasterboard linings to be of robust facing materials appropriate for an educational environment, and allow for the various modes of wheelchair transport, and allow for the specified acoustic and fire resistance as shown on sound and fire strategy drawings.

Robust details will include all air sealing requirements and acoustic separation between rooms. The installation shall be in strictly accordance with the system manufacturer's recommendations. Specific noise reduction requirements are shown on the acoustic strategy drawings. Moisture resisting plasterboards are to be installed in any areas where there is a risk of high humidity.

Allow for 12mm plywood backing between the studs and/or additional studs or noggins where support is required for fixtures and fittings as shown on the drawings. Refer to the fixture and fittings drawings for location of items requiring noggins and to the coordinated heights drawings for height of noggins, and to room data sheets and drawings for further details.

Casing of soil and other drainage stacks to be 50x50mm MF or timber stud casing as dimensioned on the drawings and - prior to fixing the 2No layers of 12mm plasterboard - tightly pack the void with Rockwool insulation to a minimum depth of 50mm. Allow for a 150x150mm access panel to each of the rodding points on the stack.

All internal walls to be painted in Diamond silk emulsion by Dulux or similar approved unless otherwise specified by the Project Manager.

Contractor to make allowances for 3 no. feature colours for application to feature walls internally. Locations to be agreed with end user. Plasterboard Internal walls

Fair Faced Concrete Walls

To continue the industrial ethos of the buildings, where concrete walls and cores are being proposed as part of the structural design they are to be left in a high quality fair faced finish. The finish is to be to NSCS4 – Special finish as specified BS EN 13670 Execution of Concrete Structures, with formwork being Phenolic film faced (PFF) plywood

CEILINGS AND SOFFITS

Refer to architect's reflected ceilings drawings for location of the various ceiling types. To achieve a reverberation time as specified in MACH Acoustics report, the majority of rooms will have suspended acoustic and lighting raft panels installed at high level and, where shown on the drawings at high level along the walls. See Acoustic Report for further information. Generally, all ceilings and light fittings will be installed at least 2700mm AFFL. Fire resistant ceilings are required to not have timber shadow battens.

Where access panels are provided in fire resistant ceilings these are also required to have the relevant fire rating. Where gas pipes are located within ceiling, roof or any other voids they must be vented as required by current regulations, refer to services specification for further requirements.

CEILINGS BELOW CONCRETE SOFFITS

Acoustic Tile Grid Ceiling:

Ceilings to WC and core areas to be ECOPHON Focus D acoustic tiles in an exposed metal grid. Refer to acoustic Report for acoustic performance required in each room. All suspended ceiling tiles are to be clipped in position with access panels located as/ where required for access / maintenance of services located above. Perimeter infill trim for Tegular tile and edge profile to manufacturer's recommendations to perimeter of all demountable suspended ceilings

Self Finished Concrete

All other spaces to have self finished exposed concrete soffit.

FACE/Tech soffit to be underside of pre-cast concrete plank.

Library soffit to be underside of in-situ reinforced concrete flat slab with high quality fair faced finish. The finish is to be to NSCS4 – Special finish as specified BS EN 13670 Execution of Concrete Structures, with formwork being Phenolic film faced (PFF) plywood

Lighting and Acoustic Rafts

These are to be employed throughout the buildings for both lighting integration and acoustic attenuation. Contractor to ensure either Ecophon Solo Raft 2400x1200x40mm (400) or Whitecroft Foil Light 800x2200 (800mm) 48mm infill is used in accordance with the requirements of the acoustic report prepared by MACH Acoustics. The acoustic report specifies the number of rafts of each type to be used throughout the development to ensure the acoustic mitigation criteria are met. Lights to be corrosion resistant LED type.

NOTE: If the Ecophon system is used, the main contractor will need to consider additional lighting provision, given the Whitecroft system has integrated lighting.

INTERNAL DOORS

General

Door leafs must be of solid laminated core faced timber construction with hardwood exposed edgings to extend 50mm on the front face of the door..

Fire

All doors shall be high performance door sets of suitable fire rating and will be fully certified in accordance with BS476 part 22 1987. Certificates showing compliance with this standard must be submitted to the main contractor and the architect prior to manufacture along with confirmation that the ironmongery selected by the client does not compromise the validity of the fire certificate. Ensure that all ironmongery is coated with the appropriate intumescent compound prior to housing in the door or frame. Doors within corridors and to all habitable spaces to have glazed panels with zone of visibility between 900mm to 1500mm AFFL.

Visual Disability

Door colours are to be visually distinct from the ironmongery for compliance with Part M and BS8300. Vision panels are framed to provide adequate fixing for screws to glazing beads. Include for intumescent smoke seals/ brushes to be fitted to all door sets where required. All architraves to be factory finished to match frames of doors; typically softwood painted decorated in gloss paint, colour tbc

Acoustics:

All doors and glazed screens between occupied spaces and corridors must achieve Rw 30 dBa. (with 35 dBa acoustically rated doors and frames to all locations as specified within MACH Acoustics report. All acoustic sliding folding doors will have a similar requirements as internal doors (refer to MACH Acoustics report).

Architraves

These are to be rebated plugged, screwed and pelleted to the walls or frames. Hardwood skirting will be painted. Internal Glazed Screens to have hardwood frames with matching profiles to internal door frames and architraves. All internal joinery to doors and windows will have a 5mm chamfer to exposed edges.

Riser Doors

Riser doors should be at least 44mm thick and formed from a solid or laminate core. Acoustic compressions seals should be installed between the door leaf and rebated frame around the entire perimeter. There are currently no acoustic requirements relating to these doors, however should a riser link two teaching spaces then sound transfer could potentially be an issue, therefore MACH Acoustics should be informed if this is to be the case anywhere within the development.

INTERNAL IRONMONGERY

Ironmongery must be anti-vandal, stainless steel and with concealed fixings. The requirements of Building Regulation Approved Document Part M must be satisfied regarding type and positioning of all glazed apertures. Ironmongery to be Satin Stainless Steel or similar approved and must contrast visually with the door face and to be agreed with the Project Manager. Doors to learning spaces shall include: a turn snib internally that can used only for unlocking the door from inside, a self-closer, push-plate and pull handle. Stainless steel kick plates shall be 400mm high and will be fitted to both sides of all doors. Allow for 900mm high kick plates to all doors within the catering and dining areas.

All corridor doors shall be held open on magnetic hold open devices linked to the fire alarm system, ensuring that the doors fail-safe to close in the event of fire or power failure. Colour of internal doors/frames must contrast visually with wall in accordance with Approved Document Part M. Thresholds must be entirely level with finished floors. Contrasting lipping to be applied to doors on hold open devices to circulation routes.

Where internal door closers are required these are to be cam operated with an adjustable power function which ensures the required minimum opening/closing force can be achieved whist ensuring full and correct closure of the door from any side.

Contractor to include for Salto or similar electronic access control system to all rooms as identified on the emerging university security strategy to FACE/Tech and Library. Internal store cupboards and IT/server rooms to have a suited key to lock the door and a turn snib internally that can used only for unlocking the door from inside, a self-closer, push-plate and pull handle. Stainless steel kick plates shall be 400mm high and will be fitted to both sides of all doors.

MANIFESTATION

Manifestation to comply with Approved Document Part N of the Building Regulations. Contractor must allow for manifestation to be applied to all of the externally glazed doors. Allow for 3 no. opaque coloured applied manifestation based on university logo design. Pattern will be confirmed at the next stage and will include reference to the university name.

Internal Fixtures, Fittings and Finishes

SANITARY FITTINGS

Gender Neutral Self Contained WC Areas

These will be fitted with Contour 21 close coupled floor mounted WC and hand rinse basin, separate hot and cold pillar taps with flow restrictors and temperature restrictor for hot tap only, by Armitage Shanks or similar approved. Contractor to provide all necessary ancillary fittings listed within Room Data Sheet

Colour of Sanitary Fittings and Grab Rails

All toilets must contrast visually with walls and floors by 30 points light reflectance value in accordance with Approved Document Part M

Accessible Toilet Enclosures

These will be fitted with Contour 21 Doc M peninsular sanitaryware care pack and Doc M Ambulant Cubicle packs by Armitage Shanks or similar approved with contrasting grab rails. Wall finishes to provide compliant visual contrast to all sanitary ware and wall-mounted fixtures in accordance with Approved Document M. Contractor to provide all necessary ancillary fittings listed within Room Data Sheet

Associated Fittings

These will include stainless steel paper towel dispensers, soap dispensers, toilet paper holders, warm air hand dryers, coat hooks. Ref: Armitage Venesta Washroom Systems T:01474 353333. All toilet areas will have a wall mounted drinking fountain in stainless steel in the corridor space outside.

Cleaners Rooms

These will include heavy duty cleaners' sink with high splashback, bucket grate and HW pad

Above Ground Drainage

Refer to layout and detail drawings prepared by the M+E engineer for the scope and particular requirements of fittings. Wastes pipes and to BS 5572 shall be as follows:

- Wash Basins 32mm
- Bath and Shower trays 38mm
- Kitchen sinks 38mm
- Domestic Waste Disposal Unit 38mm
- Kitchen appliances 38mm
- Soil and Vent Stacks 100mm
- Vent Stacks 75mm

Traps to Outlets

for pipes up to and including 50mm shall be fitted with a minimum water seal of 75mm. Pipes exceeding this diameter shall have a minimum water seal of 50mm. Traps used on sinks, baths and showers may be reduced to 40mm where they are at ground floor level and discharge directly to an external gully. All traps to be anti-siphon type.

Wastes

to discharge direct to external back inlet gullets or into soil and vent stacks as shown on drawings. All changes of direction must be fitted with a rodding eye.

Drainage Penetrates

above ground level walls, all holes shall be core drilled and at a slight incline downwards from inner to outer skin. These penetrations shall be orderly and consistent.

All drainage must be vented at the head of the run by a venting pipe projecting at least 1000mm above any nearby windows on the building or neighbouring buildings. Other soil stacks may be fitted with a Durgo' or stump valve to the Building Inspector's approval and as noted on the engineer's above ground drainage coordination and layout drawings. Wherever possible avoid venting any soil stacks via the roof finish. Venting shall be via a ridge vent or high point on the roof to minimise the risk of water penetration - as indicated on the drawings – and shall terminate with a wire or similar guard at least 900mm above any window within 3-metres of the venting pipe.

INTERNAL FINISHES (ROOM DATA SHEETS TAKE PRECEDENCE)

General:

There will be a range of colours to all finishes to assist in way-finding and orientation throughout the building and to enable individual areas to be identified through contrasting decoration in accordance with the DfEE Building Bulletin 91 and BS8300.

The 'Employer' will be required to select colours/ patterns/ design / layout of feature areas. Contractor to ensure all necessary preparation of substrate and under layers installed in accordance with manufacturer's recommendations.

Walls and Ceilings

- will be painted with a water-based robust and hard wearing silk white emulsion. Select only non-toxic applied finishes. All materials and components must have a low VOC content. The following guidelines should be adhered to:
- Use varnishes with low solvent content, or leave surfaces unvarnished.
- Use water based paint or paints with natural solvent bases for interior decoration.
- Avoid use of particle boards and urea formaldehyde foam insulation (UFFI), or use only in accordance with British Standard.
- Do not use products which could emit naphthalene. Avoid aerosol cans that use VOCs as propellants.
- Where exposure to VOCs cannot be avoided take the recommended health and safety precautions

FLOOR FINISHES

Sheet Carpet

Where referenced in room data sheets install 8mm Supacord carpet tiles by Heckmondwike FB Ltd. (tel: 01924 406161) or similar approved by Project Manager

Entrance Barrier Matting

Battleship high performance sheet entrance carpet. Available from Heckmondwike FB Ltd. (tel: 01924 406161) or similar approved. All ancillary trims

Main Circulation

Floors: Rubber floorcovering. Ref: Noraplan Signa Supplier: Nora Flooring Systems UK Ltd. T: 01455 200500 F: 01455 556529 Web: www.nora.com. Feature porcelain tiles to the main entrance areas. Ref: Extrema. Supplier: Swedecor T: 01482 329691 F: 01482 212988 Web: www.swedecor.com. Walls: Water-based mid sheen Ref: Dulux Trade Diamond Quick Drying Eggshell. Supplier: Dulux Trade ICI Paints T: 0870 242 1100 www.duluxtrade.co.uk.

Toilets

Floors: Seamless Resin Flooring – with slip resistant and integral 100mm high coved skirting. Supplier: Altro Resin Systems T: 01462 707600. F: 01462 707515 Email: care@altro.co.uk Web: www.altro.co.uk. Walls:water-based mid sheen finish. Ref: Dulux Trade Diamond Quick Drying Eggshell. Supplier: Dulux Trade ICI Paints T: 0870 242 1100 www.duluxtrade.co.uk

Stores

Floors: Rubber floorcovering. Ref: Noraplan Signa Supplier: Nora Flooring Systems UK Ltd. T: 01455 200500 F: 01455 556529 Web: www.nora.com. Walls: Water-based mid sheen finish. Ref: Dulux Trade Diamond Quick Drying Eggshell. Supplier: Dulux Trade ICI Paints T: 0870 242 1100 www.duluxtrade.co.uk.

Plantrooms

Floors: Anti Dusting Paint / Floor Sealer. Walls: Water-based mid sheen finish. Ref: Dulux Trade Diamond Quick Drying Eggshell. Supplier: Dulux Trade ICI Paints T: 0870 242 1100 www. duluxtrade.co.uk.

Skirtings

Nominally 19x150 mm bullnose Hardwood treated timber to areas indicated within Room Data Sheets. Typically timber skirtings to be decorated in gloss paint, colour tbc

Thresholds

Contractor to ensure all transfer strips are provided between adjoining floor finishes. Transfer strips to be by Gradus or similar approved by Project Manager.

VOC

Paint to be low VOC content and proposals put forward to Project Manager for comment.

WALL FINISHES

General

All finishes shall be suitable for purpose and as indicated in the Room Data Sheets with specific requirements as referenced below.

Emulsion Paint

Walls typically to be coated in Dulux Diamond silk emulsion or similar approved.

Visual Disability

Wall colours still to provide min. 30 points light reflectance value to sanitaryware / wall fittings regardless if tiled / painted surface.

CERAMIC TILES

Wall Tiling

Prismatic 150x150x6.5mm ceramic tiles by Johnson or similar approved. Semi-gloss finish. Refer to room data sheets for further details of locations. The 'Employer' will be required to select colours to all areas. Colour of walls must contrast visually with floor and ceiling.

Contractor to allow for at least 2 no. rows of ceramic wall tiling above wash hand basins / vanity units or worktops.

Contractor to allow for full height tiling to wet areas i.e. shower areas.

INTERNAL SIGNAGE

FIRE STRATEGY

For full details refer to fire strategy reports prepared by Fusion Fire Ltd.

General

The scheme will not be employing sprinkler protection. Refer to the Fire Strategy drawings for location of fire walls, fire doors and cavity barriers. Refer to the M+E Engineer's drawings and specification for details of the smoke and fire detection system designed in accordance with BS 5839. All fire walls must be built up to and sealed to the soffit of the compartment floor above to prevent the spread of flame and smoke. An allowance must be made for movement in the floor or roof structure above with a compressible joint and an intumescent sealant along its entire length.

Where specified by the engineer, the operation and control of any smoke clearance will be by means of an independently dedicated electrical supply with emergency back-up able to open the ventilators and air inlets in the event of electrical supply failure.

Accessible corridors and passageways are provided with a glazed panel giving a zone of visibility from a height of 900mm to 1500mm AFFL. Any inner rooms are covered by the provision of detection sited within the access rooms in accordance with paragraph 4.9 in Part B1 of the Building Regulations

External Fire Escape Doors

Ground floor level exit doors shall be fitted with fail safe to open latches where they are fitted with magnetic security devices. All internal corridor doors shall be fitted with magnetic hold open devices which are linked to the fire alarm system, and will be self-closing in the event of fire. Refer to M+E details for particular specification.

Elements of Structure

Panels, columns and beams supporting compartment walls and floors - shall be treated with a fire resisting system to ensure a minimum 60 minute fire protection, subject to confirmation by the Fusion Fire.

Intumescent Collars

Collars or intumescent sealant (where the diameter is less than 40mm) -to be applied around any services penetrations which go through fire compartment floor or walls. Refer to the fire drawings for locations of fire walls. Fire dampers shall be fitted at all duct penetrations through fire compartment walls.

Signage

Signage and fire-fighting equipment will be as shown on the separate signage drawings and will comply with Health and Safety (Safety Signs & Signals) regulations 1996. There will be a pictogram as part of the sign. Signage to be corrosion resistant and micro located so they can be easily access from a MEWP

Glazing

Glazing to internal corners adjacent to means of escape or protected shaft shall be at least 1800mm away from any adjoining rooms. Where this cannot be achieved then the curtain walling shall be fitted with a fire resisting glass that will provide 30 minutes integrity only to comply with Part B1 of the Building Regulations.

Cavity Barriers

These shall be fitted at maximum spacing of 20 metres in any direction; and at every floor level where these are shown as compartment floors on the FIRE STRATEGY report. Cavity Barriers shall be located at every wall junction separating fire compartments from the staircases and adjacent fire compartments. All surfaces within a cavity shall have a Class-0 surface spread of flame. All above ceiling cavities to the top floors shall have cavity fire barriers above any 30-minute fire protection walls. Refer to the fire strategy fire drawings for location.

Fire Safety

Comply with requirements as stated elsewhere in performance specification and on Room Data Sheets.

Appropriate signage to be fitted to all fire doors as required

Sufficient fire exit signage should be provided within all areas of the building to indicate intermediate routes and final exit doors for means of escape. An emergency action notice is to be provided and located adjacent to all fire alarm call points with a common notice used throughout the premises

All signs must comply with the Health and Safety (Safety Signs & Signals) regulations and should a pictogram as part of their design feature where appropriate and identified in bilingual text (English and Welsh)

LIGHTING DESIGN

Natural light is essential in an educational environment. We have developed solutions to maximise and harness the use of natural daylight, the landscape, spatial quality, colour and materials. These strategies improve the well being of both students and staff. The changes of natural daylight throughout the day will inform occupants of where they are within the university buildings as well as the time of day and external climate.

All lighting enhances the impact of variation in colour and contrast and artificial lighting will be developed to compliment the natural day-lighting strategy.

Throughout the next design stages we will be developing the interior design with respect to the external landscape design to ensure there is a seamless journey between the two environments. We have ensured there are good views and visual connections throughout helping occupants to orientate themselves to see the various landscaped areas

TEXTURE AND MATERIAL

Material and textures define the function, the character and the surfaces of a space. Internal compositions may respond to the 'natural' external setting and can be translated with the use of materials as appropriate.

Surface finish contribute to the overall appearance of the space. Their reflectance qualities and their colour can strongly influence the appearance of lighting within a learning environment.

Materials and textures can aid visual orientation, and if applied uniquely to specific areas will give students a sense of location and as such assist with way-finding. High quality and sustainable materials is crucial in educational environments to ensure lower maintenance cost. These also engender the health and well-being of all occupants.

Audible information, including the range of sounds created by contact with different surfaces can be extremely important for some occupants. They provide essential stimuli and information for the senses through sight, sound and touch—all of which contribute to the aesthetic experience of the environment.

COLOUR

Every space is a learning space, including the means of arrival and departure from the university. The inclusion of multi-sensory design provides continual information and way finding without signage from the site boundary to the main entrances and throughout the building. It will be a seamless journey from outside to inside.

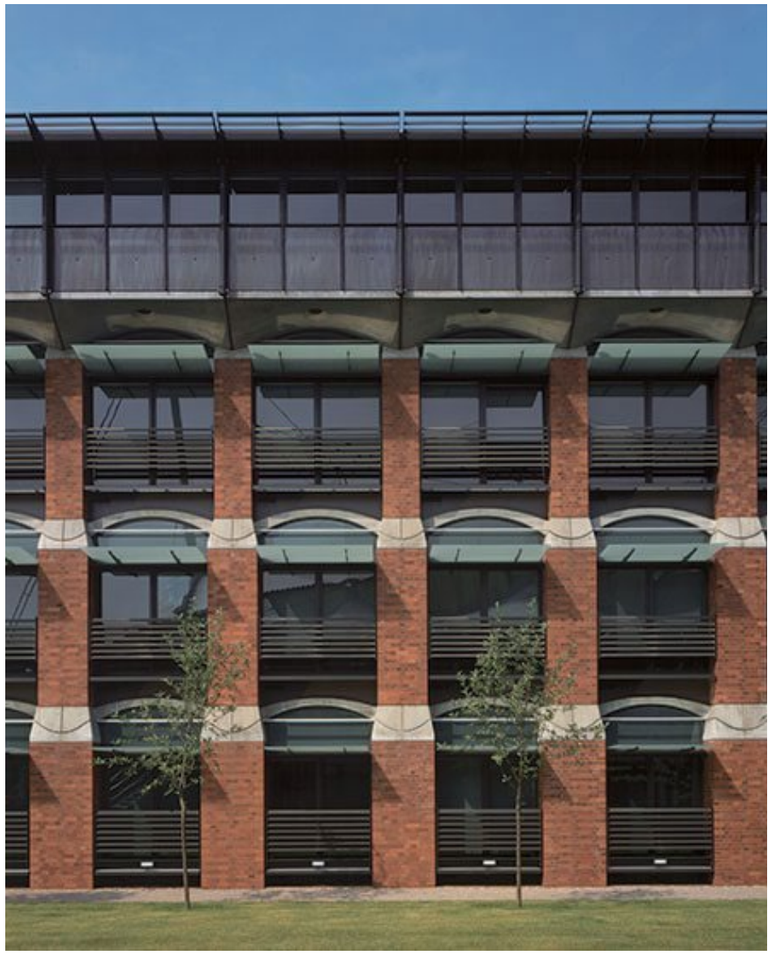
Colour provides a stimulating and attractive environment. It can define spaces, create ambience, influence mood and encourage creativity. Varying colours can be used to reinforce the sense of arrival to different areas, and so is an important element in navigation and way-finding. The aim will always be to keep signage to a minimum; relying wherever possible on visual, acoustic and thermal stimuli.

We will be developing way finding strategies that will permit access for all, whatever the disability. Everyone can enjoy the variety of materials, colour texture and lighting levels, whether natural or artificial. It is an approach that will assist in the natural movement of students and staff within and around the university.

Proposed External Materials







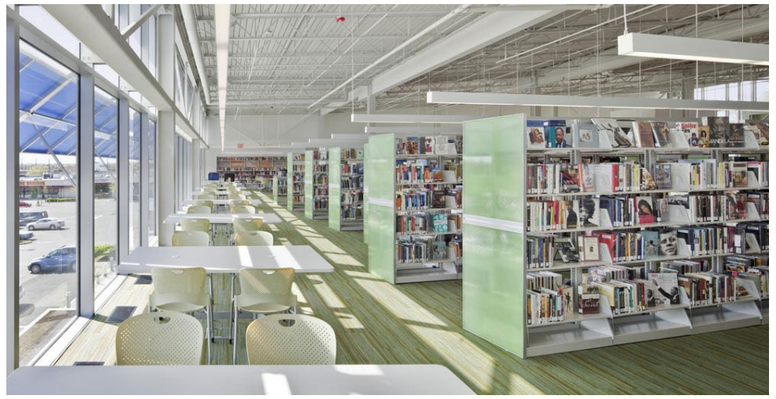




Proposed Internal Materials

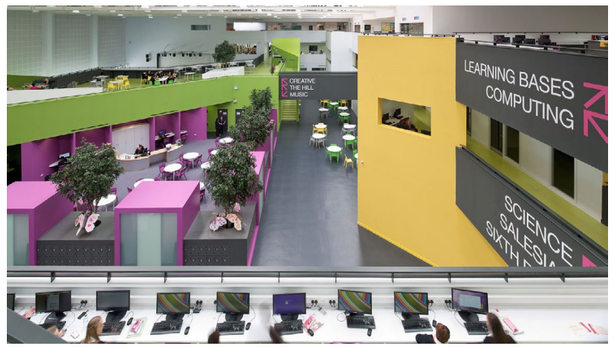




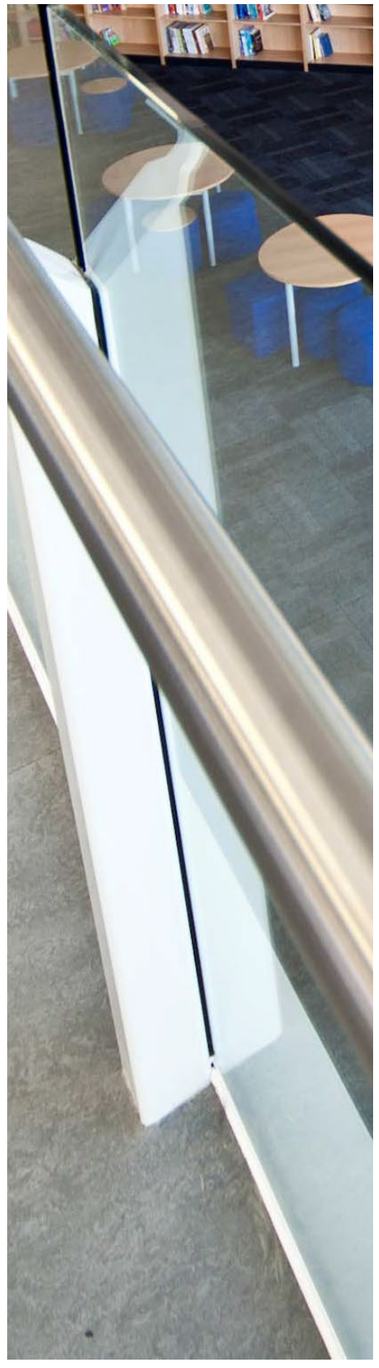


















7.2 Movement, Community Safety and Secured By Design

Figure 73 *Pedestrian connectivity plan*



Pedestrian Access

- Primary pedestrian route
- Secondary pedestrian route
- Wales Coastal Path National Trail

Introduction

The university's aims throughout the master-plan and detailed design process has been to ensure UWTSD is as 'permeable' and pedestrian friendly as possible.

Notwithstanding this, access for bicycles, cars, deliveries and public transport need to be considered on such a prominent development.

Pedestrians

Pedestrian travel and safety have been prioritised by the university during the first phase of the master-plan implementation with all pedestrian and vehicular routes being separated.

Two main pedestrian access points have been identified, the first from the bridge terminating at Trinity Square, and the second from the bus terminus on Trinity Saint David Place.

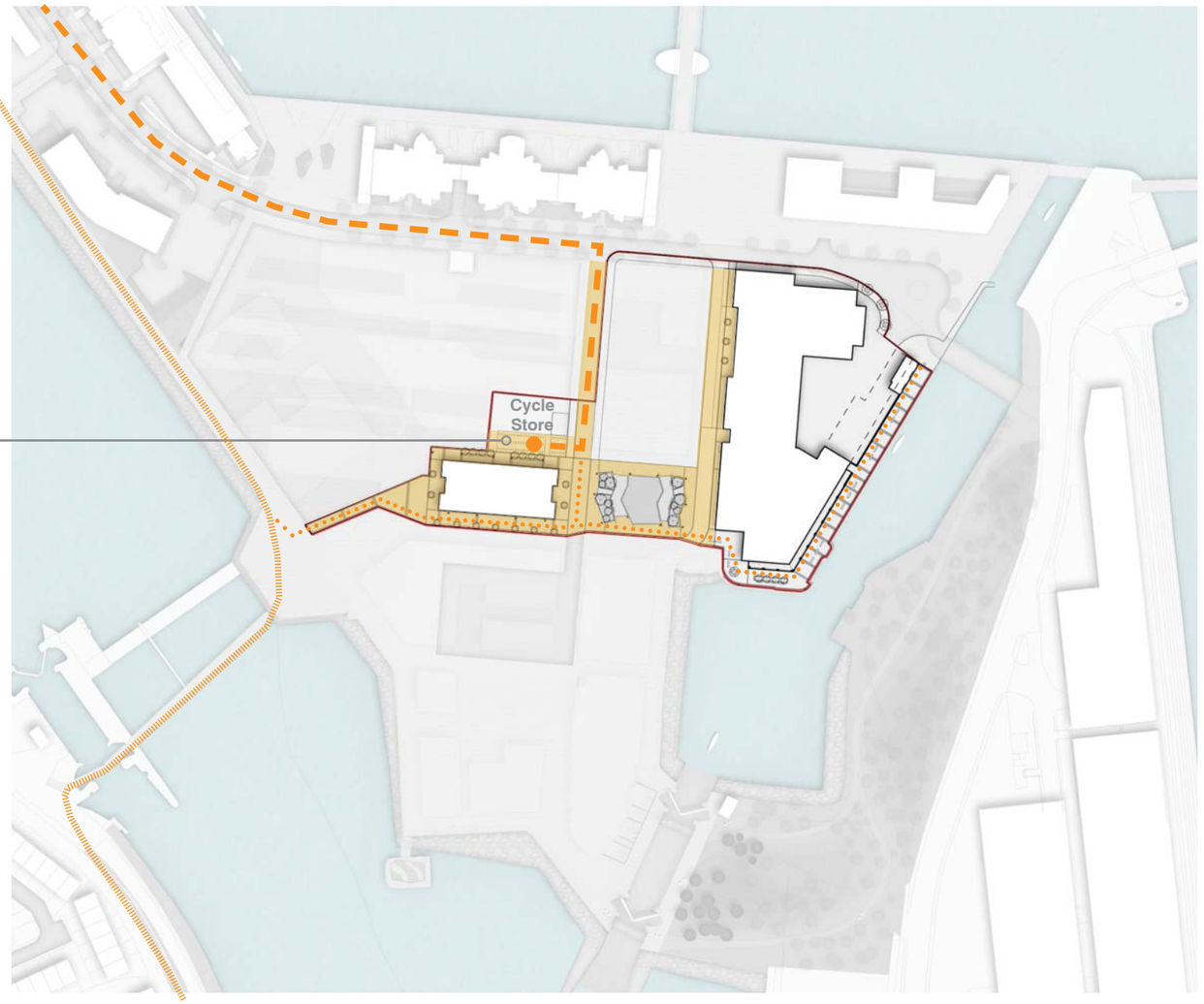
Both routes give dedicated pedestrian access to the whole of the phase 1 part of the development.

Public Transport

The university intends to extend the existing public transport provision in the area by adding routes into the site, and is currently negotiating with bus providers in Swansea to secure this extension.

The planned stops on the peninsular site link directly to the northern pedestrian access points and adjacent residential blocks.

Figure 74 *Cycle connectivity plan*



Primary cycle store for arrival of cycling visitors

Cycle Access

- Primary designated cycle route
- Cycle rack
- Sustrans Cycle route No. 4
- Leisure Cycle route - shared foot and cycle path - 3m wide
- Pedestrian priority area with permitted cycle access

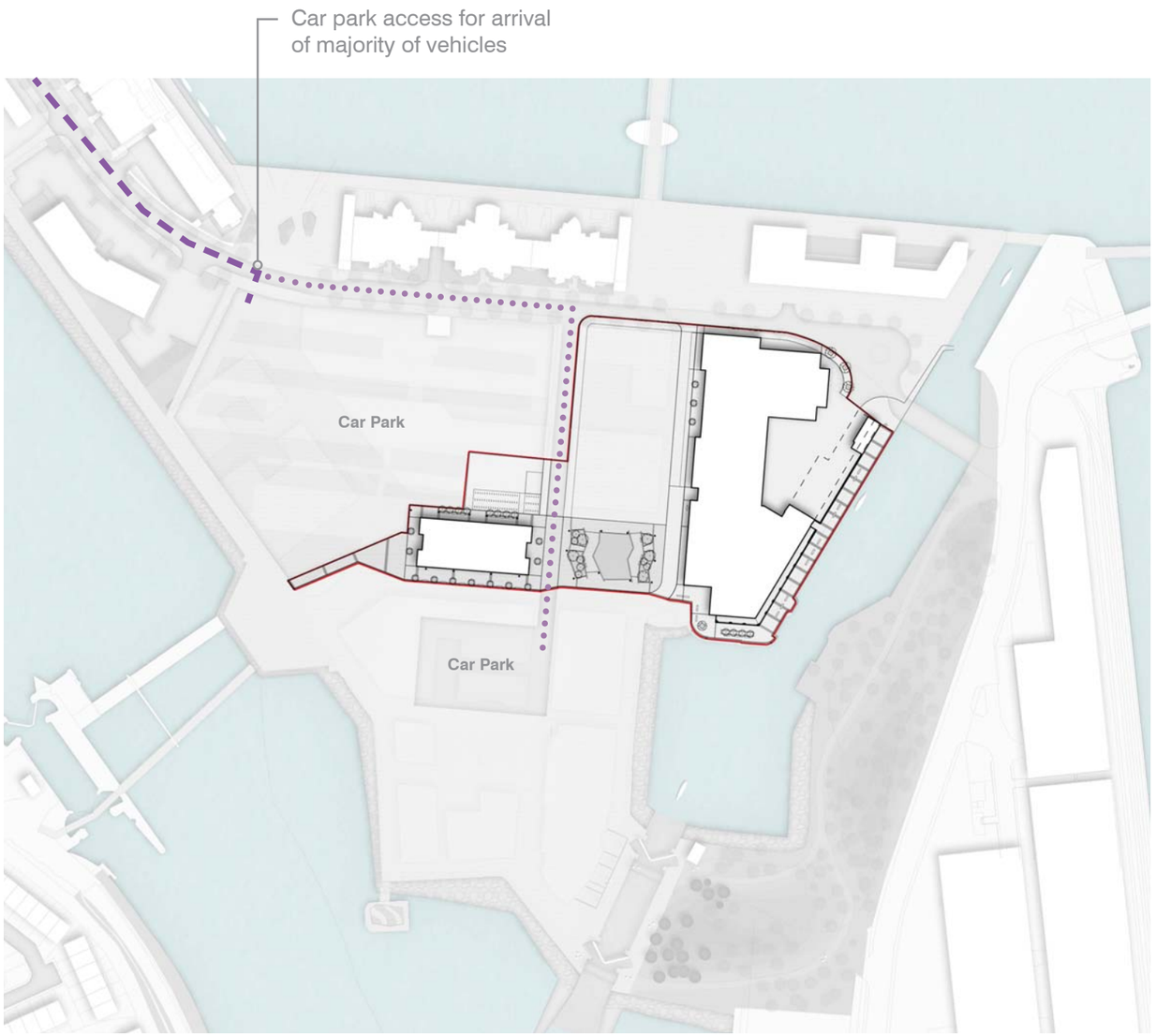
Cyclists

As part of the master-plan, cycle routes have been designed along the dock edge to serve both phase 1 and the wider master-plan site, with multiple routes linking to the national Sustrans Route 4.

However, only limited cycle routes will be implemented as part of phase 1. These are shown on the highways proposals drawings submitted as part of the reserved matters application.

The car park will contain a cycle hub providing secure bicycle storage for 75 students and staff. This area will be covered by the proposed CCTV and lighting system and maintain a secure and well lit footpath.

Figure 75 *Private vehicle connectivity plan*



Private Vehicle Access

- Primary vehicular route
- UWTSD invited access

Private Vehicles

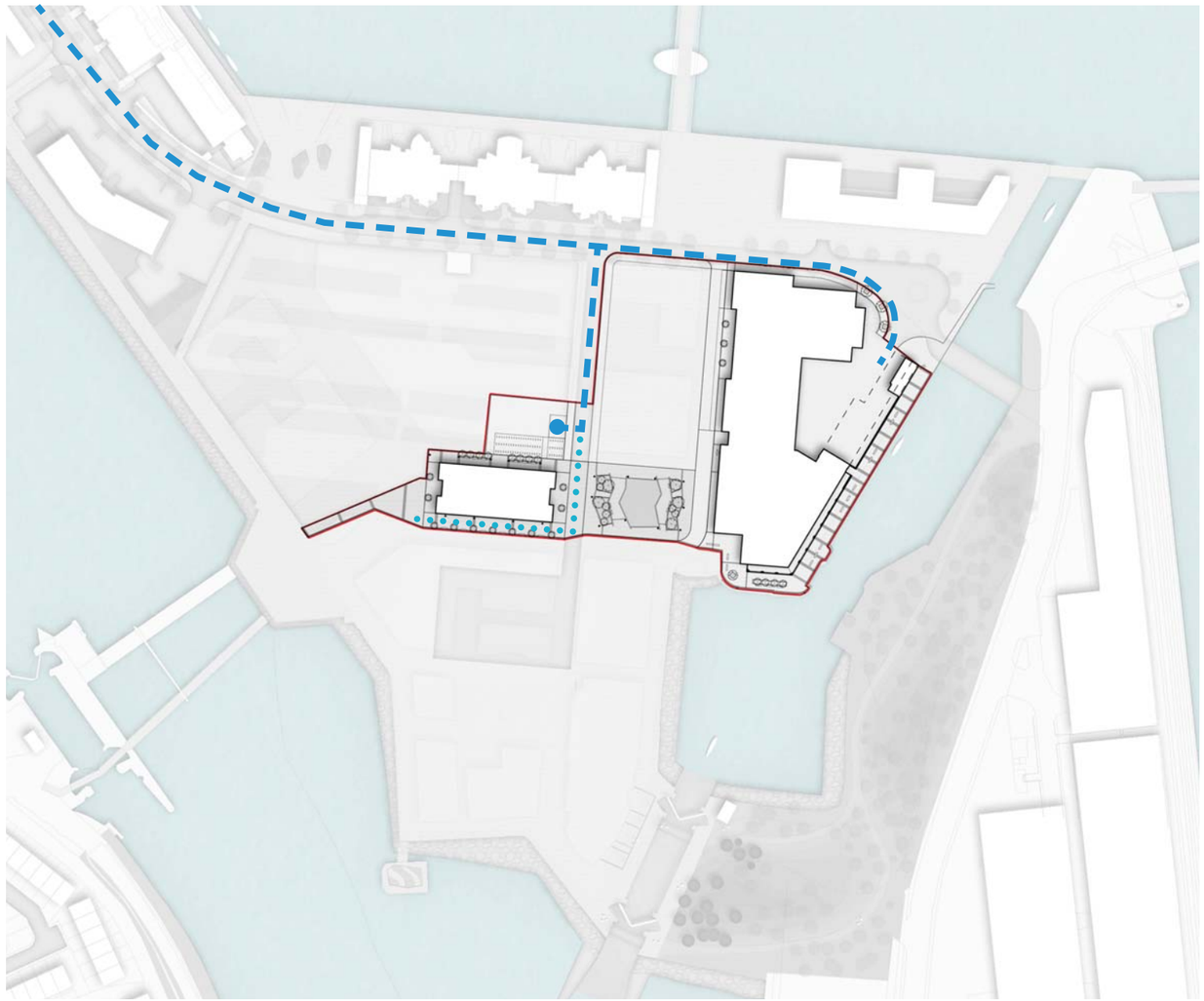
There are currently around 400 spaces available in the adjacent temporary surface car park consented until April 2018 as part of planning application 2013/0289.

The delivery of the Library will result in a small loss of spaces but this will be more than accounted for with the provision by the Welsh Government of an additional 50 temporary car parking spaces as part of planning application 2015/2236 on adjacent land between plots B5 and C4.

There are currently around 400 spaces available in the adjacent temporary surface car park consented until April 2018 as part of planning application 2013/0289. The delivery of the Library will result in a small loss of spaces but this will be more than accounted for with the provision by the Welsh Government of an additional 50 temporary car parking spaces as part of planning application 2015/2236 on adjacent land between plots B5 and C4.

In light of the above, total car parking capacity is well within maximum standards issued within the Adopted City & County of Swansea Council Parking Standards Supplementary Planning Guidance (2012). In line with BREEAM requirements, of the available spaces under its control the University only intends to demarcate between 75 and 150 spaces for its own use whilst the remaining spaces will be managed by the University.

Figure 76 *Service vehicle connectivity plan*





Servicing Access

- Primary service route
- Emergency service route
- Primary refuse point

Servicing

Phase 1 development is entered from Kings Road as indicated on the master plan. There is an existing road that runs north-south from King's Road into the peninsula site. This road contains many of the services that feed in to the southern part of the peninsula. The alignment of this road will be maintained but will undergo changes to its surface treatment i.e. as it crosses Trinity square.

The Library building will be serviced from this road in Phase 1. A further road is planned from King's Road built to adoptable standards that will lead down parallel to FACE and lead around Trinity Square to link to the southern peninsula sites. This will be for general vehicular access.

It is not envisaged that this road will be constructed as part of the Phase 1 development, although a paved access will be installed to facilitate pedestrian movement on the western flank of FACE/ Tech.

To the north of the FACE building site King's Road currently terminates at a large turning circle which can accommodate large buses and delivery vehicles. Service and delivery traffic principally for the engineering Tech part of FACE will enter an enclosed service yard from this roundabout. This configuration minimises the impact on pedestrian movement around the campus. Dedicated pedestrian crossings may be necessary where the road is raised to the pavement level at key node points along Kings Road into the site.

As part of the Stage 3 proposals, UWTSD are investigating upgrading the existing road junction into the site, along with access and egress points to the existing car park. The current hammerhead arrangement at the end of Kings Road is also being investigated for upgrading by potentially allowing a mini roundabout design to be incorporated to further enhance the free flow of vehicular traffic to and from the site.

Further enhancements, if required, will be discussed with the local authority and main contractor during Stages 4 and 5.

Community Safety and Secured By Design

INTRODUCTION

The Contractor shall include for application to the Local Police Liaison Officer to obtain a Secured By Design Accreditation for the completed works.

Initial observations and further discussions with the Local Liaison Officer Mike Harvey. suggest the design will conform to these principles His feedback on the current proposals include the following:

Perimeter Security

Initial discussions with the ALO suggested a 2.0M high fence to the site perimeter would be required to meet SBD standards, however, given the Universities desire for maximum permeability of the site, and the acceptable approach taken regarding security on the recently completed Swansea Bay Campus this solution is deemed inappropriate.

An alternative proposal, acceptable to the ALO, involves 24Hr/7 day monitored CCTV and lighting. This would meet the requirements of SBD and allow the University to maintain a permeable boundary.

Site Access Control

Vehicular access within the campus will be restricted to the minimum possible and only to those areas necessary i.e. parking and service areas. Vehicle entry onto site and into car parks will be barrier controlled with the barriers meeting Secured by Design standards.

The number of vehicle entry/exit points will be limited to as few as possible - preferably one.

Entry into all rooms where valuable equipment is sited e.g. offices, computer rooms, laboratories etc will be controlled and these rooms must be kept locked when not in use. It is vital that access into the student and staff areas is controlled via access control swipe card such as the Salto system.

Entry will be controlled from public into semi private and private areas via access control swipe card such as the Salto system.

Lighting

Lighting design will be coordinated with the CCTV installation and the landscape design to avoid any conflicts, and to ensure that the lighting is sufficient to support a CCTV system.

Light fittings will be protected where vulnerable to vandalism. However, the lighting scheme will be sufficient to cater for lawful after dark activity around the university site. It is important to ensure that there is not too great a contrast between lit and unlit areas as this can lead to intruders not being seen by people using the well lit paths

The lighting system will evenly distribute the light creating no dark shadows, provide good colour rendition, not cause glare or light pollution and will support both formal and informal surveillance of the site. Lighting for internal roads, footpaths and car parks will comply with BS 5489-1:2003.

Lighting, preferably ‘white light’ will protect the whole of the campus. All fittings shall be vandal resistant and positioned in elevated positions. The lighting will be controlled by photo electric cells or time switches.

The Overall Uniformity of light for roads, paths and car parks will be expected to achieve a rating of OAUo and should never fall below 0.25Uo. The colour rendering qualities of lamps used should achieve a minimum of at least 60Ra (60%) on the Colour Rendering Index

CCTV

The university will use student attendance monitoring. 24/7 access to facilities. ALO input will be sought for the emerging proposals.

There is likely to be a central point for security on site however the University have noted that no individual within UWTSD has currently been tasked with site wide waste/ deliveries logistics/ security, and that it is likely to be outsourced to a Property Management Company, who will have responsibility for

Cameras

- External: all external cameras to be pan, tilt, & zoom [PTZ]

Cameras should be placed in the following areas as a minimum:

- Building Entrances - Fixed dome
- Main Accesses to Site - Pan Tilt Zoom
- Car Parks - Pan Tilt Zoom
- Road Junctions - Pan Tilt Zoom
- High risk areas – Fixed Dome

Cameras installed can be either IP or hard wired cameras and all recorders should be in their own network VLan with their administrator and user passwords changed at install

Car Parks

All car parks will be protected by monitored CCTV with every parking bay protected. The-parking facilities will be lit with the lighting up to the British Standard 5489 with details provided by the Kier team.

The site will be pedestrianised with only limited service vehicular movement. The Uniformity Ratio has been adopted from what was agreed and applied at the Bay Campus for Swansea University but requires further clarification.

There will be clear lines of sight across the parking facilities and the parking facilities should aim to achieve the ACPO accredited Park Mark Safer Car Park award.

External Furniture and Bins

External furniture e.g. benches ,lampposts etc. and bins will be located away from the main buildings in order to prevent being an assist to climbing.

All planting will be of a type that grows to a maximum height of 1 metre. Trees will be sited in locations that do not interfere with CCTV or lighting or provide an assist to climbing.

There are clear unobstructed lines of sight across the whole of the campus, with recesses and concealed areas designed out allowing natural surveillance to be maximised.

Access to Drainage and Service Areas

Access to telephone junction points and manhole covers will be secured to prevent interference and/or removal.

Building Shell Security

The design of the buildings take into account the need to prevent features that aid scaling or climbing. Hidden areas as previously outlined have been designed out.

Waste Disposal Area

Waste disposal areas and oil tanks have been sited away from the main buildings, as they can be a target for arson or provide access to roofs and windows. Bin stores will be secure and preferably covered.

Drainpipes

Rainwater down pipes can provide a convenient scaling aid onto roofs or to reach windows above ground floor level. Rain water pipes will be either flush fitting (i.e. square profile) or concealed within cavities.

Cycle Stores

Historically pedal cycle theft has been an issue on University sites. External bicycle stores, with individual stands for securing bicycles, will be protected by CCTV and lighting. The areas used for parking pedal cycles will be overlooked by mainly habitable rooms, or rooms in continuous occupation where this is not possible.

Windows

All external vulnerable windows will be independently certificated to Secured by Design standards e.g. BS 7950 or LPS 1175 SR 2. Any glazing in vulnerable windows will be minimum 6.8mm laminated glass.

Doors

All external doors will meet Secured by Design standards e.g. Pas 24 or LPS 1175 SR2 where possible, and where these standards do not confilct with other legislation.This includes main entrance doors.

Fire doors must be alarmed so a signal on opening can be transmitted to the security office. These doors must be signed to warn of alarm alert and have no visible external ironmongery fitted.

All glazing to doors must be a minimum 7.5mm thick and laminated.

Computers

Careful siting of power trunking is required to ensure that computers and valuable equipment is kept away from windows.

High risk and mainframe computers will be secured in a purpose built room in individual cabinets.

Secure Areas

Access to secure areas and obvious high risk areas such as offices; laboratories etc will be restricted through access control and lockable doors.

Intruder Alarm

SBD requires that campus buildings must be alarmed where valuable property/records are located. The alarm system must be linked to a central monitoring station. The alarm wires must be protected so in the event of the wires being cut the signal still goes through to the monitoring station.

However, in view of the fact that university personnel would be using the buildings during all hours, making an alarm system impractical , it could be argued that the buildings need not be alarmed, subject to the following conditions;

- the perimeter of the buildings will be protected by monitored PZT CCTV fitted with movement detectors
- the site will be patrolled/monitored by site security 24 hours a day

Security Guards

The campus should be patrolled 24 hours a day by uniformed security guards. The CCTV control room must be staffed 24 hours a day.

FACE/TECH INTERIOR SECURITY.

Both FACE and Tech are planned to be accessible 24 hours a day, 7 says a week, something that poses a particular challenge with respect to individual and property security.

Current proposals include for a layered approach, which allows different levels of security provision to be incorporated within the building.

• L1	WC's and common areas.	no access control
• L2	Flexible learning spaces	thumb turn internally/master key external override
• L3	External and internal stores	thumb turn internally/master key external override
• L4	Laboratories and workshops	Salto (or similar) access control, programmed to students own course requirements.
• L5	Staff and sensitive areas	Salto (or similar) access control, to open student rooms as well as staff areas
•		

LIBRARY INTERIOR SECURITY.

The library is planned to be accessible 24 hours a day, 7 says a week, something that poses a particular challenge with respect to individual and property security.

Current proposals include for a layered approach, which allows different levels of security provision to be incorporated within the building.

• L1	WC's and common areas.	no access control
• L2	Flexible learning spaces	thumb turn internally/master key external override
• L3	External and internal stores	thumb turn internally/master key external override
• L4	Multimedia workshops	Salto (or similar) access control, programmed to students own course requirements.
• L5	Staff and sensitive areas	Salto (or similar) access control, to open student rooms as well as staff areas

7.3

Accessibility And Access Statement

Accessibility

INTRODUCTION

Background

This report outlines the access proposals for the first phase of a new university campus for University of Wales, Trinity Saint David located on vacant land in the SA1 Peninsula site Swansea, south Wales.

The new campus is set to provide accommodation for the locality and combine the current provision offered by the following campuses

- Mount Pleasant Campus - SA1 6ED
- Townhill Campus - SA2 0UT

The site is at SA1 in Swansea. It is prominently located within the SA1 community, occupying part of the land which is currently being redeveloped to a high standard of mixed use accommodation.

UWTSD Phase 1 will provide state-of-the-art, 21st Century educational facilities that will provide undergraduate and post graduate education within the architecture, computing and engineering disciplines. Its primary function will be to provide an educational facility for:

- 500 person faculty of architecture, computing and engineering (FACE),
- Engineering workshops and laboratories
- Academic and digital library,

Construction works include all associated external works, incoming service mains and drainage. Transport management will be improved prior to completion to ensure changes in vehicular and pedestrian movements to and from the site are safe and well controlled.

Access Policy Context

Planning Policy Wales emphasises that: “Good design is also inclusive design. The principles of inclusive design are that it places people at the heart of the design process, acknowledges diversity and difference, offers choice where a single design solution cannot accommodate all users, provides for flexibility in use, and, provides buildings and environments that are convenient and enjoyable to use for everyone.”

Similarly, TAN 12 (section 5.3 Inclusive Design) notes that “the Assembly Government expects all those involved in the design process to foster a culture of inclusion, whereby design solutions provide access to the widest possible range of people”.

In accordance with these policies, the scheme has been designed to provide access for all. This section describes how this aspiration has driven all aspects of the design. It covers access facilities for disabled persons along with any divergence from the Approved Documents. It covers the philosophy and approach to inclusive design and the key issues and sources of advice and guidance used.

References for Design

The scheme has been designed to comply with the Building Regulations Approved Document M and BS 8300. Where there are divergences from the Approved Documents, these are identified and justified in this statement. The following have been key reference materials for design -

- BS8300:2001
- Building Bulletin 91 : Accessibility Audit Checklist

The Access Statement has been modelled on ‘Guidance on Access Statements- Published by Disability Rights Commission’

The Client

University of Wales Trinity Saint David has required the building to be fully accessible for everyone. Whilst this is not a ‘special facility’ the design brief from the outset was to ensure that the design was as inclusive as possible.

Consultation and advice

Stride Treglown has extensive internal experience and resources in this field, with reference sought from registered NRAC consultants within our head office.

The statement has been prepared in line with the requirements of “Design and access statements How to write, read and use them” published by CABE and guidance published by the Welsh Assembly Government.

Management

The physical environment forms only one part of access. In order that full access is achieved, it’s important that management policies are established and implemented. These are important for responding to disabled people as individuals and for the avoidance of discrimination.

However, an accessible environment cannot guarantee against discriminatory practice. A further benefit of management policies is that they can lead to the avoidance of someone feeling aggrieved – particularly where physical access has not yet been implemented. This document will be included within the building manual so that appropriate management policies can be developed by parties involved in managing the site.

Limitations of statement

The design has been developed to ensure there is good access for a wide range of people. However there will be, in certain circumstances, a need for specific adaptations that could not reasonably have been anticipated at design stage. There may be a need, after completion, to make refinements as each disabled person, according to their individual needs, presents new access challenges to be addressed.

Reference Drawings

This report should be read in conjunction with the Stride Treglown design drawings submitted in support of the Planning Application submission.

Access Statement

Specific Issues

The following is a commentary on the access considerations that have been addressed during the design phase of the project. It should be noted that the design has been produced to exceed the access requirements of all users of the building and incorporates the access requirements of peoples of different age groups, genders, ethnicities and fitness levels.

Site

Access onto and around the site is straightforward as the flat topography means that there are no difficult level changes to overcome that might present barriers to access.

Accessible car parking spaces will be provided in accordance with paragraph 1.18, Diagram 2 of Document M. These spaces are located in close proximity to the main entrance across a level approach.

Access from the site boundary to the building entrance is nominally level.

Entrances to FACE and Tech are clearly announced from the approach with an opening leaf wide enough to accommodate a wheelchair on both the inner and outer lobby doors.

Entrances to the library are either through revolving doors or pass doors to the sides. The entrances are clearly announced and are wide enough to accommodate a wheelchair or other mobility aid.

There will be a level threshold and door automation with good visibility through from both sides.

The entrance lobby has been sized to ensure there is room for a wheelchair to clear both pairs of doors.

Horizontal movement and assembly

All corridors have been designed to allow sufficient width for wheelchairs users to pass.

Floor surfaces throughout have been chosen to allow ease of movement for wheelchairs, avoid light reflection and control sound reverberation.

There will be 'way-finding' and information signage throughout the building visible from both a standing and seated position and in the format described in BS8300 (good contrast, raised letters), so that those with impaired vision will be able to be read them.

Internal level changes

FACE/Tech and the library are four storey building with internal level changes serviced by ambulant stairs and accessible lifts.

The desire to ensure the whole building was accessible was a critical factor in deciding on the design solution and the generous provision of vertical circulation

Doors

- External doors have been designed to ensure a clear width of between 800mm and 1800mm is provided at the main entrance and final exits.
- External door with the exception of the locked plant room doors will have integral door guards/anti-finger traps provided.
- All internal doors (with the exception of some cleaner's cupboards and store doors) will have a 926mm leaf.
- Where double doors are proposed, both leafs will be equal with a minimum leaf size of 926mm. Where unequal double doors are proposed, the master leaf will be a minimum of 926mm wide.
- Where practical, double doors will be held open to ease circulation, particularly for wheelchair users.
- Vision panels to all main circulation doors are proposed in accordance with Approved Document M.
- On the opening side of all doors, a 300mm zone is provided to allow the door handle to be grasped and the door swung past a wheelchair footplate.
- Door handles will be fitted at around 1000mm from finished floor level and will contrast with the door face.
- Where fitted, door closers will be specified to ensure it can be operated with a force of no more than 20N at the leading edge.

Sanitary accommodation layout

Accessible WCs are located both centrally and throughout each building to ensure that travel distances are kept to a minimum. Staff, student and visitor accessible WC facilities are provided. Reference should be made to Stride Treglown general arrangement drawings for layouts and positioning of these facilities. These rooms have been designed to the following minimum dimensions -

- Accessible gender neutral WC compartment : minimum size 2.2m x 1.5m, laid out in accordance with Diagrams 18 and 19 of Approved Document M.
- Ambulant gender neutral WC compartments : minimum 1100mm wide and 1400mm long laid out in accordance with Diagram 21 of Approved Document M.
- Colour schemes will be chosen to ensure that there is sufficient contrast between the sanitary ware, grab rail fixtures and their respective backgrounds.
- All ironmongery and taps to disabled WC compartments will be operable by those with limited manual dexterity.

Aids to communication

The building will be equipped to provide hearing assistance with induction loops to key rooms. The quantity and disposition of these aids will be determined once key staff are appointed who can best determine the requirements of future staff and students.

A visible as well as audible fire alarm system is proposed. All final exit routes will be level.

Refreshment facilities

- The tray slide on the kitchen servery will be set at approximately 900mm. This height will ensure able bodied staff do not suffer from any long term back strain injuries as a result of receiving food at a lower level.
- The main dining hall, when set out for lunch, will allow sufficient circulation space between tables for a wheelchair user to travel unimpeded.
- The staff tea point has been designed in with a counter height of 850mm from finished floor level and sufficient leg room underneath for a wheelchair user to access the facility.

Switch and socket outlet heights

Switches, outlets and controls will be located as follows :

- Wall mounted socket outlets, telephone points and tv sockets will be installed between 400mm and 1000mm above the floor.
- Switches for permanently wired appliances will be located between 400mm and 1200mm above the floor unless needed at higher levels for particular appliance.
- Switches that require precise hand movements will be located between 750mm and 1200mm.
- Simple push button controls requiring limited dexterity will be located no more than 1200mm above the floor.

Window opening

- Windows will be on restrictors on access routes adjacent to buildings avoided so that people, particularly children and those with impaired sight are not injured. The projection will be limited to less than 100mm beyond the face of the building. Where ventilation may require windows to open beyond 100mm (windows W15, W16 & W17), an area of planting is proposed to protect pedestrians by preventing them from walking in the zone of opening.
- Controls for the main openable windows in habitable rooms will be located between 800 and 1000mm above floor and easy to operate without using both hands simultaneously.

Manifestation

Doors and glass side screens will have manifestation in accordance with Approved Document M. paragraph 3.10 (i); i.e. manifestation on the glass will be provided at two levels, 900mm and 1500mm contrasting visually with the background as seen through the glass in all lighting conditions.

Visual contrast

In accordance with paragraph 0.29 of Document M (unless specified below), the difference in light reflectance value (LRV) between two surfaces requiring a visual contrast will be greater than 30 points. Appropriate contrast will be provided for the following elements:

- Visual contrast between walls and the ceilings.
- Visual contrast between walls and the floors.
- Sanitary fittings, grab rails.
- Landings on any external ramps.
- Door ironmongery and doors
- door furniture contrasts visually with the surface of the door (15 points LRV difference as noted in BS8300)
- door frame contrast visually with the surrounding walls

CONCLUSION

The new buildings have been designed to welcome everyone with the majority of access issues well resolved.

FACE, Tech And Library WC Calculations

SPACE FACTOR FACE AND TECH

BS9999 space factor for total area

- FACE occupancy number: 1245
- Tech occupancy number: 154
- Total FACE & Tech: 1399
- **70% of FACE & Tech occupancy: 980**

- Ground floor occupancy number: 501
- Upper floor occupancy number: 898
- 70% of upper floor occupancy : 629

OCCUPANCY FOR WC CALCULATIONS

- Max occupancy number: 980 split evenly:
- Female occupancy 490
- Male occupancy 490

WC NUMBERS

Based on BS 6465-1:2006 - Assembly building (no intervals):

Female

WC Female: 4 for up to 100; plus 1 every additional 50

Male:

1 WC per 250 males; plus 1 every additional 500; 1 urinal per 50 males up to 100; plus 1 every additional 100. (Male WC provision should be half female WC provision where urinals are not used)

With Urinals

- Female WC 12 No.
- Male WC 2 No.
- Male urinals 6 No.

WC only

- Female WC 12 No.
- Male WC 6 No.
- Total 18 No.

5.3.3 Unisex Self-Contained Toilets

Where more than two WCs are recommended, and washbasins are included within the WC compartment, WC provision should be increased by 25%, i.e. one additional WC per four WCs or part thereof should be provided.

- Unisex WC 23 No. (Based on 18x1.25)

- **Ground Floor WC 6 No.**
- **First Floor WC 6 No.**
- **Second Floor WC 6 No.**
- **Third Floor WC 5 No**

SPACE FACTOR LIBRARY

BS9999 space factor for total area

OCCUPANCY

- Max. occupancy number 710 split evenly:
- Female occupancy 331
- Male occupancy 330

WC NUMBERS

Based on BS 6465-1:2006 - Assembly building (no intervals):

Female

WC Female: 4 for up to 100; plus 1 every additonal 50

Male:

1 WC per 250 males; plus 1 every additional 500; 1 urinal per 50 males up to 100; plus 1 every additional 100. (Male WC provision should be half female WC provision where urinals are not used)

With Urinals

- Female WC 9 No.
- Male WC 2 No.
- Male urinals 5 No.

WC only

- Female WC 9 No.
- Male WC 5 No.
- **Total 14 No.**

5.3.3 Unisex Self-Contained Toilets

Where more than two WCs are recommended, and washbasins are included within the WC compartment, WC provision should be increased by 25%, i.e. one additional WC per four WCs or part thereof should be provided.

- Unisex WC 17.5 No. (based on 14x1.25)
- Total 18 No.

- **Ground Floor WC 6 No.**
- **First Floor WC 6 No.**
- **Second Floor WC 6 No.**

7.4

Fire Strategy

Report Summary

FACE/TECH SUMMARY

The TECH Building is spread over four floors (ground, first, second and third). Ground floor contains; some flexi space lecture halls, a cafe, reception, CNC manufacturing centre, fabrication and wielding area and Engine Rigs area. The first floor contains; various lecture rooms. The second floor contains; different types of labs, architectural studios and flexi space lecture rooms. The third floor contains; faculty area and an architecture studio.

The aim of the Overview Report is to identify the key fire safety issues for the design, particularly those relating to planning of means of escape, and to confirm provisions to satisfy the functional requirements of Part B (Fire Safety) of the Building Regulations 2010.

For demonstrating the functional requirements of Part B Approved Document B Volume 2 will be used

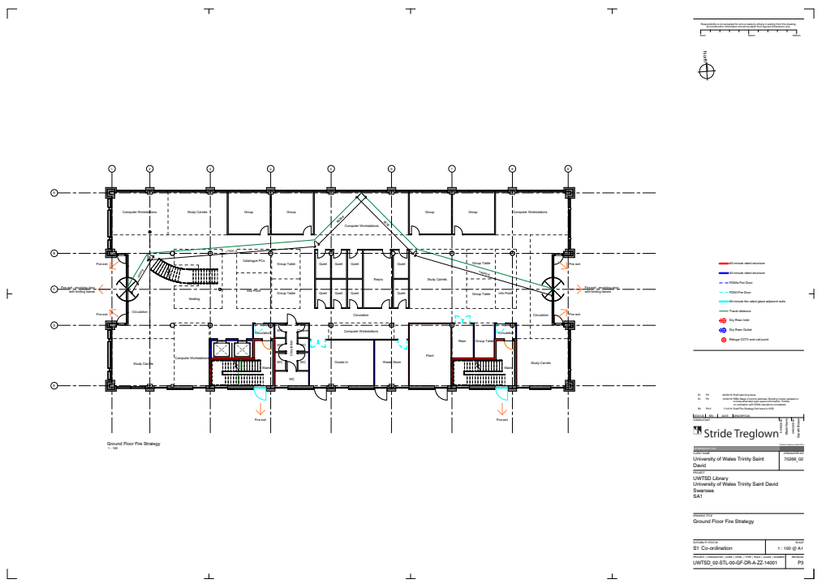
LIBRARY SUMMARY

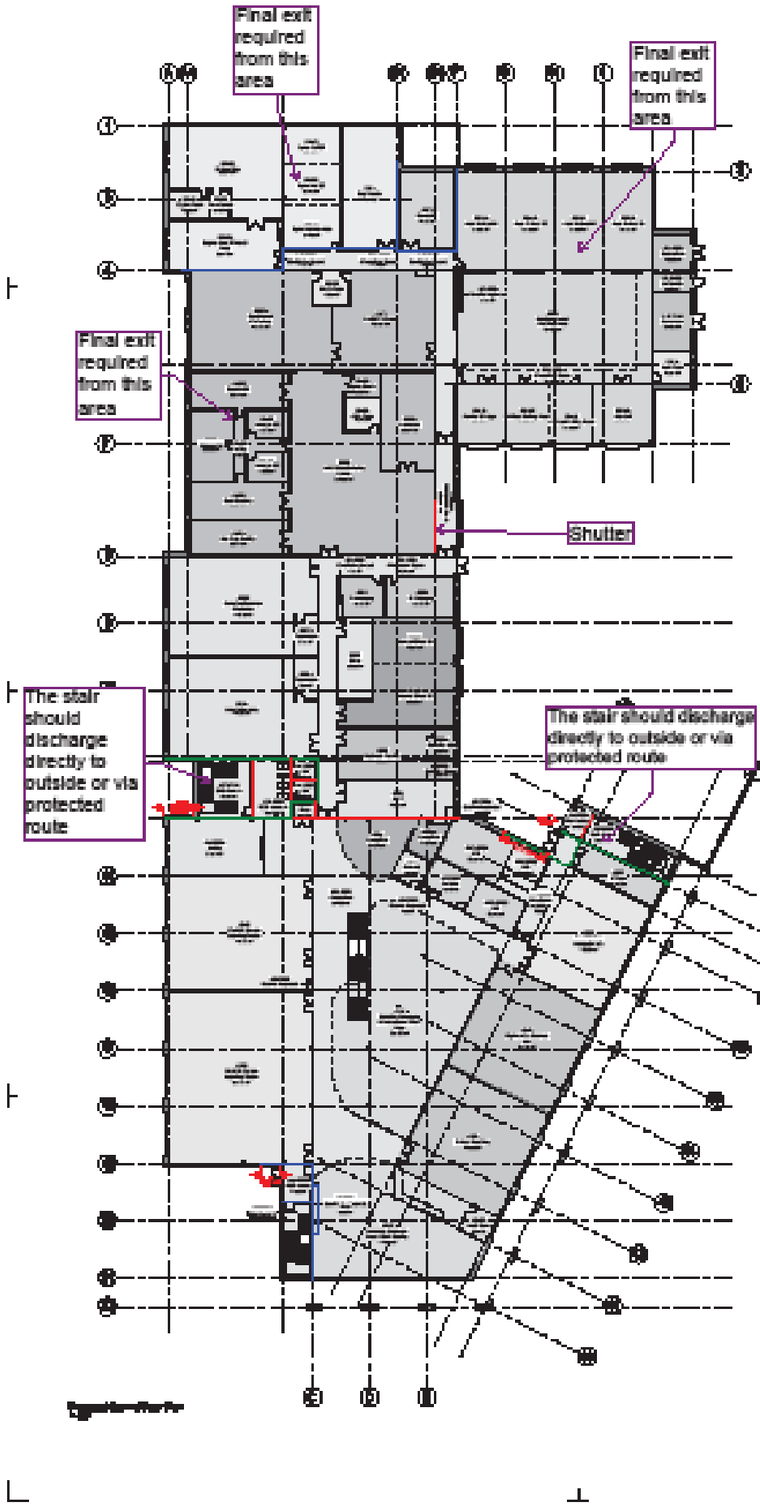
The library is spread over three floors (ground, first and second). Ground and first have an atrium between them. There are two lobby protected stairs within the building.

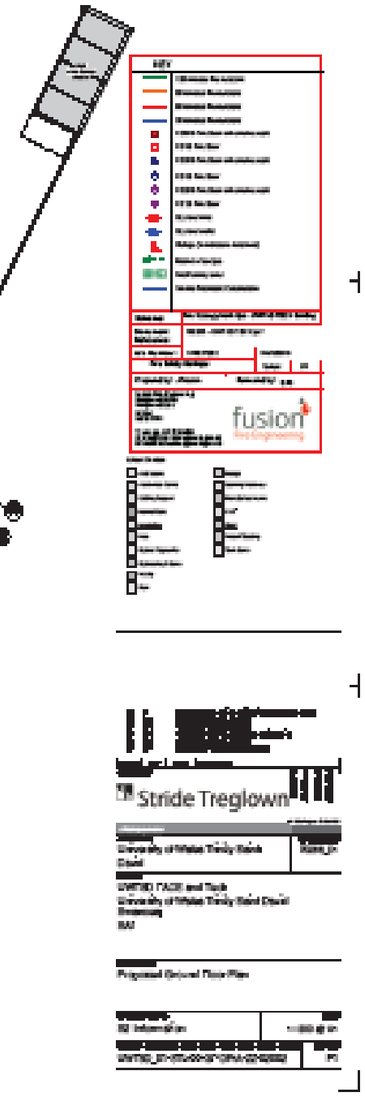
The BS 9999 risk profile for a library is a B3.

The aim of the Overview Report is to identify the key fire safety issues for the design, particularly those relating to planning of means of escape, and to confirm provisions to satisfy the functional requirements of Part B (Fire Safety) of the Building Regulations 2010.

For deriving maximum flexibility for the design the recommendations of BS9999:2008 Code of Practice for Fire Safety in the Design, Management, and Use of Buildings have been applied.







7.5

Acoustic Strategy

Report Summary

The following extract has been taken from the MACH Acoustics Environmental Noise Assessment, submitted as a separate document to both the Planning Application and the Stage 3 report, and as such should be read in conjunction with all submitted material.

EXECUTIVE SUMMARY

Noise Break-In Assessment

The purpose of this assessment is to determine the feasibility of a natural ventilation strategy based upon simple opening windows. This has been assessed in accordance with internal noise level targets as given within Building Bulletin 93 (BB93) 'Acoustic Design of Schools', using the environmental noise data collected by MACH Acoustics. In summary MACH Acoustics consider that the average noise level of the existing environment is acceptable to ventilate using open windows to the traditional teaching spaces.

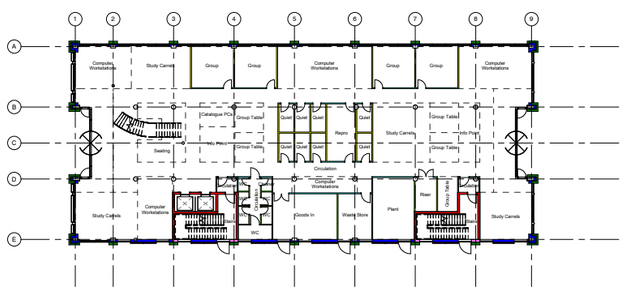
Plant Noise Break-Out Assessment

The purpose of this assessment is to reduce the risk of complaints from local residents about noise break-out as a result of activities or plant associated with the development. Maximum plant noise levels at 1 m from the unit, or 1 m from a louvre in the façade are given in Section 7.2.

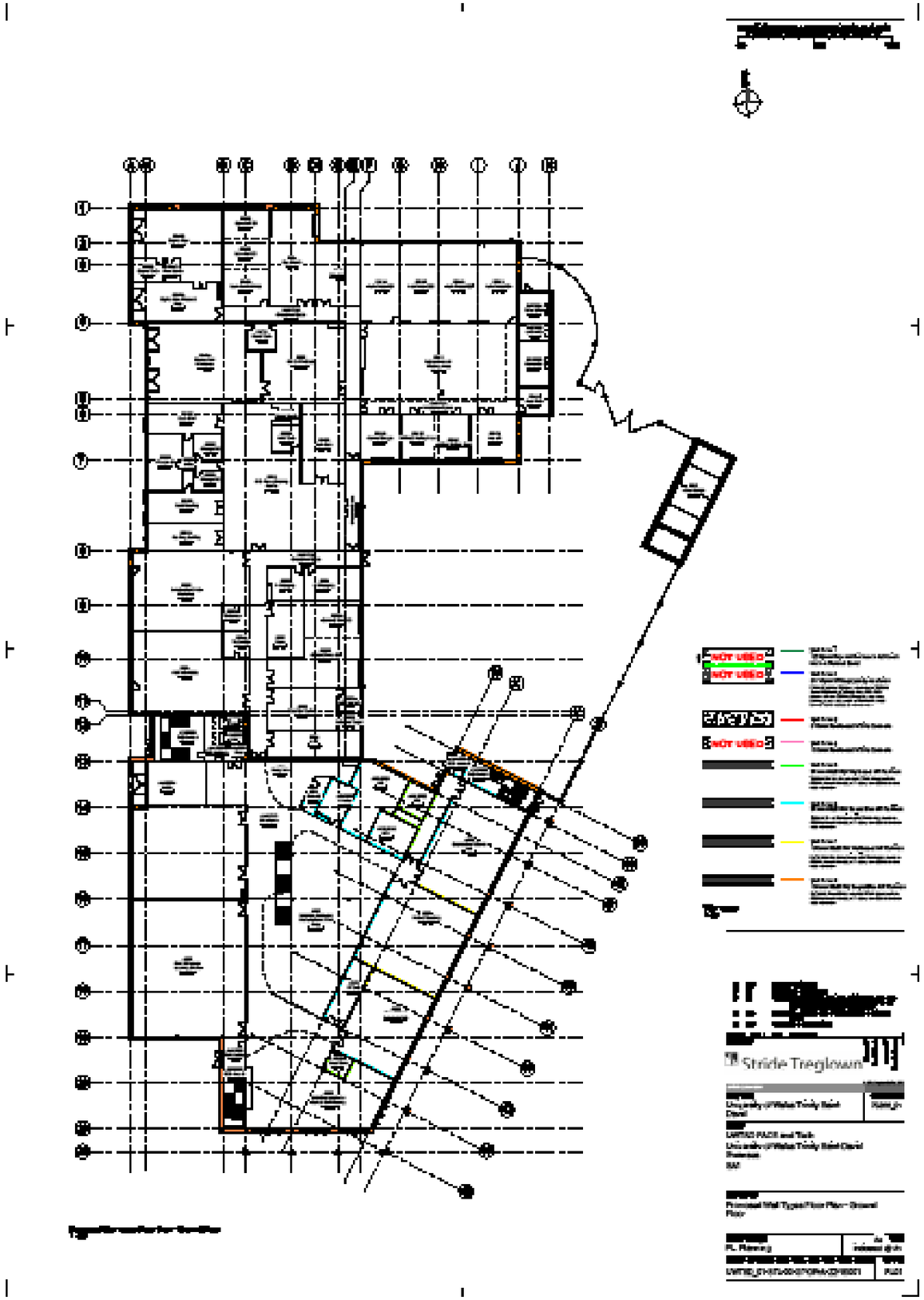
Operational Noise Break-Out Assessment

A detailed assessment has been regarding noise breaking out of the workshop areas. In summary the majority is likely to not cause a disturbance providing they are operating with windows and doors closed.

The rolling roads however are significantly louder than other noise sources associated with the workshops. There is a risk that this will disturb local residents, and the other teaching spaces in the FACE building itself unless mitigation options are taken forward. MACH have proposed that an acoustic enclosure with the automotive workshop to house the rolling road would be the optimal option. Another option would be to increase the performance of the roller shutter doors, and any glazing elements within the automotive workshop façade. Please see Section 8.7 for further details.



Ground Floor Wall Types
1 : 200



7.6

Maintenance Strategy

General Maintenance Issues
FACE, Tech and Library

INTRODUCTION

This report is intended as an overview of the proposed access strategy for maintenance and cleaning of all areas of the project. The reason for this report is to set down strategies envisaged during the design of the project to indicate possible ways of accessing the buildings safely for maintenance during its lifetime based upon the technology available at the time of writing.

Both externally or internally there are three main issues that give rise to the need for cleaning and maintenance:

- Contamination from air-borne particles
- Contamination and damage from people in contact with the materials and components (accidental and deliberate).
- Replacement as and when components wear out.

Frequency of cleaning and maintenance will vary according to contamination risk and location. Risk and disruption to occupants will be minimised when these activities are carried out before or after normal teaching hours or during standard university holiday periods.

Access for cleaning and maintenance falls into two categories:

- Those that are within easy reach of the occupants that do not require specialist access equipment, and these will require a frequent maintenance and cleaning regime; typically this will be daily. Where they are within easy reach of the occupants they are also within easy reach for regular cleaning and maintenance.
- Those that are beyond easy reach of both the occupants and the maintenance staff. These will require less frequent access but they will need specialist access equipment. Typically these activities will be carried out annually although some areas may require monthly attention.

Maintenance in this report is defined as cleaning, inspection, repair and replacement of certain elements such as lamps and glazing. The designer's approach is to choose a level of safety, whilst not compromising planning constraints and aesthetic qualities of the building.

This report looks at the most difficult access cases. Easier cases are not addressed. It is not an exhaustive method statement for all eventualities, such can only be provided by specialists in cleaning, maintenance and access. The scope includes the external envelopes and interiors and is intended as suggestions to address the following criteria:

- Means for on-going access and maintenance to all areas during the buildings' occupation.
- Potential future requirements for hiring or procuring specialised access equipment.
- Health and safety issues arising from the strategy.
- Issues that will affect design, cost, package scoping, site, equipment and details in later design stages.

External Fabric

Information from the external fabric manufacturers and installers regarding the safe operation, maintenance, removal and possible future demolition will be provided to the main contractor for incorporation in the Health and Safety File issued to the client on completion and handover of the project.

Generally this will be affected by air-borne contaminants. The new buildings are on the edge of a marine area to the south, east and west.

It is located within a maritime environment, with the coast directly adjacent. There is a main trunk road passing the northern boundaries. These routes will result in some inevitable collection of air-borne dirt: mainly on the horizontal surfaces and ledges.

Rain washes these particles over the façade and in time the accumulation of dirt causes staining and potentially the growth of algae. External cleaning frequency and procedures will be recommended by the suppliers and installers of individual elements of the fabric in the Health and Safety File issued by the main contractor. This will include particular details on the maintenance of the following:

- Single ply membrane roof
- Standing seam roof
- Lined gutters, downpipes and metal fascia system
- Profiled metal soffit
- Colour coated composite metal cladding panels
- Precast concrete features
- Facing brickwork
- Windows and doors

Cleaning of Building Exterior – General Principles

It is envisaged the following routines for cleaning the external envelope may be adopted (Note: Full information on cleaning and exact frequency recommendations to be clarified in the Health and Safety Files):

- Vertical Glass at high level: this will require cleaning several times per year, possibly more frequently near to a particular feature.
- Vertical Glass at low level. This will require cleaning weekly or monthly
- Anodized and painted aluminium and other metals should not show dirt significantly, but these elements should be cleaned at intervals required by the manufacturers in order to retain any warranty.
- Copings, sills, ledges and near horizontal metal surfaces may require cleaning at the same intervals as glass in order to prevent dirt build-up and subsequent run-off, which can result in staining.
- Brickwork: Cleaning is not normally required. The exception to this would be graffiti removal or bird fouling.
- Roof: Annual cleaning to prevent salt, acid erosion and to check operation of gutter outlets.
- Signage, light fittings: as required.

In all cases where cleaning is required, the more often a surface is cleaned, the easier it is to clean.

Operatives working in wet clean areas should wear non-slip safety footwear.

Maintenance of Building Exterior – General Principles

We envisage the following routines for maintaining the external envelope might include (Note: Full information on maintenance recommendations to be clarified in the Health and Safety Files):

- Lamp replacement: Occasional
- Vertical Glass Replacement: Extremely rare. Glass handling by operatives, crane and or vacuum glass lifter.
- Roof: Annual inspection to maintain warranty.
- Façade: Annual inspection to maintain warranty.
- Parapet, copings and rainwater outlets: Annual inspection
- Signage installation and maintenance: As required
- Lightning protection testing: Extremely rare.
- Panel interface seals and gaskets: as required.

Floors And Stair Maintenance

Information from the flooring and stair manufacturers and installers regarding the safe operation, maintenance, removal and possible future demolition will be provided to the main contractor for incorporation in the Health and Safety File issued to the client on completion and handover of the project.

Access to all floor levels is available via a Part M complaint stair and twin 13 person lifts. Areas of the floor to be cleaned and treated are to be closed off to prevent both the personnel and the public from the danger of slipping. All lifts must be maintained only by a suitably competent contractor.

Care must be taken when using access equipment to maintain high level equipment such as light fittings. This must (at all times) be subject to review by a suitably qualified person. We would always recommend the use of spreader pads (as recommended by the MEWP supplier) and movement of the access equipment is over 12mm plywood boards. This mainly ensures protection of the floor finish but will also help to support screed below.

Ensure that all non-slip components to wet areas are kept clean and dry to ensure they perform as intended by the floor covering manufacturer.

Residual Hazardous Materials - Cutting, working or removing of some materials may require health and safety precautions. Materials such as MDF create fine dust containing urea-formaldehyde resin, while mineral wool has very fine fibres both could cause breathing and if inhaled in large quantities, long term health problems.

All Stair nosings will have non-slip components. These will require regular inspection to reduce risk of slippages.

All fire escapes include a wheelchair refuge in the event of fire. All refuges must be kept clear at all times. It is recommended that the school's Fire Risk Assessment includes details of evacuation of disabled persons in the event of fire. Refuge alarms will only sound when the fire alarms have been activated. This avoids the risk of false alarms.

METHOD OF CLEANING WINDOWS, METAL CLADDING AND CURTAIN WALLING

The building has glazing on all elevations, comprising curtain walling and standard glazed in openings.

Externally

Predominantly, the external glazing, metal cladding, can be cleaned as and when necessary with a reach and wash system from the ground.'

The low level glazing (doors and panels below 2m) can be easily cleaned using traditional cleaning techniques without any special equipment.

Internally

The internal face of the glazing can be maintained as required out of hours, as is normally

undertaken by FM without any specialised equipment using traditional cleaning techniques.

The inside face of glazing to the entrance lobby(s) can be maintained via a reach and wash system from the ground, and floor levels or due to the high level internal finishes, branding or fittings glazing be a reach and vac system which reduces the amount of water used on the glazing.

FAÇADE MAINTENANCE

Any brickwork piers, aluminium rain-screen panels and feature beams can be inspected and maintained from a MEWP or 'Cherry Picker'. if/when closer inspection is required, safe access will need to be provided with scaffold.

ROOF MAINTENANCE STRATEGY

The main roof of FACE/Tech will be accessed from a continuation of a main staircase extending to roof level and egress being provided via pedestrian doors or in case of an emergency an alternative egress point via external emergency stairs or Bilco hatch to vertical escape permanently fixed, caged access ladder.

Information from the roofing manufacturers and installers regarding the safe operation, maintenance, removal and possible future demolition will be provided to the main contractor for incorporation in the Health and Safety File issued to the client on completion and handover of the project.

Reinforced membrane walkways will be provided to facilitate access to areas that require maintenance, such as flues, gutters, gullies, etc.

For maintenance and access purposes, the roof edges are protected by 1100mm high parapet. Any air handling plant enclosure at roof level will be contained within a 2.5m high steel framed louvered or solid panelled screen. The louvered panels allow for gutter cleaning at low level within the screen/ panelled area.

Pitched roof areas to the plant room of Tech, the stair tower cupola and areas not accessible by MEWP or parapet walkway will be accessed via fixed external permanently fixed, caged access ladders with a mansafe system to the area of the roof to be maintained. These areas are kept to a minimum, with suitable warning signage required to warn against unauthorised access.

An external 'bib' tap should be provided to each roof level to enable the membrane to be washed down to prevent salt attack and damage from seagull droppings.

If access is required to the plant room roof for closer inspection, safe access will need to be provided with scaffold.

Permanent access to the Library roof for plant maintenance and cleaning is via the level 2 access door between the two stair cores.

Temporary scaffolding is recommended for intensive and long term maintenance activities when a temporary means of escape is required. This should be assessed prior to commencement of the works. Man-safe systems have been provided for maintenance access to inclined roofs and should only be used as a last resort. The man-safe system includes a Personal Rescue Device that will allow personnel on the roof to safely descend to the ground should the route to the roof access be blocked. Each operative on the roof must wear one of these devices.

MEWP access is used to clear library gutters. Gutters are located along all eaves for simple and easy access. Temporary scaffolding is recommended for intensive and long term maintenance activities when a temporary means of escape is required. This should be assessed prior to commencement of the works.

Only fully trained and qualified personnel should have access to, and be authorised to work on the roof. Work at roof level must be suspended in high winds

INFORMATION AND GUIDANCE FOR MEANS OF ESCAPE FROM THE ROOF MUST BE INCLUDED IN ANY INDUCTION PRIOR TO ALLOWING PERMIT TO WORK.

Gutter Maintenance

Information from the gutter and rainwater drainage manufacturers and installers regarding the safe operation, maintenance, removal and possible future demolition will be provided to the main contractor for incorporation in the Health and Safety File issued to the client on completion and handover of the project.

Most gutters are easily accessed on the roof via and are located inside the 1100mm high parapet zone. When accessing the roof via MEWP, ensure outriggers are placed externally on the hard landscaped areas. In all cases a work zone with warning notices should be marked-off prior to work commencing. Debris should be removed by hand. Any work to be suspended in high winds.

DO NOT ATTEMPT TO WALK IN EXTERNAL GUTTERS - they are not able to take the weight of maintenance personnel.

Means of escape from the roof in the event of fire must be included in any induction prior to allowing permit to work.

PLANT MAINTENANCE STRATEGY

This section has been produced as a guide for the appointed subcontractors when they are producing their Health and Safety Files. See also

Building Services/ Structure Design & Maintenance TBA

Strategy produced by TB&A, Arup

It is by no means conclusive but deals with plant maintenance and replacement in a general outline approach.

Maintenance of Photo Voltaic Panels.

It is suggested that the PV's will be checked and cleaned at least annually or biannually. The PV's should be cleaned with water and detergent using similar equipment that is used to clean the windows.

Mechanical and Electrical – Replacement

Reference shall be made to CIBSE guidelines and manufacturers recommendations at all times.

Due to the coastal location it is advisable to undertake a monthly check on condition of panels and associated equipment. Energy monitors should be reviewed weekly and any drop in output should be considered in terms of potentia; drop in performance requiring maintenance to the system.

Information from the mechanical and electrical plant manufacturers and installers regarding the safe operation, maintenance, removal and possible future demolition will be provided to the main contractor for incorporation in the Health and Safety File issued to the client on completion and handover of the project.

Level access is provided at ground floor with double doors with clear access to allow easy replacement of plant. Access must be on permit to work basis for roof level maintenance. Replacement ventilation plant may need to be craned into position on the roof if replacement is required at a later date.

Internal high level services will require access from a MEWP 'Ranger R16 Type (www.urban-access.co.uk) or similar. This access equipment will be required where access is required for maintaining and replacing light fittings and for the maintenance of other services at high level

Care must be taken to ensure that the MEWP weight does not exceed the maximum load for the floor which may be limited to no more than 5kPa.

For further information please refer to the flooring manufacturer's recommendations for advice on mitigation measures to be implemented as part of the safe system of work when using MEWPS. Note that 18mm thick flooring grade plywood must be laid as a track for the MEWP in order to protect the floor and distribute the load evenly.

There are confined working spaces within the plant-rooms. A method statement must be provided by the maintenance contractor prior to working on or replacing items in these areas.

The breaking of fluorescent tubes releases harmful gases into the atmosphere damaging the environment. The user of the manual should refer to the Control of Substances Hazardous to Health Regulations 2002 for guidance. Refer to www.coshh-essentials.org.uk and the HSE web site www.hse.gov.uk.

Health and Safety File

In addition to the standard content of the Helth and Safety File, the current requirements for information provision to end users in current building regulations and planning are found within the following documents:

- Approved Document Part L – Conservation of fuel and power (both domestic and non-domestic, new and existing)
- Approved Document Part F – Ventilation
- Approved Document Part B – Fire Safety
- Technical Advice Note 18 (TAN 18)
- Microgeneration Certification Scheme

The building log book to accompany the Health and Safety File is to be produced in line with the CIBSE TM31 log book toolkit.

Specific Maintenance Requirements

MAINTENANCE

The following should be carried out on a regular basis (i.e. monthly):

- Inspection of pipe work for leaks: Visual inspection to check condition and joints for corrosion.
- BMS: Status checked on a regular basis (weekly as a minimum) for changes in fault locator readouts.
- Chemical analysis of heating water: By an appropriately trained person (quarterly).
- Flues: Regular visual inspections.
- Boiler casing: Examine for obvious signs of damage, corrosion and flue gas leakage.
- Boiler flue pipes and gaskets: Examine for obvious signs of damage, corrosion and flue gas leakage.
- Condensation drains: Ensure these are kept clear.
- Heating pumps: Check bearings and lubricate as necessary (quarterly)

As well as the above, an annual complete inspection and service will be required. This will include inspection of all equipment and pipe work, replacement of parts as necessary, cleaning of boilers and other equipment, testing of all equipment for faults including testing and calibration of gauges etc.

CHECKLIST FOR MAINTENANCE

Below are detailed typical approaches to the residual hazards which may be associated with the general maintenance works:

Any work at any height:

Where a person could fall from any height, including cleaning, both externally and internally, the following minimum precautions will be required at all times:-

- Only to be carried out by competent persons
- Only to be carried out by persons trained in the particular application i.e. scaffolding.
- Use of Mobile Elevated work Platform's (MEWP).
- Use all necessary and appropriate safe working platforms, e.g. scaffolds
- Provide all necessary safe access to and egress from all places of work and all working platforms
- Use all necessary fall restraint systems
- Provide all necessary edge protection, barriers, signage etc. for protection to operatives, occupiers and the public etc.

Any work in occupied areas:

- Only to be carried out by competent, suitably trained and authorised persons
- Segregate the work areas from the occupiers' activities, operatives, occupiers and the public.
- Provide all necessary hoarding, barriers, signage, etc., and any other protection deemed necessary for the circumstance.

Access to roofs, roof mounted plant & equipment etc:

- To be restricted to approved persons only who are suitably trained and authorised for the work to be carried out and have been made full aware of the relevant risks and the procedures to follow.
- Means of escape in the event of fire must be included in the induction course to be taken prior to any access onto the roof.
- A Permit-to-Work system must be in force
- Where provided as a last resort, fall restraint systems, harnesses etc must be used strictly in accordance with the manufacturer's/suppliers recommendations and/or instructions
- Where applicable all necessary edge protection will be installed to prevent falls, falling materials, etc.

Access to plant rooms, areas and equipment:

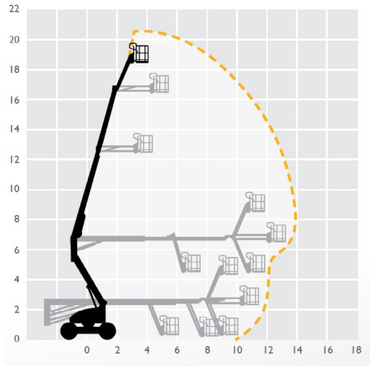
- To be restricted to authorised persons only
- Doors to be kept locked to prevent unauthorised access
- Work only to be carried out by competent and suitably trained persons on a Permit-to-Work basis
- Safe access and working platforms must be used, including any window cleaning equipment or system and/or fall restraint system incorporated into the building
- Any such system, including cherry-pickers or the like, must be used strictly in accordance with the manufacturer's/suppliers instructions and/or recommendations.
- All parts of any such window cleaning/fall restraint systems etc. are to be regularly inspected, maintained and tested in accordance with the manufacturers' recommendations and any relevant statutory legislation, British Standards, etc.
- All personnel using such systems must have been fully trained and qualified in the use of the appropriate system
- All necessary precautions are to be taken to prevent falls and falling materials.
- All necessary precautions are to be taken to protect others, particularly operatives, occupiers, the public.

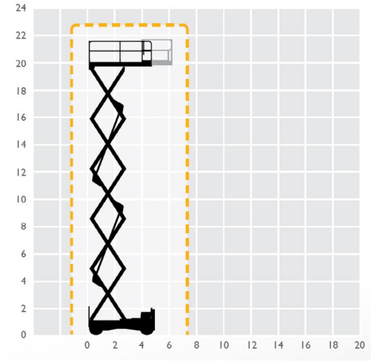
Hot-Work and any other work involving the risk of fire:

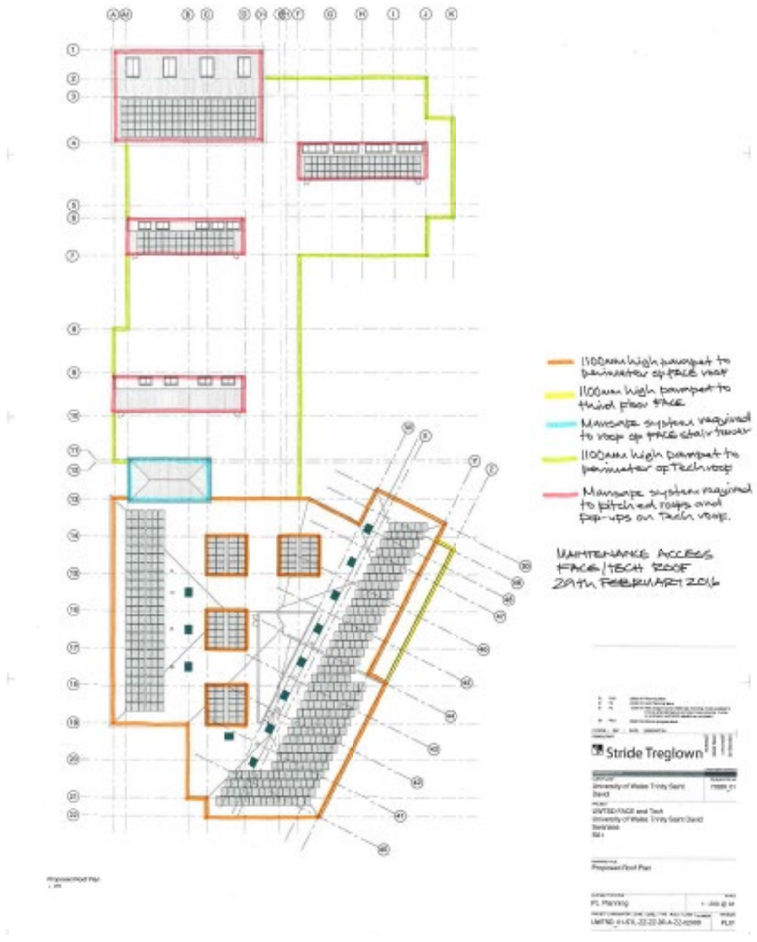
- Only to be carried out by competent, suitably trained, qualified and authorised persons on a Permit-to-Work basis
- All necessary precautions are to be taken to prevent fire by removing or suitably protecting any nearby combustible materials
- Only to be carried out with suitable provisions for fire-fighting (as a minimum a fully charged fire extinguisher suitable for the conditions involved) at the work area

Work on Services:

- Only to be carried out by suitably qualified, competent and authorised persons







- To be carried out on a Permit-to-Work basis
- Only to be carried out with suitable provisions for fire-fighting (as a minimum a fully charged fire extinguisher suitable for the conditions involved) at the work area
- No work is to be carried out on live services.

Window Glass replacement:

- Only to be carried out by competent and suitably trained persons
- All necessary precautions to be taken to ensure that there is no risk of injury to the occupiers or public, and in particular to prevent broken, flying or falling glass etc
- In the event of broken glass, the area must be thoroughly cleaned of any fragments

Brise Soleil/Shading Elements

- Ensure fixings are robust
- Investigate for evidence of corrosion.

Replacement of 'high level' lighting etc:

- Only to be carried out by suitably qualified, competent and authorised persons
- All necessary precautions are to be taken to prevent falls, falling materials etc.
- All necessary precautions are to be taken to protect others, particularly occupiers and the public, using barriers and signage,,
- If access is required for closer inspection, safe access will need to be provided with scaffold.

Cleaning of drains, manholes, etc:

- Only to be carried out by competent, suitably trained, qualified and authorised persons
- A Permit-to-Work system must be in place
- All necessary checks for hazardous atmospheres must be carried out
- All necessary protection to openings will be provided e.g., warning signs, lights and barriers.

Landscaping Maintenance etc:

- Only to be carried out by competent and trained persons:
- COSHH assessments must be carried out for all materials and activities and all necessary precautions taken to avoid hazardous fumes etc.
- Any work involving hazardous products must only be carried out by competent, suitably trained and authorised persons
- All necessary precautions to be taken to ensure that there is no risk to occupiers, the public, etc., and in particular to prevent the spread of any hazardous fumes etc., from spraying etc.

Internal painting, spraying, decorating etc:

- Only to be carried out by competent and trained persons
- COSHH assessments must be carried out for all materials and activities and all necessary precautions taken to avoid hazardous fumes etc.
- Particular care must be taken not to obstruct stairways, fire escape routes, etc., and to avoid tripping hazards, etc.

Alterations to Fire Protection:

- No alterations are to be carried out to the structure, walls, column casings, doors, riser ducts or finishes without first checking the relevant sections of the Health and Safety File to determine whether or not the work to be carried out will adversely affect the fire protection of the building or structure
- Any such work must be approved by the appropriate authority prior to commencement and if there is any doubt the lead designer for the project must be consulted
- Any necessary temporary measures are to be put in place to ensure that the fire integrity is maintained.

Maintenance of lifts:

- Only to be carried out by suitably qualified, competent and authorised persons
- A Permit-to-Work system must be in place
- All such work must be carried out in accordance with the manufacturers' recommendations and the relevant statutory legislation, Code of Practice and British Standards.
- All necessary precautions must be taken to prevent any unauthorised access to lift cars, motor rooms etc., when such work is being carried out
- Ensure that there are no unprotected door openings or shafts.

Work on or near public areas, car parks, traffic routes, etc:

- Only to be carried out by competent and suitably trained persons
- All necessary precautions to be taken to ensure that there is no risk to others, particularly occupiers, the public etc., by separation of the work areas, hoarding, signage, traffic management etc.

Working in confined spaces, hazardous atmospheres, etc:

- Works must be carried out in accordance with "Confined Spaces Regulations 1997"
- Only to be carried out by suitably qualified, competent and authorised persons working for an approved company
- A Permit-to-Work system must be in place
- Only with adequate ventilation
- Only with outside assistance available

Any work involving fumes, noise, dust, etc:

- Only to be carried out by suitably qualified, competent and authorised persons working for an approved company
- A Permit-to-Work system to be in force where appropriate
- Adequate ventilation to be provided at all times

Any work on or that could affect any existing hazardous substances or procedures:

- Information about these health and safety issued must be requested and/or checked with the building occupier
- Risk Assessments and Permit-to-Work systems must be in place

Structural modifications:

- Only to be carried out by suitably qualified, competent and authorised persons working for an approved company
- No such work is to be carried out without first consulting the structural Engineer and relevant section(s) within the current Health & Safety File in respect of the effect of the modifications on the integrity of the structure
- Relevant information in relation to the work carried out must be provided in or added to the existing Health & Safety File

Demolition:

- Only to be carried out by suitably qualified, competent and authorised persons working for an approved company
- No such work is to be carried out without first consulting the structural Engineer and relevant section(s) within the current Health & Safety File in respect of the effect of the modifications on the integrity of the structure
- Relevant information in relation to the work carried out must be provided in or added to the existing Health & Safety File.

Mobile Elevated Work Platform's (MEWP)

- Only to be carried out by competent, trained and authorised persons
- Use all necessary and appropriate safe working platforms, e.g. scaffolds
- Provide all necessary safe access to and egress from all places of work and all working platforms
- Use all necessary fall restraint systems
- Provide all necessary edge protection, barriers, signage etc. for protection to operatives, occupiers and the public etc.
- Scissor Lift, for external use only. Use spreader pads on soft ground.
- Telescopic, internal and external. Use plywood to spread loads.
- Internal Use Only. Use plywood to spread loads.

7.7

Sustainability Strategy

Energy and Sustainability Approach

Introduction

The University has already established a reputation both nationally and internationally as a leader in sustainability within the higher education sector, taking an award-winning whole institutional approach. The University aims to place sustainability at the centre of its delivery and has been working alongside other universities across the UK through the Higher Education Academy's Green Academy programme to embed sustainability within its core operations and culture.

In summary the University would wish to achieve the following:

- The preferred solution to lighting, shading, ventilation, internal climate stabilisation and internal & external movement of people is to harness a natural process or energy, with the aim of minimising overall energy impacts.
- The University development, from masterplan through to individual control system, shall be designed so that its use is as intuitive as possible for those using the facilities.
- During any construction and deconstruction on the site, no materials shall go to landfill. It is preferred that any materials not, or no longer, required on the Campus are reused in their original state. Any materials that cannot be reused shall be recycled.
- The primary external opaque materials of the built environment shall not have an applied coating or otherwise not comprise of non-homogenous construction materials. Materials shall be appropriately robust for their use.
- Significant design decisions shall have several notably different solutions proposed and the decision over which to progress shall be reached collaboratively with the Client and Core Team.
- Any 'performance gap' should be rectified to ensure energy use is in line with design expectations, with consideration for occupant comfort.
- No other Principle shall be used to unduly detract from the primary requirement to deliver a University site that meets the physical and psychological needs of the end users now and in the future.
- The structures, envelopes, services and internal fit outs of the Campus shall be designed to deliver the optimum performance for the Client (using Lifecycle Analysis where appropriate) over lifespans of 60 years (Structures), 25 (Envelope), 18 years (Services) and 9 (Fit Out) years. These shall be arranged such that longer life elements do not obstruct shorter life elements.

Minimising Energy Demand

The phase 1 buildings will utilise the following systems:

- High efficiency lighting systems (including LED) and appropriate artificial lighting levels.
- Lighting controls with perimeter areas switched separately from internal areas possibly with daylight linking.
- Strategies to improve the utilisation of plant and systems.
- Strategies to improve control and flexibility of the installations including provision of local user controls.
- Energy efficient equipment including the use of premium efficiency motors with variable frequency drives where practical (e.g. fans, pumps, lifts etc.).
- A mixture of CHP and high efficiency, low NOx gas fired condensing boilers.
- Specification of high efficiency chillers with Turbocor compressors.
- Zoning of equipment to allow plant to be turned off or enable out of hours setback in appropriate unoccupied spaces
- High efficiency energy recovery for ventilation systems where practical
- Provision of a building management system (BMS).
- Low velocity pipework / ductwork and low pressure air filters to reduce fan and pump power consumption

Energy Provision

The preferred solution at the present time is to use building level technologies as required. The proposed implementation of the following technologies reduces the phase 1 buildings carbon emissions in excess of the baseline requirements of BREEAM "Excellent" and Part L of the Building regulations:

- Solar Photovoltaics
- Combined Heat & Power

7.8

Ecology

Introduction

Condition 20 of planning permission 2015/1584 states:

The mitigation measures in respect of ecology, wildlife and Japanese Knotweed identified in the Ecology Report within the Environmental Statement Addendum (which should include a reptile mitigation scheme), shall be incorporated into the detailed development proposals and implemented as approved in respect of the of the University of Wales Trinity Saint David owned plots highlighted on highlighted on drawing no. 70183_PL003.

The mitigation measures included in the Ecology Report are outlined in this section along with a commentary on how they have been addressed.

Ecological Mitigation

- *To mitigate the risk of pollution, the works at the site will be carried out following the development of a Pollution Control Strategy prepared in accordance with Environment Agency guidelines such as "Pollution Prevention Guideline 6: Working at Construction and Demolition Sites".*

The accompanying ' Construction Method Statement' includes a section on Pollution Control that will be implemented on site. A dedicated Environmental Advisor employed by the contractor will also assist in addressing any risks associated with the project.

- *Fuel to be used for construction plant stored in tanks which will be temporarily bunded with 110% of the tanks capacity. Refuelling points located within the bunded area and all tanks securely locked when not in use. Construction should follow guidance by the Construction Industry Research and information Association (CIRIA Report 163, The Construction of Bunds for Oil and Storage Tanks).*

This is addressed in Section 2.1 of the 'Construction Method Statement'.

- *All species of birds are protected whilst nesting under the Wildlife and Countryside Act (1981, as amended). The nesting season is generally considered to be between 1 March and 31 August inclusive. The most appropriate mitigation measure is to phase construction activities that might disturb nesting birds to occur outside of the breeding period. Therefore, the removal of any vegetation and ground clearance works should be undertaken in the period September to February inclusive. If this is not possible, a walkover survey should be carried out by a qualified ecologist to confirm the absence of nesting birds. If nesting birds are found, works within the vicinity of the nest have to be delayed until the chicks have fledged. This typically takes 4 to 6 weeks depending on the state of the chick's development.*

It is intended that the development will be constructed in August 2016, towards the end of the nesting season. As such the appointed contractor will be required to check the site with a qualified ecologist before works are commenced.

- *The phasing of development across SA1 has allowed for suitable nesting bird habitat to be retained in the short term for notable species such as song thrush (Turdus philomelos), while new planting has been established on site that will provide nesting.*

The landscape proposals as part of phase 1 include the first green space on the site in the form of Trinity Gardens, while new tree planting is proposed around both buildings.

- *Prior to construction works a suitable knotweed eradication and control programme should be produced in accordance with Best Practice Guidelines. This may involve the appointment of a specialist contractor to carry out the eradication and control programme. opportunities going forward.*

This is specific to plots E7, E8 and E9 which are not included in this Reserved Matters Submission.

Similarily, the condition refers to a Reptile Mitigation Scheme, this is specific to Plots E7/E8 which are not included in this Reserved Matters Submission.



Figure 90 *Samples of potential ecological measures*

7.9

Flood Risk and Drainage

Hydrology and Flood Risk

The site is located adjacent to the River Tawe estuary, TAN 15 Development Advice Maps show that much of the site is within Zone C2 although localised areas are within Zone A. The Natural Resources Wales (NRW) Flood Maps show that the majority of the site is within Flood Zone 1 and 2, however areas to the east and south are in Flood Zone 3.

The potential development of Swansea Bay Tidal Lagoon will have a neutral or marginal beneficial effect on the proposed SA1 development. The lagoon proposals will introduce an increased resilience to surge tides from the Sever Estuary flooding.

Flood Consequences for development

Following the production of an FCA in 2006, a minimum development level of 6.58mAOD was agreed with the Environment Agency (now NRW). Since this date, new extreme water levels have been published and an updated FCA advised that commercial development levels should be set at a minimum of 7.13m AOD.

The proposed development will be sited at or above 7.20mAOD.

Surface Water Drainage

The surface water drainage strategy for SA1 comprises separate highway and plot drainage networks with outfalls into the adjacent docks. Plot and highway surface water drainage networks have been installed within Kings Road and also the connecting north-south spine road. Both surface water networks outfall into the existing docks to the north and south-west of the plots. The surface water drainage from the development will be connected into this water drainage network, or directly into the adjacent dock.

Due to the presence of made ground and potential risk from contamination, infiltration drainage SuDS systems are not suitable. Surface water flows will be discharged directly into the docks and would not require attenuation.

Water Quality

Petrol interceptors will be required in service yards as per the recommendations in Annex B of the Arup Stage 3 Report. Drainage from roof areas will be kept separate as far as practicable and would not need to be treated though petrol interceptors.

Foul Water Drainage

A foul drainage network has previously been installed within the highway network around the development plots, which outfall into storage tanks and a pumping station to the west. The existing foul network has been adopted under a S104 agreement and discharges to drop shafts on the existing Dwr Cymru Welsh Water (DCWW) deep sewer which lies below Langdon Road to the west and connects to Swansea Waste Water Treatment Works (WWTW) to the east. The existing SA1 development has Water Industry Section 106 discharge consents in place, and together with the adoptable foul drainage network, it is intended to provide for fully serviced development plots.

A series of plot connection spurs are present on Kings Road in the north. Foul drainage from the plot will connected into these spurs. The depth of the spurs suggests that gravity drainage will be feasible without the need for any additional pumping stations, assuming the floor levels of the building are set at or above 7.20mAOD.

Drainage details

The drainage design should be carried out in accordance with Sewers for Adoption 7, the foul drainage should be submitted to DCWW for adoption. Locations will need to be co-ordinated with building lines and other services details and should be installed in accordance with engineer's drawings and the Statutory Authority's requirements. Precise locations should be agreed with the engineer prior to commencing the work.

All kitchen waste water shall be discharged via grease traps and surface water drainage to vehicle parking areas or service yards shall have petrol interceptors, unless agreed otherwise.

7.10

Air Quality

Introduction

Condition 15 of planning permission 2015/1584 states:

The mitigation measures in respect of air quality, noise and vibration identified in the 2015 Environmental Statement Addendum shall be incorporated into the detailed development proposals for each phase of the development and implemented as approved in respect of the University of Wales Trinity Saint David owned plots highlighted on highlighted on drawing no. 70183_PL003.

The air quality mitigation measures included in the 2015 Environmental Statement Addendum are outlined in this section along with a commentary on how they have been addressed.

Mitigation

- *Provision of a Travel Plan for the development to encourage sustainable modes of transport to and from the site.*

A Framework Travel Plan was prepared as part of the 2015 Section 73 application and is subject to Condition 28 requiring the recommended measures to be implemented and an annual report to be produced.

- *Inclusion of cycle parking.*

Temporary cycle parking to serve phase 1 is located within the confines of the site between the Library and FACE/Tech.

- *Inclusion of staff changing facilities with showers and lockers on office and commercial plots to encourage cycling to and from work.*

Shower and changing facilities are included in the FACE/Technology building.

- *Inclusion of green infrastructure throughout the development to reduce atmospheric pollution through increased levels of deposition and absorption.*

The landscape scheme includes new tree planting around both buildings and within Trinity Gardens.

- *Consideration of final building configurations to avoid the creation of street canyons as far as practicable.*

This will need to be addressed in all future phases.

- *Provision of electric charging points throughout the development. A rate of one rapid charge point per ten residential dwellings and/or 1,000m2 of commercial floorspace is suggested within the IAQM guidance.*

This is not being addressed as the development is neither residential or commercial in nature.

- *All gas-fired boilers to meet a minimum emission standard of less than 40mgNOx/kWh.*

This will be addressed as part of the internal fit out of the building.







7.11 Noise

Introduction

Condition 15 of planning permission 2015/1584 states:

The mitigation measures in respect of air quality, noise and vibration identified in the 2015 Environmental Statement Addendum shall be incorporated into the detailed development proposals for each phase of the development and implemented as approved in respect of the University of Wales Trinity Saint David owned plots highlighted on highlighted on drawing no. 70183_PL003.

The noise mitigation measures included in the 2015 Environmental Statement Addendum are outlined in this section along with a commentary on how they have been addressed.

Noise Mitigation

The mitigation measures include a number of references to new residential developments. As no residential development is proposed in the first phase these recommendations are not discussed below.

- *Noise from outside a building can enter a room through windows, ventilators, walls, roof and doors. In most cases, windows provide the main path and it is therefore important to ensure that their insulation is specified correctly.*
- *Fixed plant to be installed on site would need to operate at noise levels that ensure noise levels are 10dB(A) below the background noise level. Current background noise levels indicate that plant noise would need to be below 35 dB(A) at the closest receptor.*

Noise break in and noise break out are both addressed in the accompanying Environmental Noise Assessment.

- *Methods of construction are as yet unknown, however best practicable means should be used as to ensure noise from each of these processes is minimised.*
- *Particular care would be required in the vicinity of residential properties, for example by using quieter, well maintained plant working close to receptors. Liaison with EHO should take place prior to commencement of construction to ensure that appropriate and adequate means of mitigation are applied throughout the construction work. Routine forms of noise and vibration control should be implemented during all phases of construction work.*

Noise and vibration are addressed in Section 3.7 of the Construction Method Statement.

- *In accordance with good working practices, the principles of the "best practicable means" (BPM), as defined in the Control of Pollution Act (1974) should be used to reduce noise and vibration emissions throughout the demolition and construction periods. This should incorporate the use of measures to control noise and vibration that do not unreasonably inhibit the work, and the use of working methods that result in minimum effects compatible with normal working practices.*
- *Noise control measures consistent with good working practices should be implemented during the construction phase. Noise and vibration control measures could be implemented within a Construction Environmental Management Plan (CEMP) in consultation with the Council.*



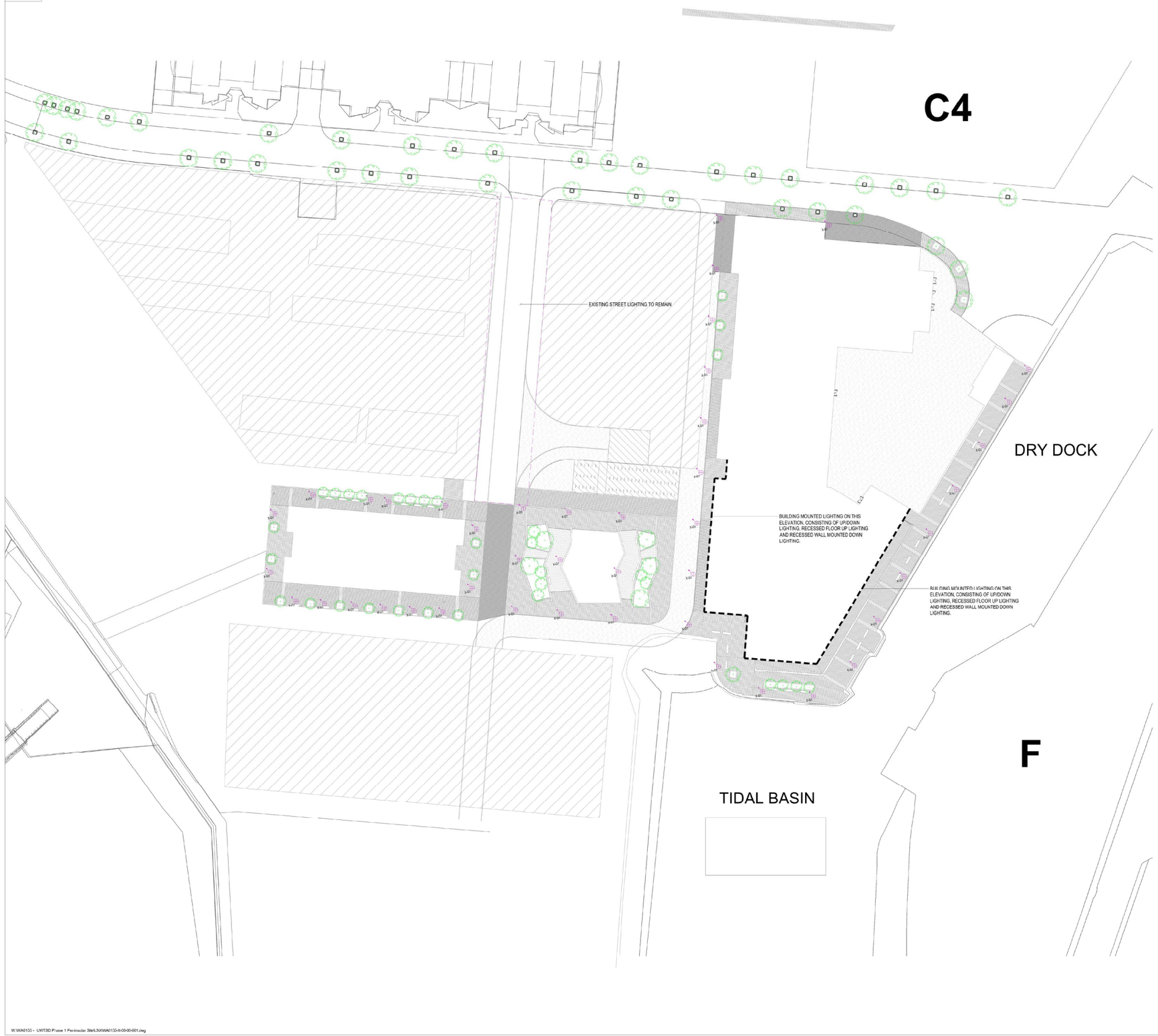




7.12

Lighting

A1



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NOTES



BUILDING MOUNTED LIGHTING









P1	-	LATEST ARCHITECTS LAYOUT ADDED	PK	IP	24.02.2016
Rev	Dcc	Description	Dwn	Chkd	Date

STAGE 3

TROUP BYWATERS + ANDERS
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Project
UNIVERSITY OF WALES
TRINITY SAINT DAVID
PHASE 1 - FACE BUILDING

Title
SITE PLAN
EXTERNAL SERVICES

Client
UNIVERSITY OF WALES TRINITY SAINT DAVIDS

Architect
STRIDE TREGLOWN ARCHITECT

Project No.	Drawn By	Date	Checked	Scale
WA0155	CJH	08.01.2016	IP	1:200@A1

Acad Model

Revision
P1

Drawing No.
WA0155-X-00-00-001

9.0

Conclusion

Phase 1 - Swansea Waterfront Innovation Quarter

Planning policy has supported the regeneration of the SA1 area for many years. The development proposals set out within this document are consistent with adopted Unitary Development Plan policies, emerging Local Development Plan policies and are aligned with the aspirations of the City and County of Swansea as relayed in the January 2015 City Centre Strategic Framework Review. The proposals seek to refine and develop previous masterplan proposals to facilitate the creation of a consolidated University at the heart of a mixed use commercial area of an extended City Centre.

The development of the Swansea Waterfront Innovation Quarter in SA1 will support the University's aim to inspire individuals and develop reflective graduates and practitioners who can make a difference in society. It will enhance the aim of the University to have an equally important role in advocating global citizenship and education for sustainable development.

The Swansea Waterfront Innovation Quarter will be situated in a vibrant, modern waterfront location with easy access to the city centre.

The intention is to establish purpose-built facilities for learning, teaching and research as well as social, leisure and recreation space. The development will combine its existing presence in SA1 with the two Technium buildings, which are currently used for commercial purposes, and will be connected to the City's Cultural Quarter at Alexandra Road through the Dylan Thomas Centre situated at the heart of the city centre.

Concluding Remarks

The SA1 Waterfront Innovation Quarter masterplan reserved matters application proposals respond to the legacy projects granted under outline planning permission 2008/0996 dated October 2010 and a revised 2015 land use framework the result of a robust site analysis, strategic options and masterplan refinement process involving UWTSD acquired development plots. The masterplan framework set out within this Design and Development Framework Part 1: Planning Design and Access Statement, accompanied by its Part 2 counterpart: the Design Code, has evolved as a result of a collaborative design approach.

Proposals have had regard to, and are supported by, general and SA1 site specific adopted Unitary Development Plan policies (2008), the emerging policy framework set out in the July 2014 Draft Local Development Plan, and sits within the wider supporting context of the Swansea City Centre: Strategic Framework Review (consultation Draft 2015).

Masterplan proposals and principles have been shaped and refined by a series of technical and design assessments as set out within the Environmental Statement Addendum and Transport Assessment which accompany the variation of condition planning application. The changes sought to the conditions set out in the 2010 decision notice have been discussed with the City and County of Swansea, and the Welsh Government as a means to clarify the role and responsibility of UWTSD to take forward development proposals across its newly acquired sites while retaining pertinent 2010 conditions and obligations affecting third party land.

The two parts of the Design and Development Framework, working together, inform the opportunities presented by individual development UWTSD development plots and have the potential to shape subsequent detailed (reserved matters) planning and architectural submissions. The University looks forward to delivering and facilitating a vibrant, economically and environmentally sustainable and attractive mixed use development which will be instrumental in shaping the future prosperity of the University and the wider Swansea Bay City Region.

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