



NATIONAL PAEDIATRIC HOSPITAL PROJECT

DESIGN REPORT

new children's hospital

Children's Research and Innovation Centre (CRIC)

Family Accommodation Unit (FAU)

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1.0 Introduction

This Design Report, prepared by Building Design Partnership (Architects and Landscape Architects) and O’Connell Mahon Architects, gives an overview of the new children’s hospital, proposed by the National Paediatric Development Board (NPHDB) on behalf of the Children’s Hospital Group (CHG) for a site on the campus of St James’s Hospital, Dublin 8.

The new children’s hospital will be a world class facility to look after children and young people from all over Ireland, who have complicated and serious illnesses and are in need of specialist and complex care. The hospital and the two proposed satellite centres in Dublin will also provide all the ‘local hospital’ paediatric secondary care to children in the local population. The project will bring together three existing children’s hospitals: Our Lady’s Children’s Hospital Crumlin, Temple Street Children’s University Hospital and the National Children’s Hospital at Tallaght Hospital. These hospitals will merge to form the Children’s Hospital Group before transition to the new facilities.

This Report focuses on the proposals for new developments on the St James’s site, as set out in section 1.2 below. In the words of the design brief the new Children’s Hospital must “**welcome, comfort and celebrate the diversity of children, young people and families**” and be a “**landmark facility**”. It must be “**conducive to well-being and raise the spirits of children, young people, visitors and staff**”. The new hospital will embody international best practice in the design and operation of a facility of this type, ensuring that clinical layouts and flows support effective working practices but also enhance the patient and family experience. In this respect the brief acknowledges the important part architecture has to play in creating a therapeutic and welcoming ambiance and a distinctive child-friendly identity.

As part of this identity the brief also emphasises the new hospital’s status as a national centre of paediatric excellence – a civic building which is expected to contribute to its urban context and reflect its status through an attractive and appropriately scaled public realm.

Two other proposed buildings complement the provision of the new Children’s Hospital on the St James’s campus and are described in detail in this Report: the Children’s Research and Innovation Centre (CRIC) and the Family Accommodation Unit (FAU). The CRIC is proposed for a largely vacant site next door to the existing academic facilities in the north-eastern quadrant of the St James’s campus. This maximises clinical linkages to existing laboratories and will reinforce the quality of both paediatric and adult healthcare research on the campus. The 53-bed FAU is proposed on an area of the main children’s hospital site just to the west of the hospital’s main entrance. This will provide essential facilities for parents and siblings of sick children with extended hospital stays to allow them to stay together in the vicinity of their sick child at what is a very traumatic time for all. This is especially important for families who reside outside of the Greater Dublin Area. The facility is connected to the new children’s hospital through a shared basement.

The Design Report should be read in conjunction with the other documents and drawings comprising the SID application, including the Environmental Impact Statement (EIS). The EIS chapters give a fuller picture of the planning and policy context for the children’s hospital as well as greater detail on a wide range of important project parameters, including engineering, infrastructure and heritage issues. A number of these chapters will be cited in the course of this Report as the EIS assessments have been

a very important influence on the way that the design has evolved over the course of the project.

The main body of the Design Report is divided into three sections, covering architectural proposals for the new children’s hospital, CRIC and FAU, followed by sections covering our integrated proposals for Landscape, Universal Access and Sustainability. These sections give an overview of how the proposals have evolved in response to the characteristics of the individual building’s sites and design briefs. The design thinking has also been informed by a number of other considerations, as mentioned above in relation to the EIS chapters. Some of these are expanded upon in a separate document Appendix submitted along with this Report: St James’s Campus Draft Site Capacity Study, incorporating the St James’s Campus Public Realm Strategy.

2.0 Outline Scope of Development

The overall scope of the proposed development on the St James’s campus comprises:

- the new children’s hospital with a Gross Floor Area of 118,113m², of which 87,677m² is above ground;
- a two-storey underground car park below the Children’s Hospital, catering for up to 972 vehicles for patients, visitors and staff;
- the Children’s Research and Innovation Centre with a Gross Internal Area of 2,971m².
- the Family Accommodation Unit with a Gross Internal Area of 4,,354m², of which 4024m² is above ground;
- public realm improvements to: the existing St James’s campus spine road; the linear park by the Rialto LUAS stop; and the public steps between Mount Brown and Cameron Square;
- improvements to the road junction at the existing campus entrance on St James’s Street;
- a new Energy Centre and flues serving the Children’s Hospital, which includes space provision for the energy infrastructure needs of the existing Adult and proposed Maternity Hospitals;
- infrastructure works, including the diversion of the existing Drimnagh Sewer;

These works are encompassed within the red line shown on the site plan included overleaf.

New Children's Hospital

Area of whole St James Campus	194,834 sqm
Area of New Childrens Hospital Site	48,530 sqm
Total no of Floors	11 floors
Total number of floors excluding Car Park & FM & Plant	8 floors
Total Area of new children's hospital	118,113 sqm
B02	11,306 sqm
B01	738 sqm
LG	18,392 sqm
G	18,381 sqm
L01	16,359 sqm
L02	16,315 sqm
L03	15,489 sqm
L04	7,210 sqm
L05	6,899 sqm
L06	6,894 sqm
L07	130 sqm
Total above ground NPH area	87,677 sqm

Family Accomodation Unit

Area of whole St James Campus	194,834 sqm
Area of New Parents Accomodation Site	2670 sqm
Total no of Floors	5 floors
Tota Area of Family Accommodation unit	4,354 sqm
Total Plant:	101.6 sqm
Basement	329,78 sqm
Ground	1388,76 sqm
First	1197.69 sqm
Second	1050.85 sqm
Third	368.7 sqm

Children's Research and Innovation Centre

Area of whole St James Campus	194834 sqm
Area of Children's Research and Innovation Centre Red Line	2,170 sqm
Area of Children's Research and Innovation Centre Site	1,438 sqm
Total no of Floors - excluding roof level	4 floors (LG, G, 1, 2)
Total Area of Children's Research and Innovation Centre Facility	2,971 sqm
L-1 Gross Floor Area (LGF)	1,078 sqm
L0 Gross Floor Area (GFL)	639 sqm
L+1 Gross Floor Area (First)	674 sqm
L+2 Gross Floor Area (Second)	580 sqm

The new children’s hospital will provide specialist tertiary (National) and secondary services (Greater Dublin Area). The following paediatric departments/ specialties are essential components of a national facility of this type and are included in the proposed development:

- Allergy & Immunology
- Anaesthesia
- Nephrology
- Cardiology
- Cardiothoracic Surgery
- Child and Adolescent Mental Health
- Community Paediatrics
- Dermatology
- Dentistry Ear Nose & Throat
- Emergency Medicine
- Endocrinology / Diabetes
- Gastroenterology
- General Paediatric Medicine
- General Surgery
- Genetics
- Gynaecology
- Haematology / Oncology
- Infectious Diseases
- Metabolic Medicine
- Neonatology

- Neurology
- Neurosurgery
- Ophthalmology
- Oral Maxillo-Facial Surgery
- Orthopaedics
- Plastics, Reconstructive and Aesthetic (Burns)
- Psychiatry
- Palliative care
- Respiratory Medicine
- Rheumatology
- Urology

Direct clinical services are supported by a range of essential clinical and non-clinical support services including:

- Corporate Services:
- Allied Health Services:
- Clinical Support Services:
- Diagnostics and Treatment Services :
- Education & Research
- Environmental Services & Facilities Management:
- Volunteer Service

2.1 Shared Children’s and Adult Hospital Services

The development also includes the provision of a number of shared non-patient support facilities to provide an efficient service to both adult and children’s hospitals (and future maternity hospital) on the campus. These facilities include:

- Central Sterile Services Department
- Catering Department
- Materials Management Deliveries
- Waste Management Facilities
- Space provision adjacent to the proposed children’s hospital energy centre for a future St James’s and Maternity energy centre
- Tunnel link between the children’s hospital and St James’s for FM distribution

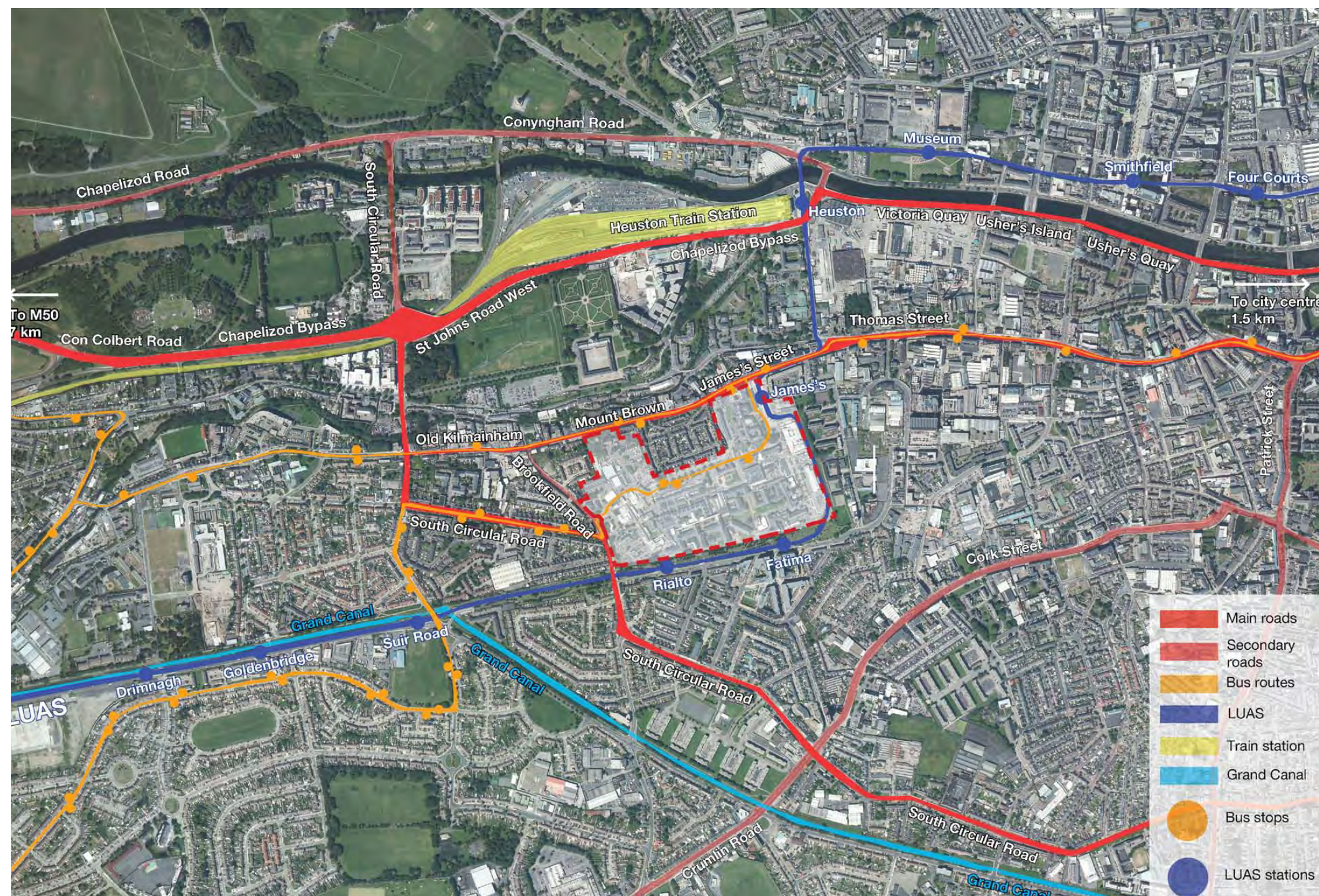
3.0 Existing Context

3.1 Site Description

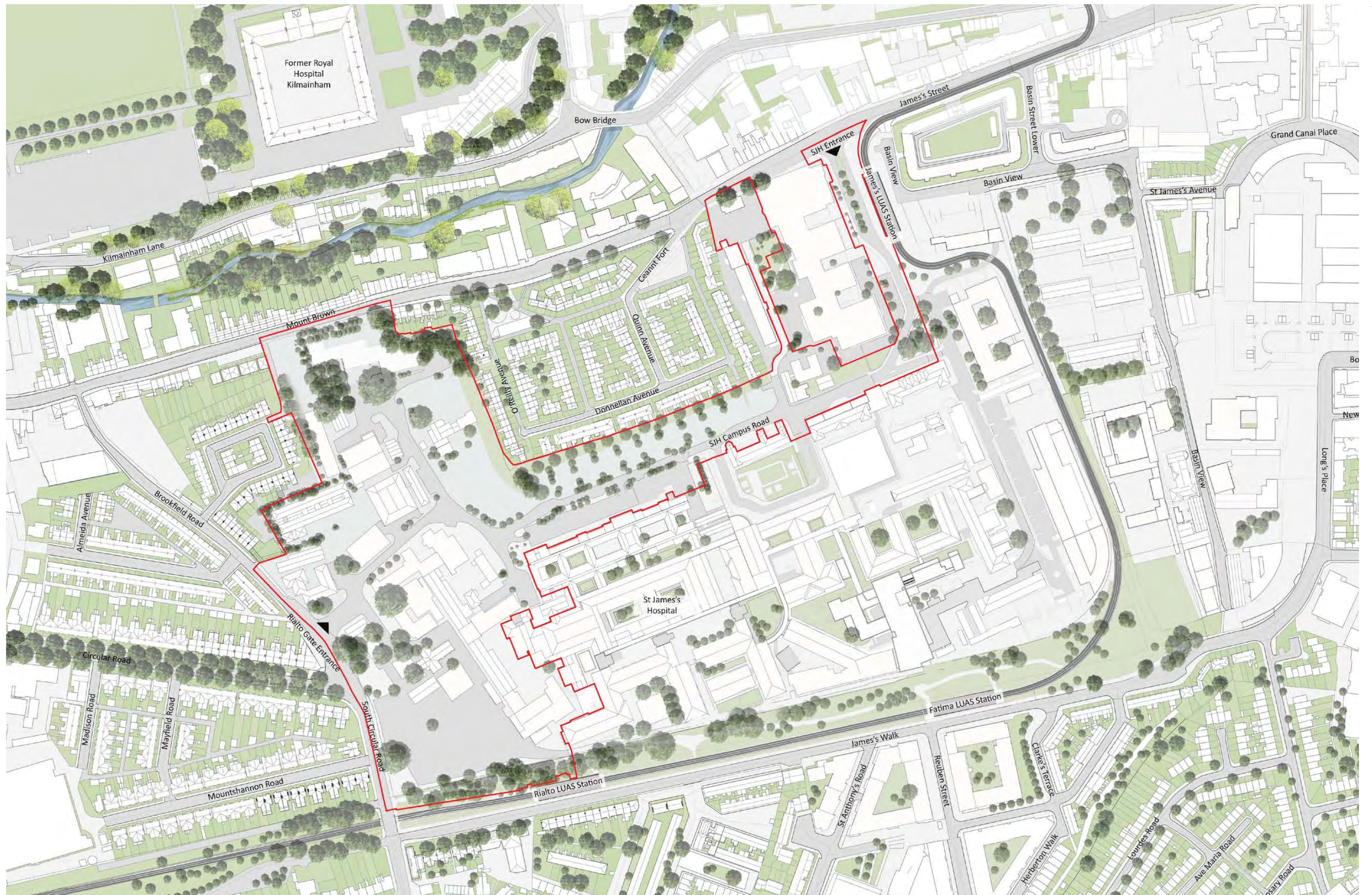
The total site area on the St James's Hospital campus is 19.48 hectares. Within this overall area the particular site ceded to the National Paediatric Hospital Development Board (NPHDB) for the new children's hospital is shown within the blue line in drawing below and has an area of 4.85 hectares.

The site is centrally located within Dublin City at the St James's Campus in postal district D8. The Campus is just west of the city centre, adjacent to the South Circular Road and is served with a direct stop by the LUAS at Rialto. The new children's hospital development is of national importance and will be a major factor in the transformation of this part of the city, through direct and indirect economic regeneration. It is also a key part of the clinical development strategy at St James's: the 'tri-location' model which aims to bring together children's, maternity and adult services alongside cutting-edge medical research with consequent benefits in terms of clinical outcomes and operational efficiencies as well as the patient experience and quality of research and innovation.

The site has street frontage onto the South Circular and Brookfield Road on its west side and the LUAS linear park on its south side. A small part of the site to the west of St James's existing Energy Centre fronts onto Mount Brown. The existing functions within the NPHDB site are being relocated by St James's Hospital and remaining buildings within the site will be vacated and demolished as part of the proposed development. (See section 2.3 below Proposed Demolitions).



Transport links



Existing site plan

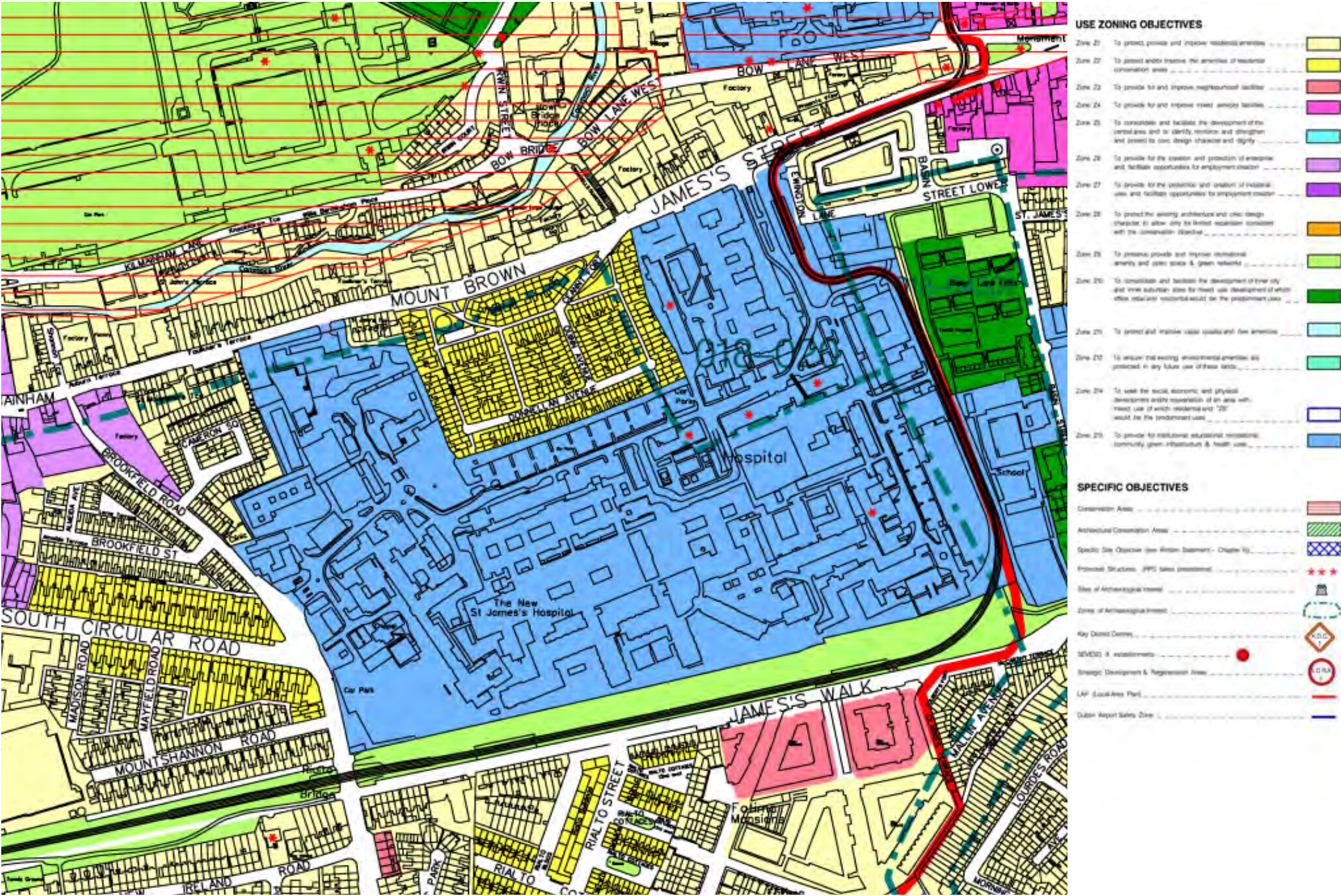
There are no Protected Structures within the children’s hospital site but the site is bounded on two sides by residential Conservation Areas: along the South Circular and O’Reilly Avenue.

The design of the children’s hospital has been influenced not only by the historic and environmental importance of these neighbourhoods but also by a sensitivity to the prevailing scale of houses here and along other site boundaries, like Cameron Square to the north-west.

3.2 Site Analysis

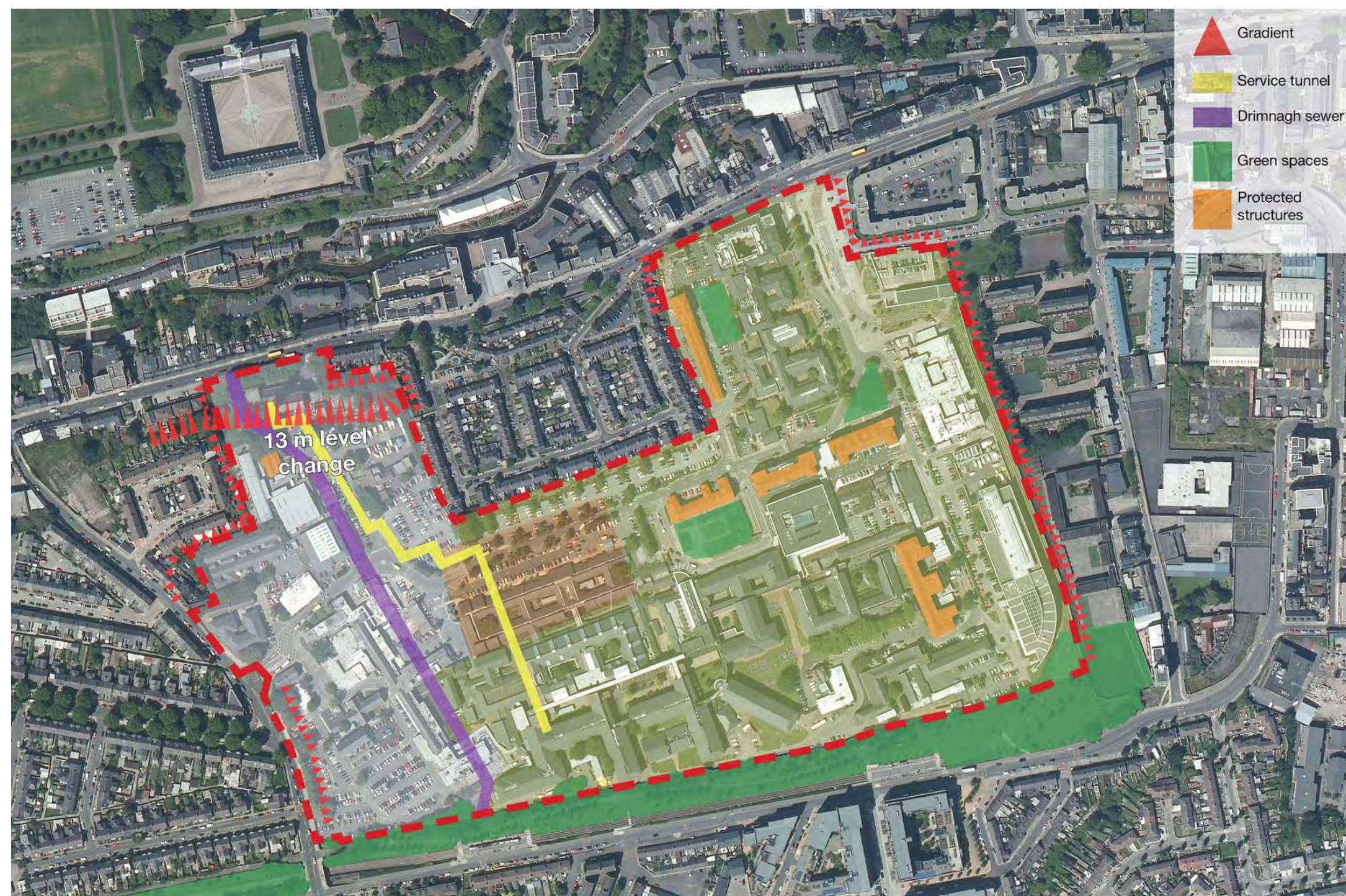
At the start of the project the proposed site was extensively surveyed and analysed by the multi-disciplinary design team. Parameters considered included inter alia:

- *Topography* – the site is largely flat, with a prevailing ordnance datum level for most of its area of between +20.0m and +20.5m, except for its northern end where it slopes steeply down to Mount Brown (+7.5m), a drop of circa 13m. The southern LUAS end also varies but to a much lesser degree, with a series of local levels that range from +21m to +21.8m by the Rialto LUAS station as the existing footpath rises up to the level of Rialto Bridge at +24m. This is a noticeably higher point on the south-western corner of the site but a localised characteristic;
- *Landscape* – initial perceptions of the site are that it has little landscape and is dominated by buildings and asphalt. A comprehensive tree and ecological survey has been carried out as part of the EIS, which assessed the condition and quality of existing trees and has informed our approach to the design of landscape, public realm and boundaries;



Conservation area plan

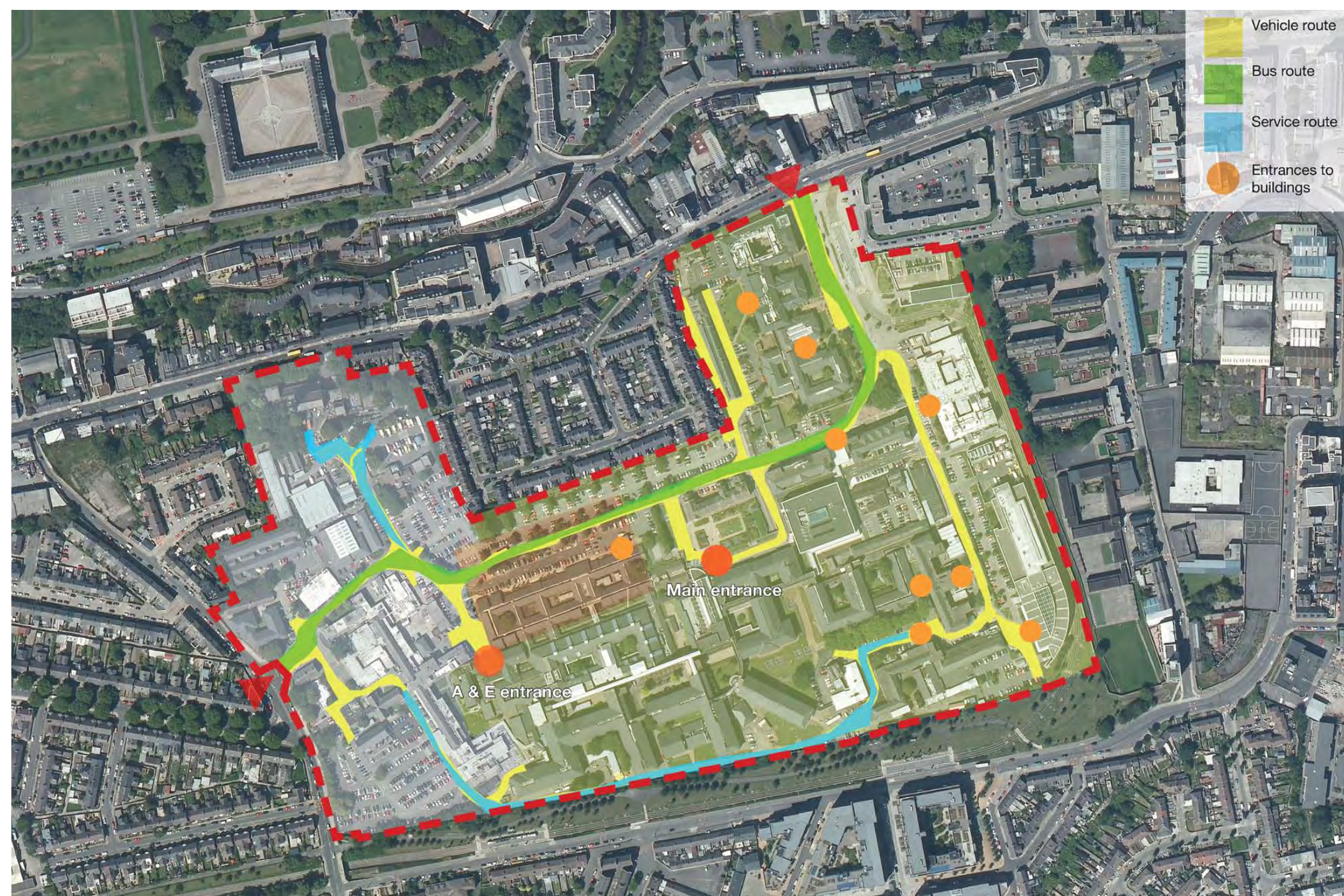
- *Access* – for a public campus of the scale of St James's the points of access are relatively limited. This is particularly evident on the site's southern edge along the LUAS linear park where the existing perimeter fence gives the campus a defensive demeanour and prevents direct access from the Rialto LUAS stop, forcing people to follow a circuitous route along the South Circular and enter the hospital much further north;
- *Circulation* – vehicular movement tends currently to be prioritised within the site, making circulation for pedestrians awkward and confusing. There is little or no provision for cyclists. There are regular bus services traversing the campus but bus-stops are relatively far apart and not integrated as well as they could be with the network of paths and building entrances;
- *Boundary conditions* – these vary considerably in nature around the site's edges. In many places existing fences and walls between the hospital and adjoining houses are in very poor condition. There are also a number of existing buildings situated very close to the boundary (including the Private Patients' Clinic and Laundry Building, on the site's western edge and the Ambulance Centre on the eastern edge), which provide little or no 'breathing space' for the adjoining residential terraces;
- *Links to St James's* – once existing buildings on the proposed site have been taken down the eastern edge of St James's Hospital will consist of the Main Hospital block and its extensions. This contains important clinical areas including the adult Emergency Department with its ambulance drop-off zone to which the ED in the children's hospital will need to connect. Other important future links include those associated with facilities management (supplies, waste and so on), so a dedicated



Site constraints

group was set up during the initial design stages to liaise with St James's and develop a detailed understanding of existing and anticipated FM flows;

- *Infrastructure* – as is to be expected with any large hospital facility, the existing site contains an extensive underground infrastructure network, including energy and services distribution, local foul and storm water drainage as well as the public Drimnagh sewer traversing the site in a south-north direction. All the services have been surveyed and strategies developed in consultation with St James's and relevant statutory or other bodies to divert, reprovide or safeguard them as appropriate;
- *Heritage and conservation* – a full heritage assessment has been prepared as part of the EIS. This confirms that there are no protected structures or buildings of architectural distinction on the children's hospital site. The neighbouring Conservation Areas are important considerations in terms of the visual impact of the future buildings and these have influenced the way that the building's massing has been developed;
- *Views* – the scale of the site means that it is visible from a range of vantage points in the immediate vicinity as well as further away. Views outwards from the site are constrained currently on a number of sides by the many existing buildings. Once these buildings have been removed, the site will become much more open and visually permeable. A significant new vista will be created towards the Irish Museum of Modern Art at Kilmainham, which lies directly to the north of the site with the Wellington Monument almost axially aligned behind it. The quality of this view, largely hidden at present by existing hospital buildings, was a strong early influence on our design thinking;



Routes and entrances

- Microclimate & environment– the north-south orientation of the site together with the low scale of surrounding buildings (both in terms of retained hospital buildings and neighbouring houses) means that there is good sunlight penetration throughout the day. In terms of wind the site's openness makes it quite exposed, particularly from prevailing south-westerly winds. Noise levels have been assessed as part of the EIS but initial impressions were that the only real source of noise intrusion is from traffic on the South Circular;
- Town-planning parameters – these were analysed closely by the architects in close collaboration with GVA, the appointed town-planning consultant. They are described in detail later in this Report together with the ways in which our proposals have responded to them;

3.3 Draft Site Capacity Study and Public Realm Strategy

The children's hospital will be a major addition to the St James's campus, fulfilling part of a longer term strategy to collocate children's, adult and maternity services: the 'tri-location model' described above. In recognition of the importance of achieving a successful integration of existing and proposed services and capitalising on the children's hospital investment to bring regeneration and employment benefits to the wider area, the NPHDB commissioned three reports in February 2015: a 'St James's Campus Draft Site Capacity Study' and 'St James's Campus Public Realm Strategy', focused on the potential offered by the campus itself (produced by BDP and O'Connell Mahon Architects – included within this Report), and a 'Report on Local Area Regeneration Opportunities', focused on the campus'



Existing environment and microclimate

These reports, taken together, show that there is real potential to develop and expand the existing campus in ways that integrate and expand clinical and research activities, improve the quality of the public realm and accessibility, and provide a positive impetus to other potential developments in the surrounding area. The site capacity study also demonstrates that the children's Hhospital and the other elements of the 'tri-location model', including provision for 20% expansion of all anticipated services, can be accommodated within the urban planning parameters set for the campus by Dublin City Council.

There are a number of existing buildings on the site allocated for the children's hospital which will be demolished as part of the current proposed development. For the most part, these buildings are a collection of ad-hoc developments which have been added to St James's Hospital over the lifetime of the campus. None of the buildings scheduled for demolition are protected structures under the meaning in the relevant Planning and Development Acts. The full list of buildings to be demolished is provided in Chapter 2 of the EIS: 'Description of the Proposed Development'.



1.0 Introduction

The NPHDB has set the challenge of creating “one of the finest children’s hospitals in the world”. First and foremost, this means that the new children’s hospital must represent state-of-the-art clinical functionality, providing the highest quality spaces for patients, families and staff and optimising the adjacencies and flows between departments to create an efficient, safe and therapeutic environment. At the same time, it must also relate to its context, integrating with the existing adult hospital campus and surrounding neighbourhoods to create an appropriate sense of place – a strong civic contribution to the city that is a fitting reflection of its national status.

The architectural design concept for the new children’s hospital is a comprehensive response to the following objectives:

- Compatibility with site and urban planning objectives
- Fulfilment of the clinical design brief
- Creation of a special place for children, young people, families and staff

The design process has not prioritised one objective over the other but treated all three as intertwined facets of the same design challenge. The proposals have evolved through an iterative series of client and design team engagements together with extensive stakeholder consultations in which the design approach was progressively developed both from the outside inwards (analysing and responding to the site context) and the inside outwards (analysing and responding to the brief’s clinical objectives). In this section we give an overview of the design process and describe in some detail the external and internal influences which have shaped our proposals. We then go on to describe those proposals in some detail, focusing on the overall experience, the underlying approach to clinical functionality, access and circulation, form and external identity.

2.0 Design Process

In the course of the preliminary design stage (August 2014 to February 2015) the design team structured the stakeholder engagement process around a number of key workshops and ‘gateways’. The first of these reviewed a ‘longlist’ of site and massing options which explored as full a range of design approaches as possible within the parameters set by the design brief, site characteristics and DCC planning guidelines. The options were evaluated at a workshop in October and a ‘shortlist’ of three selected for further development and consideration. These were then reviewed at a subsequent workshop in November and a preferred option selected. This was then refined further in the course of December and January and confirmed as the preferred design at the formal conclusion of the design stage in February 2015.

In the course of the next design stage (March to July 2015) the proposals have been presented to a large number of internal and external stakeholders. They have also been subject to intense scrutiny and design development from

the multi-disciplinary design team, client representatives and peer reviewers. They have undergone a number of cycles of clinical user consultation with clinicians from the three existing paediatric hospitals, which have yielded many detailed comments. This level of consultation has been critical in validating and improving the design and ensuring that the NPHDB and CHG have collective confidence in its appropriateness, quality and achievability.

The evolving designs have been presented on a number of occasions to Dublin City Council and An Bord Pleneala as well as to neighbouring residents, members of the wider local community and staff from the three existing children’s hospitals. In all cases comments were noted and, wherever possible, taken on board as part of the next iteration of the design.

For a fuller description of the consultation process and option selection please refer to Chapters 4 and 5 of the EIS: ‘Examination of Alternatives’ and ‘Human Beings’ respectively.

3.0 Key Drivers from the Design Brief

All hospital projects present a complex array of issues but paediatric facilities pose a number of unique challenges because of the nature and age-range of the patients and the close participation of their extended families. Children are particularly sensitive to the quality of their surroundings, so design considerations to do with colour, light, scale, views, which are important in all buildings, are doubly so in a children's hospital. All of these design dimensions have been explored over the life of the project so far and there has already been extensive consultation with patient, family and staff groups to harness their experience and insight. Our design concept has been shaped by a number of considerations, drawn from the design brief and clinical consultation process:

- **Child and family-centred identity** – this is the overriding principle at the heart of the children's hospital's model of care which permeates every aspect of the design, from its external form and scale through to the quality of the building's public spaces, bedrooms, interior finishes, play and learning spaces. Central to this challenge is

accommodating the broad age range of patients (from toddlers through to older teenagers) in ways that avoid the 'Disney-esque' and have a timeless appeal, not just to the patients but to families and staff. The rooftop gardens and the ward pavilion are very distinctive and easy to grasp as an image – something that will become emblematic of the new hospital and can be harnessed as part of its outward identity.

- **Departmental adjacencies** – we have grouped the key functional zones (Emergency, Imaging, Outpatients, Operating Theatres, Critical Care, Inpatients and Non-clinical), so that busy flows are simplified and transfer times minimised. Outpatient areas, which account for the majority of footfall during the day, have been located nearest to the entrances on ground and lower ground levels. The Emergency Department has been located adjacent to the existing St James's adult ED to simplify emergency flows;
- **Ward design** – the optimum ward arrangement in terms of flexibility groups 4 wards per floor. We have arranged

these in a continuous oval loop, subdivided into 8-bed clusters, so that nursing patterns can flex as much as possible, unimpeded by formal ward boundaries. In addition to flexibility other advantages include simplicity of wayfinding (all public lifts arrive in the centre of the Oval) and the ability for clinicians to move from one ward to another without transiting through a third ward;

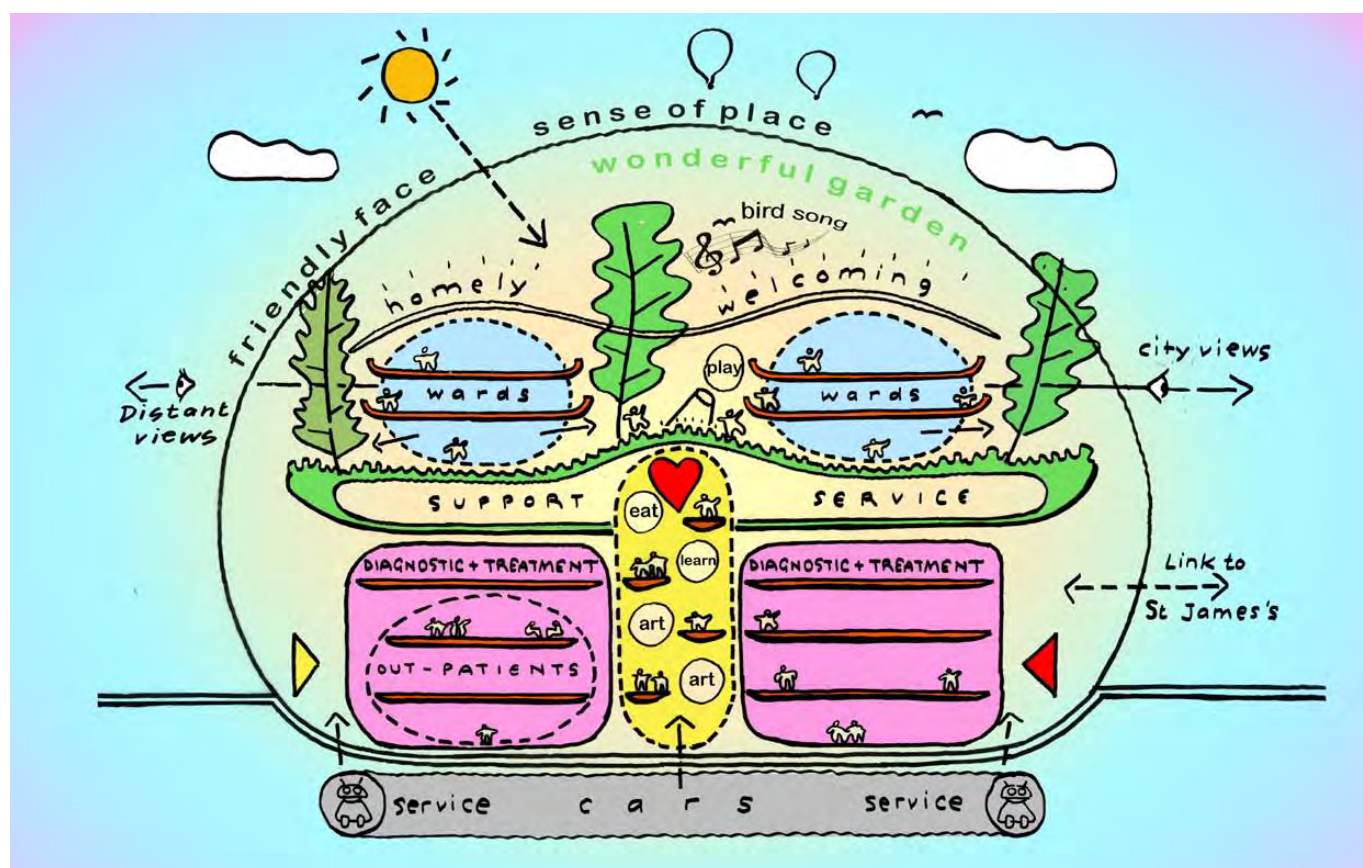
- **Segregation of flows** – the importance of keeping public, patient/ staff and facilities management flows separate has had a big influence on our approach to access and circulation. This supports the hospital's infection control policy, protects the privacy and dignity of patients and families transferring between clinical areas and aids the clarity of wayfinding;
- **Nature** – the design brief stresses the therapeutic benefits of outdoor space, which can also offer opportunities for learning, play and distraction as well as respite from the clinical environment for patients, families and staff. The design incorporates a striking new landscape axis running northwards through the

site from the LUAS linear park towards the former Royal Hospital at Kilmainham, creating a memorable garden form similar in spirit and scale to the great landscape squares of central Dublin. This will be a welcome addition to the campus as a whole which currently suffers from a shortfall of good quality open space;

- **Human Scale** – we felt it was very important to break down the scale of the hospital to aid orientation, give identity to its different parts and make it feel less institutional and more in keeping with the scale of things familiar to children like houses and trees. We see this as fundamental to making the hospital more accessible to children – playing with their sense of scale and curiosity. This is also a key consideration in townscape terms, ensuring that the hospital is successfully embedded in its context alongside residential scale buildings;



4.0 Key Site and Urban Planning Objectives



Ideagram



The design team's understanding of the site context has been informed by its own extensive site analysis, described in section A3.2 as well as previous work carried out by St James's Hospital, including the 2008 Outline Development Control Plan and feasibility studies conducted to test the potential fit of the Children's Hospital on the proposed site (for further detail on these please refer to Chapter 4 of the EIS and the 'St James's Campus Site Capacity Study' included in the appendices to this Report).

Early on in the design process alternative site and building strategies were explored, which were discussed with internal client stakeholder groups as well as external stakeholders. These interactions contributed greatly to the design team's improved understanding of the site's potential opportunities and constraints, which included:

- Planning parameters** - Dublin City Council's zoning for the proposed site sets out a series of height; plot ratio and site coverage parameters for this location, which are covered in detail in Chapter 3 of the EIS. In exploring different building options the design team tested the boundaries of these parameters and reviewed them with the team's planning consultants, GVA, as well as representatives of DCC and ABP at various intervals. For further detail of our response to the parameters please see the Planning Report;
- Campus context** – the design has been developed to integrate the children's hospital with the future Maternity Hospital and other shared services on the St James's campus and capitalise fully on the anticipated synergies and benefits of tri-location – an approach that maximises the development potential of the wider site whilst minimising disruption to ongoing care and reducing the number of required phases. For further
- detail please refer to the 'St James's Campus Draft Site Capacity Study' included separately in this submission.
- Urban context** – the design is sensitive to the building's scale and civic importance and its relationship to the wider urban context, including its potential to provide a regenerative focus. The design approach increases the campus' permeability and establishes a new high quality public realm, knitting together new and existing buildings. The building's vertical sub-division into podium, rooftop garden and ward pavilion concentrates the hospital's greatest mass in the centre of the site as far away from the lower scale of residential neighbours to the west, south and north-east;
- Main entrance** – from an architectural as well as a traffic management perspective the best location for the main entrance is on the west side of the building. This establishes a clear children's identity, as distinct from the adult identity of St James's on the east side. It also provides dedicated car access to the children's hospital, avoiding the need to draw visitors through St James's;
- LUAS** – direct pedestrian access into the new hospital from the LUAS Rialto stop is an important feature of the design, which includes a southern entrance directly opposite the tram station;
- Mount Brown access** – the design proposes a new site entrance off Mount Brown which will provide access to the hospital for service vehicles as well as visitor and staff access to the underground car park. This strategy exploits the existing topography which slopes down steeply to Mount Brown, allowing service vehicles to enter the Facilities Management hub at basement level, where they will be safely segregated from public

movement above and can be screened visually and acoustically;

- **Public Concourse** – the central atrium at the heart of the children’s hospital and the points of vertical movement within it offer the spectacle of public interaction associated with shopping malls and city-centre streets. Panoramic lifts in contrasting colours for different lift cores will enhance the sense of movement and draw the eye upwards to the garden level. The concourse is treated as a continuation of the external public realm and an important contributor to the building’s civic quality;
- **Campus-wide mobility** – a holistic view has been taken of campus-wide accessibility and mobility, including pedestrian, public transport, cycling and emergency modes. It was established early on that the existing St James’s Hospital spine road (running east to west between the St James’s Street and Rialto entrances) would need to be maintained to provide campus-wide connectivity for buses, ambulances and emergency vehicles. A new alignment is proposed on the children’s hospital site, routing traffic around the northern perimeter of the new building and connecting with Brookfield/ South Circular Roads, slightly further north than the current Rialto entrance. The planning proposals include a range of improvements to the spine road, including footpath and bus-stop upgrades, more landscape and better junction layouts. For further detail please refer to the Landscape section later in this Report;
- **Levels** - Level +21.0m, the existing level along part of the site’s southern boundary, has been chosen as the datum for the building’s ground floor and its principal entrances. This is 0.5m higher than the prevailing level at

the existing Rialto entrance but raising the ground floor by this amount was felt to be beneficial overall because it improves the quality of daylight to rooms on the Lower Ground Floor and reduces the amount of excavation (with consequent reduction in construction time and truck movements);

- **Sustainability** – the brief establishes a BREEAM target of ‘Excellent’ and states that the project should: “Exceed statutory requirements in sustainability and achieve the highest levels of environmental effectiveness possible within project constraints”. The development is viewed as an opportunity to contribute positively to the local environment by not only minimising energy consumption, pollution and waste streams but enhancing the ecological value of the site. For further detail please refer to the Sustainability Report included in section G of this Report;
- **Drimnagh sewer** – the existing sewer runs diagonally from south-east to north-west across the proposed site. Early on, alternative options were explored to test whether the sewer could be left in place or diverted to the west or east of the proposed building. The preferred diversion routes the new section of sewer to the east of the Children’s Hospital. For further detail please refer to Chapter 17 of the EIS;

5.0 Design Concept Overview - *creating a distinctive experience*



View from Rialto Bridge

On approaching the new hospital from Brookfield Road/ South Circular Road, the first impression will be of a 'floating' garden about halfway up the building, a 'flying carpet' of trees and plants, surrounding a curvaceous three-storey pavilion. There will be glimpses and sounds of life and activity in and around the garden, which give a tangible sense of this being a special place – a children's and young

person's realm, elevated above the world of adults.

Below the floating garden, the elements which will be distinguishable immediately are the main entrance, the outpatient clusters extending out towards the South Circular as a series of smaller scale 'finger buildings' and the Family Accommodation Unit, which forms the north side of a generous entrance piazza. On either side of the piazza wings

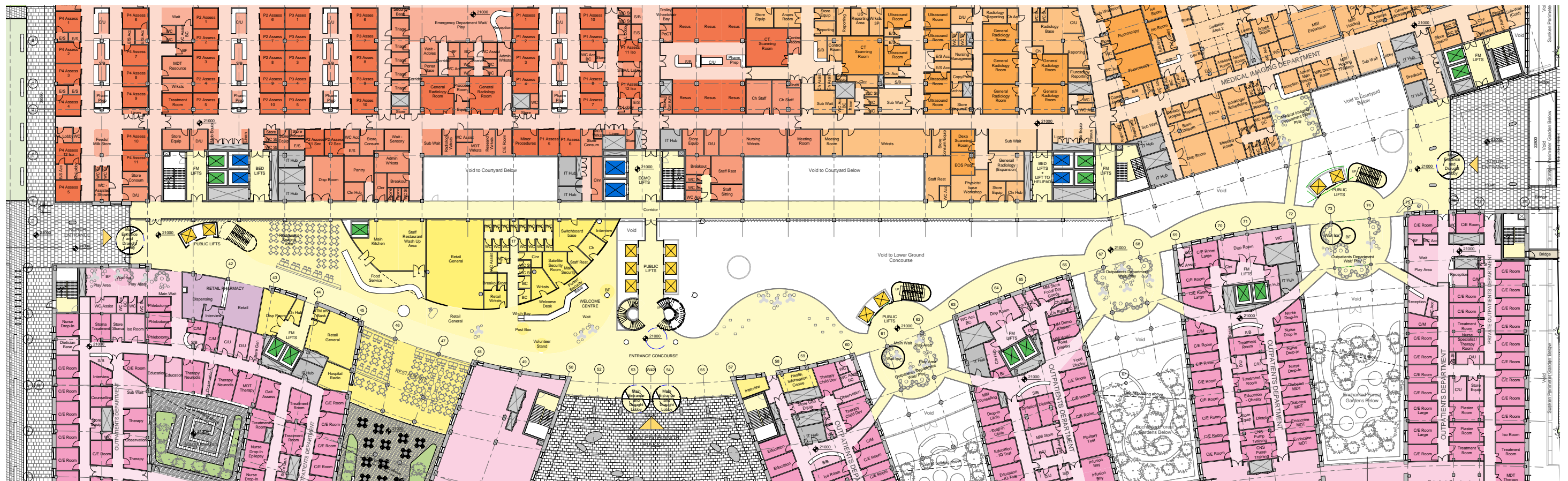
project out like welcoming arms, drawing visitors towards the hospital's front door.

The curved form of the ward pavilion reveals itself most clearly above the main entrance, extending down to ground level as a double-height glazed screen that allows piazza and atrium to feel like an uninterrupted public space. Once inside, visitors will find themselves in what instinctively feels like the

heart of the hospital – a four-storey high space that visually connects all the building's principal levels. Two key features will orientate people: the 'Biome' and 'Concourse'. With the main bank of public lifts at its centre, the Biome is the focus of vertical public movement - a structure reminiscent of botanical gardens, which extends down from the ward levels introducing daylight and glimpses of the outdoors.



View of the main entrance



Concourse - ground floor plan

The Concourse, an atrium street along the central axis of the building connects the main entrance with the hospital's other principal public entrance from the LUAS, a 2-minute walk away. This will allow those arriving at the Rialto stop to enter the campus directly from this point for the first time.

The Concourse extends down to a lower ground level, providing access to a number of clinical areas as well as the main visitor car park situated on two basement levels below the building, so that pools of light guide people intuitively from their car towards lifts and stairs and on to their ultimate destination as directly as possible.

On the west side of the Concourse the outpatient clusters are grouped on two storeys within the finger buildings. The clusters are arranged around five garden courtyards. Reception and waiting areas are placed between the fingers, open to the Concourse on one side and the gardens on the other. At the northern end of the Concourse a third northern entrance provides access for anyone coming from the St James's side. This will also serve as a link to any future children's hospital facilities on the northern part of the site set aside for expansion.



Concourse - lower ground floor plan



View from Rialto LUAS station

Under the Biome at ground level are grouped the main public amenities and information and reception functions. The public and staff restaurants are arranged either side of a shared servery with the public seating placed between a courtyard garden and the Concourse. Shops and information points line the edges of the Concourse, facing you as you come through the main entrance. Openings in the ceiling of the atrium above introduce daylight, the largest of these being the Biome itself. The shape of the Ward Oval is intimidated by the curved west side of the

atrium, reminding visitors of the building's distinctive external form as they first approached.

The oval-shaped rooftop garden, a modern reinterpretation of the courtyard at the heart of the nearby former Royal Hospital at Kilmainham, is arranged in two halves either side of the Biome, forming a secure, sheltered environment for ten of the hospital's thirteen wards. Around the outer perimeter of the wards the gardens have a larger scale with groups of trees that will contribute to the building's distinctive skyline. The world of straight lines has been left

behind and paths wend their way between organic forms: raised flower beds, lawns, terraces, more secluded seating areas, play equipment – a variety of garden spaces that can be used by different patient groups for active therapy or simply for a breath of fresh air. The eastern half of the

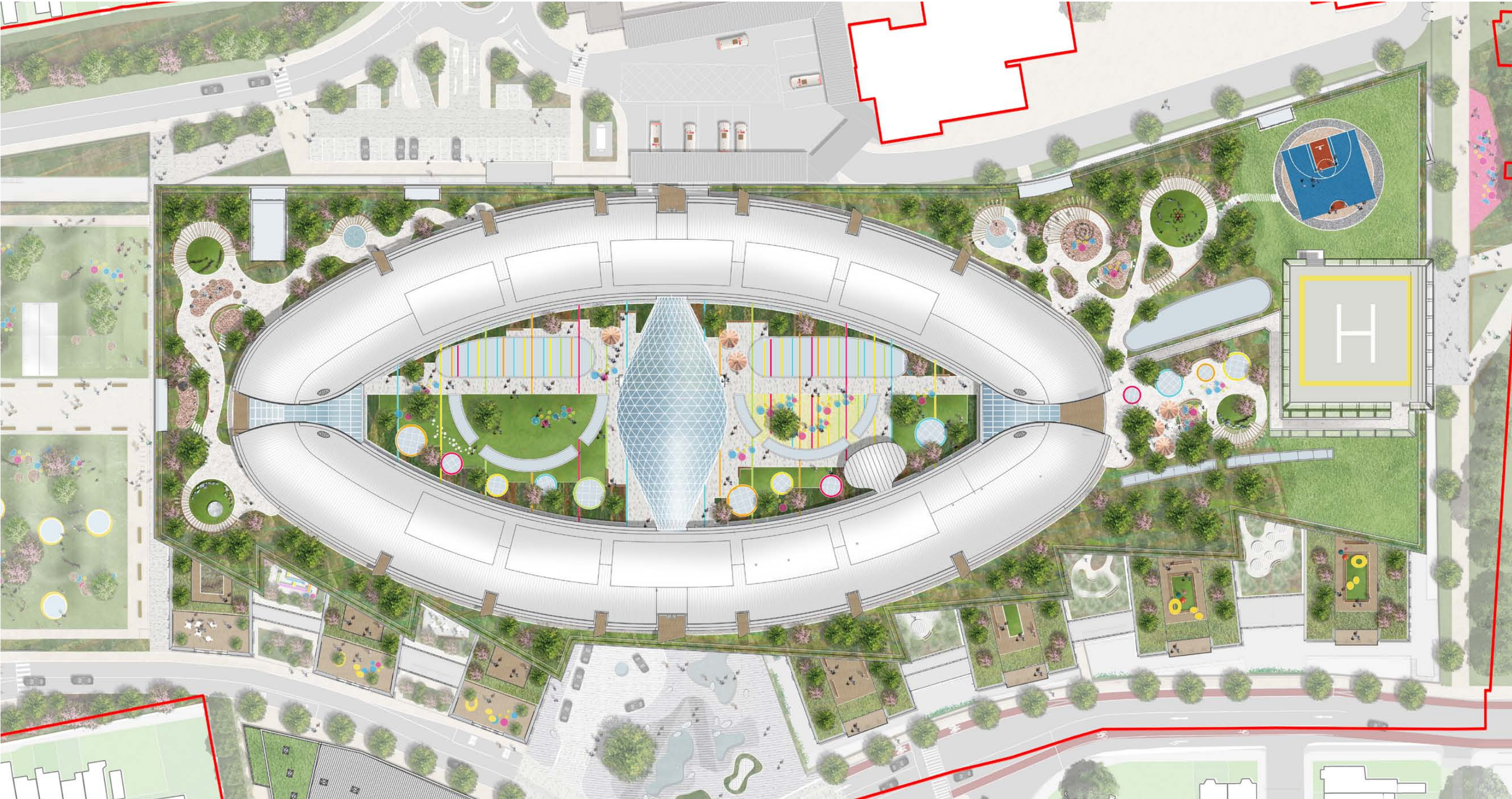
Biome at garden level includes a generous space for social events and for enjoying a sense of the outdoors even in inclement weather. A small café here can spill out into the garden on sunny days.



View of from the north east corner of the site



View into a finger garden



Roof garden landscape plan

The ward pavilion itself reads as a three storey building, its curved roof concealing a fourth level 'attic' plant room. At its southern and northern ends the oval shape is interrupted by two small atria. These emphasise the pavilion's north-south axis and serve three important functions: opening up the vista to Kilmainham from the oval garden, maximising sunlight penetration and creating 'chimneys' that bring light and air to the Concourse below.



View of the oval garden



Aerial View

6.0 Architectural Form

The building's form gives it a striking identity, which we believe will be memorable and welcoming, instilling a sense of delight and curiosity in first-time visitors. Key drivers behind our approach were:

- Breaking down the scale of the building to make it less institutional and more 'legible': a combination of distinct elements that are immediately discernible upon approach;
- Reducing the perceived scale of the building, particularly along its western edge towards the South Circular conservation area and Cameron Square;
- Thinking about the building's skyline impact in the context of city height guidelines and its visibility from different areas. Draft verified views from a number of locations were produced early on to assist in gauging the building's potential impact and consider mitigating measures;
- Creating a strong simple form for the wards that will become synonymous with the children's hospital's identity and form a distinctive presence on the Dublin skyline from more distant city-wide views;
- Optimising internal functional relationships so that clinical departments are arranged in the most effective way;
- Introducing accessible outdoor spaces wherever possible, including the extensive podium garden;
- Ensuring that the massing and orientation of the building's different parts promote good quality daylight and views to the majority of spaces and minimise overshadowing and daylight impacts to surrounding properties;
- Incorporating a sense of playfulness in the building's form and detailing that will appeal to children and young people without being childish;

6.1 Functional Principles - clinical organisation

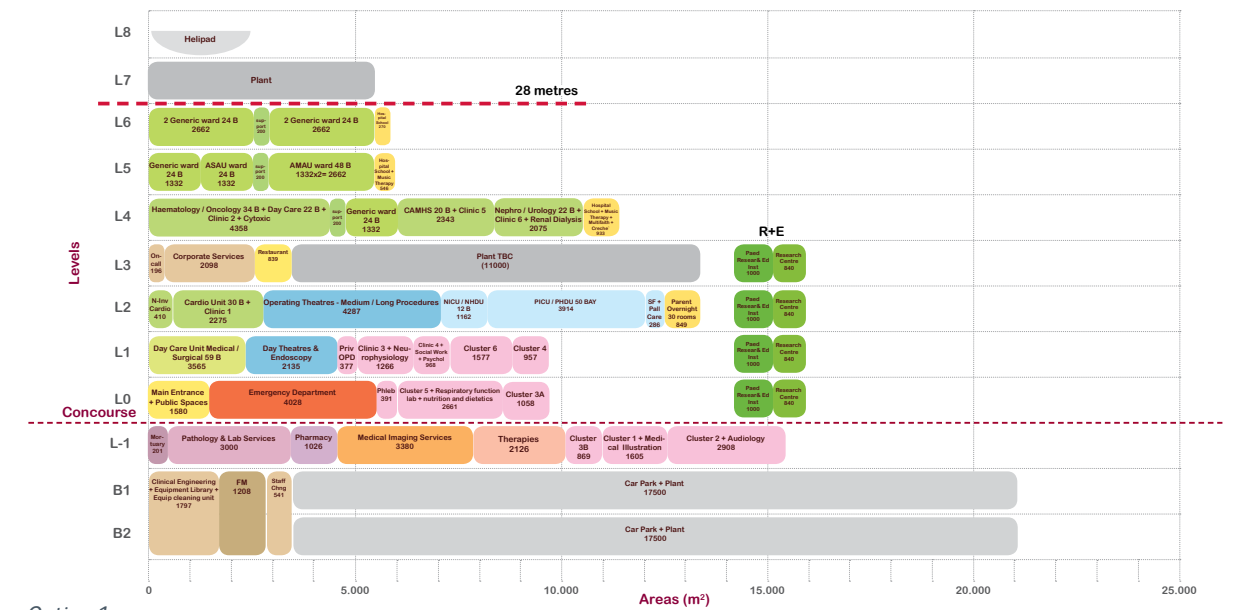
As mentioned in the introduction to this section, the outward form of the children's hospital has been influenced by a number of factors both internal and external. Amongst these one of the most important considerations, of course, is its clinical functionality.

The final proposed configuration of clinical departments, illustrated in this Report, has resulted from extensive user consultation over the course of the last year. This has been very useful in ensuring that the design meets the brief and that the clinical adjacencies and flows have been optimised. As part of this process the design team developed a range of clinical stacking options for discussion. These varied considerably in their design concept and external massing and were assessed by the design and client team both in terms of their clinical functionality (adjacencies and flows) and their site response.

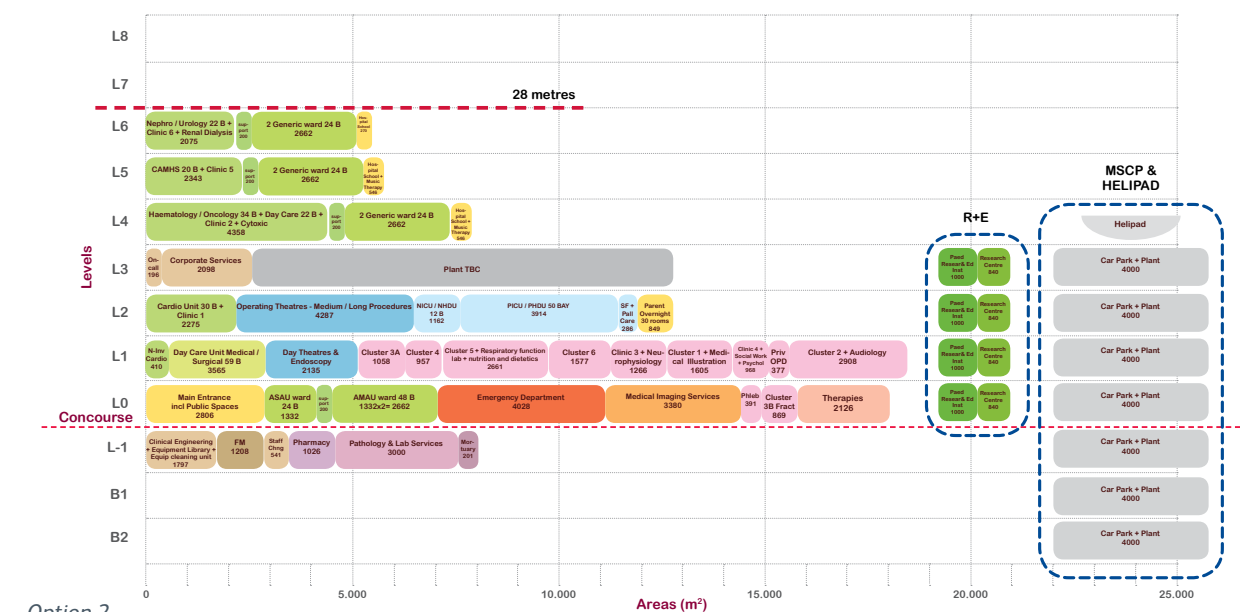
The proposed configuration, described below, was deemed the best of the options on both counts.

The building is organised vertically in four zones, which are clearly discernible externally:

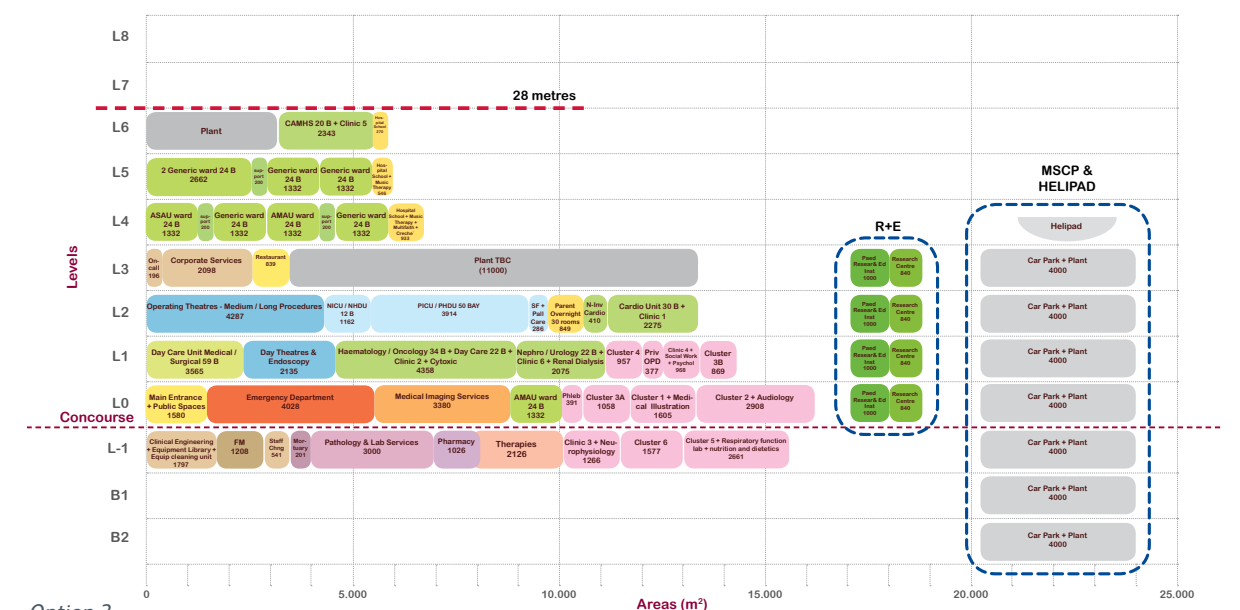
- Facilities Management spaces and horizontal distribution together with plant rooms and two levels of car parking (Basements B01 and B02)
- Outpatients and Diagnostic and Treatment areas (4 floors from Lower Ground Floor to Level 02)
- Interstitial floor, accommodating plant rooms and administration/ non-clinical space (Level 03)
- Wards (Levels 04-06)



Option 1



Option 2



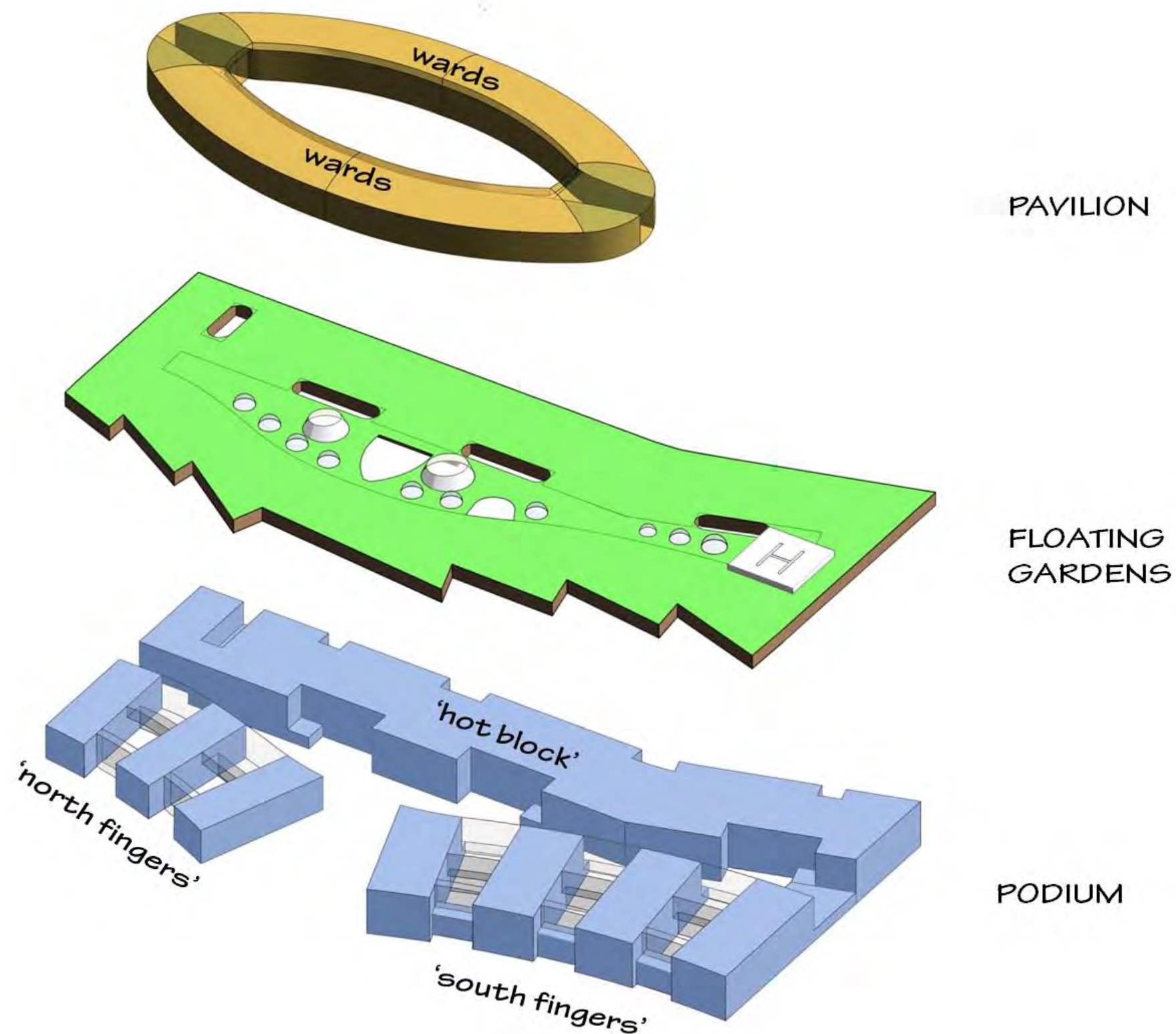
Option 3

Stacking diagram options

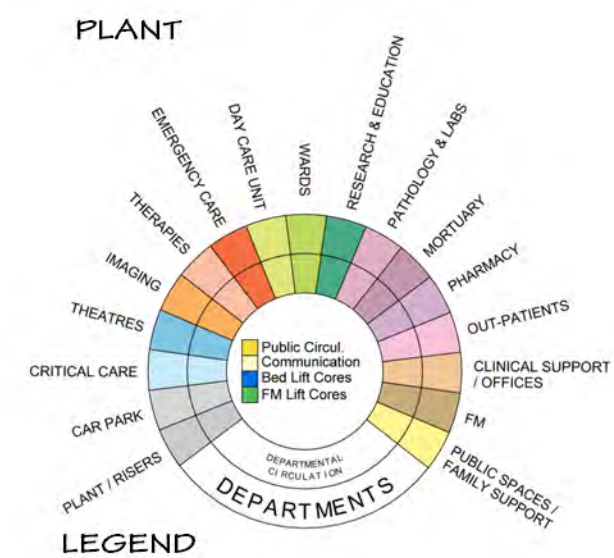
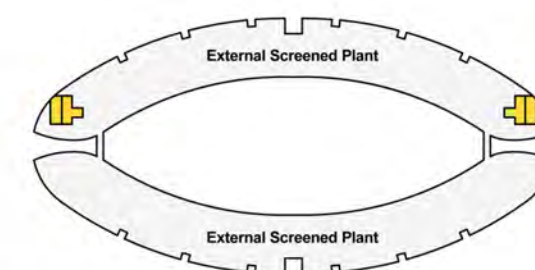
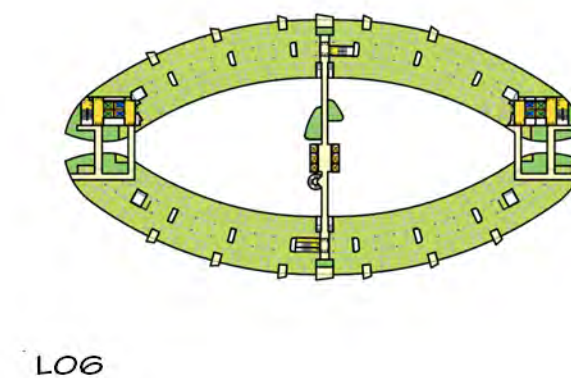
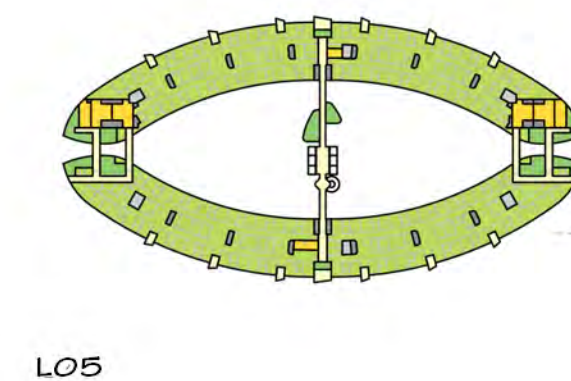
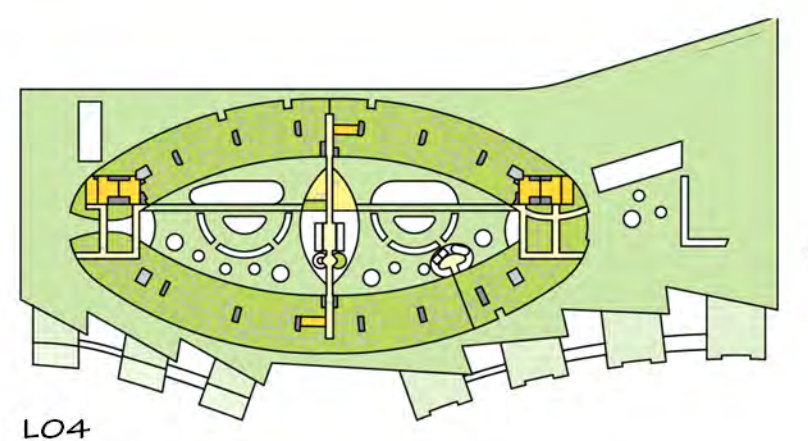
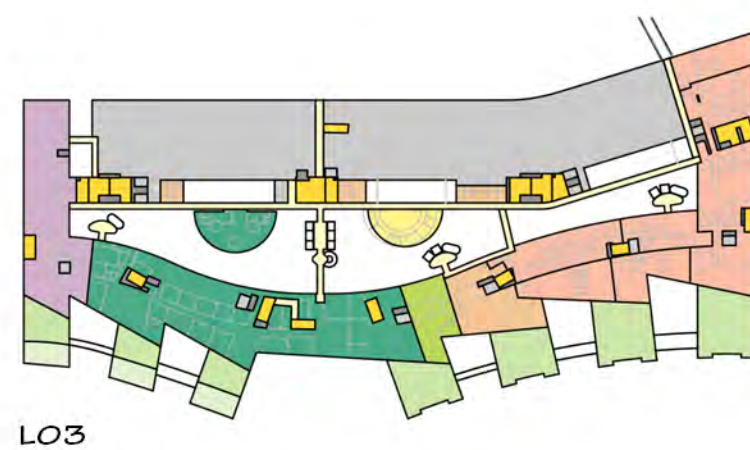
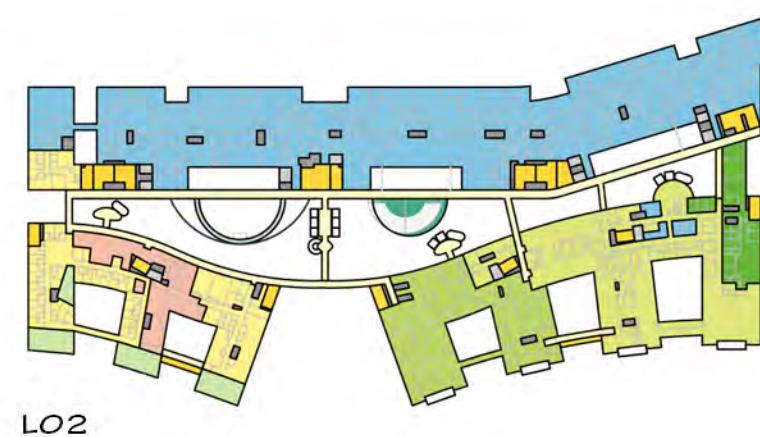
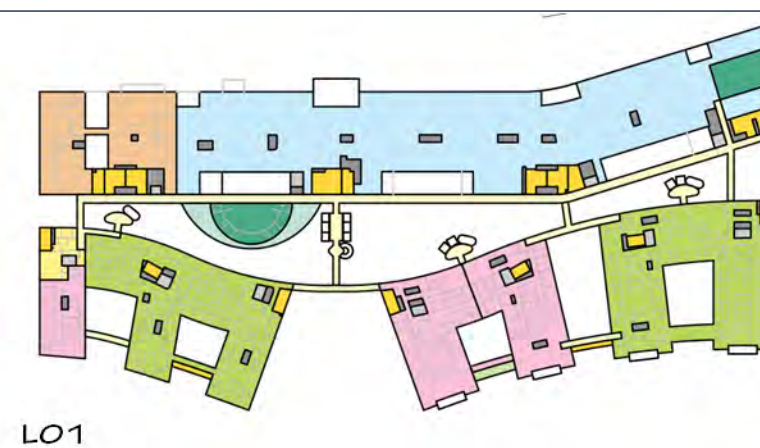
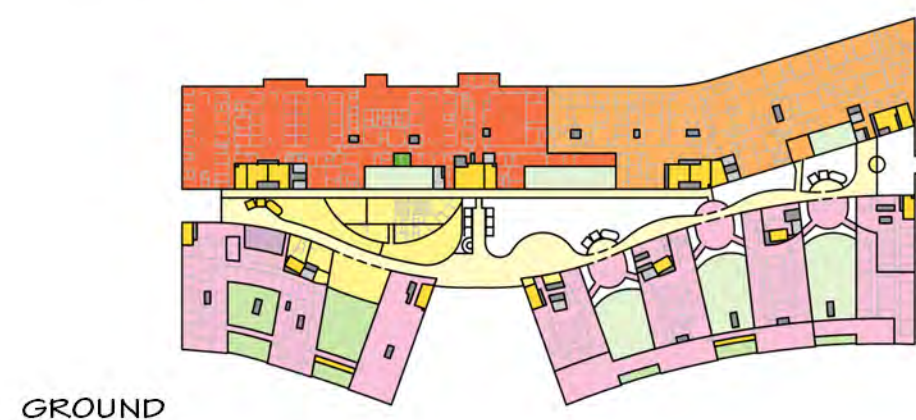
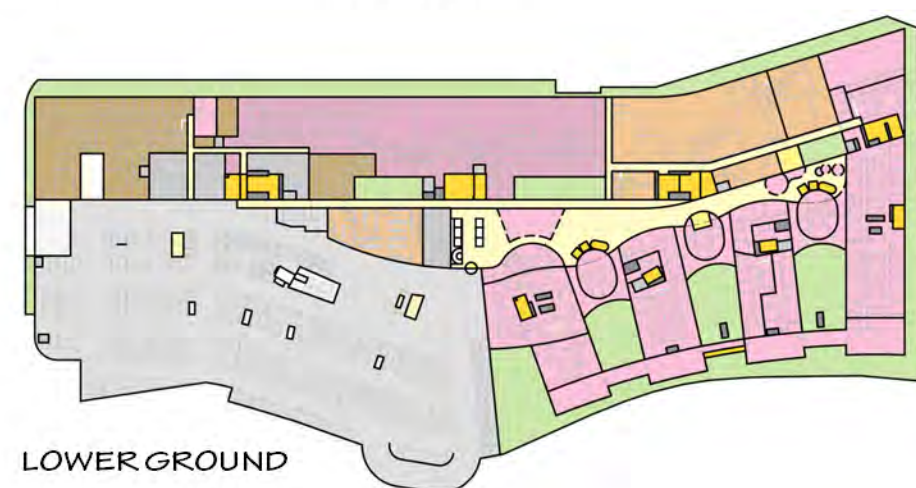
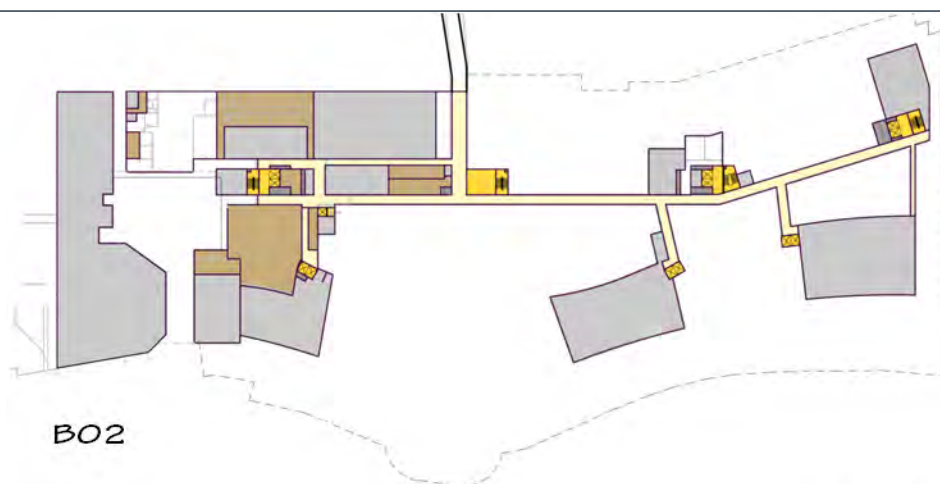
The three zones visible above ground are clearly articulated in the building's exterior form as: the stone-clad podium, the interstitial level carrying the 'floating garden' and the oval pavilion. This articulation is helpful externally in breaking down the hospital's mass, whilst internally it reinforces the logic of clinical adjacencies and makes the hospital's layout more legible and easier to navigate.

This zoning also has an environmental logic. The eastern part of the podium, the 'hot block', contains all the diagnostic and treatment areas. These are the more heavily serviced parts of the hospital, where the environment needs to be carefully controlled in terms of temperature, humidity and air changes. The western part of the podium (the fingers) and the ward pavilion above contain outpatient clinics and wards, large parts of which lend themselves to natural ventilation. These are also the parts of the hospital which benefit most from access to the outside, so we have concentrated garden areas here.

The size of the Theatre department dictated the overall plan size of the 'hot block'. This plan size and shape also suited the aspiration to locate the Emergency Department and Imaging side by side on one level which was an important clinical imperative. The Critical Care Unit, which is close in size to the Theatre department, also fits well within this overall dimension. The finger dimensions were selected to provide as much flexibility as possible in accommodating a range of uses, including outpatient clinics, administration space, specialist wards, parents' overnight accommodation and the hospital school.



Concept axonometric



These are grouped in the lower basement (at Level B02), taking advantage of the service access from Mount Brown. The service yard and Facilities Management hub is designed as the receipt and distribution centre for the children's and adult hospitals with shared areas for incoming goods, waste and catering. A service tunnel extends from this basement hub, linking it to the children's hospital's vertical cores and to a branch tunnel serving St James's and the future maternity hospital. The B02 and higher B01 basements also contain the proposed Energy Centre and a large proportion of the children's hospital's engineering plant rooms. Space has also been allocated here for future inclusion of the adult hospital's energy centre, which would allow the existing St James's Energy Centre on Mount Brown to be replaced in due course. For details of the car park please refer to Section B6.2.7 Car parking.



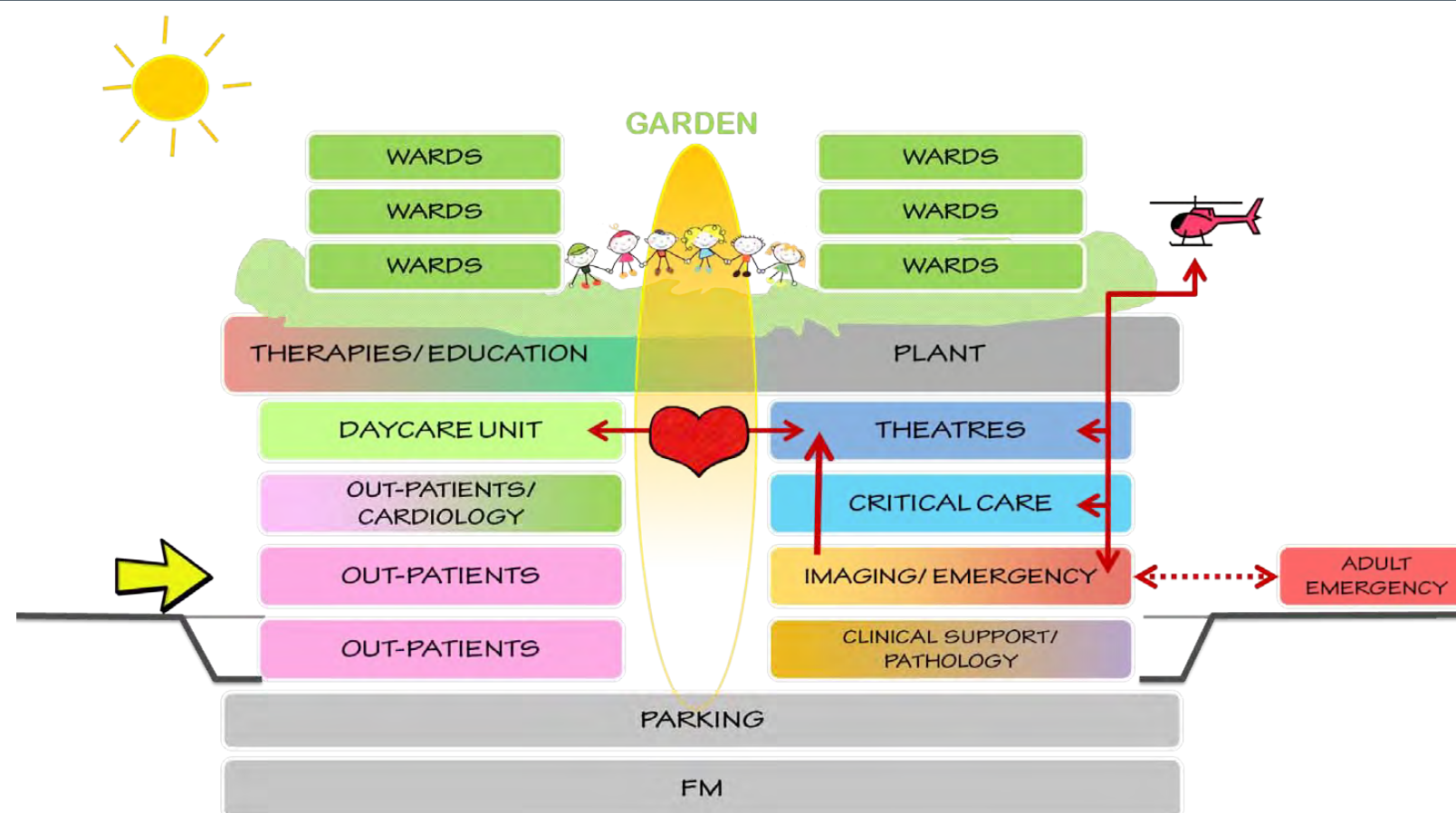
6.1.2 Podium – Diagnostic and Treatment Services

The Podium incorporates two spatial typologies: the shallower plan finger buildings (15 to 20m wide) on the west side of the concourse and the deeper plan 'hot block' on the east (35m wide). The plan depths were chosen to suit the different proposed functions: outpatient clinics and some inpatient areas (with their grain of smaller rooms and high demand for daylight and views) in the fingers and the acute clinical departments like Emergency, Imaging and Theatres (with their grain of larger diagnostic and interventional spaces) in the 'hot block'.

6.1.2.1 Emergency flows

In addition to the public entrances described earlier there are two dedicated entrances to the Emergency Department on the eastern side of the building: one for self-presenting families and the other for arrivals by ambulance. Each of these is served by a separate drop-off area: a dedicated ambulance zone that provides access to the children's hospital as well as improved access to the existing Adult ED; and a car drop-off with some short-term car parking just to the north of this.

The internal emergency flows within the children's hospital, prescribed in the design brief, are addressed by aligning the ED, Critical Care Unit (CCU) and Theatres above one another with Imaging directly next door on the same floor. A dedicated bed lift core with two larger ECMO lifts on this side provides rapid vertical links.



Proposed stacking diagram



ED entrance and ambulance parking area

6.1.2.2 Helipad

The proposed helipad, intended as a shared facility between children's and adult Hospitals, is located above the LUAS entrance, forming a strong visual marker on the building's southern side. This is a logical location from where it can serve the emergency areas and CCU within the children's as well as the ED in St James's. This location is as far away as possible from neighbouring houses and the children's hospital's own wards, ensuring that intrusion of noise is minimised. Its position has also been validated in terms of flight path and compliance with CAA guidelines.

6.1.2.3 Critical Care Unit and Theatres

The Theatres are located on Level 02, vertically aligned with the CCU on Level 01 and horizontally adjacent to the Daycase Unit and the Surgical Ward. This arrangement is based on the following core principles: clear flows for patients, staff and FM, daylight to the majority of theatres and inhabited rooms, direct vertical links to CCU and ED and the helipad via the ECMO and other bed lifts. A regular structural grid, together with the interstitial plant room above, maximise future flexibility.

The 60-bed Critical Care Unit is composed of three interconnected zones: the Paediatric Intensive Care Unit

(PICU), Cardiac Intensive Care Unit (CICU) and Neonatal Intensive Care Unit (NICU). The NICU has been located at the northern end of the 'hot block' where a bridge link can be created at a future date to connect with the anticipated maternity hospital. This will be a two-level bridge running eastwards from the hot block (on the centre line of the Oval), providing key links for patients and staff between the two hospitals. This connectivity, which is central to the 'tri-location' model of care described earlier in this document, is particularly important for the rapid transfer of seriously ill new-born babies between the birthing suites and theatres in the maternity hospital and the children's hospital's NICU.

6.1.2.4 Ambulatory Care – Outpatient Clusters and Daycase Unit

The modular Outpatient clusters, including their specialist diagnostic areas and staff workplace provision, are arranged on the west side of the concourse, as described above, where they will form part of the children's hospital identity – a friendly, lively face which shields visitors from the more acute areas on the building's eastern side. Outpatient reception points and waiting areas are conceived as a seamless part of the open-plan Concourse, akin to departure lounges in an airport. The Imaging department is collocated with Outpatients on the



Aerial view of the helipad



Clinical link between potential future Maternity hospital and children's hospital

ground floor, so that key flows, for example to and from the Fracture Clinic, are as convenient as possible. The Daycase Unit is located above Outpatients, where it is easily accessible from the Concourse but also horizontally adjacent to the main Operating Theatres with convenient links for families and staff.

6.1.3 Interstitial Floor

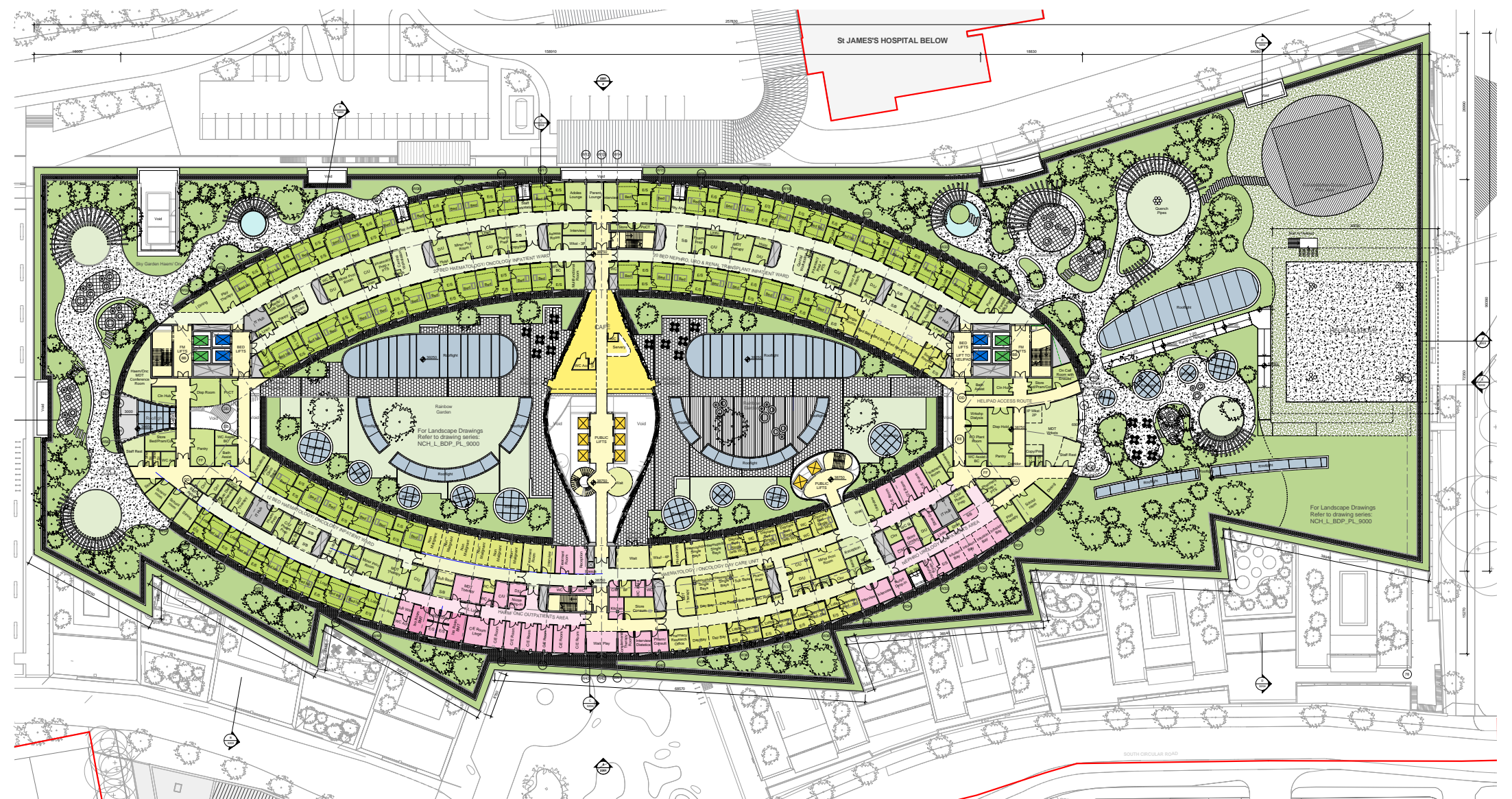
The interstitial floor fulfils a number of functions: it houses engineering plant, optimally located to serve the 'hot' clinical levels underneath, and also accommodates a number of non-patient areas (Pharmacy, Education and Corporate Services) which benefit from being equidistant from most clinical areas; it also houses a large part of the Therapies department, as described below.

6.1.3.1 Therapies

Occupational Therapy, Physiotherapy and Hydrotherapy are located at the southern end of the interstitial floor. This was considered a good location because it is equally accessible for inpatients and outpatients; it is directly below the roof so the larger therapy spaces can be day lit through local skylights; and the higher floor to floor level required for the adjacent plantrooms (5.15m) is also ideal for the gym spaces. This location also provides the added benefit of access for patients and staff to rooftop terraces above the fingers. The southernmost terrace, overlooking the LUAS linear park, is adjacent to the main gym space and will be used for active patient therapy.

6.1.4 Oval Pavilion and Gardens - Inpatient Wards and Dedicated Clinics

The majority of the wards are located in the Oval pavilion above the podium garden. The only exceptions are the Cardiac Ward, located within the Fingers in close proximity to the Cardiac Intensive Care Unit at Level 01, the Surgical



Floor Plan Level 04

Ward on Level 02 and the Child and Adolescent Mental Health Service (CAMHS) unit. In recognition of its special nature the CAMHS unit is accommodated at Level 01 where it can be accessed quickly and discreetly from public lifts adjacent to the public entrance at the northern end of the concourse.

The larger specialist wards (Haem-Oncology, Nephro-Urology and Neuro-Rehabilitation) with their dedicated outpatient clinics are located at garden level (Level 04). This will enhance the experience of longer stay inpatients as well as the outpatients who often attend the wards on a regular cycle and for extended periods. Each ward has its own secure garden, designed with users to reflect their needs and sub-divisible if necessary into discreet sections for different age groups or outpatients/ inpatients. Each of the two upper levels of the Oval is occupied by four generic 24-bed wards.

Flows in and out of the wards are segregated with the public arriving via lift or stair from the Biome and bed/ FM movement via the cores at the northern and southern ends. All the wards are organised around the same principle: single bedrooms grouped in clusters of eight either side of a shared hub, centrally placed between staff and patient/ family support rooms. The hub provides a clinical and social focus to the cluster as well as good cross-visibility. Support rooms are strategically located for speed of access by staff, particularly important in a contemporary ward with 100 % single rooms where the walking times to and from utility rooms, for example, would otherwise be excessively long.

The bedrooms are glazed wall to wall on both sides. This is achieved by pairing the ensuite bathrooms between them. As a corollary of this, the bedroom itself is a very space-efficient, ergonomic shape that comfortably



View of a typical inpatient bedroom

accommodates the zones for patient, family and staff within the designated 19m². It is also shallower than the equivalent 'hotel-style' bedroom/ ensuite layout, improving the penetration of daylight and the viability of natural ventilation. Glazing to the corridor brings the benefits of daylight and views to the heart of the ward and gives patients and families the option to be more or less 'sociable' by opening or closing interstitial blinds within the glazed screen.

The bedrooms are arranged as two virtually uninterrupted ribbons around the 4-ward Oval. This, together with the two corridors, provides multiple options for grouping of patients and providing independent access to different parts of the floor. Externally, the four wards will be individually legible as distinct forms, curving both in plan and roof profile. Within this larger-scale order the individual 8-bed clusters appear as neighbouring 'houses', articulated externally by indentations in the façade formed by balcony recesses. These occur at regular intervals to coincide with social areas and play space within the wards, providing external

space for those on the uppermost ward levels who would not otherwise enjoy access to the outdoors.

6.2 Access and Circulation

The guiding principles informing our approach to access and circulation are:

- To follow hospital best practice and segregate public, patient/staff and facilities management (FM) flows as much as possible. This is key to infection control policy as well as the requirement to safeguard the privacy and dignity of patients and families transferring between clinical areas;
- To make wayfinding around the hospital as intuitive and direct as possible;
- To minimise transfer times between clinical areas, particularly those associated with emergency flows;
- To provide clinical and FM links to St James's and to the future maternity hospital;

- To make vehicular access equally simple with convenient, family-friendly parking;
- To integrate the development with St James's providing a clear mobility strategy that addresses all categories of user: pedestrians, cyclists, LUAS, buses and cars;
- To ensure that all aspects of the design meet current universal access guidelines.
- To create an attractive and safe public realm with good connections to the rest of the St James's campus as well as the surrounding neighbourhoods

6.2.1 Internal Flows

The three key internal flows (public, inpatient/ staff and FM) are organised as follows.

Public – The Concourse is the main public spine through the hospital, drawing together the principal public horizontal circulation at Ground and Lower Ground floors with the key points of vertical movement. Public lifts and stairs are located in four locations along the Concourse: the main

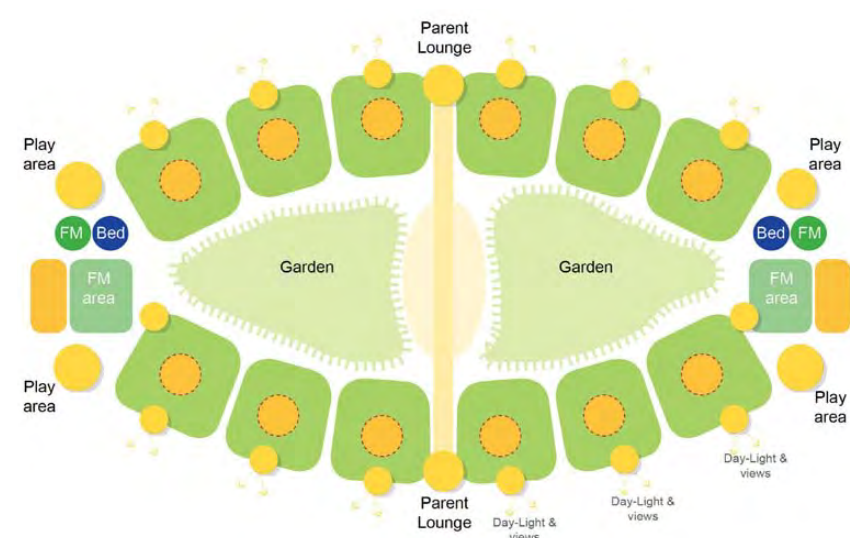
bank of six lifts aligned with the main entrance, a core adjacent to the northern entrance and two further cores serving the fingers. The central bank of lifts has been sized to deal with the heaviest flows of people between the car parks and Lower Ground and Ground floors (outpatients, Imaging, ED and public amenities).

Patients/Staff – Bed lifts are grouped in three cores, one each at the northern and southern ends of the ward Oval and another, incorporating two ECMO lifts dedicated to emergency flows and critical care transfers, in a central position within the 'hot block' (serving Ground Floor to Level 02 only). The other two cores are shared between contiguous wards and connect to the clinical side of the diagnostic and treatment departments below (Imaging and ED at Ground Floor, CCU at Level 01 and Theatres at Level 02), keeping bed movements away from outpatient and public flows into the same areas. Horizontal movement takes place along a dedicated clinical corridor on the eastern edge of the Concourse, which links to all three bed lift cores, permitting the discreet transfer of patients and staff to and from all areas of the hospital.

Facilities management - The primary FM distribution, using Automated Guided Vehicles (AGVs), occurs at basement level via the tunnels which tie together a number of dedicated FM lift cores, each with individual clean and dirty lifts. These rise through the building and connect directly to the principal FM hubs on each floor, which serve each of the clinical and non-clinical departments.

6.2.2 External Flows

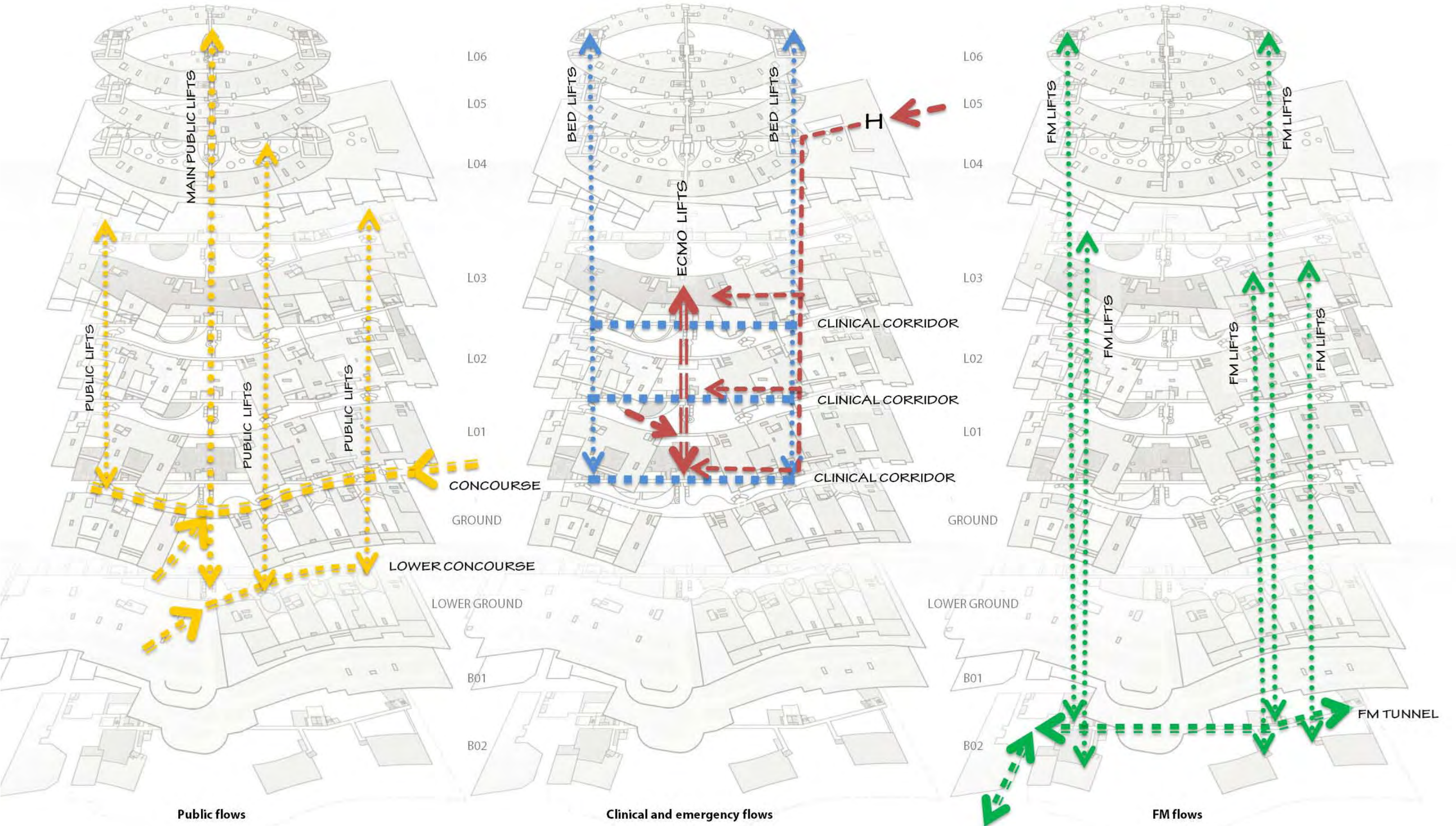
The adjacent diagrams show the proposals for external flows relating to pedestrians and cyclists, cars, ambulances and public transport. These have been developed by the



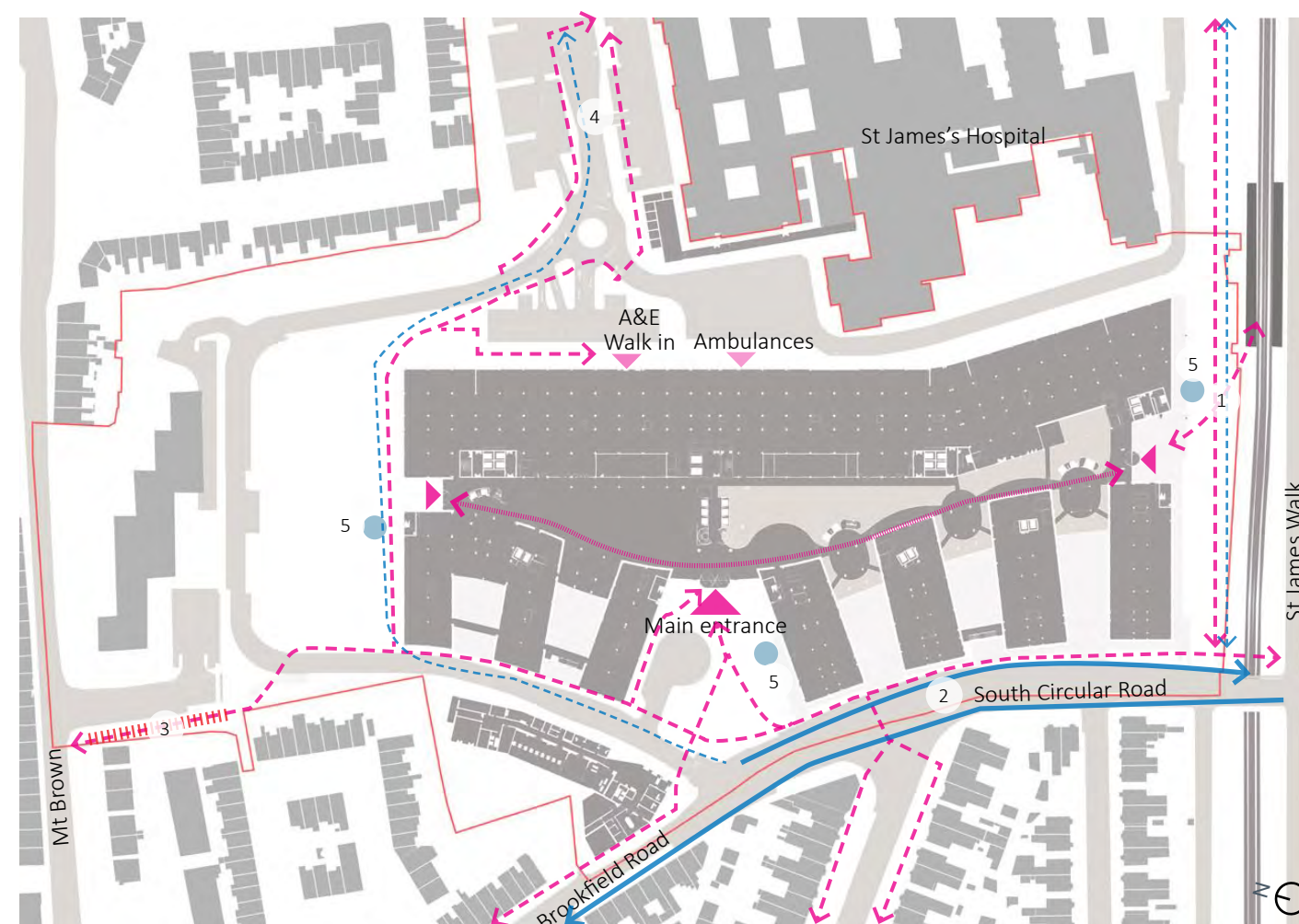
Ward diagram



8 bed module diagram



Flow diagrams



Key

- - - - - External pedestrian routes
- - - - - Internal pedestrian route
- New cycle path
- - - - - Informal cycle route through the New children's hospital site
- Cycle parking
- ||||| Steps

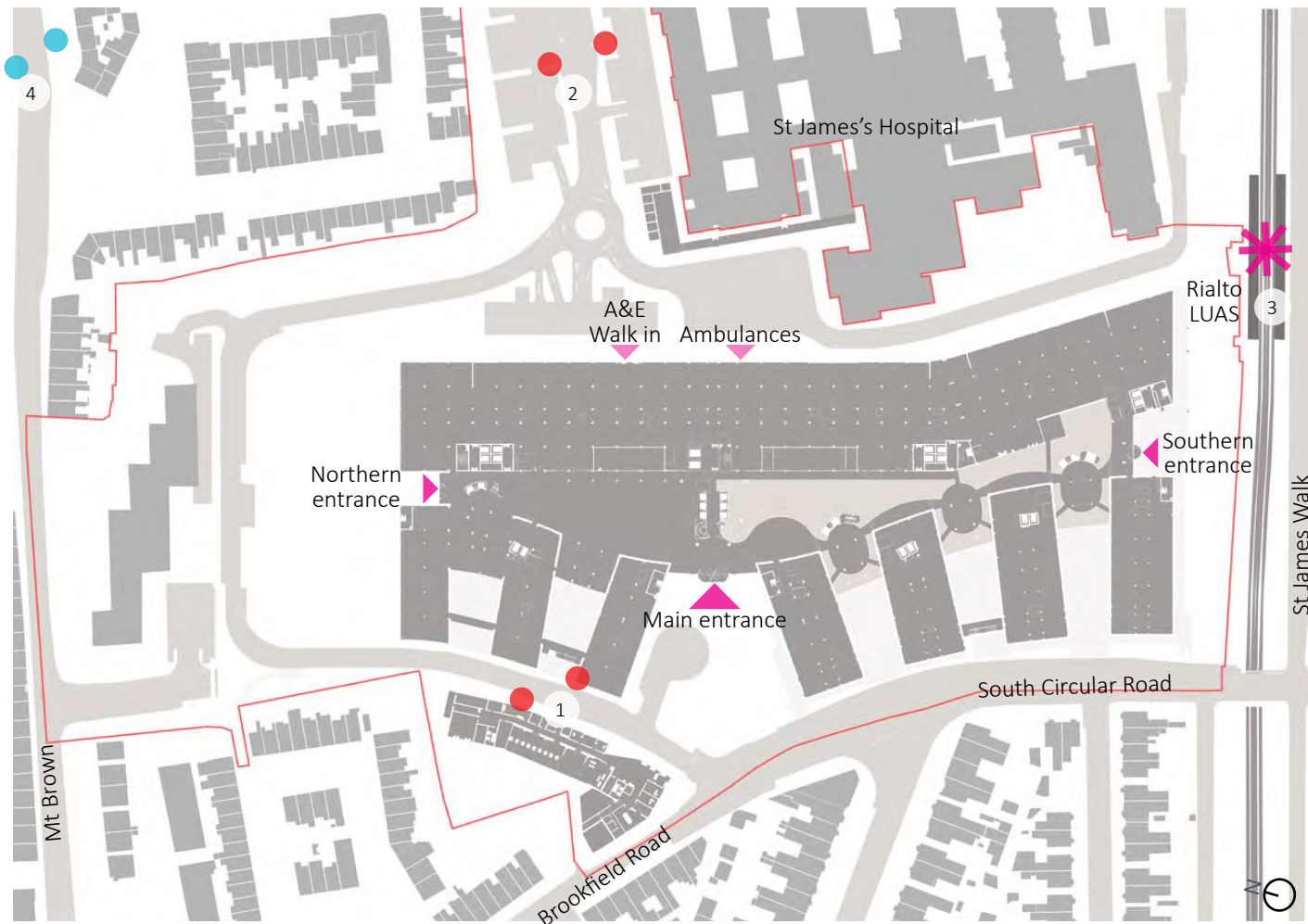
Pedestrian and cyclist movement

Pedestrian and cyclist movement through the St James's Campus will be improved with:

1. A new direct link from the Rialto LUAS to the new children's hospital building
2. New pavements and cycle route along South Circular Road
3. Upgraded stepped access from Mount Brown to the hospital campus and Cameron Square
4. Upgraded pavements along St James's Hospital Campus Road
5. A total of 50 cycle parking spaces placed at ground level entrances (an additional 350 spaces will be provided inside the new children's hospital building)

architects and landscape architects in close collaboration with the design team's transport advisors, ARUP. They integrate with and have been informed by the public realm strategy, developed by BDP and O'Connell Mahon and described in the appendices to this Report. Key attributes of the strategy are noted in the keys to the diagrams. Of these it is worth highlighting the following points:

- **Pedestrians** – the proposals increase the permeability of this part of the campus very significantly. This is achieved through: the creation of a direct entrance into the children's hospital from the existing Rialto LUAS stop; renovation of the existing public steps from Mount Brown to Cameron Square and extending this route into the campus as a new pedestrian entrance; upgrading the road, landscape and footpaths on the eastern approach to the children's hospital so that this important east-west connection is as safe and attractive to use as possible.
- **Cyclists** – the design team have consulted with the National Transit Authority and Dublin City Council and adopted their recommendation to include new cycle lanes along each side of the South Circular between the main entrance and Rialto bridge. 400 cycle spaces are included with 350 of these being undercover within the basement car parks. Staff using these will be able to go directly to shower and changing facilities located in an adjacent basement area.
- **Public transport** – the campus already benefits from excellent public transport both in terms of buses and the LUAS. As mentioned earlier in the Report, the proposals include improved access to and from the Rialto LUAS stop as well as new bus-stops adjacent to the main entrance; •
- **Cars** – the proposals include a road barrier just to the east of the children's hospital. The barrier will allow buses and emergency vehicles (fire and ambulance) to pass in either direction but will filter out cars trying to shortcut from St James's Street to the South Circular. Car access to the children's hospital will be via a proposed new junction off the South Circular, opposite the main entrance, and a new site entrance off Mount Brown. A discreet drop-off zone in the main entrance piazza ('Children's Place') caters for cars and taxis without dominating the space which is intended to be pedestrian priority. Cars accessing the Emergency Department will be directed by signage to use the main site entrance off the South Circular and progress around the northern perimeter of the site to the dedicated ED surface car park.
- **Ambulances** – consultation with the Ambulance Service highlighted that the existing St James's ambulance drop-off zone is very constrained. The proposals improve this area as part of an integrated zone for both adult and children's ambulances.
- **Fire** – fire tender access is provided to the majority of the children's hospital's perimeter in accordance with the fire strategy appended to this Report.

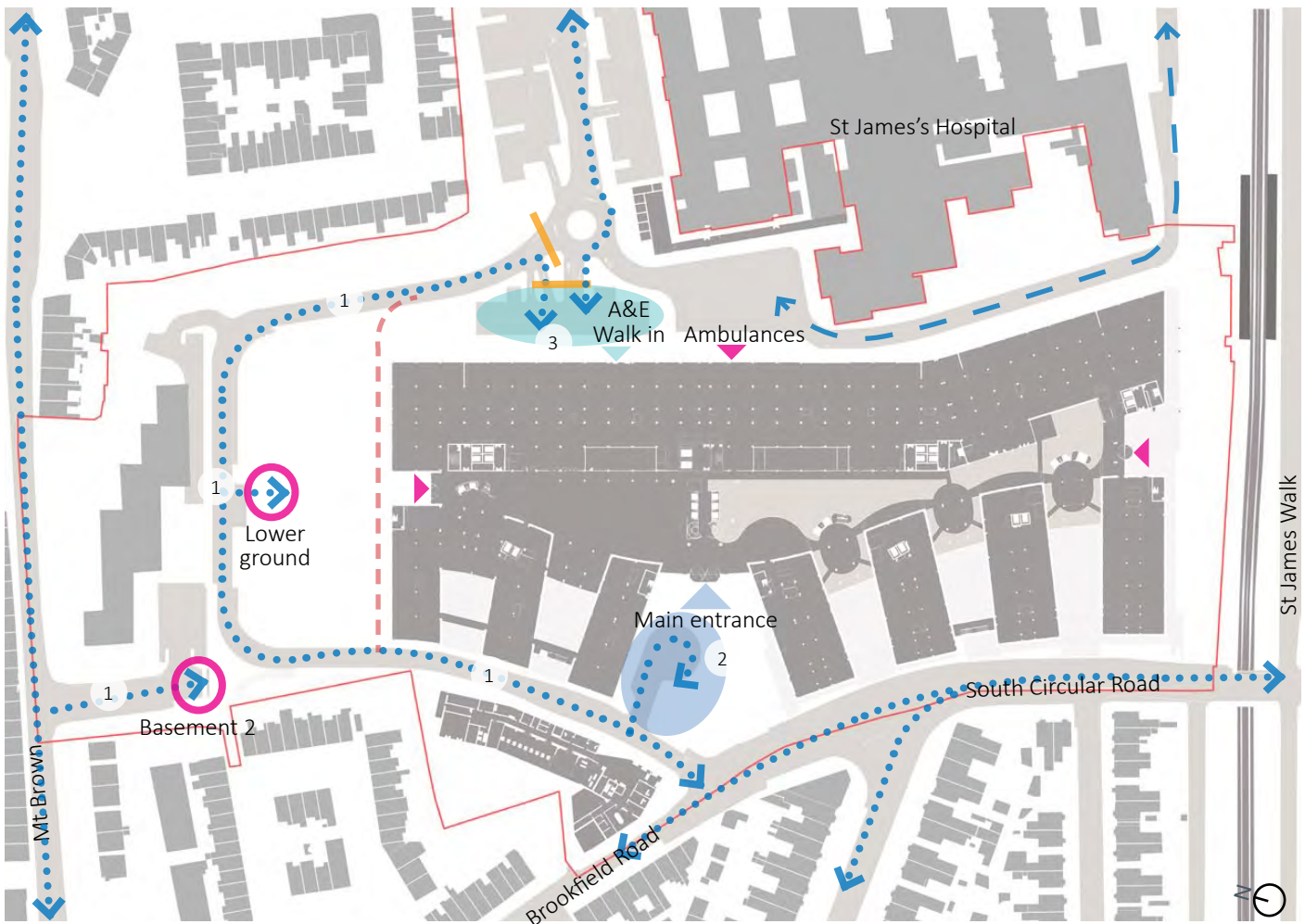


- Key
- Entrance to the New children's hospital
 - Existing bus stop
 - New/improved bus stop
 - LUAS stop

Public Transport

The proposed new children's hospital development will have good links to public transport including:

1. New bus stops by the main entrance
2. Improved bus stops to the east of the site
3. Existing Rialto LUAS stop located by the southern entrance
4. Existing bus stops on Mount Brown to the north

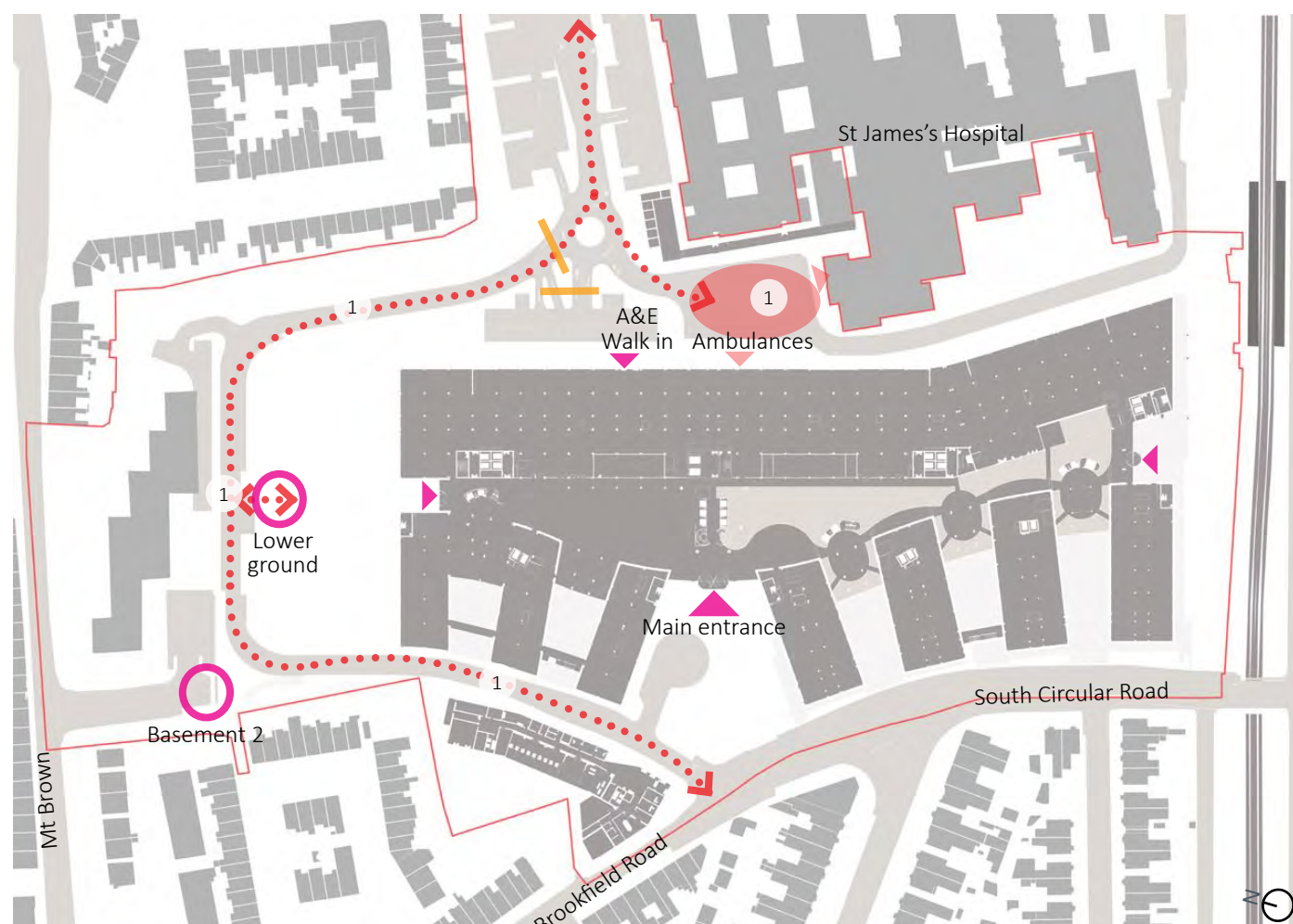


- Key
- Vehicular control barriers
 - Vehicular routes
 - Service/Maintenance access
 - Fire access through public space
 - Underground car park entrance
 - A&E parking
 - Vehicular drop off - private/taxi

Vehicular movement

The vehicular movement through the new children's hospital site will be as follows:

1. Internal campus roads leading to the new children's hospital underground car parking spaces, accessed from
2. Mt Brown or Brookfield Road
3. Controlled vehicular drop off by the new children's hospital main entrance
4. Controlled vehicular access and car parking to the new children's hospital A&E walk in entrance to the east of the new children's hospital building



- Key**
- Vehicular control barriers
 - ↔ Ambulance routes
 - Underground car park entrance
 - A&E ambulance access

Ambulance movement

The ambulance movement through the new children's hospital site will be as follows:

1. Ambulance access through the SJH Campus Road to the new children's hospital
2. Ambulance parking adjacent to St James's ambulance parking

6.2.3 Wayfinding

Wayfinding is not primarily about signs; it is about creating the aids that consciously or subconsciously influence behaviour. Successful wayfinding comes from understanding how people respond to an environment, the aids they rely on and the issues that affect their decision-making processes. Wayfinding involves signs and graphics but should be seen as part of the wider communication system and a 'reinforcement' of the intuitive wayfinding that will be a natural part of the architecture of the new children's hospital.

Our concept forms the perfect platform for an appealing and intuitive wayfinding strategy, based around the many different associations it immediately suggests: from landscape, geology and habitat to layers of history and time. The concept is organised around the four cardinal points with the Concourse orientated north-south and the central cross-axis of the Biome and ward Oval orientated east-west. In most instances visitors are offered simple binary choices: for example, left or right out of the main bank of public lifts in the centre of the Biome to the eastern or western wards and then, once inside the Oval itself, left or right into one or other of the wards.

6.2.4 Universal Access

The concept has been developed with universal access principles firmly in mind. An Application for a Disability Access Certificate to demonstrate compliance with Part M of the Building Regulations will be made to the Local Authority at the same time as the Fire Safety Certificate application is lodged. However, our intention is to exceed the base requirements and make the children's hospital an exemplar of inclusive design and accessibility, as set out in the Universal Access section included later in this Design Report.

6.2.5 Links to St James's and Future Maternity Hospital

The provision of links between the children's and adult hospitals in the short term is determined by the current layout of the adult hospital, which has developed over

time to meet its own needs, but has not been specifically developed to be connected to a new paediatric hospital. The buildings are of mixed height, varying from single to three storey in the vicinity of the children's hospital with no obvious single point of connection making sense for all of the link requirements. It has thus been necessary to consider how the adult hospital is likely to develop in the future when planning the location of links. The proposed location for the maternity hospital has also been taken into consideration in the design of the children's hospital and provision for future links. The draft site capacity study considers a number of scenarios for the future development of the campus and these have also been taken into consideration in the determining of the link strategy.

There are four key links required between the children's hospital and the adult and maternity hospital

- Emergency Links from the helipad on the roof of the children's hospital to Emergency Department in SJH
- Links for clinical staff working between the hospitals
- Facilities Management links to connect shared campus FM services located in the children's hospital to the adult and future maternity hospital.
- Link from maternity hospital to Neonatal and Cardiac Intensive care units in the new children's hospital

6.2.5.1 Emergency Links

The emergency link connects the helipad located above the garden level of the children's hospital to the Emergency Dept of the adult hospital. Adult patients arriving via helicopter will be transferred via the bed lifts in the children's hospital to ground floor level, then via the hospital street through the emergency corridor, under cover across the emergency yard to the SJH Emergency Department. This is the fastest route from the helipad to the ED that is possible with a single lift journey.

It is likely in the future that the Adult Emergency Department will be relocated and an alternative route may be developed at that stage.

6.2.5.2 Links for Clinical Staff

Clinical staff with joint appointments between the children’s and adult hospitals will benefit from the two hospitals being located on the one campus. The internal pedestrian routes through the campus are proposed to be upgraded as part of this planning application and this will improve the safety and accessibility of routes between the buildings.

In general staff coming from the Eastern side of the campus will enter the children’s hospital via the Northern Entrance off the meadow garden. This has a direct pedestrian link with the rest of the campus.

In the future it is likely that the adult hospital will be redeveloped as a taller structure. With this in mind a number of locations have been identified to facilitate future links between the children’s hospital and the adult hospital. Two links are built in on level 3. One leads directly to the central circulation core giving excellent access to all areas of the children’s hospital. The second is set out to support links to the southern end of the children’s hospital building.

6.2.5.3 Facilities Management Links

A facilities management (FM) link is proposed to connect the shared services and waste management facilities being provided in the basement of the new children’s hospital to St. James’ Hospital and the future maternity hospital. This is a key component in the shared services strategy for the campus.

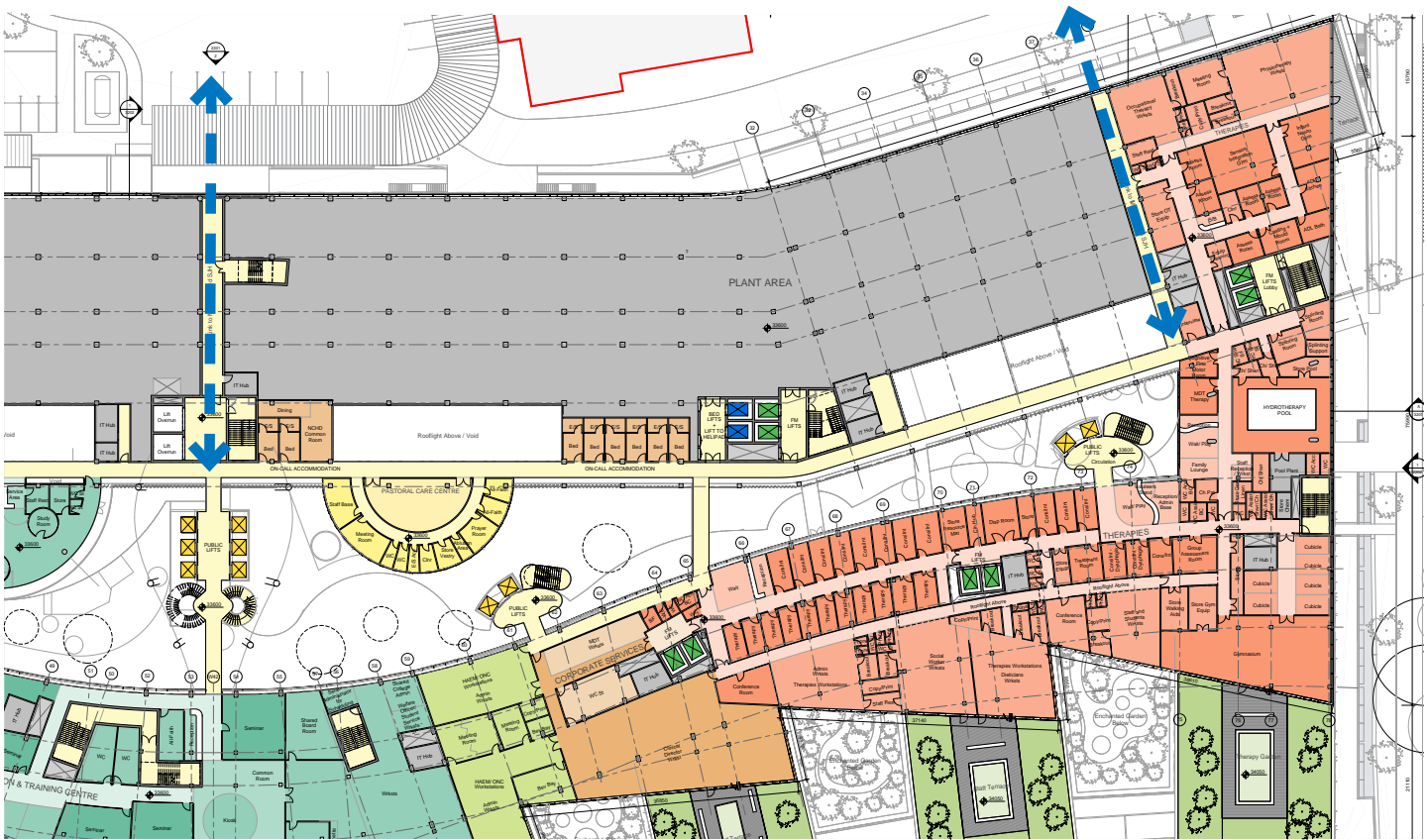
This link is facilitated via a tunnel at level B02 which connects the children’s hospital FM corridor to a new FM core located at the western end of the existing SJH Outpatient Department. The tunnel crosses over the Drimnagh sewer and is located below the access road to the Emergency Departments in both hospitals. The new lift core incorporates five service lifts and has been sized

to take all current SJH FM traffic to and from the existing adult hospital and all future FM traffic for the maternity hospital and any future expansion of the adult hospital. The FM lift core terminates at ground floor level and connects to the hospital street in SJH via a single storey link that wraps around the western end of the existing OPD building and leads to an FM holding area at the termination of the existing SJH hospital street. The holding area is located in the undercroft of an existing SJH building.

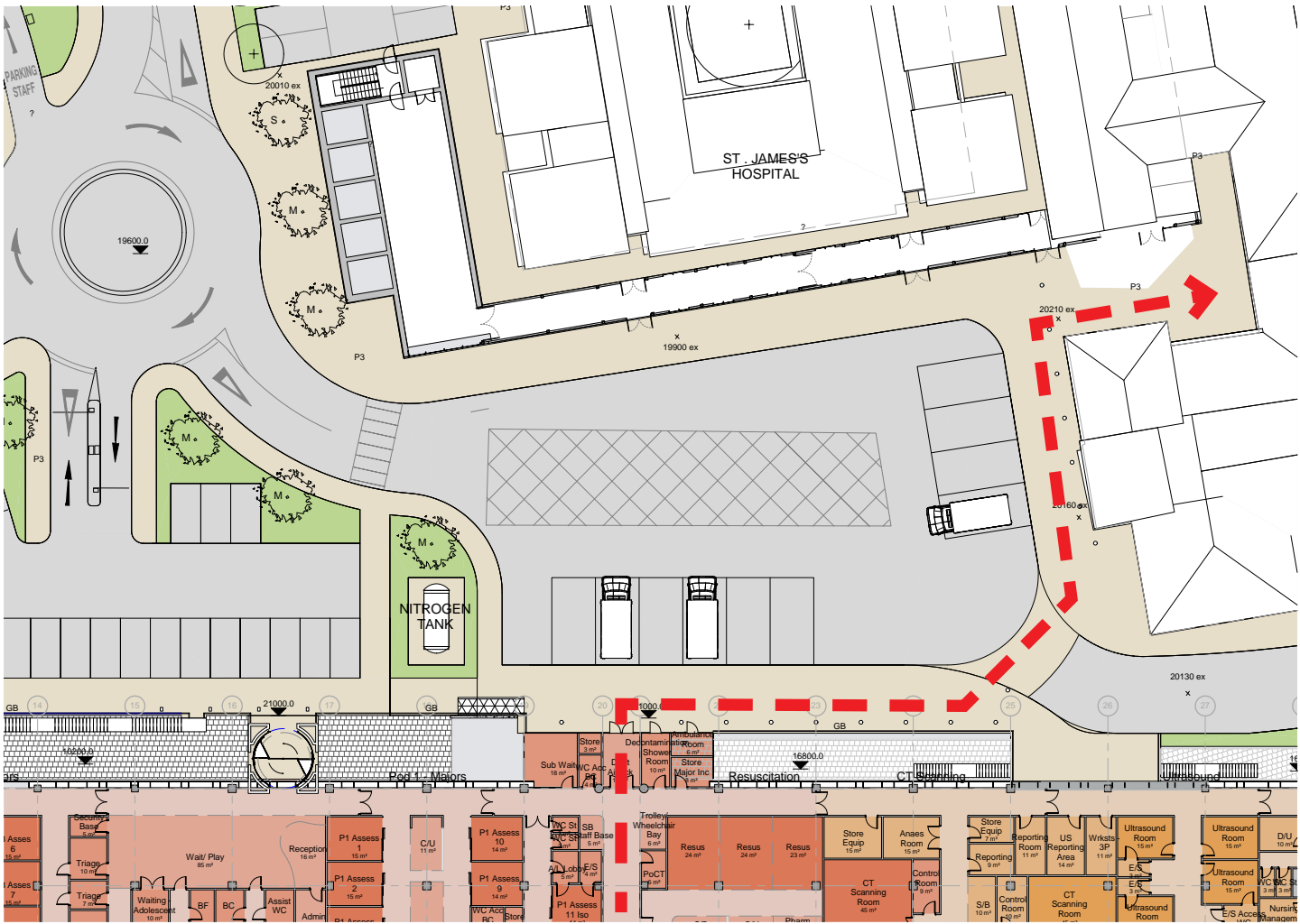
It is proposed that all FM deliveries and collections will be via automated guided vehicles (AGVs) up as far as the FM holding area. From here SJH hospital staff will collect and return carts and distribute them throughout the hospital.

The ground floor FM links are considered to be temporary as it is anticipated that in the future an FM support centre could be developed at lower ground level immediately accessible from or adjacent to this FM lift core. This will serve as a collection and distribution point in the future for the anticipated maternity hospital and all future SJH developments. A new network of lower ground level FM routes can then be planned below all future buildings, delivering an efficient FM model for the campus which can be potentially fully serviced by AGVs over time. The FM lift core incorporates a lift lobby at Lower Ground level to facilitate this future development.

The above ground element of the lift core is clad in stone to match the children’s hospital. Its location has been selected at what will become a key junction between the children’s, adult and maternity hospitals in the future. A larger core can be developed in this area incorporating staff and patient lifts with bridge links to the children’s hospital being accommodated at levels 01 and 03.



Level 03 - Clinical links (shown as blue dotted lines)



Ground Floor - Emergency link (route shown with dotted red line)



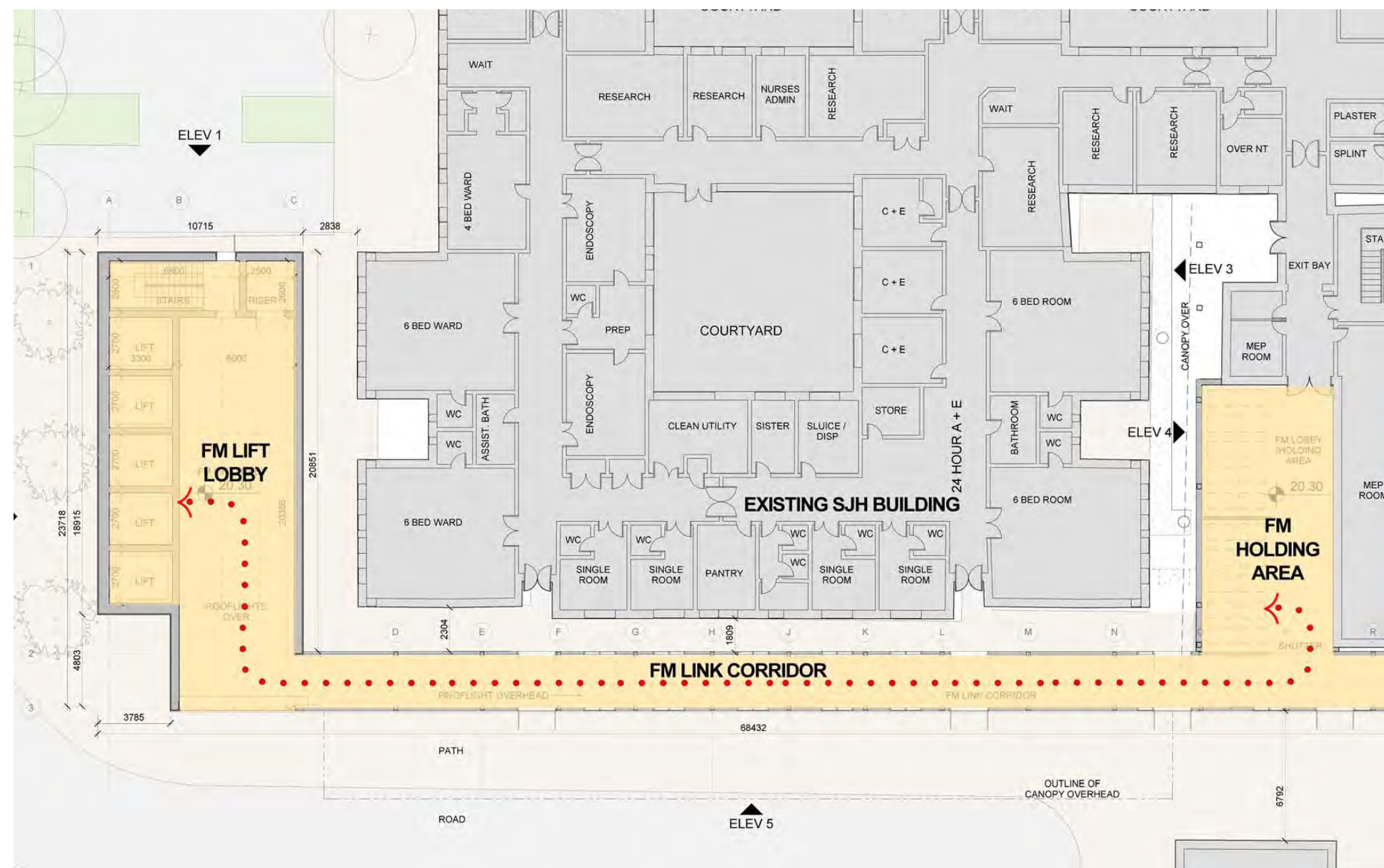
View of the existing SJH undercroft



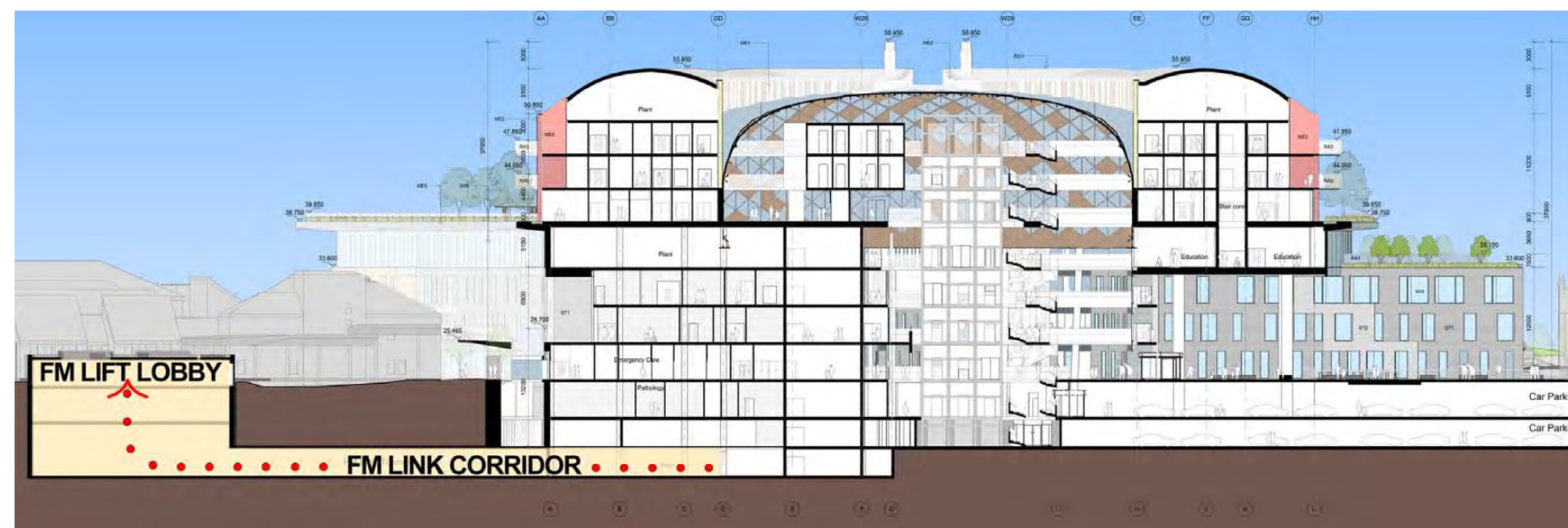
Western end of existing Outpatients building



View towards site of proposed FM core



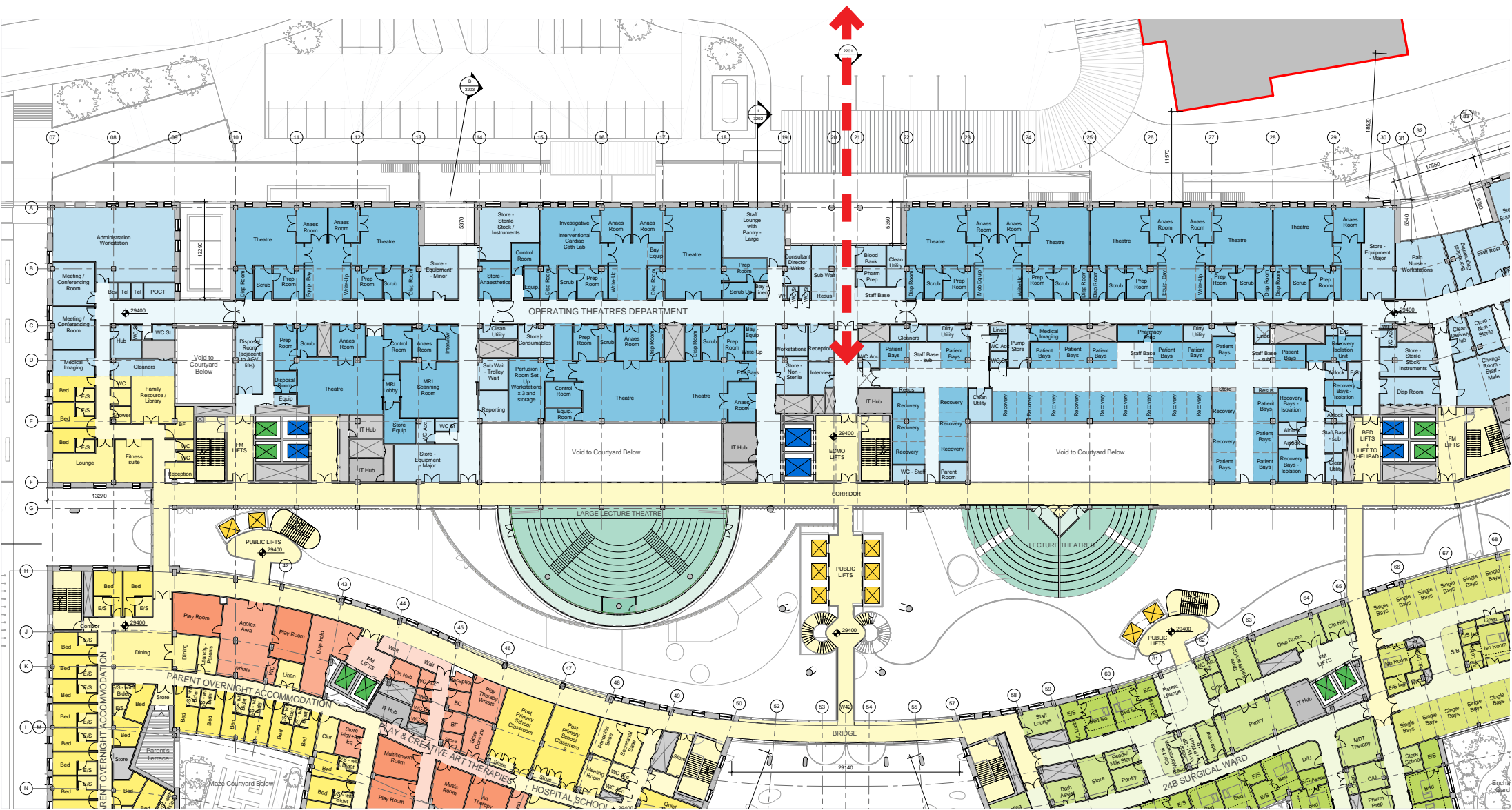
Floor plan of FM link



Section through FM link

6.2.5.4 Link from maternity hospital to Neonatal and Cardiac Intensive Care Units in the new children’s hospital

The most important clinical link between the children’s hospital and the anticipated maternity hospital is for the transfer of neonates from the maternity hospital to the neonatal (NICU) and cardiac intensive care unit (CICU) in the new children’s hospital. The critical care unit in the children’s hospital is proposed to be located on level 01. NICU is located at the northern end of the clinical block and CICU is located beside it with a hospital corridor separating them. This corridor has been designed so that it can be connected via a future bridge link to the maternity hospital when it is developed. Proximity to the proposed location for the maternity hospital was a key factor in the decision to locate the intensive care units in this location.



Level 02 - Neonatal link (shown with red dotted line)

6.2.6 Public Realm

Our proposed approach to public realm is covered in detail in the Landscape section of this Report as well as the ‘St James’s Campus Public Realm Strategy’ appended to the St James’s Campus Draft Site Capacity Study. The study, commissioned by NPHDB on behalf of the Children’s Hospital and St James’s Hospital, was very helpful in informing and reinforcing concepts for the public routes and open spaces around the children’s hospital. Here we highlight some of the most salient characteristics of this integrated architectural and landscape strategy.

6.2.6.1 Routes

The proposals include the provision of new routes as well as the upgrading and extension of existing ones. New routes into the site include the Rialto LUAS stop entrance at the southern end of the children’s hospital. This leads into the concourse, a major new public spine that runs the full length of the hospital and is conceived as a daylight atrium street, providing shared amenities and extending the external public realm into the heart of the building. Examples of upgraded routes are the proposals to renovate and extend the public steps between Mount Brown and Cameron Square or to improve the pedestrian environment along the existing St James’s east-west spine road. Other notable enhancements include the creation of cycle ways and a new wider tree-lined pavement along the South Circular between Rialto Bridge and the hospital’s main entrance.



Mount Brown Steps - as proposed



Mount Brown Steps as existing



St James Hospital Road improvements

6.2.6.2 Open spaces

The proposals include a variety of open spaces that range from fully public to semi-public to semi-private. The most prominent of these is the main entrance piazza which is conceived as a new civic space which accommodates car drop-off but is principally pedestrian in nature. Its location and form act as strong visual cues to the main entrance. This will be reinforced by the incorporation of a feature tree, public art, signage and appropriate night time lighting. The other notable public open space is the garden to the north of the children's hospital. This is referred to in the landscape section later in this Report as a meadow, an informal grass area accessible both from St James's via the upgraded footpath described above and the northern Concourse entrance. The meadow, which sits above the Lower Ground Floor car park forms a belvedere terrace with very attractive views northwards to Kilmainham and Phoenix Park.

Semi-public open spaces include the ground and lower ground level courtyard gardens that are visible between the fingers on the hospital's west side and accessible from the Concourse. The other key semi-public open space is the Oval 'rainbow garden' at Level 04 in the centre of the ward pavilion. This is accessible from the Biome café as well as from the wards and specialist outpatient clinics on either side. Passive supervision from these areas should ensure that this outdoor space can be actively and safely used by a range of patient, family and staff groups. The other rooftop gardens at Levels 03 and 04 could be considered semi-private as access to them will be more controlled.

The smallest scale outdoor spaces are the balconies included at the ends of the fingers and around the perimeter of the pavilion. These are usually combined with amenity spaces inside, providing a social focus within a clinical area.



Entrance Piazza plan



View of the Meadow Garden

6.2.7 Car parking

The current site is occupied in large part by roads, car parking and service yards – a large area of asphalt which is visually unattractive and very poor in terms of the visitor experience. As highlighted earlier, footpaths are discontinuous making pedestrian movement awkward and potentially unsafe. Given the city centre location of the campus, surface car parking was also viewed by the design and client team as a poor use of the available space.

Nevertheless car access to the children's hospital remains an important facet of its operation, particularly given its national remit which will draw families from far afield. The design brief thus included a requirement for 1000 car spaces with the majority dedicated to visitors.

Options in the early design stages explored alternative car parking solutions, including an above-ground multi-storey car park. Despite the added cost, the overwhelming preference of the client body was to incorporate all the car parking below ground with the exception of a small number of car spaces to be provided at ground level outside the ED entrance. Our proposals include 28 spaces at surface level here and the remaining 972 in two basement levels: 283 at Lower Ground and 689 at B01. This solution has been shaped by a number of considerations:

- The quality of the visitor and staff experience, including the ease of wayfinding to and from the car park;
- Accessibility, providing routes in both from the main entrance level and Mount Brown;
- Avoiding excessively large single areas, especially underground, which can be disorientating and force users to walk long distances to exits;
- A car park at Lower Ground, prioritised during daytime

for visitors, which leads directly into the lower Concourse level, making it quick and attractive to access;

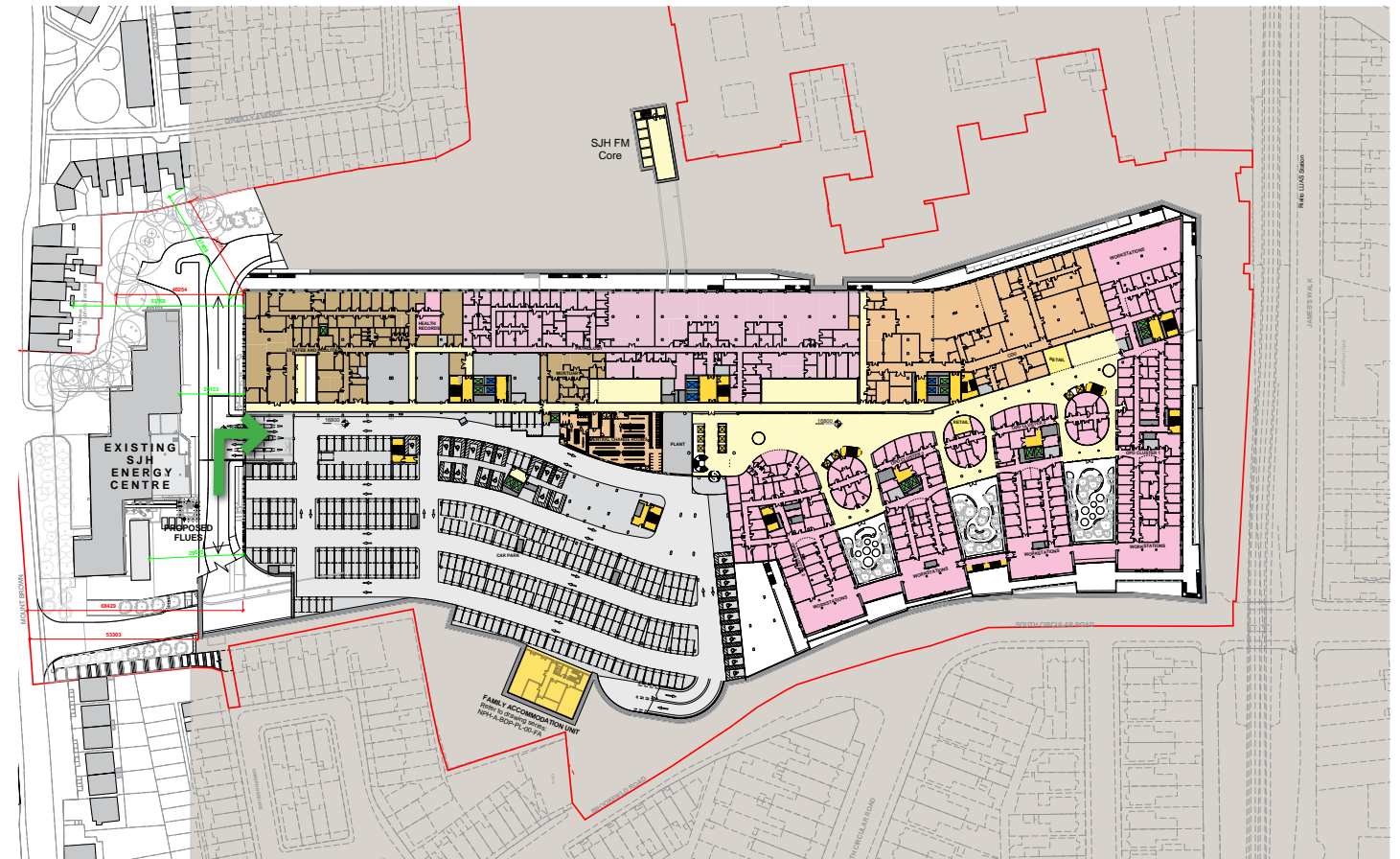
- A higher floor to floor in the Lower Ground car park (matching the 4.2m height of the contiguous clinical areas) which caters for higher tailgate family vehicles and disabled parking near the Concourse entrance;
- Introducing daylight and natural cross-ventilation as much as possible to minimise running costs and improve the user experience;
- Adopting the same 7.8m x 7.8m structural grid as the building above wherever possible to avoid expensive transfer structures and provide bays that comfortably accommodate three cars abreast without awkward parking manoeuvres;

The proposed design was the preferred solution from a series of alternatives discussed with the client team. These ranged from a largely above-ground multi-storey car park (considered as part of the Longlist options) to different combinations of surface and basement car parking. In addition to the considerations listed above a key advantage of the proposed solution is that it does not utilise the area just to the north of the main building for surface car parking. We estimated that up to 150 cars could be parked here but the client team felt that it was better to accommodate all cars (apart from those outside ED) within the basements because this preserved a completely unencumbered expansion space at the northern end of the site.

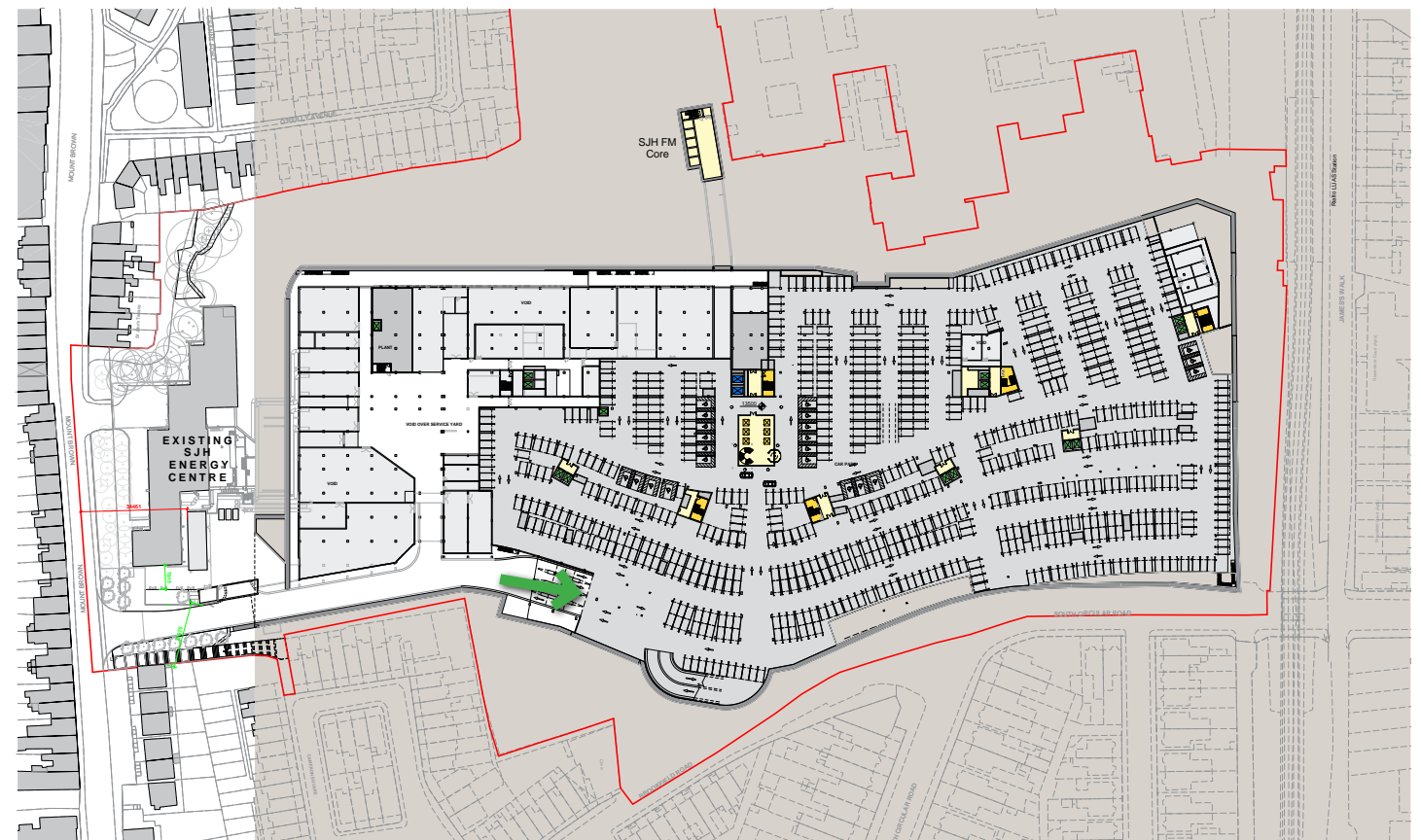
In summary, the proposals include a total of 1000 car parking spaces and 400 bicycle parking spaces as follows:

Ground Level:

- 28 Car parking spaces for ED
- 50 Bicycle spaces



Level LG - car parking access



Level B1- car parking access



South elevation in context showing new children's hospital in relation to MISA building

Lower Ground Level:

- 275 Car parking spaces (of which 26 are disabled parking)
- 6 Parking spaces for Bereavements/ Mortuary
- 5 Ambulant patient transfer parking spaces
- 350 Bicycle spaces

Basement 01:

- 686 Car parking spaces (of which 22 are disabled parking)

6.3 Massing

The massing of the children's hospital is a key aspect of the design that will affect not only the way in which the building functions as a clinical facility but also the way it is perceived as a place and an integrated part of its urban context. In this section we set out the influences on the proposed massing, which include the city's development plan policy, clinical space standards, engineering requirements, residential amenity and townscape considerations.

6.3.1 City development plan policy and standards

The policy and framework for planning and development on the site is described in detail in the Planning Report (Volume 1 of the planning application). The key parameters affecting the design are:

- **Plot Ratio** - the recommended Plot Ratio is between 0.5 - 2.5
- **Site Coverage** - the maximum site coverage allowable is 50 %
- **Open Space requirements** - the open space requirements are 10 % - 20 % public open space as provided for in paragraphs 17.2.3 and 17.9.1 of the Development Plan.
- **Height Restrictions** - as the site is not located in one of the areas specified for tall buildings within the City

Development Plan, the maximum height allowable for new development on the site is 28m or seven storeys. However, there is precedent through the decision of An Bord Pleanála to grant permission for the Private Co-located hospital on the children's hospital site in 2010 to a height of just over 32m

As mentioned earlier in this Report, the design team have considered these parameters very carefully in developing the proposals. The concept is tailored to the site and has a nuanced approach to each of the site's boundary conditions. In terms of the planning parameters:

- **Plot Ratio** - the plot ratio of our proposal is 1.9, which sits comfortably within the maximum ratio of 2.5.
- **Site Coverage** – the site coverage of our scheme is 42 %, compared with the maximum of 50 %.
- **Open Space** - with its extensive public realm and ground and rooftop gardens the design comfortably exceeds the 10 - 20 % target for open space. Excluding rooftop gardens above the Ground Floor, the proposals include 18 % open space. Including all rooftop gardens, this figure reaches 45 %.
- **Height Restrictions** - the proposed design has seven occupied floors above ground level in compliance with the guidelines. In line with normal hospital practice engineering plant occupies the building's rooftop, screened from view by a curved roof on the outer perimeter of the oval pavilion and acoustically attenuated louvres on the inner perimeter.

The resulting parapet height of 30m above ground level is close to the guideline dimension of 28m. It is worth highlighting that this taller element is confined to the ward Oval which is set back significantly from the site

boundaries. The Ordinance Datum height of the ridge of the rooftop plantroom is +55.955m, which is comparable to the Ordinance Datum of the Mercer Institute of Successful Aging, a new clinical building nearing construction completion towards the eastern end of St James's Hospital. It is also comparable to the height of the previously consented Collocated Private Hospital, which is shown for comparison purposes in a number of the verified views included in Chapter 14 of the EIS.

6.3.2 Floor-to-floor Heights

The building's proposed storey heights follow best-practice hospital norms. As noted in the Planning Report, these storey heights are generally higher than commercial buildings, so a typical seven storey hospital would be expected to be considerably taller than the 28m referred to in the DCC guidelines, a figure based on the typical storey height in a commercial building of 4m or less.

The proposed storey heights are as follows:

- 4.2m for the podium levels, where departments like Imaging or Operating Theatres require greater height for the effective operation of large-scale medical equipment and there is also greater demand for engineering services within the ceiling space;
- 3.8m for the wards, where room heights can be lower and there is less demand for engineering services
- 5.15m for the interstitial floor, which requires greater height for the main engineering plantroom serving the podium's diagnostic and treatment areas below.

Compared with other hospitals, these heights are at the lower end of the typical scale and have been chosen so as to minimise the children's hospital's overall height. The exact dimensions have been validated in terms of

functionality by all members of the design team.

6.3.2.1 Other Design Strategies to Minimise the Hospital's Height and Scale

In addition to compressing the storey heights as much as possible, the design team has also adopted other strategies that minimise the hospital's height and perceived scale:

- **Compact form** – the hospital has been designed to be as compact as possible with large floor plates within the podium levels. This optimises clinical adjacencies but also means that the use of the available site footprint is exploited as fully as possible within the planning guidance related to site coverage and open space provision;
- **4 wards per floor** – the previous design for the children's hospital on the Mater site included an inpatient tower with two wards per floor. Our proposals for the three-storey ward pavilion are based on four wards per floor. As with the podium, this brings distinct clinical advantages in terms of adjacencies but it also has the added benefit of keeping the ward pavilion to three floors;
- **Basement levels** – the design incorporates a significant amount of clinical and non-clinical space below ground spread across all three of its basement levels. This includes areas like outpatient clinics that would normally be located above ground. The perimeter sunken garden (or 'moat') was adopted to introduce daylight to these spaces and support the strategy of locating them below street level in an effort to contain the hospital's overall height;
- **Underground car parks** – as mentioned earlier in the Design Report, initial design options explored alternative locations and configurations for the 1000-space car park.

Some of these included the potential for a multi-storey car park above ground which resulted in a more compact clinical footprint with a consequent increase in the hospital’s overall height. This was rejected in favour of the current proposal which incorporates 972 car spaces below ground;

- **Floating garden and oval pavilion** – as described later in this section, the design concept is very effective in reducing the hospital’s perceived scale both from nearby and more distant views;

- **Curved roof** – in many hospitals rooftop engineering plant is typically left exposed or is sometimes screened by louvred panels. Our proposals visually contain the array of different engineering elements beneath a curved roof. This form not only enhances the shape of the oval pavilion but, when seen from nearby street level views, is largely hidden from sight due to its angle of curvature;
- **Interstitial plantroom and basement energy centre** – in developing the mechanical and electrical engineering

strategy every effort has been made to locate plant where it has as little impact on views and massing. As much plant as possible has been located in the basements. This includes areas serving the fingers that in an earlier version of the design were located above the fingers on Level 03. These were deliberately relocated to the basement (and replaced with garden terraces for patients and staff) in order to reduce the height of the fingers.-

6.3.3 Perceived Scale

The new building will be perceived in different ways depending on the angle of approach and distance of the viewer. In developing and refining the design concept we have considered the building’s visual impact from different vantage points, using verified views developed by specialist consultant Brady Shipman Martin. These are included in full in Chapter 14 of the EIS. The vertical zoning of the concept, as described above, was very



Cross section through building

deliberately developed to reduce the building's perceived scale. Particularly effective in this regard are the creation of multiple rooftop garden levels, which blur the boundary between existing and 'invented' topography, and the form of the Oval pavilion, whose curvature significantly diminishes its perceived mass from most viewing angles.

6.3.3.1 Nearby views

There is public access to the full perimeter of the children's hospital, so it will be visible close-in from all sides. From these areas the podium levels will dominate the view with the Oval pavilion less visible above. The ridge line will not generally be visible, only the parapet line of the pavilion.

On the west side the foreground is occupied by the projecting fingers and interspersed courtyard gardens. At the southern end of this side the rise in the South Circular as it crosses the Rialto Bridge diminishes the perceived height by almost a storey, making the two southernmost fingers read as though they are only two storeys above street level. Further to the north the main entrance piazza offers one of the few vantage points at ground level from where the full height of the building to the pavilion's parapet line can be appreciated. This allows visitors to take in the overall form of the hospital and orientate themselves in relation to its principal elements. The main entrance piazza provides a horizontal counterpoint to the height, creating a large 'breathing space' between the mass of the hospital and the nearest neighbouring buildings on the other side of Brookfield Road 50m or more away.

The Family Accommodation Unit, which varies in height between one and four storeys, creates an intermediary scale between the hospital and neighbouring houses on this side. The FAU, which is described in detail later in



View from South Circular



View from Rialto Bridge

this Report, occupies the foreground in many views from Brookfield Road and Cameron Square, masking the scale of the taller hospital mass behind.

On the north side the nearby views will be dominated by the podium and ‘floating garden’ above with little visibility of the pavilion.

On the east side, coming from the adult hospital, there are longer vistas of the building but nearby views by the ED entrances will reveal very little of the upper part of the building.

On the south side the pavilion will appear only in the distance with the foreground dominated by the podium, southern entrance to the Concourse and helipad. This sits 3m above the ‘floating garden’ in vertical alignment with the entrance. Views at ground level from the linear park or Rialto LUAS stop will be broken up by existing and new trees.

6.3.3.2 Middle-distance views

The hospital will be visible in middle distance views from a number of places as shown in the verified views included here. These views provide more fleeting glimpses of the hospital in the context of other existing buildings, roads and open spaces. The top of the children’s hospital is not always visible. When it is, the pavilion tends to read as a building in its own right, sitting within an elevated landscape, whilst the lower podium levels of the hospital tend to merge into the more variegated foreground of existing buildings.



View from Brookfield Street



View from Old Kilmainham Road



View from James Walk



View from South Circular

6.3.3.3 Distant views

Some of the verified views demonstrate that the hospital is not visible at all from certain more distant vantage points. When it can be seen, the podium levels are generally out of sight with the pavilion and rooftop gardens being the only elements that appear. In these city-wide panoramas, like the view from the Guinness Storehouse, the floating garden is particularly effective in creating the impression of a false ground level and reducing the perception of the children's hospital to the oval pavilion alone.



View from Guinness Store House



View from Helberton Road

6.3.3.4 View from the Irish Museum of Modern Art, Kilmainham

As a protected structure of national importance the former Royal Hospital at Kilmainham has had a significant influence on the form of the design concept. The verified views from Kilmainham show how the axial alignment of the children's hospital and the clear geometric form of the pavilion relate very effectively to their historic antecedent.



View from IMMA

6.3.4 Energy Centre Flues

The existing St James's energy centre flues are the tallest feature on the current campus. These rise from the southern face of the energy centre building in a cluster of eight pipes, four abreast either side of a central steel structure. Four of these pipes are now redundant.

The children's hospital includes its own energy centre located on Level B02. This requires 12 new flues, which need to be in close proximity to the boilers and standby generators within the proposed energy centre. The architects and mechanical and electrical engineers investigated a number of options for the design of the new flues. These included:

- A new flue stack sited just to the south of the existing St James's flues. This was felt to be too intrusive on the skyline, particularly in views from the west and east where it effectively doubled the width of the existing flue stack
- Two new flue stacks combining the children's hospital and St James's provision in a location above the proposed energy centre on axis with the centre line of the oval pavilion. This made the flues seem more prominent than necessary
- Two new flue stacks combining the children's hospital and St James's provision in a location just a few metres to the south of the existing flues. This was chosen as the basis for our proposal because it most closely respected the status quo.

The proposed stack in this location has a total of 16 pipes (12 for the children's hospital and 4 for St James's), arranged in a square configuration around a steel structure and access stair. The pipes are angled at the top, reflecting the different height requirements of the different flues.

The heights have been determined by the engineers (ARUP) in accordance with best-practice guidelines and statutory regulations.

Proposals for the flues include the idea of incorporating a sun dial on its southern face and clocks on its other sides, making the stack more than just a utilitarian landmark as at present. The aim is to involve an artist at the next stage of design development to explore different ways of taking this idea forward.

6.3.5 Residential Amenity

The design's potential impacts on residential amenity are covered in detail in the Planning Report and EIS. It is worth highlighting here that these were considered very carefully by the client and design team in assessing initial options and then selecting and refining the preferred approach. The characteristics of the building's massing described above not only reduce its scale (actual and perceived) but help to minimise potential impacts on local amenity, including overlooking, overshadowing and daylight/sunlight effects.

Section 8.0 demonstrates how the design has responded to comments and feedback from neighbours and has been sensitively tailored to the varying boundary conditions around the site's edges.

7.0 External Character and Materials

7.1 Design Intent

The hospital's external and internal appearance will reinforce the idea of the floating garden and the sense of lower floors being 'below ground' (solid and rock-like) and the upper floors being 'above ground'.

On the west side the elevations to the lower four floors emphasise the idea that the projecting fingers are separate

individual buildings, minimising their apparent scale. Glazed bridge links between the fingers break up the long elevation to the South Circular and allow glimpses into the courtyard gardens behind, where flashes of colour add a note of surprise and playfulness. This approach is very effective in relating the scale of the hospital on this side to that of the 3-storey houses opposite. Coming along the tree-lined section of the South Circular from the west, for

example, the road aligns with one of the glazed gaps and the houses align with the solid mass of the fingers on either side (which are of similar height to the houses) as if the hospital were a natural extension of the existing vista.

Stone is proposed for the facades to the podium not only because it gives the lower parts of the building the desired feeling of solidity but also because stone is associated with

major civic buildings in Dublin, so the design and client team felt instinctively that it was the right material for a building of national importance.

The 'interstitial floor' is treated on the elevations as a distinct band legible around the building's entire perimeter – the 'ground line' supporting the floating garden above. The ward Oval is lighter weight in finish,



View from Rialto Bridge



Sectional axonometric through main entrance and piazza

creating a deliberate contrast with the lower floors of the hospital. This reinforces the sense that the Oval is a separate ‘building’, breaking down the overall perceived scale of the hospital. The Oval’s legibility as a geometric shape, together with its materials, will tend to become synonymous with the Children’s Hospital image – whilst the lower floors register as the ‘landscaped mound’ on which the Oval is set.

7.2 Fenestration

Within this overall design intent the approach to fenestration works with the grain of the concept’s different elements. Windows in the podium are deeper set, punched-hole types, arranged in what appears to be a more ‘playful’ fashion with different widths creating a variety of patterns on the building’s different facades. This contrasts deliberately with the unifying horizontal regularity of the interstitial floor, which has been conceived as a giant, wrap-around frieze. It also contrasts with the vertical emphasis of the windows to the ward pavilion, where the nature of the bedrooms dictated a particular window pattern. The vertical rhythm enhances the feeling of curvature of the oval, which is further reinforced by the insertion of vertical fillets of colour. This subtle inclusion of colour makes the pavilion distinctive without over-emphasis, marking the hospital out on the skyline as a special place for children. The exact choice of colour gradation is something we envisage finalising in the course of the next stages of design development with the contribution of an artist. The intention is to integrate elements of these colours with patterns in the chosen materials for the rooftop landscape, playing with the theme of the ‘rainbow garden’, described in the Landscape section later in this Report.

This window strategy also suits the nature of the clinical spaces inside the building, which is very varied within the podium and more repetitive within the ward pavilion. Finalisation of window sizes and their placement within individual facades, therefore, has evolved primarily in response to the internal layouts and specific room types. There are a number of frequently repeated rooms that recur around the hospital, including bedrooms, exam/consult rooms and, on the east side, operating theatres, that each have a standard window. This ‘standard’ window has been developed to provide good daylighting levels,

appropriate to the scale and function of the room, and, where appropriate as in the bedrooms and most exam/consult rooms, to incorporate opening vents for fresh air.

There are three zones of windows in the building that correspond to the podium (Lower Ground to Level 02), the interstitial level (03) and the ward Oval (Levels 04-06).

7.2.1 Podium

In the podium the playful arrangement of windows is overlaid with a countervailing rhythm of projecting metal fins in different colours, which provide solar shading where necessary

on exposed facades. In the courtyard elevations the stone is ‘peeled back’ to reveal a coloured surface of glazed tiles that are suggestive of mineral strata. The colours change from courtyard to courtyard, giving each one a distinctive identity that aids wayfinding and can be associated with the identity of the individual outpatient clusters.

Curtain wall glazing is used between the fingers to keep them distinct and admit as much daylight as possible into the Concourse and courtyard gardens. Full-height glazing is also used for the three entrances to give them emphasis and draw visitors into the interior. Importantly, the glazed screens

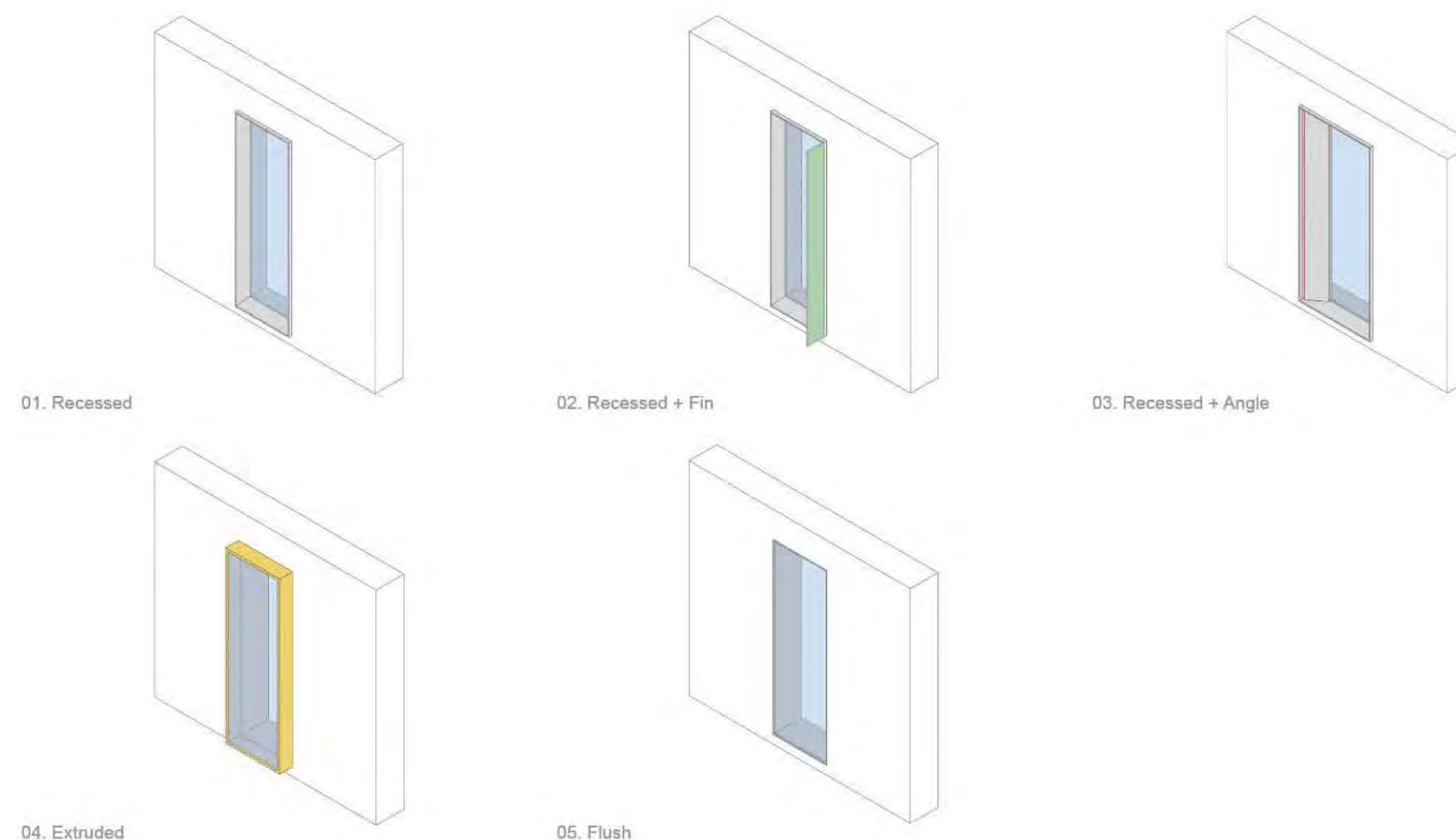


Diagram of window types

provide visual continuity between outside and inside, allowing the exterior form of the fingers, for example, to be as legible internally as externally. On the north, east and south elevations part of the ground floor has a continuous ribbon of glazing. This runs the whole length of the east elevation, creating a ‘portico’ effect and bringing daylight into the principal public circulation spine in the Emergency and Imaging departments. The ground floor glazing is interrupted on this side at irregular intervals by projecting metal-clad bays housing patient waiting areas within ED. The two entrances to the department also project out, forming bridges across the

sunken garden. These are also marked out by lightweight steel and glass canopies. The canopy by the ambulance entrance shelters the rear of the ambulances and continues around the full western and southern perimeter of the drop-off zone unifying children’s and adult EDs.**7.2.2 Interstitial Level** The interstitial level is deliberately distinct from the podium both in terms of its surface treatment and floor to floor height, as described above. The interstitial level is capped by projecting eaves, which have been designed as a ‘giant table-top’, visibly bearing the weight of the garden and ward Oval above. The exact design of the

‘frieze’ mentioned earlier in this section will be developed in collaboration with an appropriate artist at the next stage of design. The idea is that there could be an overall artistic or graphic theme which can be overlaid on the glazing or reproduced as perforations in metal screens placed in front of the plantroom louvres on the east façade.

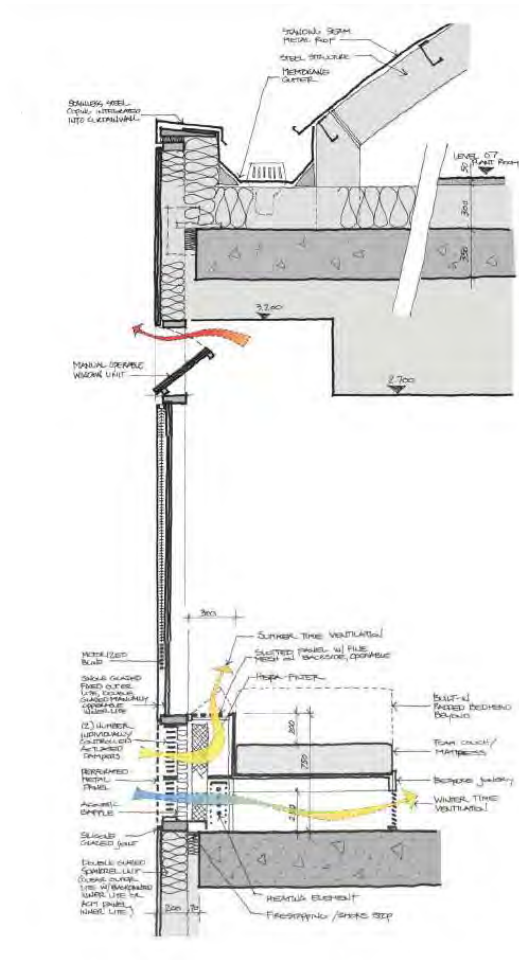
7.2.3 Ward Pavilion

The wards are generally composed of the same internal template, each with 24 bedrooms, making up a cluster of four wards per floor. For this reason the window pattern

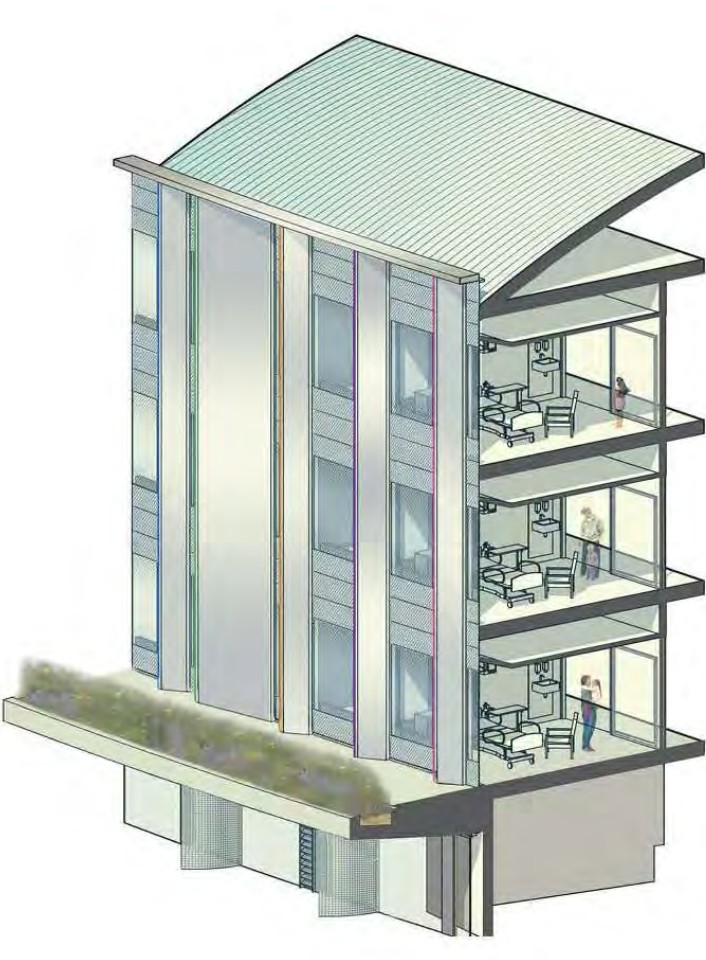
on the ward levels (04-06) is repetitive. A number of studies were carried out during design development to test different sizes and arrangements of windows. These were influenced by factors like daylight, natural ventilation, views out from the patient bed and the inclusion of a parent sofa-bed against the window wall. The studies were informed by air flow and daylight models produced by the engineers.



view from a child's perspective



Natural ventilation section - Ward bedrooms



7.3 Materials

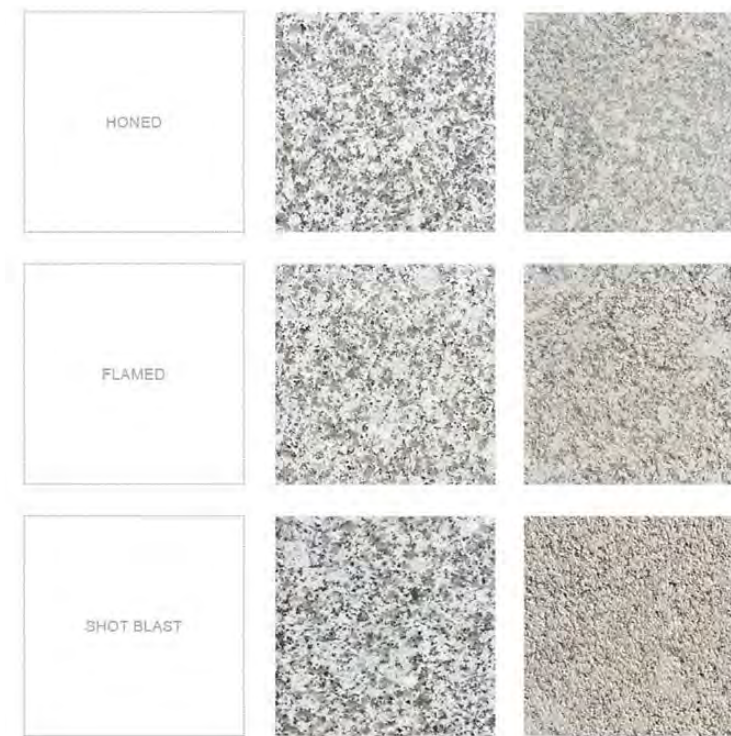
The principal material choices for both the interior and exterior have been informed by:

- The design concept and its legibility
- The creation of an appropriate sense of place that integrates the children's hospital with its context
- Robustness and ease of maintenance
- Cost
- Infection control
- Ease of construction and potential for prefabrication
- Thermal performance

7.3.1 Podium

The prevailing material proposed is stone with the favourite in terms of colour and grain being a mottled grey granite. The specification of the exact stone type will be developed at the next stage. 1:50 scale bay studies are included as part of the planning application and illustrated opposite. These show our approach to the coursing of the stone and give a feeling of the overall intended effect in terms of colour and grain. The 'rips of colour' that occur from time to time on the principal elevations and also within the finger courtyards are composed of glazed ceramic tiles in a range of colours. A similar treatment is envisaged to the skylight cones that illuminate the Concourse and project into the Level 04 garden, becoming part of the playful rooftop landscape.

The selection of the wall cladding will be coordinated with the choice of paving material to the entrance piazza and Concourse, so that the base of the building has a coherent quality binding it together.



Material - system selection



Minerals of Irish Counties



Detailed finger elevation study

7.3.2 Ward Oval

Windows here alternate in vertical bands with metal panels, giving the Oval a gentle reflective quality and a feeling of being midway between earth and clouds. Balconies give rhythm to the elevation and highlight the bedroom clusters. Flashes of colour are introduced to the edge of the panels and will be visible from some vantage points but not others, giving the wards a surprising 'now-you-see-it-now-you-don't' quality.

The Oval is capped by a curved standing seam metal roof that masks the rooftop plant (chillers, air handling units, extract fans, lift motor rooms and so on) and plays down the building's height, as described earlier in this section. The Oval's interior garden elevations will be identical in terms of fenestration but may differ in colour or texture, perhaps with a more reflective or lighter finish to boost light levels. The centrepiece of the garden will be the Biome, reminiscent of the quality of structures in a botanical garden. Its structure will be carefully detailed to create a light and open feel that preserves the continuity of the garden and its cross views. The north-facing side of the Biome will be predominantly glazed, taking advantage of the good quality, glare-free light, whilst the south side will be more solid (with metal panels externally and a timber lining internally), controlling the amount of sunlight admitted to avoid excessive build-up of heat.



View of the oval garden

8.0 Boundary Conditions

8.1 Introduction

In contrast with the oval pavilion and its pure geometric form, the design of the podium has been developed as an irregular form both in plan and section to allow it to respond, as appropriate, to the characteristics of the podium's varied internal functions and the site's different boundary conditions. This variety of response is central to the design concept, reducing the building's overall mass and helping to 'embed' it in its context. It gave the design team considerable leeway to adjust the building's external form in response to comments from stakeholders, including neighbours, without compromising the overall integrity of the architectural idea.

Below we summarise the approach adopted for each of the site's principal boundaries. Further detail on some of these areas is provided in the Landscape section of this Report.

8.2 South Circular

This will be the children's hospital's principal public face, extending from Rialto Bridge at the southern end of the proposed building to the main entrance which is roughly coincident with the point where the South Circular turns westwards.

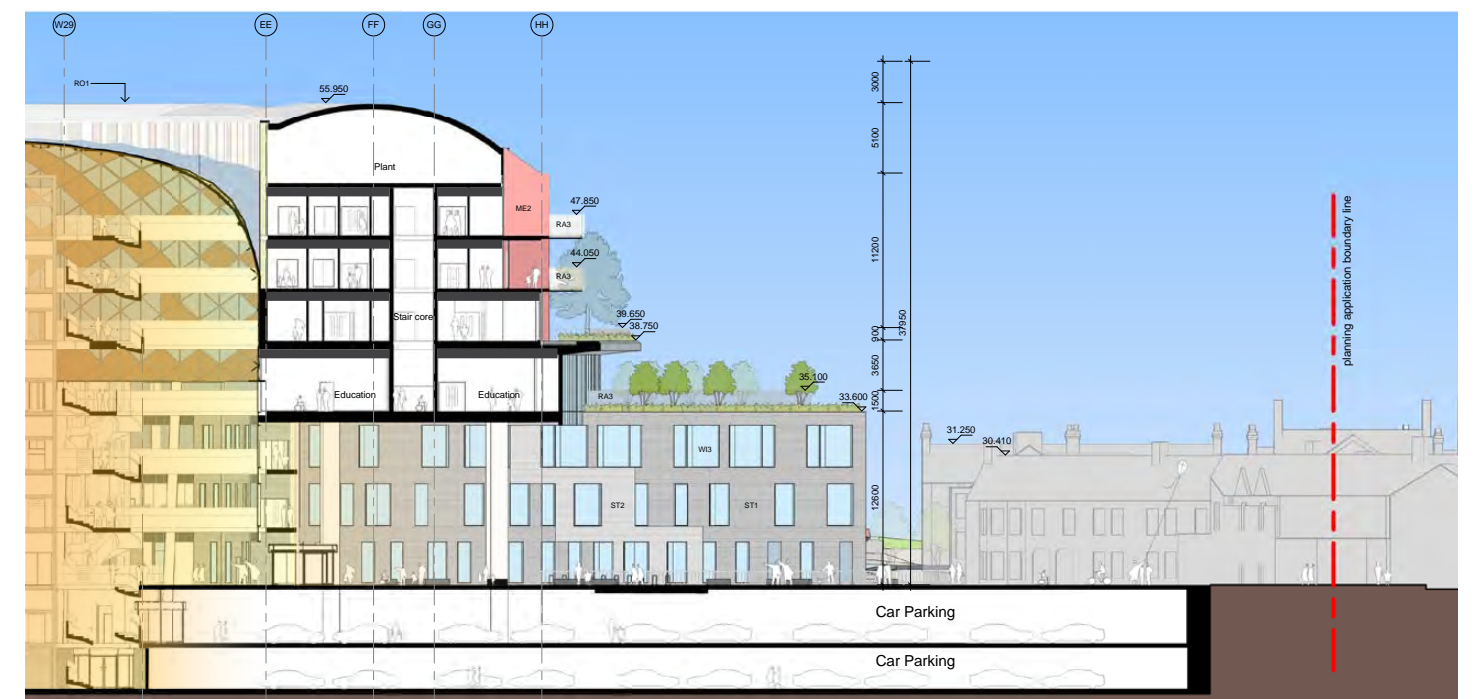
As can be seen from the west elevation, the building's height above street level along this side is three storeys (Ground Floor, Level 01 and 02). The Lower Ground Floor is set below street level, separated from the pavement by a sunken garden that varies in width.

The east-west cross-section shows how the parapet height of the hospital along the street edge (+33.6m datum level or between 10m and 12.5m above the adjoining sloping street level) is of similar scale to that of the houses opposite. The plan dimension between the hospital and the houses varies between 24.97m at its widest near the bridge and 21.92m at its narrowest where the South Circular changes direction.

The form of the building on this side is composed of four

wings (or fingers) that project out from the concourse and main body of the building. These fan out in plan with their ends perpendicular to the curving plan shape of the South Circular. Each finger is 20m wide and its end elevation is

divided into three parts: two stone faces either side of a glazed central section incorporating two levels of balconies. This treatment breaks down the mass of the fingers into smaller solid elements in keeping with the general scale of



East-West cross section - Detailed view



West Elevation



View of the Main Entrance

the residential neighbourhood opposite. The fingers are joined together at their western end by glazed bridge links on each level. The glazing, which is set back from the ends, keeps the fingers distinct from one another and affords views from the street into three garden courtyards located at Lower Ground Floor.

A sunken garden (or 'dry moat') located at Lower Ground Floor in front of the fingers and parallel to the South Circular provides daylight to perimeter rooms at this level. It also provides privacy to the clinical areas on the lower levels of the fingers as well as creating a secure perimeter to the hospital without resorting to overtly defensive measures. Proposals here include the upgrading of the pavement, creation of a new cycle way and planting of new deciduous trees along the whole frontage from Rialto Bridge to the hospital's main entrance piazza.

At Level 03 (referred to earlier in the Report as the interstitial floor) the building line sets back eastwards, creating roof terraces and soft landscape above the fingers. These will be used by patients and staff using the adjoining departments, which include Therapies, Haem-Oncology and Education. The line of the building, where it steps up from Level 03 to the 'floating garden' on Level 04, follows a zig-zag pattern that straddles the fingers and parts of the courtyards below. The zig-zag was chosen over the alternative of a continuous curving line because it was felt to be more dynamic and less monolithic, particularly when viewed from street level. It also enhances the quality of the Level 04 garden by creating a sequence of 'pocket' landscape spaces along the edge in which we propose to plant clusters of trees. The inclusion of trees here is an important part of our landscape approach, described in more detail later in the Report.



Rendered Axonometric

8.3 Brookfield Road

At the point where the South Circular changes direction and Brookfield Road commences the run of fingers is interrupted by a generous piazza that leads to the hospital's main entrance. Three further fingers project out from the building just to the north of the piazza, continuing the rhythm of stone fingers alternating with glazed gaps and courtyard gardens. The shape of the piazza is thus defined to the north and south by the fingers whose splayed geometry naturally draws visitors towards the main entrance.

The piazza is also defined in part by the southernmost face of the Family Accommodation Unit, a four storey brick building which wraps around the corner into, and runs part way along, Brookfield Road (for further detail on the FAU please refer to the detailed description included later in this Report). The existing house and shop on the opposite side of Brookfield Road, which form the corner with the South Circular, give definition to the piazza's western side. The landscape proposals show a new surface treatment of stone sets extending out from the main entrance across the new internal hospital road and Brookfield Road itself. This is intended in part as a traffic calming measure but principally to signal the presence of the main entrance and draw new and existing buildings together.

The main entrance is set within a three-storey high glazed wall, which runs full width across the eastern side of the piazza between the fingers. The glazing terminates on the underside of the interstitial floor, which sails over the entrance at Level 03 extending the zig-zag garden edge northwards. The line of the entrance glazing is gently curved in plan, echoing the face of the oval ward pavilion



View from Brookfield Road

above, which reveals itself fully for the first time. This is one of only two points on the perimeter (the other being the equivalent position on the eastern side of the hospital) where the building's full height can be appreciated. The visibility of gardens, balconies and bedrooms from the piazza as well as glimpses into the concourse will give visitors a reassuring sense of the hospital's life and 'buzz', a welcoming and non-institutional feeling.

From the piazza northwards the plan form of the building curves away from Brookfield Road, following the line of the new internal campus road. The Family Accommodation Unit, located on the opposite side of the campus road, follows the same curve. A sizable garden for guests of the FAU forms a landscape buffer between the rear of existing houses on Cameron Square and the campus developments.

8.4 Cameron Square

The southern terrace of Cameron Square faces onto the FAU garden. The mature existing trees along this edge will be preserved and integrated into the proposed family garden. The eastern terrace faces onto the north-west corner of the hospital and the open space of the meadow garden on the hospital's north side.

Proposals here include the renovation of the existing public steps that lead up to Cameron Square from Mount Brown. As can be seen from the photo, the steps are currently in a very poor state. The detail of proposed improvements is covered in the landscape section of this report but it is worth highlighting here that the proposals include opening up a new entrance into the campus at the top of the steps. This will connect to a new footpath that follows the campus road, improving pedestrian permeability across the site. New trees along the boundary will help to screen the campus from view and improve privacy for the rear gardens of Cameron Square residents on this side.

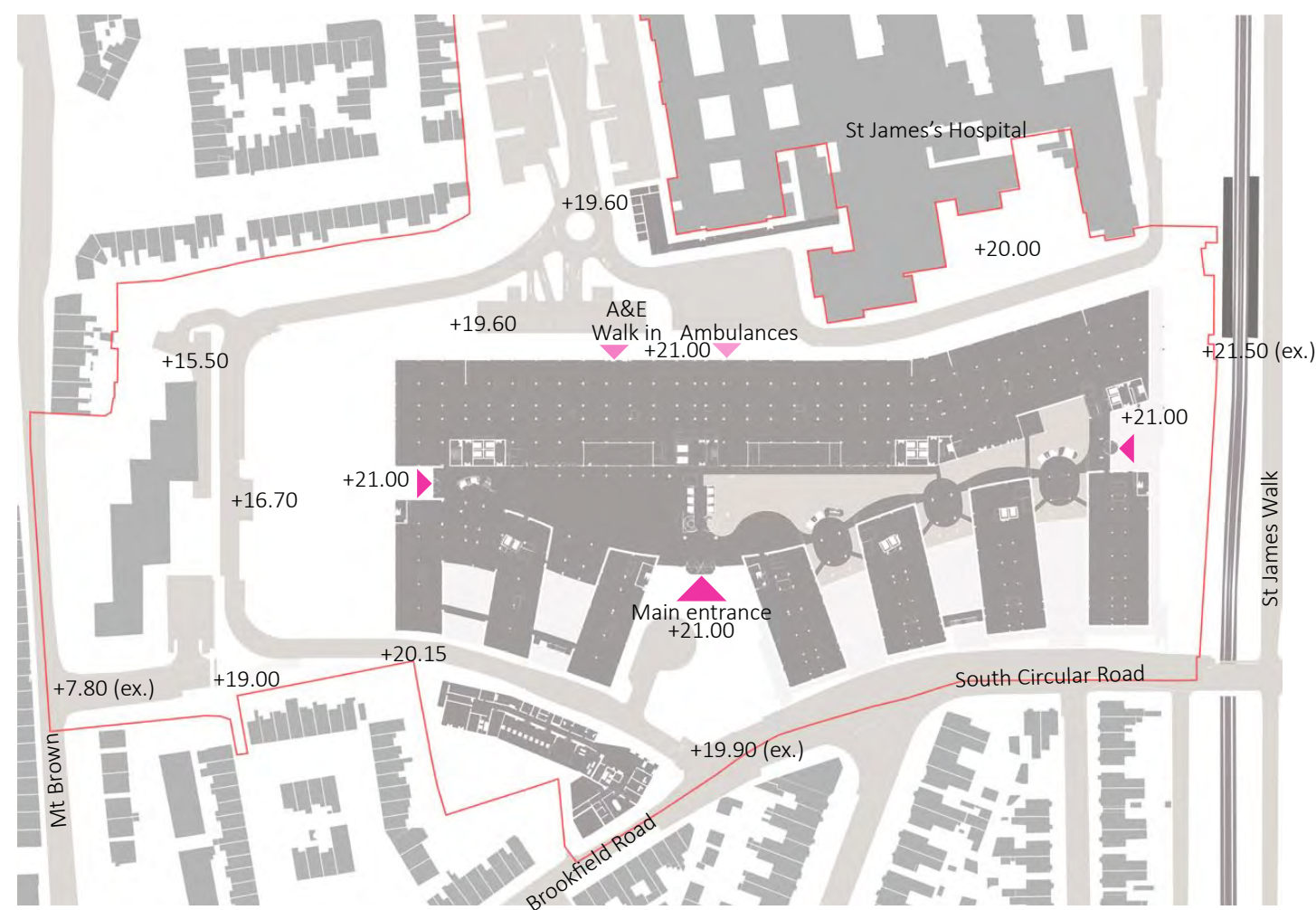
The proposed new vehicular entrance off Mount Brown (serving the FM yard and lower level car park) runs parallel to the Cameron Square boundary, just to the east of the public steps, and is located about 10m below the Square at the point where it enters the site. The road is separated from the steps by a 5m wide strip of landscape and rises at a gentle gradient from the Mount Brown datum of +7.8 m. About halfway along the Cameron Square boundary, the road disappears from downward views beneath the structure of the new internal campus road, which at this point is located at a datum level of +19.00m. (please see diagram on next page)



Mount Brown Steps - as existing



Mount Brown Steps - as proposed



Levels

The entrances to new children’s hospital are all accessed from ground floor, set at 21.00. Apart from the stepped access from Mount Brown, (set 13m below ground level of the new children’s hospital) all approaches to the building will benefit from a comfortable pedestrian approach with no gradients steeper than 1:21.

Key

+00.00 Spot level

8.5 Mount Brown

The only part of the development that faces directly onto Mount Brown is the new road described above. The elevation on this side shows the road, flanked on the west side by the renovated public steps and new landscape and on the east side by the edge of the existing St James’s energy centre. A new screen wall on this side mirrors the slope of the steps opposite and conceals an external plant compound, tucked behind the protruding wing of the existing energy centre. Views to the children’s hospital itself will largely be obscured by the bulk of the energy centre and its dense thicket of existing trees along Mount Brown. The top of the new flue stack will be glimpsed above the roofline of the energy centre but its proposed position further to the south than the existing flues should diminish its presence along Mount Brown.

8.6 O’Reilly Avenue

Proposals here include the construction of a new boundary wall (details and height to be agreed with the residents) and the creation of a new landscape buffer (over 15m wide) along the full length of the boundary. Both these elements have been discussed in principle with a number of the residents at specially convened presentations over the course of design development. The landscape proposals, described later in the Report, have taken many of the residents’ comments into account in terms of the selection of tree and plant types and their density. Beyond the landscape buffer the northern part of the residential terrace, bordering the site, faces onto the internal campus road with the meadow garden behind it. This gives the houses an unimpeded view westwards.

The proposed road dips down from a datum level of +20m (opposite the corner of O’Reilly and Donellan Avenues) to a level of +15.5 m at the point where it turns westward. This compares with the existing situation where the current car park and ambulance centre, which abut the boundary, are located at the upper level. The proposals, therefore, improve the boundary condition by introducing a new planted buffer, setting the road back from the houses and sloping it downwards, so that for much of its length it is below the ground level of the houses.

The southernmost part of the residential terrace will face the north-east corner of the children’s hospital. At the closest point the children’s hospital is 39.79m from the boundary and 45.39m from the rear face of the residential terrace. The height of the hospital at this point is four storeys with a parapet datum of 38.75m (18.25m above the prevailing ground level). The Emergency Department drop-off and short-term car park is located at ground level, screened by new landscape and trees along the western side of the road edge. A zebra crossing here will connect footpaths on either side of the road, providing an attractive and safe link between St James’s and the children’s hospital.

8.7 St James’s Hospital

The elevation on the eastern side of the children’s hospital runs southwards from this corner until it meets the southern site boundary on the edge of the LUAS linear park. The majority of this side of the building faces onto the adult hospital. As described in more detail earlier in the Report, locations have been identified here for future bridge links to St James’s and the anticipated maternity hospital.



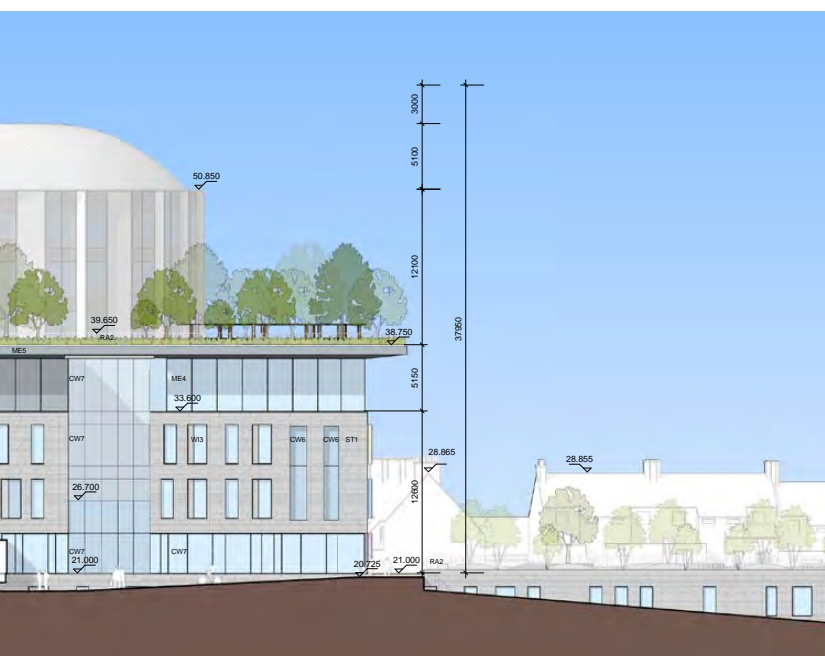
View of the hospital from the north east boundary

sits directly above the southern entrance, giving it emphasis. The helipad's underside is clad in a perforate metal mesh that keeps it distinct from the building below and gives it the feeling of hovering over the Level 04 garden.





View from Rialto LUAS Station



South elevation

9.0 Future Flexibility

Future flexibility is one of the paramount considerations in the design brief. The fast pace of technology and improvements in clinical practice mean that hospitals are always going to be subject to a high degree of organisational and physical change. Our proposals have been developed in specific ways to address this need for longer term adaptability and expansion. Adaptability relates to the building's ability to be reconfigured over time with minimal disruption; expansion relates to the building's longer term ability to grow within the constraints of the site and planning context.

9.1 Adaptability

The new Children's Hospital includes a number of design characteristics that support a high degree of adaptability:

- A deeper plan 'hot block' with a regular structural grid on the building's eastern side that is optimally configured for the larger departments, so that they are as compact and efficiently laid out as possible;
- Shallower plan fingers on the western side of the concourse which are suited both to wards and outpatient clinics, making them very versatile in the ways in which they can be reconfigured in future;
- Incorporation of 'soft space' (offices or other non-clinical areas) in strategic locations next to departments that are most likely to grow: for example, Theatres, Critical Care and Imaging;
- Plantrooms consolidated on the interstitial floor directly above the areas they serve, making it as straightforward as possible to upgrade or reconfigure services with minimal disruption to clinical activity below;
- A regular 7.8m x 7.8m structural grid within the 'hot block' that is suited to the grain of the key diagnostic and treatment departments and gives maximum freedom in the optimisation of room layouts;
- A service spine along the eastern edge of the Concourse which consolidates the major vertical cores (lifts and stairs) and service risers alongside the primary clinical circulation, so that the main floor plates are as unencumbered as possible.

9.2 Expansion

The design brief for the Children's Hospital states that the site strategy must demonstrate its capacity to accommodate 20 % future expansion of the hospital. Excluding the basement areas provided for services related to the Adult Hospital (FM spaces and plantrooms), the approximate area of the Children's Hospital is 120,000m², which results in an expansion target of 24,000m².

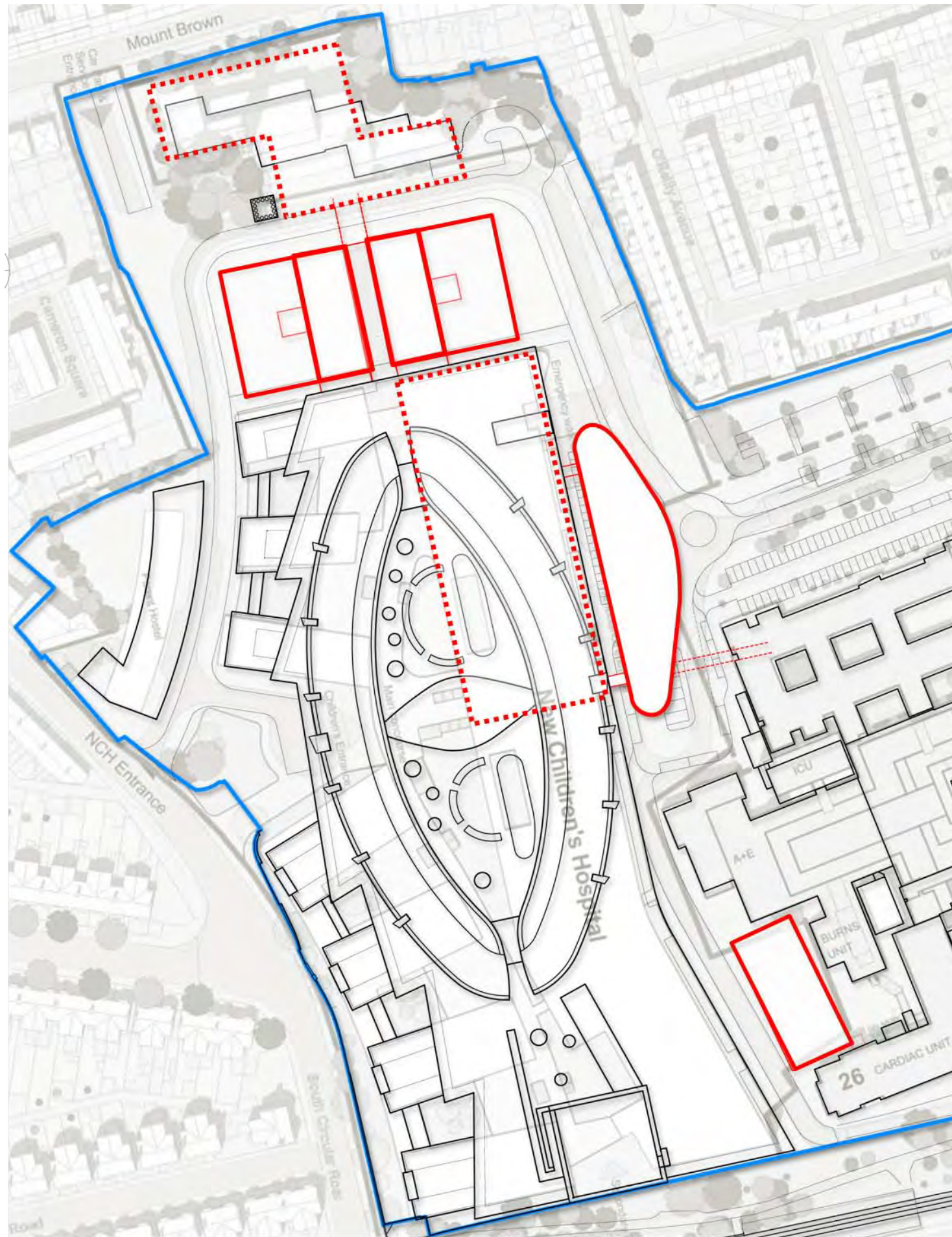
Our proposals include 23,500 m² of potential expansion space in three locations:

1. North of the children's hospital - This site sits above the car park and service yard and has been designed initially as a garden space (the 'meadow') accessible from the hospital's northern entrance. The structure below the garden has been detailed to support potential future buildings. The accompanying plan shows two buildings sitting either side of a pedestrian route which continues the line of the children's hospital's concourse northwards. These future phases are separated at ground level by the external pedestrian route that provides access to the hospital concourse. Bridges at 2nd and 3rd floor levels could be provided spanning this route to provide internal connectivity. The capacity of this site has been estimated at 15,000m².
2. East of the children's hospital above the ED drop-off – this area can accommodate a 3-storey building from Level 02 upwards, providing useful expansion space for the Critical Care Unit and Theatres without loss of car parking and drop-off to ED on the ground floor. The capacity of this site has been estimated at 5,000m²;
3. East of the children's hospital adjacent to Imaging – this area can accommodate a 4 storey building, linked to the

children's hospital by bridges at Levels 02 and 03. The capacity of this site has been estimated at 3,500m²

The above areas are all within the current children's hospital ownership boundary. In addition to this there is also the potential, identified in the 'St James's Campus Capacity Study', to expand in other ways:

- St James's Energy Centre - the children's hospital proposals have been designed to provide space for the replacement of the existing Energy Centre, allowing the demolition of the existing structure to proceed in due course at a future date. A new building here could provide in the order of 13,000m².. It could be accessed directly from Mount Brown to the north, from the campus road to the south or, if desired, connected internally to the children's hospital at basement level or via bridge link at an upper level. A redeveloped site here could form a terminus to the children's hospital concourse, tying together the northern expansion zones in a coherent and attractive way.
- Relocation of the paediatric pathology department – this is currently part of the children's hospital proposals, providing 3,500m² on the Lower Ground Floor. One of the longer term ambitions for the St James's campus, cited in the site capacity study, is the creation of an integrated adult and paediatric pathology service in a new building that also offers the potential to house a national genetics laboratory. If this is implemented, the paediatric pathology unit would vacate its space within the children's hospital, thereby freeing up room for expansion for adjacent departments like Emergency, Imaging or Outpatients.



Potential Expansion Sites

10.0 Fire Strategy

10.1 Introduction

This preliminary Fire Strategy sets out the basis and key elements of the Fire Engineering design as now developed where the objectives have been to ensure:

- that there is an adequate provision of stair and lift cores in the building for means of escape in case of fire and access for the Fire Service.
- that there is adequate provision for fire compartmentation and for progressive horizontal evacuation of patients in the building.
- that there is adequate provision of perimeter vehicle access for Fire Service vehicles.
- that the architectural design strategy for the central atrium / street is compatible with the building fire strategy.
- that there is adequate provision of fire protection systems including where required automatic suppression systems and facilities for manual fire-fighting by the Fire Brigade.
- that there is adequate provision of fire safety measures in the design of the Helipad

10.2 Design Basis

The development of the fire strategy has been based on the following UK Guidance which is relevant to the design of healthcare premises and is deemed to meet the requirements of Part B (Fire) of the Irish Building Regulations, having regard to the particular requirements in a Children's Hospital.

- 'Health Technical Memorandum 05-02: Firecode, Guidance in Support of Functional Provisions (Fire Safety in the Design of Healthcare Premises; 2014 edition'.
- 'Firecode – Fire Safety in the NHS: Health Technical Memorandum 05-03: Operational Provisions, Part J: Guidance on Fire Engineering of Healthcare Premises'
- 'Firecode – Fire Safety in the NHS: Health Technical Memorandum 05-03: Operational Provisions, Part M: Guidance on the Fire Safety of Atria in Healthcare Buildings'
- 'Firecode – Fire Safety in the NHS: Health Technical Memorandum 05-03: Operational Provisions, Part D: Commercial Enterprises on Healthcare Premises'

10.3 Dublin Fire Brigade Meetings

A series of meetings and workshops have been held with Dublin Fire Brigade Senior Fire Officer's to review the design development and the key proposals in the Fire Strategy.

Meetings and workshops were held with Dublin Fire Brigade personnel on the following dates:

- 31st March 2015
- 16th April 2015
- 27th May 2015
- 19th June 2015

These meetings were attended by:

Mr Patrick Fleming, Chief Fire Officer

Mr Richard Hedderman, Assistant Chief Fire Officer

Mr David Bradley, Senior Executive Fire Prevention Officer

Mr Seamus McAreevey, Executive Fire Prevention Officer

The design was revised as necessary to address concerns raised in these Dublin Fire Brigade meetings with particular reference to the:

- Inclusion of additional stair cores
- Inclusion of additional sprinkler protection

10.4 Key Elements of the Fire Strategy

10.4.1 Stair-cores and Fire-fighting Lifts

Sufficient stair-cores and fire-fighting lifts are incorporated in the design to satisfy the recommendations in the Guidance in respect to means of escape and fire service access and to satisfy Dublin Fire Brigade requirements.

10.4.2 Sprinkler Protection

Sprinkler protection or an alternative auto-suppression system is being provided in the following areas:

- Basement car-park level
- Basement plant / storage areas
- Risk areas at base of atrium at Ground Floor
- Ward accommodation at Levels 04, 05 & 06

10.4.3 Atrium Fire Strategy

The key recommendations in the HTM Guidance on Atria are being addressed in the design in regard to:

- Limitations in use of atrium base
- Fire separation of atrium from adjoining accommodation at all levels
- A smoke management and venting strategy

The development of the Fire Strategy has also taken into consideration the particular requirements for:

- External access and facilities for the Fire Brigade
- Spatial separation and limitation of unprotected areas to address external fire spread risks

10.4.4 Helipad

The key fire safety issues have been considered in the development of the design of the Helipad as follows:

- Provision of adequate drainage
- Provision of adequate access and egress from the landing area
- Provision of adequate rescue and fire-fighting facilities

The detailed design of the Helipad including the design of fire protection is being undertaken in accordance with UK Department of Health Building Note 15-03: Hospital Helipads.

10.4.5 Children’s Research & Innovation Centre

The fire strategy for this building has been developed having particular regard to:

- Adequacy of means of escape
- Adequacy of Fire Brigade access and avoidance of impact of adjoining buildings
- Proximity to nearby buildings and avoidance of any external fire spread risk.

10.5 Conclusion

It can be concluded therefore that the design proposed for lodgement for Planning Approval has sufficient provision for compliance with relevant design Guidance and specifically for compliance with Statutory Requirements as per Part B (Fire) of the Building Regulations.

It is therefore considered likely that a Fire Safety Certificate under the Building Control Regulations can be obtained in due course without any significant changes being imposed on the design in terms of building layouts, building height and site layout.

11.0 Universal Access

The concept of universal access is at the core of all design decisions. It is not only relevant due to the particular nature of the patients and the service provided at the new children's hospital, but also to ensure the children's hospital and its associated buildings becomes a leading example of how universal access can be achieved and integrated in all aspects of the building design.

During the design development there have been a number of consultations with different stakeholder groups that have assisted the design team with developing the approach to universal design. This includes the family forum, many of whose member's are parents of children with special needs, and special needs interest groups including the National Council for the Blind in Ireland (NCBI) and the Irish Deaf Society.

An Application for a Disability Access Certificate to demonstrate compliance with Part M will be made to the local authority at the same time that the fire safety certificate application will be lodged, however it is intended that the building will go far beyond the requirements of Part M in an effort to be an exemplar of inclusivity.

11.1 Accessibility Philosophy and Approach

The design philosophy and approach used in developing the building design is focused on ensuring that the building and its services are fully accessible by all approved users and is defined by the Disability Act as being:

The design and composition of an environment so that it may be accessed, understood and used:

- to the greatest possible extent,
- in the most independent and natural manner possible,
- in the widest possible range of situations, and
- without the need for adaptation, modification, assistive devices or specialised solutions, by any persons of any age or size or having any particular physical, sensory, mental health or intellectual ability or disability.

Universal Design demands that the principles of Universal Access are applied to any building design - those principles being:

1. Provide equitable use and access for everyone
2. Allocate appropriate space for people regardless of body size, posture and mobility
3. Ensure ease of use and comprehension regardless of physical and cognitive abilities
4. Require minimal physical strength for economy of effort by user
5. Achieve comfortable safe and healthy conditions; minimising hazards.

Where a building design fails to apply the principles of Universal Access it will inadvertently create barriers to

persons wishing to access the building and its services.

This strategy aims to highlight areas of the building design where the principles of Universal Access must be applied in order to ensure that potential barriers to access are avoided or their impact lessened to an acceptable extent.

11.2 Design Standards Followed

The design standards scheduled below are referenced in the design development of the building to ensure that the principles of Universal Access are achieved through adherence to accepted accessibility requirements:

The Technical Guidance Document Part M – Access and Use (2010) published by the Department of the Environment, Community & Local Government will form the basis of the compliance with additional reference to the following guidance documents and standards as appropriate:

- HBN 00-04 Circulation Spaces 2013
- HBN 23 Hospital Accommodation for Children and Young People
- Building for Everyone – A Universal Design Approach 2012
- BS 8300:2009 + A1:2010- Design of buildings and their approaches to meet the needs of disabled people – Code of Practice
- Designing for Accessibility – RIBA 2012

11.3 Design Approach

The design approach to Universal is evident in the design of the integration of the building into the existing site; the resolution of entrances and access points and public realm, the development of the car park layout and below ground access to the hospital, consideration of wayfinding and accessibility within the building itself.

Many aspects of the internal design for Universal Access will be developed throughout the next stage of the project when the interior design strategy is developed. What is critical at this stage of the project is that

- the approach to the building and the setting out of slab levels supports the delivery of level access throughout at all entrances and gardens,
- the building is set out in a manner that eases wayfinding for all and is easy to navigate
- the building has been sized to provide adequate accessible sanitary facilities to support the requirements of all building users. This requirement needs to go beyond the standards of Part M and recognise the very particular requirements of some of the building users, eg older children with special needs who required larger changing areas etc.
- corridor widths throughout the building support the level of activity of wheelchairs and buggys passing as well as the standard requirements of the hospital bed and trolley traffic.

11.4 Arrival & Access:

11.4.1 Main Entrance:

The main entrance to the building adjacent to the Rialto gate is a large hard landscaped plaza. The plaza is generally level with a vehicular drop off point near the main entrance designed to allow for a pedestrian priority zone in the immediate vicinity of the main entrance doors. Adequate space is allowed for those in wheelchairs or buggys to be dropped off safely and to have a level access route into the hospital.

11.4.2 Luas Entrance:

The approach from the Luas needs to take account of the level difference at this end of the site. The hard landscape design in this area has been developed in detail to achieve an accessible solution.

11.4.3 North Entrance:

The 'meadow' at the Northern end of the hospital is being set out at the same level as the entrance to the building to facilitate universal access at this end. As the roadway adjacent to the meadow slopes down on both sides to facilitate access to the carpark below there are ramps required on either side to make the meadow accessible to pedestrians approaching from SJH and from the Rialto gate. This is a very important pedestrian route through the campus. The ramps in this area will not exceed a 1:20 gradient and will also be complimented by steps.

11.4.4 Emergency Department Entrance:

The access from the ED carpark and footpaths are being planned to resolve the level differences in this area through a gently sloping approach to the building.

11.4.5 Access through the campus.

Currently there is no continuous pedestrian route through St. James' Campus. It is proposed in this application to carry out some upgrading works to the footpaths and public realm along the existing hospital roadway to improve pedestrian access and the overall accessibility of the campus..

11.4.6 Access from Mount Brown:

The design team have developed a proposal to extend a set of steps owned by Dublin City Council which currently links Cameron Square to Mount Brown, so that it now links Mount Brown to the hospital campus and onwards to the South Circular Road and the Luas. Due to the significant level difference between Mount Brown and the main campus it is not possible to provide ramped access in this location, however the proposal is still seen as a positive intervention by DCC as it improves the permeability of the neighbourhood and the campus.

The new building will be universally accessible to pedestrians from the Rialto gate.

11.4.7 Carpark

The car park is set out over 2 levels. Priority has been given to locating accessible parking spaces as close as possible to the main entrance into the building on both levels. A drop off point at the entrance into the hospital at both levels provides safe covered access for all.

The family forum were very concerned that sufficient accessible car parking spaces would be provided and that spaces were sized adequately to facilitate the requirements of special needs wheelchairs, buggys etc and all of the accompanying items that they need to bring with them.

11.4.8 Access to Gardens and Landscaped spaces:

The gardens throughout the building have been designed to facilitate level access in all locations; thus all users of the outpatient waiting areas on the lower ground floor can directly access the courtyard gardens adjacent.

Similarly the gardens on level 3 will be universally accessible for staff, patients etc depending on the proposed use of each.

The design of level 4 has also accounted for making the gardens at this level universally accessible. Level access is provided from the Biome to the gardens at both sides and the detailed garden design will support best practice in universal design.

12.0 Sustainability

12.1 Introduction

To deliver a truly sustainable project it is essential to meet the ‘triple bottom line’ of environmental, social and economic considerations. Minimising a building’s whole life use of energy and water and its creation of waste is, therefore, just one aspect of sustainable design. Also vital to consider are the impacts on the community, the local economy and employment.

The National Paediatric Hospital Project offers a rare opportunity to provide class-leading sustainable facilities integrated within the city which, through their design and operational approaches, will become exemplars of sustainable healthcare design and use. We see the children’s hospital and its satellites becoming ‘beacons’ for health and healthy lifestyles in the local area; models for the health benefits associated with sustainable development with the potential to have a positive and far-reaching impact on the local community in general but on children and young people in particular.

As well as operating as a facility to heal the unwell, the children’s hospital and wider site, through its master planning and building design, its incorporation of green spaces and ecology, the energy and waste management systems employed and the community links it will foster, has the opportunity to promote good health in the wider community. In this context the hospital can operate as both a centre for healing and a driver for health and healthy living.

In this sense sustainability is resistant to being written about in a ‘standalone’ way as it permeates all aspects of our approach from urban design, architecture and medical planning through to engineering, landscape and

stakeholder engagement. This holistic understanding of sustainability has been fundamental to developing sustainable approaches across a wide spectrum of issues tackled in the course of design development.

12.1.1 Holistic Approach

Our approach to sustainability ensures that sustainability is treated holistically and is fundamental and integral to the design process. We highlight below some of our key objectives:

- **Sense of Place & Community Integration** – ensuring that the children’s hospital makes a positive contribution to its urban context both as a physical environment and community resource
- **Transport & Accessibility** – ensuring that a balanced approach is adopted to transport to and from the site that gives due importance to public transport and improving pedestrian and cycle access
- **Keep it Local** – encouraging, wherever possible, during both construction and operation, the use of local staff and suppliers.
- **Healthy Materials** - employing healthy materials with additional focus given to their recycled content, their embodied energy, source, applicable certifications (such as FSC) and their capacity for de-construction, reuse and recycling.
- **Synergies** – adopting an integrated approach which is key to achieving resource efficiencies and a reduction in the carbon footprint/environmental impact of the hospital. This approach links for example, the strategies for the provision of energy, transport, recycling, energy

recovery and waste disposal, water use and reuse, building orientation and shading, and ecology.

- **Landscape** - using soft landscaping and green roofs to improve microclimate, noise attenuation, building insulation and rainfall attenuation as well as increase ecological value and biodiversity and potentially provide small scale food production for educational purposes.

This sustainability overview should be read in conjunction with the project description contained in the earlier sections of the Design Report as well as relevant chapters in the EIS. In the following sections the focus of this overview is principally on the exemplary environmental performance that is proposed for the design, construction and operation of the new children’s hospital.

Our sustainable approach not only underpins the design for the children’s hospital but also for the other new buildings proposed on St James’s campus: the Children’s Research and Innovation Centre and the Family Accommodation Unit. These are described in detail in the Design Report and are not subject to the formal BREEAM assessment applied to the children’s hospital, so they are not specifically addressed in the text that follows.

12.1.2 Environmental Performance

The project brief calls for the development to have an environmental performance that considerably exceeds the minimum requirements of current legislation. The new children’s hospital is being designed to achieve exemplar standards in relation to energy efficiency. Not only will the building comply with Part L of the Building Regulations but it will far exceed those requirements by delivering the necessary energy efficiency credits to achieve a BREEAM

Excellent building and a Building Energy Rating (BER) of A3.

The building will include highly efficient and renewable technologies and will have intelligent metering. The metering will allow for the monitoring of energy consumption in use, enabling a programme of targeted improvements through the life of the building. By delivering a highly energy efficient building the carbon dioxide emissions of the building will also be minimised reducing the impact of the building on the environment in the long term. The BREEAM environmental rating system is a holistic system that covers all aspects of environmental impact. An “EXCELLENT” rating ensures that best practice environmental development is achieved.

12.1.3 Energy Standards & Regulations

There are three strands to Irish legislation for energy efficiency responding to EU policy. These cover energy efficiency, energy performance in buildings and renewable energy.

The current Building Regulation for conservation of fuel and energy in non-domestic buildings is Part L 2008. Under the National Energy Efficiency Action Plan non-domestic buildings are required to achieve a 40 % improvement in energy performance over the current part L. The new children’s hospital will achieve this through achieving an A3 building energy rating which reflects a 50 % improvement over the current Part L.

The recast Energy Performance of Buildings Directive and Energy Efficiency Directive S.I. 426 2014 set new targets for building energy performance including a move towards near zero energy buildings and requires a study of the technical, environmental and economic feasibility of

installing high efficiency alternative energy systems. This study has been carried out for the new children's hospital via a Low Zero Carbon Feasibility Study the results of which are summarised in this document.

In March 2009 Dublin signed up through the Covenant of Mayors to improve by 20% on the EU policy target of a 20% reduction in energy use from 1990 levels to be achieved by 2020. The targets of the Covenant were included within the 2010 Dublin City Sustainable Energy Action Plan 2010 – 2020 which includes policies for reduction in energy use and carbon emissions. The proposed design will meet, and in many cases exceed, these targets and act as an exemplar project in the public sector.

The NPHDB has agreed to adopt the new IS399 Energy Efficient Design Management (EEDM) standard which will help to ensure a clear process in the decision making throughout the design of the building in relation to providing for energy efficiency in operation.

12.2. Environmental Impact of the Building Type

The project scale and its 24 hour operation through the entire year will generate a building that has a significant demand for environmental resources. The building will also have an impact on the local environment and that of the city through resource demand, building emissions, waste streams, noise, air quality, transport and ecological impact.

The project scale is viewed positively from an environmental perspective as it offers a significant opportunity to develop a sustainable exemplar while also offering a minimised lifecycle cost. The scale of the building can result in the consideration of technologies or methods that would not be viable for smaller developments as they may offer an economically attractive solution due to their economy of scale.

The development is viewed as an opportunity to contribute positively to the local environment and that of the city by not only minimising pollution and waste streams but enhancing the ecological value of the site and providing local services and employment.

The project's approach to sustainability has been progressed with a view to minimising the buildings environmental impact while also ensuring that all approaches provided have a sound economic basis.

While recognising the direct economic benefits of sustainability, it is also important to accept that some aspects of sustainable design may not have a direct economic benefit but are still worthwhile from a health and wellbeing or ecological enhancement perspective.

A good example of this is the inclusion of extensive new

landscape, including large areas of accessible roof gardens. These have a tangible therapeutic benefit and also make a significant contribution to the sustainability strategy in terms of sustainable urban drainage, the amelioration of the building's micro-climate and the promotion of biodiversity.

The relative impacts of a typical hospital are shown in Figure 2.1 below. The aspects that are in the direct control of the design team are shown in green and the operational issues that are largely influenced by the buildings

operation are indicated in blue. It is clear that the energy performance of the building has a significant role in the overall impact of the development.

While the chart shows the direct environmental impacts quantitatively; it is also important to also consider the economic, social and health impacts of the development which are less easily quantified.

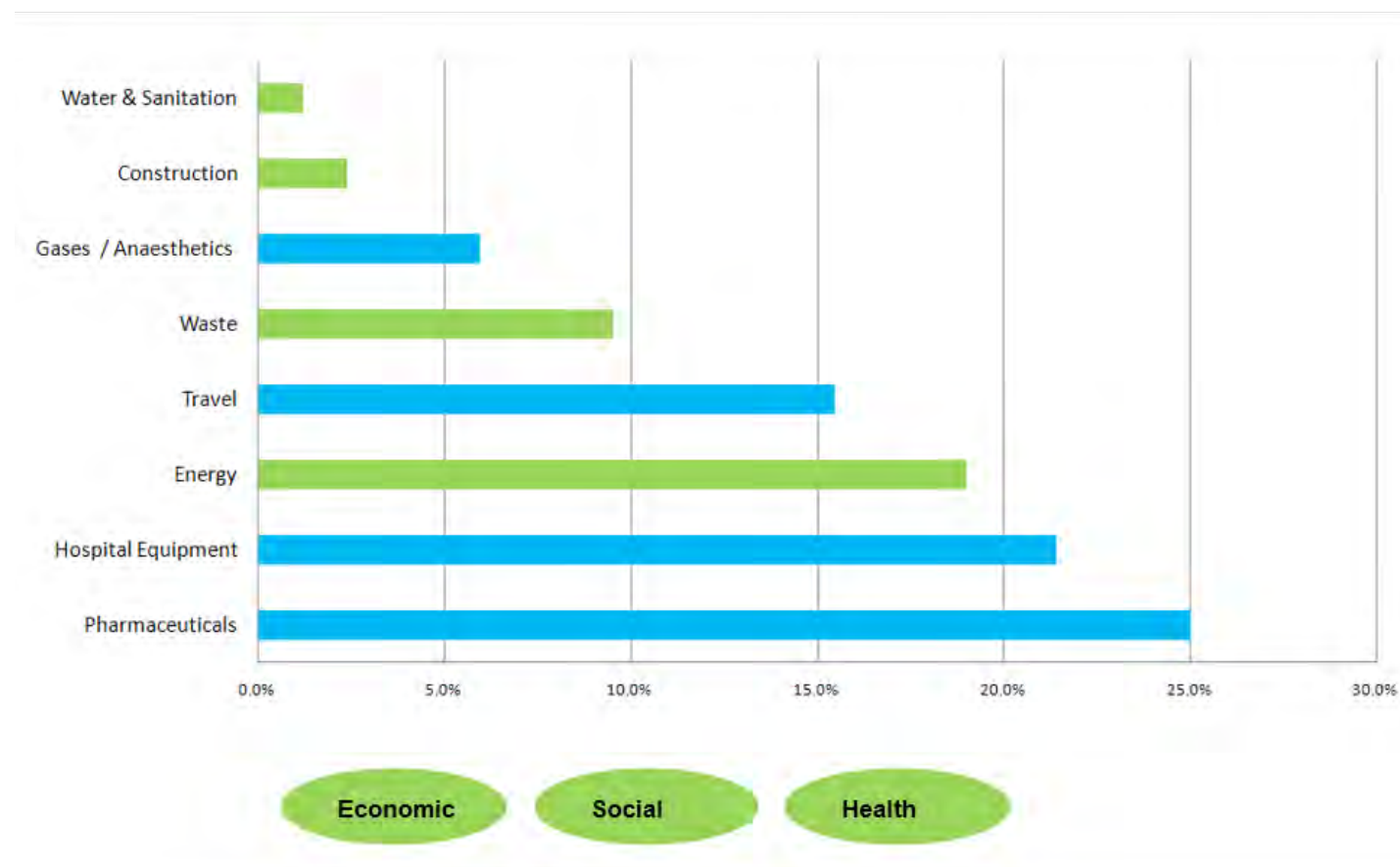


Fig 2.1 Relative Environmental Impacts

12.3 Existing Site

The existing site is of low environmental value, largely consisting of low rise buildings with relatively few areas of good quality landscape.

The existing sites flora and fauna are discussed within Chapter 6 of the EIS which states the following:

“There is no biodiversity of conservation significance on the site.”

“There are no protected habitats or floral species present on the site”

“No protected mammals were confirmed on the site”

The site has a significant potential and the proposed development maximises this potential by significantly increasing site utilisation while also improving ecological value and biodiversity.

12.4 Sustainable Design Approach

A design team has been appointed for the project that contains specialists in all aspects of environmental design including energy, waste, transport, acoustics and ecology.

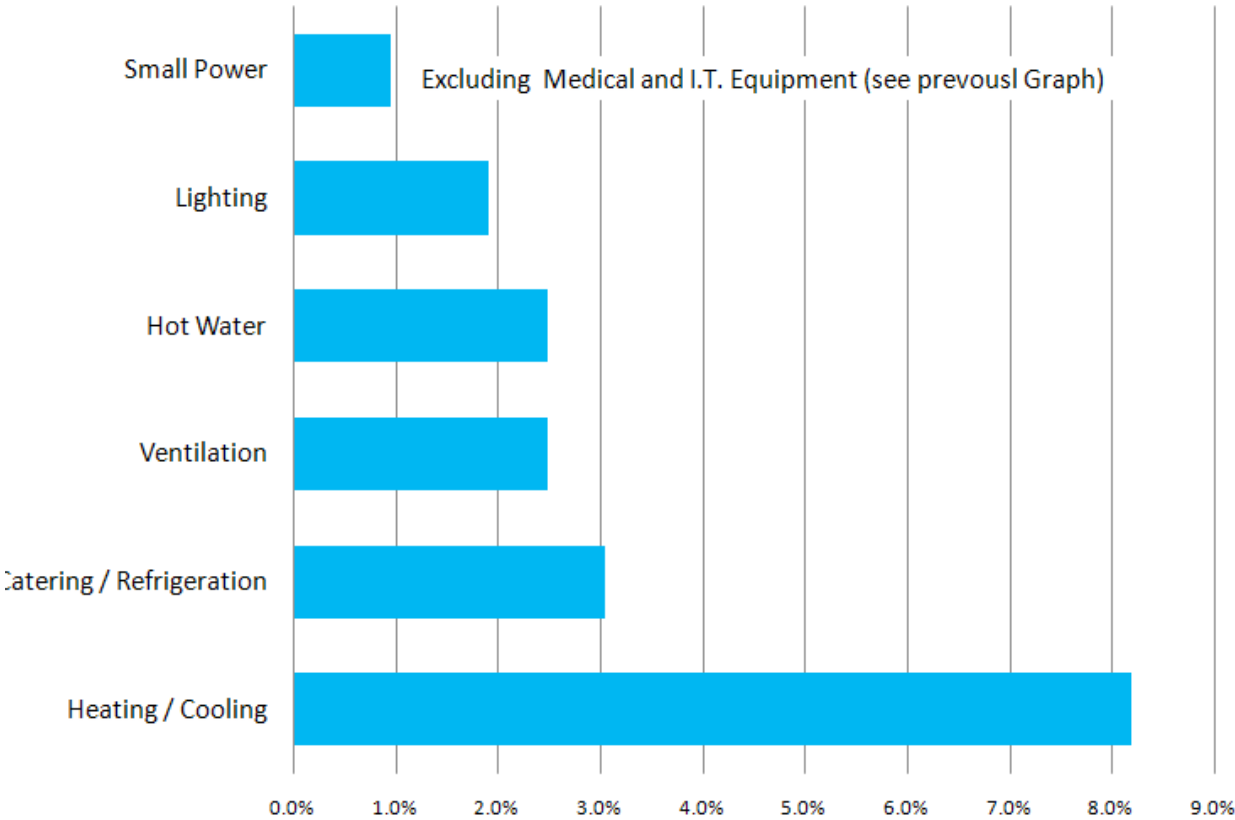
As energy is such a large proportion of the development’s environmental impact, a proportionate attention has been applied to the minimisation of energy use and its associated impacts.

The design approach to energy minimisation is achieved through the following sequence or priorities illustrated to the right.

The building’s demand for energy is minimised through the design of its fabric, form and layout. The energy generation and delivery systems are then considered to ensure efficiency. The control of energy is then considered to ensure that energy wastage is minimised and finally consideration is given to renewable and low carbon energy generation systems.

The minimising of mains water usage is also considered under both passive and active categories.

While considering how energy usage can be minimised it is important to be aware of where energy is used within a typical hospital and this is shown in the following graph. Note that the figure for small power shown excludes the energy used by medical devices and equipment. Medical devices energy is addressed within the hospital’s sustainable equipment procurement strategy.



12.5 Passive Design

12.5.1 Daylight

The health benefits of natural daylight and quality ventilation are well established and clinical studies have demonstrated that patient hospitalisation periods can be reduced through the provision of quality natural environments in approximately 60 % of cases. It was therefore important that quality daylight levels are achieved wherever possible through the design.

The provision of natural light has been prioritised for rooms that will be occupied for long periods of time and technical areas and storage have been located within areas that achieve lower levels of daylight such as building cores and shaded areas.

In particular the ward areas where patients spend long periods of time have been placed on the upper floors and are provided with excellent levels of natural light.

Natural light has also been prioritised within the main circulation spine of the building (the Concourse), so that contact with the outside is maintained as patients, visitors and staff move through the building.

12.5.2 Natural Ventilation

The use of natural ventilation for building cooling is one of the most effective methods of reducing both the buildings energy usage and maintenance costs. It is also vital for the achievement of an “A” rated BER rating for the development.

Many spaces require mechanical ventilation or air conditioning for clinical reasons but natural ventilation has been achieved wherever possible.

Approximately 20 % of the building by area is designed to be naturally ventilated including the following spaces:

- Car parking
- General ward bedrooms
- Consultant/Exam rooms on the building perimeter
- Offices on the building perimeter
- The Concourse

The conditions achieved within key naturally ventilated spaces have been tested through the use of dynamic simulation in order to confirm that the thermal requirements can be comfortably achieved through natural ventilation.

12.5.3 Fabric Performance

Insulation

The proposed thermal performance of the building fabric is shown in the table below.

Area	Maximum Value	Units	% Improvement over the building regulation minimum values
Wall U Value	0.135	W/m²K	50%
Floor U Value	0.125	W/m²K	43%
Roof U Value	0.11	W/m²K	50%
Air leakage	3	M³/hr/m²	n/a
Glazing	1.2		45%

The elemental thermal performance offers notable improvements on the minimum values provided within the current building regulations.

While the building regulations do not require the building to achieve a particular air test result, modern buildings are typically tested to a good practice minimum of 5m3/m2/hr

and the proposed figure of 3m3/m2/hr is therefore a 40 % improvement on good practice.

Solar Control

Solar control glazing will be used to minimise unwanted solar gain, particular to glazing on the south and west aspects.

Solar control glazing will not be provided where solar gains are considered useful in supplementing the building’s heating, for example in the Concourse and for glazing that is largely shaded.

12.5.4 Thermal Mass

The building is provided with a thermally heavyweight structure which is beneficial for the smoothing of peak air conditioning loads.

Within naturally ventilated spaces the maximising of thermal mass is particular beneficial and consideration has been given to the exposing of mass in these spaces where practical.

12.6 Active Design

12.6.1 Heat Generation

12.6.1.1 CHP (Combined Heat and Power)

A natural gas combined heat unit will provide the building’s base hot water load and a small proportion of the building’s heating load. The initial size of the CHP unit to be provided is 1.8MW (electrical output) but the exact size of the CHP provision is subject to revision during the detailed design stages of the project.

CHP has a lower carbon impact than natural gas boilers as long as the majority of the heat produced by the system is used productively. The CHP engine will be sized to ensure that the heat produced by the system is fully utilised within the building.

12.6.1.2 Gas Boilers

Gas boilers will provide the remaining heat demand of the building. These boilers will be fully condensing, fully modulating, low NOx boilers in order to minimise their environmental impact.

The boilers will also be capable of firing with oil and oil will be used as a backup fuel in the event of the loss of supply of natural gas.

The efficiency of the boilers will be maximised by designing the system to reduce boiler flow temperatures during warmer weather.

12.6.2 Heat Recovery

Heat recovery will be used on all ventilation systems except where a clinical condition or process precludes the safe use of heat recovery.

Consideration is being given to the use of heat pump based heat recovery to allow waste heat produced as part of the building’s cooling processes to be utilised.

12.6.3 Cooling

The building will require mechanical cooling to a number of air conditioned rooms.

The environmental impact of the generation of cooling potential is minimised through the following methods:

- Free cooling is used where possible
Free cooling air cooled chillers and the use of closed coupled grounded loops are under consideration and will be reviewed during the detailed design stage of the project.

- High efficiency chillers (particularly in part load)

The chilled water temperature selected will have a significant effect on the efficiency of the generation of cooling potential and higher (more efficient) cooling temperatures will be used where possible.

12.6.4 Fan Energy

Fan energy will be minimised through the following methods:

- Locating air handling plant as close as is practical to the areas served
- Ensuring ductwork and air handling unit pressure drops are minimised
- Selecting low energy DC variable speed fans where practical
- Using variable volume, demand lead systems will be used where possible to reduce fan energy.

12.6.5 Pump Energy

High efficiency pumps will be used and the energy consumption of pumps will be minimised by ensuring that the pumps operate at the minimum duty required to meet the load.

This can be achieved through the use of two port control in many situations where three port control would traditionally be used; such as when serving air handling unit coils.

The number of individually pumped circuits will also be minimised to reduce pumping energy at part load.

12.6.6 Lighting

LED lighting will be used throughout the building (except for some specialist clinical tasks) and all lighting will be fitted with absence detection and dimming where beneficial.

The use of LED lighting reduces electrical consumption associated with lighting and also reduces heat gain to spaces which reduces air conditioning loads.

12.6.7 Controls and Metering

A full digital controls system will be provided to implement automated energy management.

All energy and water systems within the building will be monitored to allow monitoring and targeting programs to fully understand the building’s energy use and distribution.

12.7 Water Conservation

12.7.1 Minimising Demand

Low water usage fittings will be used throughout the building to minimise demand.

7.2 Water Recovery

Borehole tests on the site have confirmed that a quality groundwater supply is available. It is proposed that ground water will be extracted and added to the cold water storage system following treatment of same.

This recovered groundwater will reduce demand on the mains water system and will also increase security of supply of water to the building.

12.8 BREEAM

The BREEAM method is a formal environmental assessment method that tests a projects design and construction using a set of environmental criteria.

When the assessment is complete a formal certificate is provided for the development, which identifies the environmental performance achieved by the building. For this project a rating of “Excellent” has been set as a minimum criterion.

The BREEAM method considers the following environmental impacts of a development:

Management

Health

Energy

Transport

Materials

Land Use

Ecology

Pollution

12.9 Renewable Energy

An analysis was carried out of the various renewable or LZC (Low to zero carbon) energy generation systems that may be applicable to the building.

The results of the study are tabled below.

** Consideration has been given to the distribution of waste heat from the Diageo facility. While this option could potentially reduce the environmental impact associated with heating; the terms of this arrangement have not been fully established at this point.

*** CHP carbon savings are based on a comparison with current grid carbon densities and are likely to be considerably lower over the lifetime of the building.

Renewable option	Simple Payback (years)	Carbon saving potential	To be included within the project
Solar Thermal	64	1.2%	No
PV	25	3.2%	No
GSHP	25	0.66%	Still under consideration
ASHP	12	0.36%	Still under consideration
District heat	10**	50%	Still under consideration
CHP	4.6	28.8% ***	Yes
Wind turbines	Never		No
Biomass	Never		No
Fuel Cells	Never		No
Hydro power	NA		No

12.10 BER Calculation

An initial BER model has been developed to test the result that is likely to be achieved by the building.

The building will achieve an “A3” energy certificate and significantly exceed the requirements of the building regulations.

The following BER results are based on the current design and are subject to modification as the design progresses but the team and client are committed to the achievement of an “A3” energy certificate.

12.11 Conclusion

The environmental performance of the development will considerably exceed all environmental requirements of the building regulations. The development takes advantage of available technologies to reduce its environmental impact where practical. The development considers all aspects of sustainability and particular attention is given to enhancements that offer health benefits such as daylight and the enhancement of ecology.

Building regulation compliance:

	Reference	Actual	Performance Coefficient	Part L Compliance
CO ₂ Emission rate (kgCO ₂ /m ² /yr)	140.6	69.9	0.5 (EPC)	Yes
Primary Energy Consumption (kWh/m ² /yr)	645.6	330.1	0.51 (CPC)	Yes

BER Calculation

	Notional	Actual	BER	Rating
Primary Energy Use (kWh/m ² /yr)	678.6	330.1	0.4865	A3

C. Children's Research and Innovation Centre

1.0 Introduction

Excellence in modern paediatric clinical practice cannot be provided except in the context of basic science research-led discovery and its translation into clinical practice. From a clinical and academic perspective, one of the reasons St James's Hospital was identified as the most appropriate adult partner for the new children's hospital was because it has very strong, internationally recognised, clinical, research and education culture and infrastructure. This is seen as being of huge benefit to the new children's hospital and will make it a place where the best child and adolescent healthcare professionals will want to train and work.

The campus already has a well-established Research and Education quarter centred around the Haughton Institute and the Trinity Centre for Health Sciences located in the North Eastern quarter of the campus between the main entrance off James' Street and Ceannt Fort Residential Area.

The proposed site for the Children's Research and Innovation Centre (CRIC) is located on James Street between the Institute for Molecular Medicine (IMM), part of the Trinity Centre for Health Sciences and No 1 McDowell Avenue. The primary function of the proposed building is to provide space for clinical and translational research to support the children's hospital. It is for this reason that it is located on this site; to reinforce this area of the campus as a hub for research and education and to maximise the benefits of co-location by proximity to laboratory space, researchers and academics.

The key requirements of the building as set out in brief are as follows:

- Clinical and laboratory space should be provided for both clinical and translational research;
- Facilities should be multi-purpose and not designed either to suit one research group in perpetuity or

designated exclusively for use by one group;

- The Children's Research & Innovation Centre should be separate from activities related to fundraising and philanthropy but have its own identity and campus presence.
- There should be parity of esteem and support for research carried out by clinicians, scientists, nurses and health and social care professionals.
- There should be good synergies created by the positioning of the new children's hospital on the campus of St. James Hospital with the provision of access to more complex and expensive research equipment facilitating extended sharing of knowledge and resources.

2.0 The Site

The site has a boundary with James's Street to the North and McDowell Avenue Residential area to the West. The Haughton Institute, a protected structure is located to the South of the proposed site. Currently the site is occupied by the remains of a derelict school building, a car park and a waste management compound which serves the Haughton Institute and the Trinity Centre for Health Sciences.

The site itself is generally level on the campus side but steps down 3-4 m to James Street along its boundary. The boundary wall on James's Street is a stone structure incorporating the end wall of the old school house stepping up in places to over 7.5m above street level. There are two mature plane trees on James Street immediately in front of the proposed site with a third almost immediately adjacent in front of the Trinity Centre for Health Sciences Building.

2.1 James's Street:

The northern side of James's Street is lined with generally 2 and 3-storey residential and commercial

properties, through a number of derelict sites and new 6-storey apartment building lies directly north. The southern side of this section of James Street is dominated by the Trinity Centre for Health Sciences which presents a four storey stone façade to the street edge and does not have any entrances directly off the street as the building is accessed only from the campus side.

McDowell Avenue marks a change on the pattern of the development of the street at the beginning of Mount Brown. The two storey houses are set above the road and are set back with gardens in front and a stone retaining wall and railings to the street edge.



Derelict building on site



Existing site boundary on James's Street

2.2 The Trinity Centre for Health Sciences:

The Trinity Centre for Health Sciences is three storey over part basement development which houses lecture theatres, seminar rooms, a library, a teaching laboratory, research laboratories, staff/student facilities and departmental accommodation for a range of disciplines of the School of Medicine. The building was opened in September 1994. The Northern end of the building which is occupied by the Trinity Institute of Molecular Medicine has been designed to facilitate future connections to the West.

Its façade to James Street is a planar stone façade with small windows. It has a brick and rendered facades to the campus with pitched roofs which hide plant for the laboratories and teaching spaces. The main entrance is off a landscaped courtyard located between it and the Haughton Institute opposite. Together these buildings form a distinguishable hub for Research and Education on the campus.



Trinity Centre for Health Sciences

2.3 The Haughton Institute:

This building is a protected structure and is considered to be of regional Architectural and Historic interest. It currently accommodates the Department of Medical Gerontology, School of Nursing & Midwifery and School of Physiotherapy.

The northern end of the building, adjacent to the proposed site of the CRIC development is three-storey, five-bay and double-pile with a hipped roof that has partial gables to the sides. It has a modern single storey boiler house attached to the Northern gable. A long two-storey, sixteen bay and single pile, with a later addition along the rear (west) elevation. The two original parts of the building are constructed in rubble calp limestone and considered to have been built in the 18th century.

OCSC have carried out a Structural Assessment of the Children’s Research and Innovation Centre Basement



The Haughton Institute

Construction on Haughton Institute and Adjoining Residential Properties which is included as an appendix to chapter 16 of the EIS.

2.4 Access:

Access to the Children’s Research and Innovation Centre (CRIC) site is via a private road within the SJH campus. This access road is a cul de sac and extends southwards for approx. 100M from the existing car park on the surface of the CRIC site to the main SJH central road network. A vehicle barrier currently controls access into this road from the main SJH spine road.

Directly to the west of the access road is the Haughton Institute, and to the east is the rectangular grassed courtyard, enclosed by the Trinity Centre for Health Sciences. The access road terminates in the existing surface car park at the north of the campus which will be replaced

by the CRIC development. There is a tarmacadam recess provided in the north east corner of the existing grassed courtyard to facilitate hammerhead turning for larger vehicles at the end of the road.

Existing usages of this road include fire tender access to the façades of the Haughton Institute and Trinity Centre building as well as waste collection from a compound in the existing car park area, general deliveries and staff access. It is also used by staff for parking along the length of the road and for accessing a second surface car park at the south of the courtyard.



Existing approach

3.0 Architectural Design

3.1 Site Layout, scale, massing

The design of the building has been developed in response to the site context, the proposed integration with the surrounding buildings and the requirements of the brief. The proposed building is four storeys in height, however due to the significant level difference between James St. and the Hospital Campus the building is perceived as being 4 storey from James Street only and 3 storey from the campus side.

The building as seen from the campus side is L shaped around a hard landscaped courtyard. The lower ground level which has a façade to James's Street extends under the courtyard to maximise the footprint required to facilitate the laboratory facilities.

The two legs of the 'L' are generally the same height and are a comparable height to the adjacent Trinity Centre for Health Sciences Buildings. A stair well at the Western end of the building steps down to reduce the impact on the adjacent residences at McDowell Avenue. Daylight and sunlight analysis studies were carried out during the design development stage which assisted in refining the massing of the building to ensure that impacts on adjacent residential properties were minimised or eliminated.

The L shape is orientated with one leg along the façade the Trinity Building and the other along James's Street. This minimises the impact of the scale and massing of the building on the McDowell Avenue properties with only a gable end presenting to the Western boundary of the site. It also allows plenty of space around the Haughton Institute with the building being set back a minimum of xxm from the protected structure. In this way the context of the protected structure is not impacted above ground.



Site plan

below ground the basement has been set out in a manner that ensures that it can be built without impacting on the protected structure above.

3.2 Entrances & Access routes

The main entrance and approach to the building, as described above is via the existing garden courtyard approach to the existing Research Buildings. The CRIC will be seen at the end of this vista which is dominated by mature trees and soft landscaping. The main entrance into the building is off the new courtyard space.

A set of doors are also provided on the James's Street elevation which could be used by staff working in the laboratory to access the building directly off the street.

Pedestrian Route to James Street

A stepped access route is proposed to link the campus and the CRIC Building to St. James Street between the IMM and the CRIC building along the Eastern boundary of the site. Two sets of gates are also proposed one at each end of the route. These will allow for flexibility in the operation of this access route from a security perspective once the building is complete and operational. The route is designed to be attractive with some passive surveillance from the new building which has a number of windows set out along the route.

In discussion with Dublin City Council it was agreed that while it is not desirable to provide access that is exclusive to ambulant people only it is still desirable to provide this link as it connects to another stepped route across James' St which links to the Camac River and Heuston Station. The building and upper level courtyard is fully accessible from the campus.

The proposed route improves the integration of the campus

into the surrounding areas and improves permeability through the campus and through the local area.

When the CRIC is developed the access road will terminate at a pedestrian plaza at the north end of the Haughton Institute. This will restrict any vehicular access beyond this point onto the CRIC site. A new hammerhead turning space will allow vehicles to make a 3-point turn and return to the SJH campus. MSA have verified that Fire tender access to existing buildings and to the CRIC site is acceptable with the new development and the resultant access road length and turning provisions.

Other vehicles requiring access to the CRIC when completed will include Waste collection vehicles, gas bottle delivery vehicles, general delivery and maintenance vehicles etc, all of which can make use of the road and hammer head turning area, but cannot drive onto the pedestrian area. Suitable bollards or other landscaping elements are proposed to ensure that this remains a traffic free space.

Levels:

The proposed building levels have been influenced by the surrounding building levels, courtyard levels and street levels. The level on James St is referred to throughout the drawings and reports as lower ground level, the level at the campus side, which is the main entrance level to the building is referred to as the ground floor level.

The ground floor level of the building is dictated by the average level of the existing ground and the entrance level of the adjacent buildings. It is set at 20.450m OD. The rest of the building is designed so that the first and second floors match the levels of the IMM adjacent which provides a level of flexibility for connections to be provided at the upper levels in the future if required.

The lower ground floor level needs to be sufficiently lower than the ground floor to allow for the service requirements of the laboratory space. It must also link to the Trinity Building adjacent and also to James's Street.

The level of James's Street falls along the street front of the building from 17.7mOD at the corner of the Trinity Centre and drops to 16.0mOD approximately at the opposite end of the proposed CRIC building.

The access from lower ground to the street is facilitated at the North Western corner of the building in order to maximise the height achievable. The lower ground floor level of the CRIC is 1.28m lower than the equivalent level in the adjacent IMM.

The Trinity Building is designed to connect to a future building on the ground and lower ground floor levels. Due to the location of the new pedestrian route to James' St. it is not possible to link the buildings at ground floor level. The key link required between the buildings is to support access from the laboratory space in the CRIC to the laboratories in the Trinity building. A double sided lift provides accessibility between the two buildings at lower ground level for universal access and for moving trolleys of samples etc between the two buildings. A short stair is located immediately adjacent to the lift. This links to a corridor in the basement of the Trinity Building from which a lift can be accessed which serves all floors of the building.



Route from James's Street

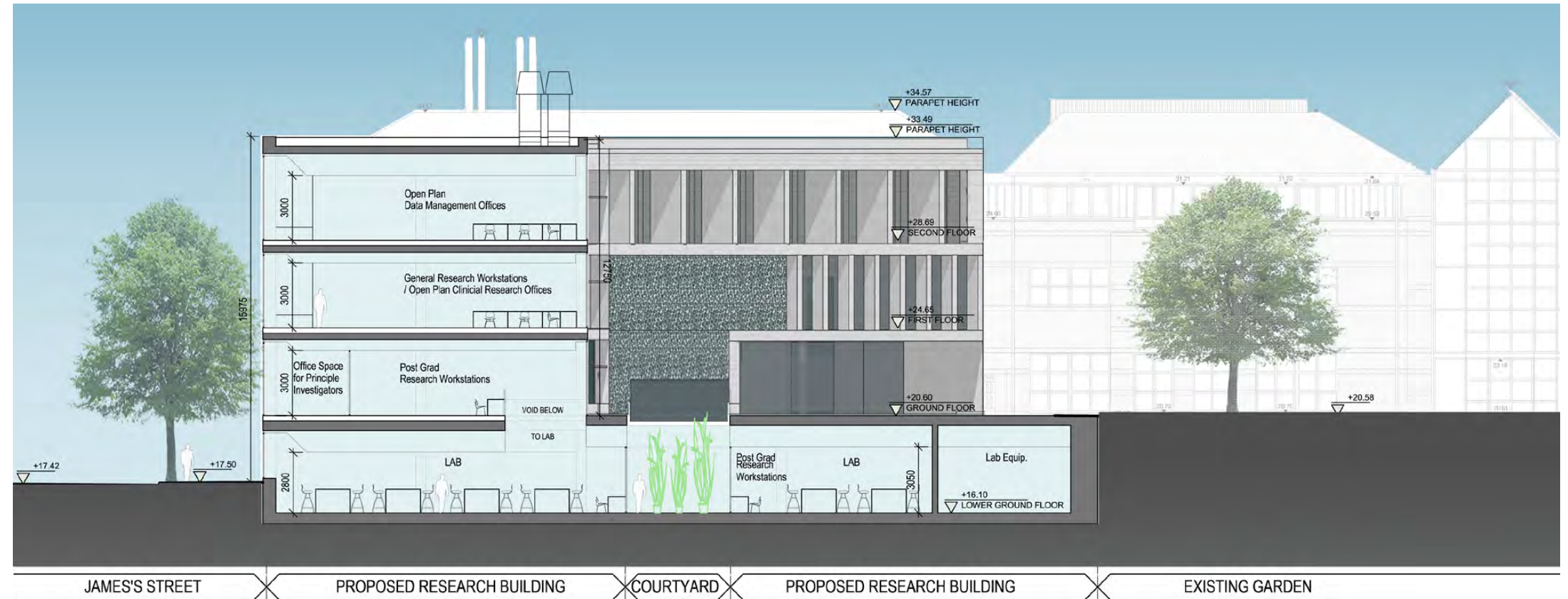
3.3 Functional Layout

The main functions of the building can be divided into laboratory based research and desk based research. The laboratory space is located at lower ground level which is the largest floorplate at 1077 sqm. The upper levels of the building accommodate office type space and support accommodation.

An open central circulation space with a flexible break out space located off the stairs overlooking James' street on every floor is designed to promote integration and opportunities for interaction. This circulation space is the focal point of the building and will be used by all staff and building users throughout the day.

3.3.1 Core Lab Facilities

The laboratory is a long rectangular space located on the lower ground floor of the building designed to accommodate a maximum of 50 researchers. It benefits from daylight from the James Street elevation. A sunken courtyard brings natural light into the other end of the laboratory space and visually links the laboratory to the entrance courtyard above. The laboratory is surrounded by support spaces including cell culture stores, equipment



Research building Section AA

stores, microscopy room etc. The majority of these spaces do not require natural daylight and are located on the periphery of the lab. Some write up space is included in the laboratory with the remainder located one floor above in an open plan space connected to the lab via an internal lightwell. A generous central stair case leads from the main entrance down to the lab, with similar stairs leading to the first floor.

3.3.2 Clinical Research Space

The ground and first floors are laid out in a similar fashion with open plan space in the main block spanning between James' St. and the entrance courtyard. Support offices, lifts, stairs, meeting rooms etc are located in the block adjacent to the IMM. The second floor accommodates a similar open plan space as the lower floors.

In keeping with the spirit of the brief the open plan areas are designed to facilitate a range of flexible working environments. The northern side is designed so that a cellular layout can be achieved, although ideally these would be only semi enclosed and designed as study bays with integral desks and shelving. The remainder of the space can be planned in a number of different configurations with a variety of desks/workstations and breakout spaces.

The meeting rooms are flexible and can be used separately or integrated to form a larger space. They will benefit from

3.4 Facades:

The facades are developed with a common approach to materials but with each façade adjusted to relate to its orientation. The principal materials proposed are stone/ prefabricated reconstituted stone panels with glazing / curtain walling behind or integrated depending on the location. Metal screens are proposed in certain areas to emphasise important aspects of the building. This includes a large vertical screen on James St. in front of the glazed flexible breakout space/circulation spine, and along the side of the main staircase on the courtyard elevation adjacent to the main entrance. It is proposed that these screens are developed as feature panels of laser cut metal reflecting some aspect of scientific research that is appropriate to the building.

The Northern Façade has solid panels flush with the façade which allow maximum light into the building, The South facing façade has solid panels perpendicular to a plane of



Laboratory

curtain walling incorporating a horizontal metal brise-soleil to reduce glare and provide shading from south light in the Summer and act as a light shelf to reflect light deeper into the plan.

The west facing entrance façade is composed of angled panels which control the low level west light. The upper level of this façade is a mixture of solid panels and louvres in a zig zag pattern in plan designed to be visually more attractive than a large plane of louvres, particularly when viewed from the neighbouring property.

The 3 upper levels of the building are designed in a manner that maximises daylight, reduces glare and avails of natural ventilation thus minimising the energy requirements of the building. The facades have been designed in specific response to their orientation. Solar panels on the roof contribute to hot water heating.

It is proposed that signage to further detail will be located on the James' Street façade and on the Southern gable wall facing the garden in front of the Haughton Institute.



View of the main entrance



North facade detail



View from James's Street

D. Family Accommodation Unit

1.0 Introduction

The objective of the proposed Family Accommodation unit (FAU) is to provide a high quality facility to house the families of those children currently receiving long term critical care in the proposed National Paediatric Hospital (nCH). It will be located immediately west of the new children's hospital site, just inside the current Brookfield/South Circular road entrance. The stated aim is to:

- Merge with and replace the current facility being operated at Our Lady's children's hospital, Crumlin.
- Compliment the operations of the adjacent hospital due to families often being in-situ at the hospital for periods of between 2-12 months
- Provide a head office for the fundraising which the operating charity relies upon.

The building is often referred to as a house as it will function in just this fashion for the families who will reside here, often for long periods. Situating it in such close proximity to the hospital is essential as the requirements of young children obtaining critical care necessitates parents being called upon at irregular hours and at relatively short notice.

2.0 Operations of the House

The aim of the house is to provide a home away from home for its occupants. This will be done by providing the residents with facilities for cooking, cleaning, eating, washing and sleeping all close by. Typically, the houses are equipped with everything people would find in their own home. This enables families to have the necessary human requirements and to be together while one child is being cared for in the hospital. A day to day in the house will normally consist of waking, having breakfast then spending the majority of the day in the hospital with a brief return to prepare a lunch. The residents usually return in the evenings to eat, sleep and unwind.

Families will normally reside in the house as long as is necessary, i.e. as long as their child is receiving care in the (nCH). How this occurs differs from person to person. Some families will have both parents in residence at all times, taking it in turns to be present with their child whereas others may split the work between one being present with the child being cared for while the other parent minds their remaining children. As there is no weekends off in critical care, the families other children often come to the house to be together as a family on the weekends so the rooms have to be able to accommodate more people at certain times. The house must accommodate a variety of needs to allow each family's routine to fit as seamlessly as possible into the unit. Accordingly, the rooms have been designed to accommodate between 1-5 people where necessary. While the majority are double rooms with the capacity for five people if required, a number of single occupancy rooms have been provided. All rooms are Part M compliant and a number of bedroom suites within the house have been equipped with disabled access bathrooms to facilitate wheelchair users.

To accommodate the growth in the number of occupants on the weekends, or indeed special occasions such as Christmas where the operating charity may provide Christmas dinner for their occupants, a large scale dining area complete with fully working kitchen is situated on the ground floor of the house, that opens onto the garden. This allows the operating charity to have regular large scale evening meals prepared here for their residents at intervals throughout the week. Also provided at ground floor level is a playroom, a separate room for the older adolescent children and a day room for some quieter relaxation.



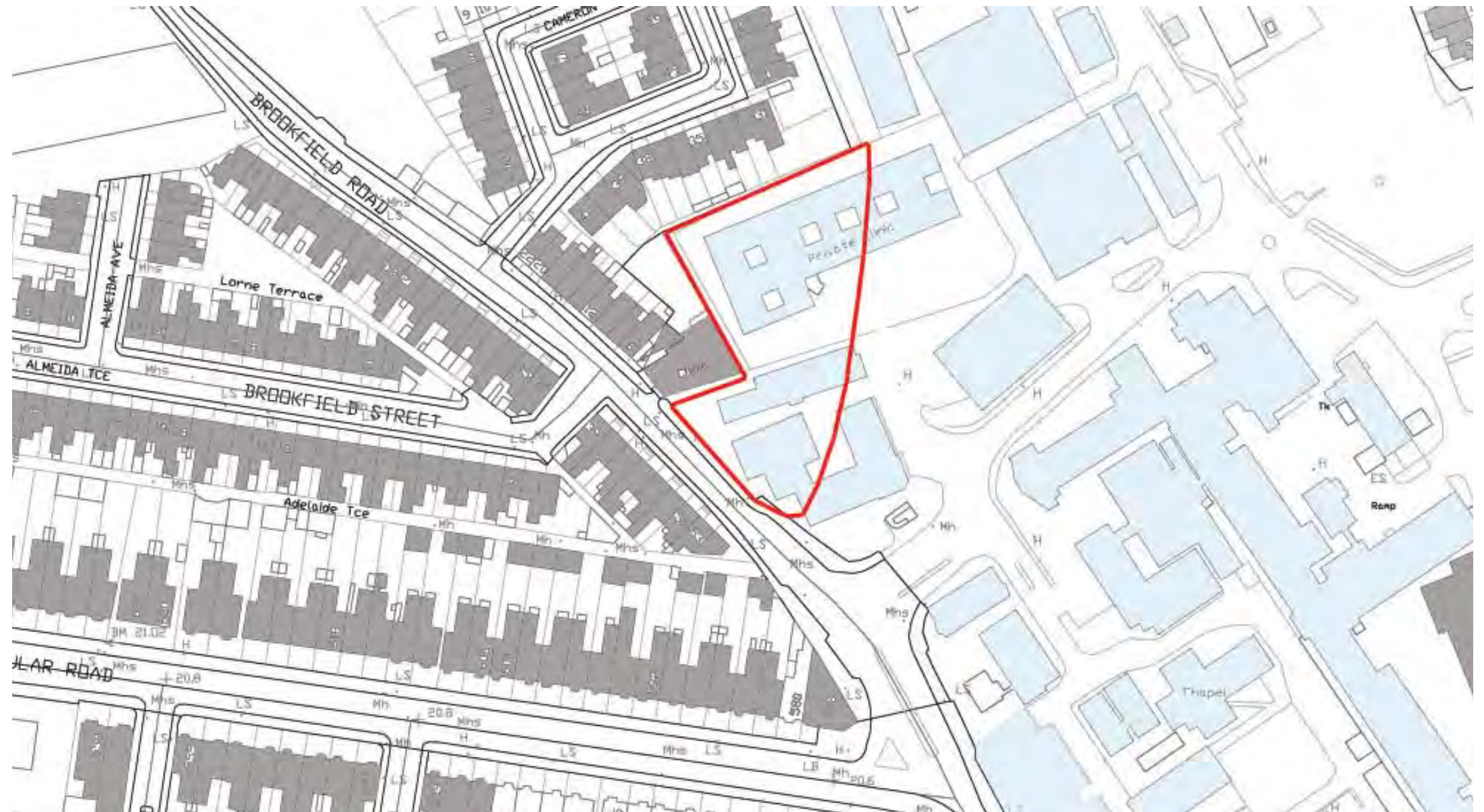
Family Accommodation Unit at Our Lady's Hospital, Crumlin

3.0 Existing Site Condition

The proposed site for this family accommodation block is outlined in red on the map below with the buildings set for demolition highlighted in blue;

The site is bordered on its south west side by Brookfield road, to the north-west by Cameron square and Brookfield private clinic. To the east is the proposed NPH.

The surrounding buildings are predominately residential with the exception of the private Brookfield Clinic and are characterised by their red brick exterior walls. The building line to Brookfield road is enforced strongly by the houses on opposing sides and punctuated only at the south eastern side by the existing clinics on the St James's hospital campus (SJH).



Location plan

4.0 Design Concept

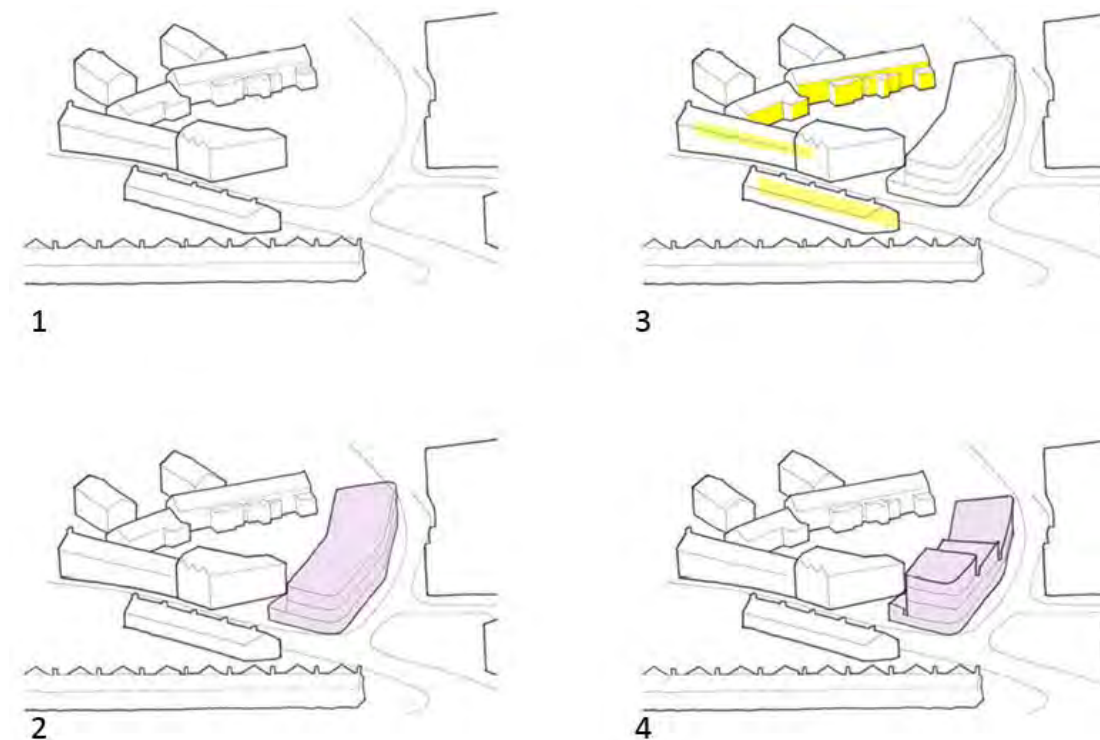
Our objectives in the architectural design of the family accommodation unit were as follows;

- Respond to the urban scales; both existing and proposed
- Create a building that acted as a continuation of the urban sector created on Cameron square and Brookfield road
- Use the site as efficiently as possible to meet the potential clients internal and external spatial requirements

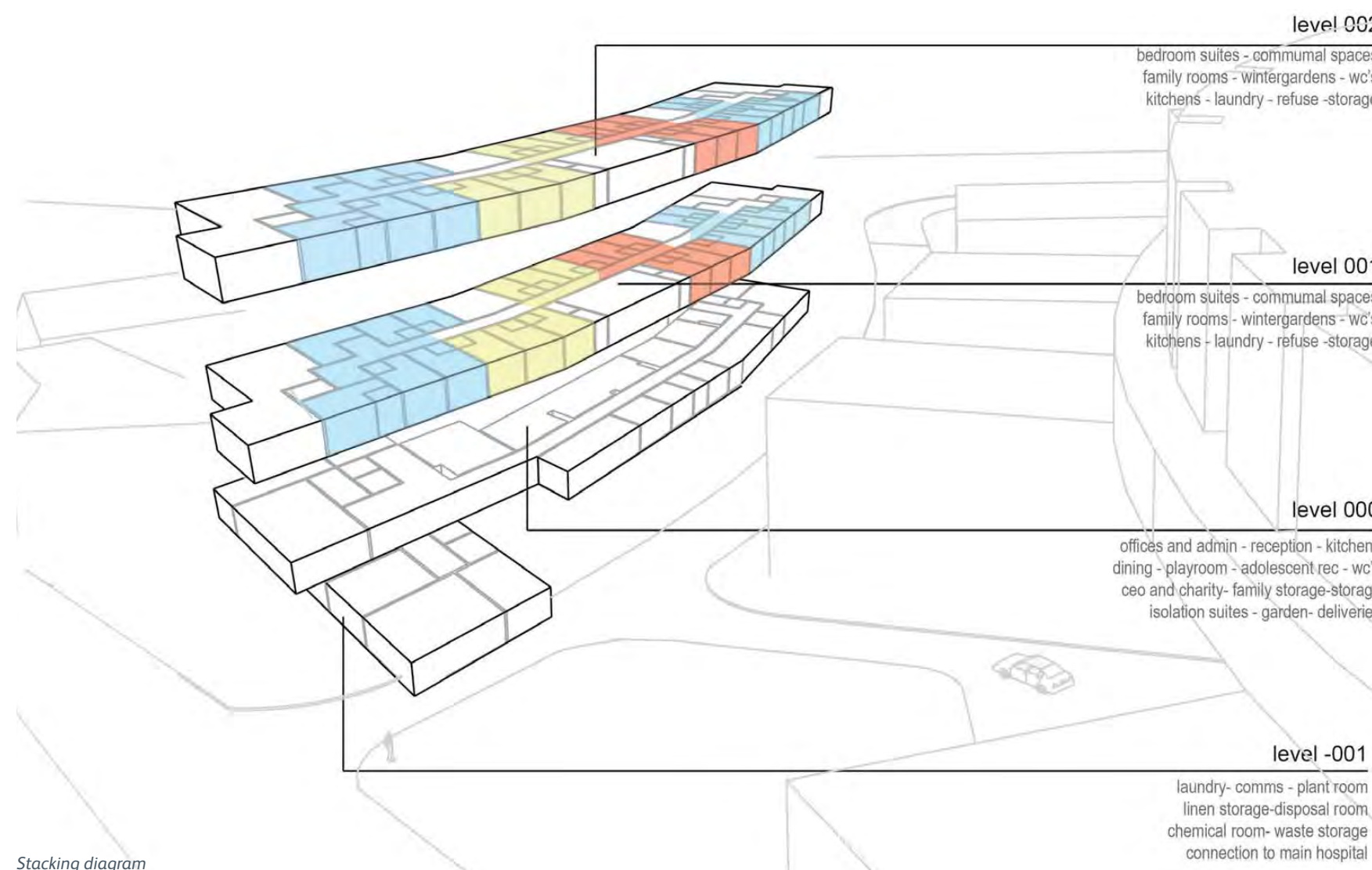
Our design proposal was to raise the residential levels of the house up above the noise and activity at ground level and position them on the upper floors; we could then place the communal and administration spaces at ground floor giving them access to the rear garden. The service areas of the house could then be positioned at basement level where a link to the nCH car park at lower ground level could be made. The diagram below shows the footprint necessary to accommodate the required spaces on the site while still allowing optimum natural light permeation into the interior spaces. This three storey building comprised two residential storeys above the ground entrance level.

After consultation with the planning authorities and consultants it was agreed that altering the building mass would create a better response to the established urban scale. The form was changed to have two lower storey blocks to the south and north facing Brookfield road and Cameron square, with a central three and four storey block facing the nCH. This massing would mitigate against the potential overlooking issues rearward and the fragmenting of the building mass allows the FAU engage and be more compatible with the existing situation.

The central mass of the accommodation unit is positioned along the eastern edge of the site to respond to the four storey wings of the proposed nCH that project onto this road. By positioning the largest mass in this position it will minimise the loss of direct sunlight by the existing private houses on Cameron square, as shown in the diagram opposite.



Design evolution diagrams

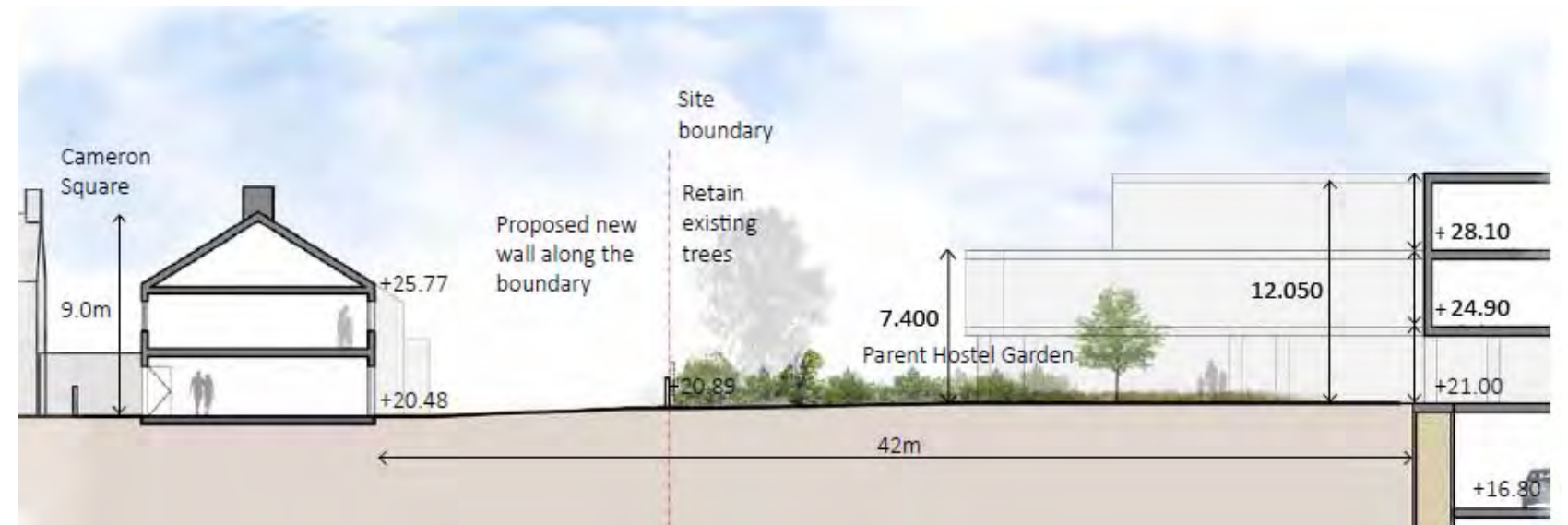


Stacking diagram

By placing the body of the house directly along the adjacent entrance road, it acts as a buffer between the proposed nCH and the garden. Backing it onto the existing private residential gardens on Cameron square and Brookfield road was an intentional decision on our part to create a screen between the residential scale to the north-west and the larger scale of the nCH to the south east.

Reducing the mass at its north and western ends where it meets Cameron Square and Brookfield road respectively, is intended to match the existing urban scale. The 7.400m high two storey block at the north end is a response to the 9.000m ridge height on the houses at Cameron square while the 12.050 block is a balance between the larger scale of the nCH and the 9.00m height on Cameron square.

Specific care was also taken towards the successful integration of the FAU into the existing urban situation. It is our contention the residential nature of the FAU necessitates it responding to the existing private houses on Brookfield road, Cameron square and the South Circular road. The design intention has been to take the building line created by the houses on the north east side of Brookfield road and continue that into the existing hospital campus northwards to meet the edge of Cameron square. In doing so, it will mirror the residential clusters found in the immediate area as shown in the plan drawing on this page. This creation of a new building line from Brookfield road to Cameron square will reinforce the residential clusters present and offer a visual barrier to the larger scale of the nCH. It will then read as a material extension of the current private houses. This clustering creates a sense of privacy and security for those residing within while also reading well in an urban context.



Proposed section GG' through Cameron Square and the Children's Hospital Parent Hostel Garden



Area Map - Residential clusters

The basement has been carefully positioned to keep it as far from the neighbouring boundaries as was practicable. In doing so it has facilitated a 6.00m wide root protection zone for the existing trees to the boundary of the Cameron square and Brookfield road properties.

The building also needs to respond materially to the surrounding residential properties in the immediate area. The predominant material present is brick, as seen in the image opposite and it has been our intention that the family accommodation unit be designed as an extension of these blocks. To facilitate its integration into this urban context brick is the predominant material on the exterior elevations. We are also proposing vertical coloured elements along the east elevation that faces the hospital to reflect some of the coloured features being proposed for its exterior treatment.



Aerial view of surrounding area

5.0 Size and Scale

The site area is **2670m²** (0.66 acres). The scope of the development entails a new accommodation facility that will be three storeys above ground level with a basement level that links into the nCH car park at lower ground level. The gross floor area of the project is **4354m²**:

- Ground floor: 1400 m²
- First Floor: 1197 m²
- Second Floor: 1050 m²
- Third Floor: 368 m²
- Basement: 335 m²

There currently exists in the area, a mix of two storey private dwellings immediately adjacent to the proposed site and also the proposed four storey wings of the proposed nCH that project onto the hospital entrance road (17.750m above ground floor level of the house). Accordingly, the family accommodation block has been separated into a number of different masses to respond to the differing scales that exist between the existing houses and the proposed nCH. At its highest point it is 15.060m (on the southern end of the site facing Brookfield road and the nCH) and at its lowest point it is 4.150 (at its northern end facing rear of Cameron square).

The mass distribution is as follows:

- A) At its north end (immediately adjacent to 31/32 Cameron square) there is a low level block, 4.150m tall
- B) The building steps back away from the boundary to a 7.40m high two storey block
- C) It then rises to a 12.05m high three storey block.
- D) A 15.060m high four storey block faces onto the south end of the site, situated on Brookfield road. The height here is a response to the four storey wings of the hospital.

E) The building then steps down to a lower 3 x storey 11.550m block that faces 43-51 Brookfield road, the height of which is intended to relate to the adjacent Brookfield clinic and the established ridge heights of the existing houses.

F) Finally a single storey 4.150m high block finishes against Brookfield Clinic

The ground floor level is +21.000m, matched to that of the NPH to accommodate the levels around the entrance piazza. A basement level is also planned situated 4.200m (+16.800m) below the entrance level of the house that will have access to the lower ground level of the NPH car park. This has been done to provide a sheltered access to the hospital and the nCH car park



Roof Plan



Elevation

6.0 Detailed Project Description

6.1 Ground floor:

- Entry to the building is from the south-western end of the house and into the reception.
- Families will arrive and be met on their first day here by charity staff. Immediately adjacent to reception is a quiet room for induction of new residents into the house.
- At this level are the offices and administration for the running of the house as well as a board room, fundraising spaces from which the charity business that facilitate the day to day running of the house can be situated.
- A large scale dining space with a fully functioning kitchen to allow the charity to prepare meals and seat their residents for larger scale events.
- Overlooking this space is a play area where younger children can be left in view of their parents while they eat.
- This space is also overlooked by the day room, a more private space for reading or watching television. All these three spaces open out onto the garden so that children outdoors can be observed when the adults are indoors.

6.2 First, Second and Third Floors

- The first, second and third floors of the house are exclusively for the residential suites.
- 53 bedroom suites in total. 28 no. on the first floor, 21 no. on the second floor and 7 no. on the third floor.
- Each residential floor contains a communal area for cooking and dining complete with a family room (2 no. communal spaces on first and second and 1 no. on the third floor). The distribution of these spaces was designed to allow a clustering around the communal spaces, thus allowing a sense of place for the residents where they have their own area to cook, dine, relax and do washing.
- Different sized bedroom suites ranging from 19 - 27 m² have been provided to cater for the different requirements of the residents.
- A phone link between the wards and the home to allow the families to be easily contacted when required.

6.3 Private Garden

- On the north-west side of the property is a 1225 m² landscaped garden for the family accommodation, it is an enclosed private garden intended for use by the house occupants.
- The creation of a safe external space is fundamental to the proposed design concept. Alongside the busy nature of the on-site workings of hospitals, the house is intended to be a respite zone for the occupants.
- The building form wraps around to define the garden, a space in which it is expected families can decompress.

6.4 Basement Level

- The basement contains 101.60 m² of plant as well as a 20.40 m² comms room.
- The plant has been situated so as to have direct access into the nCH basement to allow ease of access for the potential replacement of large scale components in the plant room in a safe manner.
- Additional Storage rooms are also provided

6.5 Circulation

- The different levels of the family accommodation unit are linked via 2 no. lift and stair cores with an additional protected stair core serving the basement level.
- A clear circulation path is created by means of a central spine corridor, punctuated at each end by a circulation core; this would also lend itself to logical escape format to satisfy Part B of the building regulations.
- A large passenger lift serves all the above ground levels of the house from ground – third floor while a separate smaller lift serves from basement – second floor.

7.0 Parking/Vehicular Access/Waste Collection

Vehicular access (including bicycle) and pedestrian access will be via the same access points as those of the nCH. As mentioned above, a link is provided between the lower ground level of the hospital and the FAU basement. This is intended to allow access for families arriving into the basement by car to the unit without having to go up to the ground level of the nCH. It is intended that the FAU will share a percentage of the parking and bicycle spaces created in the NPH. The precise allocation is still to be negotiated with the Health Service Executive (HSE) and Childrens Hospital Group (CHG).

In addition to the parking and bicycle spaces to be allocated, there is also 63.25 m² of family storage located in the family accommodation basement intended for bicycle storage as well as for buggies and other items that families will need day to day.

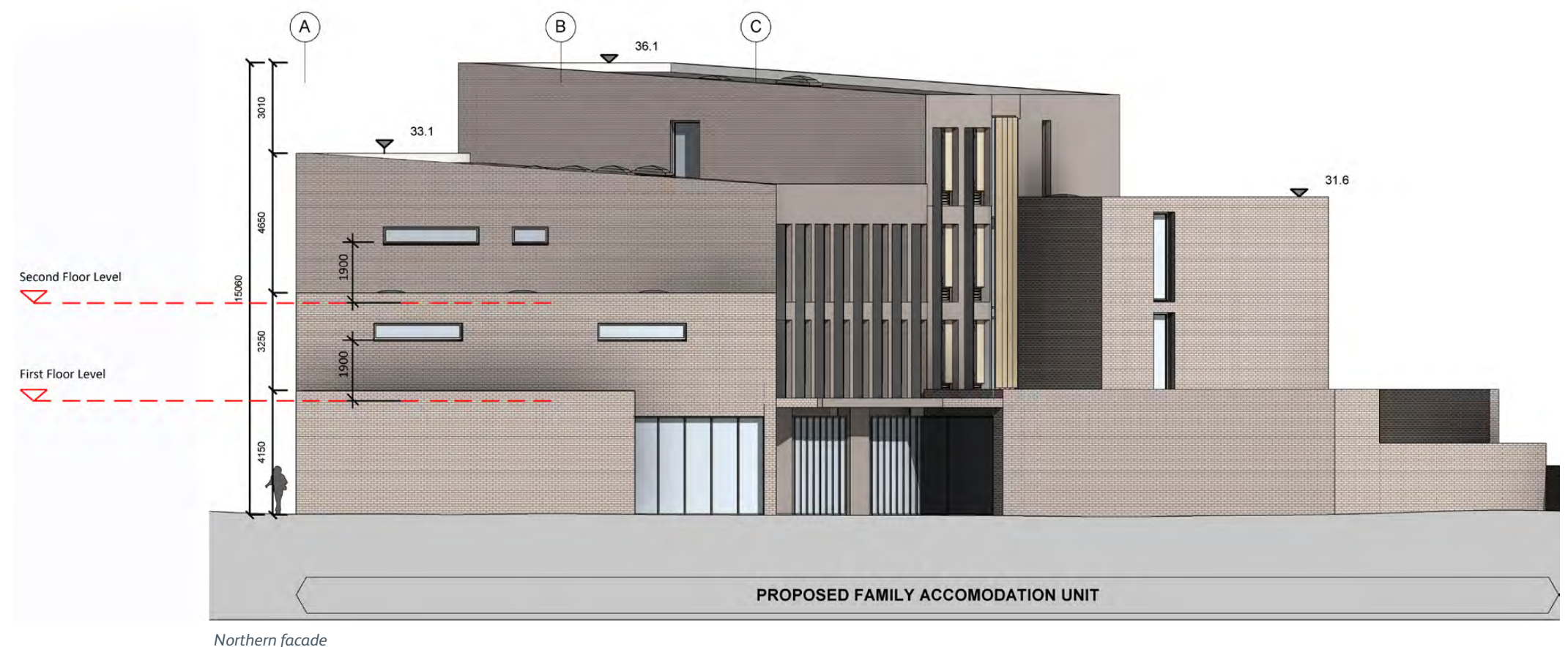
The basement also contains the house's the waste holding area. The strategy for this has been assessed by Awn as part of the waste management assessment for the nCH.

8.0 Overlooking Issues - Cameron Square

Care has been taken with the design of the building to ensure that the overlooking issues have been kept to a minimum. The stepping back of the building at its northern end of the site was driven by the desire to reduce the number of habitable spaces in direct proximity to the neighbouring boundaries above two stories. No windows have been placed on the northern face of the building that can directly overlook the gardens of the properties to the north. In order to allow permeation of natural daylight, high level windows have been inserted instead. The sill height of these openings is 1.900m over

finished floor level, above the average eye level. This strategy should allow light to penetrate without the privacy of the neighbouring gardens being compromised.

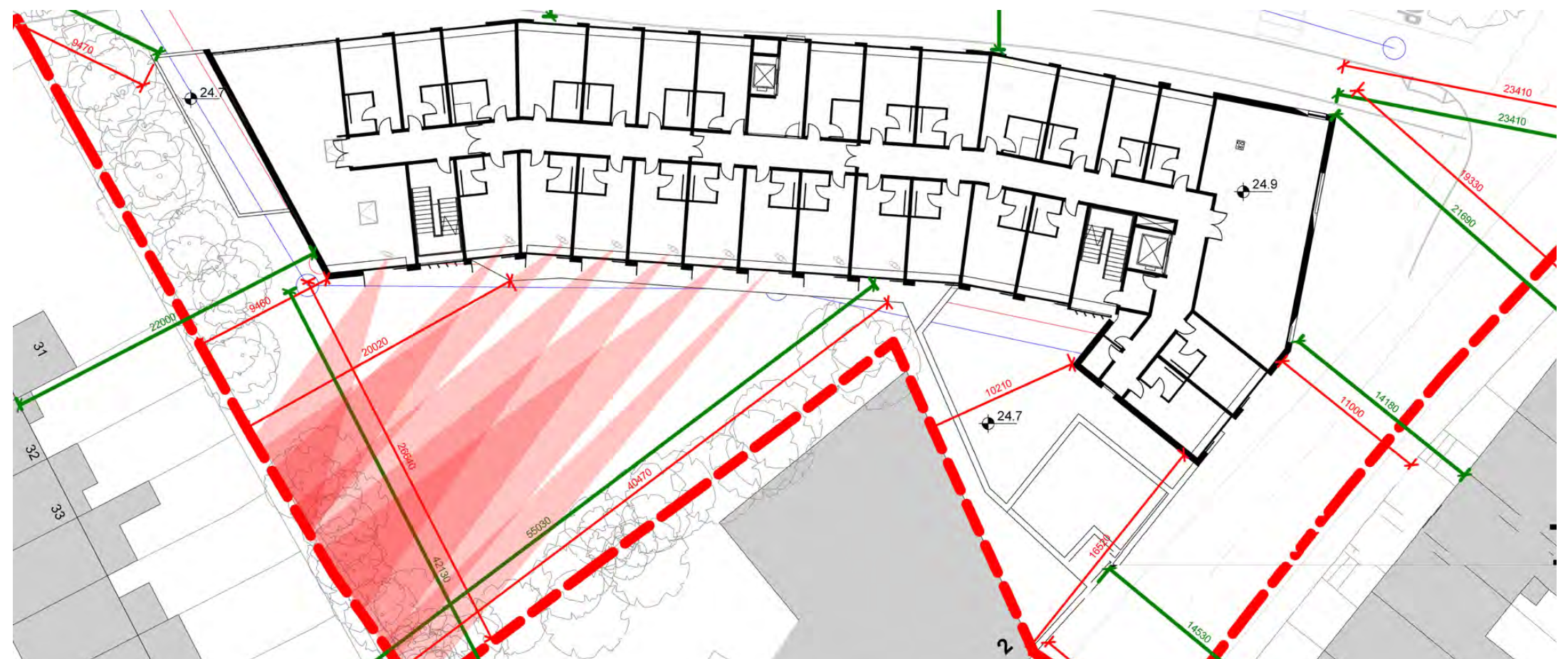
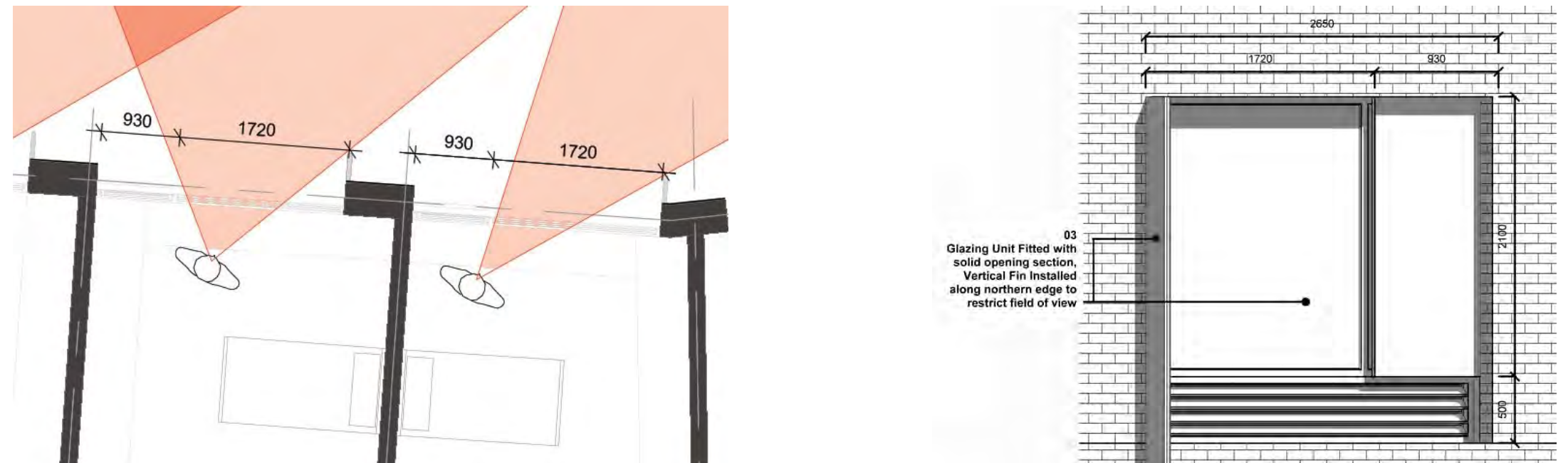
In situations that we considered there to be a potential risk of overlooking, we have employed strategies to mitigate against these issues. On the rear (north-west) elevation, the potential for overlooking was naturally present, even with distances of 20.000m to the boundary from the nearest bedroom window. As a further preventive tactic to limit the field of vision of occupants in the FAU, we elected to install



Northern facade

a vertical fin on the northern edge of each window. This fin is envisaged to work in tandem with a solid panel on the opposite side of the glazing to narrow the field of vision. It is not possible to completely obscure all views but our strategy was to ensure that if it does occur it would be from a large enough distance so as to reduce its level of intrusion to something similar found in an urban situation. As the diagrams below illustrate these two interventions conspire to limit the field of view over the closest properties.(in this case 30 – 33 Cameron square).

The diagrams on this page further illustrate how the field of vision has been reduced as well as showing the distances to the boundary and neighbouring properties at the crunch points



Floor plan in context demonstrating the limited view range

9.0 Fire Safety and Part M

Fire consultants have advised on the development of the building layouts to ensure compliance with Part B of the Building Regulations – Fire Safety (2006). The building has been assessed under the requirements for purpose group 2 (b) (Hotel, hostel, guest building, residential college, hall of residence). We are satisfied that the proposed building is Part B compliant and intend to lodge an application for a fire safety certificate following the submission of the project documentation to an Bord Pleanála.

Assessment has also been carried out through the design process to ensure the building complies with Part M of the Building Regulations – Access and Use (2010). All entrances and internal circulation routes have been designed so as to be suitable for use by all. In accordance with the Part M requirement covering accessible en suite facilities, 1 accessible en suite should be provided per every 20 bedrooms. We have 53 bedroom suites proposed and 3 no. accessible en suites in the house; 2 no. at first floor level and 1 no. at second floor level. We are satisfied that the building is Part M compliant and will be submitting the Disability Access certificate application following the submission of the project documentation to an Bord Pleanála.

1.0 Introduction

This chapter has been prepared by BDP and describes the landscape proposals for the National Paediatric Hospital Project which includes:

The new children’s hospital with adjoining public spaces, internal courtyards, terraces and roof gardens,

The courtyard and landscape proposals for the Children’s Research and Innovation Centre, and

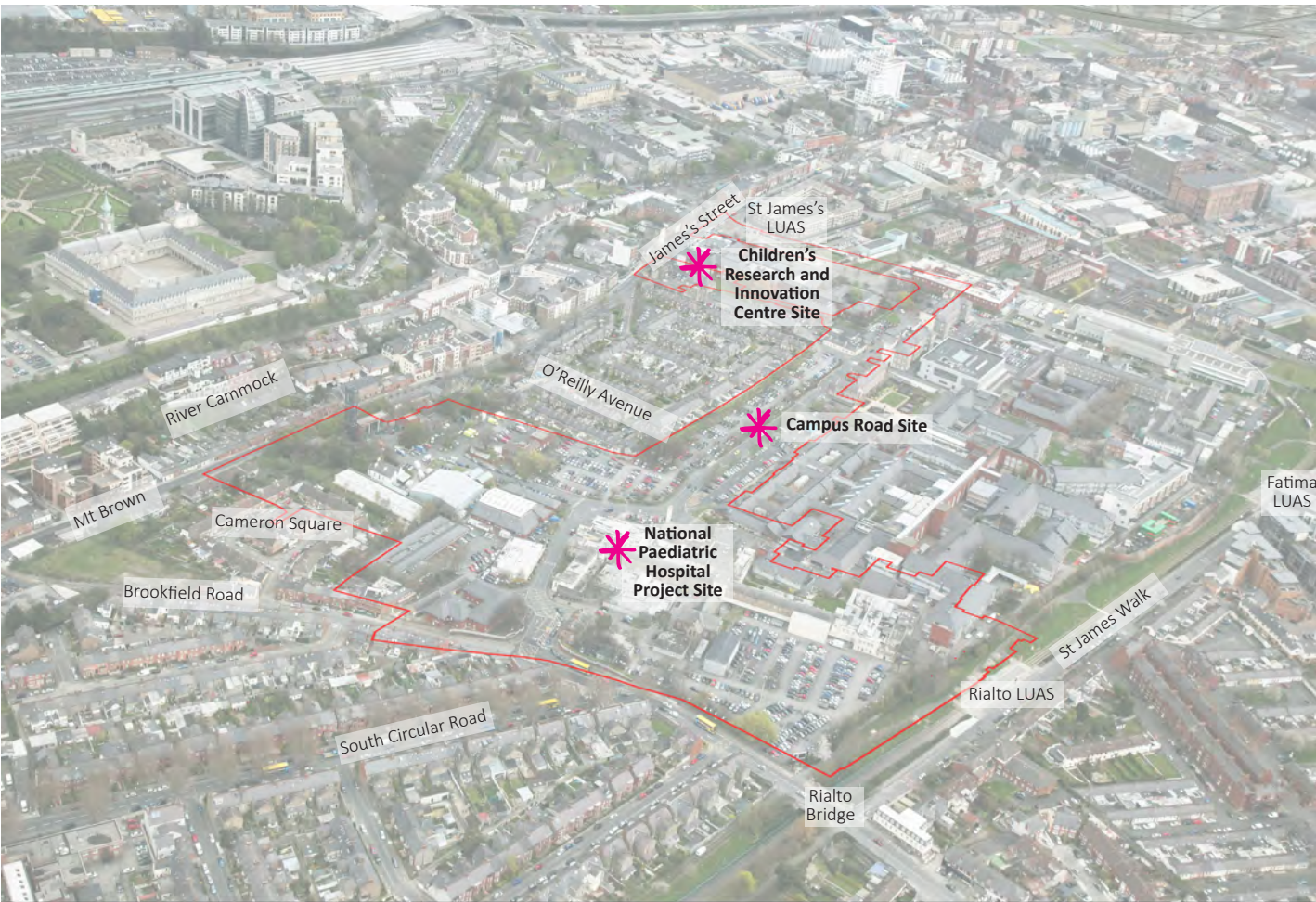
The improvements to pedestrian movement of St James’s Campus Road.

The landscape is divided into a number of areas whose detail has been developed with the client team, departmental users, the Youth Advisory Council, Family Forum and other stakeholders. The principles and the functional brief of the gardens have been developed in tandem with the adjacent areas of the building and presented to Dublin City Council and An Board Pleanala.

The landscape proposals have also been developed in the light of current Dublin City Council (DCC) planning policies and strategies. The main points arising from these reports that impact on the landscape proposals are summarised opposite:

Dublin City Development Plan 2011 - 2017
A high quality, joined-up Public Realm is central to the city’s Development Plan
The Development Plan provides guidance on the design of successful streets and public spaces with a key objective to prepare a Public Realm Strategy (SCO10)
Chapter 4 ‘Shaping the City’ emphasises the need for a high quality network of active, attractive and safe streets and public spaces (Policies SC18 and SC19)
Dublin City Public Realm Strategy - Your City, Your Space
A network of diverse, interesting and enjoyable spaces
A public realm that is convenient, accessible and safe
Ease of use for people of all ages and abilities
Being welcoming and comfortable
Celebrating the quality of the city’s unique spaces and character.

The design will also be integrated with the public realm of St James’s Hospital which is being developed within the ‘St James’s Campus Public Realm Strategy’, see Appendices.



Dublin City Development Plan and Dublin City Public Realm Strategy

2.0 Site Context

2.1 Site Context and Local Character

The site for the new children’s hospital is predominantly surrounded by residential areas. Proposals adjacent to these areas will need to be particularly sensitive to the preservation of the amenity that these residents enjoy.

To the east of the site is a predominantly industrial area including the Guinness Brewery.

To the south, a linear park stretches along St James Walk providing amenity space for local residents.

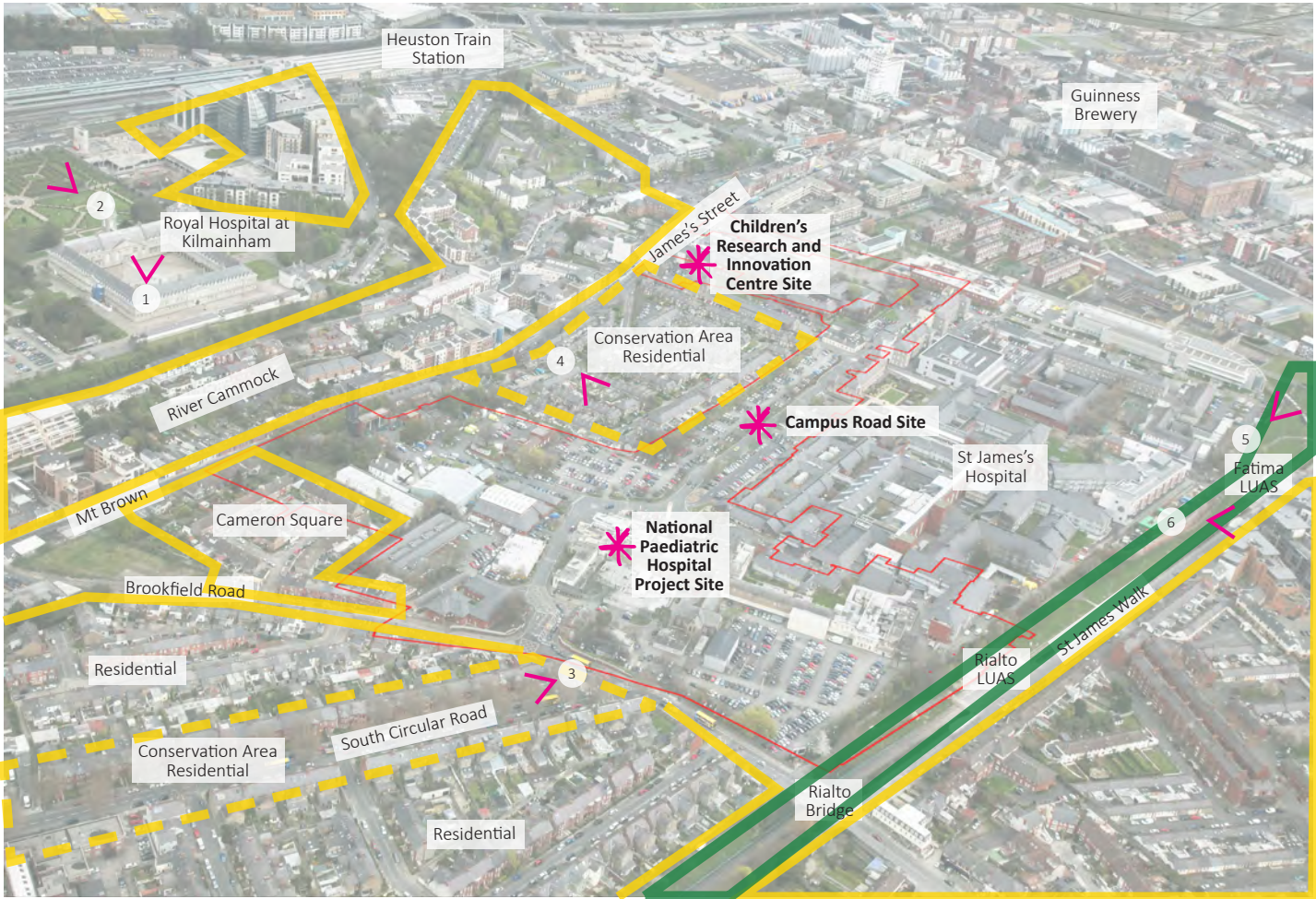
The site today is bounded by a perimeter wall and pedestrian movement into and across the campus is limited, giving it an unwelcoming frontage to its surroundings, particularly along the linear park where there could be more visual and physical permeability.

The existing St James’s Hospital (SJH) Campus has very little green space and the foreground of its buildings tends to be dominated by car parking and roads. Pedestrian accessibility is poor and routes on pavements are interrupted by car parking and vehicular access which makes way finding complicated.

Trees of varying size and quality are spread across the campus, but principally adjacent to car parking and site boundaries. As shown in the Tree Removal Plans in the Appendices, trees will be removed to accommodate the development and their loss will be mitigated through new tree and shrub planting as described further on in this chapter.

The site is well connected to public transport with close connection to 3 LUAS stops and bus routes through the St James’s Hospital Campus. It is also within a 15 minute walk of Heuston Train Station.

The children’s hospital project offers a chance to improve the public realm in the location and meet the planning parameters set by Dublin City Council, which call for 10-20 % of the site area to be devoted to open space. A strong local precedent is the former Royal Hospital at Kilmainham (now the Irish Museum of Modern Art), where the complex incorporates both a formal garden and meadow. At the centre of the building a large paved courtyard creates a memorable public space and a striking ‘hard landscape’ counterpart to the ‘soft landscape’ of the hospital gardens.



Site Location

Key

- Predominantly residential area
- Predominantly residential conservation area
- Linear park along LUAS tracks



1. The courtyard at Royal Hospital at Kilmainham, Irish Museum of Modern Art



2. The gardens at Royal Hospital at Kilmainham, Irish Museum of Modern Art



3. Row of mature Plane trees on South Circular Road



4. O'Reilly Avenue, residential conservation area between St James's Hospital Campus and Mount Brown/James Street

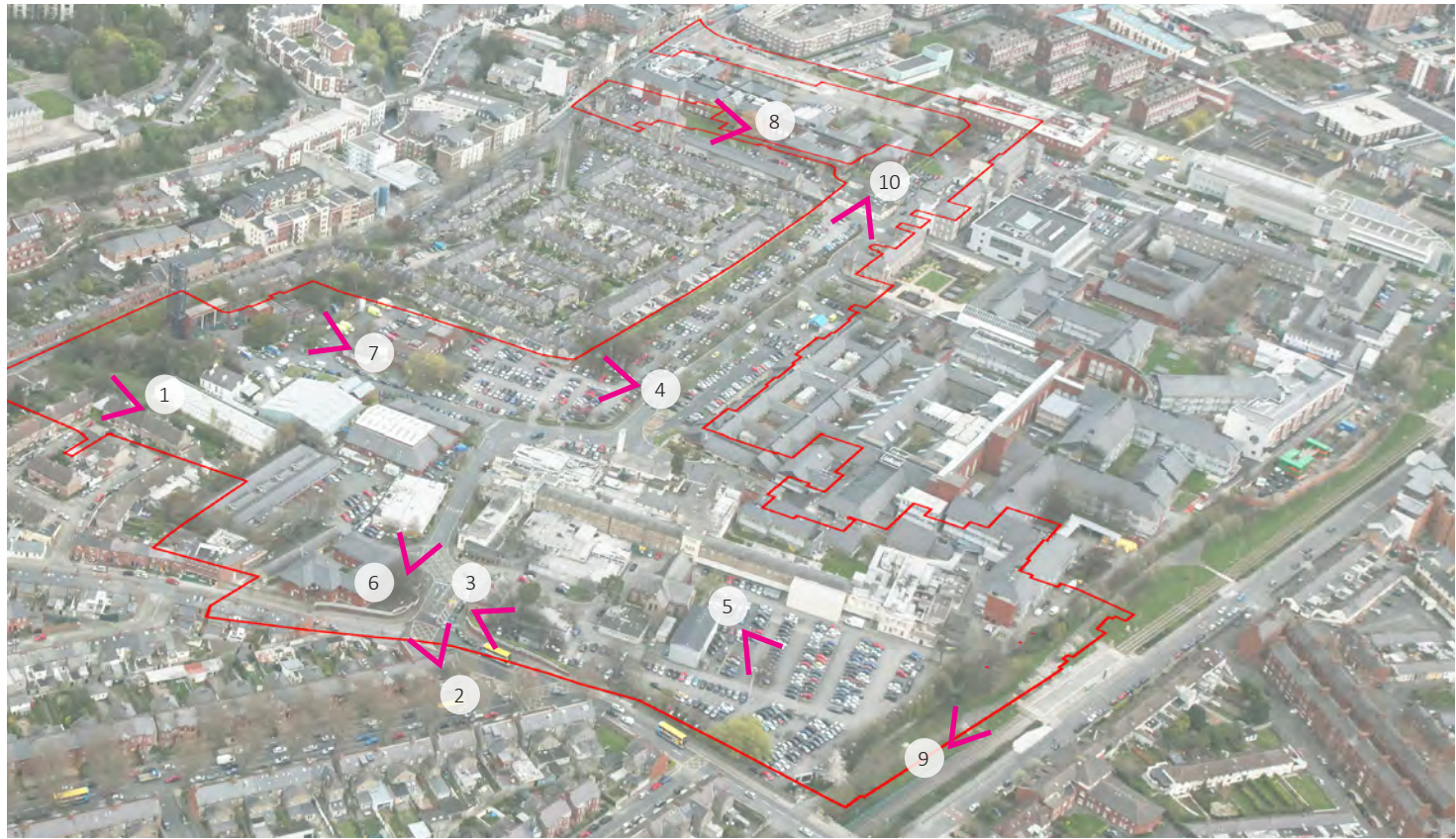


5. Linear Park along St James's Walk



6. New residential development on St James's Walk

2.2 Site Photos



1. View of the steps between Cameron Square and the new children's hospital site.



2. View from the MACE shop on Brookfield Road towards the existing St James's Campus Rialto Gate



3. View of South Circular Road looking south



4. View of car parking area within the site, looking north, with O'Reilly Avenue terrace to the right



5. View south towards car park and the existing boundary wall



6. View east from the Rialto Gate



7. View of car parking with the St James Hospital Energy Centre in the background



8. View of the CRIC site, looking north. The listed Haughton Institute is to the left of the image



9. View looking east along the linear park of St James's Walk with the Rialto LUAS stop to the right



10. View of St James's Campus Road looking west

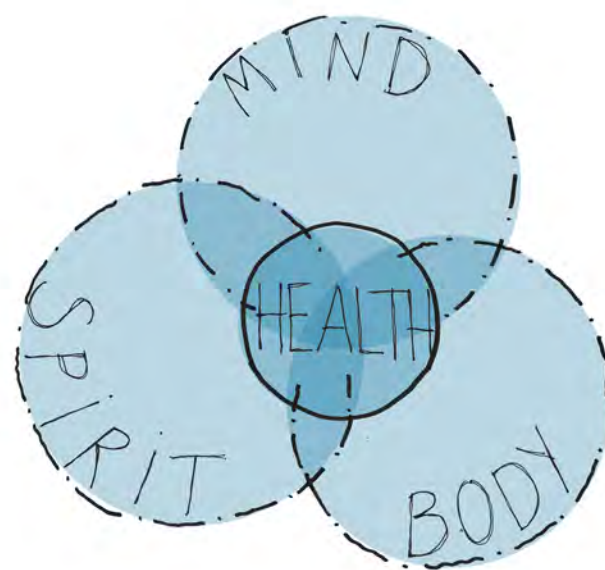
3.0 Concept Development

3.1 Vision

A hospital is an environment where people face a high degree of stress, be they patients, families or staff. Gardens and outdoor spaces can provide places for calmness and distraction as a contrast to the busy hospital atmosphere. Various studies have proven that connection with nature can be beneficial for health and well being and the therapeutic benefits of gardens and external views are well documented. The design brief calls specifically for the “encouragement of close relationships with nature, including seasonal and weather cycles” comprising of “appropriate water and horticultural features, balconies, terraces, gardens, verandas, sun lounges, courtyards and window seats”.

The incorporation of gardens and high quality external spaces also has the potential to address a number of the other ‘Principles relating to the design of a therapeutic environment for children and young people’, including:

- Sense-sensitive design
- Distraction therapy
- Rehabilitation
- Enhancement of external views
- The provision of inclusive play areas for all ages
- Encouragement of socialisation
- Creating a welcoming and non-institutional setting and creating accessible and inclusive environments catering for different types of health conditions

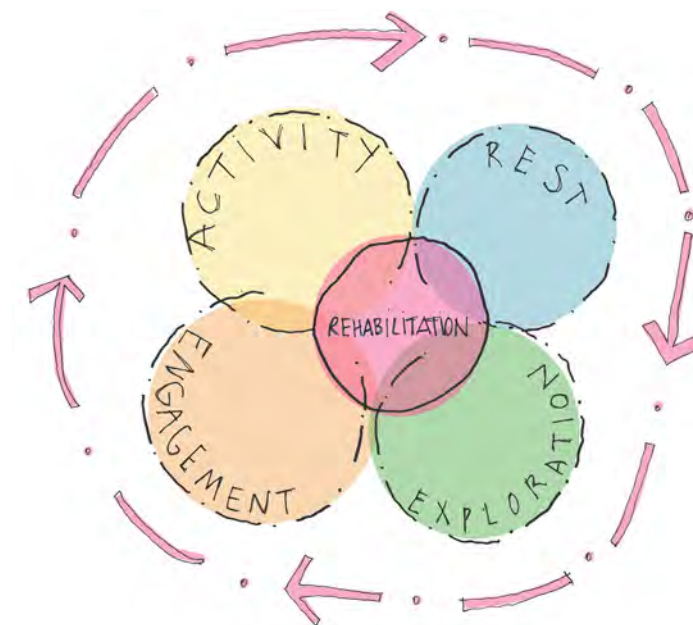


There are various aspects of wellbeing and health that the gardens can help stimulate including:

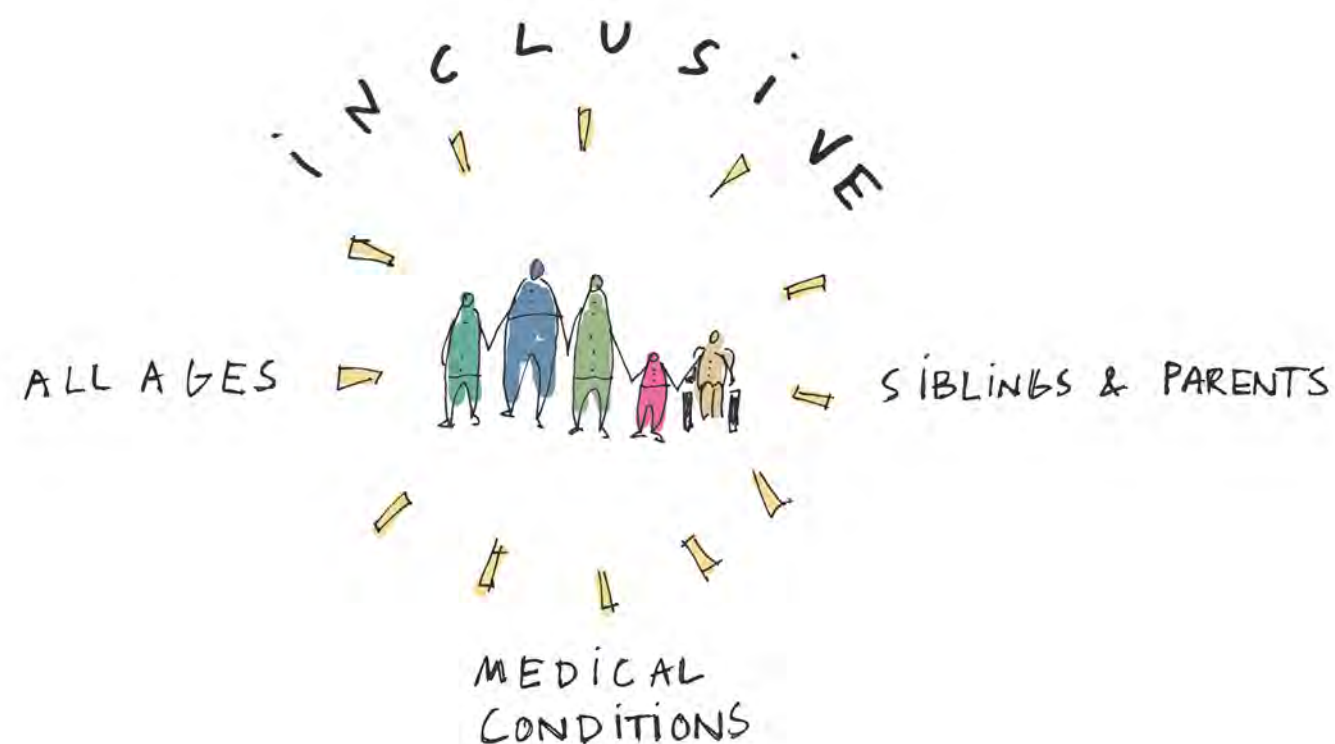
Mind - engagement, calmness, awareness

Body - physical fitness, agility, flexibility, strength

Spirit - emotional wellbeing, happiness, peace, contentment



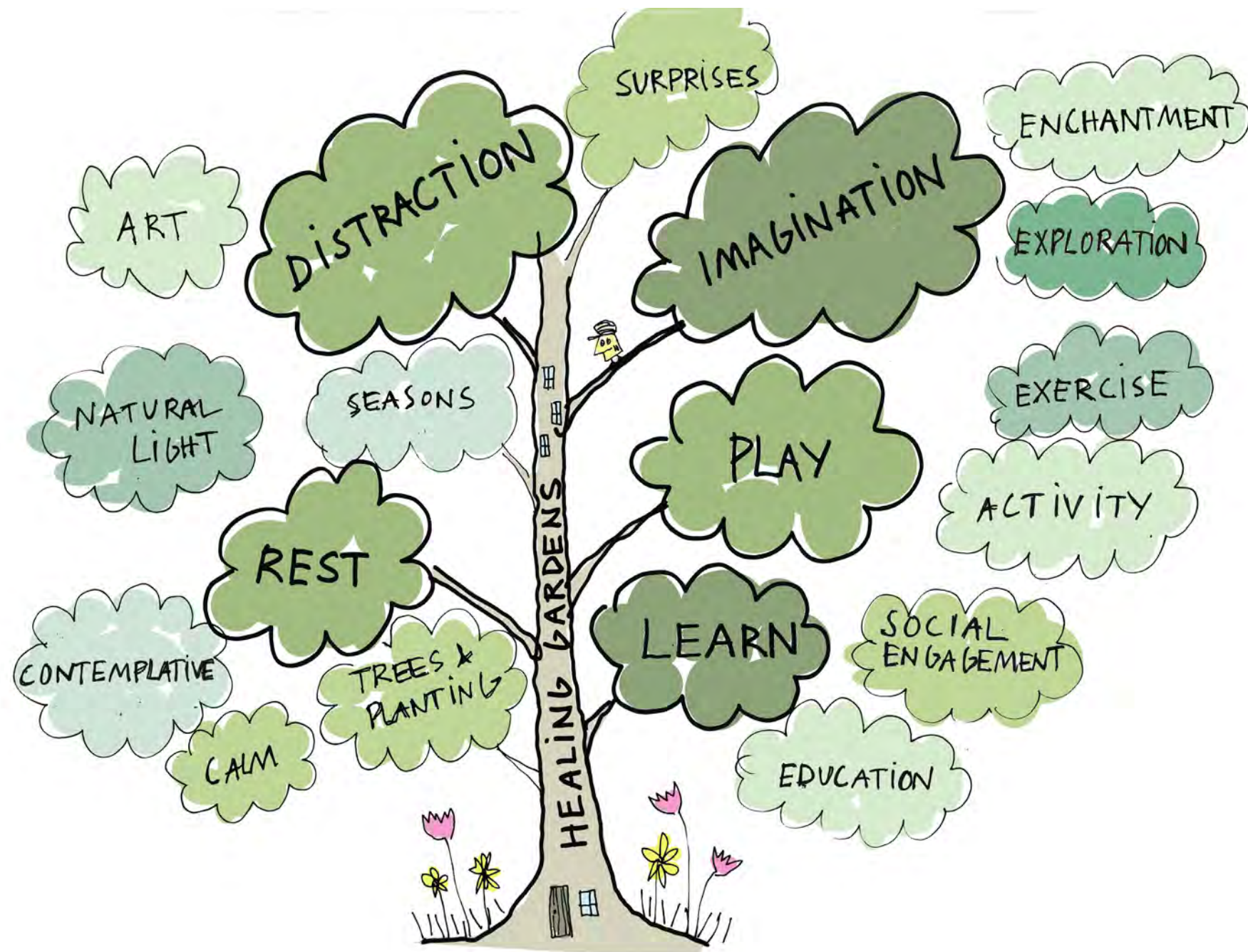
The journey of rehabilitation is a dynamic process that happens in stages, be it during a day or over a long period of time. There are opportunities for the gardens to help in the process of rehabilitation whilst also providing a place for distraction and rest for patients who may not recover from their illness.



The gardens and public spaces of the new children's hospital Project will be inclusive for patients of all ages, for different types of medical conditions and will also be there for parents, siblings, friends, visitors and staff.

Gardens are very much centre-stage in the overall design concept. These have been developed both at the base of the building as part of our approach to the 'public realm' and at podium level where they will create a unique setting for the wards. This upper garden will be visible from afar, thus playing a key role in the new children's hospital skyline identity. The 'floating gardens', together with external space on and around the building at different levels, fulfil a number of functions in our concept:

- They instil surprise and delight in visitors, drawing them into and up through the building;
- They help to break up the mass of the building, creating a foreground of smaller grain features and changing interest and colour over the course of the seasons;
- They offer real potential to be designed with patient and family groups, artists and other collaborators, so that they are a fundamental expression of the new hospital's culture and sense of place;
- They provide external space and views for the wards;
- They create strong external reference points which help to orientate people as they move around the building;
- They provide areas for play, distraction, respite and break-out for both families and staff;
- They provide facilities for outdoor play and physiotherapy, closely linked to their indoor clinical uses;
- They will have a sensory planting theme applied across all gardens, ensuring that planting stimulates the senses and encourages interaction.

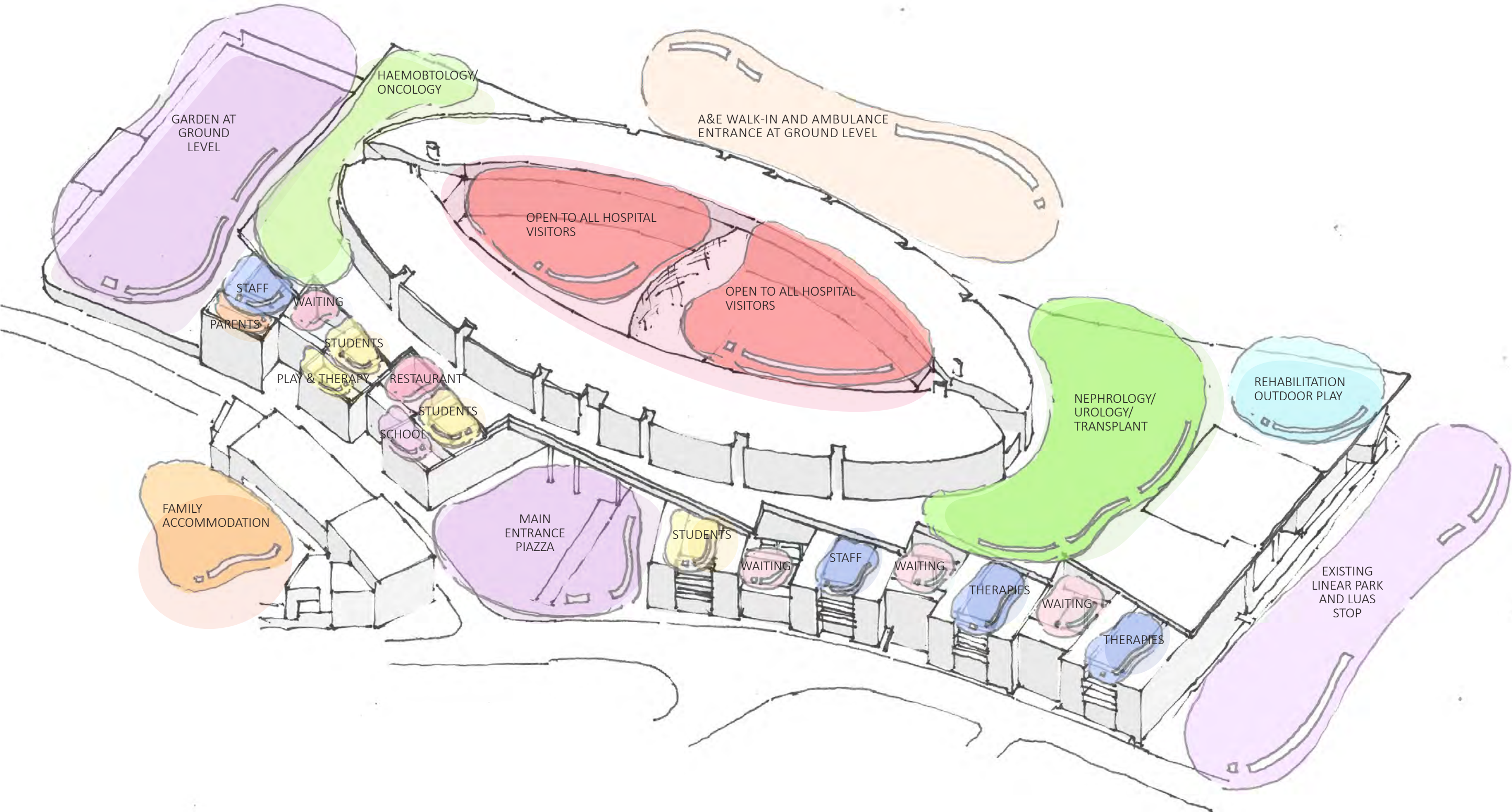


The Healing Gardens concept consist of the public spaces, courtyards, terraces and roof gardens within the new children's hospital site and will provide:

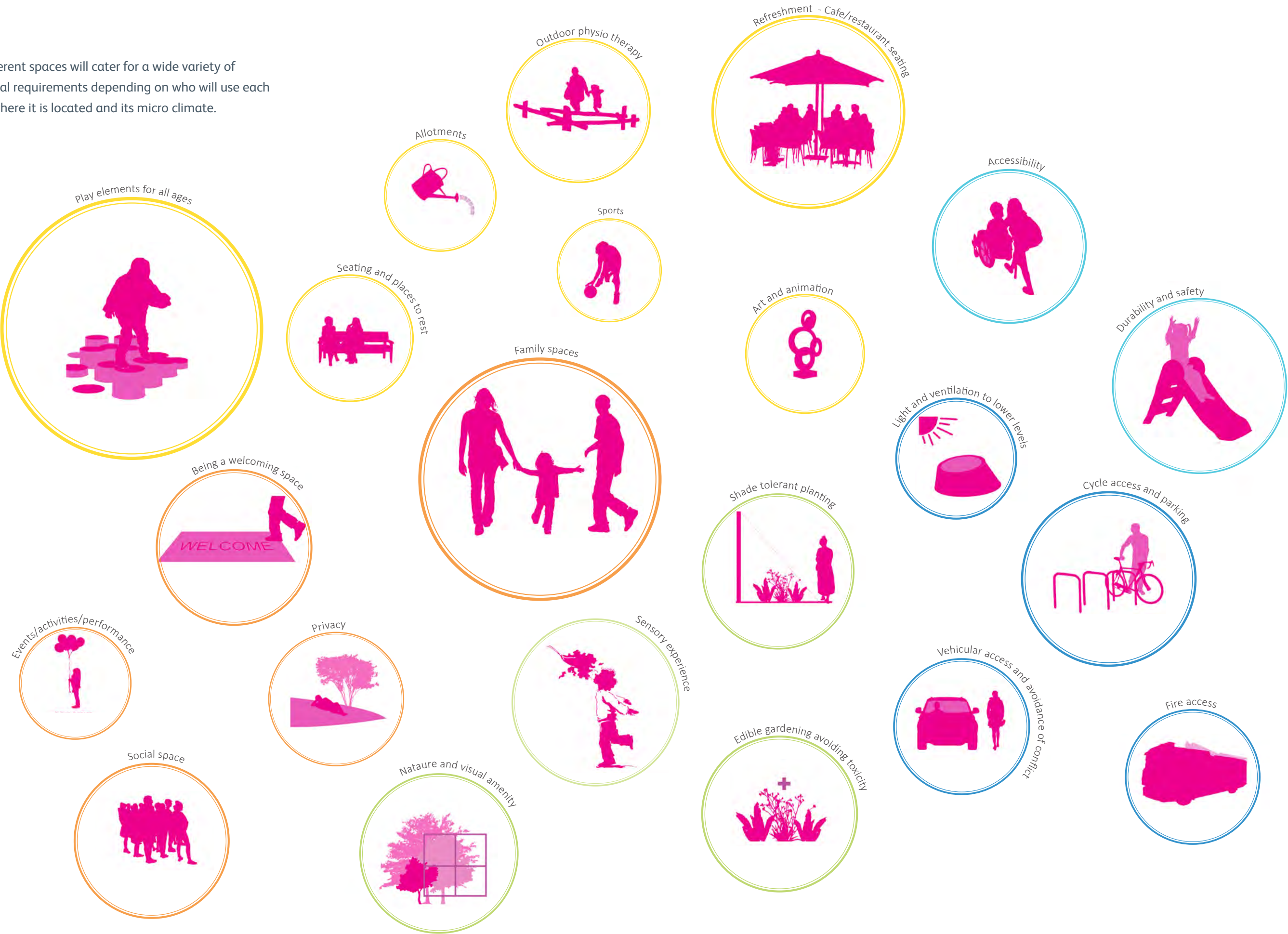
- active spaces for play, outdoor physiotherapy, exercise and interaction,
- educational spaces for learning and social engagement,
- calm and contemplative spaces for resting, and
- enchanting distracting spaces encouraging exploration and imagination .

3.2 Function

The design proposals of the gardens have been informed by the functional brief developed by the client which is based on who will access the space, be it a public space, a hospital garden open to all visitors or spaces with more specific uses, like the hospital school or a specific ward.

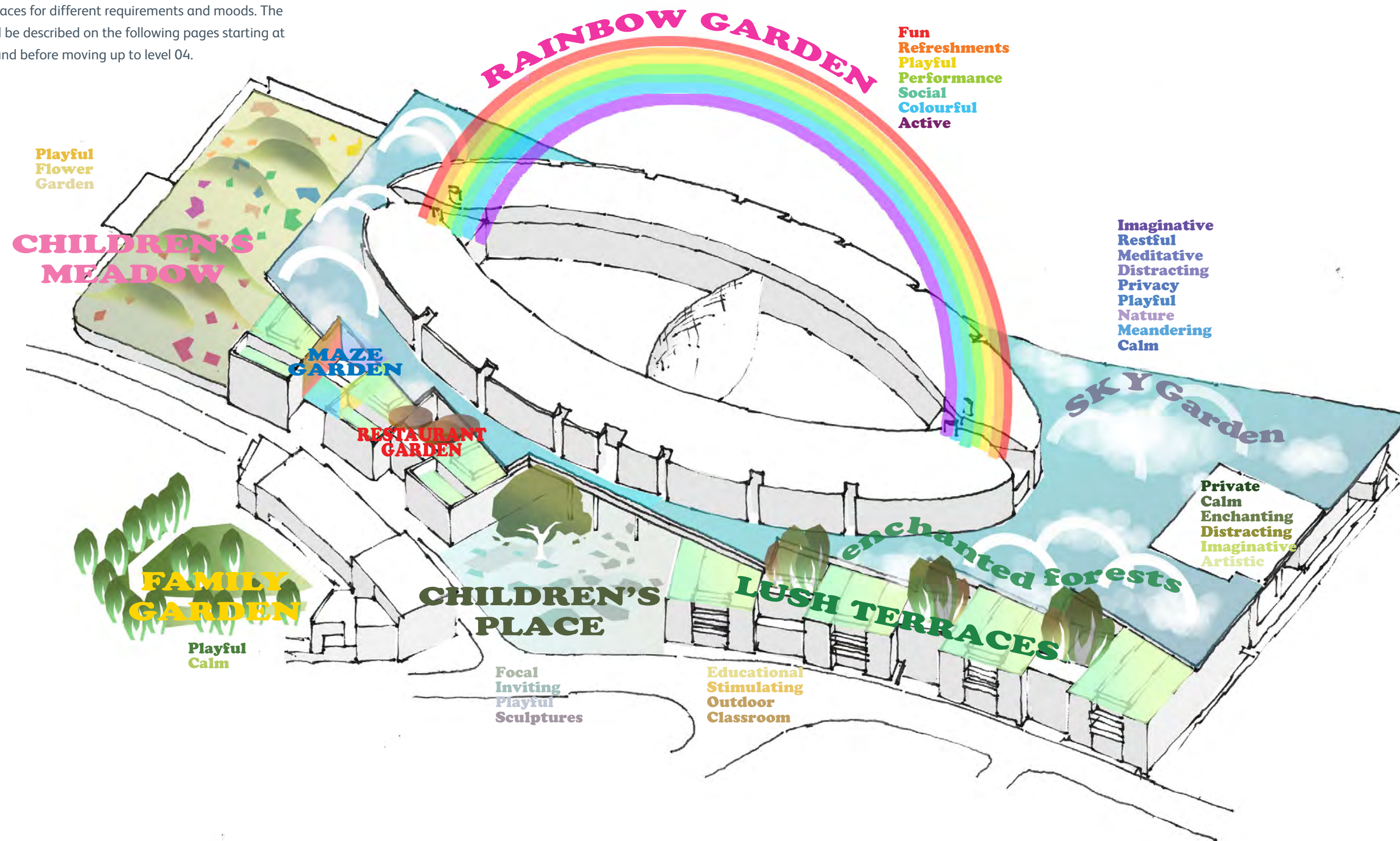


The different spaces will cater for a wide variety of functional requirements depending on who will use each space, where it is located and its micro climate.



3.3 Character

The different gardens will vary in character ranging from active open public spaces to more private contemplative lush hideaways. Clear differentiation between the gardens will help way finding within the hospital but will also provide spaces for different requirements and moods. The spaces will be described on the following pages starting at lower ground before moving up to level 04.





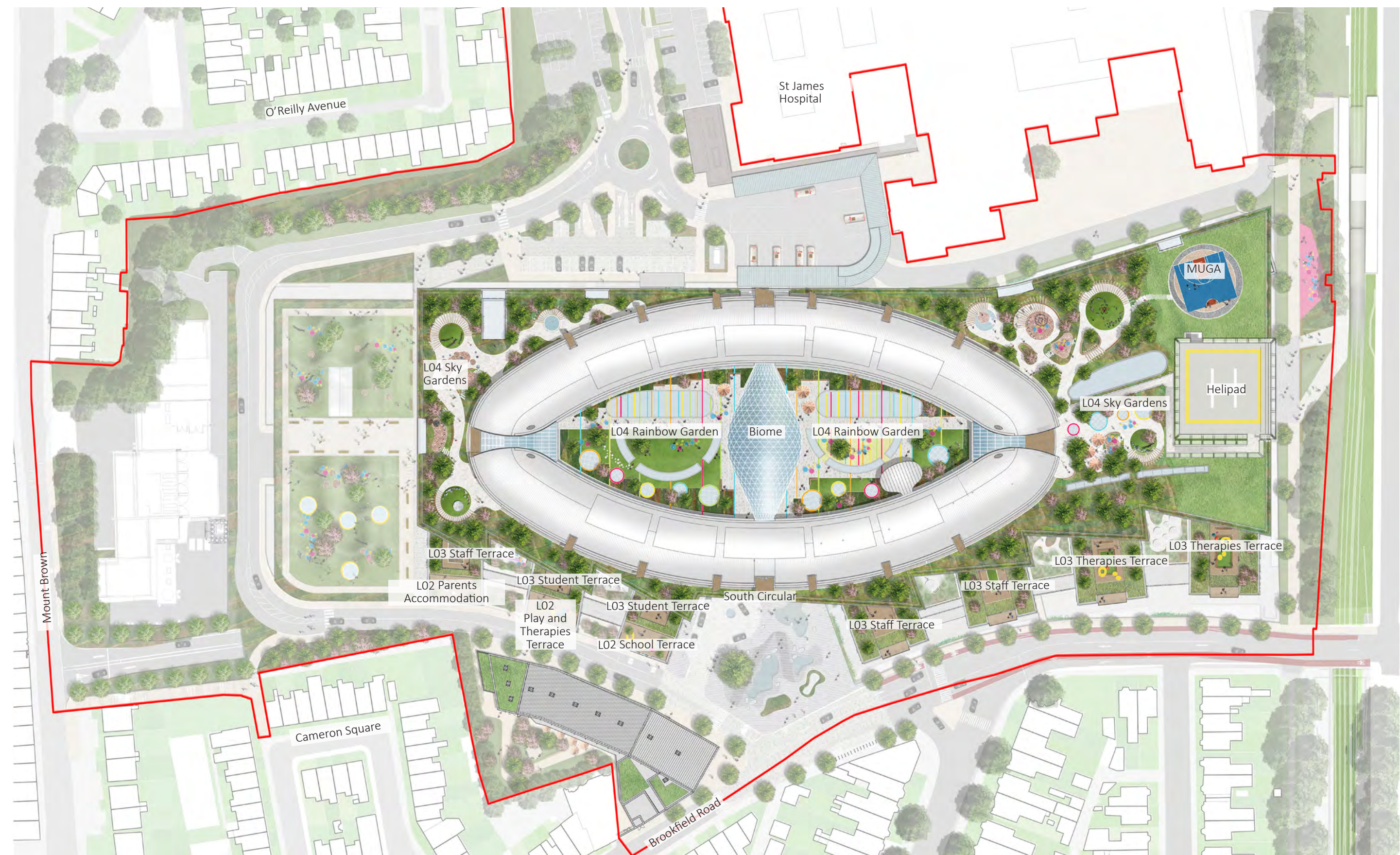
4.0 Proposal Spaces

4.1 Lower Ground and Ground Level Plan



Illustrative colourplan of landscape proposals at lower ground and ground levels

4.2 Roof Plan



Illustrative colourplan of landscape proposals on roofs

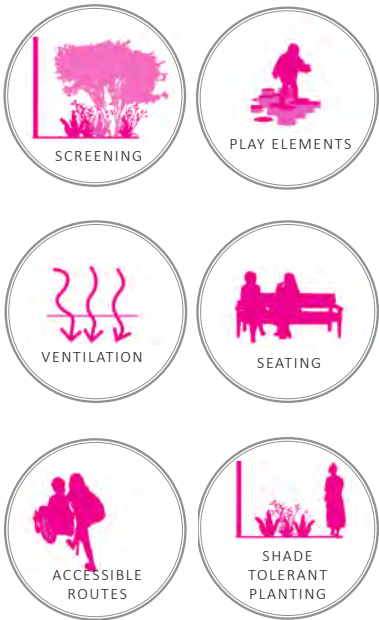
4.3 Lower Ground Level - Enhanced Forest Gardens

Analysis
Set between the outpatient clusters at lower ground floor level, these three courtyard gardens provide an attractive, sheltered outdoor space for busy outpatient clinics.

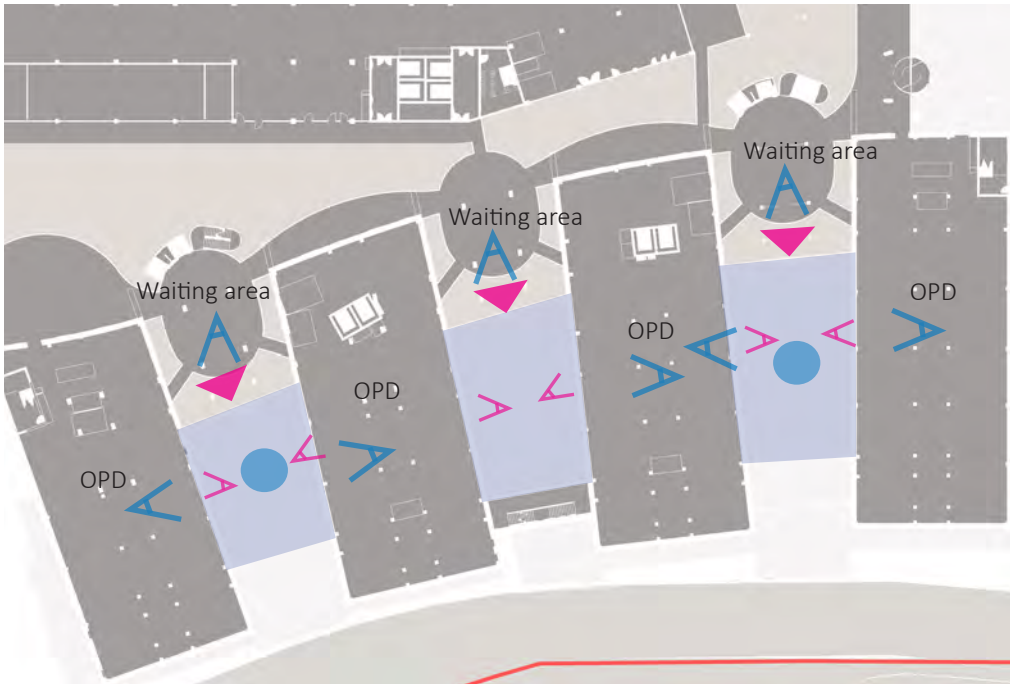
The gardens:
are accessed from the outpatients waiting area and will have onlooking views from various floors within the hospital, will be surrounded by outpatients examination rooms and privacy to these will be important, are located on top of the underground car park and two of the gardens will have air intakes for air supply to the car park.



Key Plan



Functional requirements for the space



Fixed parameters

- KEY
- Entrance to courtyard garden
 - Space on top of slab at level 00, car park below
 - Air intake to basement car park (24 sqm required)
 - Sensitive views from inside courtyard into OPD rooms
 - Views from inside building, could be uncomfortable for visitors to each courtyard



Opportunities diagram

- KEY
- Entrance to courtyard garden
 - Space for play and distraction
 - Art or play feature with incorporation of air intakes
 - Attractive views into garden
 - Planted privacy to outpatients examination rooms to avoid "fish bowl effect" for visitors to courtyard

Proposals

The Enchanted Forest Gardens will create a pleasant view for bedrooms in the Cardiac Ward on Level 01 and other departments on Level 02. The gardens will be visible from the concourse helping to reduce its apparent length and creating distinctive external reference points.

Planting comprising lush and shade-tolerant species and birch trees will screen the adjacent outpatients department from the courtyards and concourse. Winding paths will lead visitors through the gardens. Air intakes will be disguised as playful mirror structures and will be placed within a planted setting, to give each courtyard a unique identity.

Key

- 1. Entrance from outpatients waiting space
- 2. Playful air intakes to basement carpark incorporated into landscape
- 3. Seating
- 4. Meandering paths
- 5. Woodland planting
- 6. Stepping stone paths through woodland
- 7. Moat
- 8. Climber on moat wall



Illustrative plan



Illustrative view of one of the Enchanted Forest Gardens



Playful fairy tale sculptures placed within the gardens



Meandering paths through the gardens



Air intakes disguised with mirrored structures



Lush views from the outpatients examination rooms



- Key
- 1. Entrance from outpatients waiting space
 - 2. Playful air intakes to basement carpark incorporated into landscape
 - 3. Seating
 - 4. Meandering paths
 - 5. Woodland planting
 - 6. Stepping stone paths through woodland
 - 7. Moat
 - 8. Climber on moat wall

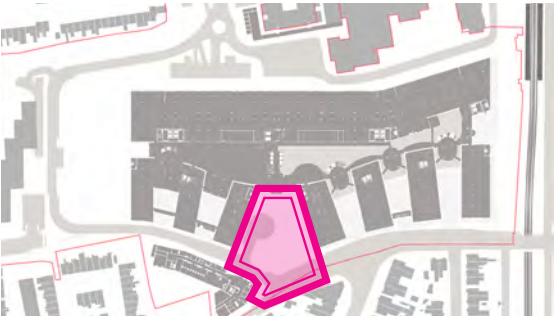
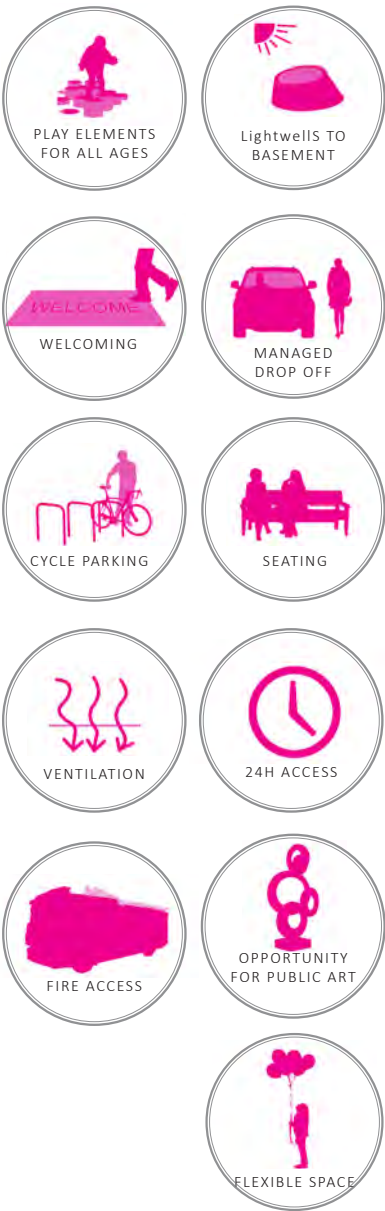
Scale 1:200 at A3

4.4 Ground Level - Children’s Place and Main Entrance

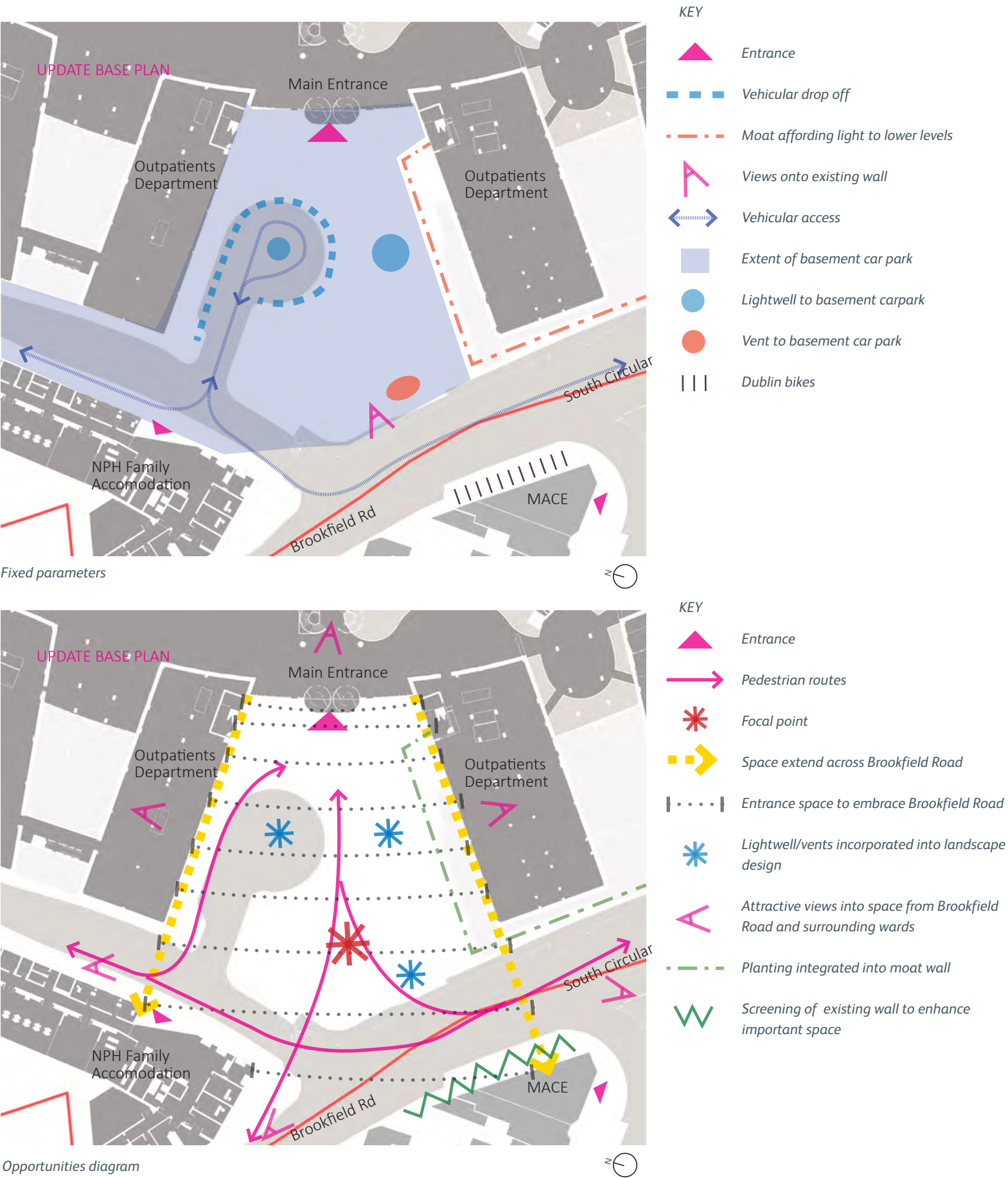
Analysis

Children’s Place is located on Brookfield Road and addresses the main entrance to the new children’s hospital. Aside from views from Brookfield Road and neighbouring properties, this space will be overlooked by outpatients departments to both sides and from various hospital wards and staff offices at upper levels. The space will be constructed above the Hospital’s underground car park and will integrate a range of lightwells and ventilation measures.

This space provides an important connection between the Hospital and its surrounding streets. It will be a welcoming space that supports patients, visitors and staff whilst also enhancing the local area.



Key Plan



Proposals

Children’s Place is a predominantly hard paved square addressing the Hospital’s main entrance. An open space with sculptural seating at its centre will encourage informal play and welcome visitors to the hospital. Areas of planting, a feature oak tree and public art will help to animate this important space.

The paving of the square will be extended across Brookfield Road to enhance driver behaviour whilst helping to define Children’s Place as an important public space. The space accommodates a managed drop-off zone for cars but will give priority to pedestrians. This will be achieved by unifying the paving across the entire space, breaking down the division between vehicular and pedestrian areas.

The drop-off zone will accommodate seven cars and sixteen cycle parking spaces will also be provided within the square. Lightwells and vents to the car parking below will be integrated into the landscape design. Lighting will be designed to ensure that a stimulating, safe and secure environment is provided during the hours of darkness.

Key

- 1. Managed drop off - 7 spaces
- 2. Granite paving
- 3. Planting
- 4. Open flexible central space
- 5. Mature Oak tree
- 6. Street tree
- 7. Lightwell - glass floor
- 8. Vent
- 9. Sculptural pebbles/bollards/seats
- 10. Roadway - asphalt
- 11. Blue Irish Limestone paving
- 12. Dublin Bikes
- 13. Bus stop
- 14. Moat
- 15. Cycle parking
- 16. Dedicated cycle route



Illustrative Plan



CGI of Children's Place and the entrance to the new children's hospital



Providing light to parking view



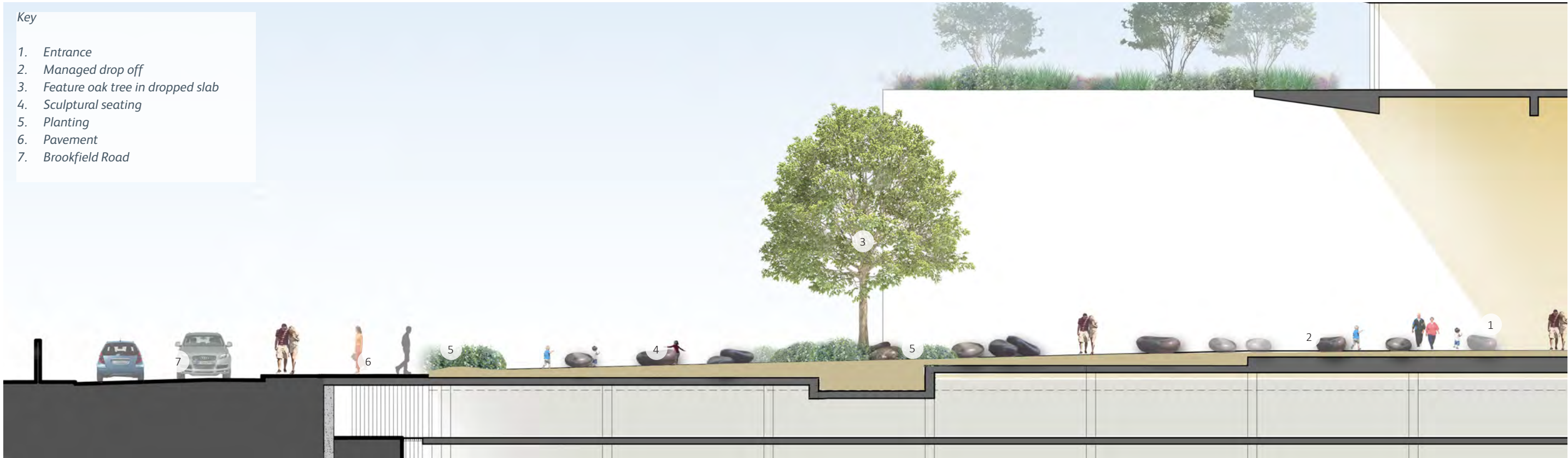
Sculptural stone seating



Feature tree



Feature lighting



Illustrative section through Children's Place

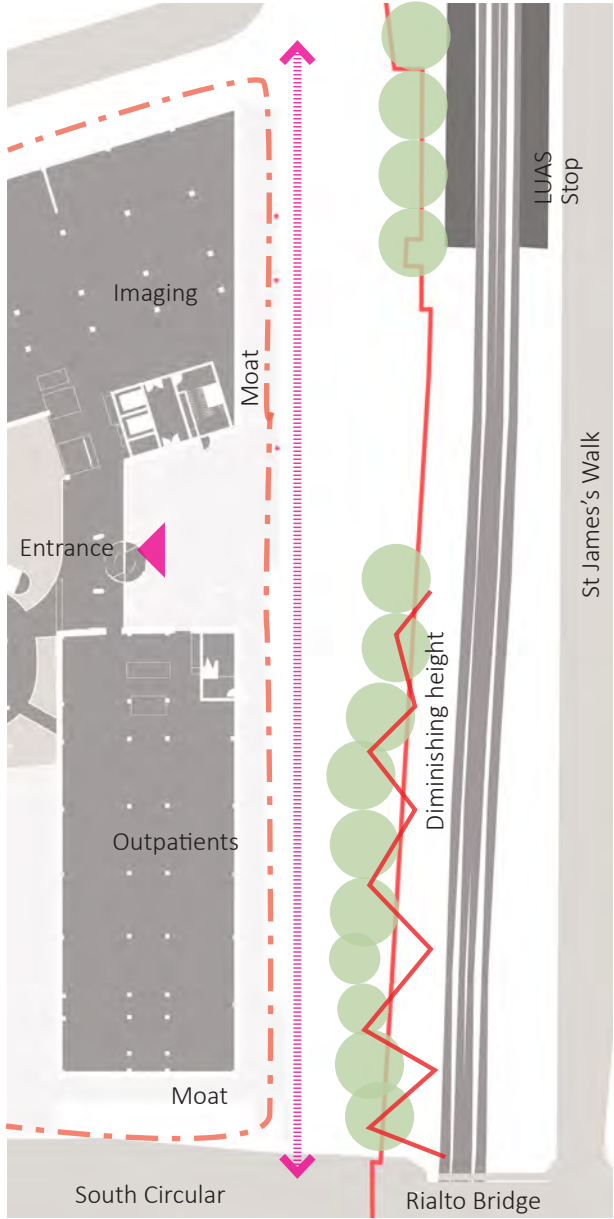
Scale 1:200 at A3

4.5 Ground Level - Rialto Entrance Space

Analysis
This gateway space is located to the south of the new children’s hospital and forms a connection between the new children’s hospital and the Rialto LUAS stop. There are significant opportunities for improvement as the space today is of moderate quality with limited natural surveillance due to the existing Hospital boundary wall with its associated overgrown planting. Whilst some of the existing trees along the boundary wall will be removed due to the development, most of the trees along the LUAS line will be retained and integrated into the final proposals.

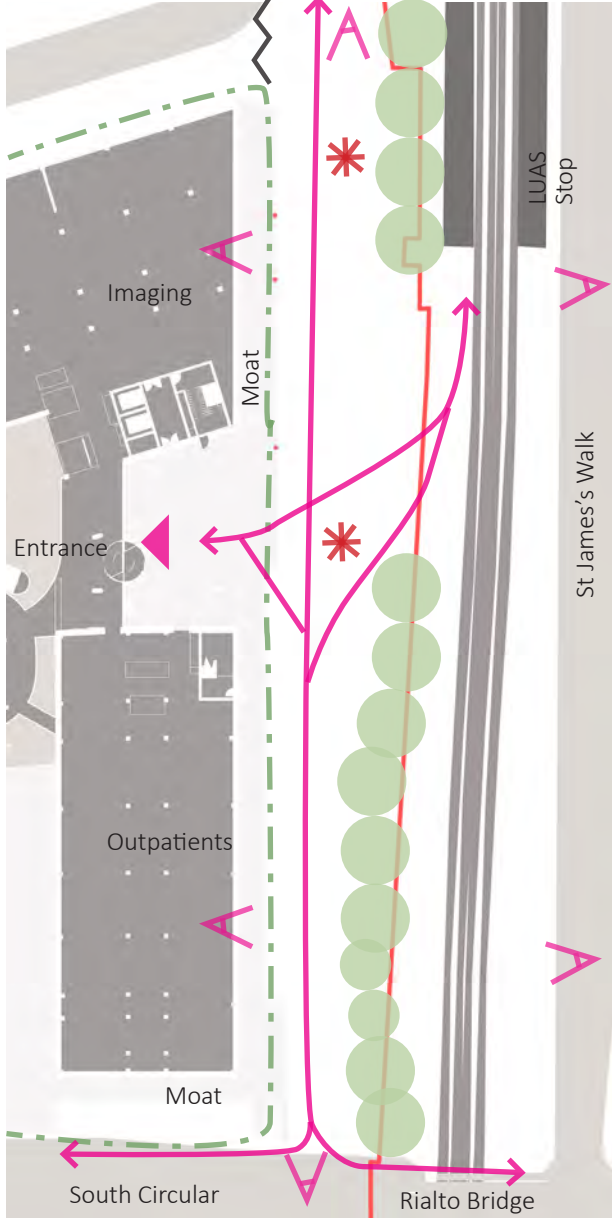


Functional requirements for the space



Fixed Parameters

- KEY
- Entrance
 - Moat edge
 - Significant level change and tall shrub planting with poor visibility through
 - Pedestrian and cyclist movement
 - Existing trees to be retained, understory planting interrupts views



Opportunities Diagram

- KEY
- Entrance
 - Improve pedestrian route
 - Planting integrated into moat wall
 - Focal point
 - Retain good quality existing trees, raise canopies and clear understory planting to aid natural surveillance
 - Important views
 - Controlled pedestrian access



Key Plan

Proposal

The Rialto entrance will be a welcoming entrance space bridging across the ‘moat’ that surrounds the new children’s hospital. The entrance will connects with an upgraded footpath network along the adjacent St. James’s Walk and from the entrance to the LUAS Rialto stop. A play space, cycle parking, new tree and shrub planting, playful art and seating will animate the space on approach to the New children’s hospital.

The existing wall between the linear park and the St James Campus will be partially removed with a gate added to control pedestrian access to the A&E area. The lighting of this space will help to create a safe environment after dark.

As many of the existing trees as possible will be retained and the existing under storey vegetation will be managed and reduced in height to open views and assist natural surveillance.

Key

- 1. New children’s hospital southern entrance
- 2. Bridge over moat
- 3. Semi-mature trees
- 4. Group of existing trees
- 5. Lawn
- 6. LUAS Rialto stop
- 7. Timber seating
- 8. Improved access - coloured asphalt
- 9. Controlled pedestrian access
- 10. Cycle parking
- 11. Play space with opportunity for art intervention
- 12. Opportunity for art



Illustrative Plan



Play space by the entrance



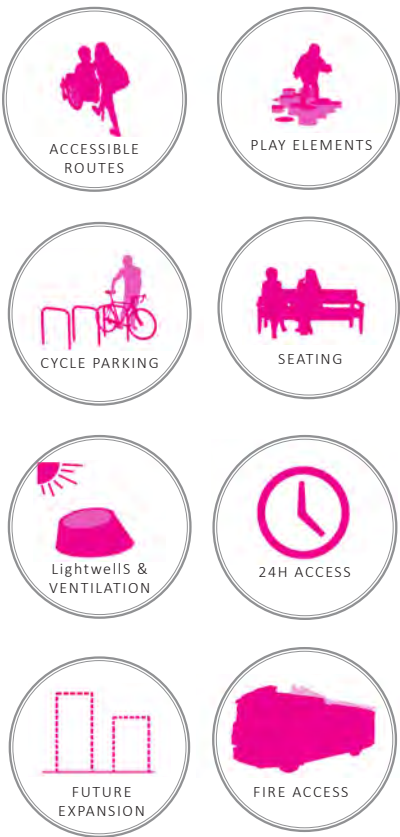
Utilise level changes to create seating



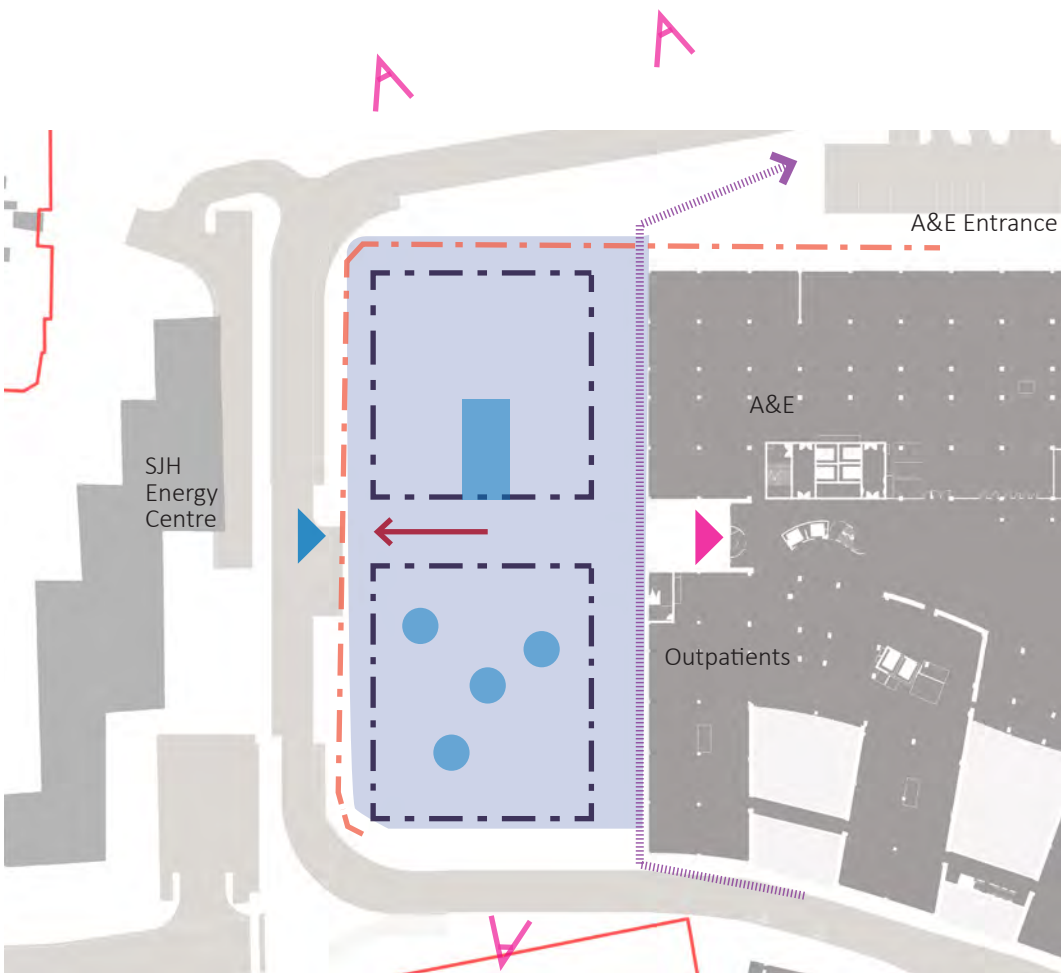
Art and signage in ground

4.6 Ground Level - Children’s Meadow

Analysis
The Children’s Meadow is located above the car park level, to the north of the New children’s hospital and the northern entrance to the hospital. The space is a dedicated future expansion zone for the hospital but will be designed as a public space and retained as such until development takes place. Vents and lightwells to the carpark will be integrated into the gardens and a new pedestrian route will link the St James’s Hospsital Campus to Mount Brown and Brookfield Road.



Functional requirements for the space

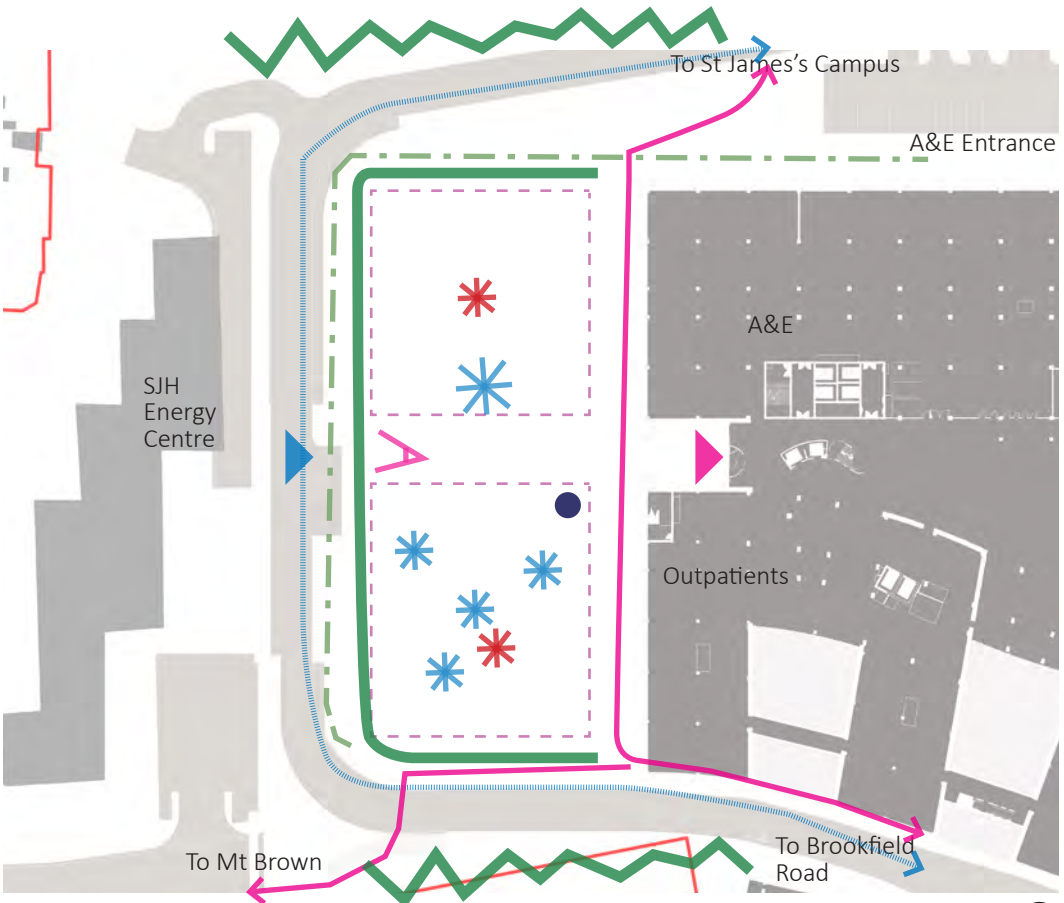


Fixed Parameters

- KEY
- Entrance to NCH
 - Extent of basement car park
 - Moat edge
 - Lightwell to basement carpark
 - Fire access
 - Sensitive views from neighbouring properties
 - Car park entrance at lower ground level
 - Future expansion zone
 - View to Royal Hospital at Kilmainham



Key Plan



Opportunities Diagram

- KEY
- Opportunity for play
 - Pedestrian route
 - Planting integrated into moat wall
 - Entrance to the hospital
 - Space for play and relaxation
 - Views enhanced at specific locations
 - Screen planting to mitigate views from neighbouring properties
 - Lightwell/vents incorporated into landscape design
 - Vehicular access
 - Car park entrance at lower ground level
 - Cycle parking

Proposal

The Children’s Meadow consists of two sculpted lawns with tree planting, play elements and seating for play and relaxation. Twenty cycle parking spaces will be provided within the space providing convenient access to the northern entrance to New children’s hospital. Playful lightwells and air vents for the car park below are integrated into the landscape.

The space is framed by planting positioned around the perimeter of these raised meadows. An east-west route through the space will be wide enough to accommodate a fire appliance.

Whilst the Meadow is a temporary space designated for the future expansion of the NCH, it will, in the short term, provide an attractive outdoor space for staff, patients, visitors and the public and will be accessed from the northern end of the concourse to the New children’s hospital or from St James Hospital. The perimeter path to the Meadow will be approximately 300 metres in length and could be used as an exercise trail. A safe environment will be created after dark through the provision of discrete but effective lighting.

Key

- 1. Mounded lawn & meadow
- 2. Multistem trees
- 3. Timber top benches
- 4. Lightwells and vents
- 5. Pedestrian route (allows for fire truck access)
- 6. Roadway - asphalt
- 7. Access to car park at Level -1
- 8. Balustrade and buffer planting
- 9. Play equipment
- 10. Path - 1 full lap of garden is approximately 300m
- 11. Cycle parking
- 12. Moat
- 13. Pedestrian link to St James’s Campus
- 14. Pedestrian link to Mount Brown



Illustrative Plan



View across meadow from central path



Mounded lawn, trees and play

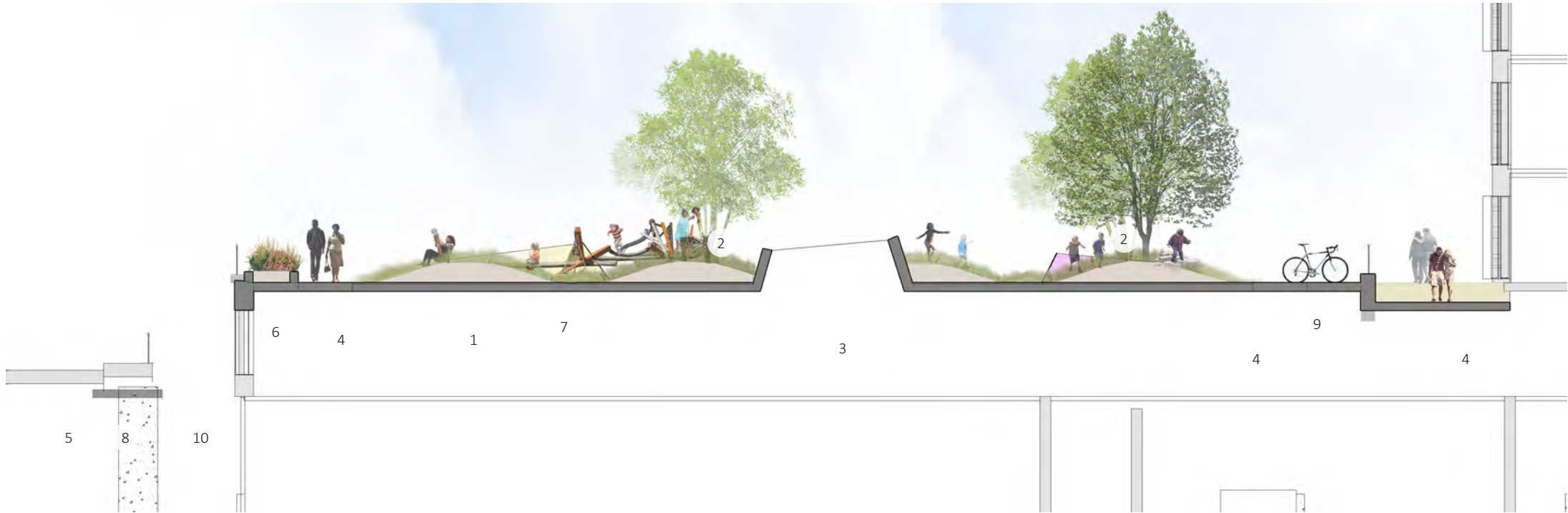


Meadow planting framing spaces within the lawns



Places for resting

- Key
- 1. Mounded lawn & meadow
 - 2. Multistem trees
 - 3. Lightwells and vents
 - 4. Pedestrian route (allows for fire truck access)
 - 5. Roadway
 - 6. Balustrade and buffer planting
 - 7. Play equipment
 - 8. Pavement
 - 9. Cycle parking
 - 10. Moat



Illustrative section

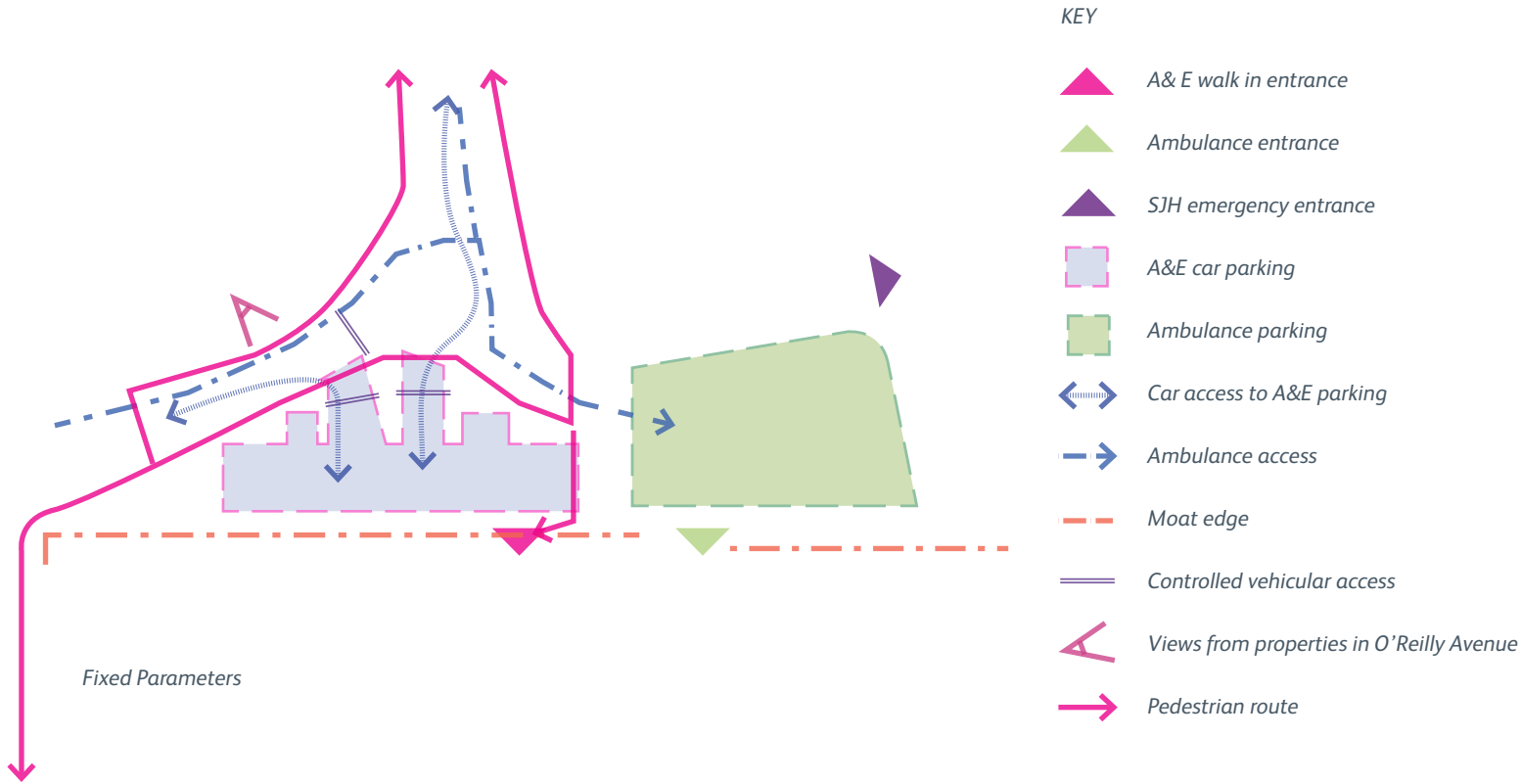
Scale 1:200 at A3

4.7 Ground Level - A&E and Ambulance Entrance

Analysis
This area is located to the east of the building between the existing St James Hospital A&E and the proposed New children’s hospital A&E department. The ambulance parking area will be shared with the existing St James’s Hospital. Views from adjacent residential properties will be screened through the planting of trees and shrubs.



Functional requirements for the space



Fixed Parameters



Key Plan



Opportunities Diagram

Proposal

The space will provide safe and clear access to A&E, its public and emergency entrances and the associated parking areas. Whilst north-south pedestrian circulation is excluded from this area, an east-west pedestrian link will be provided through the Hospital Gardens and the Children’s Meadow.

Trees and planting will screen the car parking and emergency areas.

Key

- 1. A&E walk in
- 2. A&E car park paved with granite setts
- 3. Ambulance entrance
- 4. Ambulance parking paved with asphalt
- 5. Planting between A&E walk in and ambulance entrance
- 6. Pedestrian link to New children’s hospital and Children’s Meadow
- 7. Pedestrian crossing
- 8. Vehicular control barriers
- 9. Planted screen and enhanced visual amenity for residents
- 10. SJH Ambulance entrance



Illustrative Plan

4.8 Ground Level - Courtyards

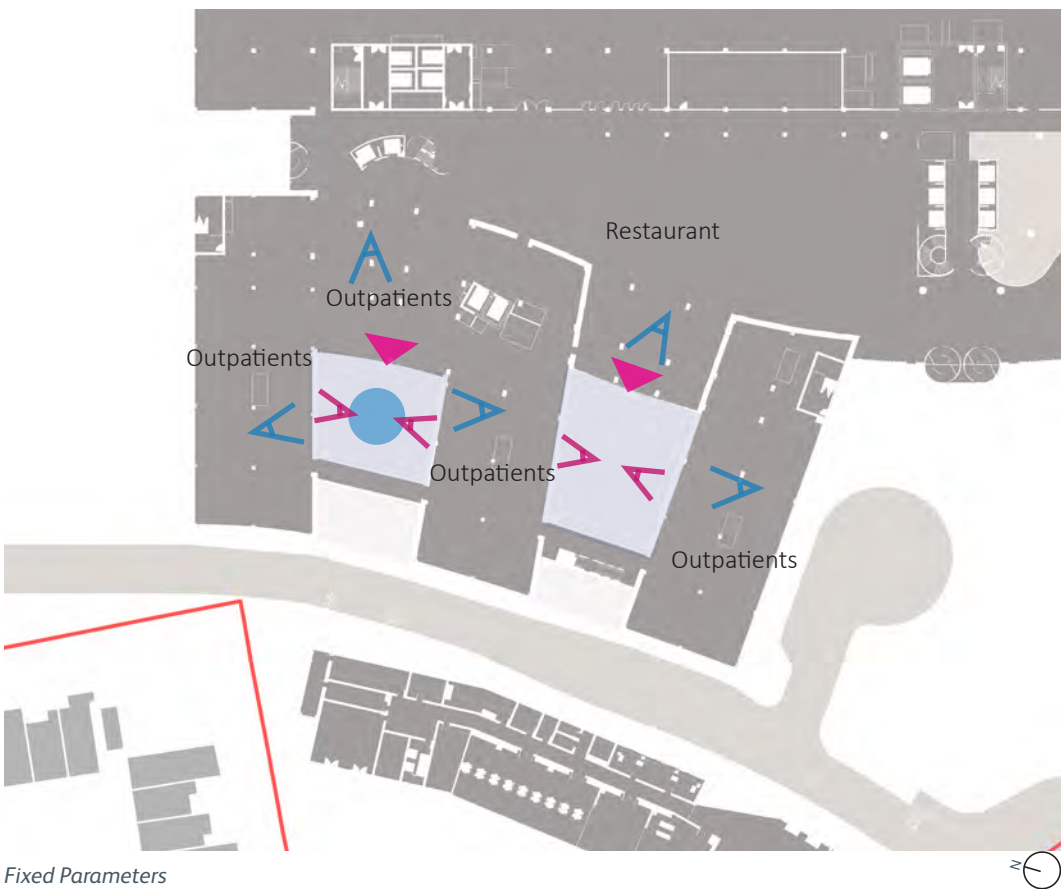
Analysis

Restaurant Courtyard – This garden will be accessed from the public and staff restaurant at Ground Floor level and will be visible from the main entrance to the New children’s hospital.

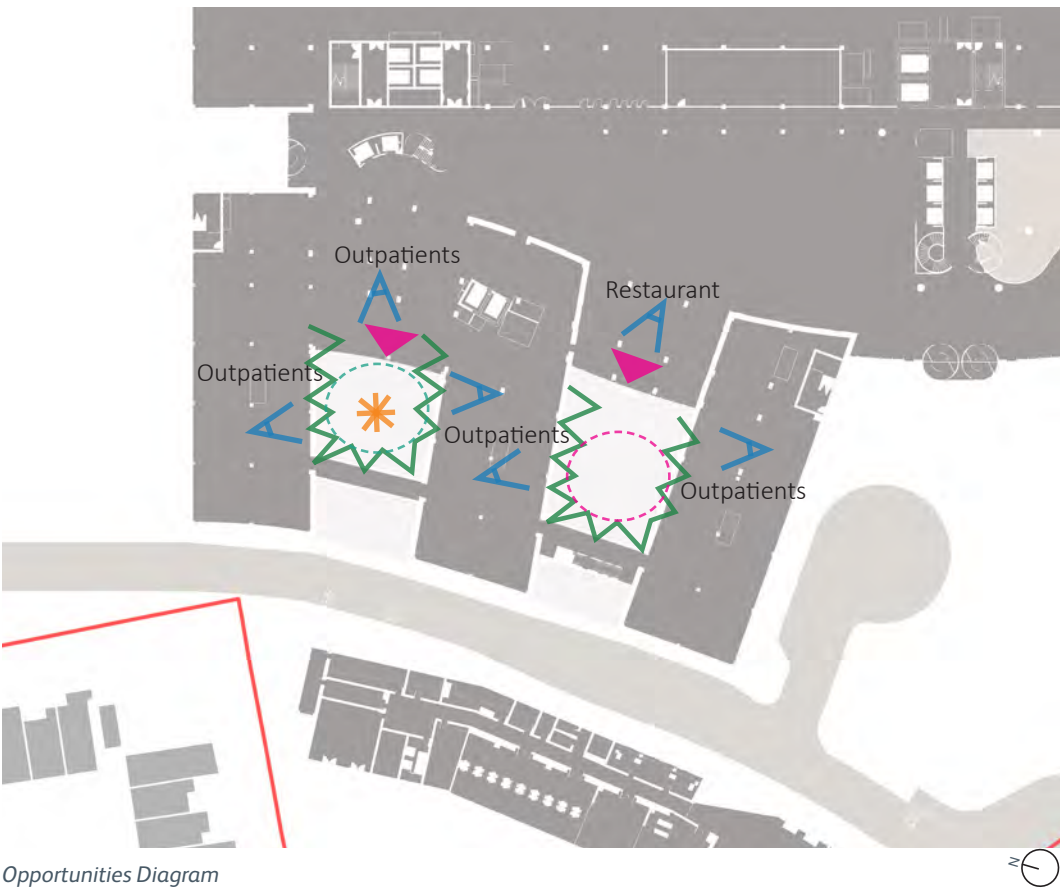
Maze Courtyard – This garden will be surrounded by the northern outpatient cluster at ground floor level and overlooked by various hospital departments including CAMHS, Neurophysiology and the Parents’ Overnight Accommodation. This garden will also accommodate a 23 sqm air intake to the basement car park below.



Functional requirements for the space



Fixed Parameters



Opportunities Diagram

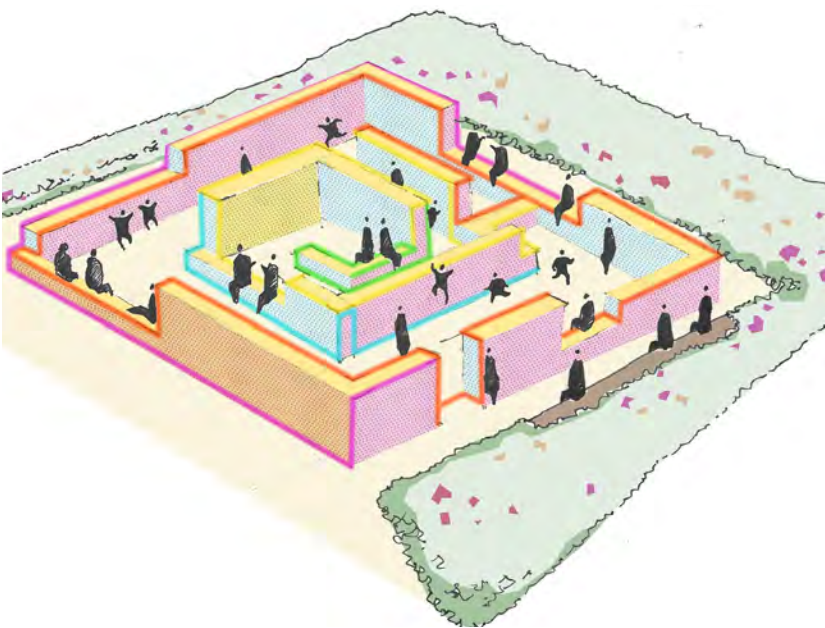


Key Plan

Proposal

Restaurant Courtyard – Planting at the edge of the garden will screen the adjacent OPD examination rooms. The centre of the space will be kept open and flexible to accommodate outdoor dining and events.

Maze Courtyard – In a similar way to the Restaurant Courtyard, a planted buffer will provide privacy to the surrounding OPD. The garden will provide a playful environment for children and parents whilst they wait for their appointments. A 23 sq m car park air intake will be modified to form a playful feature at the centre of the garden.



Sketch of maze/air intake in the Maze Courtyard



Opportunity for art and play in the Maze Courtyard



Opportunity for outdoor dining in the Restaurant Courtyard

Key

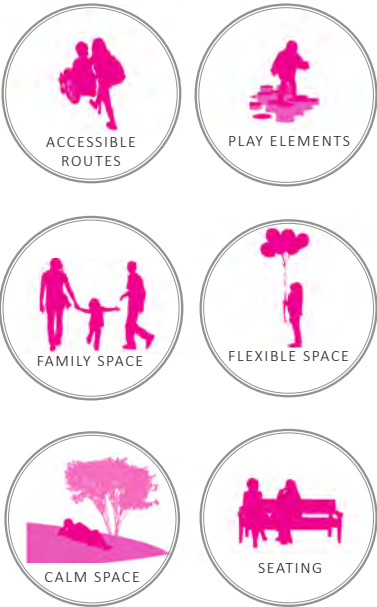
- 1. Entrance to garden
- 2. Planted buffer to outpatients department
- 3. Play/art maze feature incorporating air intake to basement car park
- 4. Flexible space for outdoor dining



Illustrative plan

4.9 Ground Level - Family Garden

Analysis
This garden is located between Cameron Square and the Family Accommodation Building and will be an external space for use by families staying in this facility.
Sensitive views to and from the adjacent neighbours will be mitigated through the integration of new trees and protection of existing trees.



Functional requirements for the space



Fixed Parameters

- KEY
- Sensitive views from neighbours
 - Entrance to the family accommodation
 - Existing trees to be retained



Opportunities Diagram

- KEY
- Proposed trees
 - Improved screening and visual amenity
 - Flexible open space
 - Space for play/lawn/seating/planting



Key Plan

Proposal

The design of the garden will include areas of lawn, ornamental planting, seats - located individually and in groups – and a play space.

A paved terrace furnished with tables and chairs leading from the building will provide a setting for meetings, events and al fresco eating.

The existing trees along the boundary with the adjacent houses in Cameron Square will be retained and supplemented with new evergreen and deciduous trees.



Illustrative view of the Family Garden



Play space with seating for parents and carers

- Key
- 1. Lawn with play equipment
 - 2. Existing trees
 - 3. Proposed trees
 - 4. Timber top benches
 - 5. Resin bound gravel pathways
 - 6. Flexible outdoor seating area



Illustrative Plan

4.10 Level 2 and 3 Terraces

Proposal Terraces North

At level 02 there are three terraces, one linked to the Parents' Accommodation, one to the Play and Creative Therapies department and one linked to the Hospital School. These terraces will be designed as flexible outdoor space for use by these important facilities.

At level 03 there is one terrace for staff and two terraces for students. The staff and student terraces will be designed as 'breakout' spaces for these user groups to relax and meet.

Key

- 1. Planted buffer
- 2. Multistem trees
- 3. Paved flexible space for seating/play therapies/ school activities
- 4. Seating
- 5. Allotment planting



Key plan



Flexible space for staff activities



Places to sit for parents/staff



Flexible space for play, therapies and school activities



Illustrative plan

Proposal - Terraces South

At level 03 to the south there are two terraces for staff and two terraces for therapies. The staff terraces will provide breakout spaces with seating and lawn. The therapies terraces will provide a flexible spaces to accommodate outdoor therapy.

Planting to the perimeter of each terrace will create privacy and shelter to these spaces as enhancing views from neighbouring properties



Illustrative view



Key plan



Illustrative plan

4.11 Level 4 - Rainbow Garden

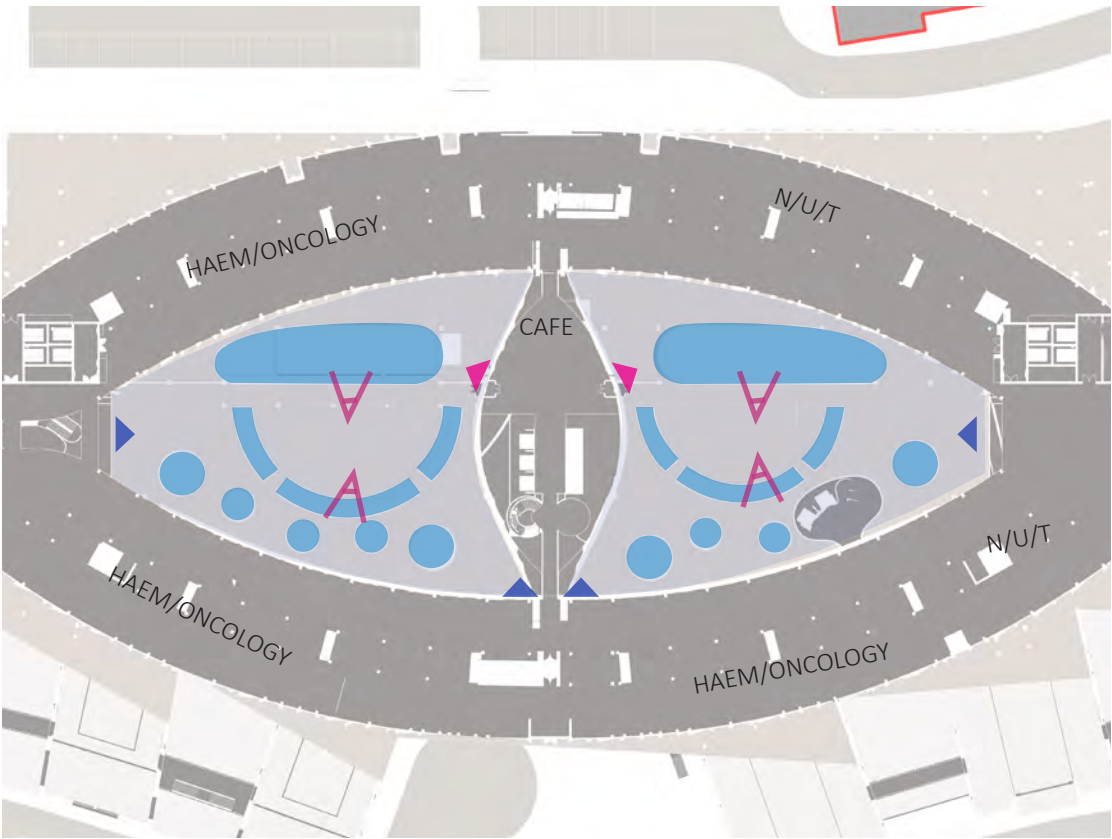
Analysis

This garden at level 04 is enclosed by the Oval and will be accessible to all hospital visitors. The garden will accommodate lightwells to the internal concourse below as well as the interior lecture theatre and the multi faith centre. As it is surrounded by wards, screening will be provided to protect sensitive views.

The space will accommodate a variety of uses including play, cafe seating, informal seating, social spaces and spaces for flexible use.

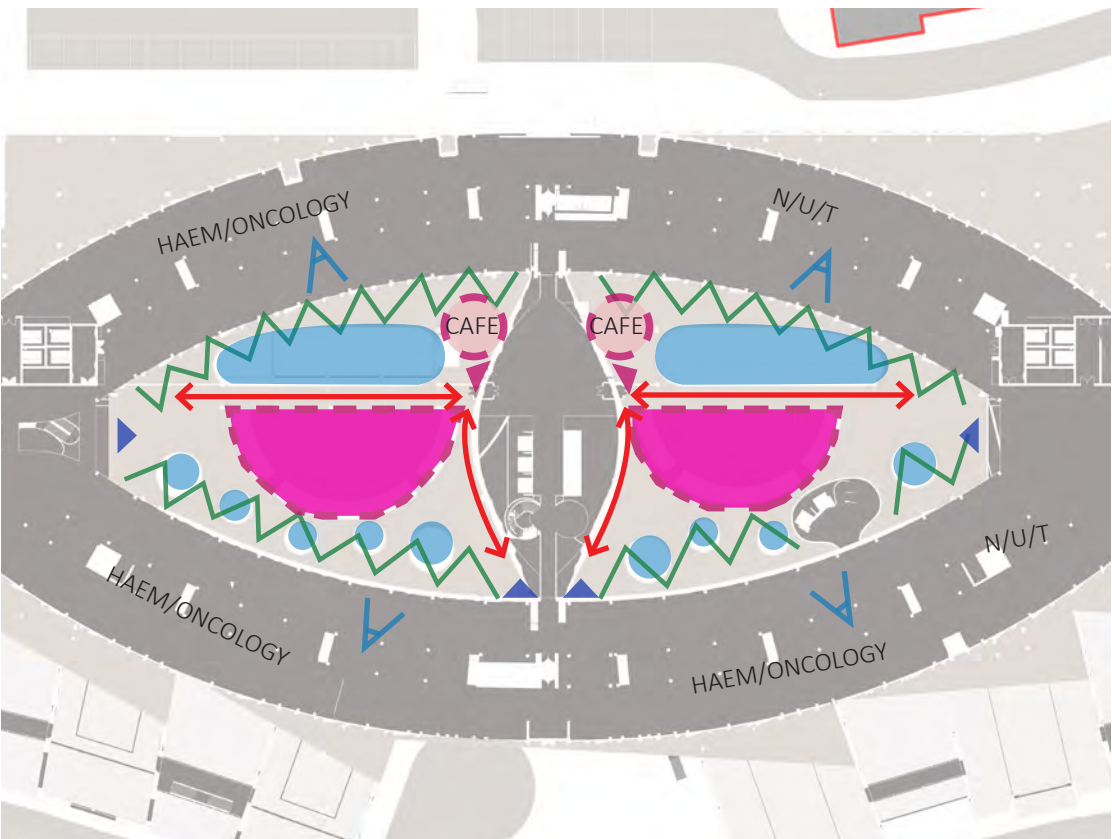


Functional requirements for the space



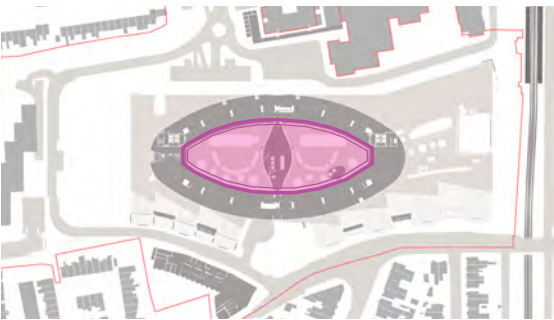
Fixed Parameters

- KEY
- Public access
 - Ward access
 - Space on top of slab
 - Lightwell
 - Sensitive views from gardens to ward rooms



Opportunities Diagram

- KEY
- Planted buffer
 - Ward access
 - Public access
 - Lightwell incorporated into garden design
 - Activity space
 - Outdoor cafe seating
 - Main pedestrian route
 - Attractive views into garden



Key plan

Proposal

The Rainbow Garden will be designed as a lush, well-vegetated outdoor space, accessible to all hospital visitors. It will also provide the setting to the Biome and its associated external seating.

The colourful slats in the Oval facade will be continued into the detail of paving and across the gardens to create playful and considered composition.

A planted screen comprising of herbaceous plants and multistem specimen shrubs will provide privacy to the patients within the ward.

The centre of the space will be designed with both calmer areas, with seating and lawns, and more active, social areas with play facilities for all ages that can be overlooked by parents in the adjacent cafe seating area. All parts of the garden will be accessible by paths specifically designed for use by buggies and wheelchair users. Playfully-designed lightwells, some of which will incorporate flowing water, will provide animation and stimulation to this important space.

The planting will be colourful and have a manicured feel, stimulating the senses with a focus on sight, smell and touch. Mature trees and flowering specimen shrubs will be planted across the garden. The ‘dropped’ structural slab supporting the garden will be able to accommodate the soil volumes required for trees to prosper and grow to maturity.

- Key
1. Planted buffer

2. Multistem trees

3. Semi-mature trees

4. Lightwell with water feature

5. Lightwells

6. Play space

7. Granite paved pathways

8. Colour bands going through landscape

9. Mounded lawn with opportunities for events

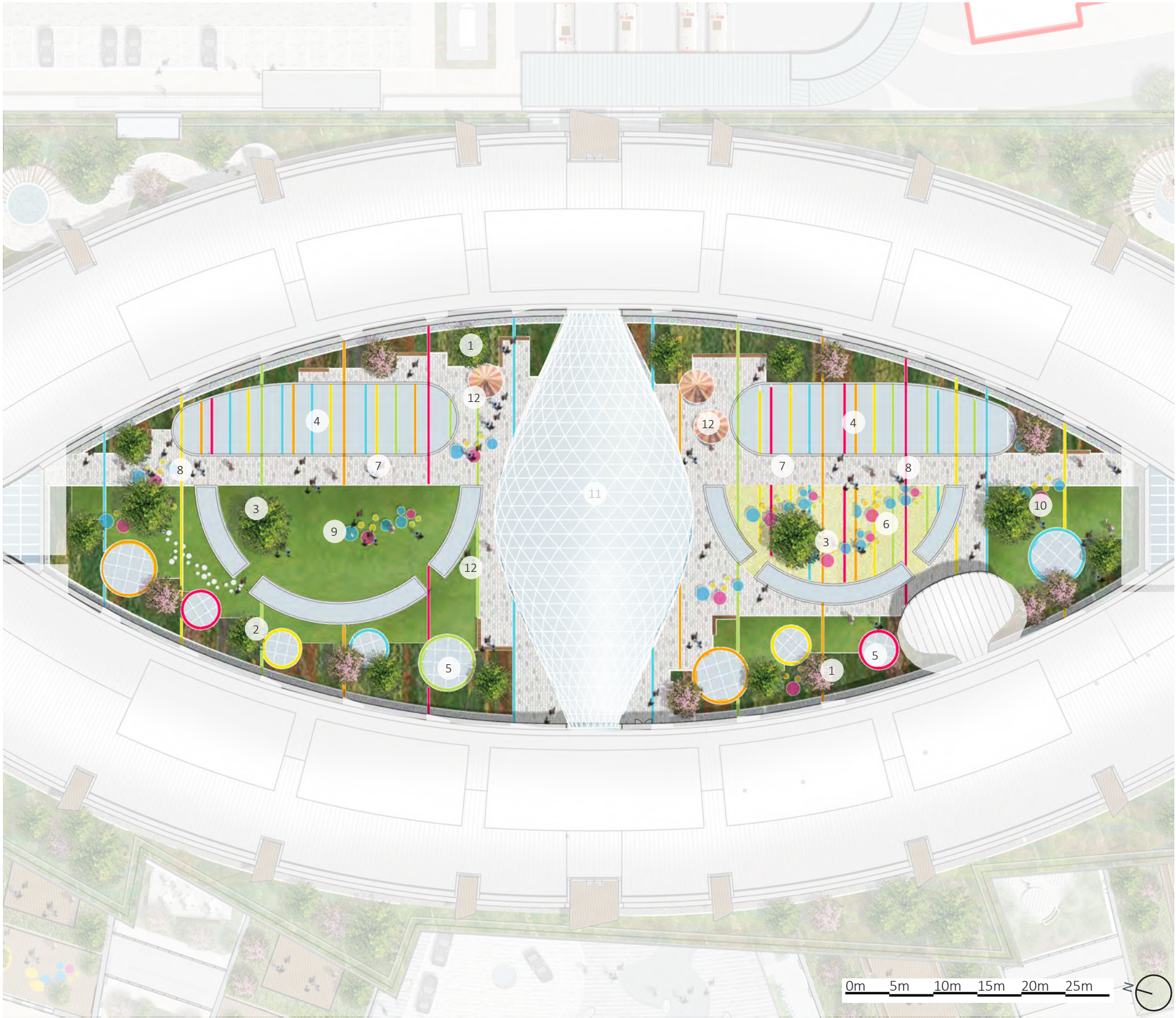
10. Lawn

11. Biome

12. Cafe Seating

13. Public access from Biome

14. Ward access



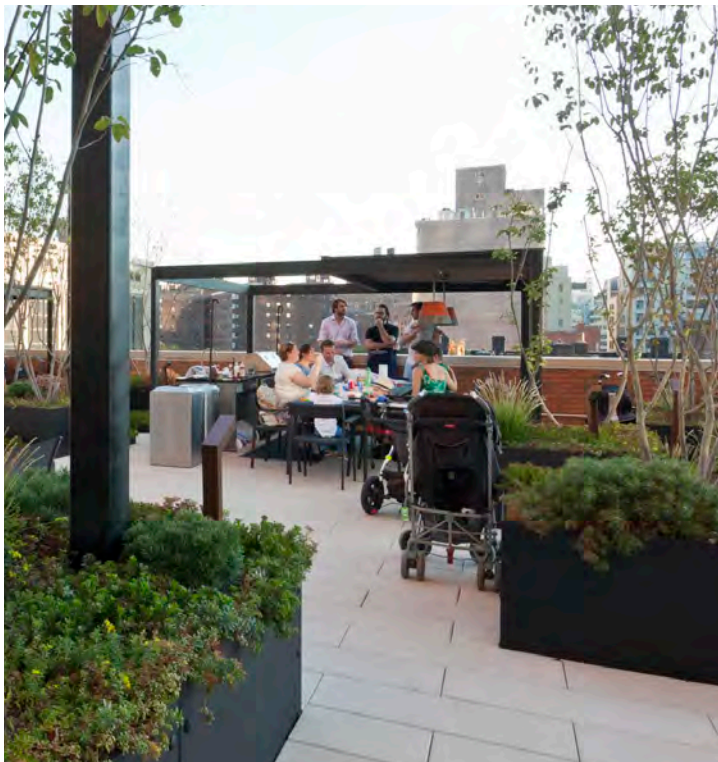
Illustrative plan



CGI view from across Rainbow Garden



Calm areas to dwell



Outdoor cafe seating



Play safe



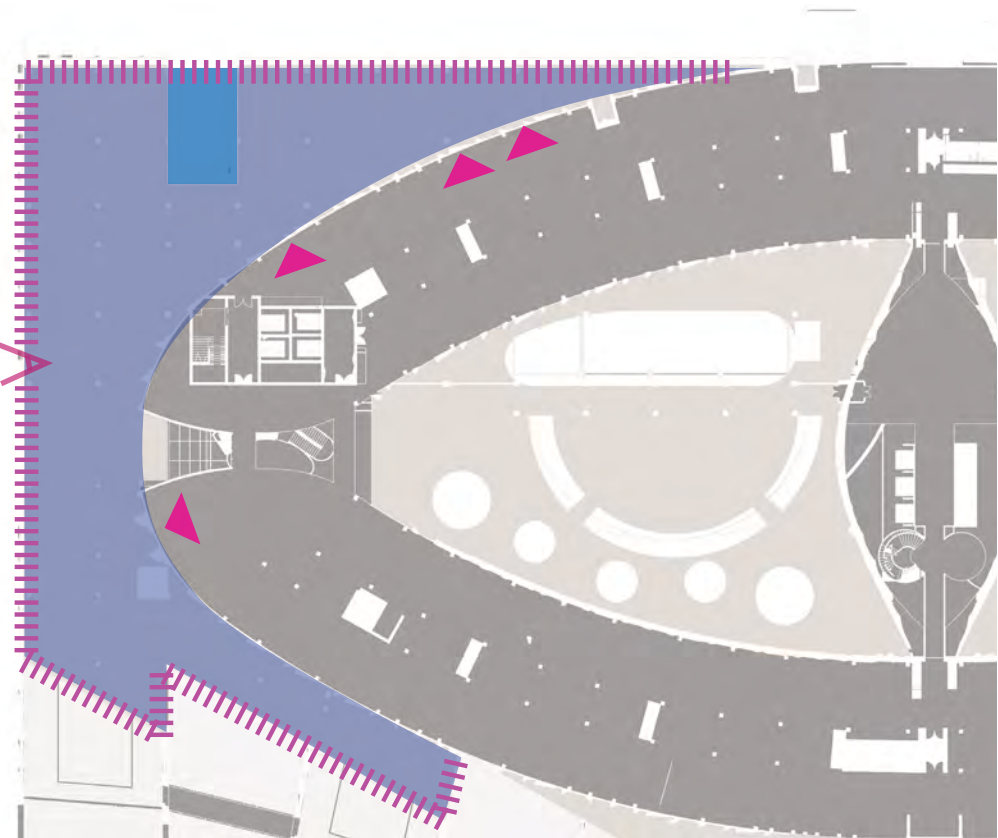
4.12 Level 4 - Sky Gardens

Analysis - Haematology/Oncology Wards

The Sky Gardens are located on the 4th floor outside the Oval. The Northern Sky Gardens are accessed from the Haematology and Oncology Ward. The garden will accommodate the uses required for these wards, including outdoor physiotherapy, flexible spaces, walking circuits and the need for calm.

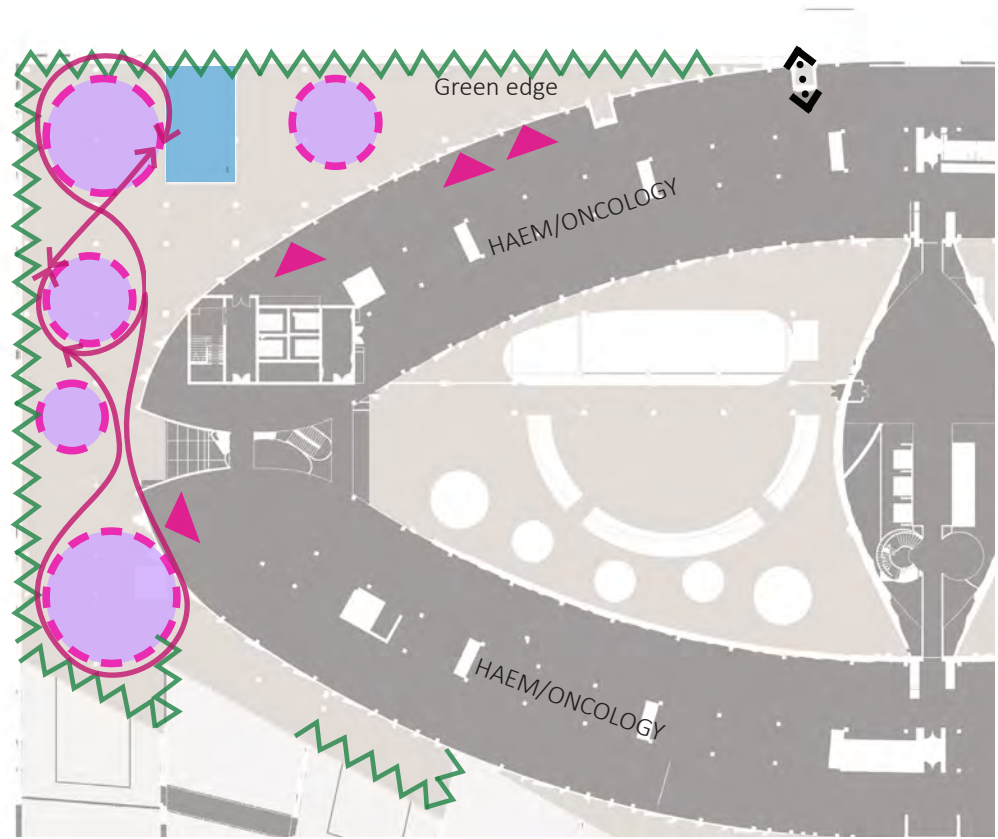


Functional requirements for the space



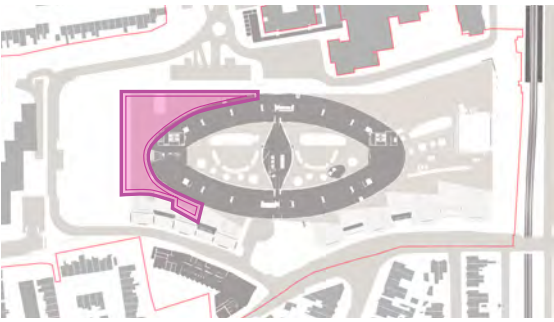
Fixed Parameters

- KEY
- Access from Haem/ONC Ward
 - Space on top of slab
 - Lightwell to floors below
 - Perimeter of roof
 - View to Royal Hospital at Kilmainham



Opportunities Diagram

- KEY
- Planted perimeter
 - Access from Haem/ONC Ward
 - Lightwell to floors below
 - Walking circuits
 - A diversity of spaces



Key plan

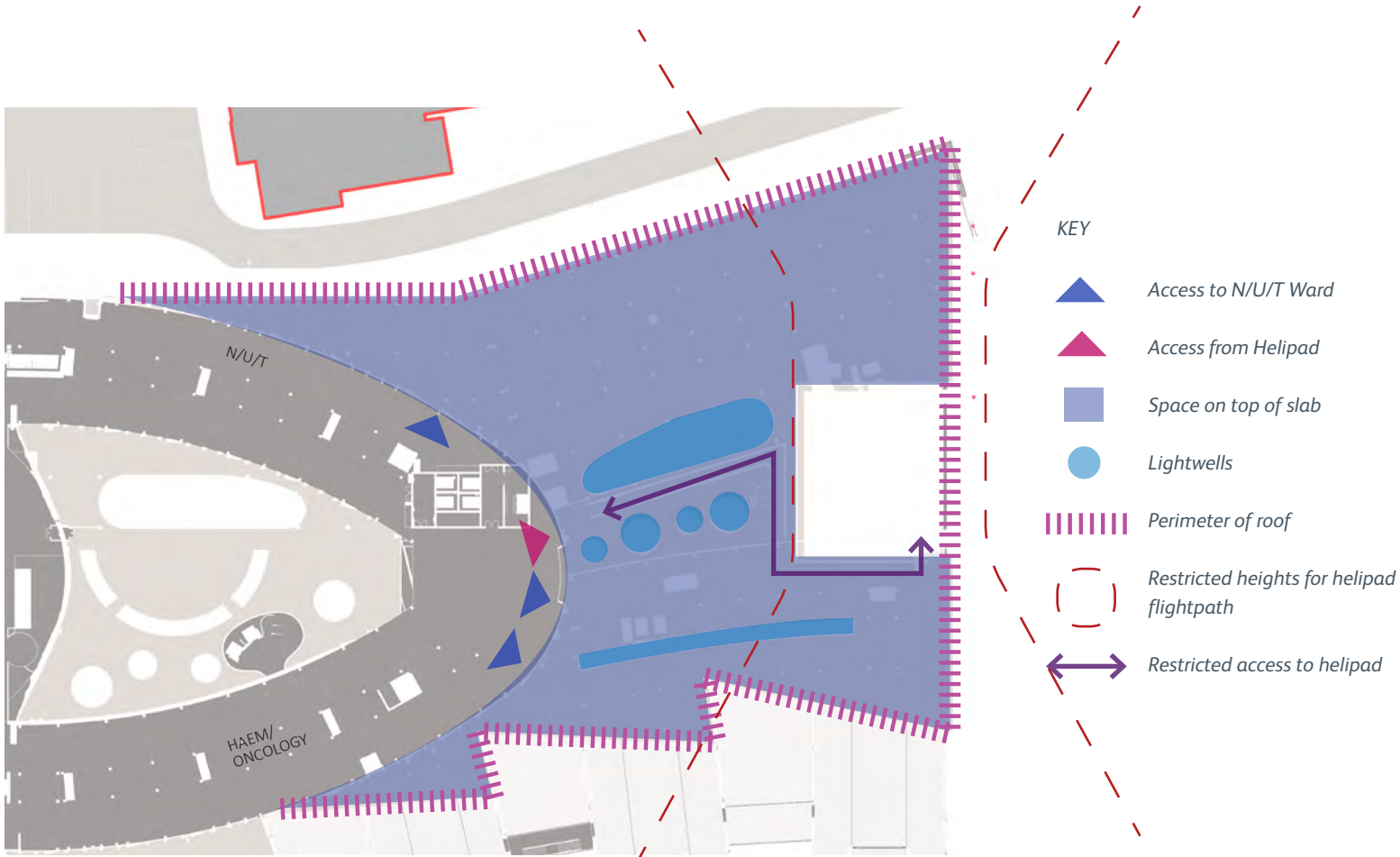
Analysis - Nephrology/Urology/Transplant Wards

The Southern Sky Gardens are accessed from the Nephrology/Urology and Transplant Wards. The garden will accommodate the uses required for these wards, including outdoor physiotherapy, flexible spaces, walking circuits and the need for calm.

The garden will also provide access from the helipad to the hospital. The helicopter flight path restricts uses within the southern part of the garden as no elements or planting can exceed a height of 3m in this zone.



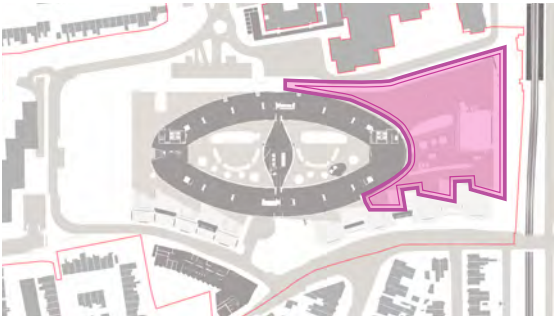
Functional requirements for the space



Fixed Parameters



Opportunities Diagram



Key plan

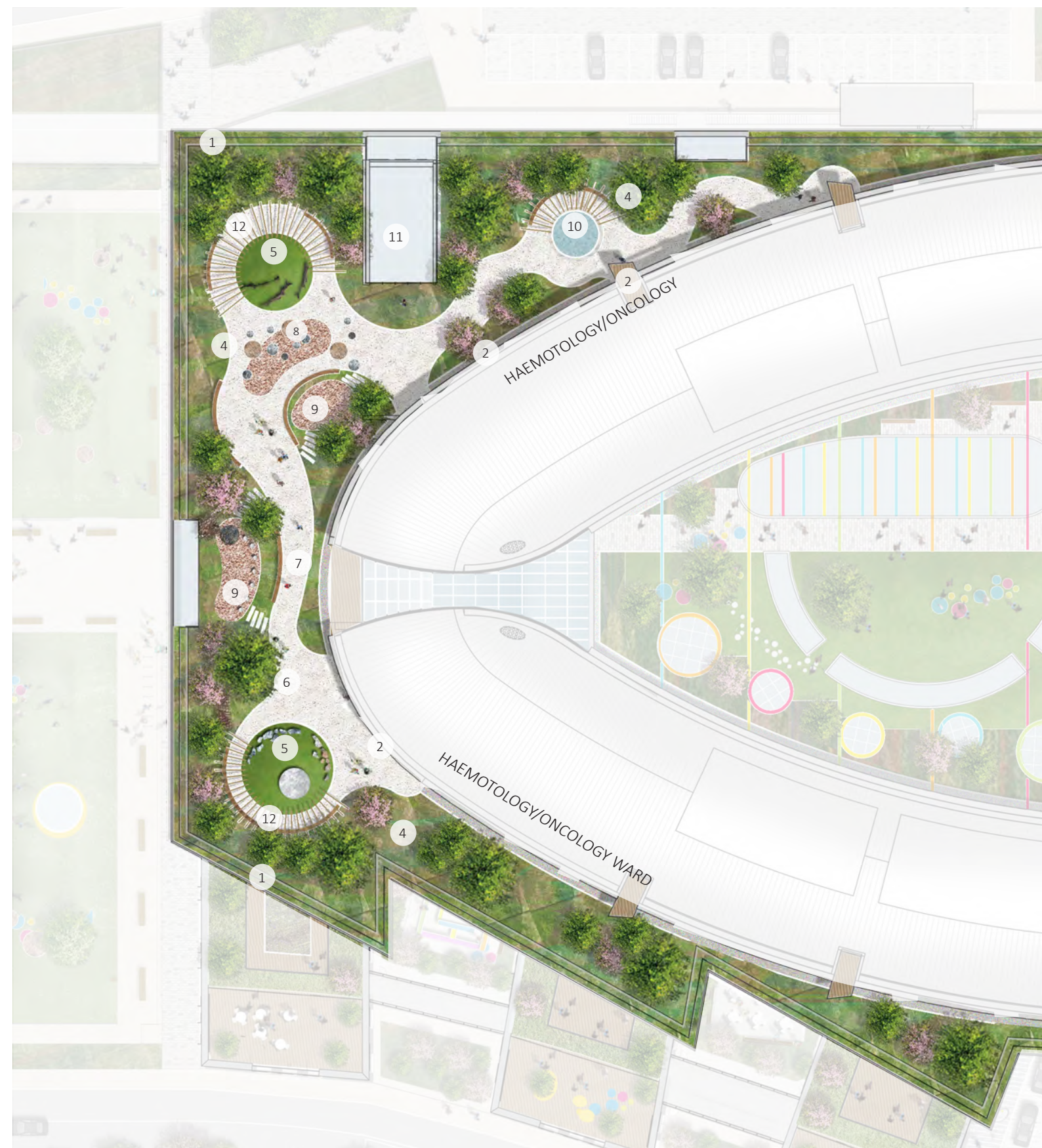
Proposal

The Sky Gardens are located at Level 04 on the outside the Oval. The Sky Gardens will be accessed by staff and patients from the Haematology/Oncology to the north and N/U/T wards to the south. In contrast to the Rainbow Garden, the Sky Gardens will have a calmer more natural character with winding paths, natural play elements and rich planting to their perimeter. Paths will be laid out so that children can do circuits for physiotherapy or play, and stop by a variety of play zones within the garden. Outdoor physiotherapy incorporating play is a way of encouraging children to be outside, but also a way of making physiotherapy more fun and less of a chore. The design also incorporates secondary, more challenging paths set within planting so that children can discover hidden play zones and lookout points for views to the surrounding areas. Some seating will be arranged to allow social interaction and some will be positioned in quieter locations. For those seeking solitude canopies and pergolas to shelter from sun, wind and rain will be provided at regular intervals and the gardens will provide spaces for hospital beds to be wheeled out into sunny or shaded locations.

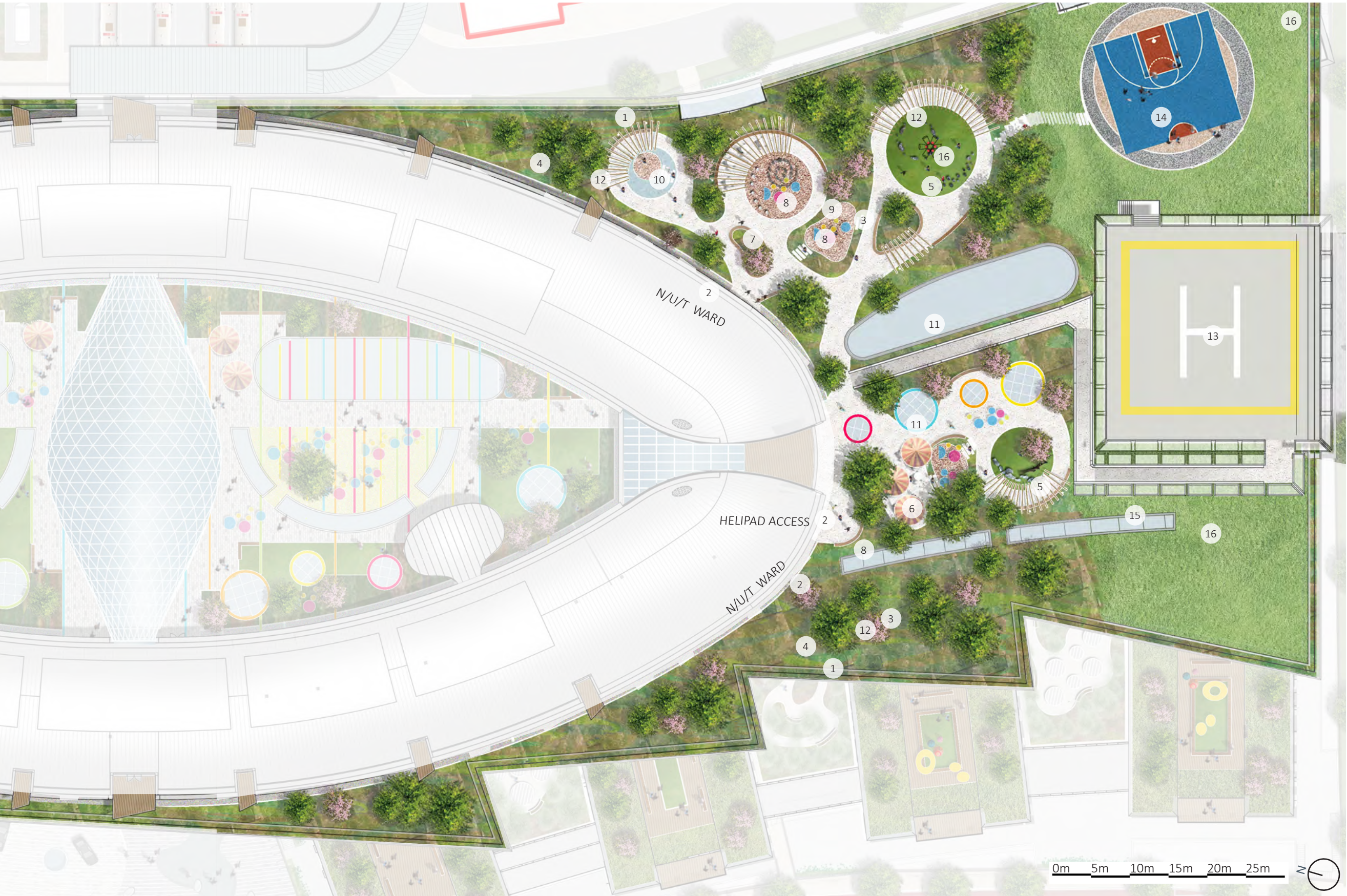
The edges of the gardens will be richly planted with groupings of trees of various sizes and maturity, creating visual interest from both inside the hospital and from surrounding areas. The perimeter planting will also provide the gardens with shelter from wind and shade from the sun and the helipad.

The supporting structure to the gardens will be engineered to accommodate trees of a significant scale, a feature that is important in allowing the planting to be enjoyed from street level as well as creating a lush garden environment that will be visible from surrounding wards.

In the southern part of the garden the design opportunities are restricted due to requirements of the helipad. The area closest to the helipad will be planted with a wildflower meadow and a multi use games area will provide facilities for outdoor physiotherapy.



Illustrative plan



- Key
- 1. Planted edge to roof
 - 2. Entrance to roof garden
 - 3. Multistem trees
 - 4. Mature trees
 - 5. Lawn for play and relaxation
 - 6. Flexible area for seating/events
 - 7. Resin bound pathways
 - 8. Play/physio elements
 - 9. 'Nature' trails
 - 10. Water feature
 - 11. Lightwell
 - 12. Pergola
 - 13. Helipad
 - 14. MUGA
 - 15. Ramp to helipad
 - 16. Sedum/meadow roof planting
 - 17. Flues incorporated into the landscape



Places to be alone



Places for play and social interaction



Shrub planting and trees creating a diversity of routes and spaces



Secondary, more challenging routes through meadows - stepping stones

4.12 Level 4 - Sky Garden -Aerial View



Key plan

5.1 O'Reilly Avenue



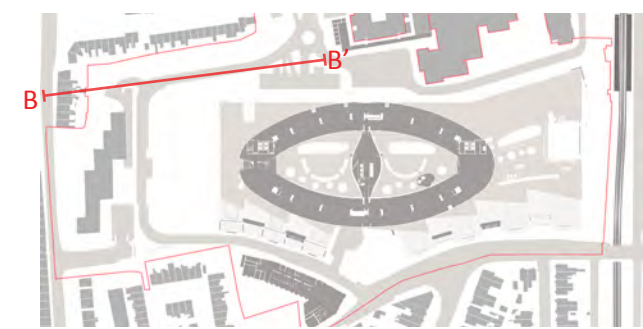
Existing section BB' through St John's Terrace and the hospital site

Scale 1:400



Proposed section BB' through St John's Terrace and the new children's hospital site

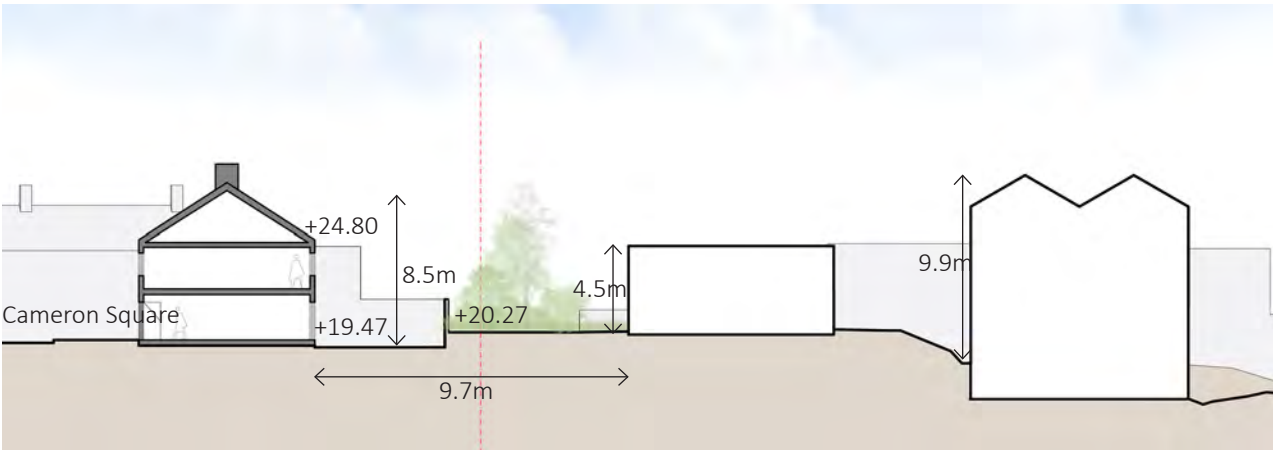
Scale 1:400



Key plan

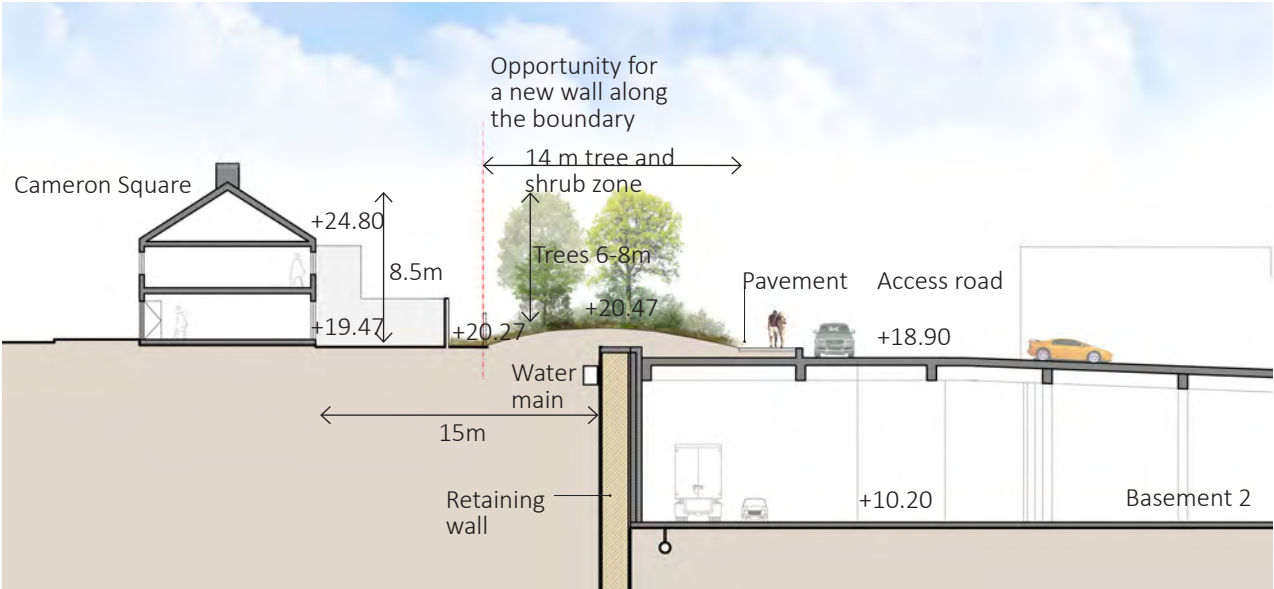
5.2 Cameron Square

A screen containing shrubs and 6-8m tall trees will be planted along the Cameron Square boundary.



Existing section CC' through Cameron Square and the hospital site

Scale 1:400



Proposed section CC' through Cameron Square and the new children's hospital access road and basement

Scale 1:400



Key Plan

5.3 Mount Brown Steps

The Mount Brown steps are located in the north-west corner of the site and a new path will link the steps with the St James Campus providing a new north-south route into and from the site. Access will be improved with steps regraded into more even flights, new and enhanced materials, improved lighting and the provision of handrails.

On the east side of the steps the existing wall will be replaced with trees and low planting to allow inward views and natural surveillance from this direction. The renovation of the existing wall and railings on the western side of the steps will be planned in consultation with local residents.



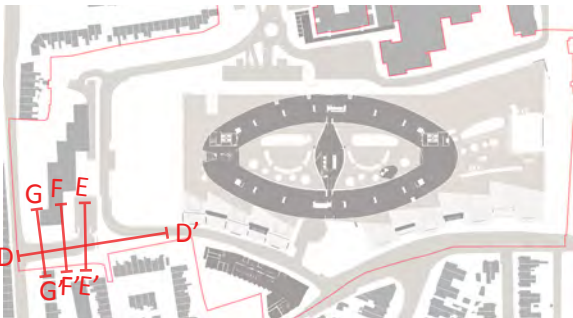
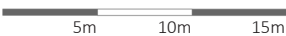
Existing section DD' through the steps to Mount Brown

Scale 1:400

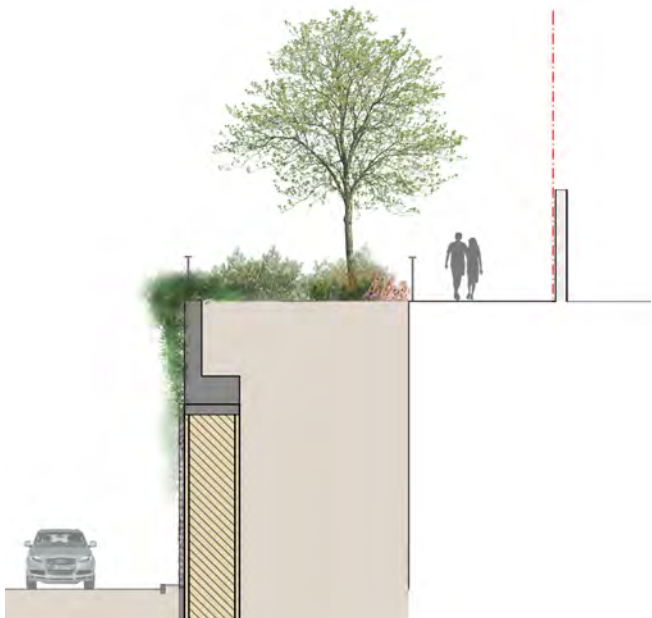


Proposed section/elevation DD' through the steps to Mount Brown

Scale 1:400



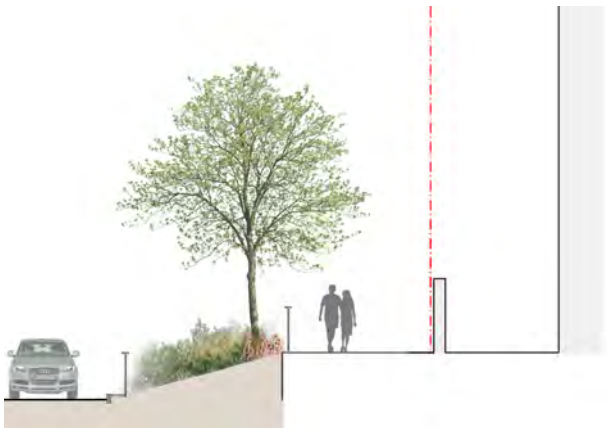
Key plan



Proposed section EE'



Proposed section FF'



Proposed section GG'

5.3 Mount Brown Steps



Image of the steps to Mount Brown today



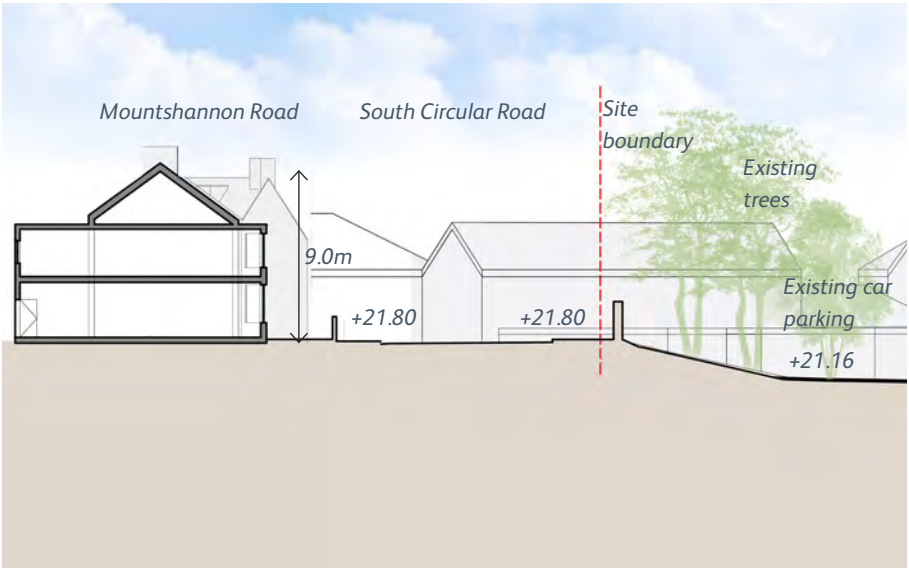
Photomontage of improved steps with rendered wall, new handrail, new surfacing, trees and planting



Key Plan

5.4 Brookfield Road and South Circular Road

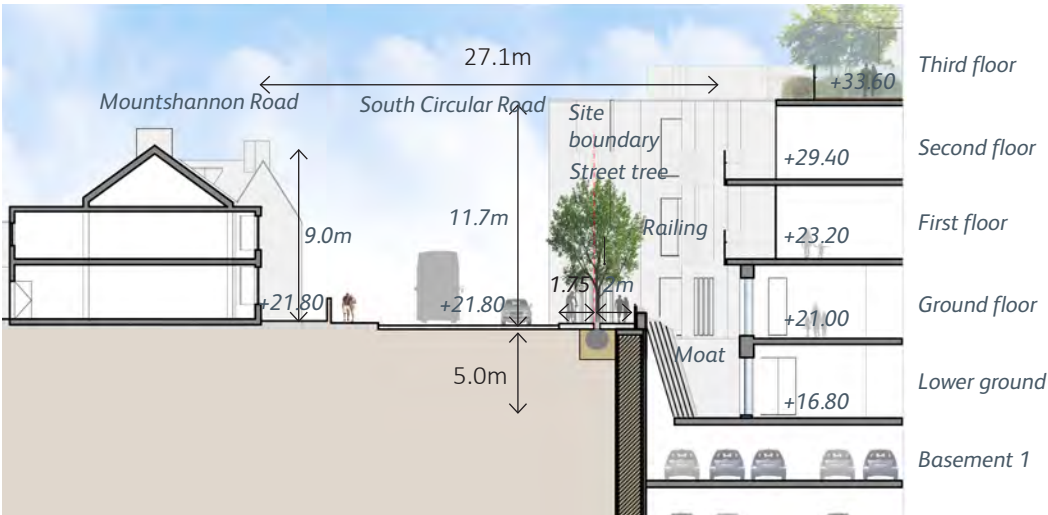
On Brookfield Road and South Circular Road a line of street trees will be planted along the pavement from Rialto Bridge to Children’s Place to replace the existing trees that are located behind the SJH boundary wall.



Existing section HH' through South Circular Road and the hospital site

Scale 1:400

5m 10m 15m



Proposed section HH' through South Circular Road and the new children's hospital site

Scale 1:400

5m 10m 15m



Key Plan

6.0 Landscape Specification

6.1 Paving

The quality of the landscape and public realm will be enhanced through the provision of a cohesive and restrained palette of complimentary materials that are easy to use, maintain and manage. Irrespective of the material used, a high quality of workmanship will be essential for the quality of finish and longevity.

The detailed specification of plants, trees and surface treatments will be developed over the next design stages. The principles that will inform this include:

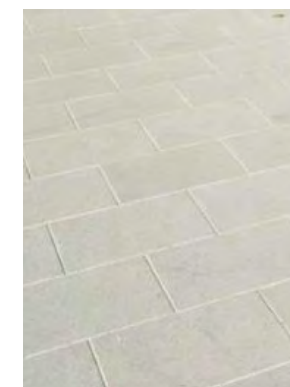
- Clinical adjacencies - the nature of adjacent internal spaces and their requirements in terms of privacy, accessibility and views;
- Scale – the size of the space and the intended effect;
- Durability – the expected wear and tear depending on the area's position and use;
- Maintenance access – both for the gardens themselves and for maintenance and cleaning of the building envelope;
- Lighting – incorporation of lighting along paths and in seating areas as well as around the perimeter of the hospital to support security measures, including CCTV;
- Shelter – creation of inviting micro-climates, including tree shelter belts to protect from the wind;

- Play equipment – garden design to encourage active use, including play structures and resilient playground finishes;
- Safety – appropriate detailing throughout, especially of level changes and balustrades, to ensure outdoor spaces are safe to use throughout the year;
- Colour, aroma and seasonal variety – to create visual interest and stimulate the senses throughout the year;
- Bio-diversity – to promote plant and animal life;
- Planting – A sensory planting theme will be applied across all gardens, ensuring planting stimulates the senses and encourages interaction
- Sustainable Urban Drainage (SUDS) – use of green roof to attenuate rainfall run-off and gather rainwater for use in irrigation or other grey water applications in the hospital.
- Sustainable materials - All timber to be FSC approved.
- Opportunities for education.

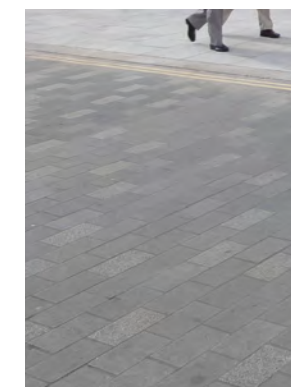
For details of buildups see detail drawings NPH-L-BDP-PL-XX-ST-9701 and NPH-L-BDP-PL-XX-ST-9702 in the Appendices.



Asphalt



Artificial stone paving



Granite paving



Blue Irish Limestone



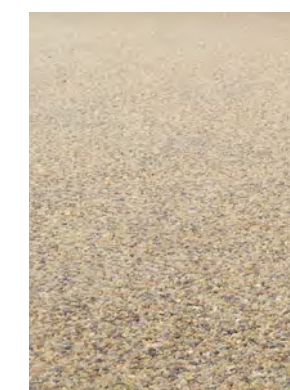
Clay pavers



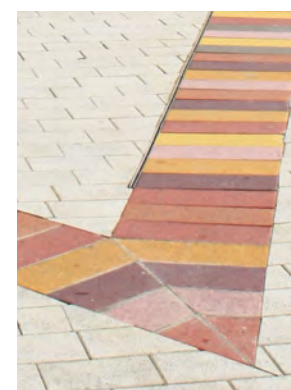
Timber decking



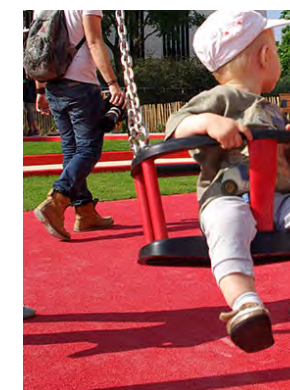
Coloured asphalt



Resin bound gravel



Colourful tiles in paving



Safety surfacing - rubber crumb



Safety surfacing - sand



Safety surfacing - bark or chippings

6.2 Outdoor Furniture

Street furniture is an important element in creating a sense of place and a legible public realm. The selection of street furniture will be considered in a comprehensive manner to ensure a common language of elements is maintained across the public realm.

For more detailed street furniture information refer to the Landscape Outline Specification.



Seating with back and arm rest



Seating edges to planting



Sculptural seating



Seating and tables for children



Modular, playful and flexible seating



Cycle stand



Litter bin



Granite edging

7.0 Planting Strategy

7.1 Site Concept

Existing Trees

As described in the introductory section to this chapter, the hospital site today is dominated by roads and car parking. There are however existing trees spread across the site that will have to be removed to accommodate the New children's hospital, the CRIC and the pedestrian improvements of St James's Hospital Campus Road.

The existing trees are of varying scale and quality and are further described in the Tree Report by Brady Shipman Martin. Careful considerations has been taken during the design process to retain as many existing trees as possible.

Along the boundaries to O'Reilly Avenue, Cameron Square and St James Walk the proposals retain as many of the existing trees as feasible. To mitigate the loss of trees, the proposals include a wide range of new tree proposals described in this chapter. Please also refer to the Tree Removal Plans for more information.

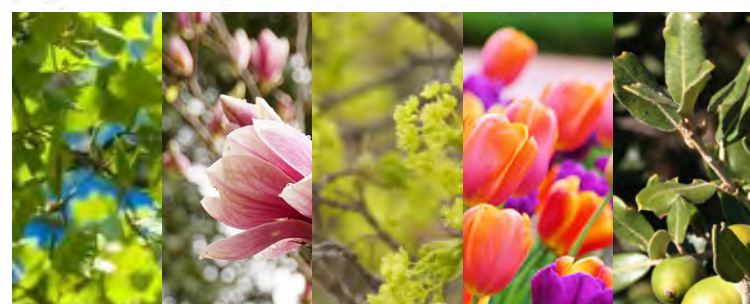
The Seasons

The planting strategy will be based on plants and trees native to Ireland mixed with non native species that are suitable to the micro climates that are created within the shaded courtyards, sunny public spaces and open and exposed roof gardens. Planting, trees and climbers growing on pergolas will become 'soft' walls enclosing the outdoor rooms, creating shade and providing shelter.

Planting will be carefully selected to create interest throughout the seasons with an evergreen base of shrubs and trees, complemented with seasonal species. Trees, shrubs and herbaceous planting that give fruit, flower or have colourful leaves will create character to the spaces during the year and provide attractive views from inside. Non toxic plants will be specified throughout the gardens.



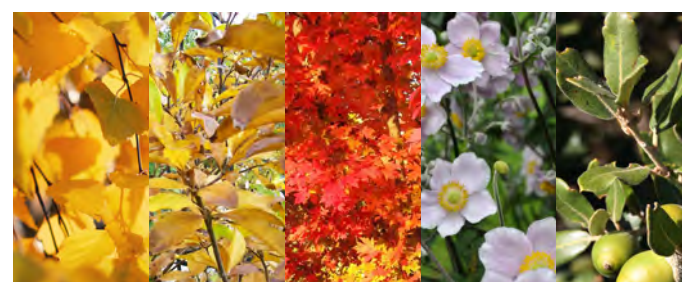
SPRING



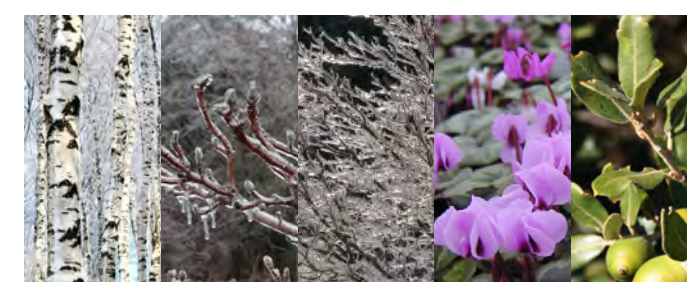
SUMMER



AUTUMN



WINTER



7.2 Site Concept - The Senses

The planting strategy across all the gardens and courtyards will have an over arching theme of sensory plants.

Sight, sound, taste, touch and smell will all be represented with brightly coloured plants such as asters, crocosmia and echinacea stimulating sight; ornamental grasses will

express the sounds of the wind through natural movement; herbs planting will offer taste; fluffy pennisetum heads and lambs ears will encourage touch and a 3D approach to smell will be created through the introduction of lavenders and mock orange planting at waist height and climbing roses and honeysuckles on above pergolas.



SMELL

Choosing particularly fragrant & aromatic species



HEARING

Choosing species that rustle in the wind



TOUCH

Foliage with different textures



SIGHT

Seasonal variety using a mix of deciduous and evergreen species

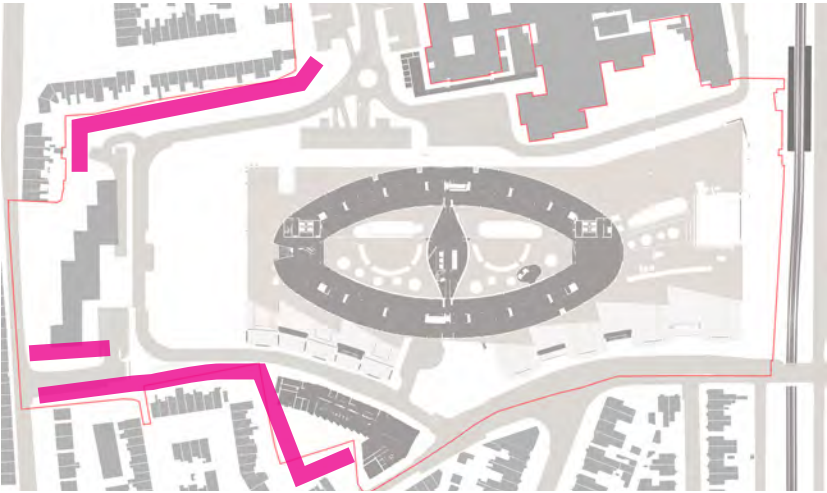


7.3 Boundary Treatment

The existing trees that are being retained along the site boundaries will be complemented with a mix of deciduous and evergreen trees and shrubs encouraging wildlife and adding seasonal interest to the perimeter of the New children’s hospital site.

Through consultation with the residents, the trees specified will be maintained to not exceed 6-8m in height, and prevent the overshadowing of the residents gardens.

Indicative species for the boundary treatment can be seen within the adjacent images.



Key Plan

Evergreen trees and shrubs



Pinus sylvestris - Scots Pine



Quercus ilex - Evergreen Oak



Juniperus communis - Juniper



Ilex aquifolium - Common Holly

Deciduous trees



Malus sylvestris - Crab Apple



Crataegus monogyna - Hawthorn



Sorbus aucuparia - Rowan



Betula pendula - Silver Birch

Shrubs



Arbutus unedo - Strawberry Tree



Corylus avellana - Hazel



Sambucus nigra - Elder



Prunus spinosa - Sloe

7.4 Lower Ground and Ground Level

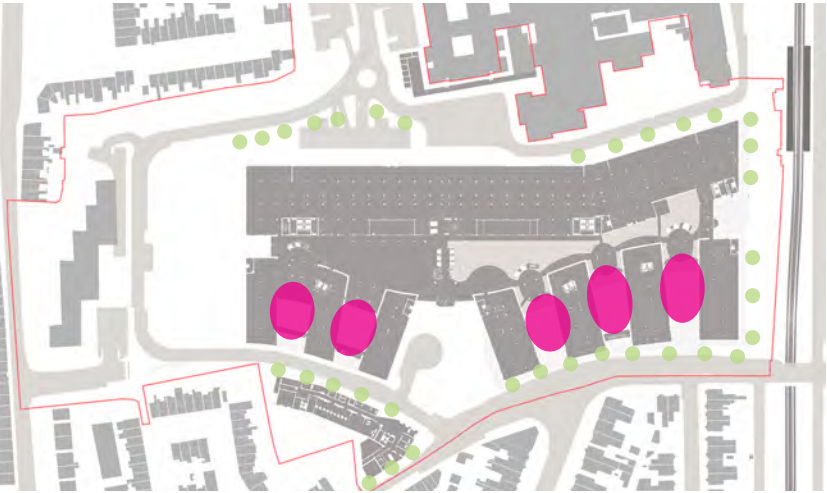
When selecting street trees, careful consideration will be given to the use of species that are already thriving in similar environments within Dublin and species found on the existing site. All trees will be chosen to suit their location and to respond to each street’s or spaces’ form and use and environmental conditions.

When selecting the street trees across the scheme the following factors will be taken into account:

- characteristics throughout the seasons,
- environmental benefits and
- habit

The courtyards at lower ground and ground level are typically shaded spaces. Planting in these areas will be shade-tolerant and predominantly evergreen, providing strong form, texture and colour for year-round interest.

Indicative species for the ground floor and lower ground can be seen within the adjacent images.



Key plan

Street trees



Acer platanoides - Norway maple



Corylus colurna - Turkish hazel



Quercus palustris - pin oak

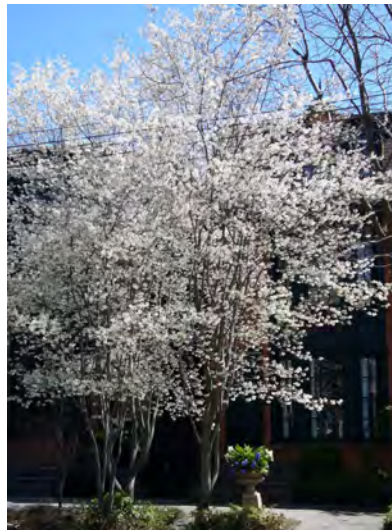


Tilia cordata 'Greenspire' - small leaved lime

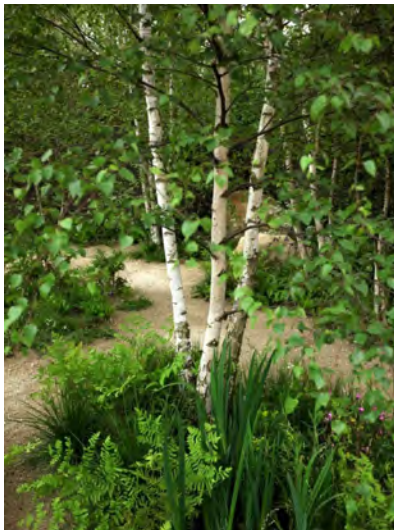
Shade tolerant courtyard trees



Acer griseum - paperbark maple



Amelanchier lamarkii - snowy mespilus



Betula pendula - silver birch



Betula utilis jacquemontii - Himalayan birch

Shade tolerant courtyard planting



Asarum europeum - European wild ginger



Asplenium scolopendrium - hart's tongue fern

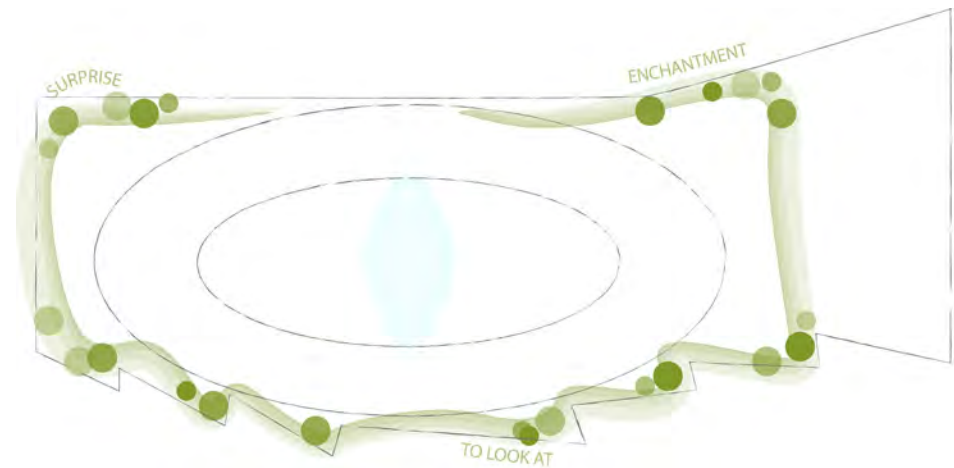


Hyacinthoides non-scripta - bluebell

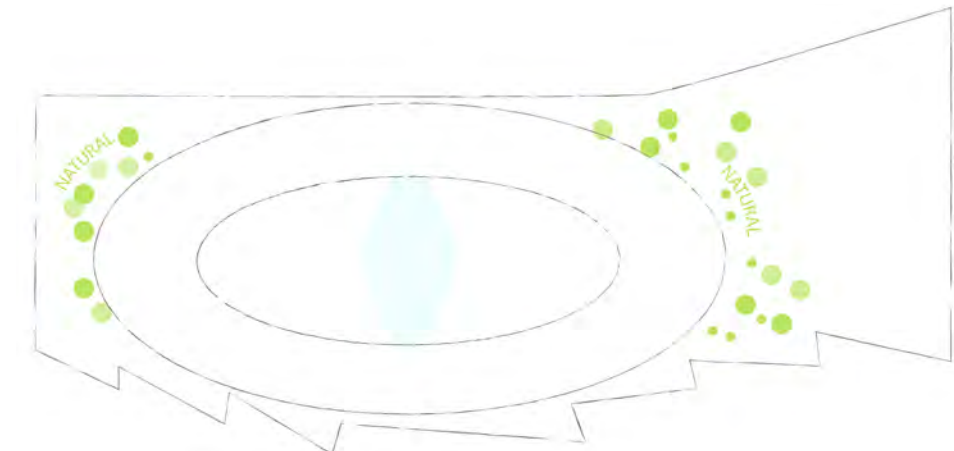


Polystichum aculeatum - hard shield fern

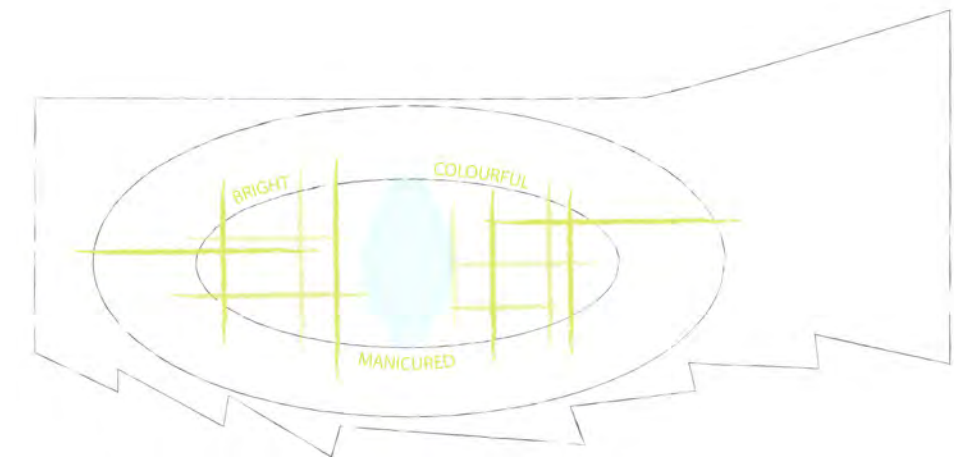
7.5 Level 04 - Roof Planting Concept



'Surprise' Edge Treatment



Naturalistic Haem/Onc/N/U/T Gardens



Manicured Public Central Gardens



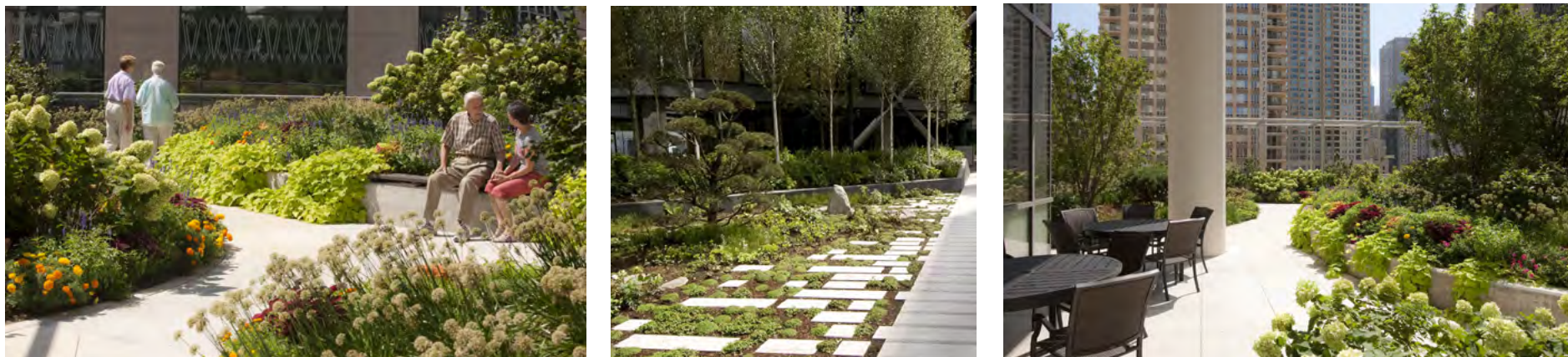
Surprise, Impression

The trees and planting along the edge of the roof gardens and terraces will be specified to give a lush and green impression and instil a moment of surprise as you approach the building. It will also provide give attractive views from inside the wards and to give shelter to the Sky Garden. The planting to the edge of the roofs will be formed from species tolerant to the exposed roof conditions with relatively low maintenance.



Touch, Smell & Interact

The species within the Sky Gardens will be of a natural character, encouraging the senses and with complementing planting to their perimeter. The planting within the Sky Gardens will build upon the sensory theme, with a natural character, following the winding paths through the gardens and framing the spaces. Areas of allotment planting for garden therapy and learning will be incorporated into the design and the area within the helipad flight path will be kept low maintenance with roof meadow planting.



Look, Scent, Colourful

The plants and trees within the Rainbow Garden will be of a more manicured garden character, framing social spaces and areas for play and relaxation.

7.6 Edge Treatment, Levels 03 and 04 - Indicative Species

Trees



Acer rubrum - red maple



Betula pendula - silver birch



Quercus ilex - Evergreen Oak



Pinus sylvestris - Scots Pine

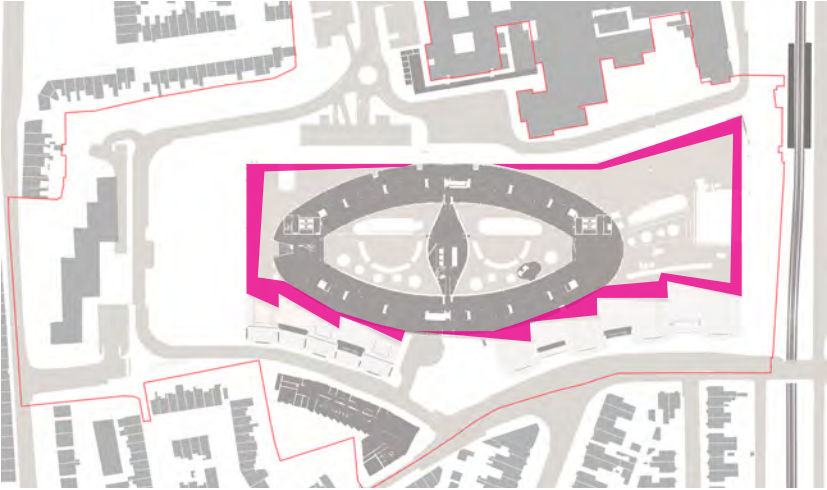
Multistem shrubs



Amelanchier lamarkii - snowy mespilus



Corylus avellana - hazel



Key plan

Shrub planting in the perimeter planter



Cotoneaster atropurpureus - cotoneaster



Mahonia japonica - Japanese mahonia



Photinia x fraseri - photinia



Prunus laurucerasus - laurel

7.7 Sky Gardens - Indicative Species

Trees



Cerciphyllum japonicum - katsura



Amelanchier canadensis - juneberry



Gingko biloba - gingko



Prunus serrula - Tibetan cherry

Shrub and herbaceous planting



Corylus avellana - hazel



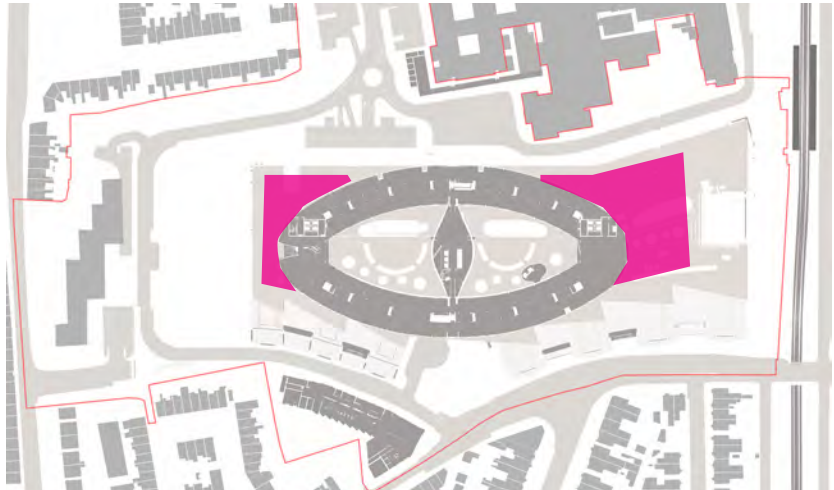
Lavandula angustifolia - lavender



Stachys byzantina - lamb's ear



Geranium x canatbrigiense - gernium



Key Plan

Allotment planting



Cucurbita pepo - pumpkin



Fragaria x ananassa - strawberry



Leucanthemum vulgare - daisy



Solanum lycopersicum - tomato

7.8 Rainbow Garden - Indicative Species

Trees



Cornus kousa - Kousa dogwood



Crataegus monogyna - hawthorn



Magnolia soulangiana - Chinese magnolia



Prunus avium 'Plena' - double gear

Shrub planting



Aster novi belgii Jenny - aster



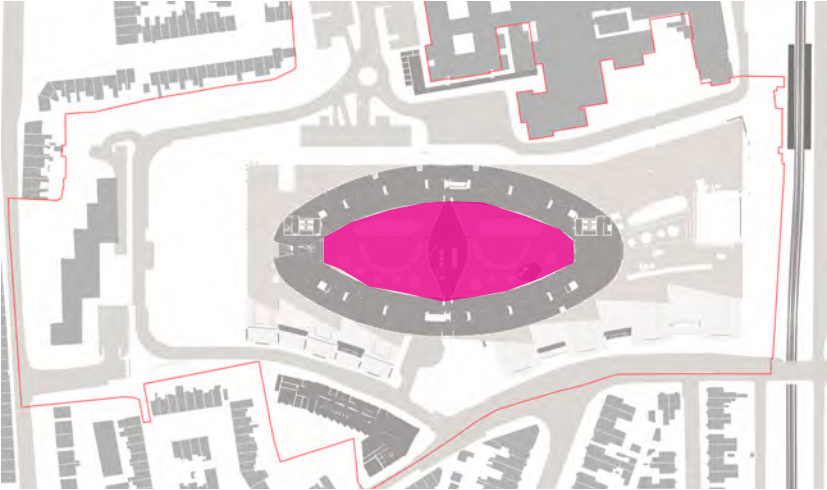
Lavandula angustifolia Hidcote - lavender



Lonicera japonica var. repens - creeping Japanese honeysuckle



Pennisetum alopecuroides - Chinese fountain grass



Key Plan

Shrub planting



Philadelphus coronarius - mock orange



Rosa 'Paul's Scarlet' - rose



Rosmarinus officinalis - rosemary



Stachys byzantina - lamb's ear

7.9 Tree Planting - Tree Heights & Character

Careful consideration has been given to the placement of trees within the roof gardens. Appropriate species will be specified to cater for the exposed conditions and micro climate. The roof garden proposals include tree groupings, rather than solitary trees, to optimise the growing conditions as the trees will naturally protect each other from the elements.

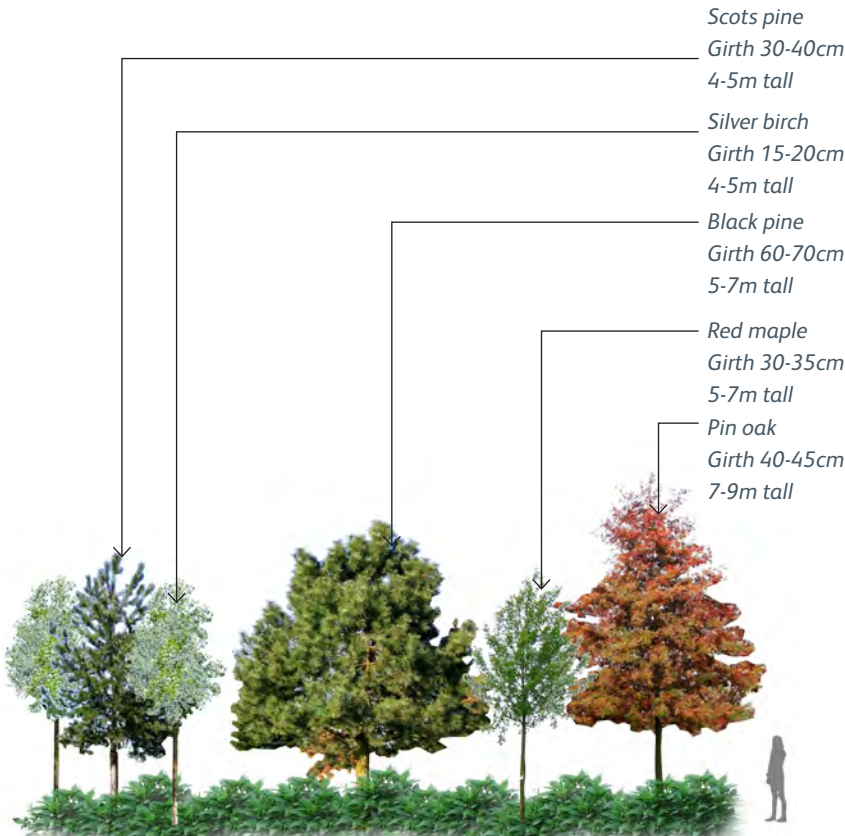
Trees will be planted at semi mature sizes to allow time for the species to adjust to the conditions while growing into maturity.



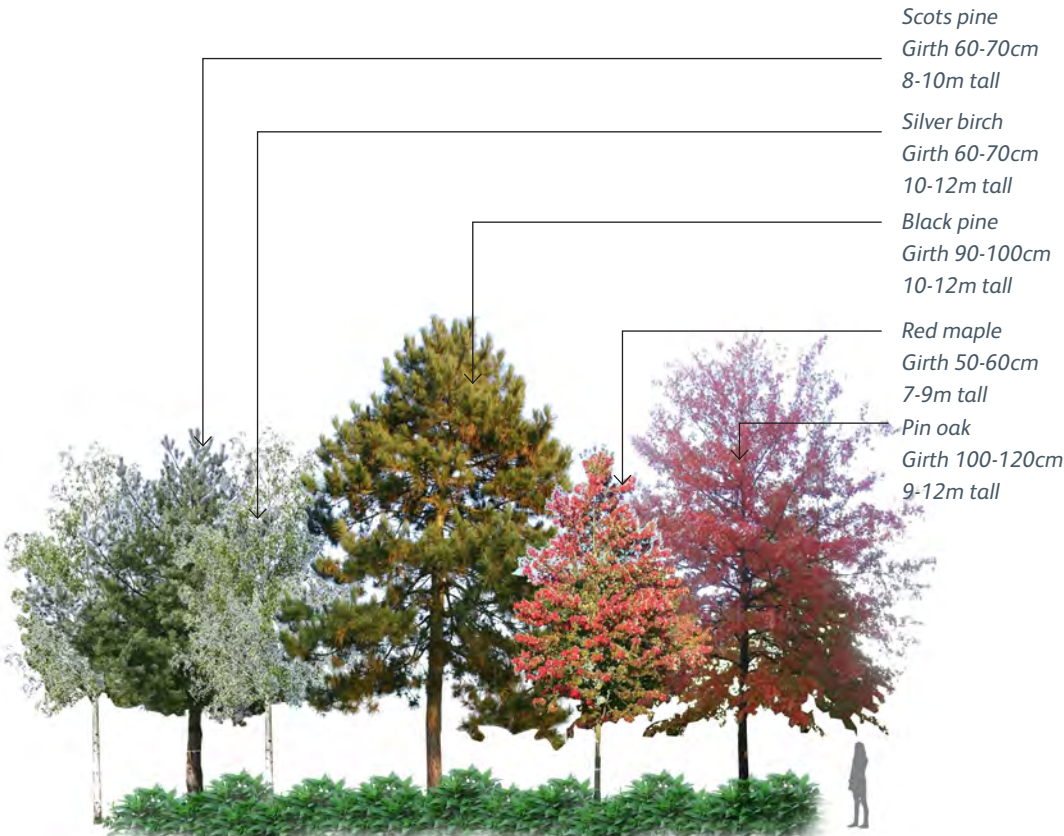
A solitary tree is more vulnerable on a roof garden with exposed conditions



Tree groupings with evergreen and deciduous trees give variation throughout the seasons as well as protect each other from the exposed conditions.



Example of a tree group on a roof garden:
Approximate size of tree grouping when planted

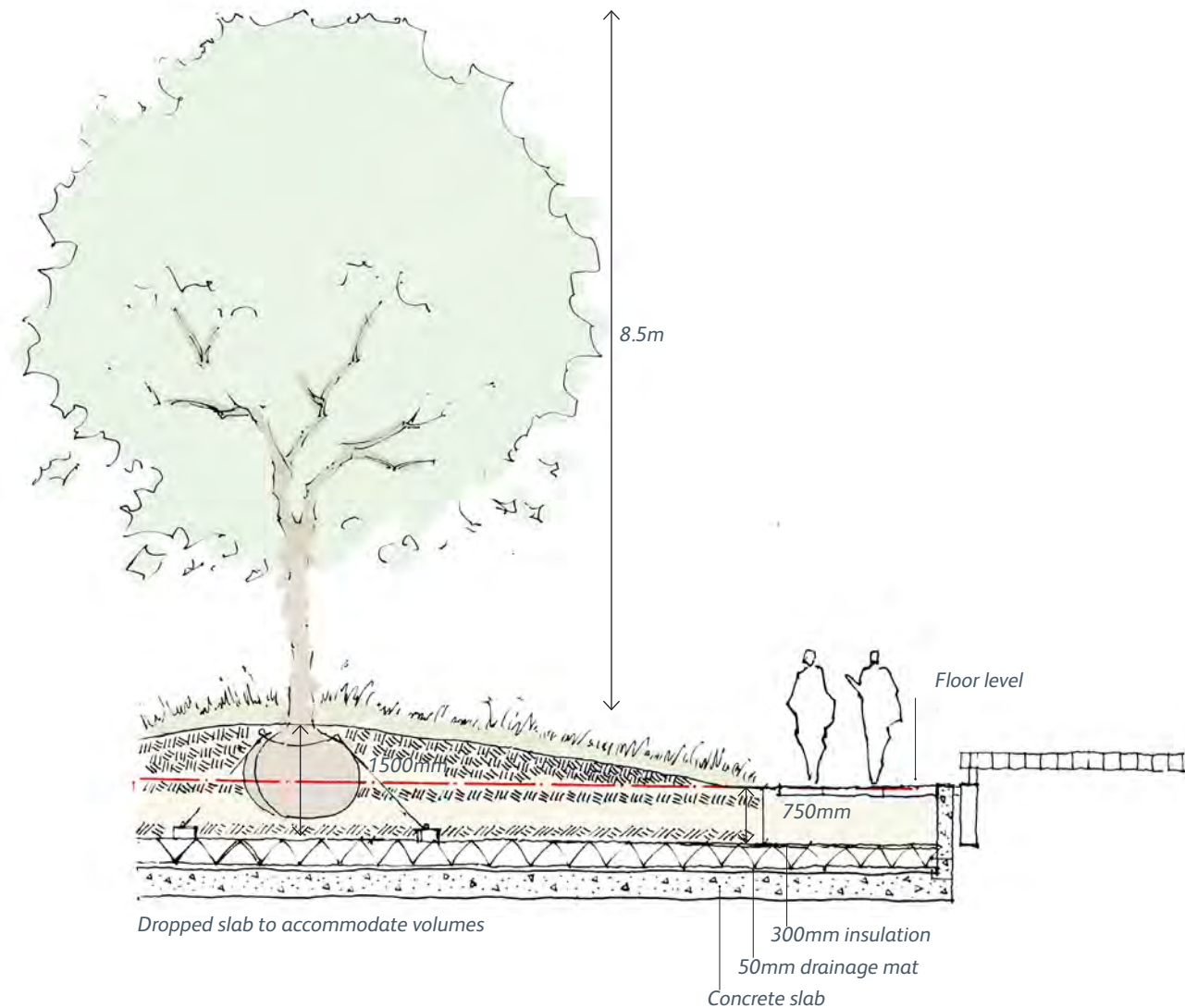
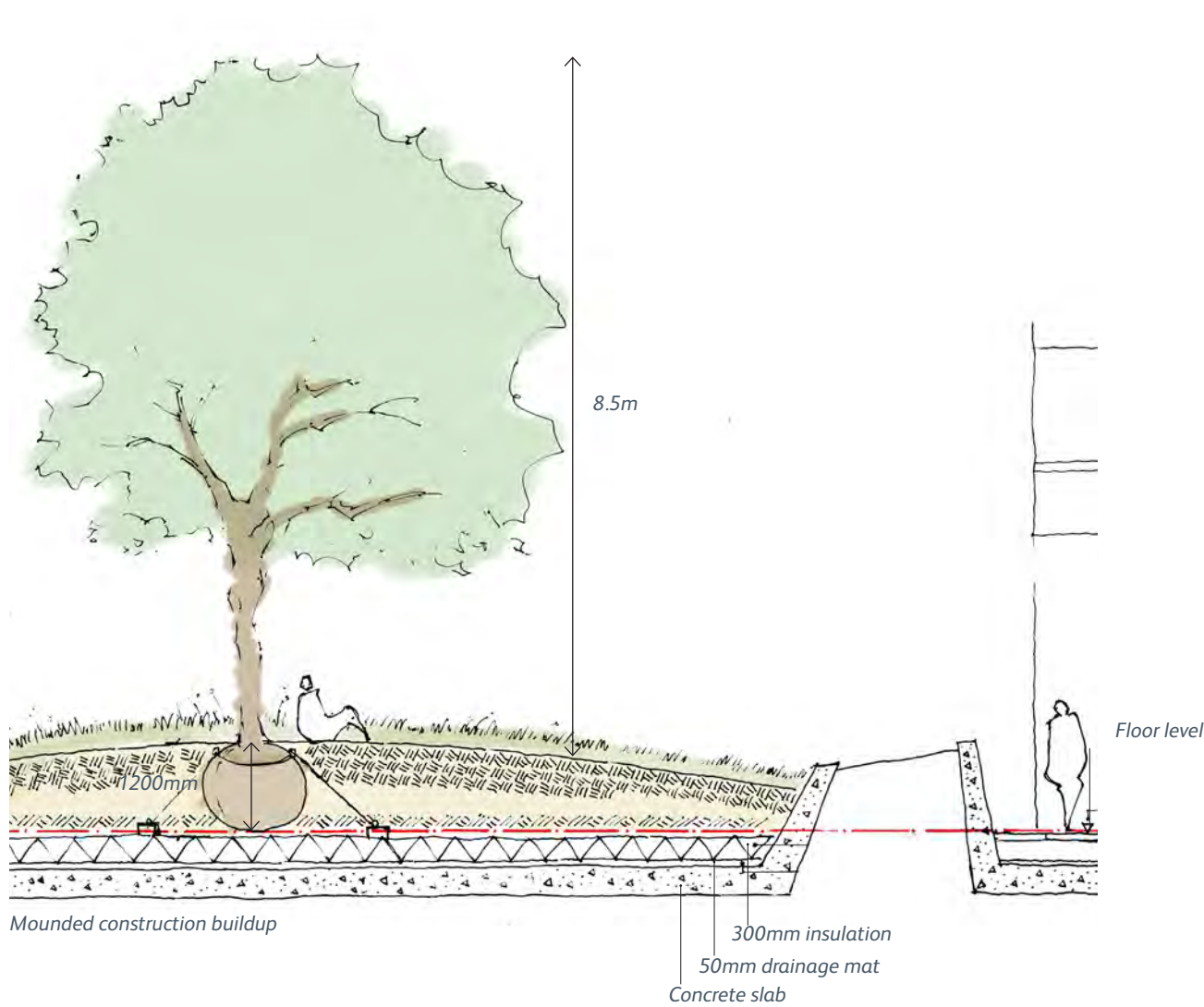


Example of a tree group on a roof garden:
Approximate size of tree grouping after 10-15yrs

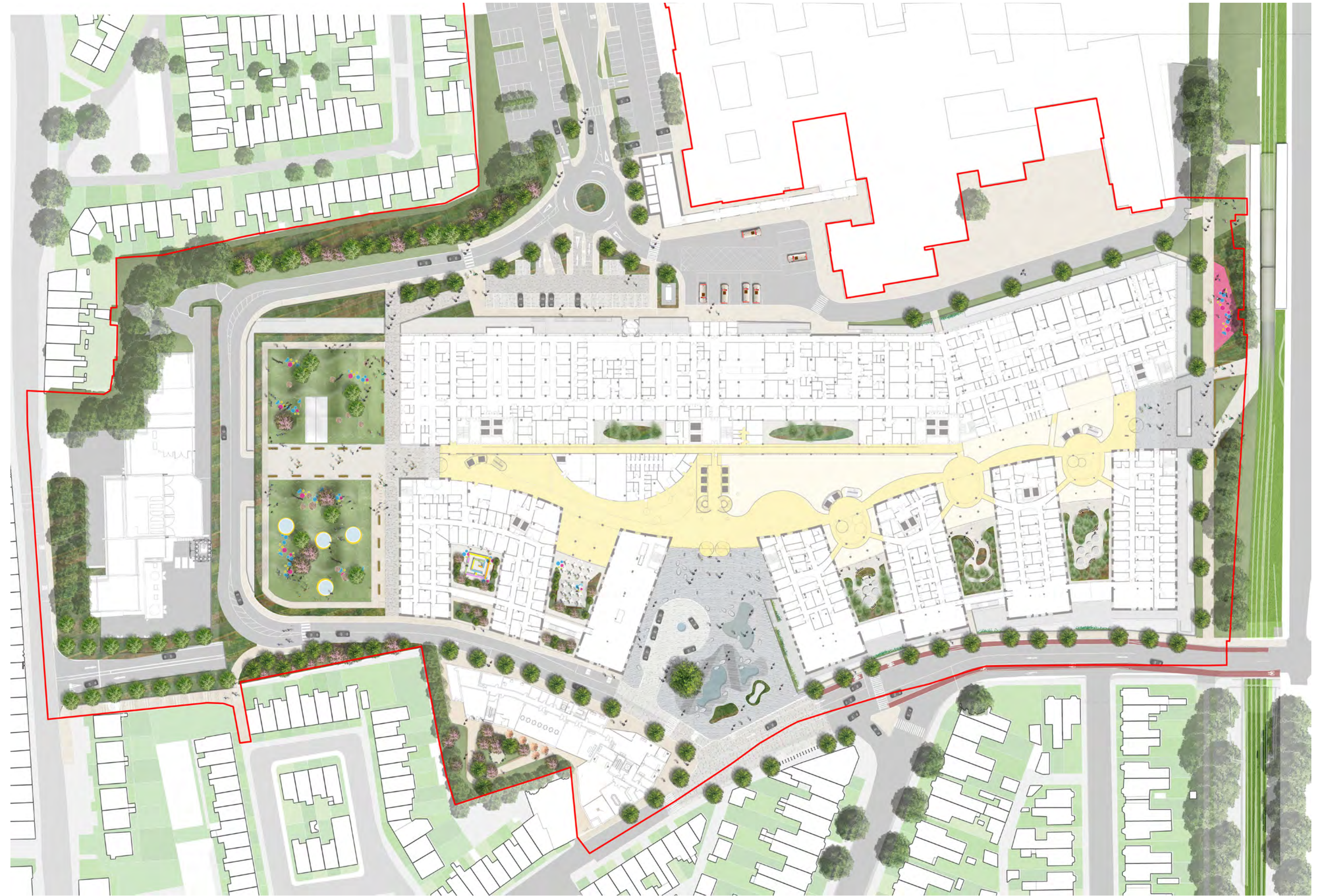
7.10 Typical Details for Trees Planting

The building structure will allow for the trees on top of slab to grow into maturity. To ensure sufficient soil volume and associated drainage, some areas of the roof will have dropped slabs whilst other areas will require localised mounding.

For further details of buildups see detail drawings NPH-L-BDP-PL-XX-ST-9701 and NPH-L-BDP-PL-XX-ST-9702 in the Appendices.







8.0 Children’s Research and Innovation Centre

The Children’s Research and Innovation Centre (CRIC) courtyard is located between the CRIC and the existing lawn adjacent to the Haughton Institute to the south. This courtyard will primarily be paved and include raised planters with integrated seating, and planting beds. Plant containers are laid out to create gathering areas for students and researchers while allowing for occasional maintenance vehicular access to the building facade. Thirty cycle parking spaces are included in the design and a new flight of steps along the east façade of the CRIC will form a north-south link from St James’s Campus to St. James’s Street.

A small open air courtyard, accessible from the lower ground floor level will be created. This shall be visible from the main courtyard above and shall provide natural light to the Laboratory area.

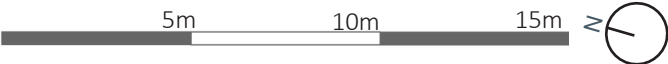
New semi-mature trees shall be planted to the northern edge of the central lawn, to replace existing trees that will be removed.

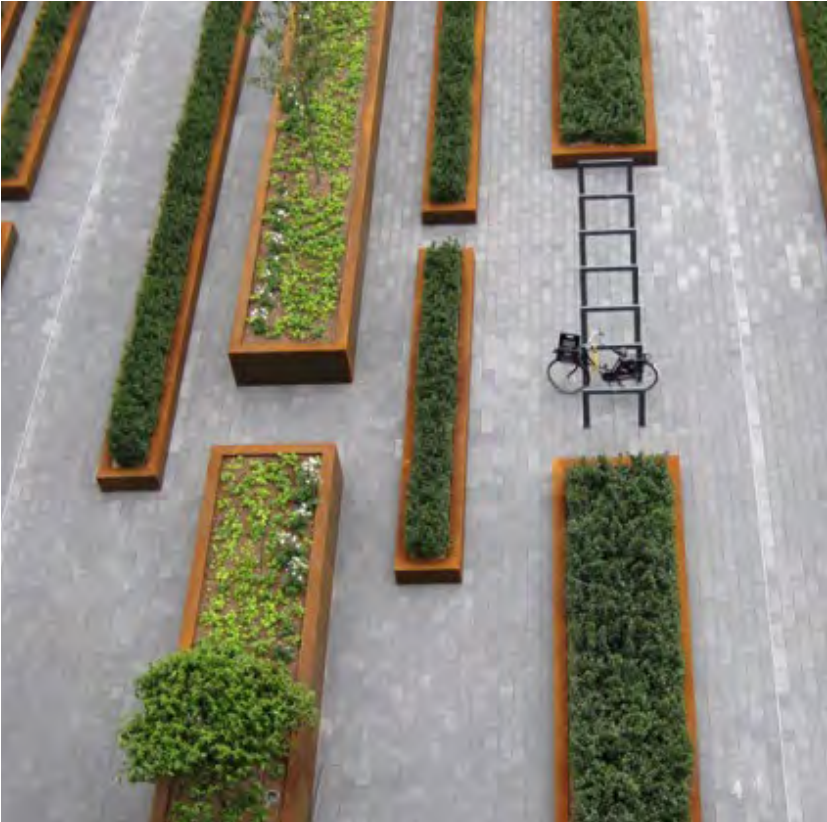
Key

- 1. Existing street trees
- 2. Steps connecting James’s Street and the SJH Campus
- 3. Raised planters and seating
- 4. Planters
- 5. Cycle parking
- 6. Paved open space
- 7. New trees
- 8. Courtyard at lower ground



Illustrative plan





Linear planting and cycle parking in stone paving



Moveable plant containers to create flexible space



Combination of timber seating and raised planters

9.0 Improvements to St James's Hospital Campus Road

St James's Hospital Campus Road today is not particularly pedestrian friendly.

To improve the pedestrian experience on St James's Hospital Campus Road the pavements will be widened in certain locations, new sections of pavement and pedestrian crossings will be added and new street trees will be incorporated to mitigate the loss of existing trees. The Dental Buildings and adjacent car parking will be removed and replaced with new car parking and a large area of landscape, linking to the vision in the 'St James's Campus Public Realm Strategy', see Appendices. The car parking at the back of the CEO building will also be removed and replaced with a landscaped courtyard.



Key plan



View 1. Opportunity for existing car park and Dental Buildings to move and be replaced by landscape



View 4. Narrow pavement on southern side, with no pavement on the northern side along car parking. Opportunity to realign road and widen pavement.



View 3. Pavement stops and pedestrians have to walk through ambulance parking. Opportunity to remove planting to allow the provision of a continuous pavement.



Illustrative plan

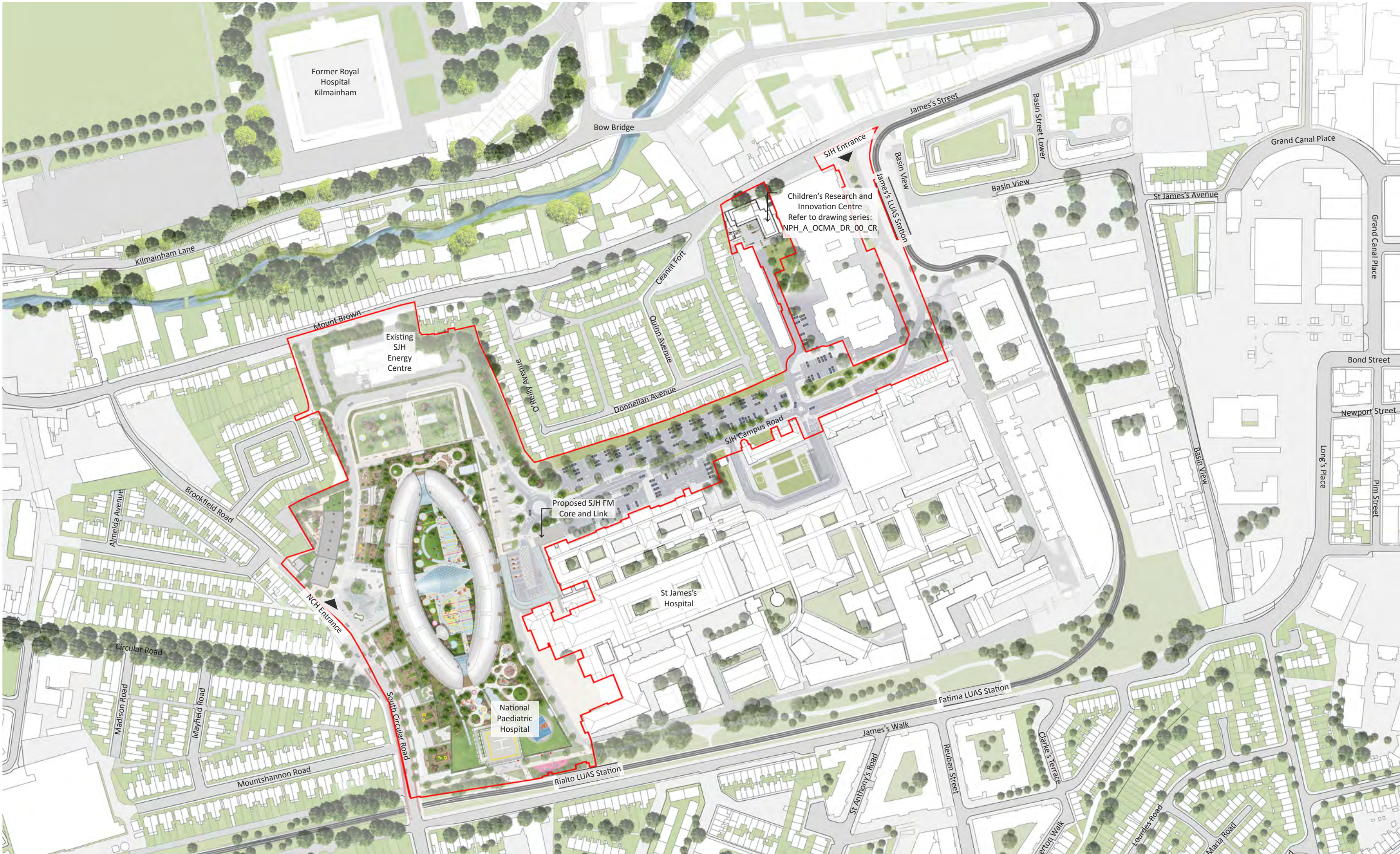
176

10.0 National Paediatric Hospital Project - Existing



Illustrative plan of the existing St James's Hospital

11.0 National Paediatric Hospital Project - Proposed



Illustrative plan of the proposed Paediatric Hospital Project