JERSEY FUTURE HOSPITAL

CO025 – PROOF OF CONCEPT

SITE OPTION ADDENDUM

APPENDIX 6 TECHNICAL SITE APPRAISAL

QUALITY ASSURANCE

Sign off: Peter Thomas

Position: Project Manager

August 2016

JERSEY FUTURE HOSPITAL

CO025 – PROOF OF CONCEPT

SITE OPTION ADDENDUM

APPENDIX 6 TECHNICAL SITE APPRAISAL

Civils and Structures

QUALITY ASSURANCE

Sign off: Peter Thomas

Position: Project Manager

August 2016

Subject	Jersey Future Hospital – CO025 TN-GEO/CIV/STR-CO025-001 Technical Note – New Build and Construction Stage Structural Considerations Final Preliminary Issue – P2
Date	31 August 2016
Job No/Ref	237035

1 Introduction

This Technical Note has been prepared to document the findings associated with civil, structural and related geotechnical input to support the preparation of the Proof of Concept that forms Change Request Nr. 25 as part of the Jersey Future Hospital Scheme.

This note covers the construction stage and new build proposals for the Jersey Hospital site and adjacent land to be acquired to the North West.

In general, the focus of this section of the report has been to look at the key structural and related geotechnical issues that are relevant to the site selection process and has not focussed on or developed any specific structural designs for the above ground structures at this stage. Either steelwork or concrete frames may be suitable once design stages are commenced, but for the purposes of this note, it is assumed a concrete frame will be used.

Detailed ground investigations and full review of available information will be required to inform appropriate detailed design stratigraphy and parameters for the proposed developments.

2 Commentary

The current design strategy provides a 100% new build structure that varies in height between seven and eight storeys. The design intent is to provide a services support building in the North West of the site linking into the main hospital building running North to South on the main axis of the site currently occupied by the Gwyneth Huelin Block and Peter Crill House.

The two new buildings would be linked at upper levels and have a common basement. The extent of the basement is still to be defined precisely, but it is likely to contain a hospital street, lift and stair cores and plant spaces to allow logistical and MEP services supply to the building above. It is understood that the edges/walls of the new basement will be located a minimum of 5m from the surrounding roads, site perimeter and existing buildings.

This solution would also see new pedestrian links at high level from the new building to the adjacent Patriotic Street Multi Storey Car Park (MSCP) and to the Granite Block.

From review of the existing ground condition information, it will be necessary to provide piled foundations and potentially a suspended ground floor slab. Ground gas protection measures are likely to be required as per regulator's requirements.

The geotechnical aspects of the site of relevance to the structural works and foundations are as follows.

2.1.1 Available ground investigation information

2.1.1.1 Stratigraphy

Historically, ground investigations were undertaken in 1973 (BH1, BH2 and BH3), 1979 (BH1, BH2 and BH3) and 2014 (BH1). Logs are available for 7 No. boreholes and have been reviewed.

The assumed stratigraphy is provided in Table 3 below:

Table 3: Assume stratigraphy for initial foundation assessment

Depth (elevation)	Geology	Summary of log description
GL (13mOD) to 1.5m (11.5mOD)	Made ground	Made ground – gravelly sand
1.5 (11.5mOD) to 4m (9mOD)	Blown Sand	Fine and medium silty sand.
4m (9mOD) to 10m (3mOD)	Alluvium	Sands and gravels, with laminated silt. Published geology indicates potential to encounter peat layers.
10m (3mOD) to 18m (-5mOD)	**North-west corner of site**: Weathered John's Road Andesite Formation	Andesite
	South & south-east part of the site: Weathered Jersey Shale Formation	Mudstone, siltstone, grit

2.1.1.2 Groundwater

Groundwater strikes were typically encountered at 4mbgl, with little or no rise, with the exception of BH1_2014 where groundwater was stuck at 4mbgl and rose to surface.

Consequently, for this initial foundation assessment groundwater is assumed at ground level.

2.1.2 Ground Gas

Provision of Radon protective measures is likely to be required for the new. Radon protective measures may comprise gas tight membrane below all slabs and sealing of incoming services. A cost allowance should be made for gas protective measures including ground sumps. Regulatory requirements are to be confirmed.

Considering the nature of the ground, land use and the proposed foundations solution, that the following will be required by the regulatory authorities: Foundation works risk assessment, Ground gas assessment, Soil risk assessment and Groundwater risk assessment.

The above assessments may be imposed on the development and included within planning conditions, in relation to contaminated ground.

2.1.2.1 Soil Parameters

The soils parameters are based on limited ground investigation, (assumed to be predominantly granular) and derived using guidance from BS8002:1994. The assumed soil parameters for this assessment are provided in Table 4 below.

Table 4: Assumed soil parameters

Stratigraphy	**Design parameters**
Made ground	$\Phi = 35°$ $\gamma = 18$ kN/m^2 C' = 0
Blown Sand	$\Phi = 35°$ $\gamma = 18$ kN/m^2 C' = 0
Alluvium	$\Phi = 35°$ $\gamma = 19$ kN/m^2 C' = 0
North-west corner of site: Weathered John's Road Andesite Formation	$\Phi = 35°$ $\gamma = 22$ kN/m^2 C' = 5 kPa
South & south-east part of the site: Weathered Jersey Shale Formation	

2.1.3 Structural assumptions & assessment

We have made an assessment of the likely structural loadings on the site. We have based them on a concrete framed, flat slab structure which is typical for modern healthcare facilities and a typical grid of 7.5 x 7.5m. This gives likely floor loadings of:

- 10kN/m^2 dead load
- 5kN/m^2 imposed load

This leads to typical column working loads of up to approximately 7,500kN.

Based on the available geotechnical information, and assuming a 750mm diameter CFA pile, a typical column is likely to be supported on 4 pile groups of around 18-20m in depth with a 7-9m deep rock socket. This suggests that there will be approximately 1 pile per 10-15m^2.

Given the proposed architectural layout and potential construction phasing, it is likely that the structure will be split into two or three independent blocks with movement joints between each block. Where structures are adjacent to existing buildings, care will need to be taken to avoid damage or affecting their stability during the works.

In the area of the proposed services building, an allowance should be made for potential transfer structures above the service yard area that is located underneath the proposed building.

Also in this area, the interface of the new site and adjacent MSCP and the existing wall/props linking to the MSCP will need to be further investigated and a sum of money allowed for potential works in this area.

It is known that some of the existing buildings on the site are piled and as such these will present a constraint to the foundation design of the new buildings such that new piles may not be able to be placed in the most advantageous positions with a subsequent requirement for a more complex substructure. There is the potential to consider re-use of the existing piles, but this would require detailed investigations after demolition of the buildings. Given the programme requirements, it may not be possible to assess this and incorporate into the new build design in any case.

The extent and depth of the new basement is still to be confirmed. However, it is assumed that an excavation of between 5-6m will be required typically where basement is required with lift pits locally around 1.5m-2m deeper. It is recommended that the basement retaining wall be kept a minimum of 5m away from existing site perimeter and structures, and ideally as far from the site perimeter as practical. This will minimise the risk of undermining or the effects on existing structures/highway.

It should be noted, however, that given the ground conditions, excavation, even in an open cut, could potentially be difficult due to the presence of running sands and shallow groundwater that may be confined and under pressure. These conditions would increase the need for enhanced temporary works and dewatering during construction and should be noted as a site abnormal. It may also be necessary to install movement monitoring on surrounding buildings and highway during the basement excavation and construction.

The opportunity to re-use demolition materials as fill on the site could be investigated further presuming a suitable location for crushing/stockpiling is identified.

The potential for Radon gas should be addressed by allowing for the following which is based on UK guidance for full Radon protection measures:

1. Radon membrane below all ground slabs (basement tanking should provide protection in any case)
2. Sealing of incoming services for gas penetration
3. Provision of sumps at rate of one per 250m^2 on plan connected by a network of 150mm dia pipes to perimeter of building (to provide an option for future active gas removal fans to be installed if necessary in the future)

2.1.4 Civil Engineering

The existing site drainage systems around the site are as shown in the following diagram.

There is little or no information available for the drainage on the site itself except to the rear of the Granite Block. There is no information about the condition of the existing drainage at this stage and a full CCTV survey should be undertaken in the next stage of design.

No review of the drainage capacity has been undertaken at this stage, however, it is expected that the foul flow from the new building should be broadly commensurate with that arising from the existing buildings and that it will take up that existing foul capacity on the network (assuming the existing estate is not used after opening except for the Granite block). Given the presence of the new basement it is possible that some foul drainage may need to pumped before gravity discharge to sewer.

It is possible attenuation may be required for storm flows, although this will require discussion with Department for Infrastructure (DfI) in the next stage of design.

The key issue will be the potential need to separate the existing combined sewer flows into separate storm and foul flows. This is likely to require new drains in the surrounding roads – this will require detailed review and discussion with DfI.

New roads will be required to be constructed which should be assume to be engineered to adoptable standards. Whether these roads are adopted will require further discussion in the next stage of design.

3 Risks/Opportunities

The key risks and opportunities are as follows:

3.1 Existing general hospital site

The key risks are:

- Ground contamination – no data available, but a risk remains given previous uses
- Radon Gas – protection measure are likely to be required.
- Lack of detailed ground investigation leading to longer/larger pile size and/or greater numbers
- Relatively shallow groundwater under pressure and potential for running sands affecting excavations and pile methods.
- Existing basement providing a constraint to new building and demolition.
- Existing piled foundations providing a constraint to new substructure design
- Work adjacent to existing buildings, highways and on a live hospital site.
- New basement extent and interface with existing site perimeter and structures and any necessary temporary works.
- Potential strengthening of MSCP required to receive new pedestrian link.
- Potential for additional temporary works adjacent to Granite Block to resolve basement changes.
- Given the location of the works, it is likely that strict working hours and/or noise limits may be set by the local authority which may impact on programme/costs of the new build.
- Acoustic and vibration issues from demolition and construction stages impacting on existing operational hospital.
- Potential temporary fresh air ventilation to areas which currently have natural ventilation mitigation methods to existing areas during demolition stage. Temporary cooling requirements may be required.
- Airborne dust – aperigillus considerations
- Potential privacy issues during construction stage. Privacy screening may need consideration.

The key opportunities are:

- Potential for re-use of piles at the existing general hospital subject to detailed investigations
- Potential for re-use of crushed and sorted demolition rubble for piling mat.

4 Derogations

It is assumed that HTM 08.01 will be applied to the structural design, in particular floor vibration limits, to suit the use of specific areas of the hospital which will influence the final slab thickness and method of construction.

There are no identified derogations at this time.

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SITE OPTION ADDENDUM

APPENDIX 6 TECHNICAL SITE APPRAISAL

Geotechnics

QUALITY ASSURANCE

Sign off: Peter Thomas

Position: Project Manager

August 2016

Subject	Jersey Future Hospital – CO025 TN-GEO-CO025-001 Technical Note –New Build Geotechnics Considerations Final Preliminary Issue – P1
Date	6 July 2016
Job No/Ref	237035

1 Introduction

This technical note has been prepared to support the preparation of the Proof of Concept Exercise that forms Change Request Nr. 25 as part of the Jersey Future Hospital Scheme.

The site options being reviewed are:

- Jersey General Hospital and acquisition of buildings to the north-west

The purpose of this Technical Note is to identify geotechnical risks and opportunities for the relevant aspects of the Change Order 25 proposals.

The site boundaries for Jersey General site are provided on Drawing SK-GEO-CO025-001.

This note has been prepared on the basis of a high level review of desk study information. A detailed desk study and full review of available information will be required.

2 Commentary

2.1 Jersey General Hospital

Background

- The General Hospital site is densely developed with existing buildings constructed at differing periods of time and are typically five storeys high. It is understood that the hospital buildings are piled, with the exception of the two Granite listed buildings comprising the 'Granite Block' and the 'Gatehouse', the foundations of which are unknown. The two listed buildings will remain. The hospital development is to extend to the north west of the existing hospital, to occupy an area currently occupied by the Riviera Hotel and Stafford Hotel. The existing building foundations of the hotels are currently unknown. The rear car park of the Riviera Hotel at the far western part of the site, adjacent to the existing Patriotic Street Multi Storey Car Park (MSCP), is accessed via a ramp down off Kensington Place, and situated at a lower elevation than Kensington Place. It is unknown whether the car park is open or in a basement. A structural link is proposed between the MSCP and the new hospital building. The hospital proposals are currently being developed at the time of writing.
- Historical ground investigations indicate made ground up to around 1.5m deep, Blown Sand (comprising fine and medium silty sand) up to 4m deep and Alluvium (comprising sand and gravel with laminated silt) up to 10m deep. The north-western of the site is underlain by John's Road Andesite Formation and the south-eastern part of the site is underlain by Jersey Shale Formation (comprising mudstone and siltstone). Groundwater strikes were typically be at 4mbgl, although one historic borehole struck groundwater at 4mbgl and rose to surface.
- Anecdotal evidence indicates during the construction of the existing basement to the north-west of the Granite Block there was a loss of material described as 'running sand' from the corner of the Granite Block resulting in movement and cracks forming in the Granite Block. The Granite Block was underpinned with concrete. No further details are currently available on these works.
- When the building proposal details are developed, detailed ground investigations including in situ and laboratory testing are required to fully assess the ground and groundwater conditions beneath the site to inform appropriate detailed design, including consideration of the following:
    - Foundation and sub-structure design options;
    - Design of buried building materials (concrete and steel);
    - Temporary works considerations (including assessment of contamination).

New foundations

- Acquisition of buildings to the north-west off Kensington Place and demolition to slab level is anticipated (as indicated on Drawing SK-GEO-CO25-001). A sequenced demolition of existing hospital buildings is proposed to allow for hospital services to continue. The

Granite Block will remain with a new connection in to the new hospital building. The design intent is to provide a services support building in the north west of the site linking into the main hospital building running north to south on the main axis of the site. The two new buildings would be linked at upper levels and have a common basement. The extent of the basement is still to be fully defined. It is understood that the edges of the new basement will be located a minimum of 5m from the surrounding roads, site perimeter and existing buildings. The new buildings are likely to require deep foundations, such as piles socketed into bedrock.

- Issues associated with piling are likely to include the following:
    - Selection of appropriate piling methods to control vibration and noise.
        - Potential issue for existing sensitive clinical services and equipment at the hospital (assuming a phased approach)
        - Potential impact on site neighbours, adjacent utilities, foundations, structures, basements and adjacent buildings, in particular the existing Granite Block (which has been underpinned at the north-western corner when the existing block was constructed).
    - Potential obstructions, which may require the pile layout to be designed around existing foundations that cannot be easily removed
- For new hospital building off Kensington Place consideration of the following:
    - Adequate foundations to support structural link between existing Multi Storey Car Park and new hospital building
    - Relationship of new basement construction and foundations and retaining walls of new and adjacent buildings.

Potential reuse of existing foundations

- Potential issues associated with reuse of existing piles include the following:
    - Assessment of the durability / residual design life of the old foundations may not support their re-use.
    - Piles may not have the load carrying capacity; albeit it may be possible to supplement with new piles.
    - Piles may be off-set from the new building column grid, and therefore more extensive sub-structure / pile caps may be needed to transfer the loads.
- Pile investigation works for potential reuse are likely to cause delays to the programme, and may not even prove that the piles can be reused.

Buried obstructions

- Buried obstructions are anticipated to exist which may present issues during demolition and construction; such as old foundations, utilities, tanks and storage facilities associated with hospital services and acquired buildings off Kensington Place.

Basements

- Potential expansion to existing basements is anticipated to comprise a complete dig out of existing basement at all faces, this should be carefully considered in the context of the following:
    - Impact of excavations on adjacent buildings and services in terms of stability and movements;
    - Requirements for groundwater control measure during excavation and post-construction impact on groundwater regime.
    - The temporary and permanent works proposals, including construction sequencing will need careful consideration.
- Construction sequencing for any expansion of existing basements will require careful consideration, including the underpinned Granite Block and potential for 'running sand' and potential associated instability of the Granite Block. The relationship between the new basement and building construction, existing basement and Granite Block requires careful consideration.

Ground gas

- Provision of Radon protective measures are likely to be required for the new build and also for the temporary clinic block in the south-west of the site. Radon protective measures may comprise gas tight membrane below all slabs and sealing of incoming services. An allowance should be made for ground sumps.

Groundwater control measures

- Groundwater conditions are currently unknown, however previous desk study indicates groundwater may typically be at 4mbgl, although one historic borehole struck groundwater at 4mbgl and rose to surface. Ground investigation is required to provide information on the groundwater conditions in order to develop appropriate groundwater control methods, if necessary.
- Determination of appropriate groundwater control measures such as pumping or cut off wall will depend upon factors such as groundwater flow rates, building proposals, basement design expectation, construction programme, consideration of potential impacts on adjacent buildings and basements and working space available.

Ground contamination potential

- When the proposed development details are confirmed, further desk study and development of a conceptual site model will be required to inform the design of a targeted ground investigation. Subsequent to this it will be possible to identify constraints related to ground conditions and potential ground contamination. Depending on the level of contamination

encountered detailed risk assessments may be required, which will be subject to regulatory approval, to confirm suitable assessment of risks to the proposed development and the requirement for any remediation.

- It is likely, considering the nature of the ground, land use and the proposed foundations solution, that the following will be required by the regulatory authorities:
    - Foundation works risk assessment
    - Ground gas assessment
    - Soil risk assessment
    - Groundwater risk assessment
- Consideration of planning conditions, in relation to contaminated ground, that may be imposed on the development should also be taken in to account.
- Soil arisings may be generated from piling, excavations for new basement construction, foundation excavations, utility trenches, and other excavations on the site. It is unlikely that made ground could be reused as selected fill, however there is a potential that natural ground may be suitable for reuse, subject to appropriate testing and compliance with the regulators. Made ground materials may be acceptable for re use in areas of open landscaping, however this will need to be confirmed by appropriate risk assessments. There is a requirement for targeted ground investigation to determine the nature and composition of the ground to be excavated. It is anticipated the States of Jersey (SoJ) will require a material management plan for such materials, such as potential for re-use (such as piling matt), off-site disposal to landfill, remediation and / or treatment.

2.2 Risks/Opportunities

The key risks and opportunities are as follows:

- Radon Gas – protection measure are likely to be required.
- Ground contamination – no data available, but a risk remains given previous uses
- Lack of detailed ground investigation leading to longer/larger pile size and/or greater numbers
- Relatively shallow groundwater under pressure and potential for running sands affecting excavations and pile methods.
- Existing basement providing a constraint to new building and demolition.
- Existing piled foundations providing a constraint to new substructure design and basement expansion.
- Work adjacent to existing buildings, highways and on a live hospital site.
- New basement extent and interface with existing site perimeter and structures and any necessary temporary works.
- Potential strengthening of MSCP required to receive new pedestrian link.
- Potential for additional temporary works adjacent to Granite Block to resolve basement changes.
- Potential requirement for Radon gas protective measures.

The key opportunities are:

- Potential for re-use of piles at the existing general hospital subject to detailed investigations
- Potential for re-use of crushed and sorted demolition rubble for piling mat.

DOCUMENT CHECKING

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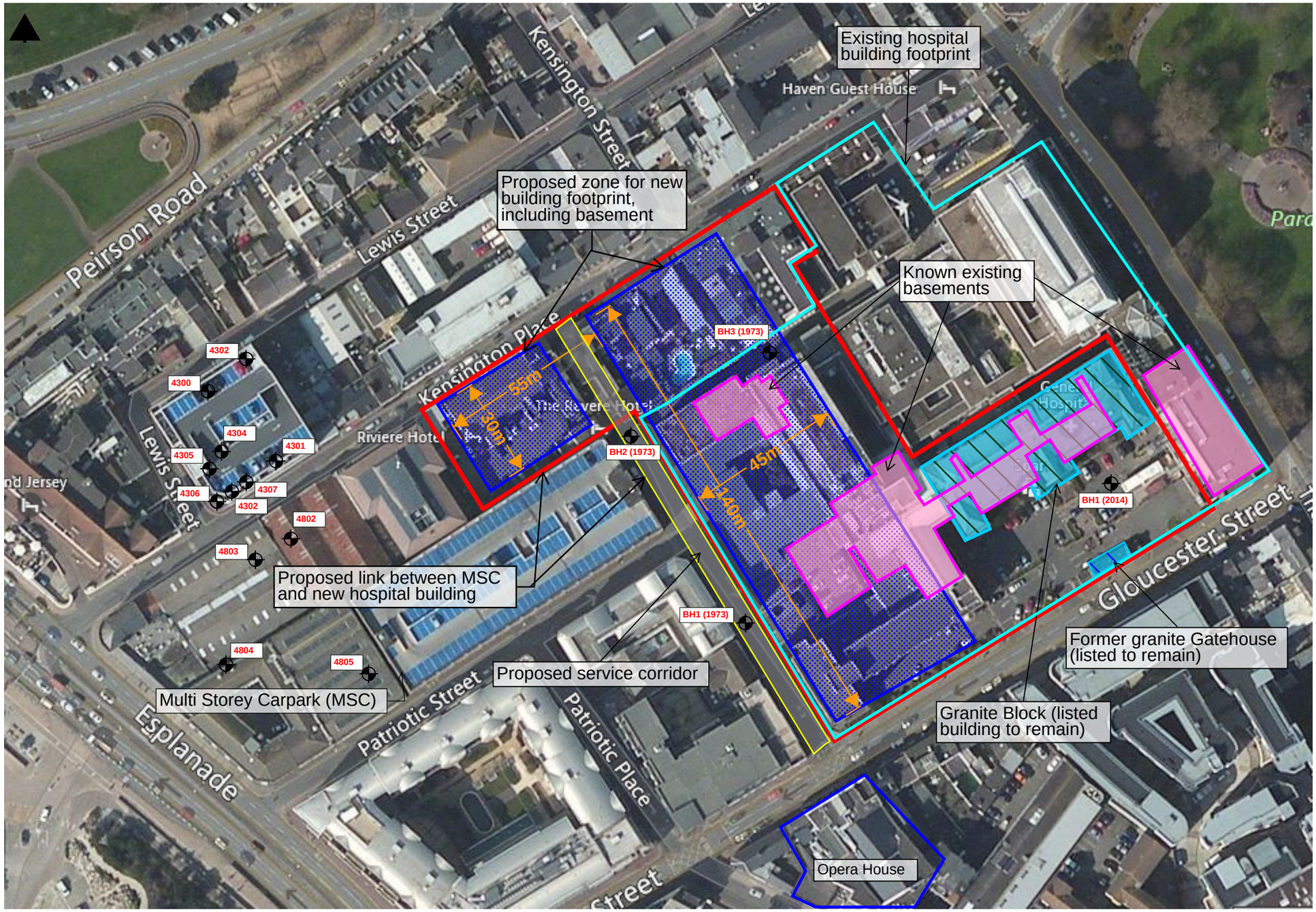

Approximate development boundary

BH1 (1973) Approximate locations of available GI for the existing Jersey General Hospital site

4803 Approximate locations of available GI provided by Jersey Hydrogeologist

Issue	Date	By	Chkd	Appd
P2	31/08/2016	KI	PT	DP
	For Internal Review and Comments			
P1	28/06/2016	KI	PT	DP
	For Internal Review and Comments			

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Client
States of Jersey

Job Title
Jersey Future Hospital

Jersey General Hospital

Scale at A3
NTS

Role
Geotechnics

Drawing Status
For Internal Review and Comments

Job No	Drawing No	Issue
237035	SK-GEO-CO025_001	P2

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APPENDIX 6 TECHNICAL SITE APPRAISAL

MEP

QUALITY ASSURANCE

Sign off: Peter Thomas

Position: Project Manager

August 2016

ARUP

Subject	Jersey Future Hospital – CO025 TN-MEP-001 Overview of MEP Technical Notes for CO025 Final Preliminary Issue – P1
Date	6 July 2016
Job No/Ref	237035-00

1 Introduction

This technical note has been prepared to provide an overview of the differences between the Option C (and Option A for which existing plant and services configurations were shown on some drawings) Technical Notes and Drawings from CO021 and the proposed CO025 Option F scheme. Where principles remain largely unchanged, a new technical note or drawing has not been provided so as to avoid unnecessary duplication. Where the changes are significant, a new technical note or drawing has been prepared and an overview of the key amendments provided in the following tables.

1.1 Documents

CO021 Technical Note Name and Reference	Corresponding Name and Reference of New Technical Note as Appropriate	Overview of Amendments from Option C CO021 Technical Note
External CCTV Cameras – TN-E-001	N/A	Same principles will apply to amended location and external layout.
External Lighting – TN-E-002	N/A	Same principles will apply to amended location and external layout.
Energy Study (Electrical) – TN-E-003	TN-E-CO025-001	Size of plant amended to reflect amended building size and quantity of plant rooms amended to reflect decentralised boiler plant servicing strategy.
Incoming Utilities / Diversions (Electrical Services) – TN-E-004	N/A	Same principles as Option C are largely followed. Generator use during commissioning stage of the new building may be required to deal with capacity issues associated with operating the existing hospital at a time when the new building is

		being commissioned. An allowance for generator controls to accommodate this has been made at this stage.
Electrical High Level Services – TN-E-005	N/A	Same principles will apply as Option C
Sprinklers Water Pressure – TN-M-001	N/A	Same principles as Option C except the tank volume will increase from 140m3 to 180m3 due to the increased height of the building.
Medical Gas Storage – TN-M-002	N/A	Same principles will apply as Option C
Chimneys – TN-M-003	TN-M-CO025-001	Amended chimney height and quantity to reflect amended configuration and decentralised plant approach.
Fire Hydrants – TN-M-004	N/A	Same principles will apply as Option C
Incoming Utilities / Diversions (Mechanical Services) – TN-M-005	N/A	Same principles as Option C with exception of amended gas main routing to serve the north west of the site to provide resilient incoming connections.
Mechanical Services High Level Description Technical Note – TN-M-006	N/A	Same principles will apply as Option C
Energy Study (Mechanical) – TN-M-007	TN-M-CO025-002	Size of plant amended to reflect amended building size and quantity of plant rooms amended to reflect decentralised boiler plant servicing strategy.

Energy Centres – TN-MEP-001	N/A	Differing strategy for building plant provision amended to decentralised plant strategy as opposed to two energy centres. Technical note not applicable for this option.

1.2 Drawings

CO021 Drawing Name and Reference	Corresponding Name and Reference of New Technical Note as Appropriate	Overview of Amendments from Option C CO021 Technical Note
Option A - Existing Site Existing Electrical Infrastructure - SK-E-OPTA-001	N/A	This drawing demonstrates existing site configurations so is not required for reissue as part of this exercise.
Option A - Existing Site Electrical Schematic - SK-E-OPTA-002	N/A	This drawing demonstrates existing site configurations so is not required for reissue as part of this exercise.
Option A - Existing Site All Electric Indicative HV/LV Schematic - SK-E-OPTA-003	N/A	This drawing demonstrates existing site configurations so is not required for reissue as part of this exercise.
Option A - Existing Site Conventional Heating Indicative HV/LV Schematic - SK-E-OPTA-004	N/A	This drawing demonstrates existing site configurations so is not required for reissue as part of this exercise.
Option C - External CCTV Requirements - SK-E-OPTC-001	N/A	Amended to represent new building shape and location and external layout changes.
Option C - External Lighting Requirements - SK-E-OPTC-002	N/A	Amended to represent new building shape and location and external layout changes.

Option C - Proposed Electrical Equipment Locations - SK-E-OPTC-003	SK-E-CO025-001, 002	Amended to represent new building configuration.
Option C - Electrical Utilities Diversions - SK-E-OPTC-004	N/A	Not applicable as new services will be provided to the site with no known services crossing the areas that are to be demolished that are not part of the Relocation Engineering Strategy.
Option C - ICT Utilities Diversions - SK-E-OPTC-005	N/A	Not applicable as new services will be provided to the site with no known services crossing the areas that are to be demolished that are not part of the Relocation Engineering Strategy.
Option A - Existing Site Existing Mechanical Equipment and Infrastructure - SK-M-OPTA-001	N/A	This drawing demonstrates existing site configurations so is not required for reissue as part of this exercise.
Option A - Existing Site External Mains Water Layout - SK-M-OPTA-006	N/A	This drawing demonstrates existing site configurations so is not required for reissue as part of this exercise.
Option A - Existing Site External Gas Layout - SK-M-OPTA-007	N/A	This drawing demonstrates existing site configurations so is not required for reissue as part of this exercise.
Option C - Proposed Mechanical Equipment and Infrastructure - SK-M-OPTC-001	SK-M-CO025-001, 002, 003, 004	Amended to represent new building configuration.
Option C - Proposed Site External Mains Water Layout - SK-M-OPTC-002	N/A	Not applicable as new services will be provided to the site with no known services crossing the areas that are to be demolished that are not part

		of the Relocation Engineering Strategy.
Option C - Proposed Site External Gas Layout - SK-M-OPTC-003	N/A	Not applicable as new services will be provided to the site with no known services crossing the areas that are to be demolished that are not part of the Relocation Engineering Strategy.
Option C - Proposed Site Existing Mechanical Equipment and Infrastructure - SK-M-OPTC-004	N/A	This drawing demonstrates existing site configurations so is not required for reissue as part of this exercise.
Medical Gases Schematic - SK-M-MG-001	N/A	Principles consistent with CO021 so no requirement to reissue.

ARUP

Subject	Jersey Future Hospital – CO025 TN-E-CO025-001 Technical Note – Energy Study (Electrical) Final Preliminary Issue – P1
Date	6 July 2016
Job No/Ref	237035-00

1 Introduction

This technical note has been prepared to support the preparation of the Proof of Concept Exercise that forms Change Request Nr. 25 as part of the Jersey Future Hospital Scheme.

The site option being reviewed is Jersey General Hospital.

The purpose of this technical note is to identify electrical considerations for the electrical requirements for plant to serve heating dependent on an electric heating or oil heating solution for the Change Order 25 proposal.

2 Commentary

This note documents the difference in spatial / equipment requirements for both an all-electric and conventional oil or gas fuelled heating scheme.

An application was made to Jersey Electricity Company (JEC) on 28th January 2015 for the following supplies to the Jersey General Hospital site, based on an all-electric scheme and a conventional heating scheme as part of the CO021 works.

Table 1: Maximum Demands Submitted to JEC

Site Option	E
Max Demand (all electric) kVA	10,599
Max Demand (conventional oil / gas heating) kVA	4,199

Due to the reduced GIFA of this option, a reduced electrical demand will be required and therefore the previously requested load requirements are still acceptable, demonstrating available local network capacity.

The following are the calculated loads for the proposed new building under this option:

Table 2: Maximum Demands for this Option

Site Option	E
Max Demand (all electric) kVA	8,800
Max Demand (conventional oil / gas heating) kVA	2,600

An N+1 arrangement will be provided for transformers and generators whereby three separate transformer and generator compounds at roof level will be provided, each with 50% overall site demand capacity.

2.1 New Hospital Building

2.1.1 All Electric

The following equipment would be required for an all-electric hospital:

- 3 No. transformer locations separated from each other and at roof level – each sized at 50% overall building demand capacity – 4.4MVA each.
- 3 No. generator locations separated from each other and at roof level – each sized at 50% overall building demand capacity – 4.4MVA each.
- 2 No. JEC HV incomer (approx. 30m^2)

2.1.2 Conventional Heating

The following equipment would be required for an conventionally heated hospital using oil or gas:

- 3 No. transformer locations separated from each other and at roof level – each sized at 50% overall building demand capacity – 2.6MVA each.
- 3 No. generator locations separated from each other and at roof level – each sized at 50% overall building demand capacity – 2.6MVA each.
- 2 No. JEC HV incomer (approx. 30m^2)

3 Risks/Opportunities

Substation locations and numbers have been chosen to reduce long cable runs. However, the number of substations and arrangements will be reviewed as part of future design stages.

4 Derogations

The amount of fuel storage on site(s) may be reduced, based on an agreed derogation by the hospital.

ARUP

Subject	Jersey Future Hospital – CO025 TN-M-CO025-002 Technical Note – Energy Study (Mechanical) Final Preliminary Issue – P1
Date	6 July 2016
Job No/Ref	237035-00

1 Introduction

This technical note has been prepared to support the preparation of the Proof of Concept Exercise that forms Change Request Nr. 25 as part of the Jersey Future Hospital Scheme.

The site option being reviewed is Jersey General Hospital.

The purpose of this technical note is to identify mechanical considerations for the energy systems requirements aspect of the Change Order 25 proposal.

2 Commentary

This note documents the difference in spatial / equipment requirements for both an all-electric and connectional heating scheme.

2.1 Jersey General Hospital

2.1.1 All Electric

The following equipment would be required for an all-electric hospital at Jersey General Hospital and differs from previous options due to the reduced gross area which impacts upon heating requirements.:

2.1.1.1 Electric Hot Water Boiler

- Electric Hot Water Boilers located within 3no.boiler plant rooms with total load capacity of 5.2MW. (approx. 160m2 for each boiler plant room).

2.1.1.2 Air Source Heat Pumps

- 4.4 MW air source heat pumps located at roof level. (Locations and areas to be confirmed).
- 580 kW electric hot water heaters located in calorifier plant rooms.

2.1.1.1 Electric Panels / Electric Hot Water Boiler

- Electric ceiling panels with a total capacity of 1.7 MW.
- Electric Hot Water Boilers located within 3no. boiler plant rooms with total load capacity of 3.5 MW (approx. 160m2).

2.1.2 Conventional Heating

The following mechanical heating plant and equipment options have been considered for a conventional heating system.

2.1.2.1 Gas Fired Boilers

- Gas Fired Heating Boilers located within 3no. boiler plant rooms with total load capacity of 5.2 MW. (approx. 160m2 for each boiler plant room).
- Hot water generation plant located in calorifier plant rooms served by boiler plant.
- Incoming gas supply provided by Jersey Gas.

2.1.2.2 Oil Fired Boiler

- Oil Fired Heating Boilers located within 3no. boiler plant rooms with total load capacity of 5.2 MW. (approx. 160m2 for each boiler plant room).
- Hot water generation plant located in calorifier plant rooms served by boiler plant.
- Fuel oil storage tank.

3 Risks/Opportunities

N/A

4 Derogations

N/A

ARUP

Subject	Jersey Future Hospital – CO025 TN-M-CO025-001 Technical Note – Chimneys Final Preliminary Issue – P2
Date	30 August 2016
Job No/Ref	237035-00

1 Introduction

This technical note has been prepared to support the preparation of the Proof of Concept Exercise that forms Change Request Nr. 25 as part of the Jersey Future Hospital Scheme.

The site option being reviewed is Jersey General Hospital.

The purpose of this technical note is to identify mechanical considerations for the chimney aspects of the Change Order 25 proposal.

2 Commentary

2.1 Jersey General Hospital

There is a requirement for flue chimneys from oil or gas fired boilers serving this site option.

Chimney height to comply with health and safety legislation and building heights.

Existing General Hospital chimney flues will remain operational throughout the construction work period.

The provision is for oil / gas heating with the chimney provision 3.No. chimneys serving the 3 No. boiler plant.

No chimneys are required for heating plant if electrical heating plant is installed.

3 Risks/Opportunities

New chimney heights for Jersey General Hospital to comply with health and safety legislation and building heights. Estimated to be at least 3m above the highest building in the local area. This value is different from the Option C at the Jersey General Hospital site due to a taller building height and boiler plant now being on the roof.

Demolition of existing Jersey General Hospital chimney.

Risk of chimney(s) being higher than 3m. When the final design of the building has been completed and if gas/oil heating is chosen then a wind tunnel modelling and analysis of wind effects may be required. This will demonstrate both the flue gas dispersal and the street level air velocity and direction for all movement velocity. The previous General Hospital building was tunnel tested with building model and changed / influenced the chosen design and location of the boiler flues, from integral to the high-rise building to a separate chimney. This may assist in the siting of other MEP plant intakes and exhausts systems to ensure clean fresh air or exhaust dispersal.

4 Derogations

N/A

JERSEY FUTURE HOSPITAL

CO025 – PROOF OF CONCEPT

SITE OPTION ADDENDUM

APPENDIX 6 TECHNICAL SITE APPRAISAL

Relocation Projects

QUALITY ASSURANCE

Sign off: Peter Thomas

Position: Project Manager

August 2016

ARUP

Subject	Jersey Future Hospital – Change Order 25 TN-MEP-CR025-001 Technical Note – Relocation Projects Engineering Impact Assessment Final Preliminary Issue – P2
Date	30 August 2016
Job No/Ref	237035-00

Introduction

This technical note has been prepared in response to the architectural relocation strategy for the existing Jersey General Hospital.

Supportive Drawings and Documents

The following supportive drawings should be read in conjunction with this document which detail specific engineering items as part of the Enabling Schemes.

SK-M-CO025-005 – Existing Mechanical Plant Relocations

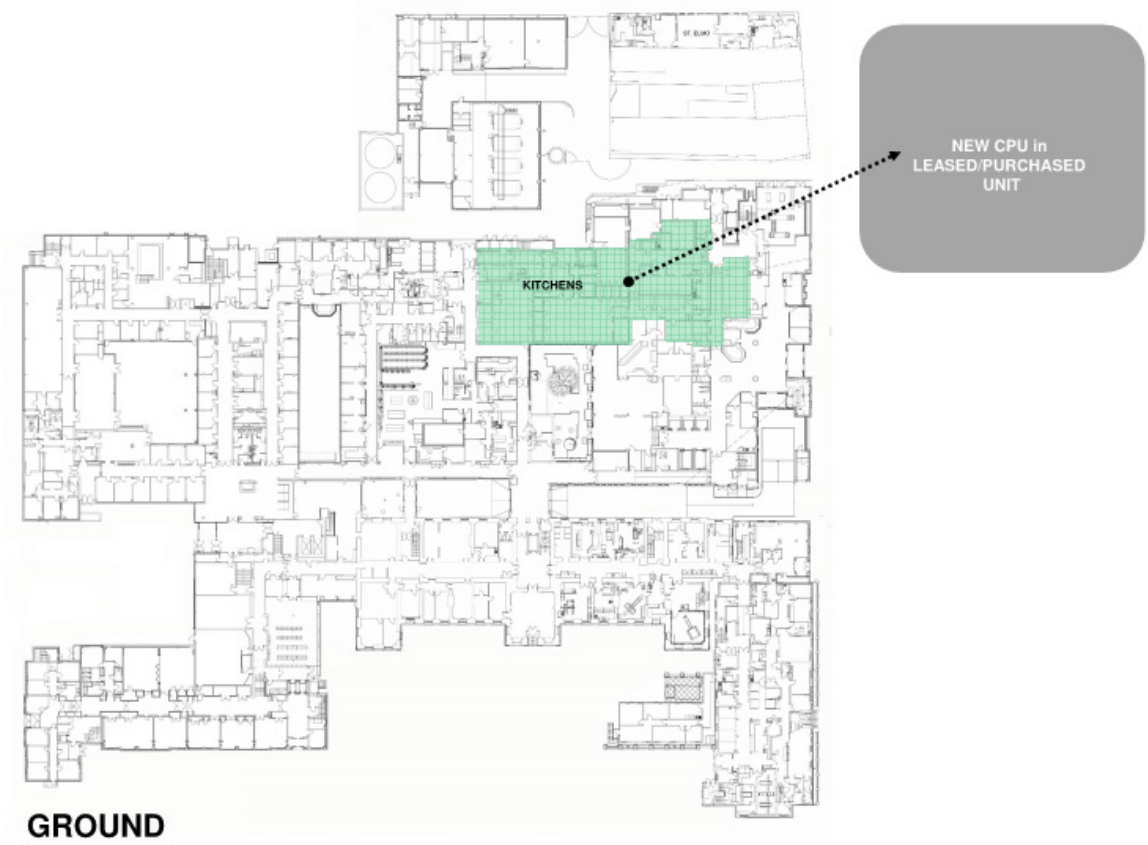
SK-E-CO025-003 – ICT Relocations

SK-GEO-CO025-002 – Westaway Court Geotechnic Considerations

TN-GEO-CO025-002 – Relocation Projects Geotechnics Considerations

1 ES-1 Impact Assessment

1.1 Creation of Catering CPU



1.1.1 Description of Works

Relocation of the current catering service to new cook-freeze based Central Production Unit (CPU)

1.2 MEP, Structures, Civils and Geotechnics Impact Assessment

This Enabling Scheme is based on relocation to off-site premises, final location is to be confirmed. As the proposed location is not yet identified an engineering appraisal has not been undertaken as part of this works.

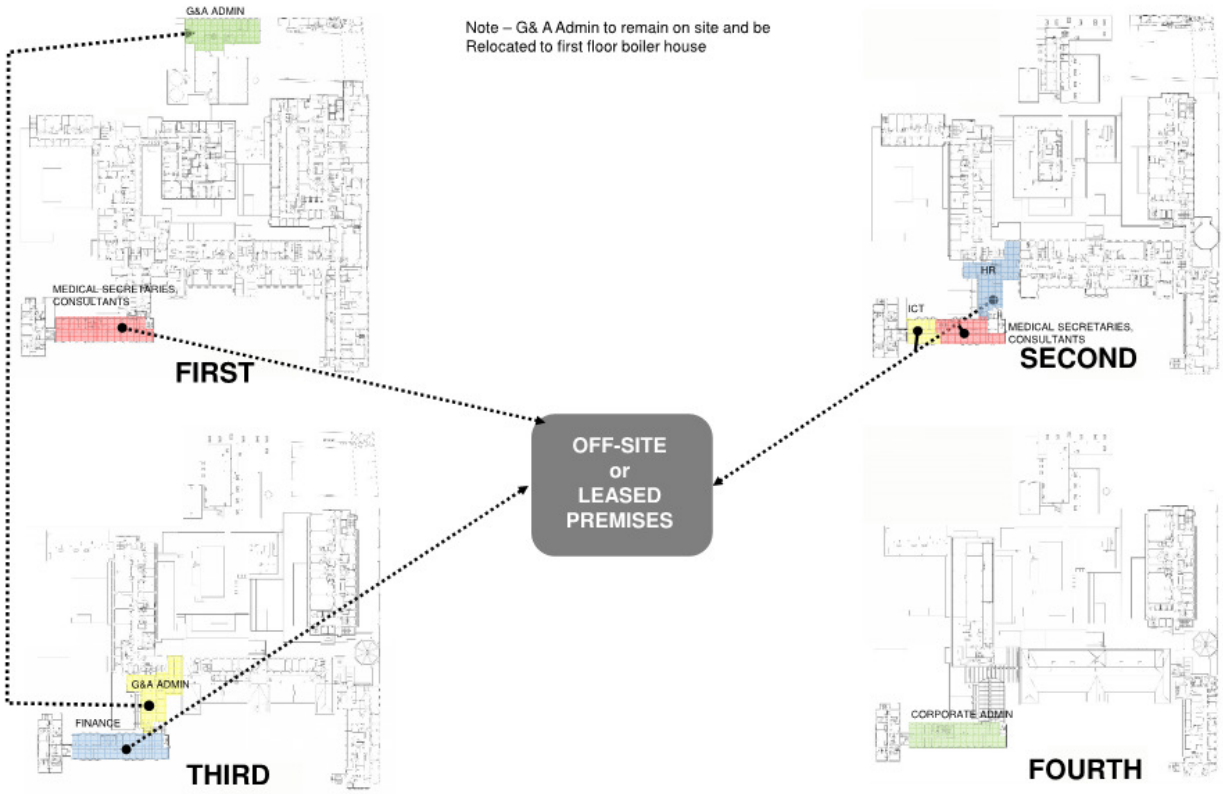
1.3 Transport

The off-site move of the Kitchens (catering) will have a minimal impact on the local highway network

Transport Item	**Impact Description**	
Local Highway Network to New Location	Two points to consider: (1) Staff movement - Based on the 2013 FTE Staff data for the hospital and presuming that 65% would travel on the network as solo occupancy and; (2) Deliveries from the new off-site catering location to the new hospital site assumed to be two deliveries per day (therefore 4 two-way trips). Deliveries would not necessarily occur in the highway peak period.	
	Additional AM Trips (Two-Way)	Additional PM Trips (Two-Way)
	19	19
Parking	Minor reduction in parking associated with staff reallocation to new premises from the existing hospital site. Parking requirements at any new identified off-site location would need to be assessed. Deliveries to be accommodated at service yard off public highway.	

2 ES-2 Impact Assessment

2.1 Relocation Medical Secretaries / Consultants



2.1.1 Description of Works

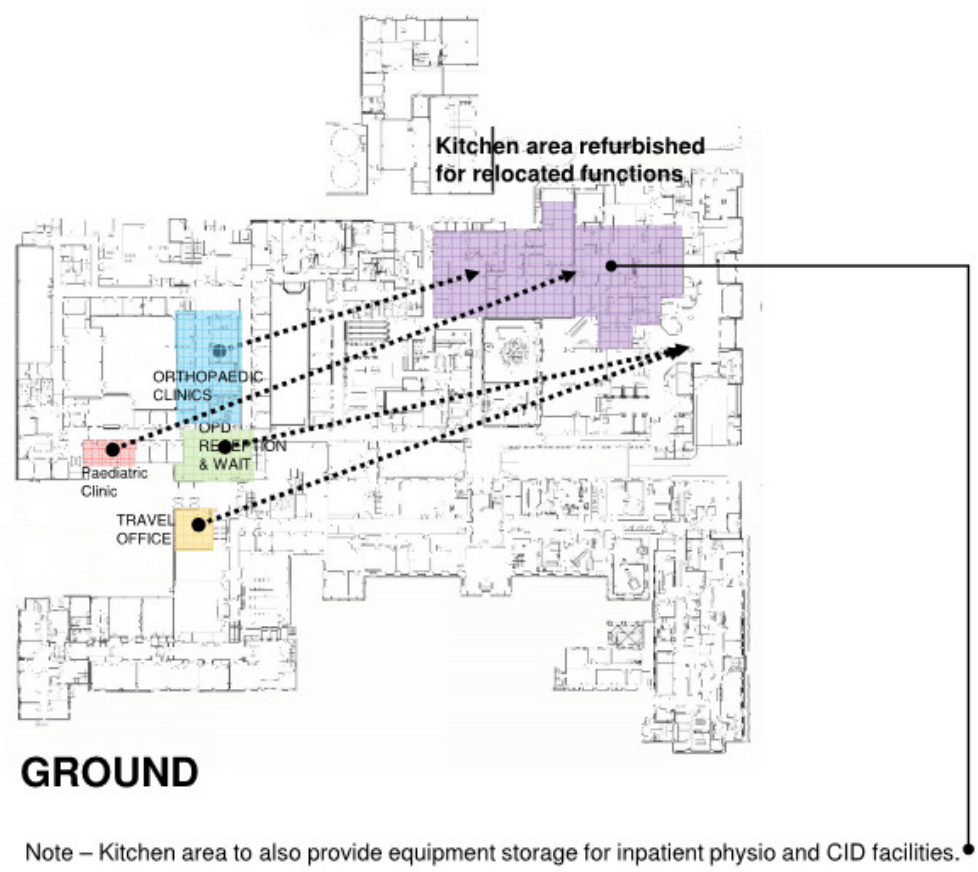
Relocation of medical secretaries & consultants to leased premises within the town centre.

2.2 MEP, Structures, Civils, Transport and Geotechnics Impact Assessment

This Enabling Scheme is based on relocation to off-site premises, final location is to be confirmed. As the proposed location is not yet identified an engineering appraisal has not been undertaken as part of this works.

3 ES-3 Impact Assessment

3.1 Transfer of Clinics – 1 – Vacated Catering Department



3.1.1 Description of Works

Refurbishment to allow for the relocation of hospital based clinics and other key functions to the Vacated Catering Department.

3.2 Impact Assessment – Mechanical and Public Health

System	Impact Description
Low temperature hot water (LTHW)	Existing LTHW pipework serves some local heat emitters in this area. Works are likely to include temporary links to maintain supplies to areas for which the pipework extends outside the refurbishment perimeter. Final connections will then be made to re-feed new emitters in the refurbished areas.
Medium temperature hot water (MTHW) / High temperature hot water (HTHW)	An existing MTHW ring main passes through this area in the existing mezzanine. This will be required to remain live.
Domestic hot water system (DHW)	Existing DHW pipework serves outlets in this area. Works are likely to include temporary links to maintain supplies to areas for which the pipework extends outside the refurbishment perimeter. Final connections will then be made to re-feed new outlets in the refurbished areas.
Domestic cold water system (DCW)	Existing DCW pipework serves outlets in this area. Works are likely to include temporary links to maintain supplies to areas for which the pipework extends outside the refurbishment perimeter. Final connections will then be made to re-feed new outlets in the refurbished areas.
Fuel Oil System & Storage	Not applicable.
Incoming natural gas	Incoming natural gas serves the kitchen and the pathology department. This main will need to be diverted outside the refurbishment area to maintain operation of the pathology department.
Incoming mains water	A direct connection to the kitchen is provided. This will be isolated and removed to outside works area.
Above ground drainage system	Existing above ground drainage associated with the kitchen will be removed/diverted as required. Drainage that passes through the kitchen area from floors above will be maintained as far as is practicable within the new layouts and diverted to some areas should this be required.
Ventilation system	There is a dedicated ventilation system for the kitchen. This will be stripped out. New mechanical ventilation systems and air handling plant will be required. New air handling plant could potentially be installed on the roof above the refurbishment area thus alleviating space in the plant room where the existing kitchen ventilation equipment is installed.
Cooling System	There is no dedicated cooling system for the kitchen. A cold storage system with local cooling plant is provided which may be omitted based on final kitchen relocation strategy. Any refrigerant will be disposed of to comply with regulations. New cooling systems will be required for accommodation that is being relocated to this area and will be served from new chillers or DX cooling plant. Cooling plant will be located at roof level.
Medical Gases	There are understood to be no existing medical gases in this area. New medical gas pipelines are likely to be required to serve the new clinical requirements which will be taken from the local medical gases rings. Pathology Vacuum pump is located alongside the existing electrical intake room which may require relocation.

System	Impact Description
Systems Specific to Area / Department	Not applicable

3.3 Impact Assessment – Electrical

System	Impact Description
HV	There is understood to be no HV provision in this area so no works are foreseen associated with this.
LV	Intake LV panels are installed in the area where the works are proposed. These are to remain. It is understood that their connections are from the local hospital corridor so not expected to be affected by the works. Outgoing ways will be required to be maintained and some diversions/reconnections of existing final circuits that pass through the refurbishment area feeding areas outside the refurbishment extents may be required. This LV system is proposed to be used to feed the refurbished area.
Generators	Not understood to be affected.
ICT	Main data routes are understood to run in the mezzanine area which is required to remain. Some data cabling may pass through the refurbishment area to serve areas outside the refurbishment extents and some diversions/reconnections of existing to maintain existing outlets for cabling that pass through the refurbishment area may be required. New data outlets with associated feeds from local cabinets will be provided.
Fire Alarm Systems	A local fire alarm ring is understood to serve this area and those areas surrounding the refurbishment extents. It is proposed that the ring will be amended to maintain functional operation of the areas outside the refurbishment area. The ring will then be amended to incorporate the new devices associated with the refurbished areas. Reprogramming upon diversion and then reconnection of new devices will be required.
Intruder Alarm, CCTV and Access Control and Nurse Call Systems	At this stage the extent of these systems' coverage is not known but an allowance for decommissioning of existing devices in the refurbishment area, amendment/diversion of loops passing through the area, and subsequent connection of new devices including all necessary reprogramming should be made.
Systems Specific to Area / Department	None identified.

3.4 Impact Assessment – Structures, Civils and Geotechnics

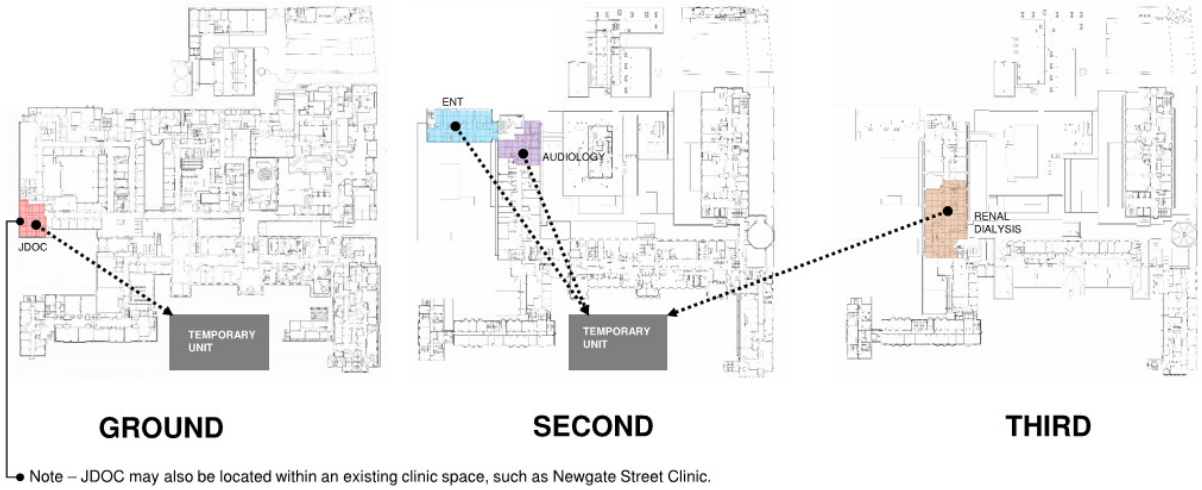
System	Impact Description
Geotechnics	
Ground Conditions	Not Applicable
Ground Water	Not Applicable
Ground Gas	Not Applicable
Contamination	Not Applicable
Structural Engineering	
Foundations (existing)	It is not anticipated that works to existing piled foundations will be necessary, but this will be subject to design development. Works to the undercroft area are expected.
Foundations (new)	None expected
Ground Slab (existing)	Ground slab is suspended concrete. This is above an undercroft space in part of the kitchen area (undercroft present between grids K-M and 60-90). It is anticipated that substantial structural works will be required to the ground slab to reconfigure drainage in this area. It is expected that the original design loading for this floor will be sufficient for its proposed new use where retained.
Ground Slab (new)	Where slab is broken out to reconfigure drainage, it will need to be reinstated with new concrete slab.
Superstructure (existing)	The existing structure is a concrete frame. It is not expected that significant work is required to this, but subject to design development.
Superstructure (new)	No new superstructure is expected.
Walls/Partitions	Walls are expected to be masonry. It is possible these contribute to overall building stability and this would need to be assessed in the next stage if they are required to be altered.
Civil Engineering	
Drainage (foul)	There is significant existing drainage present for the kitchens. This is typically set into the ground slab and is routed through the undercroft (where present) or below the supended ground slab. This will either discharge to Kensington Place or The Parade, but it cannot be confirmed which at present as there are no drawings available for the drainage below the slab in this area and this will need to be surveyed. It is anticipated that the drainage will require significant alteration to suit the new clinical use and layout.
Drainage (Storm)	Given the lack of drainage information available it cannot be confirmed if storm drainage is present in this area. An allowance should be made for amending the storm drianage in this area to suit new layouts until surveys can be undertaken and the design is more developed. Storm drainage is expected to discharge to the combined sewer in The Parade, but this needs confirmation by survey.
Roads/Parking	Not Applicable

3.5 Impact Assessment - Transport

Transport Item	Impact Description
Local Highway Network	Internal move. No impact on the local highway network anticipated.
Parking	Internal Move. No impact on parking capacity or function.

4 ES-4 Impact Assessment

4.1 Construction of Temporary Clinic Block



4.1.1 Description of Works

Relocation of, ENT, Audiology, Renal Dialysis to a newly constructed temporary clinic block adjacent to the Granite Block.

4.2 Impact Assessment – Mechanical and Public Health

System	Impact Description
Low temperature hot water (LTHW)	New LTHW pipework system to serve the new Temporary Block will be provided from new plant in the Temporary Block.
Medium temperature hot water (MTHW) / High temperature hot water (HTHW)	New connection required from the existing MTHW ring main to the temporary block. Local system shutdown required to make new connection. Main system needs to remain live.
Domestic hot water system (DHW)	New domestic hot water system required to serve Temporary Block either from new dedicated plant or new connection taken from existing plant if the capacity is available.
Domestic cold water system (DCW)	New domestic cold water system required to serve Temporary Block. Supply taken from new main water supply connection taken from the Jersey Water main located on Gloucester Street.
Fuel Oil System & Storage	Not applicable.
Incoming natural gas	No gas mains located below the area proposed for the Temporary Block have been identified based on available information.
Incoming mains water	New main water supply connection is required for the Temporary Block taken from the Jersey Water main located on Gloucester Street.
Above ground drainage system	New drainage will be required to Temporary Block. Below ground drainage capacity assessments required.
Ventilation system	New mechanical ventilation systems and air handling plant will be required for the Temporary Block. New air handling plant will be located at roof level within new enclosed plant rooms. Isolation Room AHU (Bartlett Isolation Room) that is currently located on an area affected by the demolitions to be reprovided as new to the roof of the Temporary Building with short term reconnection in order to minimise duration of loss of service.
Cooling System	New cooling systems will be required for the Temporary Block either via DX systems of new chilled water plant. Cooling plant will be located at roof level of the Temporary Block.
Medical Gases	New medical gas pipelines will be required to serve the new clinical requirements in the Temporary Block. Links to be provided to the Temporary Block from the rings local to the building. Local bottle stores may also be required.
Pneumatic Tube System	Consideration to be given to the installation of a pneumatic tube system back to the existing General Hospital.
Systems Specific to Area / Department	New RO plant will be required for the Renal Dialysis. Plant is currently proposed to be located at roof level of the Temporary Block within enclosed plant room. Existing buried services below the proposed new building are currently unknown. Survey required to identify these and diversions undertaken as required.

4.3 Impact Assessment – Electrical

System	Impact Description
HV	Not understood to be affected.
LV	There is an LV buried connection from the Gate House transformer compound that crosses the existing car park. This route is unknown at present but an allowance for diversions has been made of any buried services. The hospital is served by LV interlinks which would allow this diversion to occur with minimal impact on existing systems but would be at reduced resilience for the period. New LV connections will be made to provide LV supplies associated with the new building.
Generators	The existing temporary theatres 5 and 6 block contain a generator set and its air intake will require consideration during design and construction of the new temporary block to avoid obstruction. This may require removal/replacement as part of the temporary block works.
ICT	New fibre optic links will be provided to a local cabinet to provide ICT connections associated with the new building.
Fire Alarm Systems	A connection to the existing site wide system will be made with a local new panel to serve the new building. Reprogramming to integrate the new system into the existing will be required to be undertaken.
Intruder Alarm, CCTV and Access Control and Nurse Call Systems	A connection to the existing site wide systems will be made with local new panels to serve the new building. Reprogramming to integrate the new system into the existing will be required to be undertaken.
Systems Specific to Area / Department	Existing buried services below the proposed new building are currently unknown. Survey required to identify these and diversions undertaken as required.

4.4 Impact Assessment – Structures, Civils and Geotechnics

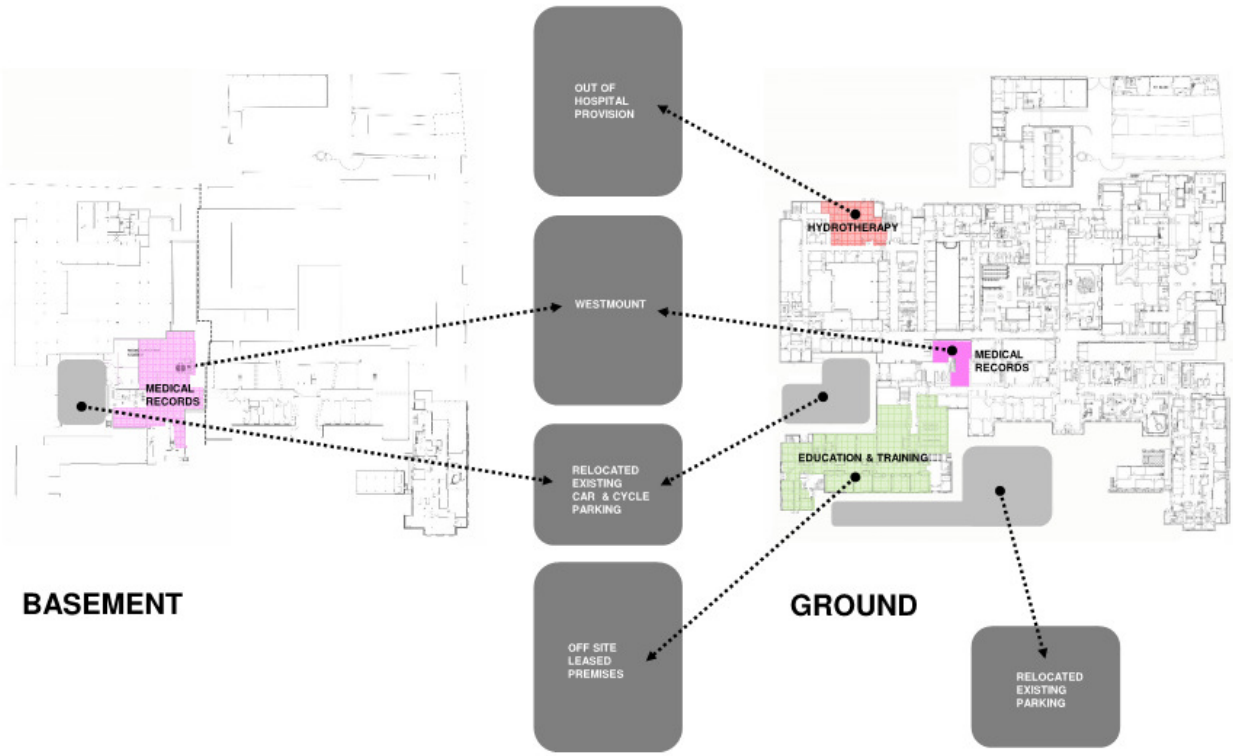
System	Impact Description
Geotechnics	
Ground Conditions	There is a risk of encountering running sands in the ground from 1m bgl approx. Review of historical borehole logs and geological mapping indicates approxiamtely 1m of made ground underlain by Blown Sand, in turn underlain by Alluvium. Bedrock at around 10mbgl. Works adjacent to the Granite Block during construction of the existing basement to the West led to instability and the need to underpin. This should be borne in mind during the design of the foundations and any drinage excavations and suitable temporary works used if necessary.
Ground Water	Groundwater strikes were typically recorded at 4mbgl on historical BH records. One borehole recorded a rise to ground level. There is a risk of encountering groundwater at around 4mbgl which may be under pressure.
Ground Gas	Made ground may be a potential source of ground gases. Radon Risk should be addressed.
Contamination	The risk of contamination in this area is conisdered to be low, but cannot be ruled out.
Structural Engineering	
Foundations (existing)	Any excavation works adjacent to the existing Granite Block will need to take precautions not to undermine the existing foundations – refer to ground conditions section above.
Foundations (new)	Given the likely form of construction for the Temporary Clinic Block, it is anticipated that a concrete raft foundation will be suitable (subject to GI).
Ground Slab (existing)	Tie in to existing Granite Block ground slab required.
Ground Slab (new)	Assumed as concrete raft as above. Radon protection measure should be assumed as required at this stage.
Superstructure (existing)	Local openings may be required to form connections – design yet to be developed. Listed building so works must be sensitive to this and may cost more.
Superstructure (new)	Temporary clinical block is assumed to be constructed either from lightweight materials (as per the New Theratre Block – timber/cold-rolled steel) or from modular construction. It is expected that there wil be plant above (including the replacement isolation room AHU). Stair/lift access will be required which is likely to be within a local steel framed structure.
Walls/Partitions	Not applicable (except as noted above)
Civil Engineering	
Drainage (foul)	Existing drainage is present in this area. This will need to be reconfigured to connect the new facility and faciliate the foundation/raft. A new connection to the public sewer in Gloucester Street is likely to be required. Department for Infrastructure records show that an existing discussed connection onto the site has been sealed and it may be possible to be reinstated. A drainage survey will be required in the next stage.

4.5 Impact Assessment – Transport

Transport Item	Impact Description
Local Highway Network	Internal move. No impact on the local highway network anticipated.
Parking	Temporary unit removes approximately 31 spaces from frontage of the hospital. Suitable alternatives will be investigated in next design stage. No direct parking requirement associated with the move of departments.

5 Project ES-5 Impact Assessment

5.1 Off Site Transfers



5.1.1 Description of Works

The works for the project are summarized below:

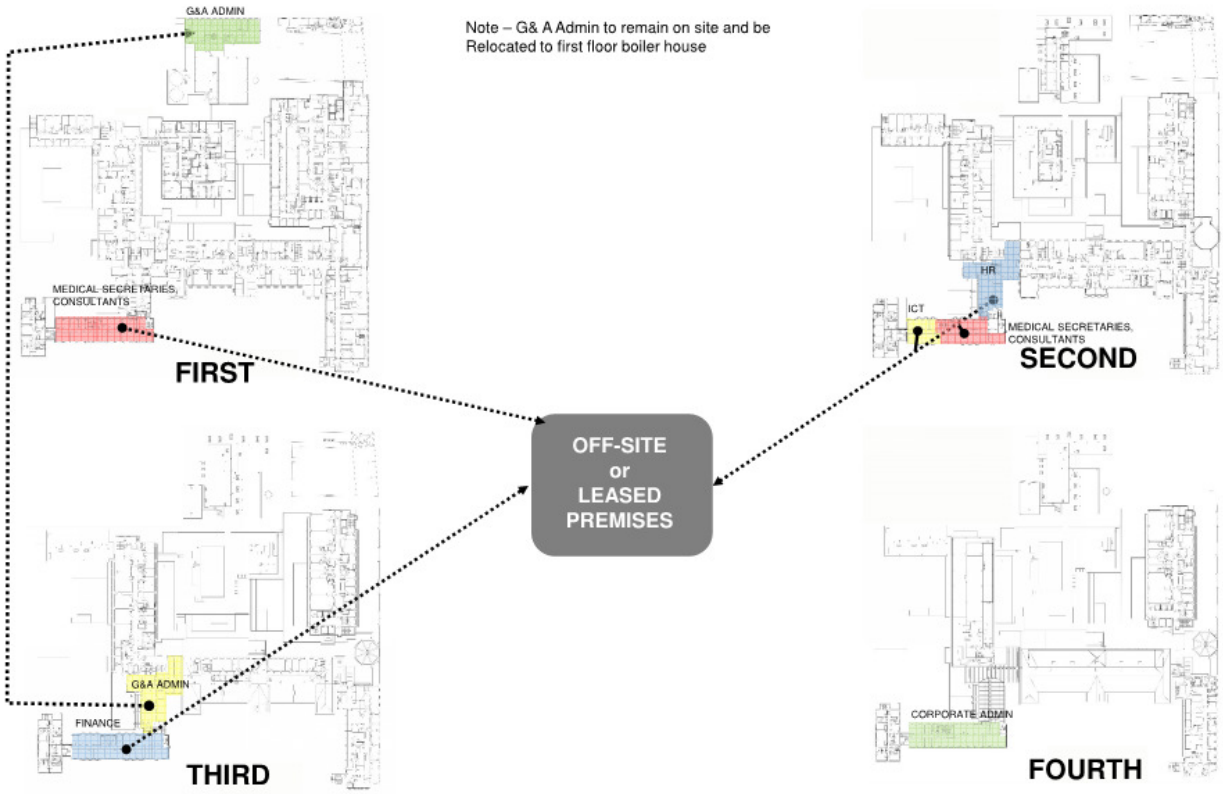
- Hydrotherapy → external facilities;
- Medical Records → Westmount Rehabilitation Centre
- Education & Training → Leased Facilities

5.2 MEP, Transport, Structures, Civils and Geotechnics Impact Assessment

This Enabling Scheme is based on relocation to off-site premises, final locations to be confirmed. As the proposed locations are not yet identified an engineering appraisal has not been undertaken as part of this works. Relocation of parking is covered in Transport Documentation as part of TN-TRA-CO025-001 and supportive drawings.

6 ES-6 Impact Assessment

6.1 Relocation of Corporate Functions



6.1.1 Description of Works

Finance, Corporate Admin, HR & G&A Admin will be relocated to alternative accommodation on the existing Hospital site or within walking distance

6.2 Impact Assessment

With the exception of the relocation of G&A Admin to the First Floor Engineering block, this Enabling Scheme is based on relocation to off-site premises, final location is to be confirmed. As the proposed location is not yet identified an engineering appraisal has not been undertaken as part of this works.

6.3 Impact Assessment – Mechanical and Public Health

System	**Impact Description – Relocation of G&A Admin to the First Floor Engineering Block**
Low temperature hot water (LTHW)	LTHW system serving existing F/F Engineering Block to be modified to suit requirements for new G&A Admin subject to further evaluation of the heating load and the required capacity of the LTHW.
Medium temperature hot water (MTHW) / High temperature hot water (HTHW)	Not applicable.
Domestic hot water system (DHW)	Existing systems to be modified in existing F/F Engineering Block to suit requirements for new G&A Admin subject to further evaluation of the capacity required.
Domestic cold water system (DCW)	Existing system to be modified in existing F/F Engineering Block to suit requirements for new G&A Admin subject to further evaluation of the capacity required.
Fuel Oil System & Storage	Not applicable.
Incoming natural gas	Not applicable.
Incoming mains water	Existing F/F Engineering Block system to be modified to suit requirements for new G&A Admin.
Above ground drainage system	Existing F/F Engineering Block system to be modified to suit requirements for new G&A Admin.
Ventilation system	Existing G&A Admin vent systems to be stripped out – if applicable. Requirement for the provision of ventilation to existing F/F Engineering Block to suit requirements for new G&A Admin.
Cooling System	No exiting cooling systems in existing F/F Engineering Block. No mechanical cooling to F/F Engineering Block envisaged for new G&A Admin
Medical Gases	Not applicable.
Systems Specific to Area / Department	None identified.

6.5 Impact Assessment – Electrical

HV	Not understood to be affected.
LV	Diversion of any circuitry that serves areas outside the refurbishment area will be required to ensure these areas outside the area remain operational. New circuitry from local distribution boards will be provided to feed new requirements of the space.
Generators	Not understood to be affected.
ICT	New data cabling connections to be taken from local ICT cabinet.
Fire Alarm Systems	Diversion of any circuitry that serves areas outside the refurbishment area will be required to ensure these areas outside the area remain operational. New circuitry from reconfigured local fire alarm loops will be provided to feed new requirements of the space. Reprogramming during strip out and again during recommissioning of new will be required.
Intruder Alarm, CCTV and Access Control and Nurse Call Systems	At this stage the extent of these systems' coverage is not known but an allowance for decommissioning of existing devices in the refurbishment area, amendment/diversion of loops passing through the area, and subsequent connection of new devices including all necessary reprogramming should be made.
Systems Specific to Area / Department	None identified.

6.6 Impact Assessment – Structures, Civils and Geotechnics

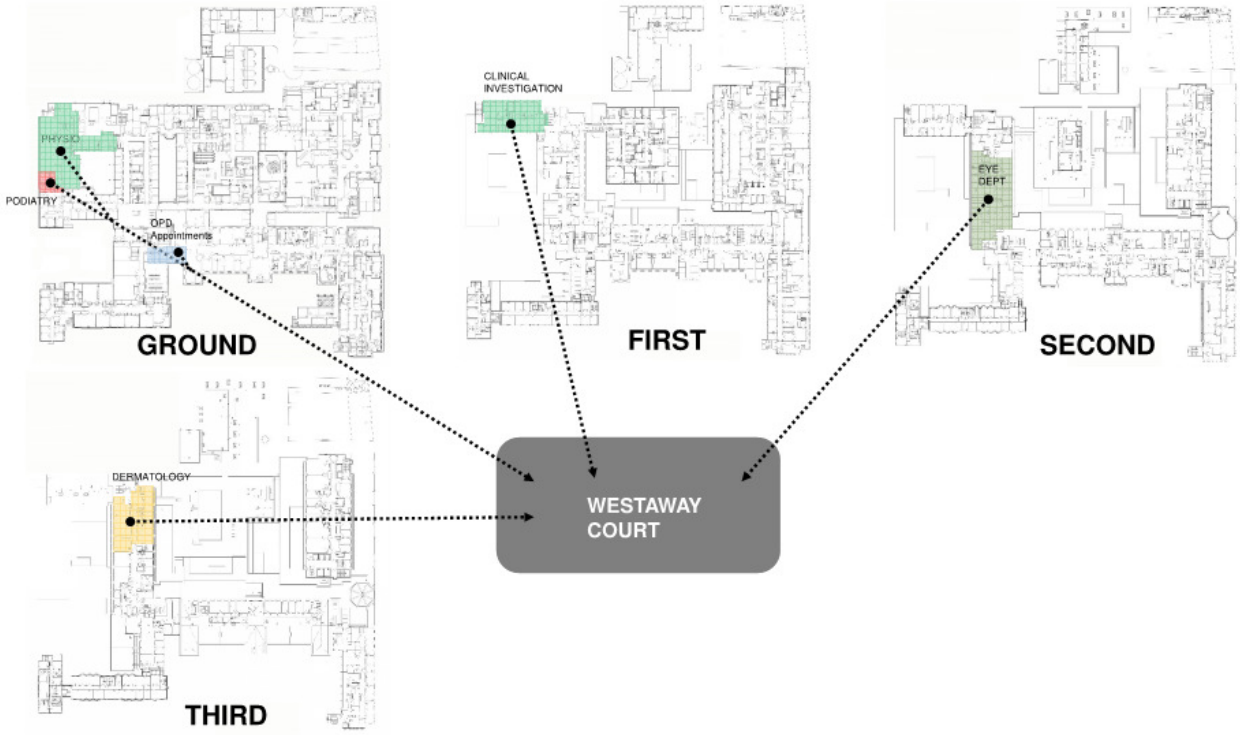
System	Impact Description
Geotechnics	
Geotechnical Conditions	Not applicable
Ground Water	Not applicable
Ground Gas	Not applicable
Contamination	Not applicable
Structural Engineering	
Foundations (existing)	Not applicable as works at higher levels.
Foundations (new)	Not applicable
Ground Slab (existing)	Not applicable as works at higher levels.
Ground Slab (new)	Not applicable
Superstructure (existing)	RC concrete frame – currently offices (2.5kPa) with proposed use similar hence no significant structural works anticipated
Superstructure (new)	Not applicable
Walls/Partitions	Walls are typically masonry. It is possible these form part of the building stability system and this will need to be reviewed in the next stage. An allowance should be made for additional stability works if substatial reconfiguration of these walls is required and they are proved to be part of the stability system
Civil Engineering	
Drainage (foul)	No works are anticipated to the external drainage system, but this is subject to further design developement
Drainage (Storm)	No works are anticipated to the external drainage system, but this is subject to further design developement
Roads/Parking	Not applicable

6.7 Impact Assessment – Transport

Transport Item	Impact Description
Local Highway Network	Relocated to either an area of the existing building or within walking distance. Travel patterns unlikely to change.
Parking	Internal Move. No impact on parking capacity or function.

7 Project ES-7 Impact Assessment

7.1 Transfer of Clinics – 2 – Remodelled Westaway Court



7.1.1 Description of Works

Following its remodelling and extension Podiatry, Physio, Paediatric Clinics, Ophthalmology and Dermatology clinics will be relocated to Westaway Court.

7.2 Impact Assessment – Mechanical and Public Health

System	Impact Description
Low temperature hot water (LTHW)	Existing electric night storage convector heaters currently serve Westaway Court. These units are not suitable for a clinical environment and will be stripped out and replaced with a new heating system.
Medium temperature hot water (MTHW) / High temperature hot water (HTHW)	Not applicable.
Domestic hot water system (DHW)	Existing DHWS system serving Westaway consists of individual flats with immersion cylinders. These units will be stripped out and replaced with a new central DHWS system.
Domestic cold water system (DCW)	Existing domestic cold water systems serving Westaway to be modified to suit the new requirements.
Fuel Oil System & Storage	Not applicable.
Incoming natural gas	Checks required to find out if there is a gas main located nearby or even serving Westaway.
Incoming mains water	Assume that existing incoming mains capacity is adequate, but capacity check required to find out if existing supply is large enough for the new clinical requirements of new relocated departments.
Above ground drainage system	Existing drainage in Westaway will require modification for the new clinical requirements of new relocated departments.
Ventilation system	New mechanical ventilation systems and air handling plant will be required for the new departments moving to Westaway. Possibly local ventilation units may be suitable. Ongoing maintenance and access will be more extensive should a decentralised approach be adopted/required. New air handling plant is likely to be located at roof level, but modifications to the roof of Westaway will be required to accommodate the plant. Ceiling heights in Westaway may restrict the installation of supply and extract ventilation ductwork.
Cooling System	New cooling systems will be required for the new departments moving to Westaway. New cooling plant will need to be either located at roof level or in a new secure compound located externally at ground level. If cooling plant is accommodated at roof level, modifications to the roof of Westaway will be required to accommodate the plant.
Medical Gases	New medical gas pipelines will be required to serve the new clinical requirements in Westaway. This could be provided to the building via local bottled supplies / manifold. Local bottle stores will also be required. Medical Vacuum will be installed if required.
Pneumatic Tube	Consideration to be given to the installation of a pneumatic tube system back to the existing General Hospital. Note the distance between Westaway and the General Hospital, and the route of the pneumatic tube pipework (i.e. via new tunnel below Parade Gardens) will be costly and complicated should it be required.
Systems Specific to Area / Department	Existing buried services below the proposed new building element are currently unknown. Survey required to identify these and diversions undertaken as required.

	It is understood that the existing building is fed by electric radiators. New oil tank and boiler proposed to feed new building although this will be investigated and agreed in further stages.

7.3 Impact Assessment – Electrical

HV	Not understood to be affected.
LV	It is expected that because the existing building is fed by electric heating that there will be sufficient capacity for the proposed use. Amendments to the incoming supply/metering may be required. New LV system from incomer to be provided to serve new building.
Generators	In order to provide HTM compliance a new generator is likely to be required for some uses.
ICT	A new JT connection is anticipated with small data cabinet provision to connect new facilities to existing hospital network. New data cabling to serve new outlets in the rooms will be provided with additional cabinets installed as required to achieve 90m rule compliance for limitation of data cable lengths. A local UPS to support required facilities, including VoIP systems will be required. This could potentially be rack mounted.
Fire Alarm Systems	A new fire alarm system will be provided which is anticipated to be autonomous for the site with remote monitoring.
Intruder Alarm, CCTV and Access Control and Nurse Call Systems	New systems will be provided which are anticipated to be autonomous for the site with remote monitoring.
Systems Specific to Area / Department	Existing buried services below the proposed new building element are currently unknown. Survey required to identify these and diversions undertaken as required.

7.4 Impact Assessment – Structures, Civils and Geotechnics

System	Impact Description
Geotechnics	
Ground Conditions	Review of historical borehole logs and geological mapping indicates approxiamtely 1m of made ground underlain by Blown Sand, in turn underlain by Alluvium. Bedrock at around 14mbgl.
Ground Water	A groundwater strike was recorded at 14.3mbgl with a rise to 7.5mbgl on historical BH records. There is a risk of encountering groundwater which may be under pressure.
Ground Gas	Made ground may be a potential source of ground gases. Radon Risk should be addressed, in pariticlar, as resospective radon protecitve measures may be required by the regulators.
Contamination	The risk of contamination in this area is conisdered to be low, but cannot be ruled out.
Structural Engineering	
Foundations (existing)	Existing foundations are piled. Proposed new use will increase design loads from 1.5kPa to 2.0kPa (Clinical) or 2.5kPa (Office). An assessment of the piles to take additional load will be required in the next stage. It is anticipated that this will be able to be proved without signficant works, but subject to detailed design checks
Foundations (new)	It is expected that new foundations to support the new accommodation area will be required. It is expected these foundation will be piled. If a new lift is required, then this will require additional foundations and pit to be constructed.
Ground Slab (existing)	Existing ground slabs is a suspended concrete slab. The floor loading in the existing is typically 1.5kPa. Design check to show increased loading to 2.0 or 2.5kPa will be required. Initial work indicates that 2.0kPa will be OK, but 2.5kPa will need more work to prove capacity exists. The design load for the existing Block D structure is 3.0kPa. The rehabilitation gym will require a higher load and this would need to be reviewed further once its likely location is defined (assumed to be on ground floor). Any works to re-plan foul drainage will require local ground slab removal and reinstatement. Radon protection measures may be required and suitable cost allowance should be made at this stage.
Ground Slab (new)	No new ground slab is expected to be required (subject to design development) except if an new lift is installed on the outside of the building.
Superstructure (existing)	Existing supsended slabs are a 150mm concrete slab with a 75mm thick non-structural screed on top. The floor loading in the existing is typically 1.5kPa. Design checks to show increased loading to 2.0kPa or 2.5kPa will be required. Initial work indicates that 2.0kPa will be OK, but 2.5kPa will need more work to prove capacity exists. The design load for the existing Block D structure is 3.0kPa It is likely the external insulated render system will need to be replaced If a new lift is to be provided then either structural works to the existing frame or a new external structure will be required.
Superstructure (new)	A new accommodation link between Block A and Block B is expected to be required leaving circulation below for vehicles. It is expected that thsiwould be a steel framed structure with instu concrete slabs on decking. Column locations and spans would need to address the car parking/vehicles below. It is assumes this will be 2 levels of acoommodaiton but this is subject to design development. This structure will be independent of the existing buildings on its own foundations.
Walls/Partitions	Walls are typically masonry. It is possible these form part of the building stability system and this will need to be reviewed in the next stage. An allowance should be made for additional stability works if substatial reconfiguration of these walls is required and they are proved to be part of the stability system

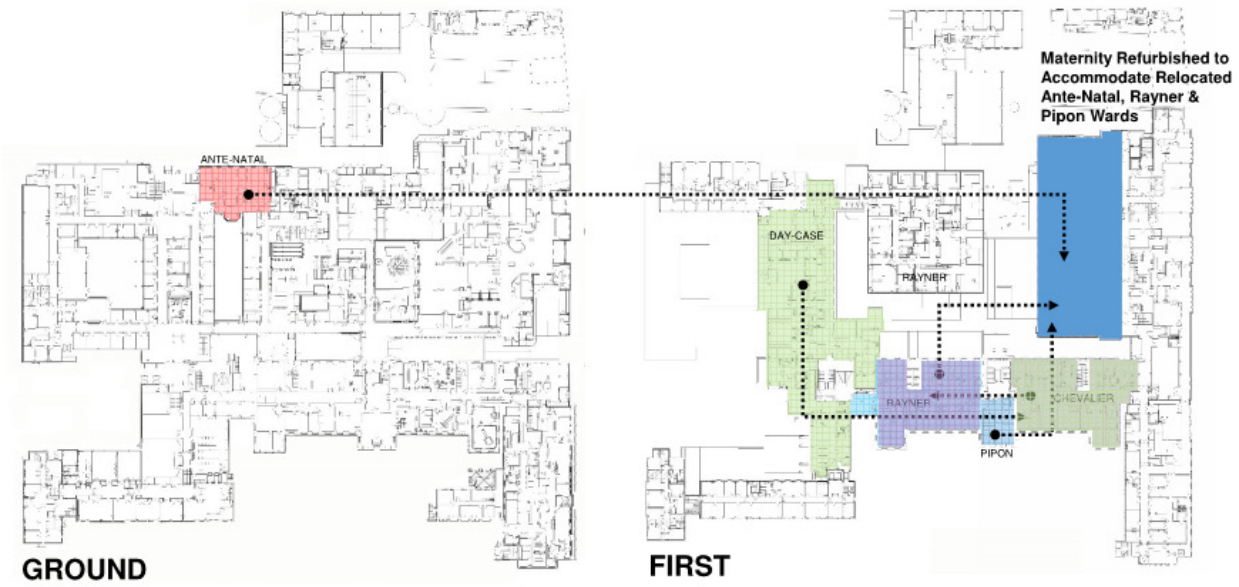
Civil Engineering	
Drainage (foul)	There are two foul connections into the combined sewer in Saville Street. The required changes to the foul drainage are unclear and are subject to further design development. Drainage survey required in next stage.
Drainage (Storm)	There are two storm connections into the combined sewer in Saville Street. Department of Infrastructure have advised that any increase in flow may necessitate the laying of a new public sewer and possibly on site attenuation. The nearest existing storm sewers are in The parade Gardens to the South West or Poonah Road to the East of the site. The required changes to the storm drainage is subject to further design development. Drainage survey required in next stage
Roads/Parking	It is undertood that the existing parking/circulation and access on site will be retained – this is subject to design development

7.5 Transport Impact

Transport Item	Impact Description	
Local Highway Network	Based on TRICS trip generation for Healthcare - Clinics the number of vehicular trips below could be expected to be associated with the Project relocation. These are not necessarily new trips on the wider network as they are likely to have been travelling to the existing site. They are however new trips to/from Westaway Court.	
	Additional AM Trips (Two-Way)	Additional PM Trips (Two-Way)
	33	28
Parking	Based on 2013 FTE staffing data and assuming a reduction of 30% for shift work etc. a total of approximately 41 spaces would be required if using SPG 3 guidance. Initial parking accumulation shows that a maximum of 42 spaces would be required. The total parking provision is approximately 40 spaces with the proposed loss of a maximum of 4-6 spaces associated with the planned extension of the building. This demonstrates that the majority of parking will be accommodated on site with further investigation required to identify appropriate provision for a small number of off-site parking at peak times.	

8 Project ES-8 Impact Assessment

8.1 Reorganisations / Refurbishment of First Floor Parade, Granite & 1960 Wings



8.1.1 Description of Works

Following the reorganisation of the existing Maternity department to release space Ante-Natal, Rayner, Pipon Wards will be relocated to Maternity.

EAU to transfer from Chevalier to Rayner enabling Daycase services to occupy Chevalier allowing increased theatre capacity to be utilised for Daycase patients.

8.2 Impact Assessment – Mechanical and Public Health

System	Impact Description
Low temperature hot water (LTHW)	Existing LTHW systems associated with Ante Natal vacated area will be removed. Existing LTHW pipework systems serving relocation areas / wards to be modified to suit the new requirements. Works are likely to include temporary links to maintain supplies to areas for which the pipework extends outside the refurbishment perimeter. Re-commissioning and re balancing of LTHW systems required on completion of works.
Medium temperature hot water (MTHW) / High temperature hot water (HTHW)	An existing MTHW ring main passes through or near the relocation area in the existing mezzanine. This will be required to remain live.
Domestic hot water system (DHW)	Existing pipework systems Ante Natal vacated area to be isolated locally and stripped out. Existing domestic hot water systems serving relocation areas be modified to suit the new requirements. Works are likely to include temporary links to maintain supplies to areas for which the pipework extends outside the refurbishment perimeter. Final connections will then be made to re-feed new outlets in the refurbished areas. Re-commissioning and re balancing of DHW systems required on completion of works.
Domestic cold water system (DCW)	Existing pipework systems Ante Natal vacated area to be isolated locally and stripped out. Existing domestic cold water systems serving relocation areas be modified to suit the new requirements. Works are likely to include temporary links to maintain supplies to areas for which the pipework extends outside the refurbishment perimeter. Final connections will then be made to re-feed new outlets in the refurbished areas. Re-commissioning and re balancing of DCW systems required on completion of works.
Fuel Oil System & Storage	Not applicable.
Incoming natural gas	Not applicable.
Incoming mains water	Assume that existing incoming mains capacity to the refurbished areas is adequate, but capacity check required to find out if existing supply is large enough for the new clinical requirements of new relocated departments.
Above ground drainage system	Existing above ground drainage associated with Ante Natal vacated area will be removed. Existing drainage in refurbished areas will require modification for the new clinical requirements of new relocated departments.
Ventilation system	Mechanical ventilation systems / ductwork serving Ante Natal vacated area will be stripped out. New mechanical ventilation systems and air handling plant will be required for the new refurbished departments / wards. Some systems may be retained and re-used, but this will depend on the outcome following a system analysis. New air handling plant will be located at roof level within the existing enclosed plant room on the 8th floor.
Cooling System	Any local cooling systems in the vacated Ante Natal areas will be stripped out. If any existing DX systems, refrigerant will be disposed of to comply with regulations. New cooling systems will be required for the new departments / wards being relocated. New cooling plant will need to be located at roof level.

System	Impact Description
Medical Gases	Existing medical gases in the Ante Natal area to be vacated to be stripped out. Works are likely to include temporary links to maintain supplies to areas for which the pipework extends outside the refurbishment perimeter. Final connections will then be made to re-feed new outlets in the refurbished areas.
Systems Specific to Area / Department	Not applicable.

8.4 Impact Assessment – Electrical

HV	Not understood to be affected.
LV	Existing LV systems in ante-natal block to be stripped out and modified to ensure areas outside perimeter remain operational. LV systems amended to suit refurbished area requirements. Any areas where circuits cross the refurbishment areas will require circuit modification to ensure continuity.
Generators	Not understood to be affected.
ICT	Existing data cabling systems in ante-natal block to be stripped out and modified to ensure areas outside perimeter remain operational. Some data cabling may pass through the refurbishment area to serve areas outside the refurbishment extents and some diversions/reconnections of existing to maintain existing outlets for cabling that pass through the refurbishment area may be required. New data outlets with associated feeds from local cabinets will be provided.
Fire Alarm Systems	Existing fire alarm cablings in ante-natal block to be stripped out and modified to ensure areas outside perimeter remain operational and reprogrammed as required. New loops to be provided to suit refurbished areas with modification to existing during refurbishment to ensure continuity of service to areas outside refurbishment extents.
Intruder Alarm, CCTV and Access Control and Nurse Call Systems	Existing cabligs in ante-natal block to be stripped out and modified to ensure areas outside perimeter remain operational. At this stage the extent of these systems' coverage is not known but an allowance for decommissioning of existing devices in the refurbishment area, amendment/diversion of loops passing through the area, and subsequent connection of new devices including all necessary reprogramming should be made.
Systems Specific to Area / Department	New IPS/UPS systems envisaged to serve refurbished areas.

8.5 Impact Assessment – Structures, Civils and Geotechnics

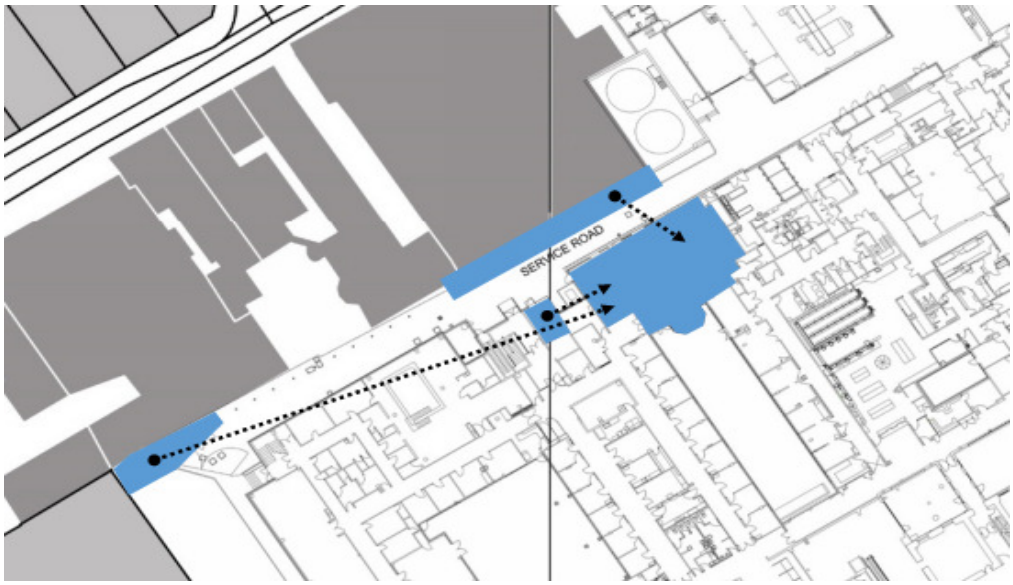
System	Impact Description
Geotechnics	
Geotechnical Conditions	Not applicable
Ground Water	Not applicable
Ground Gas	Not applicable
Contamination	Not applicable
Structural Engineering	
Foundations (existing)	Granite Block - Partial basement present. Foundations are shallow wall thickenings. No works are anticipated to the foundations or basement. Phase 2 Block – Not applicable as works at higher levels.
Foundations (new)	Not applicable
Ground Slab (existing)	Granite Block - Part suspended (Vaulted Brick Arch) and part ground bearing granite slabs Phase 2 Block – Not applicable as works at higher levels.
Ground Slab (new)	Not applicable
Superstructure (existing)	Vaulted brick arch with steel tie rods. With timber or stone finished floor above. Current use is for clinical wards (2.0kPa) and proposed use is similar. Potential need for new drainage/service penetrations to be formed subject to design development subject to design review. Phase 2 Block – Concrete frame with RC ribbed floor with spine beams. Current use is clinical/wards (2.0kPa) and proposed use is similar. Potential need for new drainage/service penetrations to be formed subject to design development. Any new penetrations should be between ribs and subject to design review
Superstructure (new)	Not applicable
Walls/Partitions	Granite Block - Thick masonry walls on plan are load bearing. Other masonry walls, both internal and external, may be load bearing, supporting ceilings/plant. Care will need to be taken if proposal involve alterations to masonry walls. Phase 2 Block – Walls are masonry or lightweight but are not expected to contribute to building stability.
Civil Engineering	
Drainage (foul)	No works are anticipated to the external drainage system, but this is subject to further design developement
Drainage (Storm)	No works are anticipated to the external drainage system, but this is subject to further design developement
Roads/Parking	Not applicable

8.6 Impact Assessment – Transport

Transport Item	Impact Description
Local Highway Network	Internal move. No impact on the local highway network anticipated.
Parking	Internal Move. No impact on parking capacity or function.

9 Project ES-9 Impact Assessment

9.1 Re-siting of Critical Plant and Systems



9.1.1 Description of Works

Key plant and systems to be re-sited away from the areas to be demolished Including, but not limited to:

Medical gas manifold & storage, ICT & telephone hubs, Bartlett ward ventilation plant, oxygen production units & water supply to Pathology.

9.2 Impact Assessment – Mechanical and Public Health

This section is to be read in conjunction with the supportive drawing SK-M-CO025-007

System	Impact Description
Low temperature hot water (LTHW)	Heating may be required within the medical gas bottle storage area to maintain ambient temperature of between 10 and 40 deg.C. General reconfiguration of system to areas where works are proposed will be required.
Medium temperature hot water (MTHW) / High temperature hot water (HTHW)	An existing MTHW ring main passes through or near the relocation area in the existing mezzanine. This will be required to remain live.
Domestic hot water system (DHW)	No significant amendments envisaged.
Domestic cold water system (DCW)	No significant amendments envisaged.
Fuel Oil System & Storage	Not applicable but note existing oil storage tanks nearby on other side of service road.
Incoming natural gas	Not applicable.
Incoming mains water	There is a tanked connection to the existing Pathology from the Gwyneth Huelin Building. A new purpose sized tank with new connections will be required to maintain connection for the Pathology unit.
Above ground drainage system	No significant amendments envisaged.
Ventilation system	New Medical Gases Manifold and Plant Room - High and low level natural ventilation louvres required on external wall, or forced mechanical ventilation to comply with HTM 02-01. Isolation Room AHU - AHU associated with Bartlett Isolation room to be decommissioned and removed after installation of new to roof of new Temporary Building and reconnection to associated Isolation Room.
Cooling System	ICT Relocation - A new cooling system via local DX unit to serve the new ICT hub room location will be provided. Isolation Room – New cooling via local DX to be provided to roof of Temporary Building to serve AHU.
Medical Gases	Internal layout / racking to be designed as per requirements of HTM 02-01. Note the requirements stated above regarding ventilation. Derogation required against HTM 05-01 regarding the location of medical gas storage areas, fire separation, fire hazard and separation distances. Reference made to *HTM 05-01 Table 1 Requirements for the location and fire separation of fire hazard departments from patient-access areas. Refurbished area to accommodate medical gas bottle storage will be required to be upgraded to 60 minutes fire rating.*
Systems Specific to Area / Department	Not applicable.

9.3 Impact Assessment – Electrical

HV	Not understood to be affected.
LV	Amendment to LV systems to suit new provision. No substantial amendments envisaged.
Generators	Not understood to be affected.
ICT	The existing ICT incoming location is to be relocated as part of these works. Critical equipment from the existing ICT room in the Gwyneth Huelin Block basement will be relocated to the new location as shown. Internal wall amendments will be required to provide appropriate space for the new cabinets. Amendments to the existing fibre optic ring will be required to remove the ICT cabinets in the Gwyneth Huelin Block and Peter Crill House with new link to maintain ring to existing hospital when PCH and GHB are demolished to be provided. The existing site has direct fibre optic connections to local off site facilities. It has been agreed that these will be disconnected following Jersey Telecom instatement of new connections with connections from the existing hospital during the demolition and construction stages being made over the JT network.
Fire Alarm Systems	No significant amendments envisaged.
Intruder Alarm, CCTV and Access Control and Nurse Call Systems	No significant amendments envisaged.
Systems Specific to Area / Department	It has been confirmed that the new ICT room will not require gas protection systems and rack mounted UPS will be acceptable.

9.4 Impact Assessment – Structures, Civils and Geotechnics

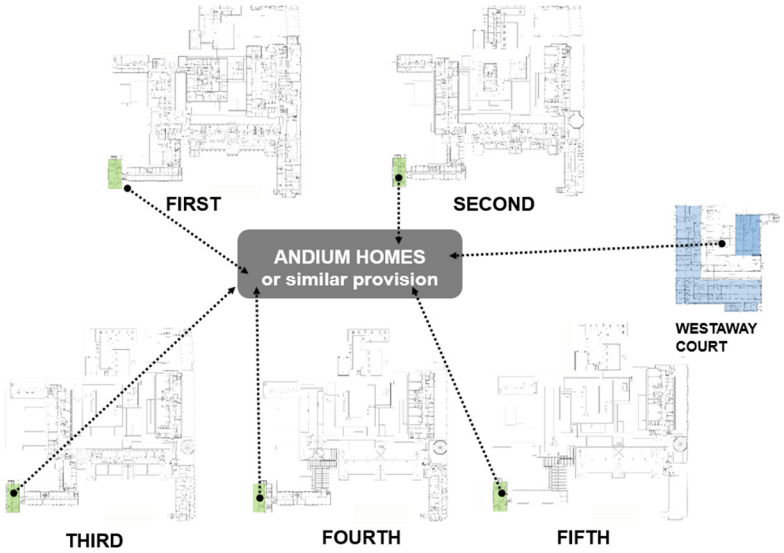
System	Impact Description
No impacts envisaged.	

9.5 Impact Assessment – Transport

Transport Item	Impact Description
Local Highway Network	Internal move. No impact on the local highway network anticipated.
Parking	Internal Move. No impact on parking capacity or function.

10 Project ES-10 Impact Assessment

10.1 Transfer of Staff Accommodation



10.1.1 Description of Works

All staff accommodation to be relocated over a given programme to third party facilities possibly provided by ANDIUM Homes.

10.2 MEP, Structures, Civils and Geotechnics Impact Assessment

This Enabling Scheme is based on relocation to off-site premises, final location is to be confirmed. As the proposed location is not yet identified an engineering appraisal has not been undertaken as part of this works.

10.3 Transport Impacts

Transport Item	**Impact Description**	
Local Highway Network	Based on 25% of the relocated staff (First principle analysis - 40 at the existing hospital and 60 Westaway Court) choosing to travel by car (solo occupancy) due to the relocation:	
	Additional AM Trips (Two-Way)	Additional PM Trips (Two-Way)
	16	16
Parking	Minimal increase in demand on parking facilities near to the Hospital site.	

11 Demolition Stage

11.1 MEP

The Enabling Schemes 1-10 provide decant of facilities from Peter Crill House and the Gwyneth Huelin Block with Enabling Scheme 9 providing key plant relocations required to maintain systems operation of the existing hospital enabling the demolition of Peter Crill House and the Gwyneth Huelin Block.

All systems, with the exception of those noted in Enabling Scheme 9, are understood to be radial connections from the existing site's network and therefore their connection is straightforward without significant modification to the existing systems within the areas of the hospital that are to remain during the construction stage.

In order to allow demolition along the required building lines, local modifications to all systems will be required to ensure that any local services e.g. lighting, power, fire alarm, data outlets, security systems, BMS, heating etc.in the existing areas to remain, remain operational in the areas adjacent to the demolition line.

The Bartlett AHU for the isolation cubicles provides cooling as well as heating to the cubicles. This chiller is mounted on the Gwyneth Huelin Wing roof. The re-provision of the chiller will need to be included within the temporary block. This plant also provides a small amount of chilled water for local cooling to Rayner Ward ultrasound and colposcopy.

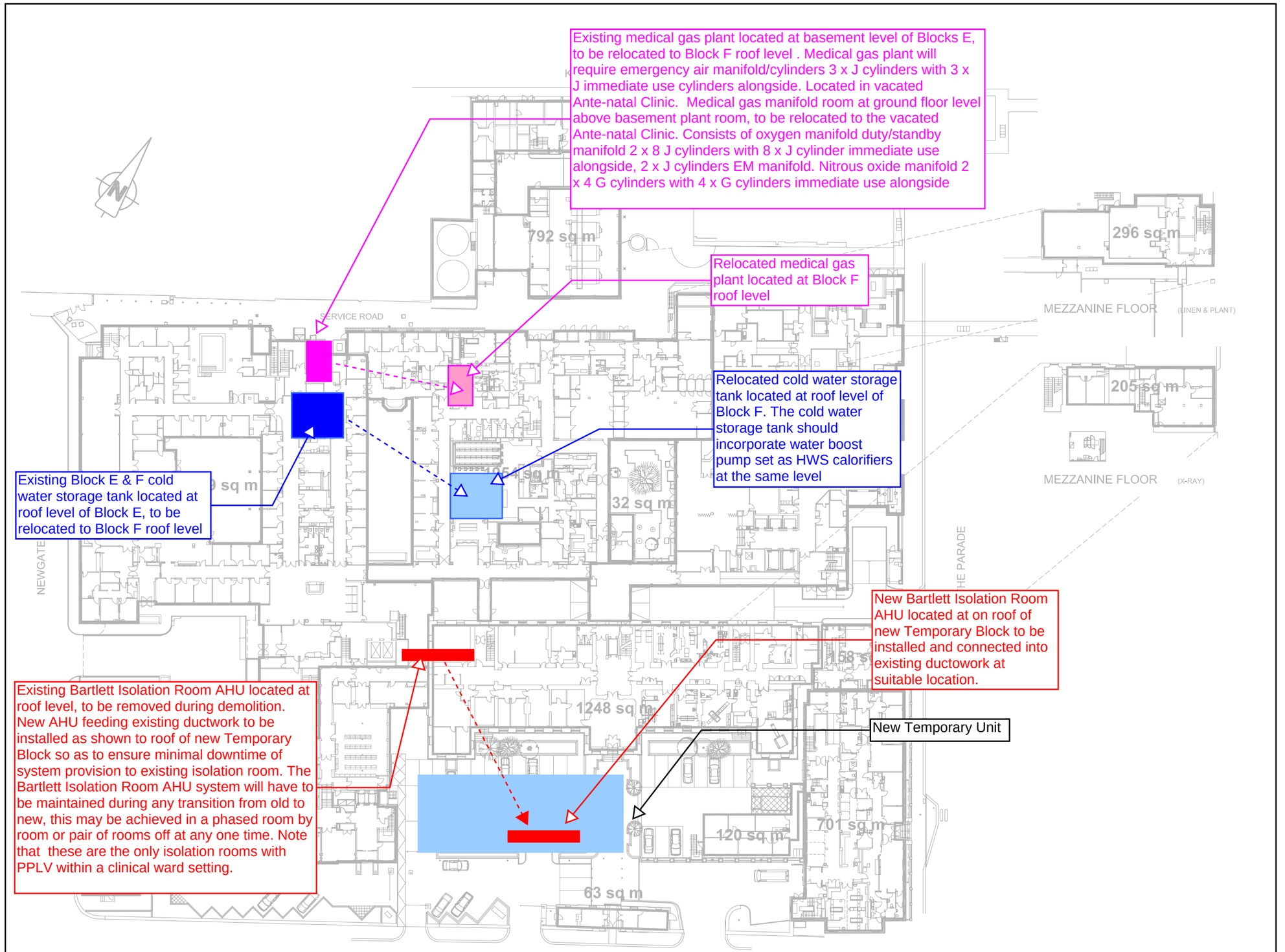
Reprogramming/rebalancing of all systems will be required to ensure the existing site to remain functions correctly in the absence of the demolished areas.

A nominal allowance for the above has been made and local surveys will be required to ensure detailed design incorporates these requirements.

11.2 Structures, Civils and Geotechnics

The following issues/risk should be considered relating to the demolition of the buildings on the existing site.

- The majority of the clinical buildings to be demolished (Gwyneth Huelin and Peter Crill House) are concrete framed and as such should not present any unusual challenges to a competent demolition specialist to ground level.
- The offsite buildings (two hotels and apartment block) should not present significant challenges in their demolition, but it is unclear if these buildings have basements or undercrofts - this will need to be investigated further in the next stage of design. Protection during demolition to Kensington Place will be necessary. Demolition alongside the existing fuel storage tanks will need to be done with additional care to avoid the risk of damage to them.
- There are two separate areas of existing basement on the site. These will make the demolition more complex and the way they interact with the new building and its basement is yet to be developed. Removal of the basement and/or local backfilling are options which will be considered in the next stage of design. A suitable cost allowance should be made for this additional complexity.
- Works to the basement where this is close to the perimeter of the site and/or existing buildings (in particular the Granite Block) will need to proceed carefully to address the risks of subsidence to adjacent structures. If necessary, suitable temporary works will need to be provided.
- In the area adjacent to the Granite Block and Daycare Building, the complexity of demolition increases and it is very likely a staged demolition will be required in this area. At high level a steel platform spanning between these two buildings carries the isolation room AHU which will need to be re-provided to allow the demolition in this area to proceed.
- The extent of phasing in this area cannot be definitively stated at this point and this will need a detailed review in the next stage of design. A suitable cost allowance for this complex area should be made at this stage.
- Given the location of the works, it is likely that strict working hours and/or noise limits may be set by the local authority which may impact on programme/costs of the demolition. It may also influence the choice of demolition method in some areas which may lead to non-typical techniques being required e.g. high-pressure water cutting etc.
- The presence of asbestos should be noted and suitable cost/programme allowance made. Detailed pre-demolition surveys by a suitably qualified asbestos specialist will be required to ascertain the exact location and types of asbestos present. We presume an asbestos register has been provided by SOJ and costs assessed from this at this time.
- Construction work risks associated with potential flooding to the Granite Block basement will require appropriate consideration. This may require flood prevention, detection and pumping considerations.



P2	30/08/16	AH	PT	DP	Final Preliminary Issue SoJ comments added
P1	06/07/16	AH	PT	DP	Final Preliminary Issue

Issue	Date	By	Chkd	Appd

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Client
States of Jersey

Job Title
Jersey Future Hospital

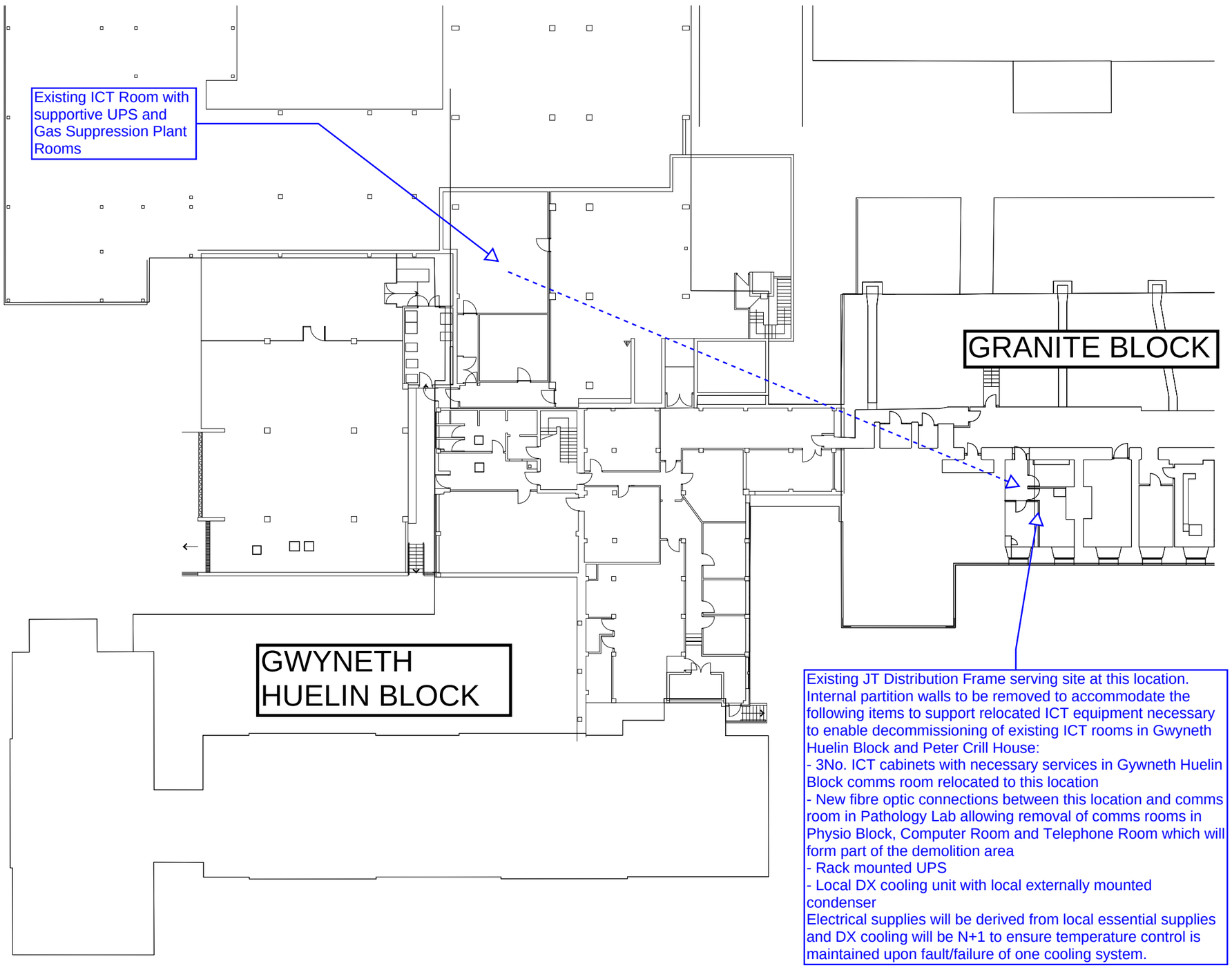
CO025 Existing Mechanical Plant Relocations

Scale at A3
NTS

Role
Mechanical

Drawing Status
Preliminary Issue

Job No	Drawing No	Issue
237035	SK-M-CO025-005	P2



Issue	Date	By	Chkd	Appd
P2	31/08/16	PT	PT	DP
	Final Preliminary Issue			
P1	07/07/16	PT	PT	DP
	Final Preliminary Issue			

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Client
States of Jersey

Job Title
Jersey Future Hospital

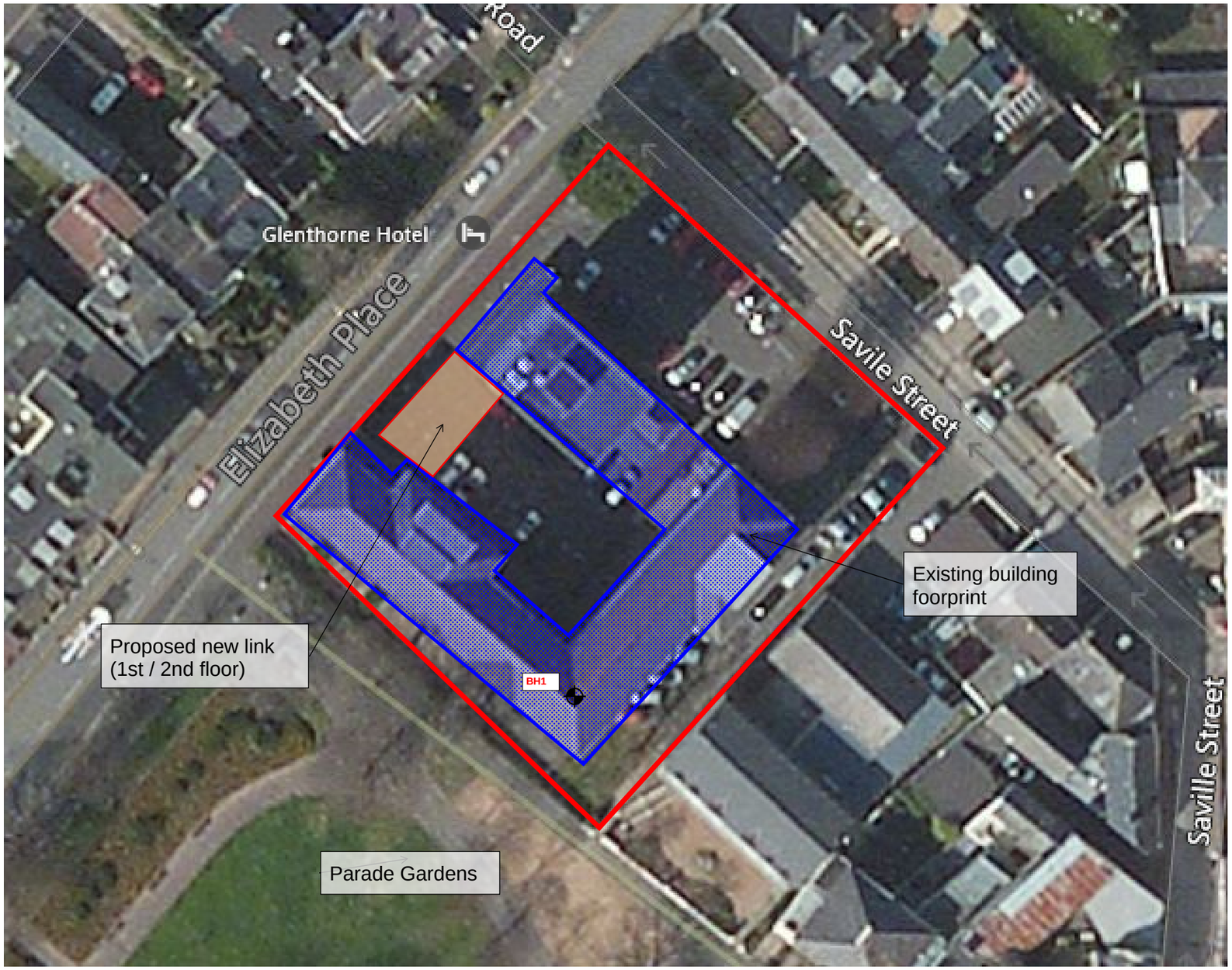
CO025 ICT Relocations

Scale at A3
NTS

Role
Electrical

Drawing Status
Preliminary Issue

Job No	Drawing No	Issue
237035	SK-E-CO025-003	P2



Approximate development boundary

BH1 GI February 1994

Issue	Date	By	Chkd	Appd
P1	06/07/16	KI	PT	DP
	Final Preliminary Issue			

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Client
States of Jersey

Job Title
Jersey Future Hospital

Westaway Court

Scale at A3
NTS

Role
Geotechnics

Drawing Status
Final Preliminary Issue

Job No	Drawing No	Issue
237035	SK-GEO-CO025-002	P1

ARUP

Subject	Jersey Future Hospital – CO025 TN-GEO-CO025-002 Technical Note – Relocation Projects Geotechnics Considerations Final Preliminary Issue – P1
Date	6 July 2016
Job No/Ref	237035

1 Introduction

This technical note has been prepared to support the preparation of the Proof of Concept Exercise that forms Change Request Nr. 25 as part of the Jersey Future Hospital Scheme.

The site options being reviewed as part of this document is:

- Westaway Court

The purpose of this Technical Note is to identify geotechnical risks and opportunities for the relocations projects associated with Change Order 25 proposals.

The site boundaries for Westaway Court are provided on Drawing SK-GEO-CO025-002.

This document should be read in conjunction with TN-ENG-CO025-001 – Relocations Projects Engineering Impact Assessment.

This note has been prepared on the basis of a high level review of desk study information. A detailed desk study and full review of available information will be required.

2 Westaway Court

Background

- When the building proposal details are developed, detailed ground investigations including in situ and laboratory testing are required to fully assess the ground and groundwater conditions beneath the site to inform appropriate detailed design.

Foundations

- Historical ground investigations indicate made ground up to around 1m deep, Blown Sand (comprising loose brown and grey fine and medium sand) up to 3m deep and Alluvium (comprising firm brown clayey silt, very stiff blue grey silty clay and dense blue grey silt and sand) up to 14.3m deep. Bedrock was encountered at 14.3m comprising moderately strong slightly weathered blue/grey fine grained igneous rock. Groundwater strike was at 13.6mbgl, and rose to 7.5m, subsequently groundwater monitoring recorded groundwater at 2mbgl.
- It is expected that new foundations to support the new accommodation will be required. Piled foundations are anticipated to be required. Foundation considerations are required when the proposals are developed, in particular, interaction with existing pile foundations.

Groundwater control measures

- Groundwater conditions are currently unknown, however previous desk study and historic borehole struck groundwater at 14.3mbgl and rose to 7.5mbgl. Ground investigation is required to provide information on the groundwater conditions in order to develop appropriate groundwater control methods, if necessary.

2.1 Risks/Opportunities

The key risks are:

- Radon Gas – protection measure are likely to be required.
- Ground contamination – no data available, but a risk remains given previous uses
- Lack of detailed ground investigation leading to longer/larger pile size and/or greater numbers
- Relatively shallow groundwater under pressure and potential for running sands affecting excavations and pile methods.
- New pile foundations alongside existing foundations affecting new building

DOCUMENT CHECKING

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Date	28/06/2016	28/06/2016	28/06/2016