

# 05 Standards & Systems

As will all new projects, there is a range of design guidance material and regulations which must be adhered or considered throughout the design process. In addition to local policy requirements, planning design guidance and building control guidance, there is also a range of NHS design guidance which must be considered for projects. The design guidance which has been relevant to Llantrisant Health Park has been outlined below.

## 5.1 Clinical Design Standards

### WHTM/WHBN Standards

CDH: Diagnostics - **HBN 6** Designing Facilities for Diagnostic Imaging

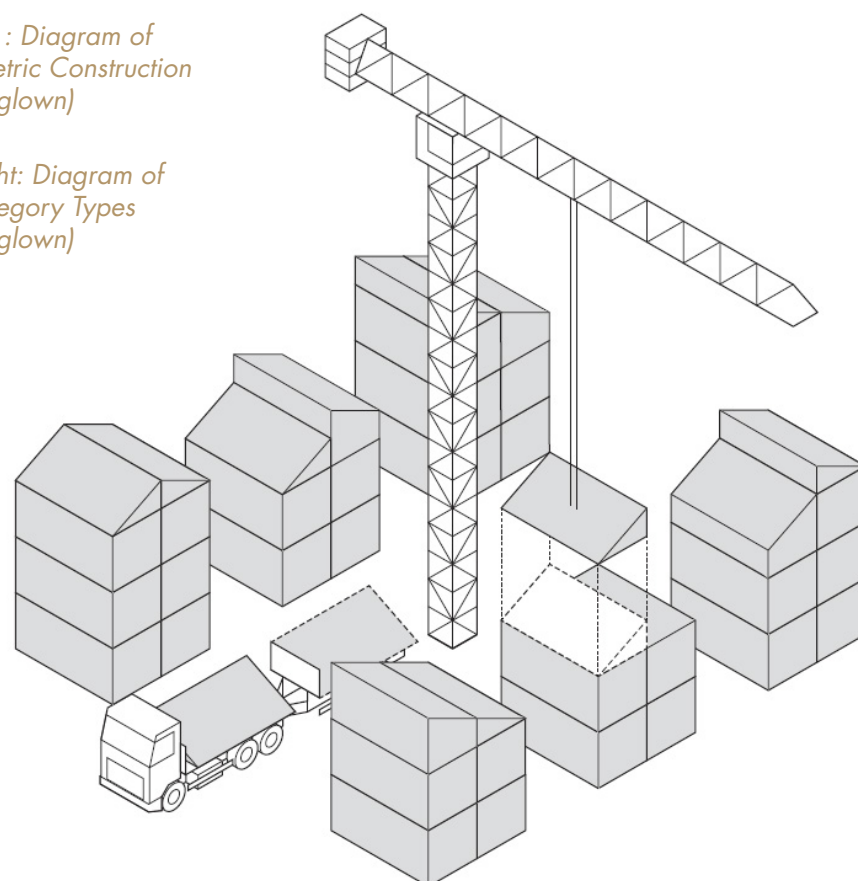
CDH: Endoscopy - **HBN 52** Vol 2  
Accommodation for Day Care: Endoscopy Unit (additionally JAG and International Health Facility Guidelines (IHFG))

Surgical Hub: Day Surgery - **HBN 10-02** Day Surgery Facilities

Surgical Hub: Arthroplasty Surgery - **HBN 26**  
Facilities for Surgical Procedures

*Below Left : Diagram of  
3D Volumetric Construction  
(Stride Treglown)*

*Below Right: Diagram of  
MMC Category Types  
(Stride Treglown)*



Recovery Ward: First Floor - **WHBN 04-01**  
Adult In-patient Facilities

Recovery Ward: Ground Floor - **WHBN 04-01**  
Adult In-patient Facilities

**WHBN 00-01** General Design Guidance for  
Healthcare Buildings

**WHBN 00-02** Sanitary Spaces

**WHBN 00-03** Clinical and Clinical Support  
Spaces

**WHBN 00-04** Circulation and  
Communication Spaces

**WHBN 00-09** Infection Control in the Built  
Environment

**WHBN 00-10** Flooring, wall and ceiling,  
sanitary assemblies, window and associated  
hardware

**WHBN 14-01** Pharmacy and  
Radiopharmacy Facilities

**WHBN 14-02** Medicines Storage

## 5.2 Non-Clinical Design Standards

### Planning Guidance

- National Planning Policy Wales guidance, including Technical Advice notes (TANs) as applicable.
- Consideration of Future Wales: The National Plan 2040 (South East region) as applicable.
- Rhondda Cynon Taf Local Development Plan 2006-2021 (LDP).
- Design and Placemaking, Nature Conservation and Environmental Impact, Planning & Placemaking best practice guidance.

### Building Regulations

The design will comply with all current building regulations. An Approved Inspector will be appointed at RIBA 4 for the project.

### Fire Compliance

The fire strategy has been developed for the project and will continue to progress with the contractor fire engineers and NWSSP.

### Secured by Design

The design will follow the principles of Secured by Design where possible. This assessment has informed the developing site-wide security and access strategy for the project.

### NHS Net Zero Building Standard & BREEAM

Refer to Section 06.

### Accessibility & Inclusivity

The building will be fully accessible to all in accordance with Approved Document M of the building regulations as an absolute minimum. Door thresholds will be level throughout the scheme. The quality of patient access in and around the buildings is paramount, with accessibility/visual wayfinding/environment playing a significant part of the interior design principles for the site.

## 5.3 NHS MMC & Government MMC Framework

### MMC NHS Toolkit

MMC has formed an integral part of the design concept since RIBA Stage 1. Design has developed in a way which considers the types of MMC available within the market and what categories may be most appropriate for this project.

The NHS MMC Assessment Toolkit is aligned to the Government MMC framework and compliments the NHS Net Zero Carbon Building Standard tool to help outline and steer Health Boards in their approach to MMC and potential NZC benefits. It is aimed to support projects in the development of MMC potential.

As part of the Llantrisant Health Park scheme, Mott MacDonald were appointed to undertake the MMC toolkit throughout early design stages, evaluating the suitability of Llantrisant Health Park's evolving design for different MMC category types. There are 7 category types for MMC which are outlined as below, each offering a range of benefits which could directly relate to project types.

As clinically standard spaces are typically so regular in their size and arrangement, the Llantrisant Health Park project has developed a Category 1 MMC focus. Category 1 utilises 3D volumetric principles, where off-site manufacture can be used to complete sections of the building in an environmentally-controlled space. These completed sections are then delivered to site and installed to form a partially-complete building, bringing benefits in terms of quality-control, programme-control and enhanced pre-manufactured value (PMV).

The irregular shape of the site, aim to reuse the existing building footprint, and the need to maximise efficiency has meant that irregular shaped buildings have been generated to follow the site boundary; this is particularly prevalent for the CDH which is constrained at the northern end of the site. Further information on this approach and how it has informed the developing design can be found in Section 7 of this Design & Access Statement.

Building standardisation extends into the facade and materials optioneering through throughout the design process. Efforts have been made to ensure a core material palette is utilised and that a repeating facade system can be implemented across each building. Repeating, standard facade modules will enhance the potential for off-site manufacture and quicker installation, whilst remaining cognisant of building quality and appearance in addition to placemaking principles.

An ongoing project challenge has been floor to floor heights, ensuring the proposed building service void can accommodate a standardised MEP design and distribution, which aligns with Government New Hospital Programme (NHP) principles. The design has evolved to mitigate some of these NHP principles, ensuring that the building does not become unreasonably tall in scale for the site and locality, but still delivers clinically and achieves the plant and services regime needed.

In addition to Government guidance, an MMC approach to this project also aligns with the NHS Wales Strategic Decarbonisation Plan 2021, where maximising MMC potential and off-site PMV contributes towards the NHS Net Zero Building Standard goals - refer to Section 6 for further sustainability information.

3D Volumetric	2D Panellised	Manufactured Components	Additive Manufacturing	Pods Pre-Manufacture	Productivity Improvement	Site Process Improvement
1 	2 	3 	4 	5 	6 	7 
Off-site and near site pre-manufacturing					Site based process improvement	

# 06 Sustainability

NHS Wales is clear in its ambition to create **whole life net zero carbon facilities** within its estate, considering both embodied and operational carbon. There are a range of other sustainability considerations which apply in Wales, in particular for public health projects.

## 6.1 NHS Net Zero Building Standard 2023

The **NHS England Net Zero Building Standard** has applied in England since early 2023 and focuses on three key objectives:

- Define the performance standards for operational energy and embodied carbon.
- Set targets for operational energy and embodied carbon.
- Establish a process for collecting data for those elements which are not currently collected. Thus, allowing the NHS to contribute to the creation of new industry benchmarks whilst ensuring the NZBS is routinely improved over time.

To meet the Welsh Government legislation around Net Zero Carbon, NHS Wales have committed to adopting the NHS England Net Zero Building Standard on significant projects going forward - this will allow projects to be assessed against an accredited 'net zero framework' and ensure benchmarking and compliance. Llantrisant Health Park has adopted this strategy and will continue to be assessed against these targets through to completion.

## 6.2 NHS Wales Decarbonisation Strategic Delivery Plan 2021-2030

The **NHS Wales Decarbonisation Strategic Delivery Plan**, published in 2021, sets out the Welsh Government ambition for carbon emissions reductions and environmental impact of healthcare services in Wales. The plan covers a range of physical, operational and infrastructure targets, the key for LHP being the fundamental integration of climate considerations within the project; its design, delivery and operation to enhance public health outcomes.

## 6.3 Well-being of Future Generations (Wales) Act 2015

Additionally, in terms of Welsh guidance, constructing responsible, sustainable, resilient and energy efficient buildings, for future generations and custodians, aligns with the Wellbeing of Future Generations Act 2015. The Act drives big-picture thinking to minimise global impact and drive considered design for positive long-term solutions.



Above: Diagram of Well-being of Future Generations Act 'Well-being Goals' (Welsh Government)

The overarching principles of the Act marry well with the NHS England and NHS Wales guidance available and combined, they have driven the following design quality ambitions for LHP:

- Lower-embodied carbon solutions and design, enabling improved lower-operational carbon solutions
- Consider reuse as a first principle for all aspects of the site and retain what is practically possible to retain
- Flexible and adaptable design to support changeable clinical services and ensure longevity and future-proofing
- Quality spaces for patients to enhance well-being and facilitate positive patient outcomes

- Quality spaces for staff to ensure that they have access to well-designed break-out/rest areas and access to nature
- Provide quality outdoor spaces on the site for patients, staff and visitors to enjoy, gain access to natural environments
- Views out to landscape to utilise nature as a healing tool
- Create a building which contributes positively to the local community and South-East Wales region, delivering a calm, safe and welcoming environment which does not negatively impact its surroundings

## 6.4 Early Project Considerations

Initially, the Llantrisant Health Park project aim was to **build less** and reuse the existing BAAE buildings which were inherited on the site. Design work was undertaken in early RIBA 2, where a building suitability 'gateway' assessment was undertaken to ascertain if the building was adequate for the brief outlined.

Unfortunately, for a variety of reasons, the existing building construction could not support the clinical environment required. This gateway report led to a decision and approval from WAG to demolish the existing buildings to provide a new and appropriate facility on the site. Demolition is currently in progress and buildings are being considerably dismantled, with elements reused, reprocessed wherever possible.

## 6.5 Application of the Standard:

The design team have, and will continue to evaluate, the following project aspects:

- Energy and Carbon performance; ensuring that operational carbon targets are met.
- Thermal modeling and operational energy simulation to ensure embodied carbon targets are being met.
- Whole Life Carbon assessments have been optioneered and refined to ensure embodied carbon targets are being met across the whole design team.

- Specification of lower-carbon and more sustainable materials where appropriate, with a design which considers circular economy principles.
- Consideration of MMC and off-site use.

At the conclusion of RIBA 3, it is expected that the NHS Net Zero Building Standard requirements are fully embedded into the project, ensuring detailed design and construction will meet the NHS Net Zero aspiration.

## 6.6 BREEAM

BREEAM is a compulsory requirement for projects of this scale in Wales, as such work towards BREEAM accreditation has been ongoing since RIBA Stage 1. The Design Stage Tracker set out the target ambition for the project to achieve **BREEAM 'Excellent'**.

## 6.7 Modern Methods of Construction (MMC)

MMC solutions can contribute significantly to sustainability through improved efficiency and reduced waste.

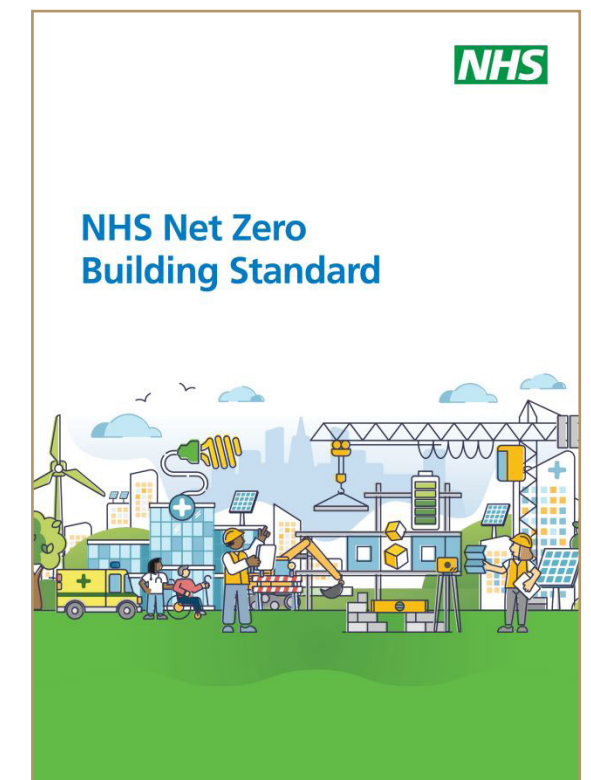
Buildings constructed using a Category 1 approach are within a factory-setting, where environment is controlled and waste can be minimised through factory processes and precision.

Construction is often quicker and lower-impact on the direct site environment, with components being delivered to site partially-complete and installed efficiently with less disruption to site ecosystems.

Additionally MMC facilitates dismantling and reuse of the building at a later date. Components can be removed and reused directly on other future projects, readily adapted and/or expanded for alternative uses on the same site, or have all componentry recycled and reused on other projects.



Above: NHS Wales Decarbonisation Strategic Delivery Plan (NWSSP)



Above: NHS Net Zero Building Standard Guidance (NHS England)



# 07 Design: Site Development

Early in the scheme it was agreed that the Diagnostic Hub would be located towards the north of the site, being closest to the existing mobile MRI pad and the site entrance, with an expected higher patient turnover. This allowed the Surgical Hub and associated recovery ward to sit further south on the site, where there was more scope to accommodate larger volumes of space and potentially facilitate expansion in the future.

Additionally, as previously noted, phasing is a requirement for the project. It was considered from this perspective that the CDH was best suited in closer proximity to the site entrance, preventing patients accessing through a construction site once opened.

The preservation of the future development zone, located south of the current proposed buildings, has been a key element of the project brief; being cognisant of designing efficiently and ensuring the building footprint was not

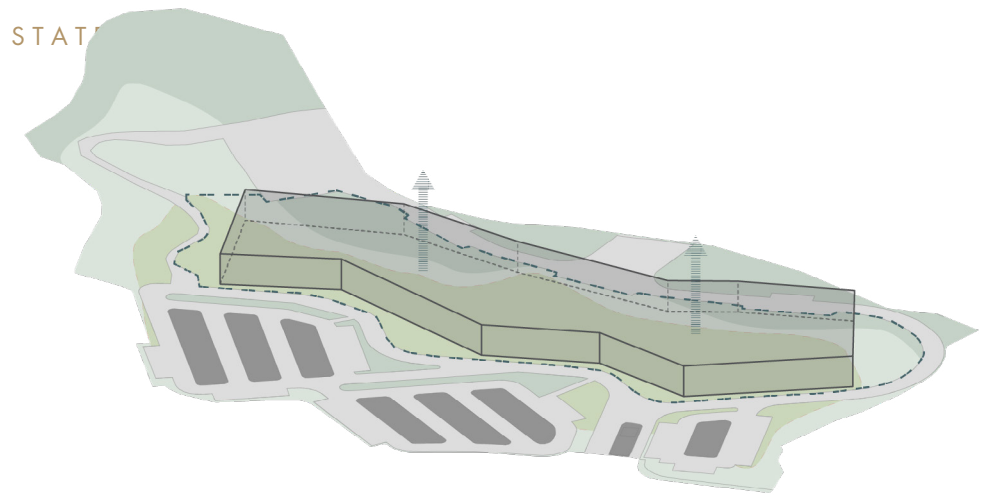
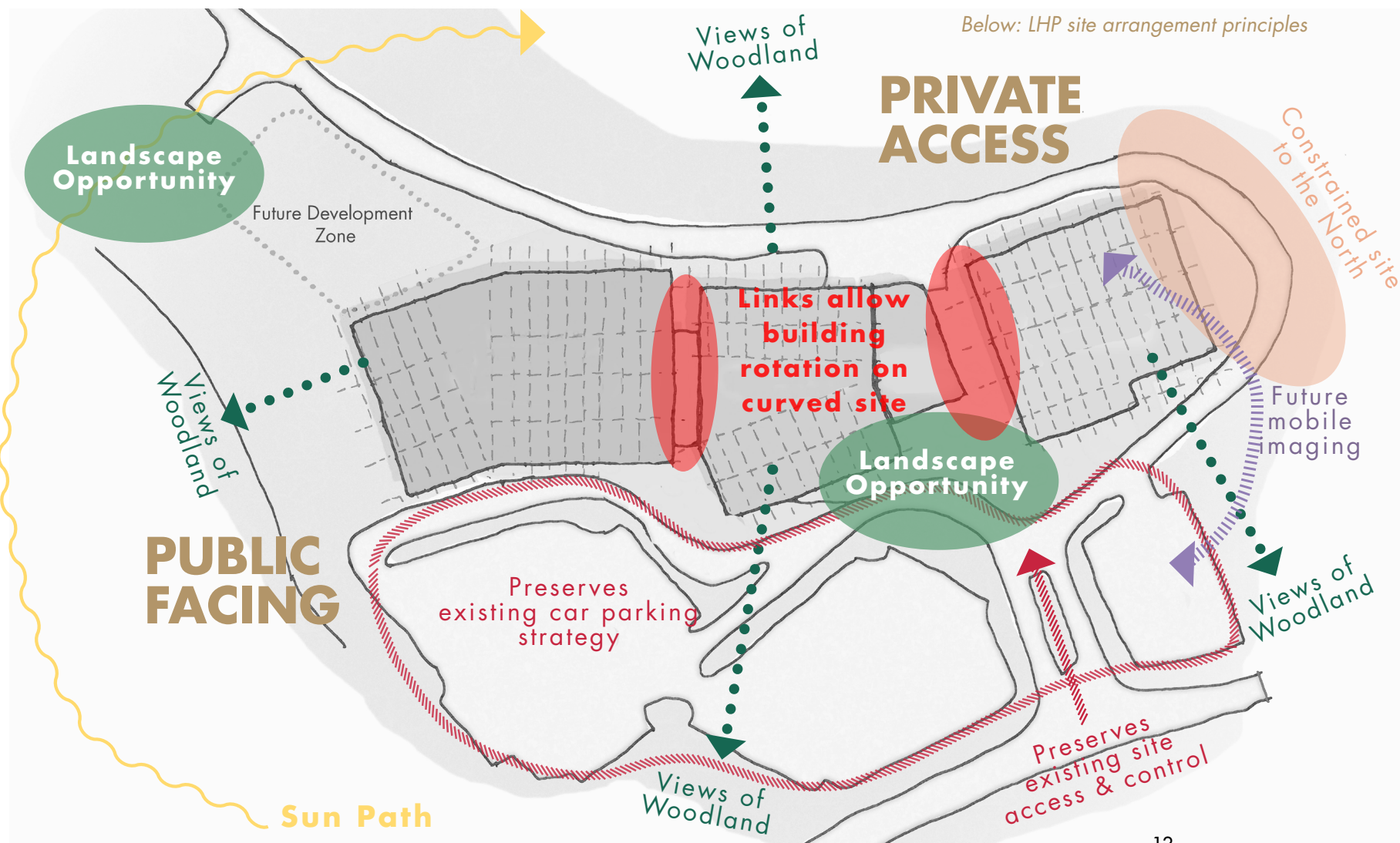
excessive to preserve that future development capability. We do not know the likely future use or development type, but it is anticipated that it will not link directly into the Surgical Hub. That said, there is scope to form a link bridge into the proposed Surgical Hub building at FF in the future if deemed necessary and there was a clinical benefit. Any proposals for this area will be subject to entirely separate future designs, planning applications and associated statutory requirements, i.e. SAB.

As the project brief was developed, it became clear that as this is an elective treatment and diagnostic facility, it should be more domestic and welcoming in scale and appearance, not appearing as a large acute hospital. Links between buildings are required for fire strategy reasons, but also for the accessibility of core services across departments. As such, we have explored various ways of managing the separation of public access between Hubs, to facilitate brief requirements, but still

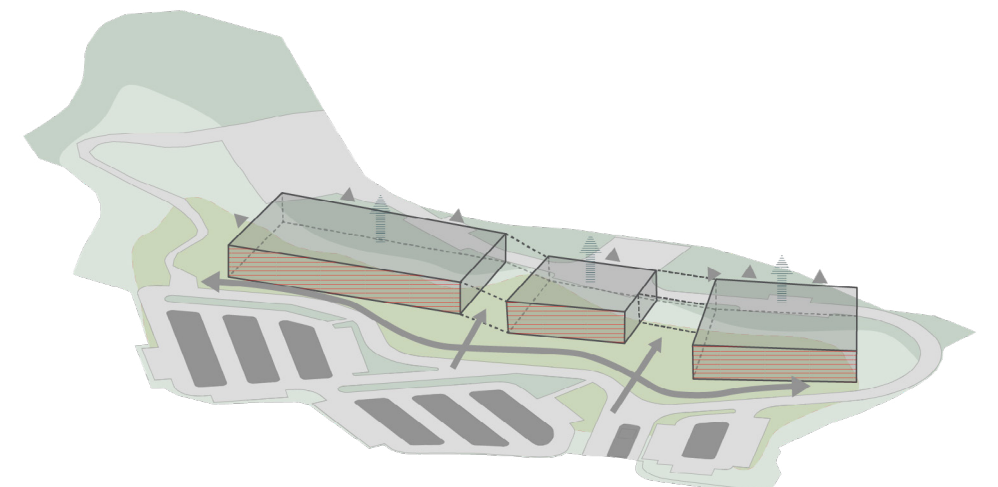
allow connectivity for facilities, for staff and to maintain some clinical resilience. The adjacent massing diagrams explore the balance between separating Hubs, yet maintaining connection through the site. The design has developed on the basis of Option 3, considering MMC potential throughout.

All buildings have requirements for enclosed plant over the clinical accommodation, this is due to the intensity of the clinical services being provided on the site, additionally the need to enclose for WHBN/WHTM.

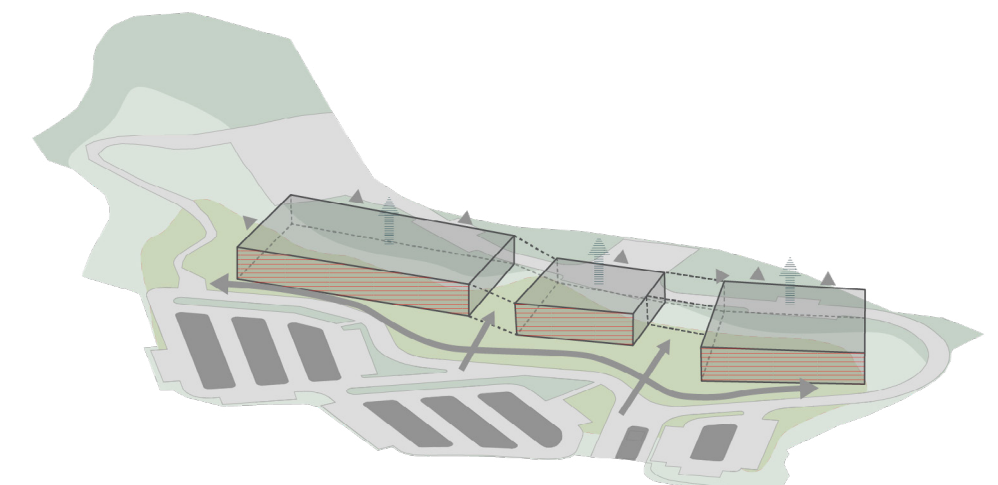
The simple form factor and building orientation also contribute to a reduced energy demand in the building through passive design. The building form is largely orientated North-South across its length, with East-West aspect for windows across all buildings. The orientation reduces impact from prevailing South-Westerly winds, creating a protected and cocooning area to the front of the buildings and at entrances.



**Above: Option 1** 'Hospital-style' massing where the site comprises one large building. This gives the feeling of an acute site and does not facilitate the easy development and construction of a potentially separately phased CDH.



**Above: Option 2** 'Health park-style' massing where the site comprises separated smaller buildings. This works for the Diagnostics Hub, however a closer link between theatres and the supporting recovery ward is required to ensure efficient clinical flows.



**Above: Option 3** Variation on the 'health park-style' massing. Links offer staff or controlled patient movement around the buildings - there is no public access between buildings. This allows for critical theatres and recovery access, but maintains separation of departments and phasing if needed.

# 07 Design: Site Strategies

A range of site strategies and requirements have been defined as part of the project brief development and the site strategy development. In some areas strategies have developed hand in hand with the design to ensure that the site infrastructure meets the operational requirements. Alternatively, some operational elements have been driven by the existing site aspects and the principle of retaining the existing infrastructure as far as is practical.

The key site-wide principles, both in terms of patient accessibility, staff accessibility, and operational management are outlined as follows:

## 7.1 Patient Drop-Off & Accessibility

2No. drop off areas are being provided as part of the road infrastructure alterations, one conveniently located for the CDH and one for the Surgical Hub. Both are sized to allow for multiple cars dropping off concurrently, with level access into the buildings from these locations. It is hoped that Surgical Hub Arthroplasty patients will typically be dropped off for their surgeries, rather than parking on the site, as they will likely stay overnight. Day Surgery patients should also be dropped off for their surgeries with pre-operation consultation and assessment taking place elsewhere in advance.

## 7.2 Car Parking

Based on the transport scoping report, in retaining the existing car parking areas, there is an adequate number of parking spaces for reuse. Adaptions will be needed to the existing parking areas to form appropriate disabled parking bays. An allowance has been made within the project cost plan to cover any upgrades to the existing car parking infrastructure, such as new white lining and external lighting and accessibility upgrades, new wayfinding etc.

Staff parking will be on a permit basis to ensure that it remains as LHP use, with additional staff parking available at RGH.

## 7.3 Pedestrian Access on Site

A new landscaped area will be provided between the two hubs. It is not anticipated that patients will need to move between Hubs, however the landscaping area will feature street furniture/seating and provide access to a small cafe/coffee shop space.

Patient access to the Hubs will be from a designated car park, via stepped or ramped access, to a walkway which will lead them into the Hub required. Directional wayfinding will be in place to aid this journey and patients will be briefed on how to arrive as part of their pre-operation assessment and booking letter.

Staff access for the CDH will be via the main CDH entrance and into respective departments and Surgical Recovery staff will access via the Surgical Hub entrance. Theatres staff will have a dedicated entrance which takes them directly into staff change areas immediately serving theatres.

## 7.4 Cycle Storage

Based on the transport scoping report, an adequate number of cycle parking spaces will be provided at the site. This has been separated into two separate storage areas to allow for bicycles to be secured close to the building that staff/visitors are accessing.

Internally, for staff only, appropriate changing and showering facilities are provided in each building with associated cycle drying rooms for wet clothing.

## 7.5 Emergency & Delivery Access

Each building will benefit from a dedicated emergency bay to the rear of the building. These will be ring fenced for ambulance only access, ensuring that they will be clear for use in any eventuality. Locating ambulance bays at the rear of the site, with discreet internal access routes out to them, will facilitate dignified transfer of any patients to an appropriate acute hospital site. The nearest A&E facility is RGH.

Dedicated delivery bays to the rear of the site serve each Hub respectively.

## 7.6 Gatehouse Infrastructure

The existing site gatehouse would have required extensive refurbishment or replacement, and the existing siting of the gatehouse creates some issues for large vehicle tracking in and out of the site. It is proposed that the gatehouse is removed and replaced sat slightly closer to the boundary line and entrance gates. This would offer good observation of approaching vehicles and an opportunity for facilities to control the parking/any delivery vehicles moving onto the site. The new provision will mean that there is scope to base site security in the gatehouse out of hours and that the building position will have public highways frontage, allowing for installation of directional signage to aid wayfinding.

A new ground recessed bollard system will be provided to control public/private vehicle access around the site, ensuring that no rear service areas can be reached without security knowledge. It is envisages that delivery/maintenance access to the rear of the site will either be manually controlled from the gatehouse, or via a fob/key pad system.

## 7.7 Future Mobile Imaging

An existing mobile MRI pad, sized to support a mobile PET-CT scanner, is already provided within Car Park A. It is expected that this will be retained, however a second pad may be provided to the rear of the CDH. Spatially this has been protected on the site in case of future need and the proposed location would enable patients to be seen through the main diagnostics department (shown in green to the rear of zone 1).

## 7.8 Future Development Area

Throughout the project, efforts have been made to balance the significant SOA with the requirement to retain the plateau earmarked for future development. The preserved space can be seen in a large green hatch to the south of the site. Any development would be separate to this application, requiring separate associated infrastructure and would require determination for approval on its own merit.

