Full planning application for the construction of a new build research and development (Use Class B1); internal new road alignments; car park; and soft and hard landscape, at Liverpool Royal Hospital, Daulby Street, Liverpool

Planning, Design and Access Statement

December 2011

Royal Liverpool University Hospital – BioInnovation Centre

taylor young|ty

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1. Introduction

1.1 This Planning, Design and Access Statement supports a full planning application at the Royal Liverpool University Hospital, off Daulby Street, Liverpool, for the construction of a research and development facility, (Use Class B1); revised vehicle access, and parking ; and hard & soft landscape, on a site of approximately 0.33ha..

1.2 The application is a detailed submission for development on part of an existing surface car park, within the Royal Liverpool University Hospital site, as shown on the following location plan. The development site is approximately 0.33ha, with the building having a floor area of 8087 square metres over 5 storeys plus plant room at the roof. The development consists of:

- a new build BioInnovation Centre (Use Class B1), comprising research and development, consisting of 35 laboratories and ancillary offices and conference/seminar meeting space, with accesses at its northern and southern ends.
- high quality soft and hard landscape and public realm;
- removal and re-provision of some trees;
- new internal road alignments to the rear of the proposed development site;
- ground surface car park to the rear of the building, providing 6 car parking spaces for disabled staff and visitors. Secure cycle space and motorcycle parking will be provided at the rear of the site also.

1.3 It is expected that approximately 300 employees will be based in the development at any one time. The development will be open 24 hours a day, but the core opening hours will be from 08:00 – 18:00

1.4 This statement introduces the content and background of the planning application, and together with other supporting documents will enable the proposals to be fully assessed against policies and all other material considerations. It also explains the proposal in more detail; including its site context, the design process and evolution, and access considerations. It should be read in conjunction with the suite of plans and drawings submitted as part of the planning application, as well as the following supporting documents:

- Tree Survey (September 2011)
- Ground Investigation Report (November 2011)
- Transport Statement (November 2011)
- Travel Plan Framework (November 2011)
- Utilities Statement (December 2011)
- Drainage Statement (December 2011)

1.5 For ease of reference, abbreviations used in this statement include the following:

LBIC - Liverpool BioInnovation Centre

LCC - Liverpool City Council

LDF - Local Development Framework

NHS - National Health Service

PPG - Planning Policy Guidance

PPS - Planning Policy Statement

RLUH - The Royal Liverpool University Hospital

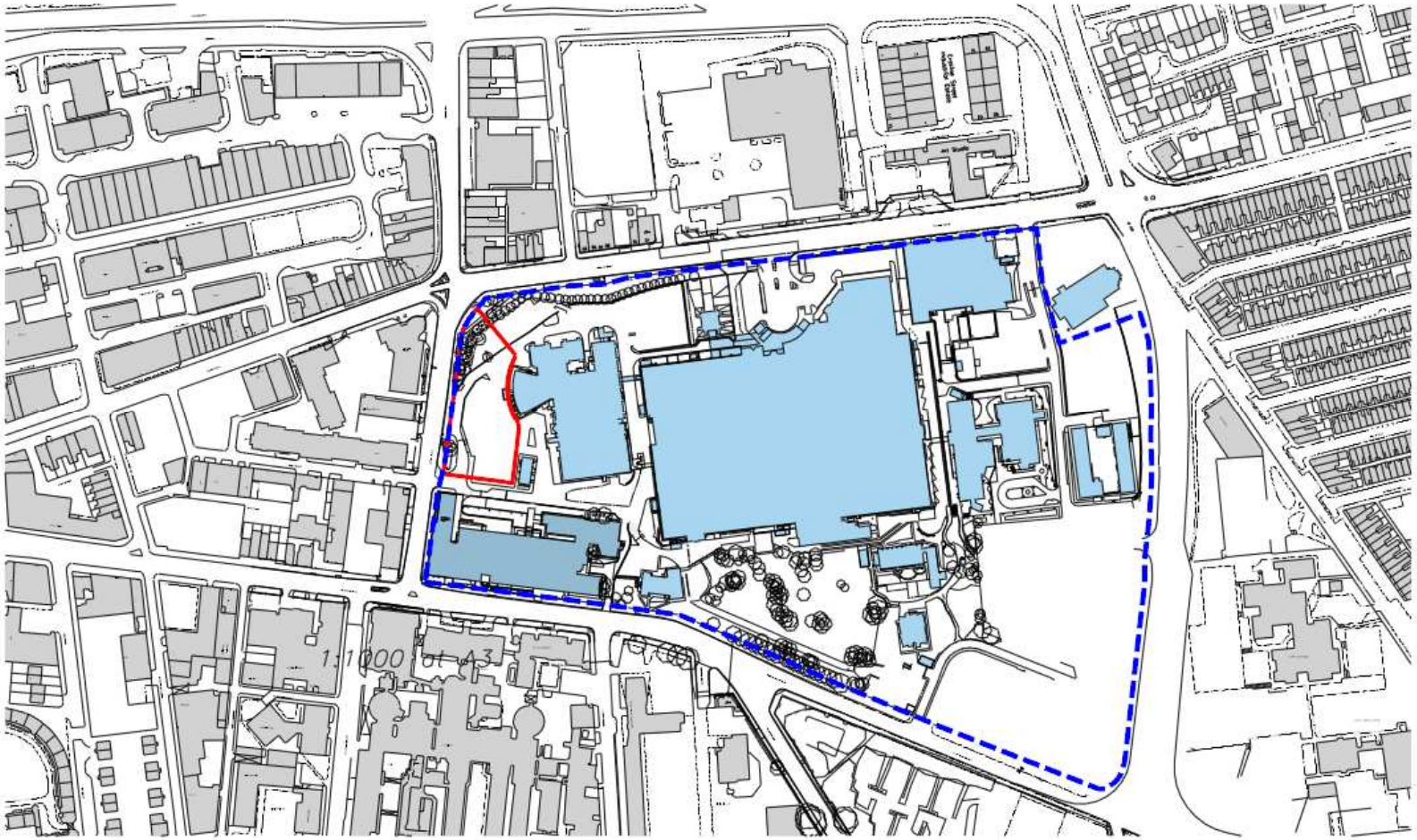
RLBUHT –Royal Liverpool and Broadgreen University Hospitals NHS Trust

RSS - Regional Spatial Strategy

SPD - Supplementary Planning Document

UDP - Unitary Development Plan

Site Location Plan



AREA = 0.33 HECTARES

KEY:

PLANNING BOUNDARY

OWNERSHIP BOUNDARY

Rev	Date	Revision Notes
B	16/12/11	BLUE LINE BOUNDARY AMENDED
A	12/12/11	DRAWING SCALE REVISED, PLANNING AND OWNERSHIP BOUNDARIES ADDED

NIGHTINGALE associates architects

Project
LIVERPOOL BIO INNOVATION CENTRE

Drawing Title
LOCATION PLAN

Job No	Date	Drawing@A1
10770	05/12/11	1:2500

Status
PLANNING

Drawing No						Rev
Orig	Zone	Level	Type	Number	Sequence	
AR	WS	XX	PL	100	010	B

2. Background to the Proposal

2.1 The Liverpool BioInnovation Centre (LBIC) is a laboratory research building for start up life science companies. It is the first phase in the development of the Liverpool Bio-Campus. With the support of partners, it is deliverable, on a currently available site, by 2014, with potential for a Phase 2 BioInnovation Centre capable of delivery before 2017, as the hospital redevelopment evolves.

2.2 The Liverpool BioInnovation Centre is envisaged by the Trust as a high quality piece of architecture where ideas are stimulated, developed and applied.

2.3 LBIC will provide a dedicated environment for world class convergence of clinical and academic research to bring new Life Sciences technologies to the marketplace delivering value in business creation, jobs, growth, research and patient care for the sub-region. Crucial and central to this is the operation of a Business Support and Commercialisation Centre (BSCC) that will facilitate pipeline development through, stringent and expert commercial assessments, IP review/protection strategies and development of business plans.

2.4 Uniquely, the BSCC will operate a Proof of Concept (POC) Laboratory, to undertake POC studies to test the transferability and utility of technologies (particularly diagnostic technologies) as to their commercial potential. The stringent commercial assessment and the POC studies de-risk the business case for commercialisation and significantly increase the deliverability of products into the marketplace and for the benefit of patient care. To support the development pipeline created through the BSCC and POC, the LBIC will also provide incubator and grow-on space carefully specified and equipped to enable early-stage Life Sciences businesses to become established, develop and expand.

2.5 Meeting and networking facilities will provide a catalyst for the cross-fertilisation of ideas, science and technologies between industry, academia and healthcare. Strategically, LBIC will catalyse the development of the Liverpool BioCampus and act as an exemplar the agendas to develop new technologies and liberate IP. It will drive a step change in local and external perceptions of the excellence of Liverpool's Life Sciences offer; forge even stronger local and international relationships beneficial to the local and national economy, and further physical regeneration of the area.

2.6 This will be achieved through a partnership of the Royal Liverpool and Broadgreen University Hospital Trust (RLBUHT), Liverpool City Council (LCC), the University of Liverpool (U of L), Liverpool School of Tropical Medicine (LSTM) and other partners. All these partners are situated in close proximity within a square mile of each other in Liverpool's Knowledge Quarter. Here there is a virtuous and unique confluence of expertise within human medicine, veterinary medicine, tropical medicine, science and engineering together with a large university hospital (with leading-edge research including in pancreatic disease, microbial disease, palliative care, cancer and ocular oncology) where clinical trials are undertaken.

2.7 The partners will create a building in the order of 70,000 ft², on RLBHUT's land to meet the demand for additional incubator and grow-on space created by the new businesses developed through the BSCC and POC. This will complement facilities at the successful MerseyBIO incubator and some laboratory space at the Liverpool Science Park within the sub-region as well as those at Daresbury and the Heath, although LBIC's offer will be in close proximity to clinical and academic research. The partnership is currently in the process of applying for £12M in ERDF and is investigating match funding from partners, venture capital and government sources to begin the LBIC in 2012.

2.8 The Liverpool BioCampus, an 11 acre site to be created by the replacement of the existing Royal Hospital, is a key Liverpool asset.

2.9 The availability of such a well-connected site with access to a strong scientific base, on the edge of a vibrant city centre is, if not unique, highly unusual in global terms. It offers Liverpool the opportunity to

bring together academic research, healthcare and clinical trials, and industry in a compact ecosystem on a vibrant international campus that will:

- Enhance collaboration in life sciences
- Help build the profile and status of partner institutions
- Support basic science, clinical trials and industry
- Improve patient care and treatment as the product of collaboration is more rapidly applied
- Stimulate local economic growth by providing space for locally generated businesses as well as incoming businesses that value a location close to a strong science base
- Contribute to the national economic position
- Further the physical regeneration of the city

3. Design Guidance Framework

3.1 In 2007 Royal Liverpool & Broadgreen University Hospitals NHS Trust prepared a masterplan for the comprehensive redevelopment of its Royal Liverpool Hospital This masterplan was drawn up in close consultation with Liverpool City Council, Liverpool Vision and the University of Liverpool. It addresses the whole city block bounded by Prescot Street, Daulby Street, West Derby Street and Low Hill, integrates closely with the adjoining University Masterplan and forms part of the wider Knowledge Quarter Framework which assists development in this part of the city.

3.2 The illustrative masterplan with its underlying Framework Plan and parameter plans informed an outline planning permission granted in December 2008 for the comprehensive redevelopment of this city block, and is providing the urban design context for the procurement of a development partner for the new hospital through the PFI process.

3.3 The masterplan locates the new hospital in the southern and eastern parts of the site and identifies a series of sites fronting Prescot Street and Daulby Street for future healthcare related developments which are now to form the emerging BioCampus. It provides a structure of new pedestrian and vehicular access arrangements, and guidance on development blocks, frontages, heights, landmarks, open space, car parking and phasing.

3.4 The site for the proposed LBIC is the only part of the overall hospital site that can be redeveloped for Bio-Campus uses before demolition of existing hospital buildings takes place. It forms the western frontage of this new development area, fronting Daulby Street, and this proposal is the first new development to be brought forward through the planning system in response to the established masterplan. The approved Framework Plan is provided at appendix 1. Parameters which have guided the design of this scheme are:

- An important pedestrian access point for the whole site at the corner of Daulby Street and Prescot Street, providing a diagonal route south eastwards towards the proposed new hospital which buildings should address
- A principal vehicular access point south of this plot and immediately north of the existing Dental Hospital linking through the main site to Prescot Street
- Opportunities for further development to the east of this scheme
- A major public space in the centre of the city block
- Building heights of up to approx 6 storeys on the Daulby Street frontage.
- Opportunities for car parking in various development blocks within the site, but not necessarily in each development
- Buildings should be at back of footway on Daulby Street and should also address the new diagonal route
- Phasing variable in this part of the site

3.5 The approved Framework Plan and the accompanying parameters has guided the design and development of the proposal.

Phasing

3.6 The overall masterplan will be developed in phases with the new hospital constructed between 2013 and 2016, demolition of the existing hospital between 2016 and 2018 and completion of new site infrastructure between 2018 and 2020 In the intervening period therefore the whole site will therefore be undergoing phased redevelopment.

3.7 Construction of the BioInnovation Centre will commence in 2012 and will be completed ahead of the new hospital and major demolitions.

4. Site History

4.1 The hospital was mainly designed by Holford Associates during the early 1960's, following confirmation of the project in the 1962 Hospital Plan. The development of the site took place in four distinct phases between the 1960s and 80s:

4.2 Since then, substantive alterations have been made to the hospital as health service restructuring within Liverpool has consolidated further services on the site, and clinical practices/technologies have developed.

4.3 In November 2007, RLBUHT secured outline planning consent for redevelopment of the RLUH to provide a hospital and related healthcare developments on site, comprising core hospital buildings, energy centre, future healthcare buildings, vehicular and pedestrian access including blue light access, car parking provision including multi-storey car parks, vehicular drop off/arrival areas, pedestrian routes and areas of soft and hard landscaping.

4.4 Whilst all matters were reserved for subsequent approval, the application established a number of important principles about the layout of the site and the design of the new hospital. This was presented as a framework and guidance, and has been used to inform the design, scale, massing, location, orientation and access of the proposed new LBIC.

4.5 The main hospital redevelopment is to take place in a phased manner over a period of at least 10 years. The first stage of new development, will be the construction of a new hospital within the south eastern part of the site next to the existing hospital. This will be followed by the decommissioning and demolition of the existing hospital buildings and reclamation of the land to create new access routes and landscaped areas. The third element of the site's redevelopment will be the creation of further healthcare related activities on the remaining area of the site fronting Prescot Street and Daulby Street.

4.6 RLBUHT are currently in the process of procuring a developer team to construct the new hospital redevelopment. The proposed LBIC will be constructed in parallel with this, beginning in 2012. The LBIC would take approximately 18-24 months to build and aims be in operation by the middle-end of 2014.

5. Site Context

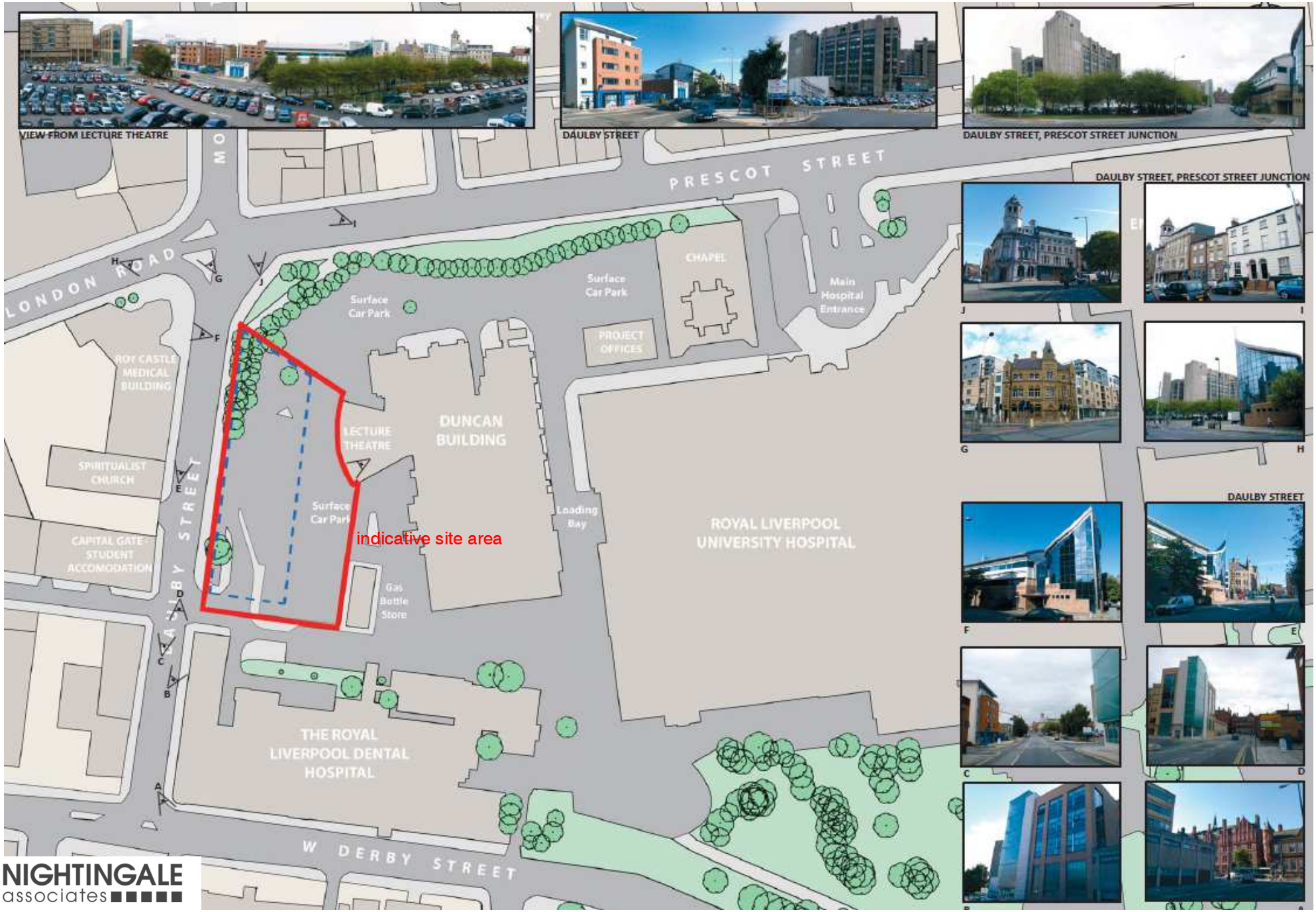
5.1 This section describes the existing context of the site and its surrounding environment. This analysis defines the key physical influences that have shaped the scheme and its design.

Location

5.2 The proposed development site is located off Daulby Street on part of an existing surface car park, within the larger Royal Liverpool University Hospital (RLUH) site.

5.3 The site is bounded by the Liverpool Dental Hospital to the south, RLUH and the University's Duncan building to the east, Daulby Street to the west and Prescot Street to the north. The site makes up roughly half of the east frontage along Daulby Street, and is visible from the junction of London Road/Prescot Street and Daulby Street.

Please refer to the Site Analysis Plan overleaf



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Uses and Activites

5.4 The site forms part of the Knowledge Quarter, located within the Liverpool Bio Campus. The Liverpool Knowledge Quarter is a multi stakeholder initiative focussing on the wide range of knowledge economy assets investment and infrastructure in this part of the city. The Royal Liverpool & Broadgreen University Hospitals NHS Trust and the University of Liverpool are the principal stakeholders and the site of the Royal Liverpool University Hospital forms a substantial element of the Knowledge Quarter.

5.5 The Liverpool Bio-Campus in the centre of the city's Knowledge Quarter encompasses the University of Liverpool, the RLUH, the Liverpool School of Tropical Medicine, 2Bio and the Liverpool Science Park.

5.6 The wider Bio-Campus provides for a concentration and co-location of research, industry and healthcare provision collaborating in health related research and clinical trials, enabling Liverpool to become a centre of global excellence in biomedical sciences.

5.7 Within the immediate environment of the site, there are a mix of healthcare and education institutions, local businesses and retail outlets. Along Prescot Street and London Road, there is a concentration of small retail units to the ground floor of student living accommodation.

Movement and Linkages

Site Access

5.8 Vehicular access is currently off Daulby Street where access to the existing car park can be gained. The main access to the hospital for other modes of travel such as walking and cycling can be found at the hospital's main entrance on Prescot Street.

Highway Network

5.9 Prescot Street, to the north of the proposed development site, is a single carriageway road with a width of approximately 12m providing two lanes in each direction and has a speed limit of 30mph.

5.10 Prescot Street provides access to the RLUH Accident and Emergency department. A signal controlled pedestrian crossing is provided with 'zigzag' markings near the hospital's main pedestrian entrance. It has footways with street lighting, bus stops near the main entrance and there are double yellow lines waiting restrictions on each side of the road. However, disabled parking is available on both sides of the road.

5.11 Pembroke Place, to the south of the proposed development site, is a single carriageway road with a width of approximately 11m providing two lanes in the westbound direction and one lane in the eastbound direction. It has a footway with street lighting on both sides, bus stops on both sides near the main entrance to the dental hospital. The road has a speed limit of 30mph with double yellow lines with 'No Waiting'/ Loading restrictions on each side of the road.

5.12 London Road, to the northwest of the proposed development site, is a one-way single carriageway road with a width of approximately 11m providing three lanes in the eastbound direction. It has footway with street lighting on both sides, bus stops on the northern side and a speed limit of 30mph. There are double yellow lines with 'No Waiting'/ Loading restrictions on each side of the road with pay and display parking bays on the southern side.

5.13 Daulby Street, to the west of the proposed development site, is a one-way single carriageway road with a width of approximately 11.5m providing three lanes in the southbound direction and has a speed limit of 30mph. It has footway with street lighting on both sides and a bus stop to the north of the existing staff car park entrance providing for city-bound services. There are double yellow lines with 'No Waiting'/ Loading restrictions on each side of the road with pay and display parking bays for about six cars (with a maximum stay of two hours) on the western side near the northern end. The northern end of the road forms a signal controlled cross junction with London Road, Prescot Street Job No Report No Issue no Report Name Page M076017 1 Transport Statement - Proposed Bio Innovation Centre, Daulby Street, Liverpool 7 and Moss Street. This junction has signal controlled pedestrian crossings with dropped kerb and tactile paving. The southern end of the road also forms a signal controlled T junction with Pembroke Place. This

junction has signal controlled pedestrian crossings with dropped kerb, tactile paving and pedestrian railing.

Public Transport

5.14 The development site is served by a high frequency of bus services providing links to a number of local and regional destinations. There are up to 19 bus services with routes across Merseyside, from bus stops close to the site. These stops are well within the recommended walking distances. Further details are provided within the Transport Statement.

5.15 The nearest rail station to the site is Liverpool Lime Street Station which is located approximately 900m to the west of the proposed development site.

Pedestrian Access

5.16 In general, all footways within the vicinity of the site are of good quality and are of acceptable width, with dropped kerbs provided at crossing points. A suitable level of street lighting is present throughout the area. The pedestrian facilities and enhanced crossing facilities on junctions to the west of the site encourage movement by foot within the vicinity of the development site and provide good links to the nearest bus stops on the Prescot Road, London Road and Daulby Street itself, thus encouraging sustainable travel by employees and visitors at the proposed site.

5.17 There are a number of residential areas within the 2km maximum desirable walking distance such as Edge Hill, Everton, and the city centre.

Cycle Facilities

5.18 There are currently no dedicated cycling facilities present on the A57 Prescot Street / London Road; however, there are on-road cycle routes along the A57 Kensington. On-road cycle routes to the south of the site are available along Harbord Street and Hope Street with Hall Lane and Russell Street providing recommended cycle routes with which to access the site in part. There is also an on-road cycle route to the south of the site along Oxford Street linking with Lime Street Station to the west.

5.19 Liverpool Lime Street railway station also has cycle parking facilities.

Buildings and Townscape

5.20 The surrounding area of the site is made up of a rich variety of Victorian and Georgian buildings, mixed with more modern buildings built between the 1980s and present day.

5.21 To the immediate east of the site, within the RLUH, is the Duncan Building and Lecture Theatre, surrounded by ground surface car park. This monolithic concrete building stands tall over the site, and is visible across the City, due to the site's topography. It is a very dominating and oppressive building, that visually detracts from the area. It is to be demolished as part of the main hospital site redevelopment.

5.22 Opposite the site to the west, along Daulby Street, there is a mix of modern buildings, built over the last ten years. These vary in scale and height, ranging from 2 to 4 storeys, generally of an unremarkable architectural design. They are made up of a mix of materials, including brick, stone, glass, and metal cladding.

5.23 There are some buildings of historic value and merit at either end of Daulby Street. They include the Victorian red brick University of Liverpool Foresight Centre to the south of the site, and the Prince of Wales Hotel and Moss Street Bank to the north.

5.24 The junction of Prescot Street, Daulby Street, London Road and Moss Street sits immediately to the north of the site. It is a busy traffic junction with surrounding buildings which offer some relief from this. All three buildings on the junction acknowledge its presence in their design, ‘stepping up’ as they reach the corner and creating a prominent series of facades. This has provided useful pointers to the development of the current proposals.

5.25 Daulby Street which runs along the edge of the site is a one way street which has an open car park to the east and a discontinuous series of buildings, split by car park and road entrances, to the west side. The 3 storey Roy Castle Building, extending from the Prescot Street junction with its distinctive glazed corner tower is the only building of architectural note. Further along the street the scale of

buildings is not continuous, with a single storey spiritualist church and a 4 storey residential block.

5.26 The significant facade of the Dental Hospital is to Pembroke Place to the south, with a recently completed extension which has given the western frontage a face lift, creating a prominent corner that faces the application site from the south side.

Public Realm and Open Space

5.27 There is little by way of 'soft' public realm in the area, apart from a group of trees atthe corner of Daulby Street and Prescot Street. The accompanying tree survey identifies that these are of a poor quality.

5.28 There is limited street furniture or external public spaces where people can congregate.

Development Framework

5.29 As the Royal Liverpool Hospital Site is undergoing extensive redevelopment over the next 8 years, the site constraints are relatively complex. Initially the current setting is dominated by the Duncan Building and its lecture theatre to the east, which constrains the site to 31 metres at its narrowest point, whilst the north end of the site lies within further surface car park.

5.30 As part of the Framework Plan, the site is transformed with a prominent 20 metre wide pedestrian boulevard to the north, connecting the Prescot Street/Daulby Street junction diagonally to the 'landscape heart' at the centre of the hospital site, and from which the new hospital entrance will be accessed. East of the site it is proposed that future phases of the BioCampus will be developed so that the proposed building would be able to accommodate expansion on that side.

5.31 Only on the south side of the site is there an existing urban fabric which will remain. The corner of the junction between Daulby Street and Oakes Street is dominated by the Dental Hospital extension built in 2010. The design of the extension has acknowledged that Oakes Street will be a significant entry point into the hospital site within the future Framework Plan, and has a suitably strong corner feature as a result. Otherwise this side of the site is dominated by the rear elevation of the Dental Hospital from where the Hospital is serviced.

Opportunities and Constraints

5.32 Having undertaken a thorough analysis of the site context, the opportunities and constraints of the site and the project are considered to be as follows:

- Develop a previously developed site;
- Provide a strong frontage to Daulby Street;
- Design that is informed by the approved Development Framework Plan for the hospital redevelopment, which sets a prescribed scale, height, mass, location and orientation of the LBIC. Please refer to Appendix 1 which illustrates the parameters plans and approved Framework Plan that have informed the LBIC design parameters;
- Create enclosure and presence that will tie in with the future redevelopment of the hospital and the existing fabric along Daulby Street;
- Retain permeability, providing a strong pedestrian route into the site from the north of the proposed LBIC, and a vehicular route to the south of the building;
- Ensure a second phase of the LBIC (BioCampus) can be designed to complement this phase 1, and also ties in with the Development Framework Plan for the wider hospital redevelopment;
- Tram line easement along Prescot Street forces the building footprint just south of the junction, along Daulby Street.
- Create a building with iconic landmark forms that signal investment in the city and promote the City's quality architecture;

- Retain trees where possible, but remove some to accommodate building footprint; open up clear site lines to the building and entrance; and provide clear walkways;

- Enable future development to come forward on the remainder of the site;

  Retain accessibility across the wider site and define entrances; and

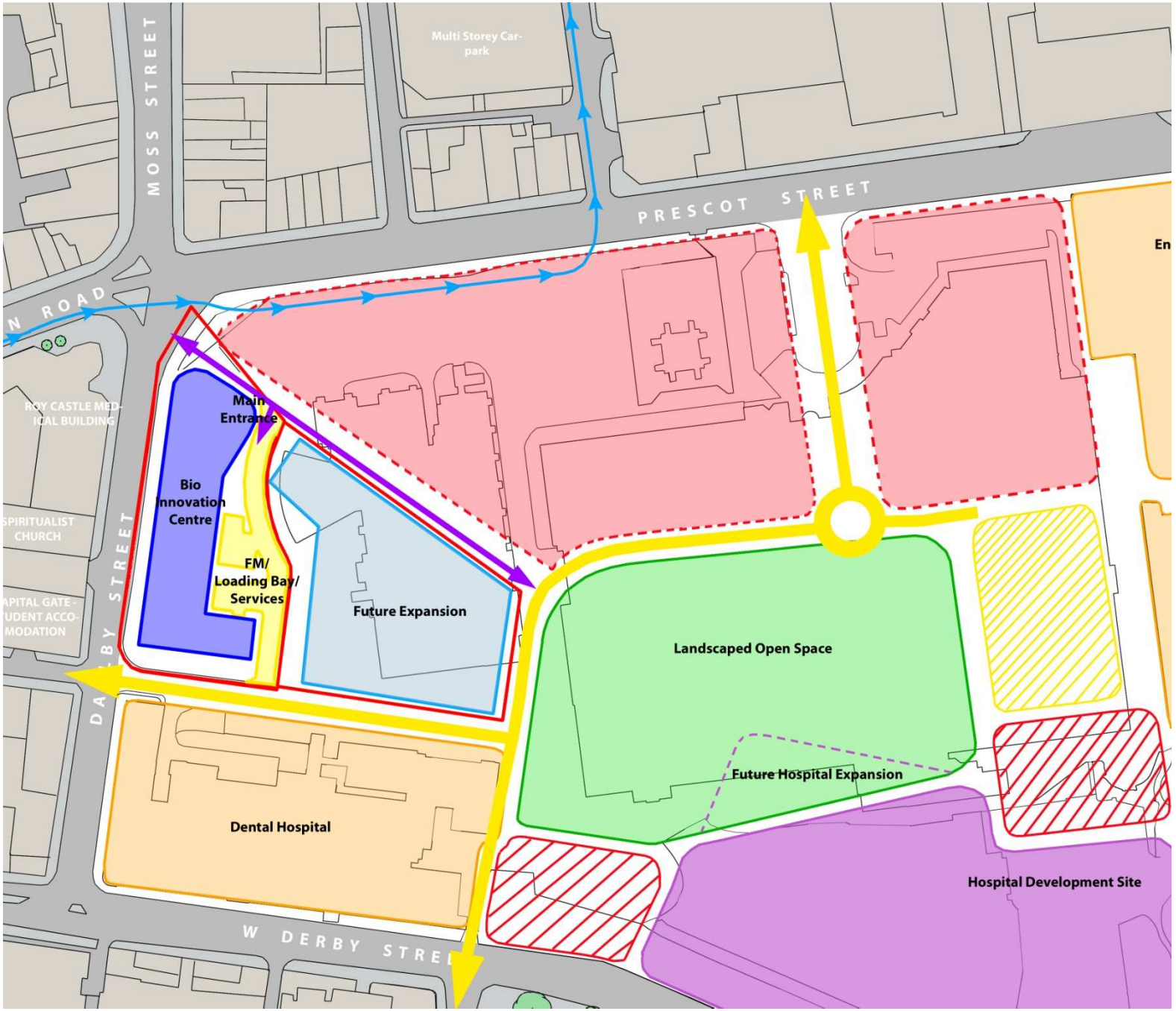
- Use of quality contextual materials.

5.33 Please refer to the Opportunities and Constraints Plan overleaf

Opportunities and Constraints Plan

Key

- Site for Possible Future Healthcare Buildings
- Bio Innovation Centre Site Boundary
- Bio Innovation Proposed Building Zone
- FM/Loading Bay/Services
- Site for New Hospital Development
- Site for Buildings to be Retained
- Landscaped Oper Space
- Drop Off / Arrival Places
- New Squares
- Pricipal Routes
- Possible New Tram Line
- Pedestrian Route
- Future Hospital Expansion Zone



6. Design Process

6.1 This section sets out the design parameters and principles that have informed the detailed design development.

Vision and Objectives

6.2 The UK is a major provider of scientific expertise to the global pharmaceutical industry and is responsible for the discovery and development of more leading medicines than any other country, apart from the US. It is also a historically prime location for research and development and a world centre for scientific expertise, particularly in oncology, regulatory matters and early stages research. The Northwest is the UK's top cluster for biomedical research employing 25,000 people, being home to several major pharmaceutical companies and having internationally renowned academic and clinical research establishments. The region is also the highest exporter of pharmaceuticals in the UK – £3.4 billion.

6.3 It is becoming increasingly commonplace for large pharmaceutical companies to obtain their scientific research from smaller, independent sources rather than undertake this within their own organisations. This has led to a strong increase in the number of small companies providing research services and to a rising demand for buildings which can accommodate and support this demand.

6.4 Innovation centres not only supply the specialist facilities which developing biotechnology companies need to carry out their research, but also provide an environment and setting which fosters creativity and promotes collaboration between different research groups. They also provide the wide range of supporting services and facilities which are necessary to support and grow new businesses. In doing this, Innovation centres play an important role in supporting the development of scientific research and in maintaining the UK's position as a major source of knowledge for the global Pharmaceutical industry.

6.5 Critical to the success of the LBIC is that it should be a building where ideas are stimulated, developed and applied. It has to be a place rich in opportunities for the exchange of ideas – between people based there and those in the partner institutions, between the wider research and commercial life sciences community. It must be iconic, where people want to be because of its ambience, its buzz, sense of dynamism and creativity. Informal and formal networking should be the life blood of this building; spaces for this, for coffee and eating will be crucial where ideas can be exchanged. These are places where people want to be; where thoughts are shared, ideas generated, networks developed and business conducted. They are places where formal gatherings can be convened.

Design Drivers

6.6 **Design Brief** – ground floor offices, and four floors of 10 lab buildings initially. Labs are functional spaces which dictate a modular construction

6.7 **Existing Site constraints** – width of site from back of pavement to Lecture Theatre and the Trust's requirement to establish and maintain a hospital access road between the building and the lecture theatre has dictated that the building form be linear.

6.8 **First stage of Framework Plan** – Full width of city block needed to repair site edge. The LBIC will be positioned along Daulby Street as standalone building. It should not be reliant on future phases of Framework Plan to make sense in its urban context i.e. it must be contextually sound now and in the future, as the redevelopment of the hospital takes fruition.

6.9 At present, the LBIC is viewed not just from Daulby Street but also from the Duncan Building to the east. Materials and design should therefore reflect the importance of the building's visibility on all sides. The design takes this on board, to create a robust facade, that does not appear 'back of house'; and the service area has been designed discretely and sensitively.

6.10 Create presence on the corner of Prescot Street/Daulby Street junction, 'stepping up' to corner as other buildings do.

6.11 Have a significant presence to Dental Building side as this will be a primary entrance and exit to the future hospital site.

6.12 **Future Framework Plan** – the building needs to allow for future phases of the Liverpool Science Park and allow for these phases to connect to the LBIC, so that the site and buildings have a common entrance area.

6.13 The LBIC has been designed in line with the approved Framework Plan and will ensure that this site and the hospital redevelopment are designed comprehensively.

Design Response

6.14 The design process has taken into account the planning policy guidance, as detailed at section 10, it has involved an analysis of the site's context, and an understanding of the development potential of the site. Consultations with the RLBUH Trust, end users, the Local Planning and Highways Authority, Police Liaison Officers and specialist consultants have also informed the process of refining the proposed development.

Physical

6.15 The site is a ground surface car park that does not add to the visual aesthetic. This Liverpool BioInnovation Centre proposal is the first phase in the redevelopment of the RLUH site, which will dramatically improve the use, accessibility and appearance of this site and area. The proposed building has been informed by the existing local area and the parameters for future hospital redevelopment, to create a contextual landmark building.

Social

6.16 As well as reusing a previously developed site to kick-start the redevelopment of the RLUH site and creating a BioCampus hub to strengthen the Knowledge Quarter, the proposal will create up to 300 professional jobs.

Economic

6.17 The proposal constitutes a significant investment in the City and will contribute to the ongoing regeneration of the local area and City. It adds to the BioCampus and Knowledge Quarter, creating a hub of research and development. It begins the process of raising the profile of Liverpool's R&D offer, that is set to create professional quality employment, to the benefit of the local economy.

6.18 Such a facility is essential in retaining graduates and attracting new and linked investment with the University of Liverpool. The North West region is the highest exporter of pharmaceuticals in the UK, and it is hoped Liverpool can be central to this. The Liverpool BioInnovation Centre is a great opportunity for the City and the region.

Design Guidance

6.19 The following have been taken into account, although this list is not exhaustive:

- By Design (Department for the Environment, Transport, and the Regions) – urban design guidance
- Towards an Urban Renaissance (the final report of the Urban Task Force, 1999) - urban design. This perspective is complemented by contained in '
- Places, Streets and Movement -a companion guide to Design Bulletin 32 Residential roads and footpaths (ODPM, 1998) - advice for the design of residential areas
- Liverpool Urban Design Guide Supplementary Planning Guidance

6.20 The approved RLUH redevelopment and in particularly the accompanying Development Framework Plan, has steered the design of the new Liverpool BioInnovation Centre.

Consultation

Trust and staff

6.21 In the 4 months since project inception, numerous meetings/presentations have been held with the delivery team at the hospital. The Trust will form the primary shareholder in the development. Option appraisals have been carried out and a series of 3D models developed to test each design. Technical advice and consultation has been sought at regular intervals from staff at

Liverpool University's 2 Bio Development, where 14 labs operate in the same manner as the LBIC intends to be run.

Local Authority Pre-application Discussions

6.22 At appropriate stages of the project, over the last three months, discussions have taken place with the Liverpool City Council's Planners, Urban Designers, and Highway Engineers to agree the principles and detail of the design.

6.23 The officers' feedback on the proposal has shaped the evolution of the design and site layout, particularly with regard to the treatment of the main entrance and the desire to avoid a 'rear face' to the building opposite the Dental Hospital. This has formed a key part of the design development process.

Community Involvement

6.24 Liverpool's Statement of Community Involvement (adopted July 2007) does not require this type of development at this scale to undertake formal community consultation.

6.25 However, given the amount of consultation that has been undertaken, as part of the Outline planning application for the hospital redevelopment it has been agreed between the consultant team and Planning Authority that , further specific local consultation is not necessary prior to submitting this application.

Design Evolution

6.26 In the early sates of the scheme while site constraints were being realised, a number of option appraisals were carried out which looked at different approaches to the site and the building. These early sketches appraised a building which had a central atrium against the more linear form which was eventually adopted. It quickly became clear that in order to comply with the site constraints and future possible phases of the site (see Design Drivers above) a linear form was the only solution which answered the brief in each case.

6.27 Within most of these developments a constant point has been the location of the main entrance at the north end where it sits both on the current Prescot Street / Daulby Street junction and also addresses the future pedestrian route formed as part of the Framework Plan. This has always been envisaged as a double height space which creates the required presence to the busy junction to the north. However, initial designs looked at a sharp projecting corner which though in keeping with the ethos of the building did not respond to other buildings on the Daulby Street/Prescott Street junction. A corner which stepped up and offered a curved frontage in keeping with other buildings was eventually adopted.

Early design concept in relation to corner of Prescot Street and Daulby Street.

6.28 Once a linear form was established the internal layout of the labs became the driving force behind the design. The labs required to be accessed via a single sided corridor, which was initially located on the east side of the building facing the Duncan Building, which

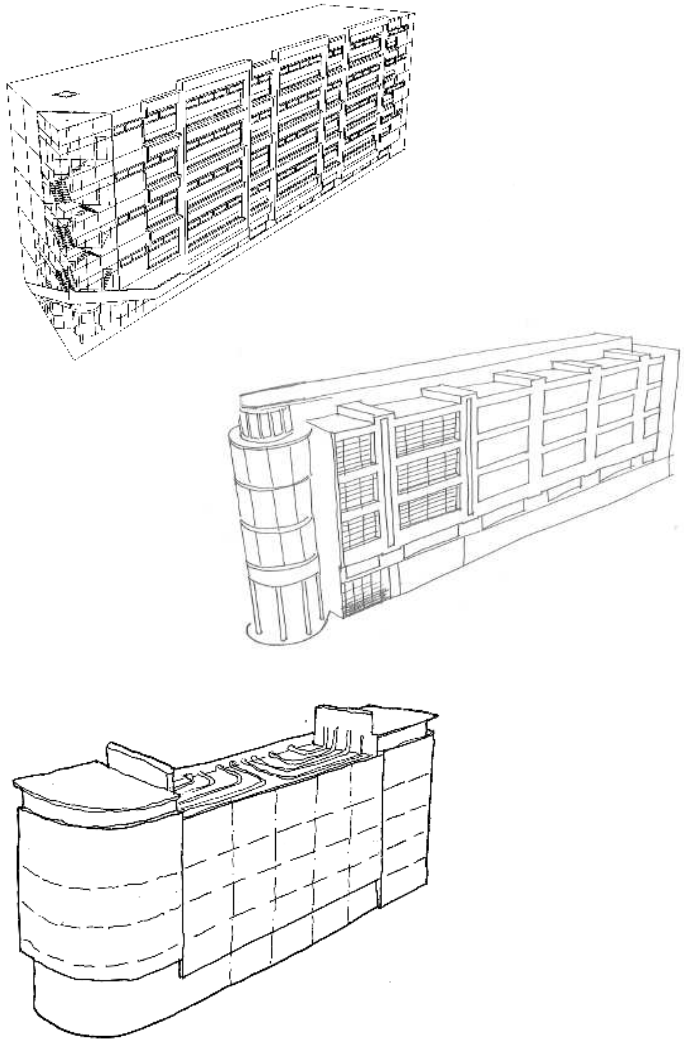
facilitated future expansion more easily. However it was soon moved to the Daulby Street side of the building to free up the elevation treatment and offer the street an active frontage. The Labs are located on the east side, which though a less 'public' elevation will still form a significant presence facing the Duncan Building for a number of years. Thus early designs for a much more function building have been upgraded with increased amounts of glazing to create a more public face, despite large areas of the glazing on this side actually needing to be blanked out.

6.29 All of the labs on the upper 2 floors will be provided with a extract duct for potential fume cupboards. These need to be vented at 3m above the highest roof level. Although internal locations for the ducts were initially looked it was eventually agreed that a more honest approach would be adopted and that they would be located on the face of the building.

6.30 Although the brief called for 10 labs suites on each of the upper four floors, from an early stage one lab was omitted in the prow of the building which allowed for the creation of a double height atrium at the entrance. As the design progressed and the prominence of the accommodation in the prow of the building was realised, all of the labs at this end were dropped i favour of more flexible office accommodation, which in terms of the elevations has much few restrictions on elevational treatment. It was also decided that a 100 seat seminar room needed to be incorporated into the design and the prominence of the prow meant this was the obvious place to be located. Initial consideration of 4th and 5th floor locations were not adopted because of the presence of the roof terrace at second floor which would turn a low level flat roof into an opportunity for a prominent roof terrace.

6.31 A BioInnovation building is heavily serviced and access for deliveries and waste removal was always a consideration. The move away from a clear rear elevation meant that creating a discrete service delivery area was more difficult. Some screening has been afforded to the south by the inclusion of a single storey building to house waste stores and FM services. Landscape screening will be developed to the north to shield the service area from the main entrance.

Images showing how the design of the building changed in shape and style through consutlation with the RLBUHT and the Planning Authority (top being earliest concept, bottom being the latest)



6.32 The landscape vision for the development site is as follows:

- A scheme that enhances the design of the building by linking it with the wider city environment;
- A high quality public realm that contributes to the presence of the building on this key city corner location;
- Maximum effect by introducing planting as screening where required and hard landscape materials that enforce and enhance the streetscape and provides a welcoming and legible approach to the building.

Landscape Strategy and Design

6.33 To achieve this vision the scheme can be zoned into the following areas with different landscape approaches for each as described below.

Daulby Street & Prescot Street Corner and Entrance Space

6.34 This zone has been designed to give a prominent setting to the front entrance of the building. It provides a high quality urban space that highlights the entrance. Views from the surrounding street have been taken into account to provide an interesting and legible street corner that supports the strong design of the building enhancing its main entrance. Within this space are opportunities for sitting and activity with suitable seating provided for lunchtime outdoor space.

Eastern fringe to the building

6.35 The space to the east of the building contains parking, a service yard and an access road to the car park that will be retained on the adjacent hospital site. The landscape in this zone has been designed to fulfil a number of roles.

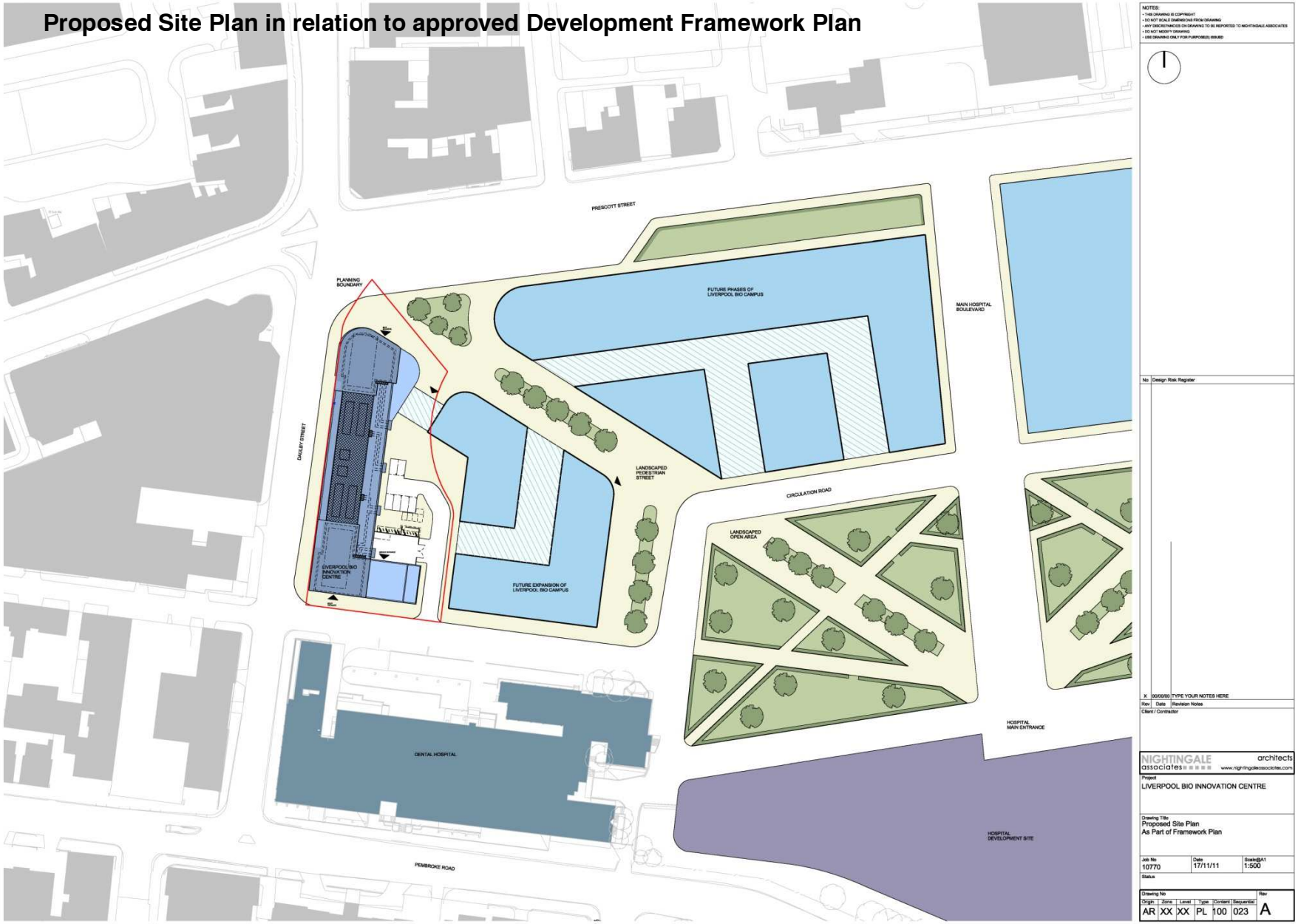
- to create breathing space between the proposed building and the adjacent hospital and associated access road;
- provide privacy to the lower levels of the building;
- provide planting that creates interest and animation, in comparison with the western side of the building, this side will see much lower footfall.
- Screen the service yard in an interesting and pleasant way

The Terrace

6.36 The terrace is a in a prominent position on the building and thus has a considerable presence on the street corner. Through the use of a specimen tree on this terrace we have provided a key focal point on the street corner that also gives seasonal interest and shade. It further links the building with its surrounding lower level landscape. The terrace has been designed as a 'break out' space for people working or visiting the building. It offers direct access to the outside and a key space for lunching, informal meetings and promotional events.

Landscape Proposal

Proposed Site Plan in relation to approved Development Framework Plan



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Project
LIVERPOOL BIO INNOVATION CENTRE

Drawing Title
Proposed Site Plan
As Part of Framework Plan

Job No	Date	Scale@A1
10770	17/11/11	1:500

Status

Drawing No						Rev
Origin	Zone	Level	Type	Content	Sequential	
AR	XX	XX	PL	100	023	A

7. Development Proposals

7.1 This section sets out the planning and design details of the Liverpool BioInnovation Centre.

Use and Quantum of Development

7.2 Covering an area of approximately 0.33ha, the extent of the LBIC site does not extend much beyond the footprint of the building itself. This is as because LBIC is the first phase in the future framework plan. For the next 5 years the building must coexist and function adjacent to buildings which will eventually be demolished as part of the RLUH PFI redevelopment.

7.3 A new access route is proposed servicing the building from the south and giving access to service yards, cycle park and a small car park adjacent to the east of the building. This route also facilitates access to an existing car park outside the development site to the north, which will be identified for use by the development. 40 car parking spaces will be allocated in that area, and these will include disabled spaces.

7.4 The site to the north of the building where its main entrance overlooks the Prescot Street/Daulby Street junction, shall be paved and landscaped in keeping with a prominent public place and as a part of the overall public realm framework for the site as a whole. Further details of the landscaping are described in section 7.

7.5 The LBIC building itself has a foot print of 1498 square meters (0.1498 hectares). It is a building designed for housing start-up companies specialising in Life Sciences and is a place where they are offered a specialized menu of support resources and services. It will comprise of a variety of facilities to support the Life Science companies in their early development. The following list describes components of the proposed building:

- The Business Support and Commercialisation Centre and the Proof of Concept Laboratory
- Flexible and open plan Cafe/Servery/Function/Networking areas for both formal and ad hoc meetings (allowing for the creation of further offices should they be needed in the future)
- Public Exhibition Area
- 18 Bookable office spaces
- 6 bookable meeting rooms
- 35 laboratory Suites of 100sqm each containing a laboratory and write up office
- Laboratory Support facilities such as goods and waste stores
- A 115 person Seminar Room with associated foyer and support facilities

Layout

7.6 Due to site constraints, the accommodation is arranged in a linear form over 5 floors and is accessed via a double height atrium and project upper floors at the northern end. The ground floor arrangement leads from the entrance atrium, reception and exhibition space through to the open plan cafe/server/flexible space, which site adjacent to a suite of bookable offices, meeting rooms, and staff welfare facilities. To the rear of the building the FM, support facilities and delivery area for the laboratories is screened from a rear staff entrance which give a more direct access to the south end of the building adjacent to the Dental School other related University facilities. The 4 floors of laboratory suites above are access from a single fully glazed corridor running the full length of the building. At the prow of the building the curved glazed facade surrounds prime office space while on the second floor this space has been opened up to proved a dramatic 90 person conference room and foyer space, both of which open out onto a roof top terrace.

7.7 The project brief required laboratory accommodation to be flexible, allowing for life science companies to expand into neighbouring suites as required. A steel frame affords ultimate flexibility and lab layouts and work benching has been designed to linking to neighbouring labs can be achieved with minimum disruption.

Exposed block walls have been requested by the client for robustness in the labs, though these are not load bearing and can be demounted with no structural implications. Service penetrations and runs have been located along periphery walls to minimise restrictions on future flexibility also. Ground floor office accommodation is divided using stud partitions which afford even more flexibility for future room configurations.

Scale and Massing

7.8 The LBIC has 5 floors of accommodations with a floor to floor height of 4.7 metres and a partially enclosed roof top plant room of 4.5 metres high. The building has been designed to a scale which is in keeping with the framework plan for the Royal Liverpool Hospital Site which outline planning approval has already been acquired. This dictated a guide building height of 31 meters which, other than fume ducts, we have remained below.

7.9 On the north side the LBIC responds to the Prescot Street junction where all 3 existing buildings on the opposing corners offer an increased height or amended roof line to the junction. Similarly the proposed developed steps up on the prow facing the junction, and uses the height of the plant room to emphasise its presence on the corner. The LBIC also takes a lead from the existing buildings in presenting a curved facade to the junction.

7.10 The building is in keeping with the height of the Dental Hospital which remains on the site after the Royal Liverpool University Hospital whole site development. The access road between the Dental Hospital and the LBIC will be a significant route into the new hospital site following redevelopment so a key driver for the scheme was to ensure that this end of the building had an appropriate scale and language. This has been achieved by using a vertical emphasis to the materials and by using the presence of the roof top plant room.

7.11 Being a linear building the LBIC presents a significant elevation to Daulby Street so various measures have been employed to balance the scale of this elevation:

- The ground floor has been recessed, with structure exposed breaking up the length of the building at eye level and offering a widened pavement
- Significant glazing has been used to both ground floor offices and upper floor corridors maximising the possibility of an active frontage
- The length of the building has been broken up by a change in massing as the building turns into the Prescot Street elevation, and the scale of the ground floor set back has also been increased in keeping with the main entrance of a significant building facing a public space. The introducing of a strong vertical emphasis to the facade and the change from glazing to solid cladding at each end of the building also contributes to the reducing in scale of the Daulby Street elevation.

7.12 Plant room at fifth floor has been set back so that its impact is reduced in the scale of the elevation as perceived from street level

Proposed north facing elevation

Proposed south facing elevation

Proposed main entrance

Appearance

7.13 As the LBIC is the first building to be developed on the emerging Liverpool BioCampus, and as such forms a flag ship for attracting further investment and thereby establishing a need for future developments, it is envisaged as an iconic and high quality piece of architecture.

7.14 A distinctive linear form, with a curved dramatic prow, a clearly defined main entrance with projecting upper floors above have been used in conjunction to high quality materials and large areas of glazing to give the building the desired presence. The buildings length has been broken up by the articulation of the 6.6 metre structural grid as defined by the laboratories themselves, while the curved end of the building facing Prescot Street is intended as a less rigid form, where a high quality horizontal glazing reflects the prime office space on the upper floors and seminar room on the second floor.

7.15 The simple forms and clean lines have been further enhanced by the avoidance of projections and brise soleil from the elevation design, which has in part been dictated by the presence of troublesome (and large) seagulls in the site vicinity.

7.16 All elevations have a constant horizontal banding which is intended to balance the vertical emphasis of the glazing/cladding to front and rear, unify the differing zones of the building and generally reduce the scale of the building.

7.17 The ground floor on Daulby Street is set back by 500mm to create a plinth for the building which reflects the scale of the street. Full height glazing between metal clad columns is frittered to give privacy on this and on upper floor levels.

7.18 The scale of the double height main entrances has been enhanced by locating it beneath the projecting upper floors plates, which form a natural canopy, and blur the boundary between the internal fully glazed atrium and the external covered space. To the side of the building the double storey main entrance appears to slide out from the footprint of the upper floors, along a slip plane formed by the canopy roof. The roof of the projecting ground floor footprint also

forms a landscaped terrace which is accessed from the second floor seminar room and foyer.

7.19 At the south end of the site the building has responded in scale and treatment to the stair tower of the Dental Hospital on the opposite corner of the street, creating a prominent hospital site entrance, which does not feel like it is passing between the rear sides of the 2 buildings. As such the service delivery yard to the LBIC has been screened from this road, however this is the route which will be used by service delivery vehicles accessing both the LBIC and the Dental Hospital.

7.20 The rear elevation to the east, also responds to the internal laboratory layouts, where the regular grid of 6.6 meters is accentuated by a combination of cladding, glazing and the 1 x 3 meter aluminium clad risers projecting from the building at the upper floors. These allow fume ducts to access the roof level where they eventually terminate above plant room level and are seen as an honest expression of the true function of the building.

7.21 At roof level the 2 plant- rooms at each end of the building are set back to reduce the impact of the buildings height, whilst the plant room roof projects by a meter to give the appearance of a penthouse loft space. 3 meter high louvred screens span between the two plant rooms to shield air handling plant etc. The screens and plant rooms are set back 5 meters on the east side of the building allowing the fume ducts to travel horizontally behind a 1.1 meter high parapet.

Materials and Design Quality

7.22 The high quality slick aesthetic desired by the client has been achieved with a simple palette of modern high quality materials, particularly large areas of structural glazing and curtain wall glazing, which is framed by areas of natural fibre cement cladding to emphasise different zones of the building. The glazing, particularly to the corridor on Daulby Street, has been used to expose the buildings constant 6.6m wide structural grid, which is further subdivided by the glazing sections to 3.3m. On the East elevation, where the vertically stacked labs and associated services afforded a less flexible approach to the elevational design, glazed vertical bands are subdivided by vertical bands of the natural fibre cement cladding, which incorporate the 4 projecting fume duct risers at the upper 2 floors of the building.

7.23 The metallic bands at each floor level connect through the different areas of glazing and cladding and the silver colour gives an accent to the other materials.

7.24 The glazing around the prow of the building is curved rather than facetted and the horizontal emphasis helps to define the curves.

7.25 Structural glazing is used around the main entrance and main entrance foyer at ground and first floor level to blur the boundaries between the inside and outside, and to give a dramatic public face to the exhibition space and feature staircase between ground and first floor.

7.26 At the rear of the building stack bonded roman brickwork is used to create a plinth which extends out to incorporate the waste stores and service delivery facilities. The ground floor projection also masks the service delivery yard from the Dental school to the south, although landscape screening will be needed to do the same to the north.

7.27 The plantrooms at each end at roof level are clad in a composite aluminium PIR insulated panel system, where as the 3m high screens to external plant area will be made from louvered panels.

7.28 Preliminary concept for external treatments of BioInnovation Centre:

- **CLADDING TO FRONT REAR AND SOUTH ELEVATIONS:** Fibre cement cladding panel (Marley Eternit Natura)
- **CLADDING TO ROOF TOP PLANT ROOM ALL ELEVATIONS:** Composite metal faced PIR insulation panel system (Kingspan Optimo)
- **LOUVRED PANEL TO ROOF TOP PLANT ROOM:** Extruded aluminium louvre blades in extruded aluminium section frames.
- **BRICKS TO SINGLE STOREY DELIVERY AREA:** Semi glazed roman bricks

- **EXTERNAL DOORS:** Factory finished steel doorsets with overpanels complete with SS ironmongery and weatherstripping
- **AUTOMATED CURVED SLIDING ENTRANCE DOOR TO MAIN ENTRANCE**: Circular door lobby with two sets of bi-parting curved sliding doors. Powered automated opening and closing (electric motor) with movement detection sensors (Record UK Ltd, model Reference 'RST 16'
- **GLAZING TO DAULBY STREET ELEVATION :** Aluminium framed double glazing (Technal MX GD Fully Capped Curtain Wall System) with frittening
- **GLAZING TO DUNCAN BUILDING ELEVATION :** Aluminium framed double glazing (Technal MX GD Fully Capped Curtain Wall System) with spandrel panel
- **GLAZING TO MAIN ENTRANCE 2ND. 3RD AND 4TH FLOORS :** Technal MX Toggle Thermally Insulated Curtain Walling System
- **BOLTED STRUCTURAL GLASS FACADE TO MAIN ENTRANCE GROUND AND FIRST FLOOR LEVEL:** Saint Gobain Structural Glass System, steel supported double glazed units

Material examples:

Fibre cement cladding panel (Marley Eternit Natura)

Composite metal faced PIR insulation panel system (Kingspan Optimo)

Extruded aluminium louvre blades in extruded aluminium section frames

Semi glazed roman bricks

Aluminium framed double glazing (Technal MX GD Fully Capped Curtain Wall System)

Saint Gobain Structural Glass System, steel supported double glazed units

Landscape and Open Space

7.29 The hard landscape materials follow the precedent of the other key spaces within the city using the Liverpool Public Realm Implementation Framework as guidance.

7.30 High quality stone paving will be used to the main entrance space. It will be a mixture of grey granites as used with great success elsewhere in the city, with a light grey granite kerb used to delineate the space.

7.31 Seating, bins and cycle parking will be a matching suite of brushed stainless steel street furniture to ensure that the scheme is easy to maintain and robust. A curved pre cast concrete bench provides an interesting alternative place to sit and also creates a key feature in the main entrance space.

7.32 All materials chosen ensure a crisp clean finish to the scheme that compliments the building design and the streetscape.

7.33 Soft landscape will be used to provide seasonal interest and year round colour to the space it will be a lively mixture of formal trimmed hedges and free flowing shrub herbaceous and perennial planting.

7.34 A timber structure will provide screening to the service yard, this will allow a range of flowering climbing plant to colonise this space softening the screen.

Safety and Security

7.35 The principles of Secured By Design have been employed in the development of the scheme design and landscaping. The approach has followed the following in principles

Integration

7.36 The building has developed in close consultation with the planning authority and through many development meetings with users and the client, to ensure that proposed scheme is resolved and fit for purpose. Due to time constraints in the development of the scheme a meeting with the police liaison officer has not yet been held but drawings have recently been issued to the Merseyside Police for comment and a meeting is planned in the near future.

Environment Quality

7.37 An general upgrading of the urban environment as been incorporated into the scheme design. The current open and intimidating car park has been replaced with a high quality piece of architecture which repairs the edge of the Hospital site, and continues the line of other buildings on Daulby Street. High quality materials in both the building and the landscaping are intended to upgrade the surrounding environment and generate future development which will further upgrade the area. The building is envisaged as being open between the hours of 8am and 6pm, though access to all entrances will be controlled at all times. The open reception area has a staff base which will be manned during office hours. CCTV cameras will be employed externally and lighting has been designed to appropriate standards and lux levels to maintain good visibility even when the building is shut and internal lighting is switched off. A lighting scheme has been provided as part of the application which demonstrates this approach.

Natural Surveillance

7.38 An open aspect has been included in the design where significant areas of anti bandit glazing afford good visibility around the building and from inside the buildings ground floor into the surrounding site. The service delivery area required by the function of the building has been enclosed by secure 2.4m high weld mesh fencing with lockable gates. Canopies where provided are at high level roofs so do not encourage for loitering and anti social behaviour.

7.39 Due to a relatively restricted site, the landscaping around the building is limited in extent, concentrating on uplifting the quality of the materials around the main entrance leaving site boundaries open into the surrounding area.

Sustainability

Sustainability Protocol for Estate Development

7.40 Whilst Liverpool City Council does not have specific renewable energy provision targets, local and national planning policy supports the promotion of renewables where possible. The Trust have requested that the design team and contractors consider Government sustainability targets when designing and implementing the new Bio-Innovation.

7.41 It is a requirement that all work will achieve the standards laid down in the Building Regulations L2 and also achieve a BREAAM Healthcare Excellent rating.

7.42 Design teams will ensure that all contract specifications / briefing documentation clearly spells out the obligations that Projects must meet.

Energy

7.43 The NHS has issued stringent criteria to be adopted in new and refurbished buildings for mandatory energy targets, with new build at 35-55 GJ/100m³ per annum.

7.44 Design solutions for all projects should consider the use of the following technologies:

- variable speed drives
- high efficiency motors
- heat recovery
- insulation
- lighting and effective controls
- light sensor and movement controls

7.45 All new build schemes must consider the provision of 10% of energy consumption from renewable sources.

Environment

7.46 The environmental aspects of construction work are also a key element in the Trust's philosophy to reduce the environmental impact of the hospital site. Therefore, all proposals must address:

- noise reduction by the project
- noise reduction by replacement of equipment
- water use and recycling to reduce consumption
- effluent creation and contamination
- packaging minimisation and removal from site
- waste materials and safe removal from site
- use of environmentally friendly materials as defined in NHS Guidelines

7.47 This includes the use of sustainable source wood, water based paints and finishes, carpets and floor coverings from sustainable sources etc.

Renewable Energy Provision

7.48 The design team are looking to meet the Trust's Energy aspiration of 55GJ/100m^3 per annum. The 55GJ refers to the total energy of the Building, i.e. thermal and electricity and the current expectation is that all of the energy will be provided by the existing Royal Liverpool Hospital Combined Heat & Power (CHP) installation. The CHP will provide heat in the form of steam and we will provide steam/LPHW calorifiers for the building heating requirement. The CHP will provide electricity at High Voltage and we will provide transformers and associated switchgear for the building electrical requirements. The primary energy source for both heating and power is the site wide CHP system and no dedicated heat producing appliances are intended for the building, also there is no dedicated incoming electricity supply from the statutory undertakings intended, as this is also taken from the CHP system.

7.49 Renewables currently take the form of all heat and power being taken direct from the site wide CHP plant. There is a Capital Sum allowance included in the Project Budget to cover additional renewables and if required, these will take the form of roof mounted Photovoltaic's (PV's) and/or roof mounted Solar Thermal Domestic

Hot Water located on the plantroom roof and/or Air Source Heat Pumps located within the plant enclosure behind screens. Ground Source Heat Pumps have been discounted due to the confined nature of the site as there will be insufficient area available for the loops or boreholes. Wind Turbines have also currently been discounted (but will be reviewed again at detail design stage) on the grounds of noise with the site being close to/integral part of a major hospital and also on aesthetic grounds to reduce the visual impact of roof mounted plant. The PV's and the Solar Thermal will be inclined at an angle of approximately 30-45 degrees, they will not be installed horizontal.

7.50 Mechanical Plant will generally be located within plant rooms or behind screens so should not be visible from the ground. The only exception to this is the Fume Cupboard Extract ducts and fans, the fans will be open on the main roof on the Duncan Building elevation side of the building. The fume extract ducts extend 3m above the plant room roof in order to dissipate any fume cupboard discharges.

7.51 Due to the nature of the Building, i.e. Laboratories, the building has to be a Mechanically Ventilated Building in order to maintain the pressure regimes required in the laboratories, therefore there is no opportunity for natural ventilation because of the function of the building process. The Mechanical Ventilation systems (with the exception of fume cupboard extract) shall be complete with heat recovery on the supply and extract, to use the heat in the extract air to pre heat the incoming fresh air. The method of heat recovery is still to be finalised, but will take the form of plate heat exchangers, thermal wheels, run a round coils etc.

Maximising social benefits

7.52 The Trust actively seeks to maximise the benefits of construction for its local community and contractors will be expected to commit to the following objectives:

- Maximise the engagement and recruitment of local people
- Provide a workforce that is representative of the local population and provide evidence of steps taken towards achieving this.
- Maximise the use of local contractors and sub-contractors
- Ensure that the skills of existing workers are enhanced through training and lifelong learning
- Enable local construction firms to compete for the new construction works
- Develop and consolidate local business linkages
- Ensure that all contractors and sub-contractors implement legally compliant best practice equal opportunities policies and procedures and provide evidence to demonstrate their contribution to these objectives, including diversity statistics for their workforce

7.53 Contractors will be required to set out a strategy for achieving these objectives and any other proposals it might have for maximising the benefits of construction where practicable, along with a process for monitoring its achievement. This strategy should be fully supported by their sub-contractors and must clearly identify:

- That the Contractor and its supply chain have a formal training plan in place for the development of the project workforce
- Specify the proportion of the workforce that will be trainees, apprentices or long term unemployed
- Specify the proportion of hours worked in delivering the project that will be undertaken by trainees, apprentices or long term unemployed

8. Access and Movement

Public Transport

8.1 The development site benefits from being located within approximately 50 metres walking distance of the southbound bus stop on Daulby Street; the eastbound bus stop is located on Prescot Street A57, 100 metres away, and the westbound bus stop a little further away. It is approximately 150 metres walking distance of the bus stops on the eastbound carriageway of Pembroke Place A5047.

8.2 The recommended walking distance from a development to a bus stop by IHT in their 'Guidelines for Planning for Public Transport in Development' is 400m. The walking distances from the development site to the local bus services are therefore within the recommended distance.

8.3 All the bus stops in the area have good waiting facilities for passengers with shelters, seating and bus timetable information.

8.4 The site is within walking distance of Lime Street Station.

Vehicle Access

8.5 Vehicular access to the proposed development is only possible from Daulby Street providing one way access from London Road. Access to the site is also possible from Prescot Street and Moss Street. The site is also situated within easy access from Islington, Scotland Road and the Mersey Tunnels providing links to Wirral, Chester and further afield.

8.6 Servicing vehicles will access the site via the same access point.

Pedestrian Access

8.7 The main pedestrian access to the development will be via entrances on the corner of Daulby Street / Prescot Street and one at the south of the development off Daulby Street. An additional entrance will be available at the back of the development where servicing and deliveries will take place.

8.8 Daulby Street has a footway with street lighting on both sides. The northern end of the road forms a signal controlled cross junction with London Road, Prescot Street and Moss Street. This junction has signal controlled pedestrian crossings with dropped kerb and tactile paving. The southern end of the road also forms a signal controlled T junction with Pembroke Place. This junction has signal controlled pedestrian crossings with dropped kerb, tactile paving and pedestrian railing.

Emergency Access

8.9 Emergency vehicles will be able to access the site without the requirement for any additional emergency access arrangements.

Vehicle Parking

8.10 Liverpool City Council's parking standards as set out in the SPD document 'Ensuring a Choice of Travel' states that a maximum total of one space per 40 square metres should be followed. This allows for a maximum of 99 spaces on the site.

8.11 In accordance with the maximum standards set out in 'Ensuring a Choice of Travel' a limited number of car parking spaces are to be available due to the sustainable location of the proposed development and the nature of the likely individuals working in the development.

8.12 Six spaces will be provided as part of the proposed development for use as disabled and visitor bays. Disabled bays will be provided in line with the SPD document.

8.13 20 car parking permits will be made available to staff working in the proposed development to park within the RLBUH car parking facilities permitting 20 individuals to park on the wider site. 20 parking spaces just to the north of the proposed building, will also be made available for staff. As part of the travel plan being prepared for the proposed development car sharing is to be promoted to encourage greater occupancy than one person per vehicle accessing the site in relation to the BioInnovation Centre.

8.14 Changes to the number of staff accommodated within the existing Duncan building on the RLBUH site are to take place during 2012. The reduction in the number of staff based within this building will

result in a reduction of demand and pressure on site car parking as a result thus making space available to accommodate a number of staff to be employed within the proposed development.

8.15 In addition, the medium term parking and Travel Plan strategy for the Royal Liverpool University Hospital is to reduce the number of parking spaces available on-site from the current 1100/1200 to 1000 spaces.

8.16 Other car parking is available nearby including the 500-space Q Park car park on Epworth Street and smaller pay by the visit car parks on Prescot Street, Pembroke Road and Daulby Street opposite the site access.

8.17 Redevelopment of the hospital and development of the BioCampus as a whole will be carried out within an established Framework which addresses car parking as part of the broader masterplan.

Cycle and Motorcycle Parking

8.18 Cycle parking will include spaces for 10 bicycles in secure covered areas on site for staff use as well as 14 spaces within covered areas for staff and visitors. This exceeds the minimum requirement outlined in 'Ensuring a Choice of Travel' which requests 1 space per 400 square metres for staff and 1 space per 300 square metres for customers/visitors.

8.19 Space for 5 motorcycles will also be included within the site; this fulfils the minimum requirement of 1 space per 875 square metres as outlined in 'Ensuring a Choice of Travel'.

Access for All

8.20 The proposal will be fully DDA compliant. The building will benefit from lifts; disabled toilets are provided at the ground floor; and corridors and doors will be widened to provide disabled friendly movement.

8.21 The building will be designed to meet standards of Section M of Building Regulations.

9. Planning Policy Context

9.1 The purpose of this planning policy appraisal is to review national, regional and local planning policy, relevant to the development of the site, and to assess the scheme in light of these policies. The review should be read in conjunction with the other supporting documents that accompany the application.

9.2 The national, regional and local planning policy context relevant to the site include:

- National Planning Policy Statements and Guidance Notes
- Draft National Planning Policy Framework
- Regional Spatial Strategy for the North West
- Liverpool Unitary Development Plan (2002)
- Emerging Local Development Framework

Planning Policy Review

9.3 National Guidance of particular relevance to the proposal includes:

- Planning Policy Statement 1 – Delivering Sustainable Development (2005) and supplementary guidance Planning for Climate Change (2007)
- Planning Policy Statement 4: Planning for Sustainable Economic Growth
- Planning Policy Guidance 13 – Transport (2001)
- PPS 22 - Renewable Energy

9.4 As described later in this chapter, this planning application complies with current statutory national planning guidance.

9.5 The Draft National Planning Policy Framework (July 2011) has been out to consultation and it is expected that a final version will be published April 2012. An important emphasis of the NPPF is the presumption in favour of sustainable development, and other supporting themes including the support for economic development, B1 office uses to be supported outside the town centre and a continued commitment of high quality design.

9.6 This application complies with these draft principles, although this B1 Use Class remains within a mixed use area of the city centre edge, as annotated on the Liverpool UDP. This is covered further within this chapter.

Development Plan Determiantion

9.7 Section 38 of the Planning & Compulsory Purchase Act requires applications to be determined in accordance with the development plan unless material considerations indicate otherwise.

9.8 The Localism Bill received Royal Assent on 15th November 2011, and in doing so passed power to the Secretary of State for Communities to revoke Regional Spatial Strategies. Although the SoS has not formally abolished RSS, this is likely by April 2012, and as such, RSS should be given limited weight in determining this application.

9.9 The policies of the RSS provide general guidance on strategic planning issues for the period up to 2021. It is primarily intended to promote sustainable patterns of development and physical change in the region. It addresses issues of housing, economy, transport, education and health from a regional and spatial perspective. The following policies are relevant to this proposal

9.10 Regional Guidance (North West Plan 2008):

- Policy L1 – Health, Sport, Recreation and Education Services Provision
- Policy RT 9 – Walking and Cycling
- Policy DP1 – Spatial Principles
- Policy DP2 – Promote Sustainable Communities
- Policy DP6 – Marry Opportunity and Need.
- Policy L1 Health and Education Services Provision

9.11 The Planning and Compulsory Purchase Act 2004 requires all Local Authorities to prepare a new type of development plan – a Local Development Framework. Liverpool Council is working towards this.

9.12 The draft Core Strategy identifies and supports The Knowledge Quarter, as a key growth areas during the period of the Core

Strategy, "creating a range of job opportunities, to the benefit of residents of all parts of the City Region".

9.13 Until the Core Strategy is adopted, the UDP's 'saved' policies remain the starting point for planning decisions in the City.

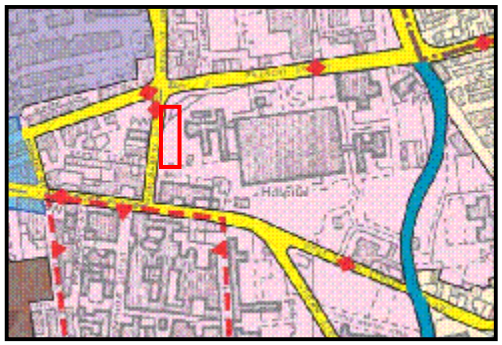
9.14 There are a number of policies, within the Liverpool UDP and the supporting Supplementary Planning Documents, relevant to this proposal:

- GEN1 Economic Regeneration
- GEN6 Transportation
- EP1 Vacant, Derelict and Neglected Land
- HD18 General Design Requirements
- HD19 Access For All
- HD20 Crime Prevention
- HD23 News Trees and Landscaping
- T6 Cycling
- T7 Walking and Pedestrians
- T9 Road Safety
- T12 Car parking Provision in New Development
- T13 Car Parking for the Disabled
- T15 Traffic Impact Assessment
- Ensuring A Choice of Travel SPD

Principle of Development

9.15 The UDP Proposals Map notates the site within a Mixed Use Area (where Policy E6 is applicable). The principle of development of new BioInnovation centre on this site is considered to be acceptable.

9.16 It accords with policy guidance in relation to the location of such facilities and the site's inclusion in a wider 'primary residential area' within the UDP where such uses are supported.



Proposal Map - Taken from the Liverpool UDP (Adopted November 2002)

Key

- **Indicative Red Line**
- Primarily Industrial Areas (E1)
- Mixed Use Area (E6)
- Site for Housing Development (H1)
- Primarily Residential Areas (H4)
- Proposed Extension of Conservation Area (HD7)
- Conservation Area (HD7 to HD14)
- London Road Shopping Area (S4)
- New Road Scheme (T10)

Support for Proposed Use

9.17 Local planning policy supports development proposals which contribute to the economic development and competitiveness of the City; and maintains and enhances the City Centre's role and function as a regional centre. Whilst the site is on the periphery of the City Centre, the proposal will respond to Policy **GEN9 - City Centre** key aims by:

- providing up to 300 highly qualified professional jobs
- strengthening the knowledge economy of the City, in creating adding to the 'Knowledge Quarter'
- Reusing a surface car park to improve the physical environment; and visual appearance and townscape character along Daulby Street.

Design & Sustainability

9.18 The proposal responds to the guidance of PPS1, in terms of the sustainable location of development and in delivering an essential service on a previously developed site. UDP **Policy HD18 General Design Requirements**, which sets out criteria for assessing new developments to ensure high quality design, has also been taken account of.

9.19 The proposal presents a high quality building and spaces that support the efficient use of resources. Throughout the design process, the design team has aimed to achieve the highest quality design solution for the site, whilst taking into account the approved outline consent for the main hospital redevelopment. This is further explained in the following Design and Access chapters. A full assessment of the site's context has been undertaken in the development of the siting, scale, form and massing and appearane of the proposal.

Crime Prevention

9.20 The proposal has evolved with regard to the principles of UDP **Policy H20 Crime Prevention** and Secured by Design Principles.

9.21 The crime prevention strategy will be discussed with the Merseyside Police Architectural Liaison Officer. The overall approach is to secure the proposed development through layout and design. The building improves natural surveillance on all four sides.

9.22 Maximising personal safety and crime prevention through design is fundamental to the development. Proactive crime prevention measures will be based on Secured by Design guidance principles. As part of the overall hospital redevelopment the Trust are developing a comprehensive Security Policy which will form part of the design brief for the new hospital and has met with Merseyside Police's architectural liaison officer, who is supportive of the scheme. The final design will require ongoing consultation with the Police.

9.23 Once redeveloped, pedestrian routes and public areas within the hospital grounds will be overlooked by buildings. Particular care will be taken in the design of the overall site to ensure that buildings are orientated to take advantage of natural surveillance of the hospital grounds and the areas of public realm.

9.24 Lighting will be positioned to deter and reduce the fear of crime, whilst landscape design and layout will ensure that natural surveillance isn't compromised.

Accessibility for All

9.25 The development, associated parking and external circulation space will be fully accessible to all, including access and egress to the building, movement within the new building and around external areas. The building will be fully DDA compliant. There are significant benefits of the location, on the within walking distance and part of the hospital and Knowledge Quarter. This is in line with UDP **Policy HD19 Access for All,** and guidance in PPS1, which seek to achieve a fully accessible environment for all.

Climate Change and Energy Efficiency

9.26 The proposal takes climate change impacts into account in the location and design of development and in order to minimise the use of energy in the building.

9.27 Whilst there are no locally set standards for energy usage, or renewable sources, **Policy EM16 Energy Conservation and Efficiency** highlights the need for developers to ensure their

approach to energy consumption is based on minimising consumption and demand and promoting maximum efficiency. In addition, aspirations for reducing emissions, sustainable construction and renewable energy are themes of national guidance set out in the supplement to **PPS1 'Planning for Climate Change' (2001)** and **PPS22 – Renewable Energy (August 2004)**

9.28 The proposal has been developed to take into account a government requirement to achieve a BREEAM excellent rating. To meet these standards, the scheme is designed to be as energy efficient as possible, using, wherever possible. The proposal will be heated by Combined Heat and Power system (CHP) from the existing RLUH, and there are opportunities for new solar thermal and photovoltaics on top of the roof plantrooms, as shown on the roof plans.

Natural Environment

9.29 The site comprises a ground surface tarmac car park with some trees, and has limited biodiversity value. 22 trees are to be removed. The tree survey identifies these as mainly being of poor quality. 7 trees are proposed on the frontage of the development together with trees to the rear of the site. Further tree re-provision will form part of the overall hospital site redevelopment, as part of a comprehensive landscape strategy.

9.30 This development proposes a soft and hard landscape proposal that creates quality public realm and strengthen the legibility and profile of key thoroughfares and entrances to the building and future hospital redevelopment site. In relation to ground conditions, a site investigation has been carried out and accompanies this application.

Flood Risk

9.31 The site is within an area of low probability to experience river or sea flooding (less than 1 in 1000 chance in any one year), where PPS25 Development and Flood Risk requires flood risk assessment at the planning application stage for developments of over 1 ha. The site area is under 1ha and therefore a flood risk assessment is not required to support the planning application.

9.32 The scheme will be served by adequate drainage to accommodate the potential surface water run-off and will incorporate a proportion of soft landscaping and trees which contribute to the attenuation of rain water

Transport

9.33 PPG13 promotes more sustainable transport choices; accessibility to jobs, and services by public transport, walking and cycling; and a reduction in the need to travel, especially by car. It also advocates not require developers to provide more spaces than they themselves wish; and encourages the shared use of parking, between major proposals.

9.34 The proposal accords with this guidance. It is at a sustainable location, accessible by a means of public transport and is within walking distance of the town centre. It provides an adequate number of motorcycle, and cycle parking spaces to promote sustainable travel choices, and is supported by a robust Travel plan Framework.

9.35 As required by UDP **Policy T15 Traffic Impact Assessment** and following agreement of scope with the City Council's Highways Officers, a Transport Assessment has been prepared to support the application; which makes an assessment of sustainable transport, traffic impact and car parking.

9.36 These supporting documents make an appraisal of sustainable modes of transport and sets out the scope for the Travel Plan to further reduce travel to the site by the private car. The conclusions of these reports are at Section 13 of this statement.

Cycle Facilities

9.37 In order to make cycling a viable method of transport to access the facility, for both visitors and staff, the proposal incorporates convenient safe and secure cycle parking in the development. In line with PPG15, **UDP Policy T6; Cycling** and the **SPD Ensuring a Choice of Travel.** This will include 24 Sheffield type stands to accommodate 14 bicycles for visitors and 10 secure staff bicycle spaces.

Car Parking

9.38 The proposal includes adequate space for to meet demand, in line with **UDP Policy T12 Car Parking in New Developments**, which

requires new developments to make provision on site to meet their minimum operational needs.

9.39 In accordance with PPG13, the City Council has adopted a series of car parking standards, set out in the Supplementary Planning Document, Ensuring a Choice of Travel. The parking provision proposed is based on applying the standards, and by analysing the parking demand of this type of use, based on the proposed number of employers expected throughout the day, as discussed in detail in the Transport Statement. This will ensure that there isn't an overprovision, which might serve to encourage people to drive who have other means of transport available, in accordance with PPG13 and other best practice guidance. The application is supported by a Travel Plan Framework which will promote sustainable travel, reducing the reliance on the private car.

10. Conclusion

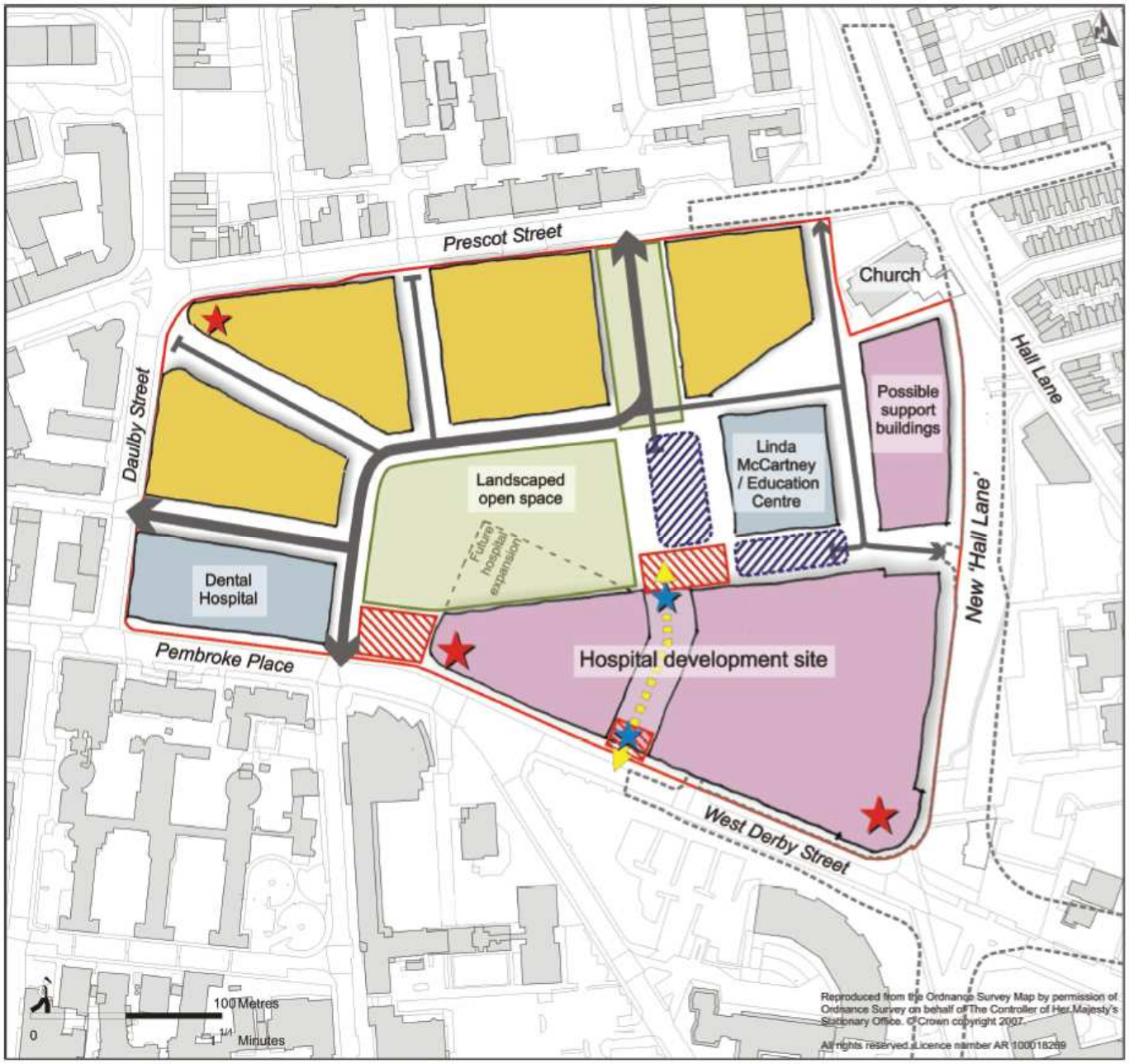
10.1 This Planning, Design and Access Statement, supported by a suite of documents and plans, details the development, its functions and impact. The proposals have been assessed in the light of national and local planning policy and are demonstrated here to accord with those policies.

10.2 This development proposal complies with the approved Development Framework Plan for the hospital redevelopment and will form a vital part of the Liverpool BioCampus and Knowledge Quarter. It provides a landmark contextually designed building and public realm that signals major inward investment in the City, creating a lasting legacy for Research and Development and provides opportunities for up to 300 professional jobs.

10.3 It is at a very accessible location by a range of sustainable modes of travel and the proposal demonstrates sustainable development through design.

10.4 For these reasons this application should be approved.

Appendix 1 - Site Parameter Plans



Royal Liverpool University Hospital

Framework Plan

Plan 11

Key

- Hosiptal Site Boundary
- Site for New Hospital Development
- Site for Buildings to be Retained
- Site for Possible Future Healthcare Buildings
- Drop Off / Arrival Places
- New Squares
- Principal Routes
- Secondary Streets
- Link Through Hospital
- Boundary of Liverpool City Council proposed new Hall Lane route
- Landmark Building Opportunities
- Principal Hospital Entrances (Distinct and prominent design)

drawn by: CB
checked by: PS
date: Nov 2007
drawing no: 3189.DA11
scale: 1:2,000@A3

taylor young|ty

Royal Liverpool University Hospital

Access

Parameter Plan 3

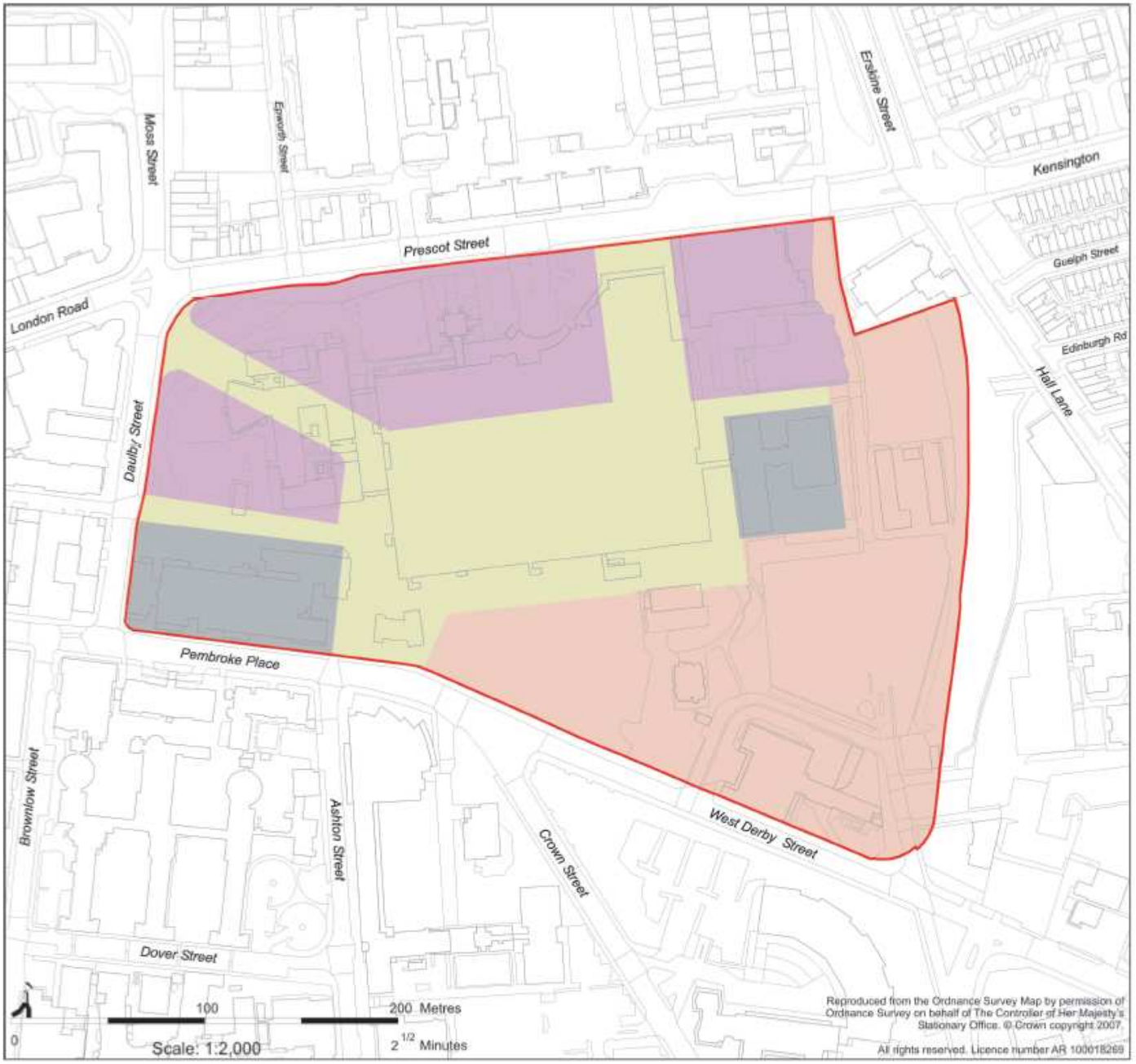
This plan should be read in conjunction with paragraphs 6.7 - 6.13 of the accompanying Design & Access Statement.

Key

- Site boundary
- Principal vehicle access / egress zones
- Secondary service and 'blue-light' access / egress zones
- Principal pedestrian / cycle access
- Vehicle connectivity and possible bus routes
- Other access routes / streets
- Walking route through hospital building
- Indicative location of arrival places to hospital

drawn by: CB
checked by: PS
date: Nov 2007
drawing no: 3189.pp003vf
scale: 1:2,000

taylor young|ty



Royal Liverpool University Hospital

Principal Site Components

Parameter Plan 4

This plan should be read in conjunction with paragraph 6.14 of the accompanying Design & Access Statement.

Key

- Site boundary
- Core area of hospital development including initial access arrangements
- Area principally for future health related development & ancillary activities
- Dental Hospital & Linda McCartney Centre / Education Centre *1
- Completed hospital access and public realm

Notes:

**1 However the Framework recognises that proposals may be brought forward for these parts of the site which are consistent with the overall parameters for development.*

drawn by: CB/AC
checked by: PS
date: Nov 2007
drawing no: 3189.pp004_sF
scale: 1:2,000

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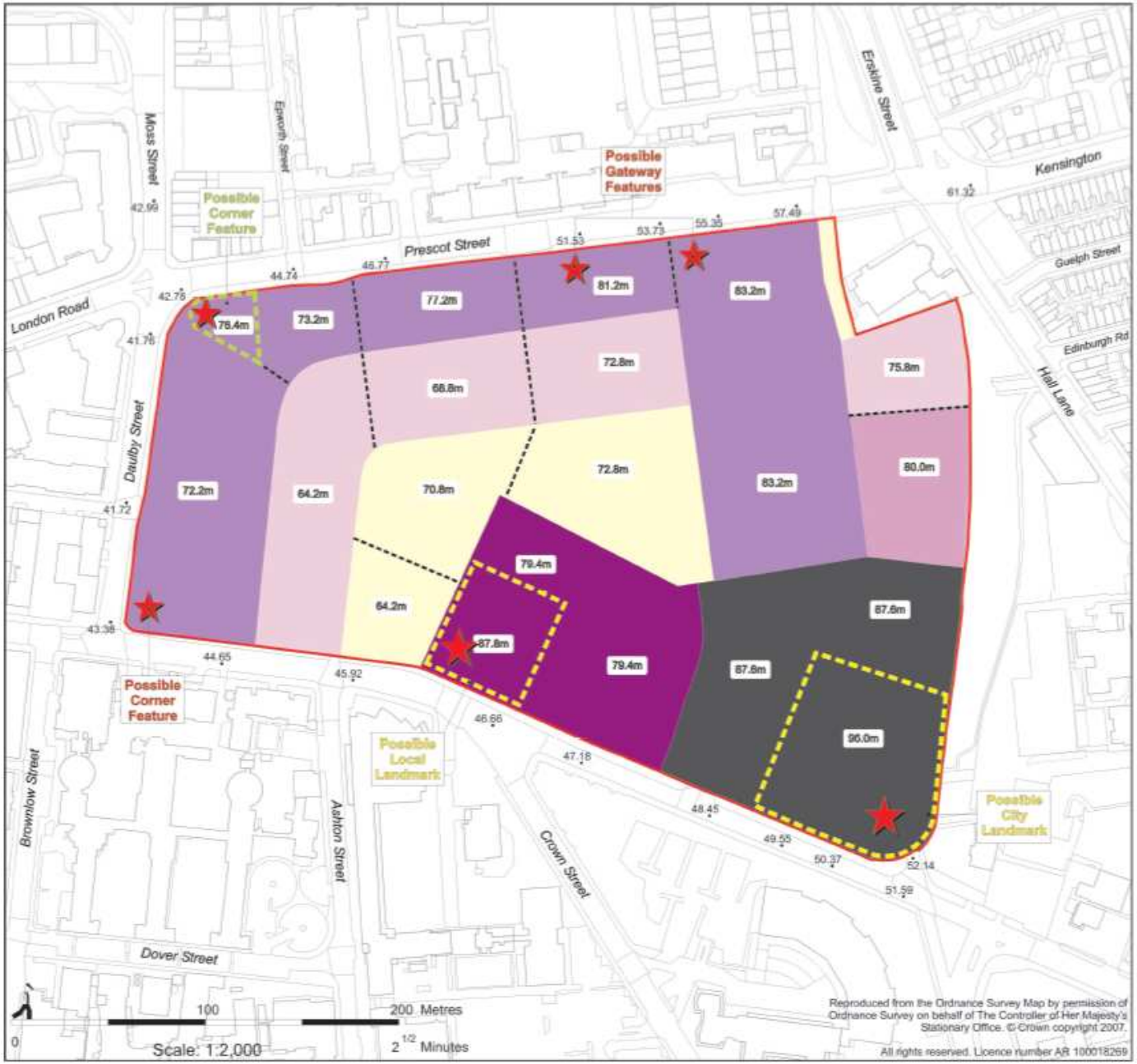

Royal Liverpool University Hospital

Height and Massing

Parameter Plan 5

This plan should be read in conjunction with paragraph 6.15 - 6.20 of the accompanying Design & Access Statement.

Key

- Site boundary
- Approximately 4 storeys
- Approx. 4 / 5 storeys
- Approx.6 storeys
- Approx.6 / 7 storeys
- Approx.7 / 8 storeys
- Area not envisaged for buildings (maximum heights identified were buildings to intrude into these areas
- Up to 2 additional storeys in these areas
- Up to 1 additional storey in these areas
- XX.XX Exisiting spot heights edging site (Metres above ordnance datum - AOD)
- XX.Xm New building heights (Metres above ordnance datum - AOD)
- Landmark building opportunity

notes:
Heights relate to heath related buildings with assumed storey heights of 4.2 metres, with a 2 metre roof. Plan shows hieght zones rather than building layouts.

drawn by: CB/AC
checked by: PS
date: Nov 2007
drawing no: 3189.pp005_vF
scale: 1:2,000

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Appendix 2 - Site Surveys / Supporting Statements

Tree Survey (December 2011)

10.5 A tree survey has been provided which accompanies this application. Whilst 22 trees are to be removed, the tree survey notes that most of these are of a poor quality.

Transport Statement and Travel Plan Framework (December 2011)

10.6 The transport statement concludes that:

- The development is well linked to the existing pedestrian and public transport network. The development site is located within the IHT recommended walking distance of bus services which provide access to a number of destinations.
- The traffic generation of the development has been estimated using trip rates from the TRICS database. The traffic generation of the proposed development will not have a material impact on the surrounding highway network.
- Parking provision for the development is in accordance with Liverpool City Council's parking standards. JMP conclude that the level of parking demand generated by the site will not have a material impact on the surrounding highway network. There is sufficient capacity within the RLBUH site and in nearby car parks to absorb demand.
- A travel plan is being developed to promote sustainable travel options to staff based within the development.
- The required visibility splays at the vehicular access point and servicing arrangements are appropriately accommodated by the development proposals.
- On this basis of this Transport Statement, we would expect the proposed development to result in no material increase in peak hour traffic. The layout of the development is such that the local highway network would not be adversely affected.

10.7 In light of the assessment it is concluded that there are no traffic or transportation grounds on which to refuse the proposed development application.

10.8 The Travel Plan Framework identifies the sustainable transport measures that can be implemented at the Bio Innovation Centre development prior to occupation in order to promote use of sustainable methods of travel by future occupiers.

10.9 Given the highly accessible location of the site, an effective Travel Plan will assist in promoting sustainable travel by all site users and hence reducing the need for car use.

10.10 Through delivery of the measures discussed within this Framework Travel Plan, the Travel Plan objectives identified can be met, as follows:

- To improve access and provide safe access to the development site by a variety of transport modes;
- To seek to manage the overall level of car use journeys to and from the site;
- To promote and maximise the proportion of site users travelling to the site by more sustainable modes, for
- example, public transport, walking and cycling;
- To provide information regarding the choice of alternative transport modes available;
- To promote healthy lifestyles and a sustainable vibrant community i.e. through raising awareness of the environmental and health benefits of using more sustainable modes of transport;
- To manage the demand for parking; and
- To minimise traffic generation on the local road network.

10.11 It is concluded that this Framework Travel Plan provides a firm basis for ensuring that the objectives, targets and delivery mechanisms are taken on board within the full Travel Plan once the site is occupied.

Ground Investigations Report (November 2011)

Desk Top Study and Geo-Environmental Investigations

10.12 A desk top study and on site investigation work was completed by GRM Development Solutions Ltd in October/November 2011 and a full report ref GRM/P5597/F.1 is available for reference.

10.13 The key findings can be summarised as follows

Historical development of the site

10.14 The site is currently covered by a surface car park serving the main hospital and is designated for staff use.

10.15 Prior to construction of the current hospital the site contained various developments including residential properties, a timber yard, picture house and cold storage buildings. The area surrounding the site has generally contained residential development since before 1893.

Site geology

10.16 The site is underlain by a solid geology of Triassic Wilmslow and Helsby Sandstone formations (both part of the Sherwood Sandstone Group) and sits above a Principle Aquifer. No cohesive deposits are present above the Sandstone.

Contamination Phase I and II Conceptual Model

10.17 Full details of the phase 1 and 2 conceptual model are outlined within the main report but conclude that after on site testing no remediation of the site is required. Protection of site users and controlled waters are not considered necessary. No radon protection measures are required. Gas monitoring is currently ongoing and basic protection measures have been assumed until final results are available.

Geotechnical Assessment

10.18 The on-site investigation included 6No window sample taken down to the natural rock head (when possible) to confirm the depth of filled ground below the site. Disturbed samples from each location where retained for analysis and gas monitoring wells established in two locations.

10.19 The investigation confirms filled ground to a maximum depth of 3.0m which relates to the presence of cellars and basements to the previous developments across the site.

10.20 Due to the relatively shallow depth of fill and obstructions in the form of old foundations and substructures it is proposed to adopt pad foundations bearing directly onto the Sandstone strata. The minimum bearing capacity of the rock as been conservatively assessed at 300KN/m2 and further insitu testing will be completed to confirm this value.

10.21 The ground floor slab will be suspended insitu concrete cast on the filled ground spanning between sleeper walls or ground beams bearing onto the main pad foundations.