



Design & Access Statement

A new 2 storey clinical building at
Royal Berkshire Hospital

March 2023



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1.0. Executive Summary

This report supports a full planning application submitted by GBS Health acting as Agents for the Royal Berkshire Hospitals NHS Foundation Trust.

Section 2 sets the background for this investment in Healthcare in Reading and why, in particular, this location has been selected.

Section introduces the series of 10 high level aspirations which underpin any future Estates developments at the Hospital. These 10 concepts link in with the overarching themes set by the NHS for current developments and also follow best practice examples of healthcare design.

Section 4, 5 and 6 introduce the detailed design and layout of the block and give confidence that this is a project that can be implemented quickly and will assist the trust in reducing waiting times and the backlog of care caused by covid-19.

We commend this project to you.

2.0. Introduction and Background

2.1 Royal Berkshire NHS Foundation Trust has been successful in attracting funding from the NHS in connection with the NHSE TIF – the Elective Capital Fund – designed to recover elective backlogs as a result of unprecedented growth in demand following the pandemic and changes in service delivery models.

This large fund will facilitate an increase in service provision in line with elective recovery for a modern Urology Procedure and Outpatient Unit and an Elective Ward

2.2 In preparation for this, a clinical bid team and a design team were commissioned in November 2022 and began outline design and business case work.

The site is currently occupied by a temporary two storey building which was erected in excess of twenty years ago and is no longer fit for use.

The existing South Block carpark will remain unchanged in both layout and capacity should the proposed new building be approved.

2.3 Our report is set out as follows;

Introduction and Background	Sets the scene for the reasons behind the development.
Design Aspiration Concepts	Provides an overview of the development aspirations in the context of the Trust's desires for the redevelopment of the Southern end of the site.
Possible cladding materials	A short storyboard illustrating common types of cladding in modern NHS developments.
Design and Access Concepts	A short description of the reasons why the building is sited where it is and has been designed in the way represented in this application.
Elevational Sketches	The initial Architects pen sketches illustrating the development of the building's aesthetics.
Mechanical Electrical and Public Health Report	We have included a detailed report from the MEP designers which explains the philosophy behind the design of the building services and how they comply with NHS, government, and Council requirements.
Appendices (under separate cover)	- Acoustic Report - Contaminated Land Survey and Report - Energy Efficiency / Sustainability Statement - External Lighting Detail - Landscape Principles - Transport Assessment / Travel Plan - CIL Form - Tree Survey - Vehicle Parking and Waste Details

3.0. Design Aspiration Concepts

We set out as follows 10 high level concepts which describe the Trusts aspirations for any new part of their Estate.

Each of these 10 'headline' concepts has a description in the follow-on section.

1.

Improve the patient, visitor and staff experience

2.

Improve adjacencies by "clustering" and reducing travel distances

3.

Increase bed numbers and improve single bed ratios

4.

Radically improve Net Zero Carbon efficiency and reduce running costs

5.

Create a digital hospital

6.

Allow easy access to external green space for patients, visitors and staff

7.

Allow for Modern Methods of Construction and Repeatable Designs

8.

Develop a Construction Phase Plan to smooth disruption

9.

Produce a series of aspirational and attractive places which utilise the concept of "zoning"

10.

Produce Human Centred, Flexible and Accessible spaces

● Environment

● Estates/Corporate/Healthcare System efficiency/matching

● Patient/Visitor/Staff experience



1. Improve the Patient, Visitor and Staff Experience

This large investment in a new clinical building is predicated on the principle that every person's experience of the new buildings and the space around them should be an improvement on what went before.

For visitors and patients, we intend to provide:

- A good experience of travel to and from the site with civilised drop off places, parking and waiting spots
- Proper taxi facilities and first class safe and secure cycling storage. Pedestrian access will be improved by proper lighting and segregation
- Inside the buildings there will be excellent wayfinding and good natural lines of sight, with plenty of rest spaces and places for quiet contemplation, sociability and waiting.
- Spaces should be furnished to a high standard equal to private provision with good natural light, temperature control and acoustics (especially at night).
- Views and access to landscape or views of nature will be provided at every bed and chair.
- Staff are a precious resource and at the heart of a service-based system. The design will provide rest rooms on the wards and wellbeing centres away from the wards.
- Spaces to change and wash canteens and exercise will be available within a short walk for all staff.
- Access to green space outdoors will be provided
- New wards and units will have good storage, pantries, clerking space, housekeeping, and waste facilities.
- All of the new patient accommodation will be fully accessible to modern standards.

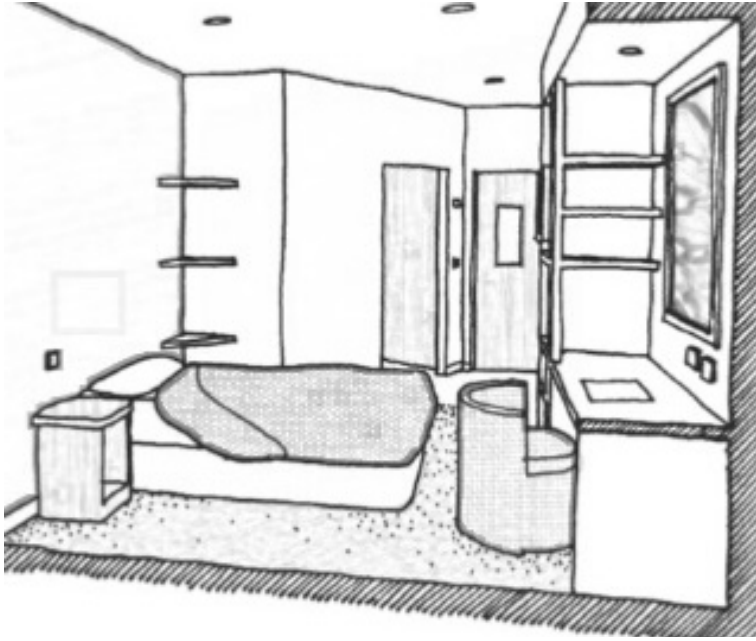


2. Improve Adjacencies by “Clustering” and Reducing Travel Distances

Our proposals aim to increase efficiency by clustering uses together.

- Reduce travel distances for patients, staff, visitors, and support services.
- Allow for each zone to have dedicated and efficiently planned support (welfare, food and beverage, parking, cleaning, supplies etc.)
- Improve wayfinding
- Reduce “no shows”
- Improve privacy and dignity for bed/trolley bound patients

We believe that by clustering like services, each Division will be able to create an environment that suits their clinical needs and reflects their ethos.



3. Increase Bed Numbers and Improve Single Bed Ratios

The NHS has for many years been embarked upon a modernisation programme with the aim of treating people in the most appropriate clinical setting and allowing them to recover outside of the acute setting as much as possible.

However, it has been appreciated for some time that ICU bed numbers in England compare unfavourably with those of most comparable world economies.

Events during the Covid 19 pandemic have thrown this into stark relief.

Our proposals will enable an increase in space that can be flexibly used and provide increase Outpatient and Procedure spaces as well as an increase in beds. This is in direct support of the Trust's Clinical Services Strategy.

At the same time that clinical developments have sought to create a reduction, where possible, in the need for hospital in patient stays, there has been a rise in the need for single bed accommodation.

There are clear clinical benefits of nursing patients in single bed settings, but the wider adoption of this pattern has two major down sides.

- Increased floor area and revenue cost
- Increased nursing cohort

However, this once in a generation redevelopment project will allow for a substantial rise in the Trust's single bed ratio across the Main Site.



4. Radically improve Net Zero Carbon efficiency and reduce running costs

The UK Government is committed to take action on climate change as part of its Climate Change Act with a target to have Net Zero in carbon emissions by 2050. This ambition is supported by NHS England & Improvement NHSEI, which launched 'For a Greener' NHS campaign to be the first Net Zero health service in the world.

At the Royal Berkshire NHS Foundation Trust a stretch target has been set of reducing carbon emissions by up to 7% per annum to achieve their Net Zero target by 2040. This Master Plan echoes the Trust's aspiration and considers holistically the milestones required to ensure this development positively contributes to this target.

We are proposing solutions that consider the existing infrastructure on site and where possible allow that to evolve and adapt over time, enabling the latest technological innovations to be utilised throughout the Net Zero Roadmap to 2040. The design approach adopted considers both operational and embodied carbon and minimises energy demand by passive building interventions.

We are proposing to utilise the existing District Heating network as the backbone infrastructure allowing energy to be moved around the campus to where it is most needed. This centralised approach is highly resilient and provides the Trust with the future

adaptability required.

Embodied Carbon in building elements such as steel and concrete will be significantly minimised by careful specification. The use of Low cement / zero cement (geopolymer) concretes and greener Electric arc furnace steels (EAF) instead of Basic Oxygen furnace Steels (BOF) will make a significant reduction to the developments embodied carbon.



5. Create a Digital Hospital

The Options provided to build a Smart Hospital include the Digital enhancements and IM&T Infrastructure needed to support integrated solutions to develop our digital platform further, particularly the way we will be delivering healthcare over the next ten years.

These Digital enhancements, underpinned by a secure, reliable infrastructure, will be the bedrock for improvements in patient safety and will support the Clinical Services Strategy further in the provision of seamless, efficient Patient Care.

New digital functionality will instil and reinforce best practice with system usage and processes. It will underpin and address operational needs to enable efficient patient flow, the optimisation of medical equipment provision and provide greater information to our patients through local kiosk devices and downloadable Patient Apps.

These Digital and Infrastructure enhancements recognise and support the need for data sharing with the wider ICS community and beyond. This will enable the patient to move around the health landscape secure in the knowledge that key patient and clinical data is available to deliver and manage their care. It embraces the increasing desire and need to provide the means for patients to monitor and manage their own wellbeing, conditions and care delivery.

This technology will be embedded into the fabric of the Building Berkshire Together New Hospital programme and deliver Patient Care without Boundaries helping to achieve the Net Zero and sustainability targets set by the Trust.

The proposed Digital and Infrastructure Enhancements include:

- Digitising onward care from Outpatients, PIFU, or remote monitoring.
- Delivering 50% of information via the portal such as pre-operative instruction or condition management information
- Greater use of voice recognition directly inputting to EPR / Patient notes
- Using the portal to pre-collect information to reduce radically in-person, on-site clerking and data entry
- 50% Reduction in the current patient telephone

and written correspondence contact with CAT teams

- Significant increase in patients on virtual wards
- Release 10,000 additional hours to care a week
 - Achieve HIMMS EMRAM level 6 accreditation for the areas included in the NHP
 - Resilient Datacentre facilities
 - Patient Care Integrated, resilient Unified Communications
 - Medical and IT equipment tracking and optimisation
 - Seamless IT Roaming, Fast Logons and Single Sign-On for all medical staff
 - Enabling connectivity

The digital plan, incorporated into this Options paper, will revolutionise patient care, support the Net Zero ambitions and provides a digital platform that accommodates emerging digital healthcare technology that will improve all Trust clinical and business services.



6. Allow Access for Patients, Visitors and Staff to External Green Spaces

This is one of the most significant Principles and one that holds the key to a very large improvement in health and wellbeing for patients, visitors, and staff.

“People who have a greater exposure to green space have a range of more favourable physiological outcomes. Greener environments are also associated with better mental health and wellbeing outcomes including reduced levels of depression, anxiety and fatigue, and enhanced quality of life for both children and adults” – Improving Access to Greenspace: A New Review for 2020 – Public Health England

Greenspace can help bind communities together, reduce loneliness and mitigate the negative effects of air pollution, excessive noise, heat, and flooding.

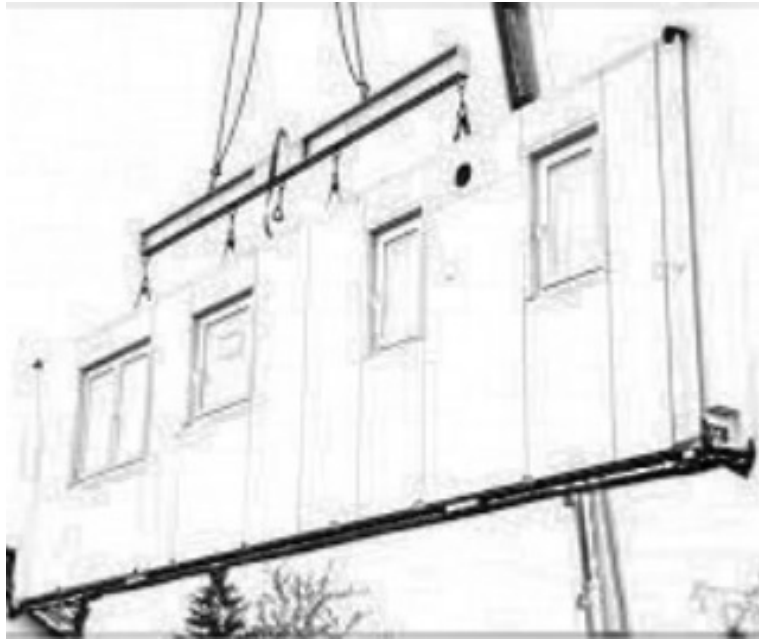
The Design of the site will allow green space to be accessed in 2 main ways;

- By placing significant green “lungs” at a maximum distance of 100m from any person on the site
- By designing in a series of new green features;
- Trees and shrubs (singly and in borders)
- Grassed amenity space
- Living walls
- Pocket parks

- Tactile planting/scented trails
- Moving water
- Indoor planting
- Allotments (with volunteering opportunities)

Again, features are placed around points of the compass and with a central node.

The demolition of South Block Annexe provides opportunities for a new pocket park across the South facing façade (helping to focus activity around the entrance).



7. Allow for Modern Methods of Construction and Repeatable Designs

It is a requirement of all new government financed construction that Modern Methods of Construction (MMC) should be utilised. It is a further requirement on NHS construction that repeatable designs (single bedrooms etc.) be incorporated.

The generally held definition for MMC includes:

- Panellised units produced in a factory and assembled on-site to produce a three-dimensional structure.
- Volumetric construction to produce three-dimensional modular units in controlled factory conditions prior to transport to site.
- Hybrid techniques that combine both panellised and volumetric approaches.
- Floor or roof cassettes, pre-cast concrete foundation assemblies, pre-formed wiring looms, mechanical engineering composites and innovative techniques such as tunnel form or thin-joint block work.
- The NAO suggested that if modern methods of construction were adopted in place of more traditional methods:
- It should be possible to build up to double on site volume with the same on-site labour.
- On-site construction time could be reduced by more than half.
- Building performance could be at least as good, if not better than, purpose built accommodation.
- Cost ranges would be comparable depending on specific project circumstances, although they would be higher on average.
- Risks increased at early stages of the development process so good risk management would become even more important.
- Tight liaison with planning authorities would be vital.
- Safety on site would be improved.
- Less waste would be generated, and recycling of waste improved.



8. Develop a Construction Phase Plan to Smooth Disruption

We will formulate a concept of “clinical islands” which will be safe and protected from any disruption.

Between each of these islands will be areas where patients, visitors and staff co-exist with contractors.

There will be;

- Segregated access
- Protected workspaces
- Asbestos free areas
- Protection for equipment and facilities
- Consideration for the Hospital’s neighbours
- Protection against noise and vibration
- Dust suppression
- Infection Control measures
- Segregation of pedestrians from road hazards
- Designated delivery zones

A significant benefit to the project will accrue from the widespread adoption of off-site construction. This will reduce deliveries, parking of construction vehicles, noise etc.



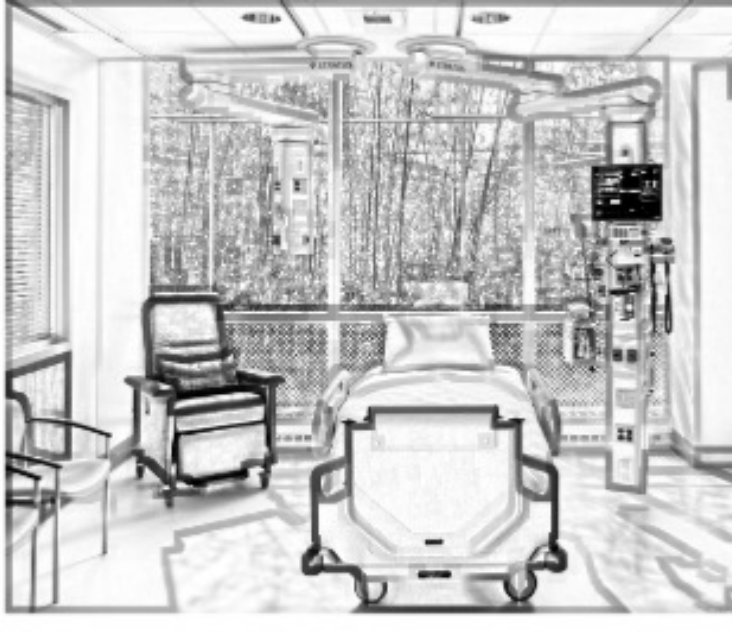
9. Produce a series of aspirational and attractive places which utilise the concept of “zoning”

Our proposals seek to utilise the familiar concept of zoning. Not a new idea but one that can be more fully adopted in the new hospital and in a way that takes benefits from the clustering of uses and geographical hubbing of clinical uses.

The divisions of the hospital will be more closely reflected in the zones.

This has two significant benefits:

- Co-location of complimentary clinical services within each zone allows maximum efficiency of staffing and reduction in transit times. Patient communication, orientation and management become easier.
- Each division can grow in ‘brand’ recognition and tailor their environment in a way that especially suits their clinical service. We propose that each block and department will have its own aspirational and attractive hierarchy of design ideas.



10. Produce Human Centred, Flexible and Accessible spaces

Our proposals seek to focus on repeatable modular design that is cost effective and technically optimised. However, these attributes are only considered to be a baseline for the design of a truly aspirational human centred hospital.

Each space is tailored to maximise the benefits of:

- Daylight
- Colour
- Acoustics
- Staff welfare
- Ceiling height changes
- Shaped seating areas
- Light on two sides of each room
- Good use of textures
- Proper ventilation
- Accessibility

4.0 Possible Cladding Materials

- 4.1 We set out as follows a series of 10 'exemplars' showing cladding materials in use in aspirational NHS facilities across the UK.

The research we have carried out suggests that the following are common themes;

- High pressure laminates
- Slatted timber
- Facing brickwork
- Glass reinforced concrete
- Slim format brick 'slips'
- Aluminium cassettes / alloy rainscreen
- Terracotta
- Glazed ceramics
- Glazed brick 'slips'
- Cementitious render

- 4.2 Each of these possible wall finishes has a unique blend of 10 criteria:

- Fire performance
- Appearance

- Longevity
- Cost
- Robustness
- Maintenance costs
- Aesthetics in context
- Buildability / speed of erection
- Aspirational quality

Taking into account each of these criteria and after use of a scoring matrix the design choice was to utilise a combination of high pressure laminate and glass reinforced concrete in alternate bands along all four elevations.

The materials work well together with the GRC giving a neutral 'stone' effect (making reference to the stone at the historic North end of the site) whilst the alternating bands of 'zingy' modern colours signify a contemporary healthcare setting.

The choice of materials should work well against the very neutral white panelling of the existing South Block.

It is considered that the setting within a large car

park and at some distance from Redland and Craven Roads will avoid any negative visual effects on the vernacular street scenes.



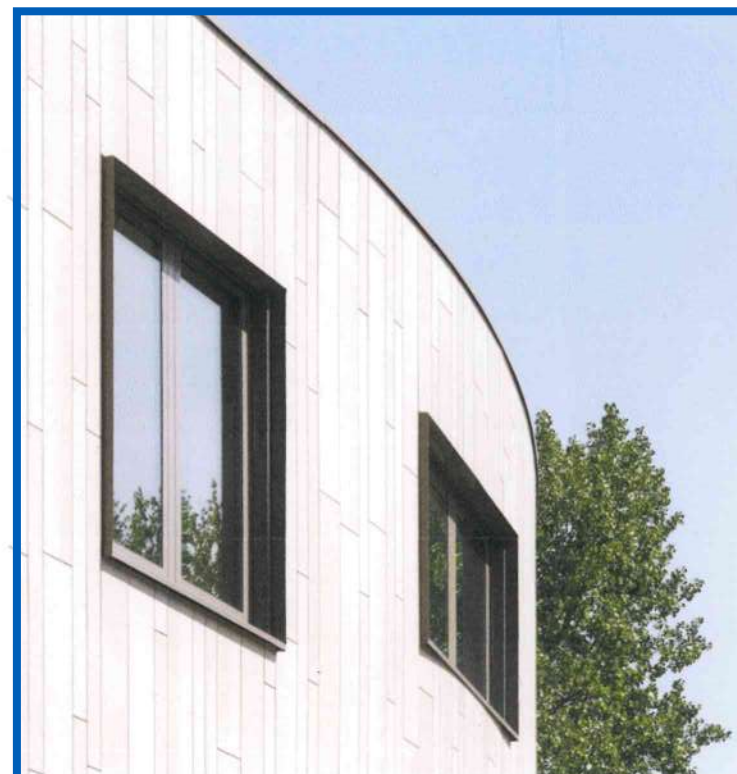
'Rockpanel' by PCP Cladding Ltd



Slatted timber



Natural brick



GRC Cladding by Rieder



Slim format 'Roman' brick cladding



Aluminium/terracotta hybrid



Terracotta cladding



Terracotta cladding

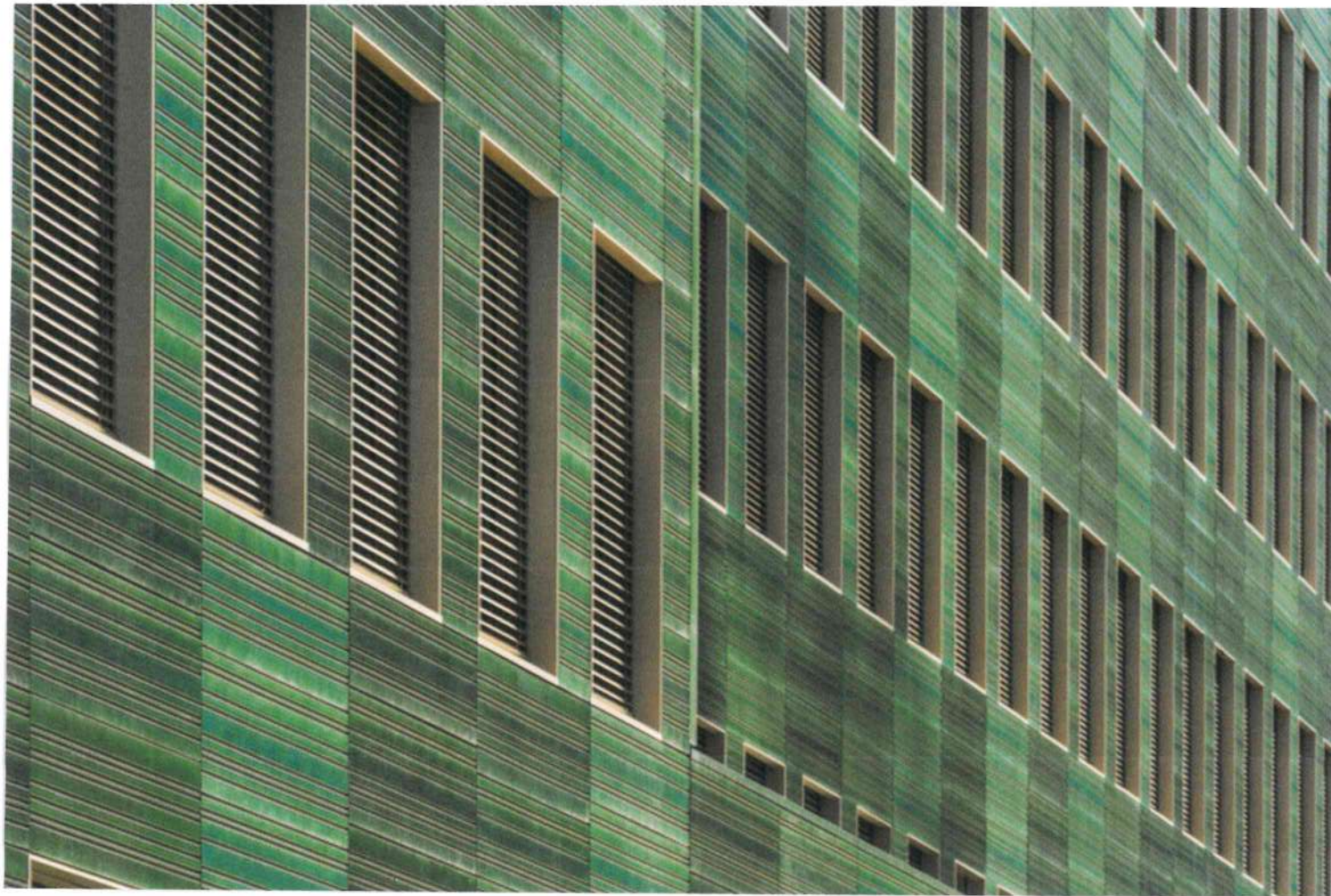


Perforated Aluminium



The QEH serves more than 330,000 people from across Norfolk, Cambridgeshire, and Lincolnshire

Cementitious board



Ceramic cladding



Glazed ceramics



Painted render



Timber vertical boarding

5.0 Design and Access Concepts

5.1 The design of the new facility has been considered in 8 ways:

- General siting
- Modern Methods of Construction
- Aspect Ratio
- Double corridors
- Plant compound
- Garden design
- Woodland walk
- Fenestration

5.2 General Siting

The design of the block is self-contained and does not rely on any facilities of the Main Hospital apart from linkages for power, water and heat, together with a corridor connection to allow bedded patients to be transferred.

Therefore, siting of the block is a function of the provision of good daylighting fire separation, appropriate distance from South Block and retention of existing car parking spaces.

5.3 The Governmental mandates the use of Modern Methods of Construction (MMC) for any new build NHS facility.

This technology allows for rapid, prefabrication of modules or wall, floor and roof elements in a remote factory.

These elements are brought to site by vehicles and assembled by crane over a relatively short construction programme.

The benefits are a high degree of control over quality of fit and finish and minimal disruption to nearby site uses.

5.4 Aspect Ratio/Double Corridors

The building is a deep plan, and this is often characteristic of NHS units. The critical element of this layout is a need for “clean” and “dirty” corridors which allow private access for clinicians whilst moving between treatment and service spaces.

5.5 Plant Compound

There is a significant volume of plant and machinery associated with modern healthcare units. This takes the form of Air Handling Units, calorifiers, transformers etc.

There are 3 possible positions to site these:

- Rooftop
- Within the volume
- Externally

The first two are more expensive and have acoustic and cost penalties associated with them.

The external plant compound is cost effective and allows for considerable later flexibility.

The external compound will have a weather sheet roof to avoid maintenance difficulties in adverse weather conditions.

5.6 Garden Design/Woodland Walk

The large courtyard to the North of the Proposal Site is steeply banked and somewhat overshadowed. Nevertheless, it forms an important “green lung” for staff, patients, and visitors, particularly bearing in mind the built up nature of the large South Block car park and the surrounding public highways.

Our design seeks to thread a new ‘woodland walk’ through the open land by means of a

5.0 Design and Access Concepts

timber boardwalk on piles. This boardwalk is widened in places to allow for bicycle storage and seating places.

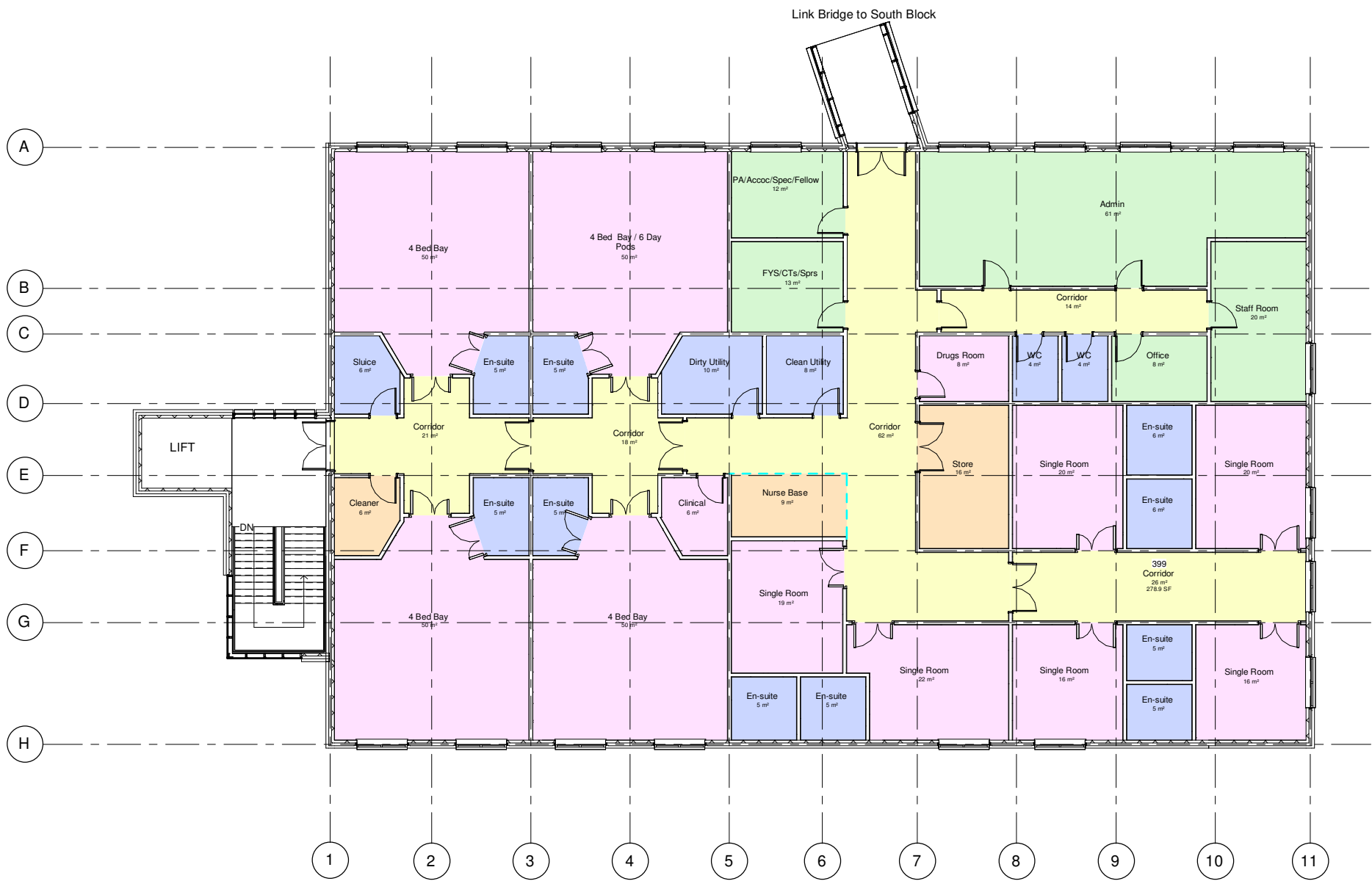
The soft landscaping is to be a completely new scheme in keeping with its orientation and designed to maximise biodiversity and staff and patient enjoyment.

5.7 Fenestration

The windows generally are modern double and triple glazed elements with brise soleil shading elements.

We have developed a 'grouped' aesthetic to the pairs of windows in order to give the building a more substantial appearance and to provide a 3 dimensional quality.

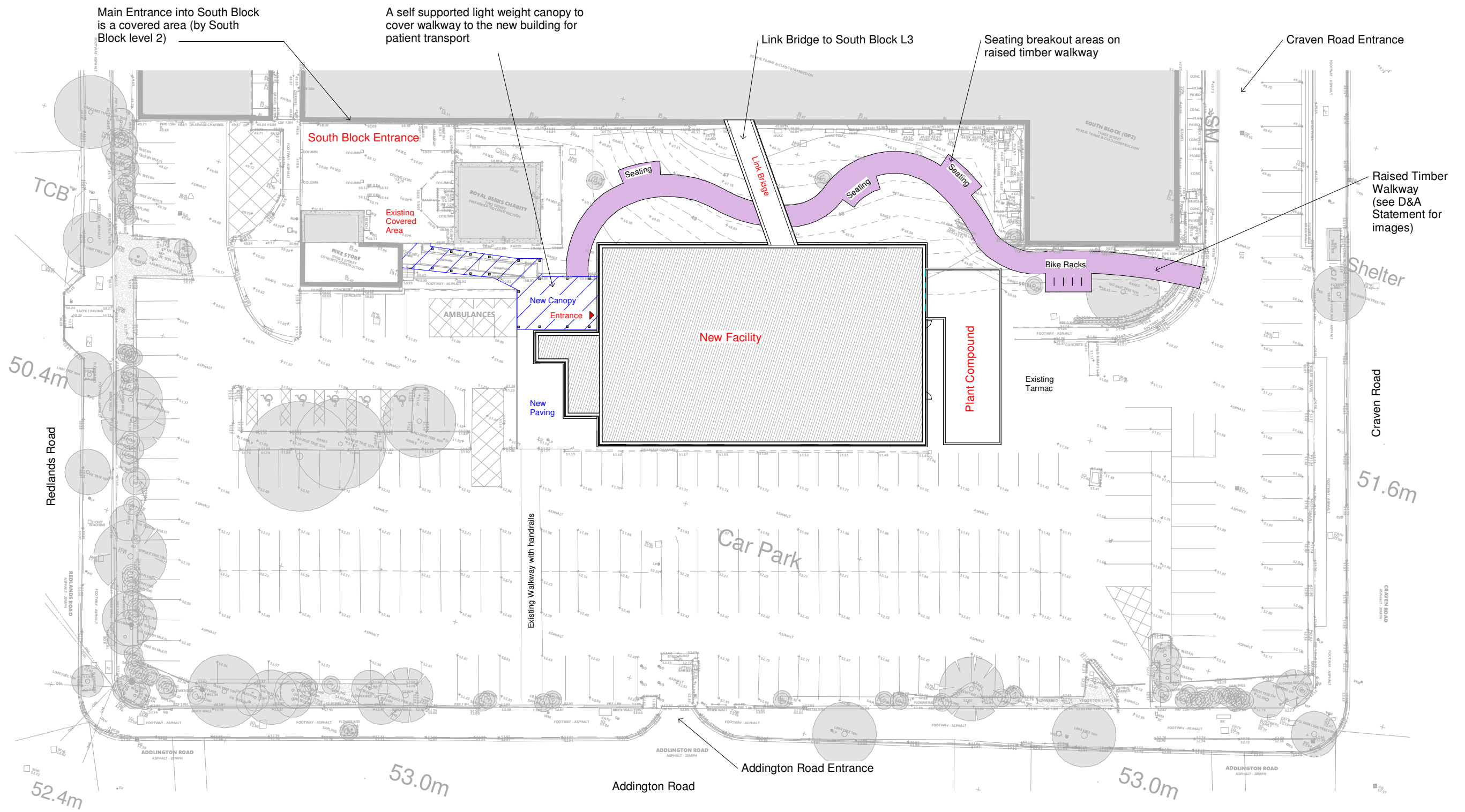




By Department Legend

- Admin
- Circulation
- Clinical
- Support Spaces
- Wet & Utility Areas

1 Level 03 - First Floor
1 : 100





3D view from South Block Car Park



3D view