NHS
Greater Glasgow and Clyde

Initial Agreement

RECOVERY AND RENEWAL

Transformation of Specialist Neurosciences, OMFS and Spinal Injuries Services in the West of Scotland

Project Reference: 21CPO24

June 2022

Version Control

Version	Changes Made	Status	Date
V1	First outline draft	draft	06.04.21
Major Rev	First major revision following stakeholder workshops and NDAP processes	Updated draft - MJ	06.09.21
Rev v0.2	Reviewed, minor changes and corrections	Updated Draft - SW	21.09.21
Rev v0.3	Comments from service stakeholders, additional input from Capital Planning	Updated draft - CB / MJ / SS	07.10.21
Rev v0.4	Addition of Tables/Charts and diagrams	Added - SS	27.10.21
Rev v0.5	Core Team first major pass	Updated Draft	01.11.21
Rev v0.6	Core Team second major pass	Updated draft	10.11.21
Rev v0.7	Updated benefits, options and scoring	Updated draft - MJ	03.12.21
Rev v0.8	Review of draft with additions	Updated draft - SW	10.12.21
Rev v0.9	Issued to Director for review	Updated draft	10.12.21
Rev v0.10	Constraints and Dependencies	Updated draft - CD	20.12.21
Rev v0.11	Economic Case	Updated draft – SS	12.01.22
Rev v0.12	Updated for INS Project Board	Updated draft - MJ	14.01.22
Rev v0.13	Further major update	Updated draft – MJ	27.01.22
Rev v0.14	Expanded Sections 3 and 5	Updated draft - MJ	16.02.22
Rev v0.15	Updated to reflect comments from governance groups (PASG, CPG, MFT Programme Board)	Updated draft - MJ	24.03.22
Rev v0.16	Updated to reflect comments from governance groups (CMT and FP&P Group)	Updated draft - AB	07.04.22
Rev v0.17	Updated to reflect comments from CIG QA review	Updated draft – AB	10.06.22

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Contents

1. Overview

1.1 Purpose

The purpose of this Initial Agreement [IA] for the development and transformation of services within the Institute of Neurological Sciences at the Queen Elizabeth University Hospital [QEUH] campus in Glasgow is to confirm the need for investment to support the continuing and evolving delivery of vital national, supraregional and regional services delivered to residents of Scotland. It will do this by responding, as appropriate, to the following questions:

	Initial Agreement (IA)	
	Question	**Response**
Executive Summary	What is the proposal about?	Prepare Executive Summary of responses to the following questions:
Strategic Case	What are the current arrangements?	Outline existing: • Service details • Service arrangements • Service providers • Associated buildings & assets
	Why is this proposal a good thing to do?	Outline: • Need for change • Investment objectives • Benefits register • Risk management strategy
Economic Case	What is the preferred strategic / service solution?	Confirm: • Stakeholder involvement • The Do Nothing / Minimum option • Service change proposals • Indicative costs • Assessment of proposed solutions • Preferred strategic / service solution • Design Quality objectives
Commercial, Financial & Management Cases	Is the organisation ready to proceed with the proposal?	Confirm: • Procurement strategy & timetable • Affordability & financial consequences • Governance & project management arrangements
Conclusion	Is this proposal still important?	Update: • Strategic Assessment

2. Executive Summary

2.1 What is the proposal about?

The title of the scheme is **Recovery and Renewal: Transformation of Specialist Neurosciences, OMFS and Spinal Injuries services in the West of Scotland**.

The Initial Agreement [IA] sets out the case for change to transform, enhance and redevelop an extensive range of national, supraregional and regional clinical services which are currently delivered by NHS Greater Glasgow and Clyde from the Institute of Neurological Sciences, an internationally recognised leader in its field.

The services covered by these proposals are highly specialist, with complex interdependencies across and between a range of other clinical services delivered to children, young people and adults from the Queen Elizabeth University Hospital Campus in NHS Greater Glasgow and Clyde. Many of the services are available on a once-for-Scotland basis or serve the entire West of Scotland, which accounts for more than half of the country's population.

The Institute of Neurological Sciences comprises two-thirds of NHS Scotland's specialist neurosciences beds, and more than half of patients treated at INS come from outwith NHSGGC: for our two most specialist services, it is significantly less than this. For Neurosurgery, only 42% of patients are GGC residents, and around 20% of patients are not West of Scotland residents at all, with 10% from East of Scotland Boards, 6% from the North of Scotland and 4% who are not Scottish residents. For national services like Spinal Injuries and Deep Brain Stimulation, only c25% of patients are GGC residents.

This IA clearly identifies the clinical imperative and compelling case that action is required not only to maintain existing vital clinical services and adjacencies, but also to allow these services to adapt and evolve to meet the needs of the populations they serve going forward.

Detailed service planning and modelling for the current and future needs of these services has been undertaken with a range of stakeholders, including clinical teams, patient and public representatives, and service commissioners.

The Institute of Neurological Sciences has its own patient and user forum called Neurology Voices, and its members have been key partners in developing this Initial Agreement, as have the Neurological Alliance of Scotland, the national umbrella body for people with neurological conditions. Their input, time contribution and support is gratefully acknowledged.

In addition to this work with patients, the Third Sector, clinical teams and other stakeholders, this IA draws on key government policies such as the Healthcare Quality Strategy (2010), the principles of Realistic Medicine (2016–) and the Framework for Action on Neurological Conditions (2019), as well as extant national and regional clinical strategies regarding the development of a Major Trauma network, the provision of Mechanical Thrombectomy for stroke patients, the provision of Oral and Maxillofacial Surgery [OMFS] inpatient services and a single model for spinal surgery in the West of Scotland.

All clinical models have been developed with a home-first patient-centred approach to care which ensures that people always have access to specialist advice and treatment when they

need it in the location which best suits their care needs. The core ethos is to support people to live as independently as possible, and to travel to this national and regional centre only when it is the most appropriate place for their care.

Significant redesign has already gone into developing virtual approaches to care at or from home, allowing people with long-term conditions to manage their own health, supported by the ability to self-refer back into clinical services when they need support. The services have rolled out a mix of networked and outreach models providing ambulatory care and short-stay admissions across West of Scotland hospitals and beyond to provide local access to regional and national specialists.

This Initial Agreement therefore sets out a long list of potential future service delivery options for the national, supraregional and regional services which must be delivered on a highly acute hospital site.

From this long list, a shortlist of three delivery options to be considered at Outline Business Case stage has been agreed:

1. Do Minimum (which cannot deliver the service model and is for comparison only).
2. All services immediately co-located in a single facility on the QEUH campus.
3. Services delivered over multiple locations and facilities on the QEUH campus.

While overall clinical models have been developed for this IA, a further comprehensive programme of modelling is planned for OBC stage, once detailed design plans which flesh out these broad options are available.

3. Strategic Case

3.1 What are the current arrangements?

NHS Greater Glasgow and Clyde [NHSGGC] is the largest NHS Board in Scotland, with eight acute sites and c.40,000 staff delivering care to a GGC population of 1.2m people, a wider regional population of 2.75m-3m people in the West of Scotland, and highly specialist services for the 5.5m people of Scotland.

The Queen Elizabeth campus on the south side of the city is the largest single-site hospital campus in the UK with approximately 1,500 adult acute beds and 250 acute beds for children and young people across several interlinked clinical facilities:

- the Queen Elizabeth University Hospital [QEUH]
- the Royal Hospital for Children [RHC]
- South Glasgow Maternity Hospital
- the Institute of Neurological Sciences
    - including the Queen Elizabeth National Spinal Injuries Unit
- the Langlands Building

The QEUH is the largest Major Trauma Centre in Scotland, serving 58% of the Scottish population.

The Institute of Neurological Sciences [INS] refers to both the buildings housing the services and the services therein. Its services support a regional population of c3m people and a national population of 5.5m people.

By inpatient activity, the INS is the largest single centre for Neurosciences in the UK, and the second-largest centre for Oral & Maxillofacial Surgery. Many of the specialist clinical services it delivers are not offered anywhere else in Scotland, and by only a small number of centres in England. It also supports critical adult and children's services across the QEUH campus, including other designated Scottish national services and complex regional pathways.

The INS accounts for around two-thirds of all specialist Neurosciences beds across NHS Scotland and half of all of Scotland's Neurosurgery beds (72/142). Excluding OMFS, Neurorehabilitation, Thrombectomy and Acute Stroke, it has 150 specialist Neurosciences beds. The next largest UK centre is the Walton Centre in Liverpool with 132 specialist Neurosciences beds; most large English units have between 90-110 beds, e.g. UCL, 118; Birmingham, 98; Newcastle, 92. For comparison, the new Department of Clinical Neurosciences in Edinburgh has recently been commissioned with 67 beds (44 Neurosurgery and 23 Neurology), not all of which are yet operational. Tayside has 16 Neurosurgery beds and Aberdeen Royal Infirmary has 34 specialist beds in a single ward, which includes neurorehabilitation and high dependency.

The Queen Elizabeth National Spinal Injuries Unit is unique in the UK and Europe as being the only centre which manages patients through the most acute phases of their surgical and medical treatment right through to discharge, a pathway which is only possible because of its location on the most acute campus in Scotland.

The services admit over 11,500 complex inpatients each year, two-thirds of whom are unplanned. Even within its planned care programmes, the treatments offered are predominantly time-critical for life or limb preserving surgery, cancer care or specialist medical treatments for long-term neurological conditions. People from across the West of Scotland attend the West of Scotland Neurology Short Stay and Day Treatment Unit for complex therapeutic interventions and infusions which require full inpatient back-up from a range of specialties including Neurophysiology, Ophthalmology, Cardiology and Critical Care.

The INS has been at the forefront of clinical service provision and research for 50 years and is internationally known for the development of the Glasgow Coma Scale [GCS], the scoring system used worldwide to standardise assessment of a patient's conscious level.

The Institute is a major teaching facility for all groups of clinical staff, and leads worldwide on research into neurological diseases and spinal injuries. It has its own Clinical Research Facility, as well as shared facilities with the Universities of Glasgow and Strathclyde, including a Spinal Research Mezzanine which develops cutting-edge electro-stimulation treatments and robotic supports for people with spinal injuries.

It provides complex national, supraregional and regional services across several specialties:

- Acute and Hyperacute Stroke
- Clinical Neurophysiology
- Interventional Neuroradiology [INR]
- Neurodiagnostics
- Neurology
- Neuropsychiatry
- Neuropsychology
- Neurorehabilitation Medicine
- Neurosciences Critical Care
- Neurosurgery, including the national Deep Brain Stimulation [DBS] Service
- Oral and Maxillofacial Surgery [OMFS] including the national Cleft Lip and Cleft Palate surgery service for adults
- Spinal Injuries
- Theatres
- Wheelchair and prosthetic services

These services are provided by approximately 1,100 staff (950WTE).

3.1.1 National strategic context

The proposed clinical models for the highly specialist services covered by this Initial Agreement have been developed within the overall strategic direction for Health and Social Care within Scotland and for NHSScotland acute services, particularly the national Health and Wellbeing Outcomes:

1	People are able to look after and improve their own health and wellbeing and live in good health for longer.
2	People, including those with disabilities or long-term conditions, or who are frail, are able to live, as far as reasonably practicable, independently and at home or in a homely setting in their community.
3	People who use health and social care services have positive experiences of those services, and have their dignity respected.
4	Health and social care services are centred on helping to maintain or improve the quality of life of people who use those services.
5	Health and social care services contribute to reducing health inequalities.
6	People who provide unpaid care are supported to look after their own health and wellbeing, including to reduce any negative impact of their caring role on their own health and well-being.
7	People who use health and social care services are safe from harm.
8	People who work in health and social care services feel engaged with the work they do and are supported to continuously improve the information, support, care and treatment they provide.
9	Resources are used effectively and efficiently in the provision of health and social care services.

The services within the Institute of Neurological Sciences have been national pathfinder sites for developing person-centred and personalised care through the use of digital and analogue solutions for keeping people safe and healthy in their own homes or a homely setting, such as:

- Active Clinical Referral Triage [ACRT]
- Virtual patient appointments
- Patient Initiated Review appointments
- Homecare delivery and remote monitoring of Disease Modifying Therapies

The nature of providing complex national and supra-regional services, however, is such that our inpatient and day care services can only be provided in a highly specialist centre. The INS provides several nationally designated services, and has the only West of Scotland beds for Neuro Critical Care, Neurosurgery, Neurology, Neurophysiology and complex Maxillofacial surgery.

3.1.1.1 Scottish Trauma Care

The Chief Medical Officer outlined Scotland's plans for achieving excellence in treating people who have suffered major trauma in 'Saving Lives, Giving Back' (SGHD, 2017). This report recommended a maximum of four Major Trauma Centres for Scotland, with the specific recommendation that all severe head injuries across Scotland must be taken directly to a Major Trauma Centre.

To support the management of major trauma, and to decrease lives lost, the Scottish Trauma Network [STN] recommended that the following consultant-led services should be routinely available immediately on site (or with a consultant on-site within 30 minutes) in a Level 1 Major Trauma Centre, such as the QEUH:

1. **Intensive Care (including Neuro ICU)**
2. General Surgery
3. **Neurosurgery**
4. **Spinal Surgery**
5. Vascular surgery
6. Orthopaedic Surgery
7. Cardiothoracic Surgery
8. Plastic Surgery
9. **Maxillofacial Surgery**
10. Ophthalmology
11. ENT
12. **Interventional Radiology**
13. Psychiatry
14. Medicine for Older People
15. **Paediatric Surgery**
16. Obstetrics
17. Neonatal Medicine
18. Paediatric Medicine

Items in **bold** are provided by specialties and/or clinical teams covered by this Initial Agreement.

Sources:
Saving Lives, Giving Back (CMO, SGHD, 2017)
Guidelines for Major Trauma Centres (Nice, 2014)

This list of specialties is replicated from the NICE guidelines for Major Trauma Centres in England, Wales & Northern Ireland and these are therefore the recommended on-site specialties for all UK Major Trauma Centres. There are no Major Trauma Centres in the UK which do not have on-site Neurosciences, Spinal Surgery and Maxillofacial Surgery.

Within the West of Scotland, 80% of all spinal trauma is admitted to Neurosurgery at INS, with 20% being admitted to Orthopaedics. For Cervical and Thoracic Surgery, most likely to be associated with major rather than moderate trauma, this rises to over 95% of trauma patients being admitted to Neurosurgery. There are also national KPIs for time to head CT and reporting of head CT for all admitted head injuries; both of these services are provided by Neurodiagnostics in INS for the Major Trauma service.

3.1.1.2 National Framework for people with Neurological conditions

The *Neurological Care and Support: Framework for Action* states that Scotland will:

- ensure people with neurological conditions are partners in their care and support
- improve the provision of co-ordinated health and social care and support for people with neurological conditions
- ensure high standards of effective, person-centred, and safe care and support
- ensure equitable and timely access to care and support across Scotland
- build a sustainable neurological workforce fit for the future

The services within the Institute of Neurological Sciences are leading on implementing all elements of this framework, with a specific emphasis on:

- developing more holistic services for carers and others who support people with neurological conditions, including specific partnerships with Parkinsons UK (the first Scottish site for their Parkinsons Connect service) and East Renfrewshire HSCP
- developing a first-in-Scotland AHP role of an Advanced Practitioner in Neurological services, starting with supporting people to self-manage early-onset Parkinsons and establishing a workforce model which can be rolled out across Scotland to support other neurological conditions – this will be especially key in supporting our remote and rural populations who find it challenging to access specialist day services
- developing a national register and database which is capable of linking with Trak for improving the care of people with Epilepsy
- developing a national Scottish self-management app for people with non-epileptic seizures - work in collaboration with NHS Ayrshire & Arran and NHS Grampian

3.1.1.3 National policy for complex Stroke care - Thrombectomy

In 2019, the Scottish Government set up a national Thrombectomy Advisory Group to advise on the roll-out of a Scottish national service network on four sites for the provision of Mechanical Thrombectomy, a complex, high-cost but highly effective intervention for people with ischaemic stroke. International trial data suggest that around half of people who receive Mechanical Thrombectomy have significantly less disability following rehabilitation than if they received existing medical interventions.

NHS Greater Glasgow and Clyde was chosen as the site for the West of Scotland service, which will serve over 50% of the Scottish population. The plans also include national cover arrangements for out-of-hours to build resilience into the service and to protect individual sites from the risks associated with staffing gaps in service.

The Thrombectomy service, which brings together specialist Stroke, Interventional Neuroradiology, Emergency Department and Critical Care Teams, has been established within the Institute of Neurological Sciences, with the first patient being treated in November 2021. The service is expected to treat over 400 patients per annum by 2024/5.

Like many INS services, its complexity requires a single regional site with the necessary infrastructure and supporting services not only to provide the intervention itself, but to support

the care and treatment of people who are transferred but are not suitable for Thrombectomy, as their needs remain significant.

3.1.1.4 Programme for Government 2021

The reprovision of the Institute of Neurological Sciences was a commitment in the most recent Programme for Government, as part of ambitious plans for addressing known issues across the NHSScotland estate.

3.1.1.5 Scottish Infrastructure Board

The Hospital Risk and Needs Assessment Tool has been developed by the National Infrastructure Board and Scottish Government as a means of assessing the needs-based priority for investment in all hospitals across Scotland. It is informed by data on demographic needs, service levels, accommodation pressures and the state of the hospital estate. It does not determine absolute priority but provides a very helpful planning tool to understand why and when each hospital might need investment support.

Within the current data collection, the QEUH site and the INS are identified as a priority for future investment. This reflects the wider regional and national importance of the QEUH site, and the specific building fabric condition and challenges of the INS facilities.

As such there is already an understanding within Scottish Government and the National Infrastructure Board that a significant level of investment is required to improve the condition and functionality of the accommodation required to provide the complex national and supraregional services covered by this Initial Agreement.

3.1.2 Local context

To meet the overall outcomes sought for the people of Scotland, NHSGGC developed its own vision for Health and Social Care, known as the Moving Forward Together [MFT] Programme. This strategic blueprint was developed with our partners and stakeholders, but very specifically with the full involvement of patients, staff and wider residents of NHSGGC.

Moving Forward Together describes a health service fit for the future which can:

- support and empower people to improve their own health
- support people to live independently at home for longer
- empower and support people to manage their own long-term conditions
- enable people to stay in their communities accessing the care they need
- enable people to access high quality primary and community care services close to home
- provide access to world class hospital-based care when the required level of care or treatment cannot be provided in the community
- deliver hospital care on an ambulatory or day case basis whenever possible
- provide highly specialist hospital services for the people of Greater Glasgow and Clyde and for some services, in the West of Scotland

The strategy was approved by the NHS Board in June 2018 and subsequently supported by the six Integrated Joint Boards in the NHSGGC area. Its overall aim is to develop a tiered model of care, delivering the majority of care as near to local communities as possible but recognising that more specialist care is better delivered in a smaller number of sites.

Two of the largest pieces of redesign referenced in the MFT Blueprint were:

- the establishment of a Major Trauma Centre on the QEUH campus to serve the population of the West of Scotland
- the reprovision of the Institute of Neurological Sciences

This Initial Agreement seeks to support both strategies within an overall context of evolving health and care provision in Scotland to develop a home-first approach to all care, while balancing this against a need to provide international standard specialist services.

3.1.3 Strategic Infrastructure Strategy

NHSGGC is working to develop a whole-system Infrastructure Investment Strategy to ensure that individual infrastructure investment decisions are driven by an overall clinical strategy and aligned with a wider strategy for investment. This initiative is being supported by Scottish Government, who are seeking a similar approach from all NHS Boards.

NHSGGC's Moving Forward Together Blueprint provides a clinical vision, but this will be further progressed to develop a plan for new service models describing where and how services will be delivered in the future. This will form the foundation upon which to build an Infrastructure Strategy to support the transformational service change. The Infrastructure Strategy will take account of the acute clinical strategy, the primary care strategy and the mental health strategy to reflect NHS Greater Glasgow and Clyde's whole health, care and wellbeing service delivery.

Having identified the investment need across GGC, a prioritisation process will be undertaken to develop a phased programme of investment over the short, medium and longer term.
A substantial amount of preparatory work has already been undertaken by the Board's Planning Team in conjunction with key stakeholders. An agreement was reached in late 2021 to supplement this with specialist external support, and a team of external advisers and healthcare consultants are scheduled to be appointed early in 2022, with a target to complete the proposed strategy by March 2023.

The strategic requirements for the QEUH site and the services within it will form a key part of this work. The needs of the INS services will be considered and this aligned piece of work will enable the examination and testing of shortlisted options in the wider context of strategic service requirements and investment decisions and demonstrate how these support the whole system objectives.

The Board has, however, agreed that the clinical risks involved in not addressing the significant issues posed by the existing infrastructure within the Institute of Neurological Sciences are such that it will remain the top priority for capital investment on the QEUH site and within NHSGGC. There are no extant alternative sites in Scotland which could support the loss of over 50% of all inpatient neurosciences and OMFS in Scotland and 100% of Scotland's Spinal Injuries service.

The completion of this wider work will not change this, and awaiting its completion will only add a further level of delay to addressing the identified high priority needs of these complex national and supraregional services.

3.1.4 Historical Context

The Institute of Neurological Sciences, which is spread across the south-east of the QEUH campus, was opened in 1974, and originally consisted of four services:

- Neurology
- Neurosurgery
- Neurophysiology
- Neuro Critical Care

Over time, its service profile has expanded, with the addition in the 1980s of Scotland's first dedicated service for spinal cord injury and in the 1990s to include Oral & Maxillofacial Surgery and its supportive Laboratory, which creates individualised, often 3D-printed, moulds, implants and prostheses for replacing or augmenting the bony structures of the skull, jaw and neck. Interventional Neuroradiology developed to offer non-surgical alternatives and extended services for both Neurosurgery and OMFS patients. The combined Interventional Neuroradiology and OMFS service is a UK leader in the treatment of salivatory cancers.

UK Ministers recognised the importance of the spinal cord injury service and the Queen Elizabeth National Spinal Injuries Unit was opened in 1992 to provide all specialist care for all Scottish residents. It has always been and remains a world leader in both care and research for this rare but devastating trauma. Most recently in November 2021, the QENSIU became the only UK site – and one of only two sites in Europe – for an eight-centre international trial to improve hand and arm function in tetraplegic patients.

Recognising the needs of individuals with neurological, spinal and maxillofacial conditions are often life-long and multi-factorial, services for Neuropsychology and Neuropsychiatry have been developed and continue to evolve to address the mental health and cognitive symptoms and impacts of the people the INS treats and supports. Catastrophic brain and facial injuries can cause significant personality and behavioural changes, as can cancer surgery and certain medications used in the treatment of neurological conditions. It is important that the specialist medical and surgical services support people and their families in dealing with these non-physical impacts which are often more devastating and long-lasting than the initial treatment itself. Specialist nursing and AHP roles have also been developed, and continue to develop, to provide both virtual support and advice, and hands-on treatment and rehabilitation for our patient groups.

From the late 1990s and early 2000s, the introduction of infusion treatments for a range of neurological conditions, most notably multiple sclerosis, saw the development of the West of Scotland Short Stay and Day Treatment service. Initially, all WOS residents with Multiple Sclerosis were treated in the unit, but clinical practice has evolved and now most people receive their treatment at home (oral or subcutaneous therapies) or in a network of treatment locations across the region (infusions). Today, the unit treats only those patients with the most rare and complex conditions or who require medications which can only be given in a specialist

acute regional unit. The clinical observation and monitoring of some of these newer treatments require single rooms with almost 1:1 staffing.

All of these services, none of which existed – or were even foreseen – when the Institute of Neurological Sciences opened in 1974, have accommodation needs. Both the Surgical and Neurology buildings have had additional storeys added, while the Outpatient Department has been expanded several times, to the front, the side and the rear of the Neurology building. The Queen Elizabeth National Spinal Injuries Unit also had an additional floor added to incorporate a Research Mezzanine, which allows our patients to be part of prestigious international trials for the treatment of traumatic spinal cord injury, and an expanded ground floor footprint to provide a stepdown facility for patients and family members prior to supported discharge back to independent living.

Following a reorganisation of services within NHSGGC in 2015, the Institute of Neurological Sciences was expanded to incorporate two additional services:

- Neurorehabilitation, formerly known as the Physically Disabled Rehabilitation Unit [PDRU], a single-storey inpatient and day treatment facility
- WestMARC, the West of Scotland Mobility and Rehabilitation Centre, a two-storey outpatient facility on the north-east of the QEUH campus (not shown on Figure 1 below)

Also in 2015, the Neurophysiology department was demolished to allow for the building of the Imaging Centre of Excellence [ICE] Building, a collaboration between the University of Glasgow and NHSGGC. Neurophysiology was relocated to refurbished and expanded single-storey accommodation attached to the rear of the Neurology Building which had previously been University accommodation.

The ICE Building houses:

- a 7-Tesla MRI scanner
- 4 theatres for Neurosurgery and OMFS
- recovery and other supporting theatre accommodation
- research and office accommodation for the University of Glasgow

In June 2021, the Acute Stroke Unit from the Queen Elizabeth University Hospital was relocated from Ward 1C in the main QEUH stack to Ward 68 in the Neurology Building to allow Ward 1C QEUH to be opened as the Major Trauma Ward. The Regional Short-Stay Neurology Treatment Service in Ward 68 was relocated to Ward 53 in the Langlands Building, a two-storey PFI build which houses inpatient and day services for both stroke patients and older people. The Short-Stay Treatment Unit is now accessed via a corridor behind Outpatients [OPD] in the Neurology Building.

From four services across three buildings, the INS now provides over 20 interlinked clinical services across seven buildings, as well as community-focused services in the WestMARC Building, which is not in the scope of this Initial Agreement.

Figure 1: QEUH Hospital Campus, February 2022

The scope of this Initial Agreement covers specialist clinical and support services which are currently delivered across seven interlinked buildings shown above:

- ICE Building
- Langlands Building
- Neurology Building
- Clinical Neurophysiology
- Neurorehabilitation (PDRU)
- Neurosurgery Building
- Queen Elizabeth National Spinal Injuries Unit

3.1.5 Service details

Clinical services within the Institute of Neurological Sciences are predominantly delivered by the Regional Services Directorate of the Acute Division of NHS Greater Glasgow and Clyde, with Neurodiagnostics provided jointly by Regional Services and the Diagnostics Directorate. Stroke services are provided by the South Sector of the Acute Division.

As at February 2022, INS has:

- over 200 funded Acute beds over 12 wards
- c.30 Level 2 and 3 Critical Care beds
- 7 functional theatres, 4 of which are in the ICE building
- 1 INR room (with a current capital programme to expand to 2 to support the roll-out of the Scottish Government's commitment to provide Mechanical Thrombectomy to all people in Scotland)
- Day treatment facilities for people with both acute and long-term neurological conditions
- An Oral Surgery treatment suite (dental chairs) for specialist care
- Six outpatient departments totalling over 50 consulting rooms
- An OMFS national and regional maxillofacial prosthetics facility, including 3D printers
- Scotland's largest Neurodiagnostics department, offering CT, MRI, Neuro-Spect and plain film, supporting both inpatients and ambulatory care for all services on the campus
- Health Records department

Admitted services include:

3.1.5.1 Acute and Hyperacute Stroke

Stroke services within INS include hyperacute and acute inpatient management of people who have had an ischaemic stroke.

Most current Acute Stroke patients are admitted for a short period of 3 to 5 days before moving onto other inpatient and/or rehabilitation services after their acute management. Treatments include the provision of clot-busting therapies (antiplatelet and thrombolysis) and intensive rehabilitation.

The service is the only hyperacute stroke unit in the West of Scotland and is also the largest acute unit in Scotland. It accepts both immediate transfers by ambulance through QEUH ED and secondary transfers from hospitals across the West of Scotland following assessment and initial treatment or stabilisation.

The service is currently expanding to include Mechanical Thrombectomy, a procedure which removes the clot entirely using image-guided interventional neuroradiology techniques, and this service will cover the West of Scotland as part of a national service network for Thrombectomy. The first West of Scotland patient was treated in November 2021.

3.1.5.2 Neurology

The West of Scotland Neurology inpatient service is the largest in the UK and is a regional and national hub for people with complex neurological conditions including Multiple Sclerosis [MS],

Myasthenia Gravis [MG], Guillain-Barre syndrome [GBS], epilepsy and non-epileptic seizures, vascular changes, and a range of motor and neuromuscular conditions (e.g. early-onset Parkinsons, Huntingdon's, muscular dystrophies, spinal muscular atrophy, etc) with a typical length of stay of c.10 days.

The West of Scotland Neurology service is also part of the Scottish nationally designated service for CAR-T [Chimeric Antigen Receptor T-cell] therapy, an innovative procedure for treating people with leukaemia and lymphoma. This service is based in the Scottish National Allogeneic Stem Cell and CAR-T Centre on Level 4 of the QEUH and requires 24/7 on-site access to Level 3 Neuro Critical Care, Neurophysiology and consultant Neurological input for managing Cytokine Release Syndrome, a potentially fatal side-effect which affects up to 50% of all patients treated with CAR-T. The Neurology team is also involved in the assessment and long-term follow-up of people who attend these services.

From December 2021, a new Scottish pathway has been developed for the treatment of people with Relapsing-Remitting Multiple Sclerosis using autologous stem cell transplantation. Although the transplants themselves will take place in Sheffield, the only current UK centre for this treatment, it has been agreed with National Services Division that the Scottish National Allogeneic Stem Cell and CAR-T Centre in QEUH will be responsible for any conditioning, pre-admission inpatient assessments, readmissions and follow-up care, and the West of Scotland Neurology service will be providing 24/7 specialist support to this new inpatient group.

The elective programme is delivered in the West of Scotland Neurology Short-Stay and Day Treatment Unit. This service supports people who require specific specialist inpatient assessment and monitoring such as video telemetry over five days to detect seizure patterns, or who must be on an acute hospital site to receive their treatment, either due to co-morbidities or under the licence conditions of the medications: for example, the MHRA licence for alemtuzumab states that it can only be given by a consultant neurologist on an inpatient basis (3-5 day treatment) on a site with immediate Level 3 Critical Care back-up.

All West of Scotland patients starting a new disease-modifying treatment will be seen in the unit as first infusions involve 12- or 24-hour specialist monitoring for cardiac and/or ophthalmic side-effects, such as sudden cardiac death and blindness.

For rare neuromuscular and peripheral nerve disorders, the West of Scotland Neurology Short-Stay Admissions Unit is the only treatment site for the population of Scotland. These younger adults can have significant cardio-respiratory issues and physical disabilities; many require mechanical ventilation and 24/7 support at home, and are already under the care of specialist national and regional teams operating within the QEUH. The co-location of specialist children's, adult and neurological treatment services on the QEUH campus allows immediate access to specialist teams with expertise in managing the complex needs of people with these rare conditions. The QEUH teams also support the Royal Hospital for Children and therefore have often been familiar with the person and their family since early childhood, and this continuity of care is key to supporting person-centred treatment, especially at very difficult times.

People with more common long-term neurological conditions are a key component of the services. There are an estimated 30,000 people affected by epilepsy and 8,000 people living with Multiple Sclerosis in the West of Scotland. The goal of the West of Scotland Neurology

service is to ensure these people can maintain their lives at home or in a homely setting in line with what matters to them, and to self-manage their own health as independently as possible.

The West of Scotland Neurology service has been a national pathfinder for Advanced Clinical Referral Triage, Patient Initiated Review appointments and virtual clinics, and in developing clinical management guidelines for the tiered care of neurological conditions. The Neurology Voices group has been closely involved in these developments which have helped to respond to their request for access to services at a time the individual needs it rather than when a scheduled review appointment is offered. More than 70% of all Neurology outpatient contacts now take place virtually, supporting people in maintaining their normal day-to-day lives and reducing their need to travel to access specialist care and advice.

Some 85-90% of patients with a common long-term neurological condition which requires ongoing medication are treated via homecare or in outpatient settings across the West of Scotland. This is supported by a network of outreach arrangements, with the Neurology service covering 14 hospitals across the West of Scotland with on-site clinics and day treatment services. This minimises the disruption to the lives of people with long-term conditions by allowing them to attend their local hospital but still be seen by a regional specialist.

3.1.5.3 Neurosurgery

Adult neurosurgery is a predominantly emergency service which provides care to people with acute brain or spinal cord injury, vascular injury and Central Nervous System [CNS] tumours. It has a close working relationship with both diagnostic and interventional neuroradiology, and many neurovascular events require treatment by both teams in tandem.

Neurosurgery supports both the on-site Major Trauma Centres at QEUH and the Royal Hospital for Children, and the Queen Elizabeth National Spinal Injuries Unit. While lumbar spinal surgery is managed across both Orthopaedics and Neurosurgery, Neurosurgery manages 95% of elective and non-elective cervical and thoracic spinal surgery, and 80% of all spinal trauma admitted to the QEUH, either through ED (minor and moderate trauma) or the Major Trauma Centre. The service has over forty years' experience in the hyper acute treatment of spinal cord injury.

The adult inpatient service in INS is the second-largest in the UK after Birmingham. If the amalgamation of the orthopaedic and neurosurgical spinal surgery services proposed as part of this Initial Agreement goes ahead, it will be the largest. Lengths of stay are c.7 days for non-elective admissions and 3-5 days for elective patients.

Its elective programme encompasses spinal surgery, cancer diagnosis and its surgical management, and the ongoing treatment of neurological conditions. The West of Scotland Neurosurgery service provides the only comprehensive complex epilepsy assessment and surgery service for adults in Scotland.

The Scottish nationally designated service for Deep Brain Stimulation involves the surgical implantation of a very fine wire with electrodes at the tip into the brain. The electrodes then send a continuous electrical pulse to the brain. It can significantly reduce tremors, dystonia and spasticity in people with several neurological conditions, most notably Parkinsons Disease. For

early-onset Parkinsons, this can be life-altering, allowing younger people to continue to work and to care for themselves independently at home.

Prior to bringing all complex regional adult and children's services together on the QEUH campus in 2015, the department also provided all paediatric Neurosurgery for the West of Scotland in a dedicated children's ward within INS. The two services remain intertwined, with adult neurosurgeons supporting tertiary paediatrics, allowing the Royal Hospital for Children to offer sub-specialty services like base of skull, vascular and complex spinal trauma surgery to the children and young people of Scotland. Without this on-site co-location, these children would require transfer to England.

3.1.5.4 Oral and Maxillofacial Surgery [OMFS]

Oral and Maxillofacial Surgery is mostly concerned with the diagnosis and management of Head and Neck malignancy and salivatory cancers, complex craniofacial conditions – e.g. cleft lip and/or palate, facial deformity and facial trauma – and infections which require surgical treatment.

It provides all complex maxillofacial surgery for West of Scotland residents, and specialist craniofacial procedures, including base of skull surgery, for the population of Scotland. In addition to QEUH being a regional centre for Major Trauma, the OMFS service provides all all-of-hours and weekend maxillofacial trauma services for the West of Scotland. NHSGGC also provides all OMFS services to NHS Dumfries & Galloway, with teams providing on-site services in Dumfries each week.

The inpatient service works closely with the ENT team located in the QEUH. Joint operating by OMFS and ENT teams is common, and takes place in the OMFS theatres. There is a West of Scotland MDT for Head & Neck cancers in the INS outpatient department all-day each Friday, which brings together OMFS, ENT, Pathology, Oncology and other clinical disciplines. ENT and OMFS have combined ward rounds in both INS and QEUH, and OMFS supports the Major Trauma Ward and the Surgical Admissions Unit in QEUH for assessment of all head, neck and cranial admissions.

The service provides a 24/7 West of Scotland emergency treatment facility on Level 2 of the INS Surgical Building for people with facial trauma or severe infection who need immediate treatment following admission through the QEUH Emergency Department and/or Major Trauma Centre. This service allows people to be stabilised, treated and discharged home for local follow-up care without the need to admit to INS/QEUH or transfer to their local hospital for a full inpatient admission.

Almost uniquely among regional services, the West of Scotland OMFS service is a truly collaborative service model, with teams from NHS Ayrshire & Arran, NHS Forth Valley and NHS Lanarkshire providing some elements of service locally (outpatients, day cases and shorter-stay non-complex surgery) while all contributing to the complex regional services in INS. All consultants support a single out-of-hours rota which covers the West of Scotland hospitals. When on regional call, all surgeons employed by other West of Scotland Boards rotate into INS for a full week at a time, allowing them to maintain critical skills by operating on more complex elective and non-elective patients.

Lengths of stay for the most complex cancer surgery, which often involves immediate reconstruction of significant portions of the bones of the face and skull, can be 20-25 days, with less complex inpatients having average lengths of stay of 2-3 days.

3.1.5.5 Spinal Injuries

Traumatic spinal cord injury is a relatively uncommon occurrence within the Scottish population (c.170 people each year) but often results in devastating disability. Uniquely in the UK and Europe, the Unit admits most new patients within hours of their injury, either by direct ambulance transfer or via transfer from other NHS acute trauma services. Falls account for half of all admissions, with road traffic accidents and medical causes accounting for around a fifth each. For the past decade, there has been a sustained rise in admissions of people over 60 who are likely to be more frail, have other co-morbidities and find it much more difficult to complete their therapy/rehabilitation programme.

Patients are admitted to the acute ward, which also has the ability to provide Level 2 and 3 care as required, before moving into the longer stay, less acute ward before they either return home or move to an alternative care facility in their local community. Key components of the service model include clinical psychology, physiotherapy and occupational therapy. There are dedicated treatment areas for physical therapy as well as clinic space to allow outpatient reviews. Patients also benefit from access to large communal areas and a therapy garden. The unit includes step-down accommodation to enable patients to progress to independent living.

Within its high dependency ward, there is specific provision for ventilated patients; this service also provides training for families and carers who will support the individual with home ventilation following discharge. Spinal surgery, which may include external (HALO) fixation, is performed in around one third of cases. Patients are routinely transferred to other specialties within INS (Neurosurgery, Neuro Critical Care, Neurophysiology), as well as to other QEUH specialties, such as Orthopaedics, Urology, Colorectal Surgery, Gastroenterology and Cardiology, as part of their ongoing treatment and management. Co-location with these specialist regional services within QEUH, all of whom have experience in managing patients with Spinal Cord Injury, prevents patients from requiring frequent and repeated ambulance transfer, as currently happens in less acute UK spinal injuries units like Stoke Mandeville and Southport. (Prior to the building of the Queen Elizabeth University Hospital and the installation of a fixed link corridor, the national service funded two dedicated SAS ambulances solely to transfer patients between services on the then-Southern General Hospital campus.)

To support older children and young adults, the Queen Elizabeth National Spinal Injuries Unit can accept people from 14 years of age, so works closely with the Royal Hospital for Children to assess, triage, support and, if required, admit young people with a spinal cord injury. Traumatic spinal cord injury in children and young people thankfully remains very rare – less than 1% of spinal cord injuries occur in under 16s – and there have been few admissions in the under-16 age category in the history of the service; the QENSIU does, however, provide support and advice to teams managing spinal fractures and other spinal injuries in children and young people.

People with spinal cord injury may remain in the Unit for several months after emergency treatment and rehabilitation. Patients with high tetraplegia routinely stay for 18-24 months, with

the least impacted patients staying for an average of around 45-60 days prior to onward transfer to a more suitable setting closer to home.

3.1.5.6 Neurorehabilitation

The Neurorehabilitation inpatient service provides services to patients with complex disabilities that are typically but not exclusively due to neurological illness or injury, excluding stroke which has its own bespoke rehabilitation services across GGC.

It provides Level 2 Specialist Neurorehabilitation Services, as defined by the British Society of Rehabilitation Medicine, delivering intensive rehabilitation to patients whose acute medical and surgical needs have been met but who still require intense specialist interdisciplinary hospital rehabilitation to maximise recovery and to support a safe transition back to a homely setting. It has recently expanded its service by 6 beds (from 18 to 24 beds) to support the intensive neurorehabilitation of people admitted to the Major Trauma Centre.

From 2023/24, as part of the final stages of the Scottish Government's national roll-out of Major Trauma services across all NHS Boards, a regional Level 1 Acute Neurorehabilitation service will be developed (12 beds).

Patients with neurological conditions are also admitted from the community if there are specific rehabilitation goals which can only be achieved by an intense period of multidisciplinary treatment. Most of these patients already attend Neurology or Neurosurgery for primary management of their condition(s) and typical lengths of stay are c.90 days.

Tables 1a-1g: Services within current accommodation

Table 1a: Queen Elizabeth National Spinal Injuries Unit

Level	Service	Required fixed link or internal access to
Level 0	All Spinal Injuries, including: Inpatient services Spinal High Dependency (L2) & Ventilation Support (L3) Day treatments Outpatients Hydrotherapy pool Rehabilitation Gymnasium Step-down unit Horatio's Garden – outdoor rehabilitation space Integrated research facility Third sector support accommodation	Neuro Critical Care INS Theatres Neurodiagnostics (CT and MRI) QEUH Major Trauma Centre QEUH Emergency Department RHC Major Trauma Centre RHC Emergency Department QEUH for other surgical and medical care (e.g. Orthopaedics, Gastroenterology, Colorectal Surgery, Cardiology and Urology, etc.)

Table 1b: ICE Building

Level	Service	Required fixed link or internal access to
Levels 0, 2-6	University of Glasgow	Not in scope – no adjacencies
Level 1	INS Theatres (4) INS Theatre Reception INS Theatre Recovery (supports all theatres across both buildings)	All INS wards and specialties Neuro Critical Care and other Theatres QEUH Major Trauma Centre QEUH Emergency Department QEUH Theatres QEUH Level 2 and 3 Critical Care RHC Major Trauma Centre RHC Emergency Department RHC Theatres RHC Critical Care Peri- and intra-operative diagnostics (CT, MRI, plain film)

Table 1c: Clinical Neurophysiology Building

Level	Service	Required fixed link or internal access to
Level 0	Clinical Neurophysiology	Outpatients - to ensure ease of access for patients and staff and promote efficient flow for MDT clinics INS Theatres Neuro Critical Care All INS inpatient and short-stay wards for VT and other EEG monitoring of patients QEUH Major Trauma Centre QEUH Emergency Department QEUH Level 2 and 3 Critical Care QEUH Theatres (for intra-operative monitoring) QEUH Scottish National Allogeneic Stem Cell and CAR-T Centre QEUH Scottish National Brachial Plexus Surgery service for adults RHC Major Trauma Centre RHC Emergency Department RHC Level 2 and 3 Critical Care RHC Theatres (for intra-operative monitoring) RHC Neurology RHC Neurosurgery RHC Scottish Craniofacial Surgery service RHC Scottish Cleft Surgery service RHC Scottish National Brachial Plexus Surgery service for children and young people RHC Scottish National Dorsal Rhizotomy Surgery service

Table 1d: Surgery Building

Level	Service	Required fixed link or internal access to
Level 6	Offices and on-call rooms	-
Level 5	Clinical Research Facility [Univ]	Resuscitation support (adult and paediatrics)
Level 4	Ward 65: Neurosurgery Ward 66: Pre-Operative Assessment, Same Day Admissions Unit [SDAU] [1]	Neuro Critical Care INS Theatres Neurodiagnostics Neurophysiology QEUH Major Trauma Centre QEUH Emergency Department QEUH Theatres QEUH Level 2 and 3 Critical Care QEUH ENT QEUH Orthopaedics RHC Major Trauma Centre RHC Emergency Department RHC Maxillofacial Surgery RHC Neurosurgery RHC Scottish Craniofacial Surgery service RHC Scottish Cleft Surgery service
Level 3	Wards 63 & 64: Neurosurgery	
Level 2	Ward 62: OMFS	
Level 1	Neurosurgery Theatres (3)	All INS wards and specialties ICE Building Theatres, Reception and Recovery Peri- and intra-operative diagnostics (CT, MRI, plain film, SPECT, Intra-cranial Doppler) QEUH Major Trauma Centre QEUH Emergency Department QEUH Theatres QEUH Level 2 and 3 Critical Care QEUH Orthopaedics
	Wards 60 & 61: Neuro Critical Care	
	Interventional Neuroradiology [2]	
	Neurodiagnostics, inc Neuro-SPECT, CT, x-ray	All INS wards and specialties QEUH and RHC – supports inpatients, day treatments and outpatients
Level 0	Neurodiagnostics, inc CT and MRI	All INS wards and specialties – supports all inpatients, day treatments and outpatients QEUH and RHC– supports head and spine imaging for all inpatients, day treatments and outpatients
	OMFS Dental OPD and Day Treatment Unit	Neuro Critical Care OMFS ward
	Interventional Neuroradiology [2] (under construction with expected completion in 2022 – will replace Level 1 single-room facility)	All INS wards and specialties QEUH Major Trauma Centre QEUH Emergency Department QEUH Theatres QEUH Level 2 and 3 Critical Care QEUH Medical Assessment Unit for immediate transfer of stroke patients, esp. Mechanical Thrombectomy

[1] Both Pre-Op Assessment and SDAU have been closed for three years due to the need for decant space to allow the ward upgrade programme to take place. This programme will continue for at least three more years.

[2] The current neuroradiology room is frequently out of use due to ongoing issues with the ageing INR equipment. This results in unplanned transfers of patients to NHS Lothian. A current capital scheme is underway to replace both the facility and the equipment, utilising the former ENT Theatres and Day Surgery Unit on Level 0.

Table 1e: Neurology Building

Level	Service	Required fixed link or internal access to
Level 3	Offices, seminar rooms, etc	-
Level 2	Ward 68: Hyperacute and Acute Stroke	QEUH Emergency Department QEUH Critical Care QEUH Diagnostics Interventional Neuroradiology
Level 2	Inpatient rehabilitation inc gym	Neurosurgery, Neurology and OMFS wards
Level 1	Ward 67: Acute Neurology	Neuro Critical Care INS Theatres Neurodiagnostics Neurophysiology Neurorehabilitation QEUH Major Trauma Centre QEUH Emergency Department QEUH Scottish National Allogeneic Stem Cell and CAR-T Services
Level 0	Main OPD	West of Scotland Neurology Short-Stay and Day Case Treatment Service Neurodiagnostics Neurophysiology
Level 0	OMFS Regional Maxillofacial Prosthetics Lab	None

Table 1f: Neurorehabilitation (PDRU)

Level	Service	Preferred fixed link or internal access to
Level 0	Neurorehabilitation inpatients, day case and outpatients and spasticity clinics	Acute Neurology Neurophysiology Neuro Critical Care Neurology Short Stay and Day Treatment service QEUH Major Trauma Centre

Table 1g: Langlands Building

Level	Service	Preferred fixed link or internal access to
Level 0	Ward 53: WOS Neurology Short Stay and Day Treatment Service Video Telemetry (VT)	Acute Neurology ward Neuro Critical Care QEUH ITU and CCU (MHRA licence requirement of specific treatments) QEUH Cardiology QEUH Ophthalmology QEUH Respiratory Medicine Outpatients Day case Neurorehabilitation service

All seven buildings are interlinked, and joined to the QEUH/RHC, to allow the movement of patients – often gowned and intubated, attended by clinical teams with life-preserving equipment – both within INS and between INS, the QEUH and the Royal Hospital for Children, with fixed corridors between:

- Neurosurgical Building and Queen Elizabeth National Spinal Injuries Unit – Level 0
- Neurosurgical Building and QEUH / RHC – Level 1
- Neurosurgical Building and ICE Building – Level 0 (lift access only) and Level 1
- Neurosurgical Building and Neurology Building – Level 1 and Level 2
- Neurology Building and Neurorehabilitation (PDRU) – Level 0
- Neurology Building and Clinical Neurophysiology Building – Level 0 (no other means of access to Neurophysiology building other than via the main entrance of Neurology)
- Neurology Building and Langlands Building – Level 0

Table 2: Beds, Theatres and Critical Care

Speciality	Building	Ward	Funded beds	Open at Dec 21
High Dependency Unit [1]	Neurosurgery	60	6 [4]	7
Intensive Care Unit [1]	Neurosurgery	61	7 [6]	8
OMFS [2]	Neurosurgery	62	21	21
Neurosurgery [3,4]	Neurosurgery	63	23	-
Neurosurgery [4]	Neurosurgery	64	23	22
Neurosurgery [4]	Neurosurgery	65	23	22
Same Day Admission Unit [5]	Neurosurgery	66	-	18
Acute Neurology Inpatients	Neurology	67	19	19
Acute Stroke Unit [6]	Neurology	68	20	20
Spinal Injuries Unit	QENSIU		48	48
Neurorehabilitation [7]	Neurorehab		24	16
Neurology Short-Stay [8]	Langlands	53	17 [12]	17 [12]
Total			**231 [223]**	**218 [213]**
Theatres and OPD				
Main OPD [9]	26 generic consulting rooms used by all specialties			
Neurophysiology	12 treatment and assessment rooms			
Theatres	7 split between ICE & Neurosurgery buildings			

Notes:

[1] Neuro Critical Care Unit is commissioned as 4 Level 2 [HDU] and 6 Level 3 [ITU] beds with the ability to flex to 6 HDU + 7 ITU. This is routinely flexed to 15+ (7 HDU + 8 ITU) by utilising Theatre Recovery

[2] Ward 62 originally had 34 beds for OMFS + ENT. This was reduced to 21 beds when QEUH opened.

[3] Ward 63 is currently closed for essential HEI upgrades to the fabric of the ward.

[4] Although established with 23 beds each, Wards 63, 64 and 65 are restricted to 22 beds to meet 2.7m bed spacing.

[5] SDAU and Pre-assessment on Level 4 was previously set up with trolley bays and open 0800-2000 with no overnight beds available. Due to the ongoing HEI ward upgrade programme, both SDAU and Pre-assessment have been closed for 3 years and the facility has been used as a decant ward with 18 beds. It is not expected to reopen before 2023/4. 14 / 18 beds are used by South Sector for medical boarders.

[6] Acute Stroke moved from 26 beds in Ward 1C QEUH to 20 beds in Ward 68 INS. The service funded complement is for 26 beds.

[7] Neurorehabilitation has 8 beds closed awaiting essential HEI upgrades.

[8] The West of Scotland Neurology Short-Stay and Day Treatment Service operates Monday to Friday with 17 beds/chairs which can be used for both day case presentations and also short-stay overnight patients [1-5 days, depending on treatment]. This equates to 12 elective beds at seven days.

[9] Does not include other OPD facilities across the estate, including Pre-Assessment, Spinal OPD, OMFS Dental OPD, Neurorehabilitation outpatients, etc [a further c25 rooms total]

Figure 2: Services by Accommodation

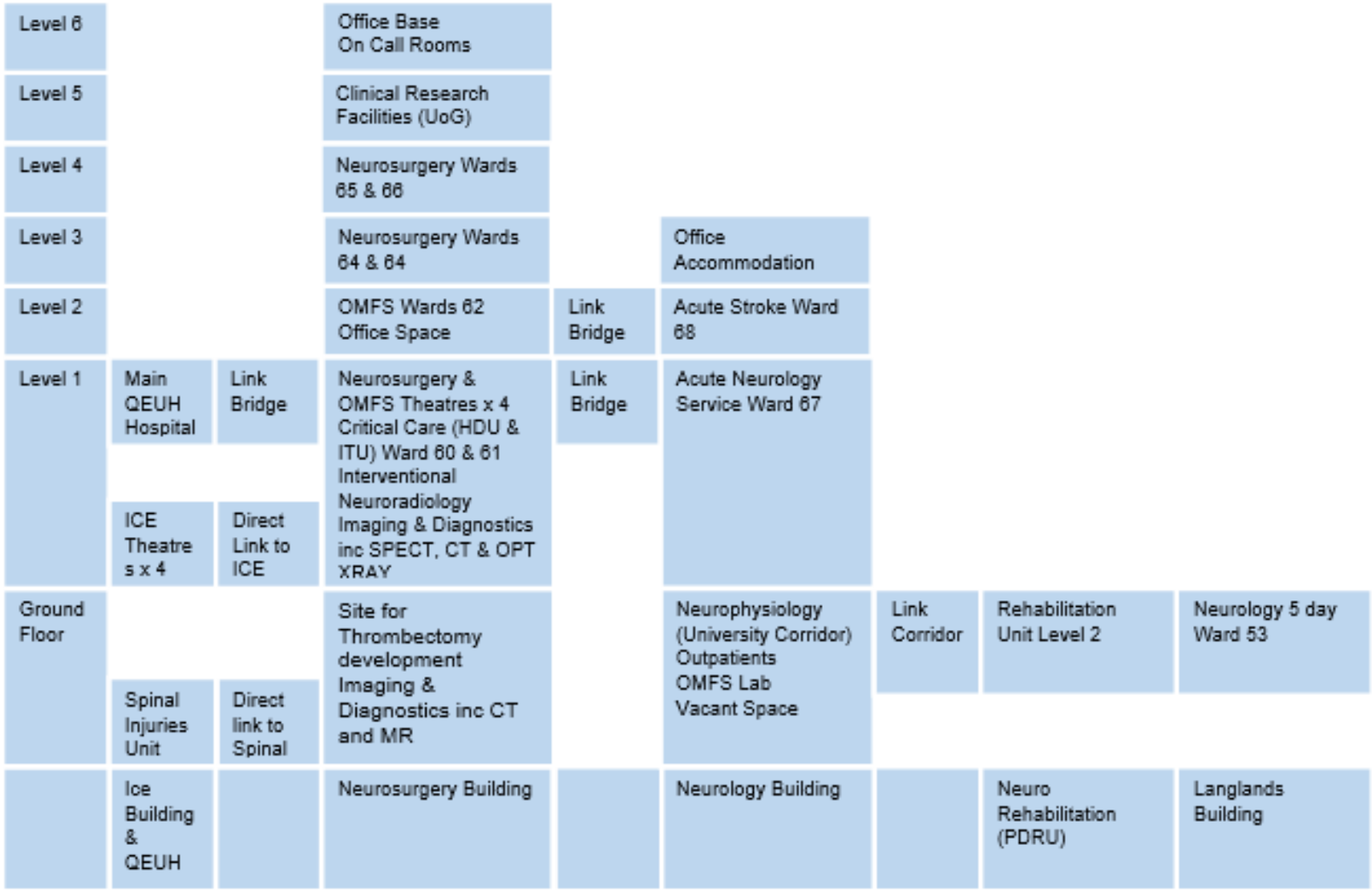
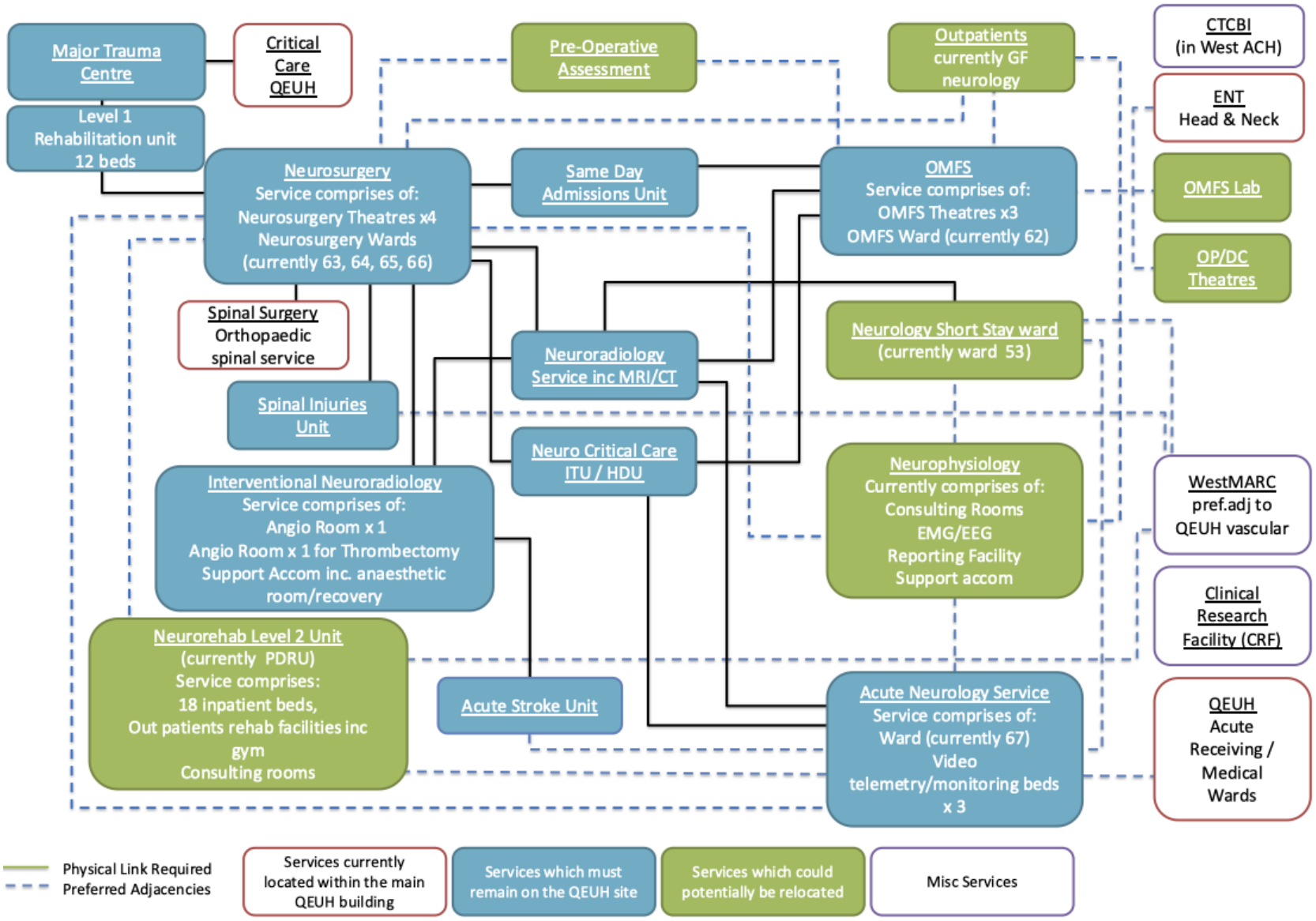


Figure 3 Clinical Adjacencies



3.1.6 Populations Covered

3.1.6.1 Designated national services

Nationally services are designated by Scottish ministers to provide services to the 5.5m population of Scotland.

There are four nationally designated services provided by the clinical teams within INS:

- Queen Elizabeth National Spinal Injuries Unit
- Deep Brain Stimulation
- Cleft Lip and/or Palate Surgery for adults
- Specialist Prosthetics

The co-location of all specialist Neurosciences with comprehensive supraregional adult and children's services on a single campus is vital to supporting other nationally designated services which are based in the Queen Elizabeth Hospital and the Royal Hospital for Children.

Teams based in INS are also a funded and integral part of the following nationally designated services provided on campus:

- Brachial Plexus Surgery for children, young people and adults (RHC and QEUH)
- Craniofacial Surgery for children and young people (RHC)
- Dorsal Rhizotomy Surgery for children and young people with Cerebral Palsy (RHC)
- Surgery for children and young people with Cleft Lip and/or Palate (RHC)
- Scottish National Allogeneic Transplant Service (QEUH)
- Scottish National CAR-T service (QEUH)

3.1.6.2 Non-designated national and supra-regional services

As the largest Neurosciences and OMFS centre in Scotland, there are some facilities which are only available within INS and are regularly accessed by all residents of Scotland, and for which INS also receives referrals from other parts of the UK. The Neuro-SPECT scanner, for example, is the only one in Scotland. These services are all provided to a population of 2.75m-5.5m.

The clinical teams in INS offer a range of services to the wider NHSScotland population which are not nationally designated, but are not routinely available elsewhere in Scotland. This is because either the disease is so rare or the clinical presentation so severe that individual clinicians across Scotland may only see people with such conditions once every few years. INS therefore provides highly specialist assessment to inform the future management of these individuals, as well as both inpatient and daycase treatments.

The services for adults provided on a once-for-Scotland basis within INS include:

- complex epilepsy assessment and surgery
- complex base of skull and craniofacial surgery
- assessment and treatment for Myasthenia Gravis (also offers Scotland-wide virtual clinical support for people with MG)

- assessment and treatment of peripheral nerve disorders
- assessment and treatment of rare neuromuscular conditions

Because paediatric craniofacial surgery and neurosurgery were provided in the Institute of Neurological Sciences until the opening of the new Royal Hospital for Children in 2015, neurosurgery remains a combined paediatric and adult team, with posts sitting across both adult and paediatric services. Maxillofacial surgery and neurophysiology are also combined paediatric and adult teams with all clinicians employed by INS and working across both hospitals. For these specialties, this allows greater resilience in providing services for children and young people which otherwise would require employing very small teams with the inherent clinical risks of maintaining cross-cover during unplanned leave and other gaps in service.

Clinical teams based in INS therefore also work jointly with paediatric-only colleagues to provide comprehensive services for the spine, brain, head and neck:

- Paediatric neurosurgery
- Paediatric neuro-oncology
- Paediatric maxillofacial surgery
- the treatment of children with complex needs who are referred to national paediatric services but whose care is not covered by the national service designation, for example:
    - some children who are referred to the national Paediatric Cardiac Service have complex genetic conditions which also affect their spinal and facial growth and which require surgical intervention not covered by national service designations
    - Not all craniofacial surgery is covered by the national designation, but is still only available in one site (RHC Glasgow) or two sites (the Royal Hospitals in Glasgow and Edinburgh) and therefore children from across Scotland are treated at RHC Glasgow

The co-location of specialist children's and adult services on a single campus enhances NHSGGC's ability to provide services for both children and adults which would not otherwise be available within Scotland. Adult clinicians within INS are available on-site to support specialist children's services in providing treatment for conditions which are rare in children and young people (e.g. vascular neurosurgical events). Equally, clinicians working across both RHC and QEUH who are also involved in specialist national children's services are able to provide continuity of care for people with very complex needs who have been seen at RHC since birth and transfer into adult neurosciences and maxillofacial services.

It is commonly noted that transition between paediatric services, where all services for a specific condition are provided on one site in a holistic manner, and adult services, where services are provided over multiple sites in a more siloed specialty-first approach, can be a significant shock for a young person with complex needs. It is also very disorienting for the families and carers who support these people throughout their lives. The current service model of close co-operation, service planning and skill-sharing by clinical teams for children, young people and adults across RHC, QEUH and INS is seen as a gold standard for the care of these vulnerable individuals and their families.

3.1.6.3 Regional services

Table 3: Current base adult populations covered by regional specialty

Specialty	A&A	A&B	D&G	FV	GGC	Lan	WI
Hyper-Acute Stroke	✓	✓	✓	✓	✓	✓	✓
Neurology	✓	✓	Trauma	Trauma	✓	✓	✓
Neurophysiology	✓	✓	✓	✓	✓	✓	✓
Neuropsychiatry	Specialist care to support INS services						
Neuropsychology	Specialist care to support INS services						
Neurorehabilitation	Level 1	✓	Level 1	Level 1	✓	Some	✓
Neurosurgery	✓	✓	Trauma	Trauma	✓	✓	✓
OMFS	✓	✓	✓	✓	✓	✓	✓

Planned elective Neuroscience services are provided to a population of 2.3m people which covers:

- Argyll & Bute HSCP (part of NHS Highland)
- NHS Ayrshire & Arran
- NHS Greater Glasgow and Clyde
- NHS Lanarkshire
- NHS Western Isles

Most residents of NHS Forth Valley and NHS Dumfries & Galloway receive their planned Neurosciences care from NHS Lothian. There are small numbers of people (under 20k) in each Board whose patient flows have always been into INS, and it is not expected that these pathways will change.

All non-elective services (including Major Trauma) and all OMFS services are provided to a population of at least 2.75m, which covers:

- Argyll & Bute HSCP
- NHS Ayrshire & Arran
- NHS Dumfries & Galloway
- NHS Forth Valley
- NHS Greater Glasgow and Clyde
- NHS Lanarkshire
- NHS Western Isles

Small numbers of trauma patients from NHS Highland are directly transferred by the Scottish Ambulance Service to QEUH if there is any suspicion of spinal cord injury at time of first triage. This is related to the popularity of active tourism (walking, climbing, mountain biking, etc) in the north-west of Scotland.

3.1.6.4 Local GGC-only services

For all services, the base GGC catchment includes both:

- residents of Argyll & Bute HSCP
- the c.100,000 residents of NHS Lanarkshire and NHS Forth Valley who were previously GGC residents before the 2015 NHS Board boundary changes to realign Boards with unitary authorities

INS is the secondary care provider, as well as the regional centre, for these two populations, bringing the base population to 1.5m.

There are few GGC-only services offered in INS, and they cover non-admitted pathways, e.g. Neurorehabilitation provides a day attendance programme for people with spasticity to this wider base population of 1.5m.

3.1.6.5 Outreach services

To reduce the need for patient travel, INS also delivers the following outreach services across GGC and to other NHS Boards:

- Neurology consultants provide clinics and outpatient/day treatments across 14 hospitals in the West of Scotland, and bespoke sub-specialty video clinics to Argyll & Bute and Western Isles residents
- GGC provides the entire OMFS service in NHS Dumfries & Galloway with GGC clinicians delivering outpatient consultations and short-stay surgery on site in Dumfries Royal Infirmary 5 sessions per week, as well as providing outreach clinics every second month to Argyll and Bute
- Clinical Neurophysiology provides outreach EEG monitoring to all Intensive Care Units across GGC and NHS Lanarkshire, and also supports the Golden Jubilee National Hospital; they also deliver on-site elective care in NHS Forth Valley and NHS Ayrshire & Arran 1-2 days per week
- The national Spinal Injuries service has a network of in-person clinics across all mainland NHS Boards at regular intervals as part of providing lifelong care and follow-up to this complex patient group; these sessions also involve the local teams and/or carers who manage the day-to-day needs of people with a spinal cord injury to promote joined-up care and shared learning

3.1.6.6 Other joint services

- Neurology consultants contribute to both the Acute Stroke out of hours rota in QEUH and to routine weekday Acute Stroke services across GGC
- INS has a specialist Neuro-ophthalmology service which is jointly provided the South Sector Ophthalmology team
- Surgical and medical services within QEUH provide support for patients with spinal injuries, with the majority of interventions being managed by Orthopaedics, Colorectal Surgery, Urology and Gastroenterology

- Before there was a fixed access corridor between INS and QEUH, the QENSIU funded two full-time SAS ambulances to facilitate on-campus transfers for patients to access these interventions

3.1.6.7 Joint services off-site

In addition to the provision of outreach services across the West of Scotland, the West of Scotland Neurology and Clinical Neurophysiology services are contracted to provide support to the William Quarrier Scottish Epilepsy Centre [SEC], a medium-stay inpatient facility located close to the QEUH campus.

The SEC is operated by Quarriers, a third sector partner, but almost all of its patients are referred by NHSScotland consultant neurologists, with small numbers of direct referrals from HSCP teams, non-NHS services and other parts of the UK. NHSScotland has a formal SLA, managed on behalf of all Boards by NHS Ayrshire & Arran, to cover all care for residents of Scotland.

The service moved from Bridge of Weir to Govan in 2013, with the capital build part-funded by contributions from NHSGGC and other NHS Boards, to allow closer access to the Institute of Neurological Sciences. INS teams are contracted to provide in-person elective clinical services, including medical Epilepsy management, Neuropsychology and Neurophysiology, on a sessional basis.

3.1.6.8 Summary

The services covered by this initial agreement are not stand-alone routine services, but complex supraregional and national services which are delivered for, and in conjunction, with other clinical services which are located across the INS, QEUH and RHC sites.

This co-location of adult acute and paediatric specialist regional and national services with Neurosciences, OMFS and Spinal Injuries brings significant benefits to people using a wider range of services than those immediately covered by this Initial Agreement. It allows services to be provided on a once for Scotland – or, at best, twice for Scotland – basis that would otherwise result in people being transferred to England to access highly specialist care.

A home-first tiered model of care is already in place which ensures that the services which can be delivered in the patient's home or a non-acute or less-acute site already are. The services all work on a hub-and-spoke approach to distributed care, with both in-person and virtual outreach delivered across the West of Scotland and beyond to minimise the need for patients to travel to access highly specialist care.

3.1.7 Excluded from scope

3.1.7.1 WestMARC

The WestMARC service provides wheelchair and mobility support for people in the West of Scotland and beyond from its base at QEUH; a manufacturing facility in Yoker; and an outreach location in Lanarkshire. Its staff also visit people in their homes for emergency repairs.

In collaboration with NHS Lothian, WestMARC delivers a nationally designated service for specialist prosthetics.

As WestMARC is a community-facing service, it does not have any immediate clinical adjacencies with any other services within the Institute of Neurological Sciences and does not require any acute clinical accommodation; it could be relocated to a non-acute or even non-hospital site. NHSGGC is working on a separate strategy for the future of wheelchair and advanced mobility services, and therefore WestMARC has been excluded from the scope of this Initial Agreement.

3.1.7.2 ICE Building

The ICE Building is a teaching and research facility owned and operated by the University of Glasgow therefore everything except the NHS services within the Level 1 Theatre complex is excluded from scope.

3.1.7.3 Routine stroke services

Diagnostics, outpatients, day care and imaging for Stroke patients, and services for people with transient ischaemic attack [TIA], are provided from elsewhere on the QEUH campus and/or across the GGC Acute estate and are not in scope.

Routine stroke services are already co-located with the necessary specialties and support services for those populations (e.g. Cardiac Care Unit, intensive rehabilitation facilities, etc.). To bring them into scope would have a significant knock-on effect on other QEUH services and require redesign of the full stroke pathway across the West of Scotland and a potential realignment of beds and services on multiple sites.

3.1.7.4 Routine oral surgery

Routine, non-complex oral surgery is not part of the specialist OMFS service and is delivered in an outpatient (dental chair) setting in either Glasgow Dental Hospital or across NHSGGC's network of specialist hospital and non-hospital oral surgery centres. These services have been excluded from this Initial Agreement because there would be no benefit to patients from disaggregating existing services which are located close to their homes and bringing them into a hyper-acute site. A separate workstream looking at the future needs for Oral Surgery and Secondary Care Dentistry has been established and this work will be taken forward over the next few years as part of the wider GGC Infrastructure Strategy which has been referenced before.

3.1.8 Activity

3.1.8.1 Inpatients and outpatients

The INS currently admits around 11,500 inpatients and 4,400 day cases each year. 64% of inpatient admissions are non-elective. There are also c.50, 000 outpatients seen each year.

Table 4: Admitted patients

	Non-elective	Elective	Day cases	Total
Neuroradiology	450	425	-	**875**
Neurology	2,300	1,200	3,000	**6,500**
Neurorehabilitation	250	50	-	**300**
Neurosurgery	1,750	1,400	150	**3,300**
OMFS	700	1,100	1,250	**3,050**
Spinal Injuries	150	-	-	**150**
Stroke	1,700	-	-	**1,700**
Totals	**7,300**	**4,175**	**4,400**	**15,875**

Table 5: Outpatients

	New	Return	Total
Neurology	11,400	13,700	**25,100**
Neurophysiology	4,750	1,200	**5,950**
Neurorehabilitation	450	1,700	**2,150**
Neurosurgery	2,950	3,250	**6,200**
OMFS	2,700	6,100	**8,800**
Spinal Injuries		1,200	**1,200**
Totals	**22,250**	**27,150**	**49,400**

3.1.8.2 Neuroradiology

The Diagnostic Neuroradiology Service provides support to inpatient and outpatient activity as well as an on call service providing 24 hour provision for CT and MRI.

The department includes:

- two recently-replaced 3T and 1.5T MRI scanners
- a multi-slice CT scanner
- digital dental and optical polarisation tractography (OPT) units
- NeuroSpect scanner

PET-CT provision is off site and co-reported by the Diagnostic Neuroradiologists.

Table 6: Diagnostics activity

Modality	Total	% Urgent / OOHs
CT	8,800	8.5%
MRI	8,300	31.7%
X-ray	4,500	18.5%
Fluouroscopy	750	11.4%
Nuclear Medicine	1,000	n/a
Total	**23,350**	

3.1.8.3 Theatres and Interventional Neuroradiology

INS was built with 8 theatres over Levels 0 and 1.

As at December 2021, there are 10 theatres (7 currently in use) and 1 INR room:

- 4 theatres plus recovery and supporting accommodation in the ICE Building
- 3 open theatres and 1 temporarily decommissioned theatre on Level 1, Neurosurgical Building
- 1 Interventional Neuroradiology room on Level 1, Neurosurgical Building
- 2 decommissioned theatres on Level 0, Neurosurgical Building

The currently commissioned facilities are co-located on Level 1 across the Neurosurgical Building and the ICE Building. There is a separate capital scheme to expand the Interventional Neuroradiology provision from 1 INR room to 2 INR rooms and to relocate the service to the decommissioned Level 0 theatres.

INS theatres run 65 planned sessions – not allowing for over-runs or additional emergencies – across 50 weeks each year. Elective operating routinely takes place on Boxing Day and 2 January each year. Individual lists which are cancelled or reduced due to planned or unplanned leave are reallocated iteratively to ensure that no staffed sessions are unused.

Theatres run 2-3 session days Monday to Friday, with 2-3 theatres open on Saturdays for a mix of urgent elective and non-elective work and 1-2 on Sundays for non-elective only.

There is no scope for downtime and there are currently no dedicated emergency theatres, so lower-priority elective cases can be postponed by emergency presentations and/or restrictions caused by the loss of theatres due to remedial maintenance, flooding and ventilation failures.

NHS Discovery is routinely used for theatres benchmarking. It shows that, for 2019/20, GGC Neurosurgery theatre utilisation (sessions x hours used) was 94% against a national average of 89%. For OMFS, NHSGGC theatre utilisation was 94.9% against a Scottish average of 90%.

Despite this extremely high utilisation, the service has routinely used private sector capacity over the last decade for elective activity – these cases are predominantly cases which would now be referred to as Priority 3 or Priority 4 under the Royal College of Surgeons guidelines

being used by all UK hospitals during the pandemic. These patients have the longest waits and are those routinely postponed to accommodate more acute presentations.

The OMFS service is exploring the use of other regional acute estate (Forth Valley Royal Hospital and/or University Hospital Crosshouse) for carrying out some P3/P4 cases as well.

Intermittent failures of the Interventional Radiology equipment has seen patients transferred to NHS Lothian for both urgent and planned care over the past decade. This, however, should be addressed by the current INR capital scheme due to be completed in 2022.

3.1.8.4 Neuro critical care

There is a funded base of 10 beds in the main Neuro Critical Care unit. The facility was designed to flex up to 13 beds to meet the needs of the services. This has recently been increased to up to 15 beds by using the newer theatre recovery accommodation within the ICE Building.

There is also a 4-bedded bay within the OMFS unit which is nursed to HDU standard for managing patients with complex airways issues. These patients are predominantly people who have had highly complex head and neck surgery, who might present from OMFS or ENT. Twelve (12) of the 48 beds within the Queen Elizabeth National Spinal Injuries Unit are capable of providing Level 2+ (High Dependency) Critical Care.

Even though the 12 HDU beds in Edenhall Ward in the Queen Elizabeth National Spinal Injuries Unit are able to be accessed along a fixed corridor link, the clinical care of these individuals would be improved by even closer co-location with the main Neuro Critical Care facilities to allow full 24/7 supervision by Consultant Neuro Intensivists, rather than the current model of management by Rehabilitation Consultants. The need for this level of supervision is likely to increase over time in line with the current trend of more older people with complex co-morbidities being admitted to the national Spinal Injuries service.

The 29-31 Level 2 and 3 Critical Care beds in INS are similar to or greater than the levels of critical care in most large District General Hospitals across Scotland.

Unit name	**Level 3/4 (ICU)**	**Level 2 (HDU)**
INS	6-8	23
Aberdeen Royal Infirmary	30 bed spaces, 25 funded	
Monklands Hospital	9	22
Ninewells Hospital	8-9	16
University Hospital Crosshouse	7	12

3.1.9 Condition of current facilities

3.1.9.1 Inpatient facilities

Given the different ages of the buildings, there is a mix of acceptable to poor patient accommodation. All bed bays and single rooms in INS meet current national bed spacing requirements, although achieving this necessitated reductions in available ward bed numbers. No inpatient wards meet current SHTM guidelines in terms of size, circulation space, plant or supportive accommodation.

3.1.9.1.1 Spinal Injuries

The Queen Elizabeth National Spinal Injuries Unit was built in 1991 and has a mix of 4-bedded bays and single rooms provided in fully ground-floor accommodation which promotes early independence.

It has a multi-function gym and a hydrotherapy department, as well as outdoor rehabilitation space which was provided by the Third Sector charity, Horatio's Garden, which supports spinal injuries units across the UK. There is also a step-down unit which allows patients and their families to experience living in adapted accommodation. All patient rooms have access to fully accessible facilities appropriate to that patient group. The integrated research facilities are located on the mezzanine level. In recent years, the hydrotherapy department has experienced frequent and lengthy periods of closure to support ongoing maintenance.

The scale of the building is reflective of the residential scale of properties to the southern edge of the site. Horatio's Garden forms a perimeter to the Spinal Injuries buildings with a fenced acoustic buffer to screen the heavily trafficked A739 Clyde Tunnel / M8 approach road immediately to the east. It is in acceptable condition for a building which is over thirty years old.

3.1.9.1.2 Neurorehabilitation

The Neurorehabilitation Building (PDRU) was built in 1991 to serve a different patient population than it currently serves. Originally intended to manage long-term continuing care patients with significant physical impairments, it now manages more acutely unwell patients who require specific shorter-term neurorehabilitation. It also has a mix of bays and single rooms.

Remedial repairs to the wet rooms frequently lead to unplanned bed closures – as at February 2022, there are two four-bedded bays closed due to exposed wiring, displaced tiles and cracked floors. The bays and single rooms are smaller than current SHTM guidelines and the exposed blockwork finishes within the internal corridors are not conducive to the needs of the current patient group, resulting in Datix reports being filed for minor patient injuries (bruising, abrasions, etc). Overall, it is rated as unsatisfactory condition.

3.1.9.1.3 Neurosurgery Building

The Neurosurgery building was built in 1972 and is a six-storey concrete framed building with four storeys of wards and offices rising above a two-storey podium where theatres and diagnostics are located. The external envelope of the building was upgraded shortly after the main QEUH hospital was on site with new cladding and replacement windows providing a better external aesthetic and some better thermal properties. Internally, the building is dated and the spaces within it do not conform to modern SHTM guidelines.

Wards 62, 63, 64 and 65 in the Neurosurgery Building have a racetrack design with a mix of 4-bedded and 6-bedded bays and a limited number of single rooms (1-3 per ward, depending on layout). While most bays and single rooms have access to a single wet room encompassing shower plus WC, a small number of single rooms in the building have a WC and hand basin only with external corridor access to shower facilities. These wards are currently undergoing some refurbishment works in response to recent HEI reports; this is a rolling programme which had been planned over three years, but has been rephased over five to seven years to maintain service provision and bed capacity whilst works are undertaken. These works will not increase the size or capacity of any of the existing spaces, rather respond to the concerns of the aforementioned HEI reports with some additional concurrent drainage works taking place. Storage within the wards is limited and corridors are regularly used for storage of chairs, linen and medical equipment. There is no central air and temperatures on the east-facing side of the building have been recorded at over 30°C.

Ward 66 in the Neurosurgery Building was built as a 12-bedded paediatric facility and later repurposed to be a Surgical Day Admissions Unit (18 trolleys, which can flex to 19) which encompassed both same-day admissions and day cases, with former offices and single rooms being used for outpatient pre-assessment and urgent patient consultations. While the ward upgrade programme is ongoing, this has been repurposed as an 18-bedded decant ward, therefore the services no longer have access to any dedicated admission and daycase facilities, which impacts on availability and utilisation of inpatient beds.

The building had a new atrium built alongside the recladding works which provides direct access to diagnostic areas and vertical circulation to the ward floors above. The ground and first floor diagnostic areas comprise theatres, x-ray, CT, MRI and SPECT scanner areas, most of which contain equipment which is not in use or nearing end of life, with subsequent replacements likely unable to be accommodated in the current areas due to load-bearing capacities and infrastructure issues. The mechanical and electrical services within the building pose ongoing maintenance issues across this and the adjacent buildings with drainage and ventilation being particularly challenging aspects.

3.1.9.1.4 Neurology Building

The Neurology building is a linear four-storey block which sits to the south of the main QEUH and Neurosurgery buildings. The building has had an office storey added on the roof of the original three-storey ward block. Wards 67 and 68 in the Neurology Building are 20-bedded wards with rooms arranged on each side of a central corridor (4 x 4-bedded bays plus 4 single rooms). Not all rooms have internal access to a wet room.

All wards in the older estate (Neurosurgery and Neurology Buildings) have very limited storage, so waste and laundry receptacles are in public corridors with lifting aids and other ward equipment stored within the ward corridors, as noted by Healthcare Improvement Scotland on its visits. This causes many potential risks in terms of slips, trips and falls for patients and staff, may present an increased infection risk, and provides an additional fire risk with cages of ward supplies also stored in these corridors. It is also highly inefficient in terms of managing stock and is disruptive to the cleaning of these areas.

3.1.9.1.5 Ambulance access

In addition to transfers into INS from the QEUH Emergency Department, the services also accept direct hospital-to-hospital transfers of patients from other hospitals in NHS Boards across Scotland, including other GGC hospitals. This inter-hospital activity accounts for almost 40% of all patient transfers.

Ambulance Entrance: Surgical Building. Ambulances unload patients onto main street (no canopy). The patient is taken through rear theatre stairwell, Diagnostics OPD and link corridor in poor repair, Narrow widths in these corridors, which are also used by staff and outpatients going between departments, are under 1m.

None of the current facilities have dedicated or segregated entrances for ambulance pick-up and drop-off. Ambulances routinely block off the entrance to the Neurology building, which is also the main OPD entrance. Equally, this entrance is often blocked to emergency ambulance access by Patient Transport Service vehicles, taxis and private cars which are dropping off people attending the outpatient department.

In the Surgical Building, ambulance access is via a side door which opens onto a narrow corridor within Neurodiagnostics. Because this side door opens onto the public access road, it is often blocked by visitors parking. Wayfinding in and around this area is poor.

Arriving patients are taken from the ambulance in full public view onto the main access road. As there is no canopy on either building, all ambulance transfer patients are exposed to the

elements before being transported through the outpatient waiting area of OPD (Neurology Building) or through Neurodiagnostics (Surgical Building). The same is true in reverse: patients are taken through public areas and out onto the public road, again being exposed to the elements while on a trolley.

3.1.9.2 Outpatient facilities

The outpatient department [OPD] of the Institute of Neurological Sciences was built in 1974 and was sized to support the Neurology and Neurosurgery services only. Over the last five decades, base services have been significantly expanded, new services have been established (OMFS, Neuropsychology, Neuropsychiatry, Spinal Injuries, Neuro-ophthalmology), and existing services have become aligned with Regional Services (Complex Disability and Neurorehabilitation).

As a consequence, the ambulatory care facilities in INS are delivered across multiple areas within four different buildings:

- Main OPD in the Neurology Building and the adjacent Neurophysiology Department
- Neurosurgery Building (Levels 0, 1 and 4)
- Neurorehabilitation Unit
- Queen Elizabeth National Spinal Injuries Unit

Main OPD has been extended on several occasions, with additional clinic rooms built to the front, side and rear of the Neurology Building and former University accommodation refurbished to house the Neurophysiology service.

Even prior to Covid, over 25% of all outpatient consultations were carried out virtually, both for the benefit of patients and to ease the pressure on the estate to prioritise patients who require a face-to-face consultation. As at December 2021, 20% of OMFS outpatient consultations, 30% of Rehabilitation Medicine, 50% of Neurology and 70% of Neurosurgery consultations take place virtually.

Outwith main OPD, many of the areas used for ambulatory patients have been converted from or within inpatient areas and are multi-purpose, causing suboptimal mixing of patient groups; these areas are also an inefficient use of acute accommodation.

As an example, the OMFS ward has a 24/7 ambulatory treatment area for people who have presented at the QEUH Emergency Department with facial injuries and infections (including abscesses within the mouth which cannot wait to be treated within the Public Dental Service due to their seriousness), or complications from both diagnosed and undiagnosed head and neck cancers. This treatment area was previously part of the ENT bed complement in ward 62 and is not segregated from the remainder of the ward. This patient group can be highly vocal and disruptive due to intoxication and/or heightened anxiety. The waiting area is in the public corridor linking Level 2 in the Neurosurgery and Neurology Buildings, which is used by staff, patients and relatives.

The layout of the buildings also involves ambulatory patients moving between departments along the same corridors through which gowned and intubated patients are taken between

critical care, theatres, wards and intra-operative diagnostics. This impedes patient dignity and can be distressing in highly acute situations.

This arrangement of facilities also prevents best use of nursing, HSCW and portering resource in two key ways: first, it requires staffing of multiple smaller areas; and, second, as many patients are physically disabled and/or neurologically compromised, they require a porter or trained staff escort, occasionally both, to move between areas.

Neurodiagnostics is spread across Levels 0 and 1 of the Neurosurgery Building and is not co-located with any of the main outpatient areas, impeding optimal patient flow and causing patients to have to attend several buildings over their visit.

MR Room, Level 1, and typical patient waiting area with stores and equipment

Level 1 Neurodiagnostics facilities are especially non-compliant with SHTM recommendations. Corridor widths throughout Level 1 Neurodiagnostics are 1-1.5m, making it impossible for users with powered wheelchairs to access by themselves; they must be transferred to smaller hospital wheelchairs and pushed by porters. The door to one of the MR rooms (pictured above) is 0.7m wide, and wheelchair users have to be lifted by staff; users of mobility aids (frames and sticks) also require staff support to negotiate the doorways. This same area is shared by both inpatient and outpatient services and has negligible waiting space, resulting in acutely unwell people being taken through corridor-based waiting areas.

As with the Level 1 Theatres, the lack of appropriate storage also means that necessary supplies are held within the treatment areas and corridors, rather than in discrete storage areas away from patients and users.

3.1.9.3 Patient and staff segregation

There is no segregation of patients, staff, visitors and the public in any of the main circulation spaces of corridors, stairs and lifts.

The Neurosurgery Building has three lifts and the Neurology Building has only two lifts. These are shared by all users of the buildings; there are no designated lifts for moving gowned patients on trolleys. This impacts negatively both on patient dignity and on the control of infection, as there is no alternative to moving vulnerable patients via highly public spaces.

Despite ongoing maintenance, breakdowns are inevitable, and this affects transfer times for moving patients between departments (e.g. from ward to theatres) and leads to large groups of people congregating on the ground floor in cramped lobby areas. There are also numerous DATIX alert reports regarding staff and patients being trapped in lifts.

All of the public corridors and lifts are also used for the movement of equipment and supplies between departments. With very limited storage, all main thoroughfares are used for storing equipment and supplies.

Main theatres and ITU corridor, Level 1, Surgical Building used by staff, patients and visitors

3.1.9.4 Healthcare Improvement Scotland Reports

INS services and wards have been included in four recent unannounced inspection visits by Health Improvement Scotland in 2016, 2017, 2018 and 2019.

The most recent report noted:

> In the Institute of Neurological Sciences, the current system in place for both ward level and infection prevention and control audits demonstrate that there are issues with the environment, due to the age and fabric of the building. These audits look at several elements of standard infection control precautions. The audits carried out by ward staff show one of these elements is scoring 30-40% for the condition of the ward environment for all the wards in the Institute.
>
> Throughout our inspection of the Institute of Neurological Sciences, we saw multiple estates issues. We found the following:

- Extensive damage to shower trays
- Broken PVC sealant on showers, sinks and toilets
- Extensive damage to walls
- Exposed damaged wooden panelling
- Damage to panels at sinks
- Damage to floors, with tape in place
- Water ingress on ceiling tiles, that was widespread throughout the Institute
- Damage to a staff changing area, including exposed pipes, broken ceiling tiles and damage at sinks.

All of these issues make it difficult to effectively clean the environment.

Queen Elizabeth University Hospital – safety and cleanliness inspection report: February 2020, HEI Scotland: https://www.healthcareimprovementscotland.org/our_work/inspecting_and_regulating_care/hei_greater_glasgow_reports/qeuh_feb_20.aspx

There is an ongoing rolling ward upgrade programme to address these issues, which has required repeated decants, increasing the pressure on availability of beds. This programme is likely to run for the next four to five years. It should be noted that the purpose of the upgrade work is to address the items identified above along with any other maintenance work in close proximity; it does not involve wholesale changes to the building structure – room sizes and bed numbers remain the same.

The Same-Day Admissions Unit and Pre-Assessment facility in Ward 66 has been converted to a decant ward to facilitate this programme. The programme started in 2018 and is expected to run until 2024/25. Three wards have been completed to date.

Necessary works often require multiple decants and the nature of the infrastructure is that this impacts several wards. As at February 2022, there is a requirement to shut off the water for 4 days in Ward 63 (currently closed) to complete necessary upgrades. Because of the interlinked systems, this would also cut all water to Ward 65, a live ward with 23 beds. Bed occupancy in Ward 65 has been 95% or higher throughout December 2021 and January 2022.

It would be a breach of Health & Safety law, not just an organisational inconvenience, to have no running water on a live ward. There is no appropriate decant accommodation on the QEUH estate to move an entire Acute Neurosurgery ward, especially as these patients require immediate access back to both Neurosurgery theatres and Neuro Critical Care. Due to routine winter bed pressures and the additional effects of Omicron, there has been no multiple decant solution either, as all available acute beds on the QEUH campus are in clinical use.

Similar issues have beset all capital projects and maintenance upgrades over the last decade: projects extend for months and sometimes years – or founder entirely – due to a lack of decant accommodation; the only other solution is to cease or pause elective programmes to ‘create’ short term capacity. This then impacts on waiting times.

3.1.9.5 Local Risk Register

The current Risk Register for the INS has the risks related to the fabric of the building rated as Very High, despite mitigation, with a potential impact of Very High.

The highest risk areas are noted as:

- Ventilation failures within theatres
- Risk of contamination, including foul waste, into INS theatres and other live clinical areas
- Poor drainage and risk of flooding throughout the Surgical Building
- General wear and tear within HDU/ITU – taped floors, cracked walls, etc
- The need to replace outdated, cracked and warped shower trays with full wet rooms

3.1.9.6 Current backlog maintenance costs

According to GGC's Estate Asset Management System (EAMS), the current level of backlog maintenance required for the existing buildings in scope is £24.9m. Assuming no change (the Status Quo option), this will grow to £44.7m by 2030 and £92.1m by 2040.

Table 7: Maintenance Costs

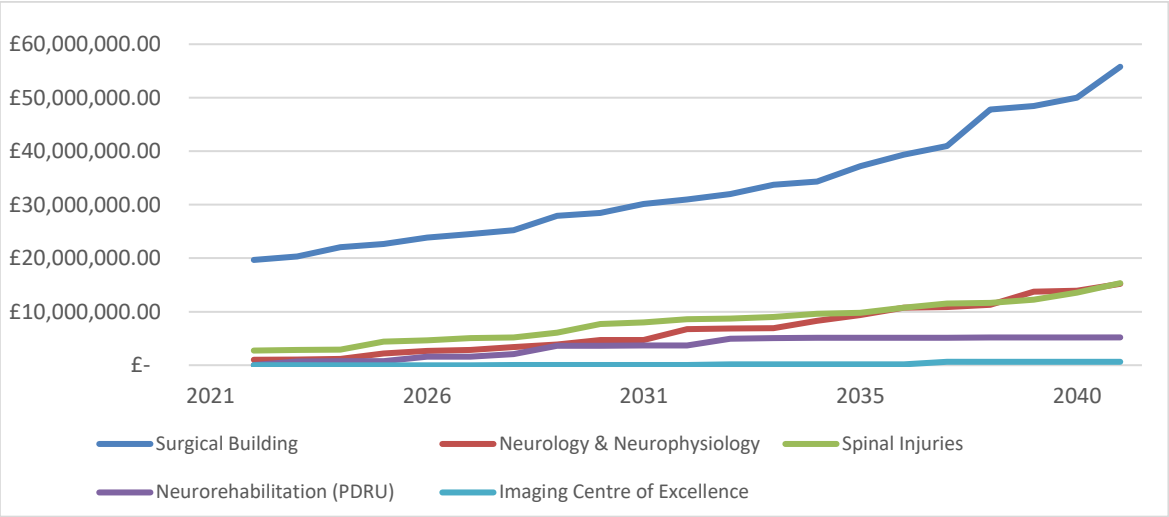
	2021/22	2030	2040
Neurosurgery Building	£ 20.3m	£ 28.5m	£ 55.8m
Neurology & Neurophysiology	£ 1.1m	£ 4.7m	£ 15.2m
Spinal Injuries	£ 2.8m	£ 7.7m	£ 15.3m
Neurorehabilitation (PDRU)	£ 670k	£ 3.7m	£ 5.2m
Imaging Centre of Excellence	£ -	£ 70k	£ 635k
Total	**£ 24.9m**	**£ 44.7m**	**£ 92.1m**

This backlog maintenance expenditure requirement is defined as the basic cost of works to bring the building back to an acceptable condition. This definition is in accordance with the Health Facilities Scotland Guidance on backlog costing and as such it excludes VAT, contractors' preliminaries, temporary decant costs, etc.

Experience of undertaking backlog works in existing hospitals has shown that the final outturn cost of such works can be significantly higher than the basic backlog cost, often resulting in a doubling or tripling of the basic cost. This also does not account for escalating contract prices being seen across current capital schemes and linked to shortages both of essential goods (concrete, timber, etc) and of skilled EU workers.

In this case, that would result in expenditure of £50-75m on eradicating the current backlog in these buildings. It should also be borne in mind that this backlog maintenance expenditure requirement is associated with the structure and physical condition of the buildings and even if these monies were expended, it would do little to address the space utilisation and functional suitability issues which currently exist in the buildings.

Figure 4: Annual Expenditure over 20 years



3.1.9.7 Current and previous capital upgrades

In 2012, NHSGGC allocated £44m in its capital programme for 17 separate capital schemes to overhaul the existing INS estate and to bring it up to modern healthcare standards which could meet the needs of its evolving clinical services in a safe environment.

The programme was intended to address a number of issues including:

- the deterioration of the above-and below-ground drainage systems which result in flooding and waste contamination of wards and theatres
- electrical overloading
- limitations on inpatient fire evacuation
- ventilation / cooling, as wards and theatres frequently record excessive temperatures
- undersized theatres of between 34-42sqm with no laminar flow facilities
- lack of wet rooms and/or en-suite provision for inpatient beds

Significant improvements were made:

- a new atrium and reception area was created in the Neurosurgery Building
- four new SHTM-compliant theatres and a theatre recovery suite were created on Level 1 of the Imaging Centre of Excellence
- the roads surrounding the Neurosurgery Building were lowered to improve access for fire tenders
- windows were upgraded and/or replaced in all wards in the Neurosurgery Building
- the cladding on the Neurosurgery building was replaced
- a partial external drainage solution was installed to isolate INS issues from the main drains for the campus – although this did not provide any improvement to drainage within INS itself, merely prevented the existing drainage issues from causing a catastrophic failure of drainage across the campus, impacting 1,250 other acute adult and children's inpatient beds

While developing an Initial Agreement for the replacement of the remaining retained theatres in 2017/18, it became apparent that the floorplate of the existing building across Levels 0 and 1 was not sufficient to provide SHTM-compliant accommodation for replacement. At best, two SHTM-compliant theatres could be created, reducing the operating capacity for INS by 25%.

At the same time, the Infrastructure Programme was reporting that the internal drainage upgrades still required to meet minimum standards for the existing services would take 10-12 years and would require multiple ongoing decants of wards and theatres, as the drainage stacks run the full height of the Neurosurgery Building and cannot not be replaced in sections. To replace a single drainage stack requires an area equivalent to a 4-to-6-bedded bay closed off on each of the 6 floors; some stacks are also linked horizontally and therefore require more significant closures. The decants would have involved between 21-65 beds and 1-3 theatres at any given time for over a decade. No significant drainage upgrades have therefore been taken forward – all ongoing programmes are to patch the existing insufficient systems which continue to pose a risk to patients and services.

The building's construction methods included the extensive use of asbestos containing materials (as was normal at that time), and consequently every element of building maintenance and adaptations takes significantly longer to complete and demand disproportionate levels of service disruption. This adds time, cost and risk to every repair, reconfiguration and refurbishment project, adding disproportionate expense due to the extensive control measures which need to be applied to ensure that no contamination takes place.

Despite having spent over £25m, it was therefore agreed by the GGC Capital Programme Board in 2018/19 that all non-urgent programmes should be paused to have a fundamental review of the long-term feasibility of the buildings, particularly the Neurosurgical Building. A full series of property appraisals were undertaken, alongside more in-depth Mechanical & Engineering [M&E] surveys.

This process concluded that the current allocation of £44m was not sufficient to cover the remedial works required, and that completing the works would not extend the lifetimes of the buildings, which would continue to require as yet uncosted ongoing works. The buildings which were not SHTM-compliant would remain non-compliant and a longer-term solution was required.

3.1.9.8 Current condition and performance of the estate

Table 8: Condition of existing accommodation

	Existing areas sqm	Physical Condition	Statutory Standards	Space Utilisation	Functional Suitability
Neurosurgery Building	20,326	Poor	Poor	Overcrowded	Unacceptable
Neurology, inc Neurophysiology	6,253	Poor	Poor	Overcrowded	Unacceptable
ICE Theatres	1,285	Good	Good	Fully used	Satisfactory
Neurorehabilitation	1,345	Poor	Poor	Fully Used	Not Satisfactory
Spinal Injuries	6,813	Acceptable	Good	Fully Used	Satisfactory
Langlands Building	695.5	Acceptable	Good	Fully Used	Satisfactory

In addition to the property appraisals described above, the buildings within the scope of this Initial Agreement have been the subject of design evaluation exercises using the Achieving Excellence Design Evaluation Toolkit (AEDET).

This exercise evaluates a design by posing a series of clear, non-technical statements, based on three key criteria:

- Functionality
- Build Quality
- Impact

This evaluation has enabled the project's stakeholders to develop a clear understanding of the weaknesses of the existing buildings in terms of design and to provide a benchmark for reprovision. The benchmark score together with a target score for the proposed new buildings will be submitted to the Scottish Government Capital Investment Group with the Initial Agreement as part of the mandatory NHS Scotland Design Assessment Process (NDAP).

It is clear from the property appraisals and the AEDET evaluations of the existing buildings that without investment in modern facilities the essential changes required in service models to meet the challenges associated with delivering national and local policy simply will not happen. Furthermore, the retention and recruitment of appropriately skilled medical and nursing, allied health professionals and support staff is becoming increasingly difficult as the facilities become progressively more inadequate. This lack of fit for purpose accommodation will exacerbate the ability to retain and recruit the necessary staff to provide services in the future.

4. Why is this proposal a good thing to do?

	Question	Response
Strategic Context	Why is this proposal a good thing to do?	Outline: • Need for change • Investment objectives • Benefits register • Risk management strategy

A note on the impact of Covid-19

Because of the wide-ranging impacts on all NHS services since March 2020, all activity modelling and analysis to support this Initial Agreement has been completed using baseline information from the previous three completed financial years (April 2017 to March 2020).

The Project Board felt that using any data from 2020/21 might skew any projections and assumptions, therefore current and planned future changes to service models have been applied to the 2017-20 data to allow for robust forecasting.

Beneficial changes to clinical service models, such as virtual clinics, virtual support at home, and patient-initiated returns and other opt-in models of care were already embedded into the forward clinical service models prior to Covid, and these changes have been modelled forward.

4.1 What is the need for change?

The current INS facilities were established in the early 1970s. Throughout the five decades since, the face of healthcare has changed dramatically and the services provided have expanded significantly both in range and number.

A summary of the need for change is also provided at Table 13.

4.1.1 Current service pressures

4.1.1.1 Theatre capacity and suitability

Theatre utilisation is c.95% against a planned level of 3,250 operating sessions per annum. At normal theatre operating of 42 weeks, this would require 77 theatre sessions (8 theatres) per week with zero redundancy factored in, and no separated provision of elective and emergency operating.

As there are only 7 functioning theatres, all seven work at 50 weeks, again with no downtime or separation of elective and emergency workload. Because of the frequent service interruptions caused by ventilation, drainage and electrical failures, the reality has been that six-day elective operating has been instituted in the four ICE theatres to allow semi-elective urgent cancer surgery to be protected from disruption in the retained theatres.

The lack of dedicated emergency theatres frequently impacts on the elective programme, with patients 'bumped' on day of surgery or cancelled at short notice to accommodate major non-elective procedures. As part of its benchmarking processes, the Core Group contacted four UK peers (Liverpool, London, Birmingham, Newcastle) to ascertain comparable service models; all four replied that their Neurosurgery service had access to at least one 24/7 Cepod theatre and that their Maxillofacial Surgery services had access to Cepod theatres from the general acute theatres allocation. The lack of dedicated emergency theatre facilities at INS is out of step with practice across Scotland and the UK, and impacts negatively on both waiting times and on lengths of stay for admitted patients who wait as inpatients for an available operating session.

The three retained neurosurgical theatres in the Surgical Building do not have laminar flow facilities, and are below the SHTM required size for a modern theatre environment (37-45sqm against an SHTM recommendation of at least 55sqm). With the high levels of specialist equipment such as image intensifiers required for complex surgery, the temperature in theatres often exceeds guideline maximums and frequent overheating incidents are reflected in the INS Risk Register.

Although all theatres meet the current minimum requirement for air changes per hour, ongoing upgrades to the air-handling plant are required to maintain this. Retro-fitting compliant ventilation systems into 1970s theatres has resulted in lowered ceiling heights in the retained theatres, with ceiling-fitted equipment now presenting a head injury risk to staff. The age of the supporting plant itself adds to the ventilation challenges, as repairs are dependent on securing parts which are no longer manufactured.

Over the past ten years, there have been repeated closures in theatres to address drainage issues from the floor(s) above, including a two-year period (2015-17) when the entire routine elective programme had to be suspended to allow remedial works to address the ingress of

waste. Surgical site infections have been an ongoing issue of concern (2015-2019, with a peak in 2017), raised at the highest levels of clinical governance within both Regional Services and NHSGGC corporately.

One of the four retained theatres in the Surgical Building has had to be closed permanently due to the impact of building works necessary for establishing the four newer theatres in the ICE Building. Repeated surveys by teams of external mechanical engineers have failed to find a viable way to bring this theatre up to minimum HSE requirements to allow it to be reopened.

Retained theatres in the Surgical Building also do not all have individual anaesthetic and scrub facilities, which impacts on patient turnaround times, and the current patient flow from the shared anaesthetic room to Theatres/IR suite is challenging from an infection control aspect as patients and staff must travel along a public access corridor; this is also true of the journey to recovery after surgery, as this can only be accessed via public circulation space. Patient dignity is therefore compromised daily by gowned and anaesthetised patients being transported pre- and post-treatment via public access routes.

Supporting accommodation for surgery and IR, especially stores, are insufficient for current service needs, having been built decades before the requirement for a large inventory of single-use and single-patient supplies. Stores are routinely held in public corridors in a just-in-time fashion (brought to the theatre complex each day for immediate use), with the storage cages remaining in the corridors for several hours afterwards. The clinical risks associated with this practice has been raised by repeated Healthcare Improvement Scotland inspections (2016, 2017, 2018, 2020).

The lack of ultra-clean supporting accommodation also means that theatre supplies cannot be prepared in side rooms, only within the theatre itself, adding to turnaround times. Despite this, staff have developed routines which minimise these turnaround delays and less than 8% of theatre hours are lost as a result.

Even before the impact of Covid, the waiting times for both Neurosurgery and Maxillofacial Surgery were routinely over 1 year, with non-elective or semi-urgent elective work taking precedence over more routine operations. Private sector capacity at Ross Hall Hospital has been utilised every year from 2010-2020 to address this, but without making significant in-roads into the waiting list, due to the ongoing and repeated closures of individual theatres. Due to both the lack of Neuro Critical Care and the skillsets of the surgical teams available, only the least complex patients can be sent to the private sector.

There is no ability to expand to meet the additional work expected to transfer into INS within the next five to ten years, which will require a minimum of 16 additional theatre session per week.

4.1.1.2 Neurology day cases and short-stay treatments

The continuing growth of the population who are living with multiple sclerosis and other neurological long-term conditions has seen the establishment of the West of Scotland Short Stay and Day Treatment service within what was previously a five-day ward. (It has since moved to another acute ward in the Langlands Building to allow Acute Stroke services to be within the main Neurology Building.)

There are more than 900 West of Scotland patients requiring regular infusions, and this cohort grows by around 50 patients per year (43 MS, 5-7 other neurological long term conditions). Where possible, this growth has been managed by transferring clinically appropriate patients to homecare treatments and/or outpatient management which is delivered across all hospitals in the West of Scotland, but newer drugs increasingly require specialist clinical monitoring for complications. These newer disease modifying treatments all require initial inpatient treatment to allow multi-disciplinary monitoring for up to 24 hours and thereafter day case infusions can only be carried out on a site with full specialist inpatient support services for back-up. Four such new drugs have been introduced in the last five years, extending the range of treatment options, and also offering second and third line treatment options for this patient group. Starting people on these therapies requires single room accommodation and almost 1-to-1 nursing, with 30-minute observations being the norm.

Even during the pandemic in 2020/21, Neurology day cases continued to increase by 9%. There is no ability to further increase day case provision within the existing facilities. A capital scheme for 6-8 additional chairs had been in process in 2019, but the area identified for this expansion has now been incorporated into the plans for Mechanical Thrombectomy and there is no alternative site within INS which is suitable.

The West of Scotland Short Stay and Day Treatment service also supports a supraregional and national cohort for rare neuromuscular disorders including Spinal Muscular Atrophy. Within this treatment group, there are several high-cost medications on the 3-10 year planning horizon which will involve complicated spinal infusions or gene therapies. Although each of these treatments will affect small numbers of people (3-10 new referrals each year), the individual treatments themselves can be complex to administer, some requiring anaesthetic support and interventional imaging guidance, and they will continue quarterly until disease progression, so the cohort of patients on continuing treatment will grow each year. All will require inpatient admission or back-up specialist inpatient facilities; they may also require comprehensive changes to the patient's existing treatment plan, diet and lifestyle both in advance of and after treatment.

The teams at the INS have already been approached by NHS Boards across Scotland looking for these services to be provided on a once-for-Scotland basis given that many smaller boards will only see a person who is eligible for treatment once every 2-5 years and would therefore struggle to provide clinically safe and effective services for their own residents. This has been referred to National Services Division to scope the potential impact for NHS Scotland.

It is expected that NHSGGC will become a designated treatment or assessment centre for some or all of these newer therapies. In advance of any national discussions, teams in INS are already working with colleagues in paediatric and adult respiratory medicine, cardiology and gastroenterology to develop new integrated service models for providing these complex therapies for treating children, young people and adults from across Scotland.

4.1.1.3 Major Trauma

Recent growth in non-elective Neurosurgical admissions points to a shift in Major Trauma admissions, even in advance of the opening of the Major Trauma Centre, which took place in August 2021.

The increase in transfers from Western Isles reflect the fact that the North of Scotland implemented its new Trauma pathways in early 2019, with unexpected consequences for NHSGGC, albeit at small individual numbers. As NHS Highland (Raigmore) no longer accepts Major Trauma, patients are now being brought directly to QEUH. This shift from NHS Western Isles has also been seen within other GGC Sectors and Directorates, most notably within Women's & Children's Services.

Table 9: Neurosurgery non-elective admissions

	2017/18	2018/19	2019/20	Var%
Ayrshire & Arran	248	255	283	14.1%
Dumfries & Galloway	23	37	47	104.3%
Forth Valley	18	59	107	494.4%
Greater Glasgow & Clyde	720	808	830	15.3%
Highland	68	68	77	13.2%
Lanarkshire	398	470	427	7.3%
Western Isles	13	12	22	69.2%
All others	66	66	71	7.6%
TOTAL	**1,554**	**1,775**	**1,864**	**19.9%**

Major Trauma admissions drive longer lengths of stay in both Neurosurgery and Neurorehabilitation. The national planning for the opening of the Department of Clinical Neurosciences in Edinburgh had assumed that all Neurosurgery and Neurorehabilitation for residents of Forth Valley and Dumfries and Galloway would be provided by NHS Lothian. The redrawing of historical pathways to see these patients now transferred to the QEUH campus in Glasgow has further knock-on consequences, as seen by the changes in NHS Highland.

Since implementing the new Major Trauma pathways in the north of Scotland, there has been an unplanned and unforeseen rise in the number of moderate trauma patients and non-trauma non-elective admissions (predominantly adults with aneurysms) from both Western Isles and NHS Highland. These two groups of people would previously have been transferred to Raigmore Hospital and then to NHS Grampian. People are instead being brought directly to the QEUH campus and work in ongoing with those NHS Boards to understand why this shift is happening and to reinstate the agreed pathways.

It is fully expected that a similar shift of unplanned additional activity will also be seen from NHS Forth Valley and NHS Dumfries & Galloway, due to both over-triage of major trauma and more subtle shifts in the referring teams' behaviours. The impact of additional trauma presentations, even at lower levels (NHS Dumfries & Galloway estimate that an additional 30-40 moderate trauma patients each year could be transferred to GGC Neurosurgery) will put additional pressure on theatres and wards. This level of activity would require an additional weekly theatre session (average primary case length is c4 hours, not including turnaround times or allowing for second and third interventions) and, at an average of 6.7 days' stay, an extra bed.

The changing nature of adult Major Trauma is that a growing proportion is caused by falls of <2m in frail individuals, most of whom sustain head and/or spinal trauma[1]. The interdependency of Major Trauma with Neurosciences is therefore likely to increase. Additional trauma workload

through the existing theatre complex can only be achieved by reducing the routine elective programme, thus exacerbating waiting times for people across the West of Scotland.

4.1.1.4 Deep Brain Stimulation

This is a nationally-designated service carried out on behalf of NHSScotland. It involves the surgical implantation of a very fine wire with electrodes at the tip into the brain. The electrodes then send a continuous electrical pulse to the brain. It can significantly reduce tremors, dystonia and spasticity in people with several neurological conditions, most notably Parkinsons Disease.

The nature of the service is that these implants last 5-7 years and therefore, although patient numbers presenting each year is relatively static, this is a recent healthcare development and therefore these new patients join a growing cohort of people who will require surgical replacement of their stimulator/battery throughout their lives.

4.1.1.5 Covid remobilisation

The impacts on INS have been less severe than some other mainstream services due to the nature of clinical presentations:

- Spinal Injuries, Acute Stroke and Acute Neurology are 100% non-elective admitting specialties
- c.90% of all Acute Neurorehabilitation admissions are non-elective transfers from other acute facilities
- c.70% of all Neurosurgery presentations are emergencies or trauma
- People with long-term conditions already known to the INS services have continued to need the same levels of treatment throughout, e.g. infusions and disease-modifying therapies (which have increased month-on-month throughout the period April 2020 to February 2022)
- New referrals for conditions such as Multiple Sclerosis, Epilepsy and motor impairment in younger adults and urgent referrals for Head & Neck Cancer and Cancer of the Brain and Central Nervous System have not been significantly affected, as the symptoms of all of these are serious and/or life-impacting enough for people to have continued to present to primary or secondary care

Around 60% of elective surgical activity is categorised as Priority 1 or Priority 2 as per the UK guidelines and therefore these services have been maintained throughout.

The greatest impact has been on:

- services for skin cancers, due to fewer people presenting to primary care, as seen across all specialties
- ambulatory services for neurorehabilitation, due to the inability to offer multi-disciplinary face-to-face group assessments and sessions as part of their ongoing day programme
- the elective neurosurgical service for lower back pain, which is categorised as Priority 3 procedures.

The services in INS have also contributed beds, critical care and anaesthetic support, and both clinical and non-clinical staff, to support colleagues and services across the Acute Division in managing the waves of admissions.

For P3 and P4 patients, who account for the remaining 40% of the elective surgical programmes, patients waiting over 12 weeks have increased in both OMFS and Neurosurgery, from 364 (123 OMFS; 241 Neurosurgery) in March 2020 to 761 (168 OMFS, 593 Neurosurgery) at end August 2021.

This equates to 121 additional OMFS theatre sessions and 430 additional Neurosurgery sessions required to bring the services back into balance, or 40 OMFS sessions and 255 Neurosurgery sessions to return to the March 2020 position.

4.1.2 Agreed Service Developments

There are a number of known service developments which will require increased capacity within all service areas:

4.1.2.1 Interventional Neuroradiology including Mechanical Thrombectomy - 2022

This is a time of significant change in the Interventional Neuroradiology service as the Board is redeveloping the current service and working with colleagues across Scotland to implement a pan-Scotland Mechanical Thrombectomy service for people who have had an ischaemic stroke. A business case for the first phase has been nationally approved.

Consultant recruitment has seen the appointment of 3WTE Interventional Neuroradiologists and a capital scheme will commence in 2022 to create two Interventional Neuroradiology rooms with a shared reporting room on the Ground Floor of the Surgical Building.

The service is already operational for existing QEUH catchment patients within normal Mon-Fri working hours, and there will be a phased roll-out scaling up to a full 24/7 service for all residents of the West of Scotland over the next five years. This is estimated to require 2 additional Acute Stroke beds and 5 additional Hyper Acute Stroke beds. The current ward has a maximum occupancy of 20 beds and any additional bed capacity would have to be created outwith INS, creating a split-site service for people with acute strokes.

4.1.2.2 Sentinel Lymph Node Biopsy - 2022

The use of Sentinel Lymph Node Biopsy as a diagnostic and staging tool for the treatment of people with cutaneous melanoma was approved by the West of Scotland Regional Cancer Advisory Group in 2020 and a business case has very recently (October 2021) been approved by SGHD for developing this service by April 2022.

Given the small numbers required for OMFS across the West of Scotland (c.30) and the need for intra-operative SPECT, it has been assumed that all cases should be incorporated into the INS base. Although a small number of cases, there is no spare operating capacity within INS Theatres at present to accommodate this expansion. Moreover, current work on a feasibility study for replacement of the SPECT scanner has identified that the floor loading required for any replacement is over 5 metric tonnes. This will further require capital work, including a series

of major equipment and service moves between Level 0 and Level 1 within the Surgical Building, to create the floor capacity to ensure that this modality remains available peri-operatively.

4.1.2.3 Level 1 Acute Neurorehabilitation - 2023

The plans for the Major Trauma Centre also included the development of a regional resource for Level 1 Acute Neurorehabilitation. This is due to be nationally funded in 2023/24 and the West of Scotland Planning Group has estimated this service will require 12 beds, based on its activity modelling of c.40 patients per annum requiring an average length of stay of 95 days. The current proposal is for these beds to be co-located with the Level 2 (GGC catchment) beds within Neurorehabilitation (PDRU). This capacity does not currently exist and could not be accommodated within Neurorehabilitation without capital spend or significant re-organisation of services, requiring decant or capacity within QEUH.

4.1.2.4 West of Scotland OMFS Strategy - by 2025

There is an agreed WOS strategy for the regionalisation of all OMFS inpatient services, with most moderate and all complex surgery being provided from the INS site. Services for NHS Dumfries & Galloway, NHS Forth Valley and complex surgery for NHS Ayrshire & Arran have already been incorporated into the INS service, with the planned transfer of elective and emergency inpatient services from NHS Lanarkshire.

This strategy has been agreed since 2009, but there has not been sufficient capacity within INS to transfer the estimated 225 patients with a required resource of 6 additional theatre sessions (4 elective, 2 emergency) and 4 inpatient beds. A West of Scotland group is currently meeting to explore all potential options, including creating capacity within INS by sending other groups of GGC and West of Scotland patients to surrounding NHS Boards for treatment.

The strategy is also tied to the development of the New Lanarkshire Acute Hospital, which has assumed that all inpatient OMFS services will have transferred to INS and provides only for day case surgery. The transfer of services will therefore need to take place before the new Lanarkshire Acute Hospital is completed.

4.1.2.5 Spinal Surgery - by 2025

All spinal surgery for West of Scotland residents is delivered on the QEUH campus, with complex cervical and thoracic surgery being provided by Neurosurgery. For historical reasons, non-complex lumbar spinal surgery has been delivered across two services, Neurosurgery and Orthopaedics. Orthopaedics only covers the GGC catchments of North Glasgow and Clyde, while Neurosurgery provides for all other GGC residents (South Glasgow) as well as Argyll & Bute HSCP, NHS Ayrshire & Arran, NHS Lanarkshire and NHS Western Isles.

There have been ongoing discussions regarding the desire of both clinical teams to develop a single regional inpatient service for complex spinal surgery, excluding minor and major falls in older people which are admitted across the Trauma Units in the West of Scotland. The most recent activity modelling for the planned single service, shows that the level of orthopaedic surgery which would transfer from QEUH to INS would be a minimum of 400 cases per annum, requiring 10 theatre sessions (with laminar flow facilities) and 5 inpatient beds.

The development of a single service would be of significant benefit to patients, allowing amalgamation of out-of-hours rotas and concentration of surgical, nursing and AHP expertise providing better cross-cover. It would be in line with other UK units, including NHS Lothian, where similar consolidations have taken place.

4.1.2.6 Summary

The combined requirements of these service developments will be:

- 28 additional inpatient beds
- 17 theatre sessions, including one full laminar flow theatre
- the development of a new Interventional Neuroradiology suite

The current services do not have sufficient capacity to accommodate all of these planned developments, and even in a ‘do nothing’ or ‘do minimum’ options, achieving this would still require significant capital spend on additional external builds and/or temporary theatres to extend clinical capacity.

4.1.3 Demographics and population

In addition to known service developments, many of the existing services will continue to grow in future years, due to changing demographics.

The core regional services are delivered to a population base of 2.75m. National services are delivered to a population of 5.5m.

Table 11: Population Base

	Population
Argyll & Bute HSCP	86,000
NHS Ayrshire & Arran	370,000
NHS Dumfries and Galloway	150,000
NHS Forth Valley	305,000
NHS Greater Glasgow and Clyde	1,160,000
NHS Lanarkshire	656,000
NHS Western Isles	26,900
Total	**2,756,000**

Source: https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2019

According to the National Records of Scotland Office, the adult population of Scotland is projected to increase by 3.4% from over 4.5m to just under 4.7m between 2020 and 2030.

Table 12: Projected Population Increase

Age Bands	2020	2030	Change
16-29	941,000	903,000	-4.0%
30-39	728,000	746,000	2.5%
40-49	674,000	736,000	9.2%
50-59	793,000	664,000	-16.3%
60-69	653,000	751,000	15.0%
70-79	484,000	550,000	13.6%
80-89	229,000	295,000	28.8%
Over 90	44,000	55,000	25.0%
Total	**4,546,000**	**4,699,000**	**3.4%**

Extract from https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/population-projections-scotland/2018-based

Unlike most mainstream clinical services, where the rates of people treated rise with age, Neurology, Neurosurgery and OMFS most commonly deal with younger patients (under age 70).

Figure 5: Age Distribution of referral into NHS GGC (all specialties)

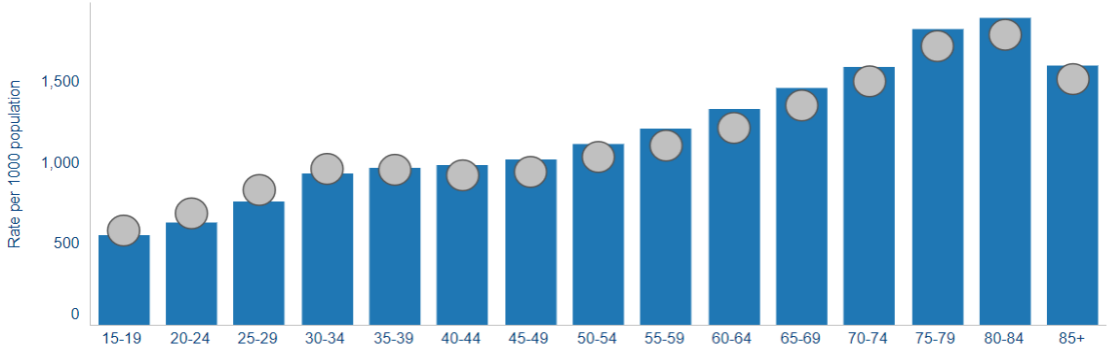
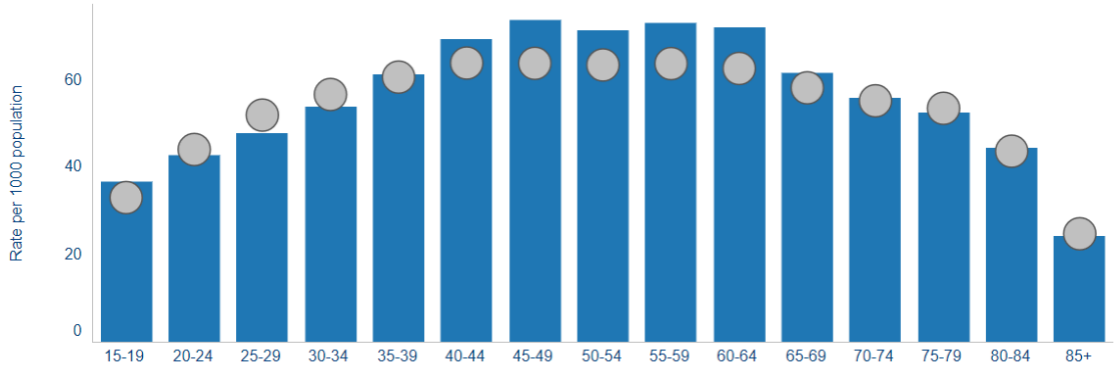


Figure 6: Age Distribution of referral into selected INS specialties



Source: Discovery Scotland.

Rates per 1,000 population for all NHSGGC new outpatient appointments versus rates per 1,000 population for new outpatient appointments in Neurology, Neurosurgery and Clinical Neurophysiology. [Grey dots show the NHS Scotland rates for the same age bands]

Nonetheless, the overall rise in population with the shift towards an older population, with the additional co-morbidities within this group, are expected to impact on all services, but especially on the acute medical services of Stroke, Acute Neurology and Spinal Injuries.

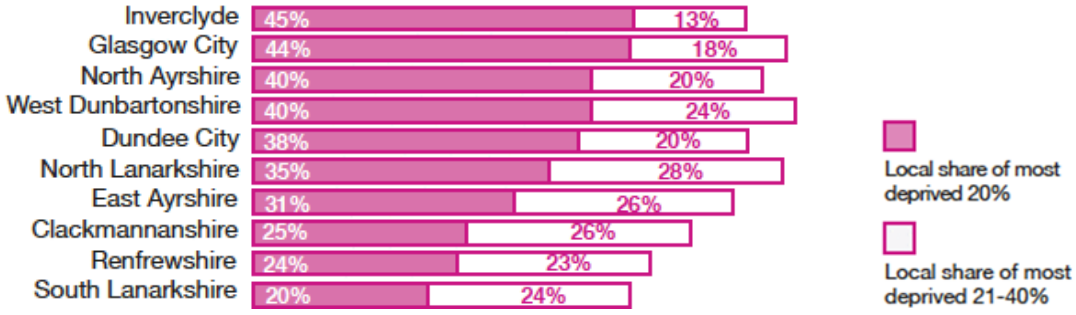
Other factors which have been built into assumptions and activity projections are:

4.1.3.1 Deprivation[2]

Deprivation is a major determinant of poor health outcomes. Even more so than age at time of procedure, deprivation adds significant additional days to lengths of stay for surgical patients[3]. It drives higher emergency medical admission and readmission rates[4] and is a major determinant in USOC referrals into GGC for Head & Neck cancer[5]. Cancer surveillance in Scotland over the last 15 years provides convincing evidence that socio-economic deprivation increased the likelihood of being diagnosed with both head and neck cancers and melanoma; people living in the most deprived groups were also more likely to have cancers that had spread to other parts of the body (metastatic disease - stage IV)[6].

Of the ten most deprived council areas in Scotland, only one (Dundee City) does not fall into the main catchments for the Institute of Neurological Sciences.

Figure 7: Deprivation Areas by Council



4.1.3.2 Obesity[7]

Obesity is both a driver of back pain within the population and a major complicating factor in undertaking spinal surgery to correct treatment-refractory back pain[8].

In 2019, 66% of adults in Scotland aged 16 and over were overweight, including 29% who were obese. Obesity rates are significantly higher among people living in our most deprived communities, with rates of female obesity being 40% within SIMD 1-2, as opposed to 18% in SIMD 4-5. This impacts significantly on both length of stay and potential outcomes for patients. The Diet and Healthy Weight Monitoring Report 2020 indicates that the total numbers of overweight adults have plateaued within Scotland in recent years, but with the proportion of those categorised as obese still rising.

At present, there are no bariatric facilities within the INS Theatres & Interventional Radiology Suite to accommodate patients with a BMI of over 45, and this impacts the care of these individuals.

Expected increases in length of stay for a more obese population have been weighed against the expected improvements in length of stay which will be achieved if and when the Surgical Day Admissions Unit is available to service again. Previously, the availability of this unit had driven a 0.6 day reduction in length of stay across all admissions.

4.1.3.3 Cancer

The INS supports three cancer services:

- Neuro-oncology
    - Single regional MDT including all tumours of the central nervous system [CNS]
- Head & Neck cancers
    - Local MDTs covering South Glasgow, Clyde, Ayrshire & Arran are held within INS jointly with ENT
    - Complex cases from across the WOS are also discussed at the Regional MDT
- Skin cancer
    - Local GGC MDTs and complex regional MDT delivered jointly by Dermatology, Plastic Surgery and OMFS

Patients with suspected or diagnosed Brain/CNS or Head & Neck cancers from across Scotland who require access to Neuro-SPECT are also routinely seen in INS, but these are

very small numbers of cases. SPECT scanning is also used in OMFS skin cancers, and all WOS patients requiring this attend INS.

According to ISD Scotland[9], incidence for these cancers is due to rise in the next five years (projections are not available for beyond the period 2023-2027):

- Brain and CNS cancers will rise by a further 3.3%
- Head and Neck cancers will rise by a further 10%
- Malignant melanoma of the skin will rise by a further 11%

The most complex Head & Neck cancer cases, involving three session days and overlapping, multiple teams of OMFS and ENT surgeons working together, are carried out in the INS theatres. Lengths of stay for these complex patients are 20+ days and access to a specialist airways support team, level 2 and 3 beds, and an HDU-level area within the current OMFS ward, is required to manage these patients successfully.

4.1.3.4 Demographic summary

Even without any technological or other changes to service, there will be a minimum of 3.4% growth for change in current population(s) served and further 3-11% increases for cancer diagnoses. With current services operating at or above capacity, there is no ability to subsume these increases in activity within the current resource profile for theatres, daycase or outpatient facilities.

4.1.4 Functionality and overcrowding

4.1.4.1 Wayfinding

Being spread across so many interlinked buildings, the current services have developed where space has been available at the time, rather than with planned sensible adjacencies, which compromises the care delivered to patients. Wayfinding – both getting to INS itself, as the site strategy directs all traffic to the main QEUH entrance, and within and between buildings – is a major issue for all services and user groups including the Neurology Voices group.

A single outpatient visit may involve starting in the main Outpatient Department in the Neurology Building, moving to Neurorehabilitation, across to Imaging in the Surgical Building, and back to the outpatient department. New patients especially can get lost (sometimes arriving initially at QEUH rather than INS outpatients) and this can be very distressing for them and their families. Frail and/or disoriented patients often require staff escorts to get around, which has revenue consequences for staffing levels, and delays to care can occur when there is a shortage of porters or available clinical escorts.

Current service users have already indicated that the fact that services are located across a maze of up to eight buildings with long distances between service areas poses an impediment to accessing their care. The lack of provision for people with often complex physical disabilities has also been raised repeatedly.

During the work for developing this Initial Agreement, feedback from service users has included:

> "Outdoor space is cluttered and it is difficult to get around and between the main buildings, with a lack of dropped kerbs and people parking up on the pavements as well."
>
> "There are too many entrances and exits – it is very confusing and hard to know where you're supposed to be going."
>
> "Departments keep closing and moving, and if you're lucky, there's a hand-written sign telling you where you should have gone."
>
> "There is very poor lighting outside and it does not feel safe moving between buildings in the evenings and in winter when it's dark."
>
> "The corridors aren't really wide enough when you're using sticks, worse if in a wheelchair."
>
> "There are no automatic buttons anywhere – you have to ram your wheelchair into doors and this also applies to the toilets."
>
> "All the toilets in the foyer and in OPD open onto public corridors and everyone can see right in."

Access issues are exacerbated by the use of corridors as storage facilities. Aside from the obvious contamination and security risks of storing clinical equipment and supplies in public corridors, this practice reduces the width of circulation spaces which already do not meet SHTM requirements. Corridors in INS are as narrow as 1m across, and all of Level 1 Neurodiagnostics is not accessible for people who use powered wheelchairs or mobility aids. Although this can be mitigated by transferring people via hoists or manual hospital wheelchairs, this causes a loss of independence, agency and dignity for the individual.

The Neurorehabilitation unit was highlighted specifically by users and the Neurology Voices group as being unsuitable for its current use. As it was initially developed as a continuing care facility for older people who were severely physically disabled with little to no rehabilitation potential, its plans did not allow for suitably sized internal rehabilitation spaces or any external rehabilitation spaces. As patients are in the unit for around 60-90 days, many wish to get outside or away from the very acute environment of their rooms/bays, but there is limited external reflection space. Its aspects are onto a very busy carpark and access roads. There are limited choices for leaving the unit, either alone or with visiting friends and family. Since all side entrances have been closed due to Covid, the atrium of the QEUH is now an 8-10 minute walk away for a moderately fit able-bodied person. The route is alongside a busy main road which experiences very high winds from the QEUH itself. For a person whose rehabilitation goal may be to achieve a 25m aided walk, this distance and these conditions are insurmountable.

4.1.4.2 Overcrowding of public spaces

Access issues are exacerbated by the use of corridors as storage facilities. Aside from the obvious contamination and security risks of storing clinical equipment and supplies in public corridors, this practice reduces the width of circulation spaces which already do not meet SHTM requirements. Corridors in INS are as narrow as 1m across, and all of Level 1 Neurodiagnostics is not accessible for people who use powered wheelchairs or mobility aids. Although this can be mitigated by transferring people via hoists or manual hospital wheelchairs, this causes a loss of independence, agency and dignity for the individual.

4.1.5 Summarising the Need for Change

Table 13: Need for Change

What is the cause of the need for change?	Effect on the organisation	Why action now:
Inability to meet current service demand	Waiting times for outpatients and inpatients are above NHS targets (and were pre-Covid). Patients who wait for excessive times may see a deterioration of their condition and the outcomes from treatment may be compromised Short-term cancellations of elective procedures are common	Activity for all existing services will increase over the next ten years and without a plan to manage this expanding demand, best patient care will be compromised by longer waits
Inability to accommodate known service developments	Agreed strategies will not be able to be implemented Patient benefits for GGC and WOS residents will not be achieved Alternative arrangements will have to be pursued, e.g. transferring patients out of the West of Scotland	Planned service developments are interlinked with wider SGHD and West of Scotland service developments and changes; deferring implementation is not an option and would result in West of Scotland patients being denied treatment options which are available in the East and North of Scotland
Dispersed service locations	Existing service arrangements affect ease of access for staff and patients Higher infection control risks of moving patients long distances through public access corridors Loss of patient dignity	These issues have been highlighted by multiple HIS inspections and the Board has a statutory duty to safeguard its patients
Services are difficult to navigate for users and their families	Feedback from users is that the current configuration of services does not meet their needs and that the complexity of navigating the sites / services impacts on their care	A service that isn't meeting user requirements is unsustainable, even in the short term
Existing buildings lack the flexibility to accommodate works or be adapted while maintaining patient services	Increased safety risk from outstanding maintenance and inefficient service performance. Lack of suitable decant in the WOS means that remedial maintenance requires reductions in service provision (e.g. closure of wards / theatres)	Building condition, performance and associated risks will continue to deteriorate if action is not taken As a national and supraregional centre, frequent current service gaps can only be covered by transferring patients out-of-area. NHS Lothian has limited capacity to accept transfers at the levels required.

NHSScotland's Strategic Investment Priorities are:

- Person centred.
- Safe.
- Effective quality of care.
- Health of population.
- Value and sustainability

These are derived from the Delivery Plan for Health and Social Care.

This proposal responds to these strategic priorities in the following ways:

Table 14: Strategic Investment Priorities

	How the proposal responds to this priority	Measured by:
Person Centred	It supports people in looking after and improving their own health and wellbeing as part of the integrated Healthcare Strategy "Achieving Excellence"	National Health and Wellbeing Outcome Indicators
	It will increase the proportion of people with intensive needs being supported to remain in a homely setting by enabling the shift in the balance of care towards integrated community support systems.	National Health and Wellbeing Outcome Indicators Joint commissioning plans with WOS HSCPs
	It improves the physical condition of the healthcare estate by upgrading or replacing a large proportion of INS which is well below current documented standards.	NHS GGC PAMS KPIs
	The clinical environment will allow greater privacy and more user-friendly spaces for staff, patients, carers and visitors.	Patient Opinion responses Staff surveys
Safe Care and Environment	Risks to patients, visitors and staff, which are inherent within buildings of this age - including fire protection/evacuation, asbestos and control of infection - will be reduced or eliminated completely.	Safe Care and Environment H&S Reports
	Ongoing impact to business continuity brought about by infrastructure failure (including drainage, ventilation, power, windows, temperature control) will be reduced or eliminated completely.	H&S Reports Theatre reports Elimination of ongoing SLAs with NHS Lothian for care of WOS patients
	Supports the delivery of "Centres of Excellence" ethos set out in the National Clinical Strategy	ISD activity reports National Health and Wellbeing Outcome Indicators

	How the proposal responds to this priority	Measured by:
Effective Quality of Care	It will ensure timely discharge from hospital by enabling a reduction in lengths of stay, improving access to services, and enabling enhancements and inclusion of modern technology and communications systems.	National Health and Wellbeing Outcome Indicators
Health of Population	The environmental, building and service changes which will be enabled by this project will improve clinical outcomes within INS's acute services.	ISD reporting National Health and Wellbeing Outcome Indicators
	More flexible accommodation will be able to meet what are likely to be significant technological changes in the delivery of care for people with neurological, complex rehabilitation and maxillofacial conditions	ISD activity reports National Health and Wellbeing Outcome Indicators Patient Opinion responses
Value & Sustainability	It will significantly reduce backlog maintenance within INS, currently estimated at £25m, which will never be able to provide a clinical environment sufficient to meet the strategic objectives of NHSGGC.	NHS GGC PAMS and KPIs
	The operational costs will be better managed through improved energy efficiency and reduced maintenance liabilities. This will significantly improve the environmental sustainability of the hospital estate in GGC	NHS GGC PAMS and KPIs

4.2 What is the organisation seeking to achieve?

Once the need for change has been identified, then the next step is to identify what can be achieved to address this need or needs. At this stage it is not aimed at identifying the potential solution but more identifying what needs to be achieved to deliver the necessary change i.e. the investment objectives.

4.2.1 Investment Objectives

The existing arrangements and the associated need for change have been established in previous sections. Table 15 summarises the key problems from the current arrangements and what is needed to overcome these issues.

Table 15: Investment Objectives

Effect on organisation and need for change:	What needs to be achieved to overcome this need? (Investment Objectives)
Demand in healthcare is not static. The predicted growth in demand for the existing base services due to demographic trends, increasing cancer incidence and prevalence, and the cumulative effects of growing cohorts of patients requiring life-long interventions is estimated at between 7-10% to 2030. Current levels of demand already exceed the maximum capacity for many of the services as currently configured. Despite working at over 95% efficiency across 50 weeks, the theatre complex is not capable of delivering sufficient capacity to keep pace with the elective waiting list, resulting in breaches of TTG targets for surgery. Outpatient waiting times for people who require a hands-on or face-to-face appointment is limited by the lack of appropriately sized and functional consulting facilities. Therapy spaces, acute ward environments and other ad hoc accommodation are routinely used for patient appointments. High-cost external private sector capacity has been used for both admitted and non-admitted care in every financial year from 2010-2020 (paused during Covid, as only P3 and P4 patients are suitable for treatment in the private sector). The services are not self-contained. Acute, complex supraregional and national services delivered across INS, QEUH and RHC are interconnected and interdependent. It is imperative that improvements in one area do not negatively affect other areas of service provision, e.g. moving one service off the QEUH campus may generate improvements for that individual service, but would affect the ability of other regional and national services in INS, QEUH and RHC to function safely and to treat the populations which GGC serves. These vital adjacencies must be maintained throughout all stages of this transformation programme and beyond in order to continue to support optimal care models for the people of Scotland.	**Objective 1** The services will improve capacity, access and outcomes, while maintaining vital clinical adjacencies and meeting the evolving needs of all patients, carers and staff

Effect on organisation and need for change:	What needs to be achieved to overcome this need? (Investment Objectives)
As all highly acute areas are currently overcrowded, any further expansion of treatment services cannot be achieved. Without additional capacity, there are risks to currently agreed strategies for mechanical thrombectomy, sentinel lymph node biopsy, deep brain stimulation, OMFS Surgery, spinal surgery and Level 2 Acute Neurorehabilitation. This will lead to either inequality of provision within NHS Scotland, with other regions able to offer services which INS cannot. This will result in a lack of local access to care across these patient groups and the transfer of patients to alternative providers elsewhere in Scotland and the UK. Given that INS provides some 60% of all Neurosciences and OMFS services in Scotland, this would be a significant detriment. The services provided are rare and highly complex, and rely on attracting and retaining highly skilled individuals at all levels, both trained clinical staff and support staff. The international reputation of the INS as a leader in healthcare delivery and development is key to this. If the services cannot keep pace with other UK centres, recruitment and retention, which is already difficult in several of the specialties despite international recruitment efforts, will become increasingly challenging, as better candidates opt to pursue opportunities at other centres.	**Objective 2** Services will remain at the forefront of delivering world-class supraregional and national treatment services to residents of Scotland by continually adapting, enhancing and improving their clinical models to meet future demands and strategies
Replacement and upgrades of essential medical equipment (e.g. CT, MRI, Spect) require larger footprints and greater loading weights, which cannot be accommodated within the existing footprint or supported by the existing infrastructure. Technological changes to existing medical equipment require retro-fitted solutions which are still below current SHTM standards and introduce new risks into the working environment, e.g. lowered ceilings, increased heat.	**Objective 3** Services will be provided in flexible and adaptable clinical accommodation in a modern healthcare environment that meets all appropriate standards

Effect on organisation and need for change:	What needs to be achieved to overcome this need? (Investment Objectives)
There are inefficiencies and delays in patient treatment pathways due to the distances of transfers between clinical areas. All transfers of admitted patients between departments involve being taken through public circulation spaces, resulting in a risk to patient safety and compromised patient dignity. There is no separation of patient, staff and public movement, or of admitted and ambulatory services, resulting in fragmented service models which do not meet the needs of our patients, staff or other stakeholders. Equipment and supplies are routinely stored in public corridors, resulting in security and infection risks to individuals, as well as further impeding the rapid movement of acutely unwell individuals. There are no dedicated ambulance transfer points with shelter or canopies – all ambulance transfers take place on the public road and involve patients being exposed to the elements. Ambulatory service users have to navigate across several disparate buildings for a single episode of care. Internal circulation and outside access roads are not suitable for people with potentially significant cognitive and physical impairments. Patient and staff safety has been repeatedly raised as a concern via Datix and through the Neurology Voices group.	**Objective 4** Services will have optimal safe, efficient clinical pathways which are person-centred, promote adjacencies between services, and enhance the dignity and safety of our patients and users, their families/visitors, and our staff

Effect on organisation and need for change:	What needs to be achieved to overcome this need? (Investment Objectives)
There is a lack of resilience within existing infrastructure to maintain clinical output within a compliant healthcare environment and minimise the risk of infection to patients. Despite significant investment, there are repeated and routine failures of all elements of the infrastructure. Flooding and ingress of foul waste into acute patient areas are common, as are issues with heating and cooling system. Datix reports and repeated recent HEI reports have highlighted patient and staff safety and infection control risks in all existing service areas. The overcrowding of the facilities and the lack of suitable decant facilities elsewhere in GGC or even the wider West of Scotland NHS estate means that remedial maintenance can often only be achieved through reductions in service provision (e.g. closure of wards / theatres) or through transfers to patients to distant service providers elsewhere in Scotland or the UK.	**Objective 5** Services will be delivered in an environment which promotes safety and minimises harm

Objective 1
Services will be provided in a safe and appropriate clinical environment which improves access and outcomes, maintains vital clinical adjacencies, and meets the evolving needs of all patients, carers and staff

Waiting times for inpatients and day cases are challenged not by a lack of staff, but by a lack of sufficient facilities to treat patients appropriately. Neurosurgery and OMFS require ultra-clean environments to carry out planned and emergency procedures which involve teams of surgeons working together or in rotation; none of the retained theatres have any laminar flow facilities. Theatre sessions are currently planned to operate at beyond 90% utilisation over 50 working weeks, with no dedicated Cepod theatres or other accommodation for emergency presentations except on weekends. This results in planned procedures being rescheduled (‘bumped’) for emergency presentations. Planned and unplanned downtime is only accommodated by reducing services, using high-cost private sector capacity or by transferring patients to NHS Lothian. The development of a theatre complex which has sufficient capacity to accommodate this will allow the service to operate within TTG targets for our base population.

(Despite numerous previous scoping exercises over the last decade, including working up a full IA for the replacement of theatres and interventional neuroradiology, it has been established that the existing building cannot support even replacement of existing facilities due to a lack of floorplate, and that the infrastructure would not support an extension to provide the base capacity required.)

Unlike within the current accommodation, necessary maintenance in all areas will be able to be carried out without the need to pause or significantly reduce the delivery of patient services.

Any identified solution will balance the need to ensure that healthcare estate is well utilised against the need to have planned downtime for upgrades, maintenance and other works.

The Institute of Neurological Sciences does not currently have basic facilities which are common across all modern hospitals - discharge lounge, ambulance receiving and ambulance waiting areas - and developing these into the preferred solution will significantly improve patient flow, experience and dignity for the current patient population.

The services outlined in detail at sections 3.1.5 and 3.1.6 describe the interdependencies between INS, QEUH and RHC for a wide range of supraregional and national services for children, young people and adults which are delivered on the QEUH campus. It is vital that these adjacencies are maintained throughout this transformation process and that any decisions taken support the continued delivery and development of services which are not included within this Initial Agreement.

Objective 2
Services will remain at the forefront of delivering world-class supraregional and national treatment services to residents of Scotland by continually adapting, enhancing and improving their clinical models

The services benefit from an international reputation for being at the forefront of both service delivery and service development across OMFS, Neurosciences and Spinal Injuries.

If the services cannot keep pace with international developments in healthcare treatment and delivery, this will diminish services which serve over half of the Scottish population and will significant impact the services' ability to attract high-quality staff in the future.

As highlighted previously, there are agreed clinical strategies in place across NHSGGC, the West of Scotland and NHSScotland for reconfiguring the delivery of several services, including:

- Mechanical thrombectomy for people who have had an ischaemic stroke
- Complex inpatient OMFS surgery for people from NHS Lanarkshire
- Spinal surgery for West of Scotland residents
- Sentinel lymph node biopsy for people in the West of Scotland with head and neck cancer
- Level 2 acute neurorehabilitation for GGC residents who are treated in the Major Trauma Centre

The current services and layout of INS will not permit all of these developments to be taken forward. During the Outline Business Case phase, NHSGGC will further examine alternative provision, including other sites, for both spinal surgery and Level 2 Neurorehabilitation as part of its overall QEUH campus and wider GGC Infrastructure reviews, but the other three developments can only be provided by and from the existing INS services. Indeed, work has commenced on developing two new Interventional Neuroradiology rooms with full bi-planar facilities to provide Mechanical Thrombectomy and construction will commence in 2022. (The Thrombectomy development is a separate already-funded capital scheme being taken forward by NHSGGC and not covered by this Initial Agreement.)

Healthcare Planners (KD Health) were contracted between Strategic Assessment and Initial Agreement to work on a series of clinical briefs. Over a period of six months, 18 clinical and 5 non-clinical support groups met to agree a series of Clinical Briefs and Schedules of Accommodation which described the necessary clinical adjacencies between departments, and the supporting accommodation required to provide these, and to enhance access and improve flow for individuals and their families. Complex and detailed modelling of future activity flows was undertaken to support this process.

At present, the options being put forward for further consideration will allow these to be taken forward. All service profiles and schedules of accommodation have been developed in a way which allows the plans to adapt to final decisions.

Objective 3
Services will be provided in flexible and adaptable clinical accommodation in a modern healthcare environment that meets all appropriate standards

The landscape of healthcare is changing dramatically, with the continuing development of highly personalised medicine supported by genetic profiling. New treatments for previously untreated conditions are already in the pipeline.

Gene therapies at birth and an oral medication for adults with Spinal Muscular Atrophy are now available, offering radical life-altering treatments for a population which, just five years ago, were managed by conservative medical means, predominantly pain control and musculo-skeletal interventions. Other neuromuscular conditions have seen life expectancies increase rapidly from school age to well into adulthood, but people with these conditions require a range of ongoing services to support and promote their independence which did not exist when the Institute of Neurological Sciences was built. Even within spinal injuries, the patient profile has changed significantly, from predominantly young men suffering major trauma related to high impact sports, road traffic accidents and violence, to an older and more mixed-sex population whose injuries are from leisure pursuits and significant falls. The service models which were developed when the Queen Elizabeth National Spinal Injuries Unit opened in 1992 have had to constantly evolve to meet the needs of the people they now serve.

The services required to meet these changing demands will require flexible accommodation which is not locked into one model of delivering care. A modern healthcare facility will offer opportunities to respond to these known and as-yet-unknown challenges.

Objective 4
Services will have optimal safe, efficient clinical pathways which are person-centred, promote adjacencies between services, and enhance the dignity and safety of our patients and users, their families/visitors, and our staff

This can be achieved by developing a solution which allows for the essential segregation of acutely unwell patients from general circulation spaces to improve patient dignity, and through the appropriate provision of storage facilities sufficiently sized to hold large items of medical equipment, including trolleys and mobile clinical support equipment, when not in immediate use.

This segregation can be seen in the QEUH, where public access and staff/patient access is kept completely discrete, with swipe card access to restrict entry. Each floor in the QEUH also

has a central core for supporting services which is not accessible to patients and the public. These core hubs include large central stores for equipment, including RFID monitoring, so that staff can easily locate vital equipment in emergency situations. A similar arrangement for INS would reduce or eliminate the current risks which arise from storing equipment and supplies in public circulation spaces.

Ensuring that all INS services have access to ultra-clean operating facilities will improve safety within the theatre environment. Fixed link corridor access to QEUH and RHC theatres and critical care will maintain the immediate triple co-location of adult and children's trauma and neurosciences services.

Patient services are spread over many buildings, which provides challenges to people attending day and outpatient services. Travel distances between departments are significant, which impacts both staffing (the need for escorts to move patients between areas) and on productivity (appointments take significantly longer to build in these travel times). Concerns have been repeatedly raised – and have been referenced in section 3 – that patients, staff and users do not feel safe travelling between buildings alongside busy public access roads and through areas which are very poorly lit.

Ambulance drop-off and pick-up takes place outside on a public access road with no shelter from prevailing elements. This is a significant risk to the most acutely unwell individuals, and not optimal for SAS staff, who must negotiate parked cars and other street impediments.

Any solution must maximise the safety and welfare of all people using and delivering the services by reducing the need to cross the site, exposed to the elements.

Objective 5
Services will be delivered in an environment which promotes safety and minimises harm

This can be achieved by ensuring that the services are provided in an environment which meets all modern healthcare standards and which allows remedial maintenance to take place without compromising patient care through enforced closure of services and clinical areas.

4.3 What are the benefits and risks to success?

A successful outcome for a project will be to deliver each of its objectives to demonstrably realise the desired benefits. In order to achieve this, all benefits, priorities, risks, and other issues need to be identified early in the proposal's development so that they can be better managed, monitored and evaluated throughout its delivery.

4.3.1 What benefits are to be gained from this proposal?

These have also been captured in the Benefits Register in Appendix H and will be developed further during the OBC stage in order to develop an initial Benefits Realisation Plan.

Table 16: Benefits Summary

Category	Benefits to be obtained
Safe	Reduced risk of infection by eliminating or significantly reducing use of public circulation spaces for transporting patients between services and for storing supplies, equipment and waste
	Modern facilities will meet all Infection Control requirements and SHTM standards
	Improved functional suitability of the estate will reduce risks from retrofitted solutions (e.g. lowered ceilings to allow appropriate ventilation)
Effective quality of care	Current services can run to optimum efficiency and capacity without unplanned downtime associated with remedial maintenance
	Additional or more suitable capacity will allow the clinical services to meet both existing service pressures and planned service developments which have been agreed with local, regional and national partners
	Additional or more suitable capacity will contribute to reduced outpatient, day case and inpatient waiting times, allowing care to be delivered more timeously
	Better alignment of services and departments will improve access/flow for individuals and their families and reduce delays between episodes of care (e.g. reduced transfer times between critical departments)
	Services will be able to adapt and keep pace with international developments in delivery of highly specialist services, continually evolving to provide better clinical models and outcomes
	Maintaining vital clinical adjacencies with and between services delivered across INS, QEUH and RHC will allow NHS Scotland to continue to provide world-leading care for children, young people and adults.
Health of the population	Higher patient/carer satisfaction with assessment and treatment
	Delivering care in an environment which can meet the needs of people with neurological, cognitive and physical impairments will improve people's experience of healthcare and will support them better in their journey(s) through and between the clinical services
Person-centred	Improve staff, patient and service user dignity and experience
	Improve the quality and physical condition of the healthcare estate for all users - patients, staff, carers, visitors
Value and sustainability	There will be a flexible modern estate using sustainable technologies which contributes to reducing NHSGGC's carbon footprint
	Ability to change the use of individual spaces to meet current and future needs will reduce the need for retrofitted solutions which are sub-optimal and/or resource intensive

Category	Benefits to be obtained
	More functional buildings and better alignment of services and departments will reduce the need for staffing solutions (e.g. portering, trained staff escorts) to 'fix' problems caused by the condition and layout of the estate
	Running costs and backlog maintenance costs will be significantly reduced

4.3.2 What risks could undermine the proposal's success?

The main project risks and mitigation factors are identified at a high level at the IA stage. As the project develops through the OBC and FBC stages a more detailed and quantified risk register will be prepared. The strategic risks at this stage, along with mitigating actions, are highlighted in Appendix G under four main categories:

- Business
- Service
- Financial
- Operational

4.3.3 Constraints and dependencies

4.3.3.1 Service constraints

Neurosurgery, OMFS, Neuro Critical Care, Neurophysiology and Neurodiagnostics are essential components of the QEUH and RHC Major Trauma services. Across the UK and Europe, the trend over the past two decades has been to co-locate adult and children's trauma services with neurosciences on a single campus wherever possible. An essential justification for the recent move of the Royal Hospital for Sick Children and Department of Clinical Neurosciences to the Little France campus in Edinburgh was to achieve exactly this triple co-location which delivers considerable evidenced benefits for patients. Similarly, there have been recent major capital programmes in Liverpool and Newcastle to align all three services onto a single campus.

Any potential solution, including decant locations, must maintain this critical triple co-location and allow all clinical services to remain operational. The existing fixed corridor between QEUH and INS is in the ideal location, directly linking the INS theatres and critical care facilities to the QEUH theatres and critical care facilities and straight through to RHC theatres and critical care facilities. The need for critically injured and acutely unwell patients to be transferred timeously along this link restricts the potential for moving the entire Surgical Building to a more remote part of the QEUH campus.

The interdependencies between the departments in INS and the need to maintain and expand all clinical services throughout every phase of the programme adds significant complexity to the scheme.

For many of the services, there are no alternative service locations or potential decant facilities anywhere in the West of Scotland. For the supra-regional and national services, there are no potential decant facilities anywhere within Scotland.

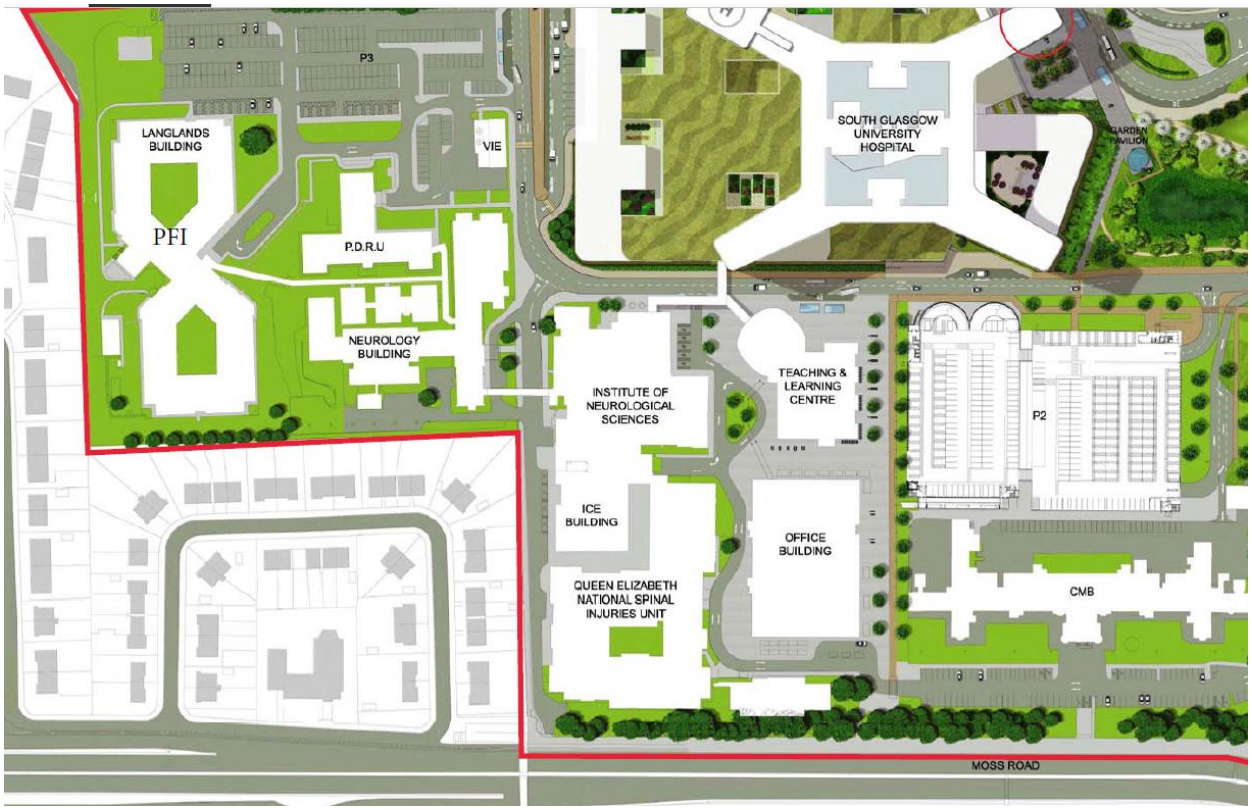
During periods of service disruption, for example when there was an unexpected failure of Neuroradiology equipment in September 2021, arrangements have to be put in place to transfer West of Scotland patients directly to NHS Lothian. Given that the INS is the largest centre in Scotland, such transfers of activity are only made possible by changing other patient pathways: during a previous longer period of service disruption, emergency neurosurgery patients from NHS Forth Valley and NHS Dumfries & Galloway had to be redirected from NHS Lothian to NHSGGC to allow NHS Lothian to create the necessary theatre and bed capacity to treat c.400 West of Scotland interventional neuroradiology patients.

The private sector is only an option for low-complexity spinal surgery. It does not have the capacity or ability to provide any complex or emergency services, and it routinely transfers or cross-refers neurologically compromised patients and complex cancer presentations into INS.

4.3.3.2 Site constraints

The Institute of Neurological Sciences is landlocked by residential properties to the south, the main QEUH building to the west, the Clyde Tunnel expressway to the east and other clinical and non-clinical facilities to the north.

Figure 8: Map of QEUH



The existing Private Finance Initiative agreement regarding the Langlands Building to the rear, which also incorporates the adjacent carpark in the scope of the agreement, currently prevents further construction in that area. The PFI contract is for 60 years and due to expire in 2059, although there are break options at 2026, 2036 and 2043, by providing one year's notice and on the basis that the building will no longer be used for hospital services. There are various

conditions around termination but a review of potential options and any opportunities around this can be explored at OBC stage as part of any options appraisal work.

The drainage infrastructure on the campus is hampered by having been added over time to a base of nineteenth century drains which were last significantly expanded in the 1950s.

The challenges of the interdependency between the INS infrastructure and the QEUH infrastructure should not be underestimated.

The main adult hospital is centrally located on the QEUH site with the Institute of Neurological Sciences, Queen Elizabeth National Spinal Injuries Unit, Neurology block and PDRU building located to the south and east of the adult hospital. The adult hospital is a twelve-story building with ward wings atop the main building podium. The buildings in immediate physical adjacency to this step down to six storeys and down further to three and two storey blocks nearer the south-eastern edge of the site.

The existing Central Medical Block (CMB) is a B-listed three-storey Victorian building that, along with the residential properties on the southern edge of the site, sets the datum for height from a planning perspective.

4.3.3.3 Service dependencies

Accepting that the triple co-location of neurosciences with adult and children's specialist and trauma services is paramount to maintaining a wide range of patient services across the Institute of Neurological Sciences, the Queen Elizabeth University Hospital and the Royal Hospital for Children, it then follows that services which require immediate access for patients in extremis to the theatres, critical care and inpatient diagnostic facilities in INS also need to remain co-located during all phases of the transformation programme.

These include:

- The Queen Elizabeth National Spinal Injuries Unit
- All highly acute inpatient beds and specialist teams:
    - Acute and Hyperacute Stroke
    - Level 1 Acute Neurorehabilitation (planned for 2023)
    - Neurology
    - Neurosurgery
    - OMFS
- All supporting accommodation for theatres (e.g. same day admissions unit)
- Neurology Short Stay inpatients
    - many treatments for Multiple Sclerosis and neuromuscular conditions require on-site ITU and/or CCU back-up as part of the MHRA licensing of the products

Tables 1a-1g in section 3.1.5 (pp.19-23) and the descriptions of populations covered at Section 3.1.6 (pp.27-28) show the full range of interdependencies at an individual service level.

Services which could be provided on a non-adjacent site but which would have workforce and other resource implications:

- Level 2 inpatient Neurorehabilitation, day care and outpatients
    - INS has only 3 WTE Rehabilitation Consultants, who are also required to provide cover to the Major Trauma Centre within QEUH and to other WOS sites, therefore increased split-site working would require recruitment to additional posts to provide services on an alternate or non-adjacent site. While not unachievable, this is a specialty which has UK-wide shortages of staff and to which recruitment is already challenging, therefore introducing any service model which was reliant on significant recruitment would have associated risks.
    - The current OOHs rota for the Neurorehabilitation unit is provided at both consultant and junior level by Neurology, and disaggregating these two services would result in running two separate out-of-hours rotas.
- Neurophysiology
    - While its outpatient services could be provided on an alternative site, this would require additional consultant-level and technical posts to maintain 24/7 on-site support to the INS inpatient wards and intra-operative support to both INS and QEUH theatres (the department provides all EEG monitoring to the Major Trauma Centre and QEUH critical care).
- OMFS day case theatres and OP procedures
    - Patients (e.g. biopsy for Head & Neck cancer, removal of complex abscesses) who are booked as day cases routinely require to be kept overnight for clinical observation and therefore any alternative site would require 24/7 medical cover with competency in managing severe infections and airways management.
- Outpatients
    - The majority of outpatients are for regional or national specialist services which often require access at the time of attendance to Neurodiagnostics to allow diagnosis and/or to inform changes to existing treatment to take place in a single visit.
    - As these are regional services which can require patients to travel significant distances (from Stranraer, Western Isles, Oban, etc), split-site working would have especially negative impacts on our remote and rural patients, either requiring multiple visits and/or overnight stays in hospital or non-hospital accommodation.
    - For more local patients, this would involve multiple visits to separate sites. For some, this would be an additional cost and time pressure, but many of these patients require PTS services, which are complex to arrange and not flexible to changing needs.
    - Splitting services within the same campus would not address the current user concerns about the distances between current departments. Even a journey of a few hundred metres can be a significant hurdle for patients with complex disabilities and neurological impairment, as noted above.
    - Providing Neurodiagnostics in more than one location - even within the same campus - would require additional staffing, imaging equipment, reporting rooms and waiting areas, as the theatre complex and inpatient wards would still require full 24/7 on-site access to CT, MRI, plain film and Spect.

Services which could be moved off-site with no workforce implications are:

- Pre-operative assessment
- OMFS Laboratory

[1] England & Wales Trauma Audit & Research Network (2017), *Major Trauma in Older People*, https://aace.org.uk/wp-content/uploads/2017/04/Major-Trauma-in-Older-People-2017.pdf

[2] SGHD (Jan 2020), *Scottish Index of Multiple Deprivation 2020*, https://www.gov.scot/publications/scottish-index-multiple-deprivation-2020/

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5. What is the preferred strategic / service solution?

	Question	Response
Economic Case	What is the preferred strategic / service solution?	Confirm: • The Do Nothing option • Service change proposals • Indicative costs • Assessment of proposed solutions • Preferred strategic / service solution(s) • Design Quality objectives

The purpose of the Economic Case at Initial Agreement stage is to identify the preferred strategic or service solutions(s) which are suitable for further assessment at Outline Business Case stage. It will do this by comparing a range of proposed solutions to identify which one(s) best meet the requisite investment objectives.

5.1 The Do Nothing / Minimum option

The delivery of the do nothing option would not be able to maintain the current arrangements outlined in section 3.1 and would present significant patient and staff safety risks.

Strategic Scope of Option:	Do Nothing
Service provision:	Option fails to mitigate the continued risk of loss of service provision. No extant clinical strategies can be implemented.
Service arrangements:	The enhanced modern and flexible service models envisaged cannot be accommodated within the existing premises.
Service provider and workforce arrangements:	Will continue to put pressure on the clinical services to deal with compromises to SHTM compliance and amendments to site and facility arrangements outwith NHSGGC control.
Public & service user expectations:	Service user dissatisfaction will continue to increase, patient experience will decline and overall risk to attract/retain workforce.

Maintaining the current arrangements would fail to meet the investment objects of the project; however, more crucially Health Improvement Scotland have highlighted in their reports for the years 2016, 2017, 2018 and 2019 non-compliance with SHTM standards across the facilities.

Inability to deliver services would restrict the ability of West and Central Scotland Health Boards to continue to deliver patient services requiring critical services outlined in this IA.

While the Do Nothing option is not considered feasible, as limited opportunity exists to carry out works to parts of the existing estate to maintain the minimal requirements of the SHTM, the Do Minimum option has been assessed as part of the strategic options assessment in section 5.4.

The Do Minimum option would bring only minor benefits, most notably through the creation of a service for Mechanical Thrombectomy for people with ischaemic stroke. It would not meet any of the Strategic Objectives.

Strategic Scope of Option:	**Do Minimum**
Service provision:	The capital development for Mechanical Thrombectomy would proceed. This would allow over 400 people across the West of Scotland to benefit from optimal management for their ischaemic stroke. As this service requires 7 additional beds, this will put further pressure on inpatient services. By extending the theatre working day further or adding an additional planned clinical session on Saturday or Sunday, a service for Sentinel Lymph Node Biopsy (1 theatre session) could be established, but this will put further pressure on the theatre estate. As these patients are covered by 31/62 day urgent cancer targets, it is likely that this will lead to cancellations or longer waits for P2, P3 and P4 patients across both OMFS and Neurosurgery. No further service developments which require either inpatient beds or theatre sessions could be accommodated. Most notably, this would have a knock-on impact to NHS Lanarkshire's plans for a new acute hospital, as their clinical models see their remaining moderate and complex OMFS service transferring to INS.
Service arrangements:	The enhanced modern and flexible service models envisaged cannot be accommodated within the existing premises. Existing services will be repeatedly paused or disrupted to allow the planned works to go ahead. Current estimates are that minimum upgrades to drainage systems to meet current safe standards will require decant of up to 25-65 beds and at least 3 theatres over a 10-12 year period.
Service provider and workforce arrangements:	Will continue to put pressure on the clinical services to deal with compromises to SHTM compliance and amendments to site and facility arrangements outwith NHSGGC control. The inability to keep pace with other UK services will affect the ability to attract and retain a sufficiently skilled workforce.
Public & service user expectations:	Service user dissatisfaction will continue to increase, and patient experience will decline.

5.2 Service change proposals

As noted previously, there has been an extant transformation and development programme for the services covered by this Initial Agreement running since 2012, although this programme was focused on a large number of smaller schemes designed to address specific parts of the failing accommodation and infrastructure, rather than looking at the full range of services as a whole.

Nonetheless, this programme sponsored a significant amount of the redesign work which would usually follow the development of an Initial Agreement. As there were major schemes for both the Outpatient Department and the Theatres & Interventional Neuroradiology services, the services have already comprehensively redesigned their clinical pathways to better address the needs of the populations served by these supraregional services.

5.2.1 Redesign already in place

As part of the Moving Forward Together Programme, there was a specific workstream for Neurosciences which saw several strands of work being undertaken:

5.2.1.1 Surgical Flow Programme

The Surgical Flow Programme was established in 2018/19 to look at optimal pathways to and from theatres. This process examined the entire pathway from assessment to discharge and identified a number of improvements to the front end of the surgical pathway.

From this Programme, the following service improvements were made to reduce length of stay, improve bed utilisation and ensure better patient flow:

- the creation of a dedicated team of nursing staff who are qualified in Clinical Assessment and Non-Medical Prescribing, allowing both non-consultant pre-assessment and same-day changes to medications
    - this has significantly reduced theatre delays (late starts) and cancellations due to medication issues which previously required the involvement of the anaesthetic team (who were already in theatre)
- pre-admission length of stay for elective OMFS admissions reduced from a median of 1.2 days to 0.3 days
- pre-admission length of stay for elective Neurosurgery admissions reduced from a median of 2 days to 0.9 days (it would be difficult to reduce this further, as some neurosurgical procedures require to be done as part of the inpatient stay, e.g. updated cerebral angiogram to inform aneurysm surgery)
    - combined, this led to a 0.6 day reduction in the overall mean length of stay for surgical patients

Other improvements included changes to the management of patients through theatres to reduce case turnaround times. Operating hours ‘lost’ to turnaround in the INS theatres was reduced to 7.8%, among the lowest across all GGC theatres.

The Surgical Flow Programme also established a dedicated facility for Same Day Admissions and pre-operative assessment, but this was closed shortly after opening in order to provide a decant space to allow the rolling ward upgrade policy in respect of Healthcare Improvement Scotland recommendations to commence.

Same Day Admissions and dedicated pre-operative assessment areas have been included in the clinical models for all of the options being explored under this Initial Agreement.

5.2.1.2 Neurosurgery online advice

Neurosurgery has been a national pathfinder for an online advice system for secondary care clinicians. This system is used by remote ED teams to seek a neurosurgical opinion on the management of patients. Linked to both Trakcare and the national PACS [Picture Archiving Communications System] system, the Neurosurgeon on call can review notes and imaging, providing immediate advice without the need to transfer the patient. One of the main benefits of this system is that this online advice is then embedded into the patient's notes at the referring centre.

5.2.1.3 Active Clinical Referral Triage [ACRT]

ACRT is one way in the services within INS have been responding to the challenge of delivering Realistic Medicine for the populations we serve. Neurology was a Scottish Access Collaborative national pathfinder site for this service development.

The West of Scotland Neurology service based in INS had significant waiting list pressures but when each sub-specialty of neurology reviewed unbooked cases using ACRT methodology, it was evident that significant numbers of those referred could be managed by advice only – either to the patient or to the referrer. Being a regional service with patients travelling many miles for review, an additional benefit to patients was evident. The Neurology team and the sub-specialties have worked with national colleagues in the Centre for Sustainable Delivery (formerly the Managing Patient Pathways Programme and the Scottish Access Collaborative) to produce a comprehensive advice booklet for referrers. Complaints have dramatically decreased and, despite the pandemic, waiting lists and long waiters in both Neurology and Neurosurgery have reduced significantly since this was implemented.

Over 90% of all new patient appointments for the services in INS are now triaged via ACRT.

Figure 9: Consultant new outpatient waiting list, April 2019 vs December 2021

	April 2019		December 2021		Change	
Specialty	**12+**	**Total**	**12+**	**Total**	**12+**	**Total**
Neurology	2,795	6,057	1,788	4,220	-36%	-30%
Neurorehabilitation	5	89	3	65	-40%	-27%
Neurosurgery	1,161	2,065	1,100	1,785	-5%	-14%
Total	**3,961**	**8,211**	**2,891**	**6,070**	**-27%**	**-26%**
Oral and Maxillofacial Surgery	23	229	202	531	778%	132%

Oral and Maxillofacial Surgery was most affected by the restrictions imposed during the first, second and third waves of Covid from March 2020 through to July 2021, as all OMFS procedures are aerosol generating procedures [AGPs] and therefore all services were restricted to Priority 1 and 2 patients only and non-urgent patients were not brought forward.

5.2.1.4 Virtual appointments

As with ACRT, the INS services were national pathfinder sites for virtual patient appointments. Virtual clinics had already been in place for almost a decade to support remote and rural populations, but this has been significantly expanded.

In December 2021, 70% of Neurosurgery, 46% of Neurology, 23% of OMFS and 20% of Neurorehabilitation outpatient appointments were held virtually.

Given the very long travel distances involved in travel for many of our West of Scotland patients, this has been highly popular, especially with younger patients who have work and family commitments. Even within the local GGC population, journeys to INS can involve 2-3 hours' travel each way by public transport, so this represents a significant time saving for many people.

5.2.1.5 Opt-in clinics and patient-initiated appointments

As many of the neurological conditions covered by the services delivered within INS are life-long, opt-in clinics and patient-initiated review appointments, by which people can quickly self-refer themselves to services as their personal health status dictates have been rolled out to those sub-specialties which deal with long-term conditions. This change builds on early discussions with Neurology Voices representatives who requested greater flexibility and the ability to have rapid access to services when support is required.

5.2.1.6 Home treatments

Wherever clinically suitable, treatments for long-term conditions are prescribed via homecare to allow people to continue their daily lives as normally as possible. Patients are only brought to INS if their treatment requires to be delivered in a facility with specialist facilities or specific inpatient back-up (Neuro Critical Care, Neurology, Cardiology, Neuro-ophthalmology, etc).

5.2.1.7 Summary

Improvements in the admitted pathways have decreased lengths of stay, improved theatre utilisation and provided ways of avoiding transfers of patients for in-person advice.

The cumulative effects of the improvements already embedded into the non-admitted pathways have seen the new-to-return ratio for the clinical services covered by the Initial Agreement reduce from 1:2.3 to 1:1.2. This compares to 1:1.8 at the Department of Clinical Neurosciences in NHS Lothian and 1:2 for Neurosciences in NHS Grampian (source: NHS Discovery). Most importantly, this has not been achieved by reducing the breadth or quality of services offered.

By pivoting to a patient-initiated virtual-first model of non-admitted care, our patients with long-term conditions now have the flexibility to seek support when they need it, rather than at a pre-

determined follow-up frequency. They can access the services they need without having to go through their GP or wait for a new outpatient appointment, and they can choose from a variety of services which suit their needs but ensure that they are always able to access a regional specialist who is familiar with their clinical history.

The clinical models already in place across the services covered by this Initial Agreement are based on a tiered model of care which focuses on a home-first approach to treatment. The services which are provided from the Acute estate are highly complex supraregional and national services which rely on a complex interdependency between key specialties within the INS and across the QEUH campus to deliver very specialist care. As noted throughout, many of the service and the facilities which support them are provided on a once-for-Scotland basis or on a very small number of sites in Scotland. There are no inpatient Neurosciences beds across the rest of the West of Scotland and no infrastructure at any other site in the region which is capable of supporting them.

5.2.2 Specific redesign to support the development of this Initial Agreement

Further to the work which had already taken place prior to embarking on the current business case process, the Project Board established a full engagement process with all current clinical and support services likely to be affected by this process. This process took place between the development of the Strategic Assessment and the start of formal work on the Initial Agreement.

This redesign process was led by the Core Team and externally supported and facilitated by KD Health as Healthcare Planners.

At the same time, a full programme of benchmarking was established to review existing activity and the impacts of potential different service models on projected activity. This process encompassed:

- comparison with four English regional peers of similar size (London, Birmingham, Liverpool, Newcastle), as well as NHS Lothian as a Scottish comparator
- forecasting of activity to 2030, taking into account both service improvements already in place and with modelling of a range of different performance targets, including:
    - lengths of stay
    - daycase rates
    - virtual care models
- cancer trend modelling
- demographic changes

A six-month process of staff engagement took place from October 2020 to April 2021 to review:

- Current national and international best practice in service provision
- Trends and known service developments on the horizon
- Critical service dependencies and adjacencies

Twenty-three individual groups were set up with clinical and non-clinical representatives and each group met at least three times (some required more in-depth discussions), with supporting work carried out by email and via MS Teams in between meetings.

Outputs from the groups have been shared and discussed with the Neurology Voices representatives who are supporting the development of this Initial Agreement to seek their views on the proposed service models, which will continue to be refined through the business case process.

The 23 groups which each produced a comprehensive Clinical Brief for their service(s) were:

- Clinical Research
- Critical Care
- Estates & Facilities
- Health Records
- Hyper-acute Rehabilitation
- Inpatient Acute Neurology
- Inpatient Neurorehabilitation
- Inpatient Neurosurgery
- Inpatient OMFS
- Inpatient Stroke
- Inpatient Therapy Services
- Main Entrance & Family Accommodation
- Neurology Short Stay and Day Unit
- Medical Physics
- Neurophysiology
- Neuroradiology
- OMFS / Prosthetics Lab
- Outpatients
- Pharmacy
- Spinal Injuries
- Staff Support [1]
- Surgical Day Case and Same Day Admission Unit
- Theatres and Interventional Radiology

[1] incl. Education, Training and Meeting Facilities, Central Admin and Office Facilities, Shared Ward Office Facilities, Staff Change and Rest, On-call Accommodation

Detail of clinical briefs and/or membership of each group is available on request.

The clinical briefing process was entirely service focused, and not tied to either existing accommodation or potential built solutions.

Each Clinical Briefing Document covered:

- Scope of service(s)
- Service trends
- Potential future developments
- Major functional content of the service
- Activity and workload assumptions
    - Annual activity indicators and projections to 2030
    - Throughout and occupancy indictors
    - Operating hours and patterns of service delivery
- Key department operating principles
- Key flows
    - Patients and visitors
    - Staff
    - Goods and waste
    - Catering
    - Pharmacy
- Specific facility requirements
    - Facilities
    - Environment
- Key adjacencies
    - Essential
    - Important
    - Desirable

Figure 10: Example patient flow diagrams

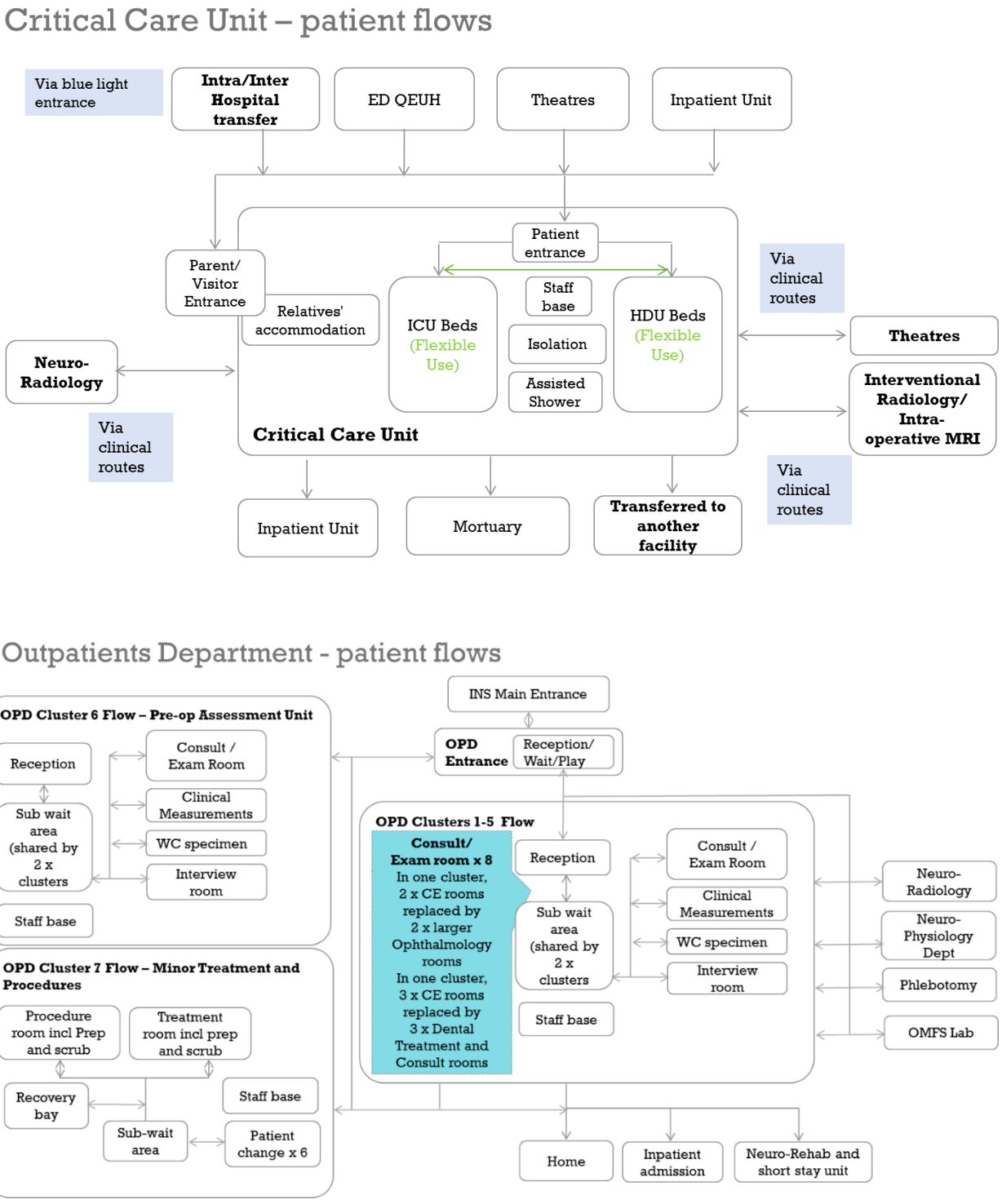


Figure 11: Example adjacencies: Acute Neurology Ward

This department needs to be adjacent to:	Essential / Important / Desirable*	Reason
Hyper-acute Rehabilitation and Medical Ward	Important	Ease of access for staff and movement between the wards for additional cover and support. Access to shared support accommodation and equipment
Critical Care	Important	Ease of patient transfer and staff support – efficient and safe movement via a non-public route for both acutely unwell patients requiring admission to the unit
Neuro-physiology Department	Important	Ease of access for patient transfer via a non-public route for acutely unwell patients requiring admission to the ward. Ease of staff access to provide support to the video telemetry beds for monitoring and diagnostic investigations
Inpatient Therapy Services	Important	Ease of access for patients requiring therapy assessment and treatments that can't be undertaken by the patient's bedside
Neuro-Radiology Department	Desirable	Ease of access for patient transfer via a non-public route for patients requiring neuro-radiology diagnostic imaging
Neurorehabilitation and Short Stay Unit	Desirable	Ease of access for staff - additional support and cross cover between the ward and unit. (integrated team)
Theatres and Interventional Neuroradiology	Desirable	Ease of access for patient transfer – efficient and safe transfer via a non-public route for acutely unwell and elective patients requiring radiological intervention
Outpatients	Desirable	Ease of access for patient transfer – efficient and safe transfer via a non-public route for acutely unwell patients requiring admission to the ward
Central Regeneration Kitchen	Desirable	Ease of access for catering staff- movement for regeneration trollies between the ward and central regeneration kitchen via a non-public route

These comprehensive Clinical Briefs were then taken to derive outline Schedules of Accommodation, using all appropriate SHPN and HBN Guidance (see Appendix B for full details).

5.2.3 Inpatient bed numbers

As noted in Table 2, the current funded bed complement across the services covered by this Initial Agreement are

Extract from Table 2: Current funded bed complement

Speciality	Building	Ward	Funded beds
Neuro Critical Care	Neurosurgery	60/61	15
OMFS	Neurosurgery	62	21
Neurosurgery	Neurosurgery	63	23
Neurosurgery	Neurosurgery	64	23
Neurosurgery	Neurosurgery	65	23
Acute Neurology Inpatients	Neurology	67	19
Acute Stroke	Neurology	68	26
Spinal Injuries Unit	QENSIU		48
Neurorehabilitation	Neurorehab		24
Neurology Short-Stay	Langlands	53	17
Total			**239**

The current services therefore have funded capacity for 239 beds.

As noted in Section 4, there are a number of agreed service developments which will be externally funded, or for which funding already exists:

Speciality	Beds	Comments
Acute Stroke	7	New SGHD-funded beds as part of national service network for Mechanical Thrombectomy
Neurorehabilitation	12	Level 2 Acute Neurorehabilitation beds, to be funded by SGHD as part of national roll-out of Major Trauma Care
OMFS	4	Currently exist within Monklands Hospital. To be funded by NHS Lanarkshire when the service transfers to INS.
Orthopaedic Spinal Surgery	5	These beds currently exist in QEUH – funding would be expected to transfer across appropriate GGC budgets
Additional required	**28**	

This would bring the total of funded beds to **267.**

As these numbers represent the 2021/22 position, building in a simplistic cumulative growth factor to 2030 of 5%, 7.5% and 10% ***with no changes to the current service delivery models and pathways*** would drive the following requirements:

Speciality	Current	Current plus developments	+5% growth	+7.5% growth	+10% growth
Acute Stroke	26	33	35	35	36
Neuro Critical Care	15	15	16	16	17
Neurology	36	36	38	39	40
Neurorehabilitation	24	36	38	39	40
Neurosurgery + Spinal	72	74	78	80	81
OMFS	21	25	26	27	28
Spinal Injuries	48	48	50	52	53
Total	**239**	**267**	**281**	**288**	**295**
Required total increase		**28**	**42**	**49**	**56**
Required over developments			**14**	**21**	**28**

Notes:
Population growth (3.9%) alone would require an additional 10 beds over a base of 267
Population (3.9%) + cancer (3-11%) growth (total 6.9%) would require 19 beds over a base of 267

When preparing the business case for the replacement of the Department of Clinical Neurosciences, NHS Lothian built in a cumulative growth factor of 16.9% from 2010 to 2020, and the new DCN has opened with that level of additional resource over its previous accommodation on the Western General Hospital campus.

Following extensive UK benchmarking, bed modelling and work with the clinical teams across the clinical workshops supported by KD Health, the actual proposed inpatient bed numbers on a ***like-for-like basis*** based on the current configuration of services are:

Speciality	Current plus developments	Proposed	Change
Acute Stroke	33	26	-7
Neuro Critical Care	15	15	-
Neurology	36	31	-5
Neurorehabilitation	36	36	-
Neurosurgery + Spinal	74	72	-2
OMFS	25	28	+3
Spinal Injuries	48	48	-
Total	**267**	**257**	**-10**

The current configuration of service is, however, not optimal. Having admitted services spread across five disparate locations does not promote flexibility in managing peaks and troughs within individual services.

The supporting accommodation and services on all wards is both undersized and not conveniently located. The storage issues have been highlighted throughout, but there are barriers to delivering patient care in the current configuration. As an example, there is a single inpatient rehabilitation hub on Level 2 of the Neurology Building which serves Neurology, Neurosurgery and OMFS (124 beds) but can only support two patients at a time. Due to other service changes, this service is no longer co-located with any neurosciences or OMFS wards, and all patients have to be escorted or portered to the facility, often involving long internal travel distances.

A more optimal service model would see three acute inpatient hubs based on:

- medical specialties
- surgical specialties
- spinal injuries

Supporting services like inpatient rehabilitation would be available in a central core, adjacent to the services which use it most, minimising both staff and patient travel.

One of the most significant decisions within the proposed clinical model is to split all admitted from non-admitted clinical flows across both surgery and medicine.

This will involve:

- Splitting all inpatient assessments, and complex and inpatient infusions out of the existing Monday to Friday West of Scotland Short-Stay and Day Treatment Service, and aligning the existing overnight beds into the Medical Services inpatient hub
    - This will ensure that patients in these potentially high-risk groups have full access to the wider Neurology and Neurorehabilitation teams who are involved in other aspects of their care
    - It will expand the current five-day service across seven days, making better use of acute inpatient resource, but also allowing for better scheduling of shorter treatments – 2x3-day treatments planned for a single bed space over a full week, rather than 1x3 day treatment plus 1 overnight infusion in the current hybrid overnight trolley / day case chair model
    - As novel agents for treating neuromuscular disorders come to market, this will also be a more appropriate environment for delivering these therapies, some of which require delivery under anaesthetic in a theatre environment and all of which require intensive monitoring
- Removing ambulatory patients (ward attenders) from across the surgical and medical acute ward environment and providing this from within a redesigned single outpatient and ambulatory care hub
    - Feedback from both ambulatory and admitted patients is that this outdated model of care is distressing for both groups, and that seeing patients within a live acute ward leads to a loss of privacy and dignity for both groups

Based on both Scottish (SHTM) and UK (HBN) guidance on inpatient ward configuration, the optimal configuration is a 24-bedded ward, and if this were to be basis of the design solutions taken forward through Outline Business Case and beyond, the preferred configuration would be:

- Acute Medicine – 4 wards (96 beds), used flexibly across Neurology, Neurorehabilitation and Acute Stroke
- Acute Surgery – 4 wards (96 beds), split 3 Neurosurgery + Spinal Surgery and 1 OMFS, but beds used flexibly
- Spinal Injuries – 2 wards (48 beds, of which 12 are critical care)

All inpatient accommodation in each of these hubs should be as flexible as possible to allow services to flex within and between specialties, while acknowledging that there will still need to be specialist areas in each of these three groupings to provide for the needs of certain patient groups; for example:

- Spinal Injuries rehabilitation beds must be located on ground level (all UK spinal injuries units are single-level at ground floor), as access to outdoor space is required to support their rehabilitation and to promote maximum independence for this patient group. For people who may be in hospital for up to 2 years, being able to easily 'escape' the hospital environment is vital to their mental health.
- The OMFS immediate treatment facility must be located in or as close to the ward as possible, as these patients may deteriorate quickly and require transfer to main theatres and/or Neuro Critical care
- Neurorehabilitation and Acute and Hyper Acute Stroke services require intensive rehabilitation facilities within the ward setting to promote earliest possible discharge to a less-acute setting or to own their homes

Equally, having Level 1-3 critical care being split over several services and locations contributes to fragmented care, and therefore the following changes are proposed for managing our most acutely unwell patients:

- Based on both population growth and expected significant increases in the numbers of complex Head & Neck cancers presenting by 2030, OMFS is forecast to require 28 beds by 2020, but for optimal management of people with significant and deteriorating airways issues, the four high acuity beds currently in Ward 62 for these patients should move into Neuro Critical Care
- The additional 7 beds for Mechanical Thrombectomy are allocated to as 2 beds for Hyper Acute stroke, including Level 2 (HDU) critical care, and 5 beds for Acute Stroke – it has been assumed that a 24/7 hyper-acute Thrombectomy service will drive the need for 1 additional critical care bed and this should be located within Neuro Critical Care
- There are 12 Level 2 (HDU) beds for Spinal Injuries. Given that the patient cohort within the Queen Elizabeth National Spinal Injuries Unit is trending towards an older population with higher levels of co-morbidities who require a higher level of supervision by specialist neuro-intensivists, these 12 beds may in future be co-located with or immediately adjacent to the main Neuro Critical Care facility.

The final configuration of beds by ward will be guided by developing a built solution at the Outline Business Case stage, but the expected bed numbers with the redesigned services adjusted for these notes above are:

Service cluster	Current plus developments	Proposed	Change
Acute Medical	104	93	-11
Acute Surgical	95	96	+1
Neuro Critical Care	20	20	-
Spinal Injuries Rehabilitation	36	36	-
Spinal Injuries Critical Care	12	12	-
Total	**267**	**257**	**-10**

5.2.4 Theatres and Interventional Neuroradiology

There are currently 8 theatres across Level 1, of which 7 are operational

- 4 SHTM-compliant theatres in the ICE building
- 3 non-SHTM-compliant theatres in the Neurosurgical Building
- 1 non-SHTM-compliant theatre in the Neurosurgical building which has been temporarily decommissioned – due to the limitations of the built environment, it has not been possible to find a way to bring this theatre back to minimum HSE requirements and it is now expected that this will have to remain permanently decommissioned

In the internal GGC business case for the ICE Building and the wider Theatres and Interventional Neuroradiology scheme, this resource was to be split:

- 4 elective Neurosurgery theatres
- 3 elective OMFS theatres
- 1 shared emergency theatre

As it has not been possible to open the emergency theatre, the 7 currently operational theatres are used flexibly across 50 weeks and 7 days to provide all elective and non-elective care.

In addition, there is a single Interventional Neuroradiology room which provides both elective and non-elective activity. NHSGGC have been awarded capital by SGHD to expand this provision to 2 Interventional Neuroradiology suites to support the national roll-out of the Scottish strategy for Mechanical Thrombectomy. This facility will support not only the population of the West of Scotland, but in conjunction with NHS Lothian, there will be a shared out-of-hours rota.

Construction will commence this year (2021). Revenue funding has also been provided via SGHD for staffing and running this resource.

The funded base from 2022, when the current INR build completes, is therefore:

- 4 elective Neurosurgery theatres
- 3 elective OMFS theatres
- 1 shared emergency theatre
- 2 Interventional Neuroradiology suites

The funded service developments previously mentioned will drive the following additional requirements:

- 10 sessions of orthopaedic spinal surgery, currently provided within the main QEUH stack in a theatre with laminar flow facilities
- 4 elective operating sessions for OMFS with access to Monklands Cepod theatres for emergencies (2 sessions)
- 1 additional operating session per week for Sentinel Lymph Node Biopsy

This would therefore see an increase of two theatres, allowing for a small amount of redundancy which the current facilities lack, to support necessary maintenance and planned upgrades.

As there are currently 77 weekly operating sessions at 42 weeks and a requirement for 16 more sessions at 42 weeks, this would require 93 operating sessions (9.3 theatres).

Providing 10 theatres would re-establish the currently decommissioned theatre, provide for funded service developments and also allow for a split of elective and emergency work, as well as having some initial redundancy to address ongoing maintenance and to make provision for additional forecast activity.

Speciality	Current plus developments	Proposed	Change
Theatres	10	10	-
Interventional Radiology	2	2	-

The theatres would be split:

- 5 elective Neurosurgery + Spinal Surgery theatres
- 3 elective OMFS theatres
- 2 emergency theatres shared across specialties

At least one theatre should also have bariatric facilities to address patients with very high BMIs who are otherwise suitable for surgery.

(if the planned amalgamation of Spinal Surgery does not go ahead and the Orthopaedic Spinal Service remains in QEUH, this would reduce this number by 1.)

This would be supported by a Surgical Day Admissions and Day Case facility, bringing together the existing facilities spread across Levels 0, 1 (8 spaces) and 4 (18 spaces, capable of flexing to 19) of the surgical buildings into a single unit with 30 flexible trolley spaces, available Monday to Friday 0700-1900.

Speciality	Current plus developments	Proposed	Change
SDAU + Day cases	26	30	+4

The small increase in spaces is supporting by bringing staffing together from across three existing services. This space will support achieving the lengths of stay required to meet the bed modelling targets which support the proposed inpatient surgical bed numbers.

5.2.5 Ambulatory care provision

The current main outpatient department has 26 generic consulting rooms and 12 Neurophysiology rooms, but there are additional outpatient consulting facilities spread across the existing services, including:

- Pre-operative assessment – 5 rooms
- Spinal Injuries – 3 consulting rooms, not including therapy assessment area(s)
- OMFS daycare – 6 spaces with associated interview and consulting rooms
- Neurorehabilitation – 3 dedicated rooms, but the rehabilitation gym areas and other non-consulting room facilities are used for carrying out outpatient assessments due to the size of the outpatient rooms

Other ambulatory care services which are provided include:

- Neurodiagnostics
- Neurology same-day treatments
- Neurorehabilitation therapy
- OMFS day case
- Spinal Injuries rehabilitation therapy

In addition, ward attenders (urgent outpatients) are still seen in side rooms or treatment rooms on all surgical wards. Being treated in a live ward environment is often distressing for these individuals, and it also compromises the privacy and dignity of our admitted patients, as there are no dedicated waiting areas for ambulatory patients, who wait on the ward with full views in to patient bays.

The proposals for going forward would be to bring all outpatient and day attender services together in a single ambulatory care hub which has immediate or very close access to Neurodiagnostics.

This will drive significant benefit for both patients, visitors and staff by:

- creating a clear separation between inpatient and ambulatory services which will enhance the experience for both patient groups

- bringing all ambulatory services together, reducing the need for patients and their families to travel significant distances between services within a single visit
- reducing the reliance on portering and trained staff escorts to support individuals through their assessment or treatment episode
- provide greater resilience by reducing the high number of smaller areas which require individual staffing resource
- allow services to flex on a sessional basis to meet the needs of the in-person clinics to be supported each day through use of generic consulting rooms

Speciality	Current	Proposed	Change
Outpatient consultation rooms	41	40	-1

5.2.6 Summary

The services within the Institute of Neurological Sciences have undergone significant transformation over recent years, both to improve service provision and to ameliorate the issues of overcrowding and unsuitability of the existing accommodation.

The existing pattern and location of services, driven by the constraints of the existing facilities, is fragmented and does not deliver key clinical adjacencies for either patients or staff. This programme of transformation will allow the clinical and support services to develop and adapt to future challenges, improving access, experience and the quality of care for our patients.

The key component of the model is to bring together associated services in a series of core hubs, based around:

- Acute medical inpatients
- Acute surgical inpatients
- Spinal Injuries
- Critical Care
- Theatres, recovery and supporting accommodation
- Ambulatory care

A significant programme of clinical engagement has taken place to describe the patient pathways and clinical adjacencies to underpin these models of care.

This will address the issues highlighted by our patients, users and other stakeholders with the existing patterns of service delivery:

- journey times between stages of treatment which are challenging for our patient populations and bring additional staffing requirements will be significantly reduced
- the separation of inpatient and ambulatory services will address the current compromises to patient privacy and dignity which are caused by vulnerable acute patients being transported through public circulation spaces and ambulatory patients being brought into hyperacute settings for low-acuity care

Based on the schedules of accommodation developed in partnership with KD Health, the high level requirements of bringing all services to current SHTM standards would be:

Area	Square meterage
Wards and critical care	19,000
Ambulatory care, including diagnostics	6,600
Theatres & Interventional radiology	8,300
Clinical support services	9,500
Plant, IT, Energy	17,000
Total	**60,400**

The current square meterage of the existing footprint is estimated at 39,500sqm, based on figures taken from NHSGGC's EAMS system. This represents an increase of 53%, a figure in line with other capital programmes within NHSGGC and across NHS Scotland where twentieth-century accommodation is refurbished or replaced in line with current SHTM standards.

5.3 Engagement with Stakeholders

As a provider of local, regional and national services from the largest healthcare campus in Scotland, and one of the largest in the UK, the stakeholders for these proposals include, but are not limited to:

- All past, current and future service users, their carers, families and loved ones
- The people who live across the populations we serve
- Neurology Voices, the INS patient forum
- The Neurological Alliance, the Scottish umbrella organisation for Third Sector partners supporting people with neurological conditions
- All of our staff across the clinical and non-clinical service teams who deliver and support the current and planned services
- Other GGC service teams on the QEUH campus, especially those services which are jointly delivered with INS teams
- All other GGC service teams
- NHSGGC Acute Division and the NHSGGC Board
- Clinical referrers and shared care delivery partners across WOS and Scotland
    - Other NHS providers, HSCPs, primary care teams and Third Sector
- The University of Glasgow, with whom we partner on many services and developments
- Other Scottish universities who support research in INS
- The West of Scotland Regional Planning Group and its supporting structures
    - Including the West of Scotland OMFS Group
- All NHS Scotland Boards, and all other NHS regional and national planning partners
- The National Services Division of NHS National Services Scotland, who commission nationally designated service
- Clinical Priorities Team, Scottish Government, who are policy leads for Neurosciences and Oral and Maxillofacial Services
- Centre for Sustainable Delivery, which aims to implement best practice through a 'Once for Scotland' approach, aligned with the priorities of the Scottish Government

- National Advisory Committee for Neurological Conditions, established by Scottish Government in 2016 to drive improvements in the care, treatment and support available for people living with neurological conditions
- People who live close to the QEUH campus

Stakeholder Group:	Engagement that has taken place	Confirmed support for the proposal
Patient/Service user stakeholders	Patients/Service Users are represented by patient representatives from both Neurology Voices (INS) and the Neurological Alliance (Scotland-wide) and have attended: • AEDET workshops • NDAP design statement development • Development of investment objectives and benefits register • Site options appraisal and assessment criteria	The specific views of patient representatives and all feedback has been included within this Initial Agreement. Their specific scores from the Options Appraisal are included below.
Clinical Service Representatives	Those identified have been engaged from the outset. Their engagement has included: • Initial brief development • Healthcare Planning (HCP) Workshops • AEDET workshops • NDAP design statement development • Development of investment objectives and benefits register • Site options appraisal and assessment criteria • Risk Workshop • Programme Board & project team representation and input	A wide group of service representatives were involved in 18 clinical and 5 non-clinical groups, each of which had several meetings and an iterative process to sign off on activity assumptions and proposed clinical models which form the basis of this Initial Agreement. (All briefs available on request). Clinical service representatives detailed at Appendix C were involved in all NDAP meetings, including the Options Appraisal.
Clinical Service Technical Advisors	Those identified at Appendix C have been engaged from the outset through both regular attendance and representation at Programme Board or Core Project Team meetings. Engagement has also included all those items listed above. Further specialist engagement has taken place with those identified to ensure the required specialist briefing is provided.	Input from those identified has been provided for the IA. A specific review of the IA took place at a meeting on 21 February 2022 and this document represents the agreed content from that meeting.

Stakeholder Group:	Engagement that has taken place	Confirmed support for the proposal
NHSGGC Project Stakeholders	To date engagement has been carried out with identified stakeholders and representatives working within or users of INS services. This offers the opportunity for identified stakeholders to further advise on brief requirements.	Responses are compiled and used to form part of wider briefing requirements for the project. Engagement continues as the project and detail available progresses. Formal sign off of proposals and support will be achieved through OBC and FBC.
Other key stakeholders and partners	Specific meetings with A&DS, HFS, NHS Assure	Engagement will continue as the project and detail available progresses.
National and regional planning partners	Specific briefing sessions have been held with national and West of Scotland planning partners, including presentations to NSD, National Planning and the WOS Board Chief Executives	Engagement will continue as the project and detail available progresses.
Staff	Staff are represented by those identified as clinical service reps and by staff partnership representatives. A Staff Partnership Group has been established. The clinical service consists of 1100 staff in total and their requirements are discussed as part of overall project discussions.	As identified for clinical service reps.
Third Sector	Third Sector are represented by Migraine Trust, Multiple Systems Atrophy Trust and Funding Neuro. Engagement on options workshops.	Representatives identified by Neurological Alliance of Scotland
General Public	The wider public may become involved in any statutory planning activity depending on preferred location. Engagement at this stage may benefit from an open day / information sharing session. Such an approach has been provided by NHSGCC previously and can be utilised again as required. The Core Team is working with GGC's Patient Engagement and Public Involvement team to develop engagement plans.	To be confirmed once preferred options/locations have been identified.

5.4 Developing a long list of proposed solutions

A long list of potential options was prepared from a series of clinical workshops and Core Team meetings. There were in excess of 20 options generated, but some were only variations of each other (e.g. location A versus location B), but it was felt that this level of detail was not required for an initial review and scoring by Core Project Team and Clinical Leads.

Table 17: Long list of options

	Option	Description
1	Do Minimum	Required option
2	All services immediately co-located in a single facility on the QEUH site	All services to be reprovided on the QEUH campus in a single location. This would retain the fixed-link corridor adjacencies required to support delivery of all patient services across INS, QEUH and RHC.
3	All services relocated to an alternative site within GGC	All current and future INS services to be reprovided on another acute site with NHSGGC.
4	All services relocated to an alternative non GGC site	All current and future INS services to be reprovided on an acute site in either NHS Ayrshire & Arran, NHS Forth Valley or NHS Lanarkshire.
5	Split services across more than one location on the QEUH site	Move one (or more) of the core service hubs into QEUH, with remaining hubs remaining co-located in either new-build or refurbished accommodation with fixed-link corridor access to QEUH and RHC.
6	Split services with some services relocated to an alternative site within GGC	The relocation of some hub services to an alternative site within GGC and the refurbishment on or adjacent to the existing INS estate for the retained clinical services.
7	Split services with some services relocated to an alternative non-GGC site	The relocation of some services to an alternative site in another WOS NHS Board and the refurbishment on or adjacent to the existing INS estate for the retained clinical services.
8	Outsourcing - All service(s)	Delivery of all clinical services by a third party, either Third Sector or private sector
9	Outsourcing - Part service(s)	Delivery of a more limited range of clinical services by a third party, either Third Sector or private sector, with the remaining services being delivered on the QEUH site
10	All INS services integrated within the main QEUH building(s)	All clinical services within INS would transfer into the QEUH and displaced services would be provided across the wider GGC estate – this may involve either new build or extensive refurbishment of alternative locations

	Option	Description
11	Selected INS inpatient services integrated within QEUH with remaining services in INS being redeveloped	Some ward-based services would be transferred into the main QEUH with staged refurbishment of the retained INS estate for the other services
12	QEUH + INS for inpatients, with ambulatory care services delivered from other site(s)	Some inpatient services transferred into QEUH and refurbishment of INS for remaining services, with less acute services offered from a non-acute site - potentially Gartnavel General Hospital or New Victoria Hospital
13	Phased new INS 'Campus' on existing INS, Spinal and PDRU sites	The phased redevelopment of the existing INS campus, supported by either an element of temporary or permanent new build on an adjacent site to allow Phase I of works to commence and decants to begin

An initial non-weighted scoring process using the SCIM matrix was undertaken on all of these options, with the outcome that several were ruled out of further consideration.

5.4.1 Notes for all models which are not located on the QEUH site

The clinical models and pathways which underpin all services are intertwined with and dependent on other acute specialist clinical services across QEUH and RHC. The following clinical reasoning applies to all of the models discounted below. Additional comments on each of the discounted options is presented in Table 18.

5.4.1.1.1 Major Trauma

- Any option which does not maintain the triple co-location of Neurosciences with Adult and Children's Major Trauma services would result in patients (e.g. all head and spinal trauma, and craniofacial injuries) being transferred between the MTCs and new site, which would involve a very high level of patient transfer of acutely unwell and deteriorating individuals.
- Moreover, there would still need to be an on-site presence at the Major Trauma Centre to provide immediate management prior to transfer. This would require establishing two rotas, which would require significant additional resource at consultant level.
- There would be no way to establish any junior medical cover, as the two surgical training rotas are banded at 2A/3 with the addition of non-training posts to make them compliant at this level. They can only safely support a single site. A move to split-ste working would significantly impact the training programmes for OMFS and Neurosurgery trainees, depriving them of the opportunity to take part in immediate major trauma. This is likely to have knock-on effects on attracting trainees in the first place, as trainees will gravitate towards other UK centres which can offer a more complete programme.
- Establishing safe rotas to cover two non-adjacent sites to keep the Adult and Children's MTCs functional would be challenging but achievable for surgical specialties at consultant level; however, there are clinical services provided from within INS that have to be maintained on the QEUH site to support the basic functioning of the Major Trauma service:

    - additional 24/7 medical and nursing staffing to support two site rotas for Neurosurgery, OMFS, Interventional Neuroradiology, Neurophysiology, Neuro Intensivists and Anaesthetists
    - emergency theatre sessions in main QEUH theatres
    - a small number of Neuro Critical Care beds establishing in QEUH for patients who cannot be safely transferred between sites
    - Neurodiagnostics imaging resource (head CT/MRI)
- The OMFS emergency care service is a regional resource which supports all West of Scotland patients – the co-location of OMFS inpatient services on the Major Trauma site allows this service to be managed from within the ward staffing complement. If a split-site model was taken forward, this service would have to be created within or close to the existing QEUH ED and independently staffed.
- This clinical model of separating neurosciences from Major Trauma does not exist in other UK centres, so would be out of step with Scottish and UK national standards.
- Transfer of patients with a brain injury is potentially hazardous if poorly executed. Patients can come to harm and long-term neurological outcome may be adversely affected.
- International comparisons from the USA show that cross-site transfers delay a patient's urgent primary neurosurgical management by over 3 hours, and this affects their long-term outcomes.

5.4.1.1.2 West of Scotland Head & Neck Cancer Surgery

- The West of Scotland complex Head & Neck Cancer Surgery service is provided by a combined OMFS and ENT team. This involves joint MDTs, clinics and operating, and shared ward rounds across INS and QEUH.
- Joint operating on extensive tumours, including all free-flap surgery, has been centralised on the QEUH site for all West of Scotland patients and takes place in INS theatres with cases involving rotating teams of surgeons working on cases which take up to 16 hours in theatres.
- The service also involves Interventional Neuroradiology for image-guided procedures (eg salivatory gland work).
- Moving OMFS off-site would mean that split-site working would have to be established. This could involve either ENT teams coming across to OMFS or part of the OMFS service remaining at QEUH.
- Either way, the service would become fragmented, with only the most complex patients benefitting from the two-team approach, while all other patients would lose out on this optimal model of care.
- As with the MTC, there would need to be an increase in overall resources to provide a two-site model to enable both sites to manage patients safely, particularly the management of significant airways disorders, which is currently managed in a Level 2 high acuity area in INS Ward 62.

5.4.1.1.3 Regional and national services in QEUH and RHC

- The clinical teams based in INS would no longer be able to provide the necessary 24/7 levels of specialist input into national, supraregional and regional adult and children's services within QEUH or RHC, therefore these services would no longer meet the local, regional, Scottish or UK care standards for providing these services.
- Creating second rotas to retain some lesser level of on-call but not on-site cover for QEUH and RHC would be even more challenging for non-surgical services – while

recruitment to both OMFS and Neurosurgery is possible, Neurology and Neurorehabilitation (both required for 24/7 cover at QEUH) are specialties with gaps at all levels across Scotland and the UK.

- Neurology cover would also still be required for the national services for Allogeneic Stem Cell Transplant and CAR-T, but this could be provided from a single rota.
- Patients who need intensive acute neurology ward support could not be transferred off-site, as they still require full 24/7 access to the Haematology Transplant team; a team would therefore have to be available to go to QEUH.

5.4.1.1.4 Spinal Injuries

- Its model of care requires on-site air ambulance facilities capable of supporting both SAS and SeaKing (RAF) landings, which no other GGC site can provide.
- Without Neurosurgery and Neuro Critical Care on site, the service would no longer be able to continue in its current clinical model, and would have to be split into the acute phase (which can last for several months) and the rehabilitation phase (which can take several months).
- This would significantly compromise the care delivered to the population of Scotland, who currently benefit from the Europe's only gold-standard fully comprehensive service.
- The Queen Elizabeth National Spinal Injuries Unit has been designated by Ministers and would require a subsequent Ministerial decision to take this significant step.
- With a split service, the specialist skills in orthopaedics, urology, cardiology and gastroenterology are still held by the teams within QEUH, so people with spinal injuries would need to be transferred repeatedly between the remote site and the QEUH to access care which supports their treatment and rehabilitation.

5.4.1.1.5 Neurophysiology

- This small team supports a large number of services across INS, QEUH and RHC.
- If moved off-site, these services would have to be provided on an outreach basis, which would reduce the ability to provide emergency care and a high proportion of staff clinical time would be lost to travel between sites.
- Alternatively, the service could maintain a presence on both sites, but this would involve a significant duplication of resources.

5.4.1.1.6 West of Scotland Mechanical Thrombectomy

- This service is newly established on the QEUH site and the service has a single rota across Hyperacute, Acute and Routine Stroke services.
- The QEUH was chosen as the regional hyperacute stroke site because of the range of supportive services available on the campus and the travel times from each local stroke site to the regional treatment centre.
- Moving to another site would require the pathways for people with stroke would have to be significantly redrawn across the West of Scotland.
- As the QEUH is the both the regional hyperacute and specialist acute stroke service, as well as the 'local' specialist acute stroke service for the 1.3m people who live in NHSGGC, this would involve a significant additional burden on the Scottish Ambulance Service to facilitate transfers to and from the new centre.

5.4.1.1.7 Paediatric Neurosurgery, Craniofacial Surgery and OMFS

- These services would all lose 24/7 support from the teams based in INS who support these national and supraregional services.
- When Neurosurgery and Acute Paediatrics were on separate sites (pre-2015 at the Southern General and Yorkhill sites), children and young people were treated in adult neurosurgery, craniofacial and OMFS services; it would be clinically unacceptable to regress to this model and would run counter to all Scottish and UK guidelines on the care of people under 16.
- Dedicated funded paediatric sessions are embedded into the job plans of adult surgeons across all three specialties, and this would be maintained, but this would result in a significant loss of DCC time through travel.
- Children who can currently be managed at RHC because there is specialist adult support on-site (e.g. children with neurovascular injury or disease) may have to be transferred to a specialist English Children's centre which can offer these services on-site, although teams would continue to provide as much remote support as possible.

5.4.1.1.8 Wraparound care for people with complex needs

- Children, young people and adults with complex conditions would have their care split between two sites, rather than delivered on a single campus which provides lifetime care.

Table 18: Discounted long list of options

	Option	**Reasons for discounting**
3	All services relocated to an alternative site within GGC	As per the clinical model highlighting above, moving off the QEUH campus would severely diminish the care to people treated both within the services covered by this Initial Agreement and also within other nationally designated and supraregional services which are based in both the QEUH and RHC. Maintaining existing services across INS, QEUH and RHC would require significant additional resource, with duplication of teams to cover two sites to a safe level. It would also diminish the breadth and quality of the clinical services delivered, while compromising the regional and national clinical training programmes supported at INS. It would lead to a significant increase in patient transfers from the QEUH to the new site and would lead to poorer clinical outcomes.
4	All services relocated to an alternative non GGC site	As per the clinical model highlighting above, moving off the QEUH campus would severely diminish the care to people treated both within the services covered by this Initial Agreement and also within other nationally designated and supraregional services which are based in both the QEUH and RHC. Maintaining existing services across INS, QEUH and RHC would require significant additional resource, with

	Option	Reasons for discounting
		duplication of teams to cover two sites to a safe level. It would also diminish the breadth and quality of the clinical services delivered, while compromising the national clinical training programmes supported at INS. With around 50% of all admissions coming from GGC residents, there would be a need for significant levels of repeated patient transfer between QEUH and the new site, and from all other WOS hospitals to the new site. Staffing the equivalent of large DGH (c1,000 staff) within a smaller NHS Board would not be feasible, and it is highly likely that a large proportion of existing staff would not wish the transfer to a work location so far from their home. No sites in Forth Valley, Lanarkshire or Ayrshire & Arran have any experience in supporting these specialist services – some do not have 24/7 CT services and rely on GGC for these services already. Split-site working across Glasgow city is technically feasible, but the experience that NHSGGC has in providing high levels of outreach services, including OMFS and Neurosciences, in and for other NHS Boards is that some clinical staff will not even consider this model of working. Staff would be required to provide on-call and outreach services to sites in two different NHS Boards (eg one week on-call in QEUH, three weeks at base) and this is not a model which will attract many staff. As OMFS staff already provide in-person services to NHS Dumfries & Galloway, this model would be asking the same team to cover services across three Boards on an ongoing basis. This could not be done safely within current resource.

	Option	Reasons for discounting
6	Split services with some services relocated to an alternative site within GGC	The elements of non-acute care which could potentially be provided on an alternative site are marginal but would present significant staffing and revenue challenges due to the interdependencies between services on the QEUH campus. All services which can be delivered in a distributed hub-and-spoke clinical model already are (e.g. Neurology provides outreach across 14 sites). Moving outpatient services off-site would require the duplication of significant pieces of imaging equipment which currently cover both inpatient and ambulatory services, and a doubling of staffing to cover two sites, neither of which would be working to full capacity. Neuroradiology is already a shortage specialty and INS is the only site in GGC which offers 24/7 Head and Spine CT and MRI, provided by a small team. Asking other small teams (Neurophysiology, Neuroradiology, Neuropsychology) to work split-site would also require additional staffing to ensure that the INS, QEUH and RHC wards continued to have 24/7 clinical cover.
7	Split services with some services relocated to an alternative site not in GGC	As option 6, but with even greater challenges, as not all staff would choose to transfer with the services, and this would present a significant challenge in recruiting a highly specialist workforce to an otherwise non-specialist site.
8	Outsourcing - All service(s)	There are no Third Sector or private sector providers of complex Acute Neurosciences services anywhere in Scotland and none who provide non-elective care. None have the full range of specialties, specialist equipment or 24/7 staffing to support highly acute and complex supraregional and national services. All existing providers in the West of Scotland are on land-locked urban sites – a programme of this scale would require a complete new build on stand-alone site. This would be an extremely unsafe clinical model. Outsourcing would not be in keeping with Scottish Government health policy.
9	Outsourcing - Part service(s)	There are no Third Sector or private sector providers of complex Acute Neurosciences services anywhere in Scotland. This would not be in keeping with Scottish Government health policy.

	Option	Reasons for discounting
10	All INS services integrated within the QEUH	This would minimally require 10 wards, 10 theatres, 30 critical care beds and significant diagnostic services. It would not be possible to continue to provide the existing specialist local and regional services within the QEUH with this level of displacement. Significant changes would be required to rooms and ward layout to accommodate the patient groups treated by the INS services. The existing QEUH OPD has a built capacity for 100,000 outpatients per annum, of which it currently sees 96,000. An additional 50,000 outpatient attendances a year could not be accommodated.
12	QEUH + INS for inpatients, with ambulatory care services delivered from other site(s)	As Options 6 and 7.

This left five options suitable for being taken forward to a more thorough options appraisal process and to full costing:

	Option
0	Do Minimum
1	All services immediately co-located in a single facility on the QEUH site
2	Split services across more than one location on the QEUH site
3	Selected INS inpatient services integrated within QEUH with redevelopment of remaining services
4	Phased new INS 'Campus' on or adjacent to existing INS, Spinal and PDRU sites

Table 19: Analysis of Option 0 – Do Minimum

Strategic Scope	Score	Comments
Service provision	**2**	**Strengths and Opportunities** Continued provision of some services in existing building(s) during upgrade programme.
		Weaknesses and Threats Services potentially displaced / unavailable during works for a number of years unless suitable temporary facilities can be provided in advance of refurbishment works. Multiple decants required over a prolonged period of time. Agreed service changes cannot be accommodated during works. Inefficiency of upgrade works. Interdependencies of clinical services mean that any significant refurbishment works causing loss of any one service within the INS could result in significant compromise to range and capacity of services.
Service arrangements	**1**	**Strengths and Opportunities** Limited continuation of some services at reduced level (dependent on level of decant required/available alternative space) Maintenance of essential clinical adjacencies (dependent on decant locations)
		Weaknesses and Threats Services potentially displaced / unavailable during works for a number of years unless suitable temporary facilities can be provided in advance of refurbishment works. Multiple decants required over a prolonged period of time. Agreed service changes cannot be accommodated during works.

Strategic Scope	Score	Comments
		Inefficiency of upgrade works. Interdependencies of clinical services mean that any significant refurbishment works causing loss of any one service within the INS could result in significant compromise to range and capacity of services.
Service provider and workforce arrangements	**2**	**Strengths and Opportunities** Transport links maintained with existing building (would need to be assessed for location of any temporary facilities). Links/adjacencies with other clinical services are maintained.
		Weaknesses and Threats Prolonged use of temporary facilities and potential for split-site working (dependent on decant locations) for some services with impact on staffing. Limited opportunity to improve facilities.
Public & service user expectations	**1**	**Strengths and Opportunities** Continuation of service on the basis that temporary arrangements can be provided whilst upgrade works are undertaken. Location provides ideal access to deliver a WOS service. Links/adjacencies with other clinical services are maintained.
		Weaknesses and Threats Reduced opportunity for service expansion. Limited opportunity to improve patient pathways/flow. Increased unreliability of service to users impacting on access times. Inability to implement agreed service changes.

Table 20: Analysis of Option 1 – All services immediately co-located in a single facility on the QEUH site

Strategic Scope	Score	Comments
Service provision	**4**	**Strengths and Opportunities** Continuation of services whilst capital build of new facility takes place. Clinical adjacencies with existing services would be maintained. The new facility would allow improvements to patient flow, enhanced environment and would accommodate agreed service changes. Work undertaken by Healthcare Planner in Stages 0 / 1 would provide the basis for development of a fully compliant clinical brief.
		Weaknesses and Threats It may not be possible to identify a site of suitable size to reprovide all INS services and maintain clinical adjacencies within clinically

Strategic Scope	Score	Comments
		acceptable distance/timescale and with physical link to QEUH Adult Hospital and RHC. Internal access route is required to both Adult and Paediatric services for transfer of critically unwell patients.
Service arrangements	**4**	**Strengths and Opportunities** Provides opportunity to improve patient flows and maximise efficiencies while enhancing environment. Would support all agreed national and regional service changes including Thrombectomy and WoS OMFS transfer(s).
		Weaknesses and Threats It may not be possible to identify a site of suitable size to reprovide all INS services and maintain clinical adjacencies within clinically acceptable distance/timescale and with physical link to QEUH Adult Hospital and RHC. Internal access route is required to both Adult and Paediatric services for transfer of critically unwell patients.
Service provider and workforce arrangements	**5**	**Strengths and Opportunities** Enhanced patient and staff accommodation. Improved flow/pathways and efficiency. Transport links maintained with existing site.
		Weaknesses and Threats None
Public & service user expectations	**5**	**Strengths and Opportunities** Provides access to new facility with improved clinical and non-clinical services. Improves flow/pathways and efficiency. Transport links maintained with existing site.
		Weaknesses and Threats Services will continue to be provided as per the status quo whilst new build works are undertaken – there may be service disruption during decant periods / decommissioning of old building / key equipment.

Table 21: Analysis of Option 2 – Split services across more than one location on the QEUH site

Strategic Scope	Score	Comments
Service provision	**4**	**Strengths and Opportunities** Continuation of services while capital build of new facility takes place.

Strategic Scope	Score	Comments
		Following move of agreed services into new build decant space would be available to support a programme of refurbishment. Clinical adjacencies with existing services would be maintained. The new facility and refurbishment programme would allow improvements to patient flow, deliver an enhanced environment and would accommodate agreed service changes.
		Weaknesses and Threats There is a risk that refurbished facilities may be constrained in terms of HBN / SHTM requirements / phasing. A full design team review would be required to explore option(s) further. Existing building infrastructure will require to be significantly upgraded to meet current guidelines and healthcare requirements. Some major derogations may be required to accommodate this within an ageing non-compliant building.
Service arrangements	**4**	**Strengths and Opportunities** Continuation of existing services during build. Provides opportunity to improve patient flows and maximise efficiencies while enhancing environment. Would support all agreed national and regional service changes including Thrombectomy and WoS OMFS transfer(s). Would maintain required adjacencies with Adult and Paediatric services.
		Weaknesses and Threats A series of decants would be required to support the refurbishment programme and works are likely to require phasing and will consequently have an overall longer timescale for delivery. Services may face temporary restrictions during decants and refurbishment works.
Service provider and workforce arrangements	**5**	**Strengths and Opportunities** Enhanced patient and staff accommodation in new build and refurbished areas. Transport links maintained with existing site.
		Weaknesses and Threats None
Public & service user expectations	**4**	**Strengths and Opportunities** Provides access to new facility and refurbished accommodation with improved clinical and non-clinical services. Improves flow/pathways and efficiency. Transport links maintained with existing site.

Strategic Scope	Score	Comments
		Weaknesses and Threats There will be service disruption during decant periods with potential for care pathways to be compromised (dependent on capacity/location of decant facilities). If not included in scope of upgrade programme, some existing services will not be brought up to current SHTM standards but maintained as-is.

Table 22: Analysis of Option 3 – Transfer some services into QEUH with refurbishment of remaining services

Strategic Scope	Score	Comments
Service provision	**4**	**Strengths and Opportunities** Agreed INS services would be relocated to the main QEUH hospital maintaining critical clinical adjacencies. Co-location of services in QEUH could promote joint working between INS and QEUH services and may enhance care pathways.
		Weaknesses and Threats This would require the displacement of a significant proportion of existing QEUH services within the adult hospital (including wards and/or theatres) which may negatively impact on the service users of those services. It would be an overall benefit for INS service users.
Service arrangements	**4**	**Strengths and Opportunities** Maintenance of INS services by transferring agreed services into QEUH – this would free decant space in INS to support refurbishment programme for remaining services. INS capacity would be maintained and accommodation enhanced.
		Weaknesses and Threats There may be insufficient space available in QEUH to accommodate agreed INS services and planned service changes/expansions.
Service provider and workforce arrangements	**3**	**Strengths and Opportunities** Improved standard of patient and staff accommodation in QEUH. Transport links maintained with existing site.
		Weaknesses and Threats Design of QEUH may not meet requirements for close observation of acutely unwell patients impacting on workforce requirements – experience with existing services resulted in an increase in WTE nursing to maintain observation for acutely unwell and/or deteriorating patients.
	3	**Strengths and Opportunities** Improved standard of patient accommodation in QEUH.

Strategic Scope	Score	Comments
Public & service user expectations		Maintains access to all INS services on single site.
		Weaknesses and Threats There may be limited opportunity to improve patient pathways/flow and implement agreed service changes due to inpatient and outpatient services being split over a longer distance. Patient feedback from Neurology Voices indicates that some current patients and users find the distance between QEUH and INS unmanageable.

Table 23: Analysis of Option 4 – Phased INS campus approach using existing and adjacent locations

Strategic Scope	Score	Comments
Service provision	**3**	**Strengths and Opportunities** Continuation of services while capital build of new facility takes place. Following move of agreed services into new build decant space would be available to support a programme of refurbishment. Clinical adjacencies with existing services would be maintained. The programme would allow improvements to patient flow, deliver an enhanced environment and would accommodate agreed service changes.
		Weaknesses and Threats There is a risk that refurbished facilities may be constrained in terms of HBN / SHTM requirements / phasing. A full design team review would be required to explore option(s) further. Existing building infrastructure will require to be significantly upgraded to meet current guidelines and healthcare requirements. The duration of the programme would be over many years to allow each Phase to progress, requiring repeated decants. Some major derogations may be required to accommodate this within an ageing non-compliant building.
Service arrangements	**3**	**Strengths and Opportunities** Continuation of existing services during phased builds. Provides opportunity to improve patient flows and maximise efficiencies while enhancing environment. Would maintain required adjacencies with Adult and Paediatric services.
		Weaknesses and Threats A series of decants would be required to support the refurbishment programme and works will consequently have an overall longer timescale for delivery than other options.

Strategic Scope	Score	Comments
		Services may face temporary restrictions during decants and refurbishment works.
Service provider and workforce arrangements	**5**	**Strengths and Opportunities** Although delivered over a much longer timeframe, this option would still provide enhanced patient and staff accommodation. Transport links maintained with existing site. Assuming no decant off-site during phasing, there would be no changes to existing staff arrangements.
		Weaknesses and Threats None
Public & service user expectations	**3**	**Strengths and Opportunities** Improved standard of patient accommodation by end of programme. Maintains access to all INS services on single site, and reconfiguration between buildings and services should allow better alignment of services.
		Weaknesses and Threats There will be service disruption during decant periods with potential for care pathways to be compromised for several years. (The extent of disruption will be dependent on capacity/location of decant facilities.) If not included in scope of upgrade programme, some existing services will not be brought up to current SHTM standards, but maintained as-is.

Table 24: Initial ranking of options from matrix scoring

	Option	Score	Rank
1	All services immediately co-located in a single facility on the QEUH site	19	1
2	Split services across more than one location on the QEUH site	17	2
3	Selected INS inpatient services integrated within QEUH with redevelopment of remaining services	14	3=
4	Phased new INS 'Campus' on or adjacent to existing INS, Spinal and PDRU sites	14	3=
0	Do Minimum	6	5

5.5 Initial assessment of proposed solutions

5.5.1 Benefits for scoring

The longer list of individual benefits included at Table 16: Benefits Summary were developed into a shorter list of amalgamated benefits for the purposes of scoring the reduced list of options which was put to wider groups. The detailed description(s) of benefits were agreed iteratively through consultation with clinical teams, the INS Programme Board and wider Stakeholder Groups.

The final wording and ranking of these benefits was agreed at a session held in November 2021. This session included representatives of:

- Core Group
- GGC management
- Clinical teams
- Neurology Voices
- The Neurological Alliance
- National Services Division (the commissioner of all national services)

Table 25: Benefits criteria for ranking options

	Benefit	Description
A	Improves the patient and staff experience	Services will be delivered from a high standard of facilities which meet the needs of all people using and delivering the clinical services, especially those with complex needs, including mobility issues and cognitive impairments. The solution will promote the safety, welfare and dignity of all people using and delivering the clinical services, including minimising journeys between departments and reducing the need to transport acutely unwell individuals through public circulation spaces.
B	Maintains necessary clinical adjacencies	There will be timely access to the full range of acute and supporting services required for people using and delivering the clinical services. This will include fixed link or covered access where required. Any solution will support the movement of staff and patients to and from the Queen Elizabeth University Hospital and Royal Hospital for Children to support services provided by South Sector and Women's and Children's Services.

	Benefit	Description
C	Meets published and recognised environmental standards	Services and accommodation will meet SGHD guidelines on Infection Control and other technical standards (HAI, SHTM, HSE, etc). This includes corridor widths, minimum room sizes, bed spacing in any shared accommodation, specific standards for specialist departments such as neurodiagnostics, theatres and critical care, etc.
D	Allows current clinical services to be maintained (and expanded) to meet agreed national, regional and local clinical priorities	All current clinical services can be maintained and expanded in line with demand and to meet agreed service developments throughout the programme. The option minimises the need to move services to alternative locations which would compromise the ability to deliver the clinical services in a safe and effective way. The option will promote links to national, regional and local clinical strategies for delivering the full range of services included within scope and for the wider needs of the campus, NHSGGC, the West of Scotland and NHS Scotland
E	Flexibility, sustainability and Net Zero	There will be increased future capacity to allow NHSGGC to deliver the necessary clinical services, including offering flexible space which can adapt to changing service needs and technological advances. The solution will also address meeting GGC's carbon footprint targets / reductions.

The definition **'all people using and delivering the clinical services'** was agreed to mean everyone who uses, provides or contributes to the services covered by the scope of the Programme, including, but not limited to:

- all patients and service users - inpatients, outpatients, day attenders - as well as their visitors, family and carers who use the services provided in person
- anyone who accesses clinical services from their own home (or other homely setting), as the services provided currently include telephone and video consultations, as well as remotely-monitored healthcare equipment, and will continue to use remote technological solutions to support people in managing their health in the future
- all clinical and non-clinical staff of all grades, whether based in INS or visiting INS as part of their normal duties

5.5.2 Ranking of benefits

Using a Benefits Matrix, which compares individual benefits against each other, these criteria were ranked against each other to provide a ranked and weighted list.

	Description	Rank	Weight
B	Maintains necessary clinical adjacencies	1	33
D	Allows current clinical services to be maintained (and expanded) to meet agreed national, regional and local clinical priorities	2	27
E	Flexible, Sustainable, Net Zero	3	20
A	Improves patient and staff experience	4	13
C	Meets published and recognised environmental standards	5	7

This was done as a group, with the consensus view taken.

At the session, it was noted that:

- Benefit A (Improves the staff and patient experience) was also supported through achieving other benefits, e.g. more sustainable and flexible accommodation and expanding services to meet national, regional and local clinical strategies both contribute significantly to improving the user experience
- Benefit A should be reworded to prioritise the safety, dignity *and welfare* of staff and patients, although it was recognised that the current need for vulnerable gowned and anaesthetised patients to be transferred through open public corridors was a major identified risk and should be specifically addressed by any option
- Benefits B and C should be considered with reference to the 18 detailed clinical briefs which have been developed for all services during the extensive process undertaken with the external Healthcare Planners. These clinical briefs identified both immediate and necessary adjacencies, including optimum travel times between services / departments, and full schedules of accommodation
- Benefit C was scored less well because participants reflected that no change should be undertaken that did not meet legal and technical standards, therefore meeting standards was implicit in all options being considered
- Benefit E will include flexible accommodation, but this does not mean generic in all cases - where there is a need for specialist provision (e.g. dental chairs, neuro-ophthalmology, etc), this will be provided.

It was also reiterated that all benefits were interlinked and that the success of the programme depended on realising all of the benefits, and not merely the highest ranked ones.

5.5.3 Scoring of options

It was agreed that the scoring should be reported against three anonymised groups, to allow comparison between different viewpoints:

- Patient and Third Sector representatives (5)
- Clinical representatives (8)
- GGC management and Core Project Team (6)

5.5.3.1 Group position

The absolute mean ranking of the benefits by the group resulted in the following ranking:

	Option	Weighted Score	Ranking
1	All services immediately co-located in a single facility on the QEUH site	891	1
4	INS Campus approach – staged programme	679	2
2	Split services across more than one location on the QEUH site	575	3
3	Some inpatient services relocated to QEUH with redevelopment of remaining services	469	4
0	Do minimum - necessary upgrades only	266	5

5.5.3.2 Patient and Third Sector representatives only

	Option	Weighted Score	Ranking
1	All services immediately co-located in a single facility on the QEUH site	873	1
4	INS Campus approach – staged programme	716	2
2	Split services across more than one location on the QEUH site	596	3
3	Some inpatient services relocated to QEUH with redevelopment of remaining services	493	4
0	Do minimum - necessary upgrades only	256	5

Looking only at patient scores did not change the ranking of options, with very minimal differences in the scores for the top and bottom ranked options, and slightly higher scores for each of the other three options.

5.5.3.3 Clinical representatives only

	Option	Weighted Score	Ranking
1	All services immediately co-located in a single facility on the QEUH site	929	1
4	INS Campus approach – staged programme	655	2
2	Split services across more than one location on the QEUH site	518	3
3	Some inpatient services relocated to QEUH with redevelopment of remaining services	386	4
0	Do minimum - necessary upgrades only	242	5

Again, the ranking of options by the members of the clinical teams present ranking of options was the same as both the overall mean and the patient and third sector representatives. The clinical teams were considerably less in favour of the option of transferring some services into the main QEUH building, due to the loss of immediate co-location of services.

5.5.3.4 GGC management and Core Project Team only

	Option	Weighted Score	Ranking
1	All services immediately co-located in a single facility on the QEUH site	801	1
4	INS Campus approach – staged programme	681	2
2	Split services across more than one location on the QEUH site	629	3
3	Some inpatient services relocated to QEUH with redevelopment of remaining services	553	4
0	Do minimum - necessary upgrades only	306	5

There was less of a pronounced difference between the first to fourth ranked options from the GGC management representatives and the Core Project Team scores, but this did not change the overall ranking of options.

5.5.3.5 Most pessimistic and optimistic scores

Looking at scores by individuals, the lowest and highest scores for each option were:

	Option	Pessimistic	Optimistic
1	All services immediately co-located in a single facility on the QEUH site	767	933
4	INS Campus approach – staged programme	653	720
2	Split services across more than one location on the QEUH site	460	720
3	Some inpatients relocated to QEUH with redevelopment of remaining services	313	587
0	Do minimum - necessary upgrades only	153	433

These were derived from the overall highest and lowest individual score for each option, and represent scores from 10 individuals, with no individual being consistently low or high scoring across the options.

5.5.3.6 Comments and conclusions

This initial scoring was intended to highlight any potential significant differences in **models of providing the necessary service configuration and maintaining essential clinical adjacencies and patient flows.** There was no consideration of what the final accommodation might look like, specific location on the QEUH campus or technical feasibility of the options as the focus at this stage of the process is rightly on service models and not buildings.

All groups felt that each of the options could achieve the clinical service requirements and none of the options should be discounted without further consideration of technical aspects and the wider organisational context including the Board's Infrastructure review.

Undertaking sensitivity analysis to review the scoring – including looking at the patient and clinical views in isolation from core group and management scoring – did not change the ranking of the options. Each group felt that full co-location of all services in a single facility on the QEUH campus would provide the best service model, with realignment of the services across the available estate with varying levels of reprovision and/or refurbishment being the next most favoured.

Discussion on the day with the patient, clinical and management representatives highlighted that people did not see significant differences between three of the proposed models:

- INS Campus approach – staged programme
- Split services across more than one location on the QEUH site
- Some inpatients relocated to QEUH with redevelopment of remaining services

While both discussion and scoring showed a marked preference for closer co-location of services, the representatives strongly felt that the options themselves were not sufficiently

different from each other, but merely alternative ways of achieving a staged programme delivered over multiple locations.

This IA therefore proposes that **three options** should be taken forward for consideration at Outline Business Case:

Option 1	Do minimum - necessary upgrades only
Option 2	All services immediately co-located in a single facility on the QEUH site
Option 3	Services delivered over multiple locations and facilities on the QEUH campus

Ability of final shortlisted options to meet the Strategic Objectives

	Option 1: Do Minimum	**Option 2: All services immediately co-located in a single facility on the QEUH site**	**Option 3: Services delivered over multiple locations and facilities on the QEUH campus**
Objective 1 The services will improve capacity, access and outcomes, while maintaining vital clinical adjacencies and meeting the evolving needs of all patients, carers and staff	No	Yes	Yes
Objective 2 Services will remain at the forefront of delivering world-class supraregional and national treatment services to residents of Scotland by continually adapting, enhancing and improving their clinical models	No	Yes	Yes
Objective 3 Services will be provided in flexible and adaptable clinical accommodation in a modern healthcare environment that meets all appropriate standards	No	Yes	Yes / Partially

	Option 1: Do Minimum	Option 2: All services immediately co-located in a single facility on the QEUH site	Option 3: Services delivered over multiple locations and facilities on the QEUH campus
Objective 4 Services will have optimal safe, efficient clinical pathways which are person-centred, promote adjacencies between services, and enhance the dignity and safety of our patients and users, their families/visitors, and our staff	No	Yes	Yes
Objective 5 Services will be delivered in an environment which promotes safety and minimises harm	No	Yes	Yes / Partially

Option 3 has been scored as 'Yes / Partially' against two of the objectives as the extent to which it can meet these will depend on the design solution which is developed at OBC stage.

If a high proportion of existing estate is retained and refurbished, then the ability to meet SHTM guidelines and/or other standards may be partially compromised.

5.6 Design Quality Objectives

5.6.1 AEDET

The Project Team has had early engagement with Health Facilities Scotland (HFS) and an Achieving Excellence Design Evaluation Toolkit (AEDET) multi- stakeholder workshop was carried out on 27th May 2021 to review the current design functionality and set a Benchmark of scores for the facilities. The results of this workshop are shown in table 26 below:

Table 26 – Institute for Neurological Sciences existing arrangements: Benchmark AEDET scores:

	Benchmark
Use	1.3
Access	0.9
Space	0.9
Performance	1.1
Engineering	1.0
Construction	1.6
Character and Innovation	1.0
Form and Materials	0.9
Staff and Patient Environment	0.9
Urban and Social Integration	1.2

Weighting	=	Target
2	=>	5 - 6
1	>	3 - 4
0	<	3

At the same workshop, the stakeholders completed target scores identifying the main features that the design solution should focus on and be measured against at subsequent stages. The results of this scoring is shown in table 27 below.

Table 27 – Institute for Neurological Sciences: Target Scores:

Category	Benchmark	Target
Use	1.3	4.6
Access	0.9	4.3
Space	0.9	4.6
Performance	1.1	4.5
Engineering	1.0	4.2
Construction	1.6	4.5
Character and Innovation	1.0	4.5
Form and Materials	0.9	4.7
Staff and Patient Environment	0.9	4.6
Urban and Social Integration	1.2	4.7

The AEDET Benchmark and Target scores are summarised above with the full completed AEDET review IA data provided in Appendix D

The AEDET benchmark and HFS AEDET Refresh guidance would suggest that a target score of at least 3 is achieved in each category, it is clear across all ten categories there is significant need for improvement on the current Benchmark scoring, with the majority of scores below 1.5.

5.6.2 NDAP Design Statement

An NDAP workshop was held on 29 June 2021, facilitated by Architecture & Design Scotland [A&DS] and attended by key stakeholders. The initial output was a draft written statement followed by additional workshop for image selection. A preliminary review was held with Health Facilities Scotland [HFS] and A&DS for further guidance.

Comments from this review have now been considered and incorporated accordingly. Agreement has been reached with key stakeholders and the project board on an initial design statement which sets out the baselines that need to be satisfied for the non-negotiables to be met.

The Design Statement also contains a self-assessment process outlining the “who”, “how” and “when” realisation of the non-negotiables will be measured.

The Design Statement is included as Appendix F.

5.6.3 NHS Scotland Assure

NHS Scotland Assure was established in June 2021 and seeks to move the culture around projects to one of more rigorous control of compliance, and adherence to technical guidance and standards.

NHS Scotland Assure will provide reassurance to NHS GGC that the project has been developed with due consideration to the Health Associated Infection System for Controlling Risk in the Built Environment (HAI-SCRIBE) and infection control, and compliance on the main building services e.g., ventilation, drainage, electrical, and that sufficient briefing and governance arrangements are in place.

The Key Stage Assurance Review (KSAR) guidance and checklist for the IA stage were published in June 2021 and the project team have worked collaboratively with NHS Assure to address the requirements at the Initial Agreement stage. The review process commenced with a first meeting in January 2022 and the Final Report was issued on the 1st April 2022. Overall, the KSAR has not identified any significant findings that require to be addressed prior to the conclusion of the IA phase of the project and NHS Scotland Assure have confirmed support for the project at this stage.

It should be noted that the project will be designed in accordance with all published guidance and technical standards, with a minimum of derogations.

5.6.4 Net Zero Carbon

The project team are cognisant of the requirement for NHSScotland to be a ‘net-zero’ Greenhouse Gas (GHG) organisation by 2045 at the latest, and for all NHSScotland new buildings and major refurbishments to be designed to have net-zero GHG emissions from April 2020.

The Net Zero Carbon requirements have been considered by NHS GGC through the development of this Initial Agreement and the development will comply with the Scottish Health Technical note 02-01 NHS Scotland Sustainable Design and Construction Guide (SDaC).
A route map for the project will be developed which will review and agree design parameters for:

- Passive design – reduce energy demand
- Operational energy – delivering building services effectively
- Eliminate fossil fuels – choice of system types/fuels
- Renewable energy and storage – local renewables and energy purchase
- Upfront embodied carbon – reduce embodied carbon during the construction of the building
- Whole life carbon – consider the ongoing maintenance, replacement and end of life implications

Low carbon systems which will be considered for any future development may include:

- Renewable Energy Centre
- Solar Thermal Hot Water

- Solar Photovoltaics (PV)
- Heat Pumps (Ground Source or Air Source)
- Rainwater Harvesting
- Wind Turbines

NHSGGC are in the process of establishing a Climate Change and Sustainability Governance Group to oversee their transition to a net-zero emissions service, and the project team will work collaboratively with this group to ensure this investment aligns with their work across the board.

At an operational level, there is a QEUH Sustainability Group which covers all clinical services on the campus and focuses on making small changes at ward and individual patient level which can contribute towards achieving the Board's target. Moreover, there is a specific programme within INS Theatres to look at reducing waste by switching to single-patient rather than single-use items.

5.6.5 Equality Impact Statement

The design of the facility will be fully compliant with statutory guidance in relation to access, and with input from appropriate stakeholder groups.

This investment will address health inequalities through improving access to the hospital and ensuring appropriate accommodation and facilities are provided for all patient groups, providing enhanced patient experience and quality of care for all patient cohorts.

We will work with service users to remove discrimination, harassment and victimisation, foster good relations between protected characteristics and promote equality of opportunity and to take steps to assess and mitigate potential risk of exacerbating inequality on the grounds of socio-economic status.

We will ensure we do not act in a way that could impact on the human rights of patients, service users or staff, systematically exclude any particular groups from participating in engagement activity and hold people's data safely and securely in accordance with GDPR.

We will listen to the communities and service users about how they want to be involved, working to deliver a flexible and tailored approach where possible. We will provide a range of engagement and communication options with service users to help them become as involved as they wish in service development and design and ensure that we do not discriminate in the way we communicate with service users and staff.

We will work to engage with relevant equality groups on this service review and with service users to identify and mitigate any potential barriers to access that need to be addressed.
A high level EQIA assessment of the protected characteristics can be found at Appendix K and will be developed further during OBC.

6. Is the organisation ready to proceed with the proposal?

	Question	Response
Commercial, Financial & Management Cases	Is the organisation ready to proceed with the proposal?	Confirm: • Procurement strategy & timetable • Affordability & financial consequences • Governance & project management arrangements

6.1 The Commercial Case

External consultant Cost Advisors are currently in place and were appointed from the HFS NHS Scotland frameworks. Appointment is for IA stage. The appointed external consultants are currently part of the Core Project Team. Further external consultant appointments will be required for OBC and FBC. A high-level project timetable is provided in Table 28 below.

Table 28: High Level Project Timetable

Activity	Target Date
IA Submission to NHSGGC Governance Groups	February 2022
Anticipated IA approval by SGCIG*	June 2022
OBC Submission to NHSGGC Governance Groups	November 2024
Anticipated OBC approval by SGCIG	December 2024
FBC Submission to NHSGGC Governance Groups	November 2026
Anticipated FBC approval by SGCIG	December 2026
Construction Start (Single Facility)	Q1 2028
Construction Start (New / Refurbishment over multiple locations)	Q1 2028
NHSGGC Technical Commissioning Validation Period Start (Single Facility)	Q1 2031
NHSGGC Technical Commissioning Validation Period Start (New / Refurbishment over multiple locations)	Q1 2030 – Q1 2036
Facility Operational (Single Facility)	Q2 2032
Facility Operational (New / Refurbishment over multiple locations)	Q2 2031 – Q1 2037

* Due to the size and scale of the project the date for consideration by SGCIG has been moved, and accordingly all other dates will move forward by the same timeframe.

6.1.1 Procurement Strategy and Timetable

The Board is experienced in delivering major projects of this nature and the various procurement routes and is ready to move the project forward to the next stage upon IA approval. To identify the preferred procurement route to be adopted, a procurement strategy workshop will be held following IA approval. This will include technical, finance and clinical service representatives from NHSGGC. The attendees will also include individuals from other NHS Boards involved in major projects who will be able to share their experience from other healthcare programmes. The workshop will consider the procurement of both the external consultant technical advisors who will be required to support the internal NHSGGC team and the constructing partner.

Identifying the procurement route will be influenced by funding model. Advice from CIG will confirm if the project is expected to be privately funded or traditionally funded capital.

Prior to the procurement workshop a pre-workshop procurement paper will be circulated to shortlist suitable procurement routes. The Project Team proposes to engage technical advisors to prepare the papers and facilitate the workshop.

Procurement options to consider will include the following:

- Traditional
- Design and Build
- Design, Develop and Construct
- Early Integrated Team
- Construction Management
- Management Contracting
- Revenue Financed Options
- Frameworks Scotland
- Hub

A shortlist of the viable procurement options will be determined ahead of the workshop which will be taken forward for discussion and scoring at the session.

Scoring for each procurement route will look at:

- Client control over design and specification
- Impact and control of change
- Single point design and construction responsibility
- Cost and time certainty after contract execution
- Speed of development
- Oversight and role of the design team during construction

The nature of the strategic option which is ultimately selected will also influence the best procurement route.

The above process will also reflect and be shaped by the wider review currently underway looking at procurement options for large scale health projects in Scotland. At time of writing HFS/NHSS Assure are leading on this, in consultation with Boards, contractors and

consultants. NHSGGC are playing an active part in this initiative, and any procurement options considered for this project will be aligned with the outcomes and conclusions of this process.

6.1.2 Procurement of Technical Support

As the client, the project team must be 'intelligent procurers' and the appointment of the type of technical expertise advising the client team must be carefully considered to ensure they are the most suited to a project of this complexity and scale.

Exploring different procurement routes such as Hub Strategic Advice, Frameworks Scotland and OJEU for appointing the required technical advisors, including the Site Monitor and Independent Commissioning Engineer will also be implemented to ensure a larger pool of expertise can be drawn from.

For a project of this nature, Technical Advisors at a minimum must demonstrate:

- major health project experience
- procurement expertise
- healthcare planning experience
- experience of the funding model proposed
- relevant design experience
- programming and planning expertise
- commercial expertise
- expertise in health technical guidance, building regulations, British Standards etc
- construction health and safety / CDM expertise

The Project Team will ask for an external independent representative to attend interviews for the appointment of the Technical Advisors.

6.2 The Financial Case

This section will provide the following information, to be further developed during the Outline Business Case stage:

- A statement of the organisation's financial situation in relation to the proposal, including confirmation of its affordability
- Identification of resources proposed for the project, including their suitability and availability
- Any capital or revenue constraints on the project
- Description of any financial contributions to be made by external partners, and the current status of that commitment

6.2.1 Statement of Affordability

NHSGGC have considered the affordability of this proposal by undertaking a review of the financial implications of investment.

On a purely financial basis, the 'Do Minimum' option will give the lowest capital investment costs, and the recurrent revenue impact will not change. This does not provide any service model improvements or meet any of the investment objectives so is only used as a baseline for measuring the other options.

Detailed revenue cost implications for each of the options short-listed options will be undertaken during the OBC stage, but a potential range of costs and detailed notes on how later designs will influence these costs is discussed at 6.4.3 and 6.4.4.

6.3 Indicative costs

6.3.1 Capital Costs

Construction cost estimates were developed for the short-listed options, and these are presented below.

Due to the fluidity of the construction market, unknown design risk and construction risk at this stage, sensitivity analysis was carried out to present a range of costs. As it is not possible to quantify whole life capital costs without design information to inform final revenue modelling, specific GEM models and whole life costs will be explored in detail at OBC stage.

The cost information was developed by an independent cost consultant employed by the Board. The base cost is derived from out-turn costs of several similar sized projects recently completed across the UK. The outturn cost per m2 has been applied to total GIFA which is estimated to be 60,000m2.

Table 29: Construction Cost Estimates

Description	Option 0: Do Minimum	Option 1: All services immediately co-located in a single facility on the QEUH site	Option 2: Split services across more than one location on the QEUH site	Option 3: Selected INS inpatient services integrated within QEUH with redevelopment of retained services	Option 4: Phased new INS 'Campus' on existing sites
Total	£290m £6,305m^2	£790m £13,170m^2	£780m £13,000m^2	£980m £16,330m^2	£1,090m £18,170m^2
Low Range (-15%)	£246.5m £5,359m^2	£671.5m £11,192m^2	£663m £11,050m^2	£833m £13.883m^2	£926.5m £15,442m^2
High Range (+15%)	£333.5m £7,250m^2	£908.5m £15,142m^2	£897m £14,950m^2	£1,127m £18,783m^2	£1,253m £20,883m^2

Costs relate to the provision of INS services only at this stage and specifically exclude any infrastructure work such as site wide services upgrades or other planned investment on the site.

These costs include allowances for equipment, inflation, professional fees VAT and Optimism Bias. Further detail is provided within the Cost Estimate Option Appraisal Rev 3 which is included in Appendix I.

6.3.2 Optimism Bias

The Project Team followed HM Treasury Green Book guidance and the Risk Management Guide in the Scottish Capital Investment Manual to determine the level of Optimism Bias that should be applied to the cost estimates.

The upper bound percentage was calculated by determining the build complexity, location, scope of the scheme and changes to service delivery. The team then worked through an assessment of the mitigation already carried out based on experience of previous projects to determine the mitigation factor to be applied to the upper bound percentage. The resulting Optimism Bias rate is summarised in the table below.

Table 30: Optimism Bias

	Option 0: Do Minimum	Option 1: All services immediately co-located in a single facility on the QEUH site	Option 2: Split services across more than one location on the QEUH site	Option 3: Selected INS inpatient services integrated within QEUH with redevelopment of retained services	Option 4: Phased new INS 'Campus' on existing sites
Optimism Bias	56.80%	28.70%	42.10%	47.20%	39.60%

As the project progresses and detailed designs are developed, the level of optimism bias applied to the preferred solution will be reviewed and considered against the level of quantified risk that can be established. The expectation is that the more risks that can be quantified, the level of optimism bias will reduce. Future reviews of optimism bias will also take account of any inflationary increases beyond those already included.

It is recognised that the Optimism Bias allowance represents a considerable uplift in cost allowances and is based on very high-level information at this early stage. For this reason, an illustration of a further sensitivity factor of plus/minus 15% is included in table 29 above.

Table 31: Capital Cost per Option

	Option 0: Do Minimum	Option 1: All services immediately co-located in a single facility on the QEUH site	Option 2: Split services across more than one location on the QEUH site	Option 3: Selected INS inpatient services integrated within QEUH with redevelopment of retained services	Option 4: Phased new INS 'Campus' on existing sites
Construction Costs	£83.9m	£316.8m	£268.5m	£324.4m	£377.7m
Construction Cost per m^2	£1,824 (Based on 46,000m^2)	£5,280 (Based on 60,000m^2)	£4,475 (Based on 60,000m^2)	£5,406 (Based on 60,000m^2)	£6,295 (Based on 60,000m^2)
Professional Fees	£8.3m	£25.3m	£26.9m	£32.4m	£37.8m
Other (surveys/IT)	£1.85m	£6.84m	£5.9m	£7.1m	£8.3m
Inflation	£44.2m	£111m	£115.2m	£139.1m	£168.8m
Equipment	£12.6m	£47.5m	£40.3m	£48.7m	£56.7m
Optimism Bias	£85.7m	£145.6m	£192.3m	£260.4m	£257m
VAT	£47.3m	£130.6m	£129.8m	£162.4m	£181.3m
Total Capital Costs	£290m	£790m	£780m	£980m	£1,090m
Total Cost per m^2	£6,305 (Based on 46,000m^2)	£13,170 (Based on 60,000m^2)	£13,000 (Based on 60,000m^2)	£16,330 (Based on 60,000m^2)	£18,170 (Based on 60,000m^2)

To provide the above indicative costs at this Initial Agreement stage, the following assumptions have been made:

- An optimism bias allowance has been applied to each option. This has been calculated in accordance with Scottish Capital Investment Manual guidance.
- Land purchases are excluded at this stage. However, where relevant any proceeds from disposals are assumed to be returned to Scottish Government in line with guidance rather than being offset against capital requirements.
- External advisors' costs (included within capital cost figures) are based on estimates from similar recent projects undertaken within NHS Scotland and England.
- Capital cost options are as detailed in Appendix I.
- Pricing is based upon figures at Q4 2021, and inflation allowance is based on BCIS TPI
    - This was calculated by the cost consultants to the mid-point of construction Q3 2027 (forecast index of 448)

6.3.3 Resources

Suitable resources have been identified to further develop this project through OBC stage. These resources are detailed in the Management Case with a statement on availability and suitability.

6.4 Capital and Revenue Constraints

6.4.1 Capital Constraints

The capital costs have been considered and prepared for each option and these are noted in Table 31, and a detailed breakdown of these costs are included in Appendix I.

These capital costs have been calculated using the assumed schedule of accommodation for each option. This will be revised during the OBC stage as the preferred option is identified and further defined.

It is intended that the proposed investment will be funded through a Capital Allocation from the Scottish Government to support a traditionally funded capital build.

The main elements of this funding will be required during the Construction Phase; however, funding will also be required for the development of the design during the Outline Business Case and Final Business Case phases of the project.

6.4.2 Revenue Constraints

Annual revenue costs related to the running of the current INS are c.£90m with £83m supporting clinical services and £7m for estates and facilities related costs as set out below.

Table 32: Existing Revenue Costs

Service	Annual Revenue Costs (£m)	WTE
Neurosciences and Spinal Management & Admin	2.1	8
Neurology	24.8	105
Neurosciences (medical and surgical)	10.5	131
Physically Disabled Rehabilitation Unit (PDRU)	2.8	54
Spinal Injuries	6.3	118
Critical Care	3.6	64
Interventional Neuro-Radiology	2.4	5
Neurosurgery	8.9	132
Oral and Maxillofacial Surgery	6.0	88
Theatres	10.2	130

Service	Annual Revenue Costs (£m)	WTE
Stroke	2.3	47
Imaging	3.0	32
Total Clinical Services	**82.8**	**914**
Estates & Facilities	7.1	-
Total Revenue Costs	**89.8**	

As the current options are broad without fully worked up design models, it is not possible at this stage to provide detailed revenue costings for each of the options as staffing and facilities costs will vary based on square meterage of individual departments, adjacencies between services and departments, and the number of sites across which the services will be provided.

Based on this, the estimated revenue impacts are:

	Do minimum	Other options
Projected costs	-	£11-25m

The main drivers of the increased costs are the increased Estates and Facilities costs for managing a greater building footprint and the staffing impact of changed layout and reconfiguration. There are also potential additional non-pay costs linked with changes to layout, adjacencies and changed working practices which will be developed further at OBC stage.

These are discussed in more detail below at 6.4.3 and 6.4.4.

6.4.3 Financial Contributions

No capital contributions are expected from any external NHS Board.

NHSGGC holds Service Level Agreements [SLAs] with all external NHS Boards, in which the total costs of providing its hospital services are allocated against other NHS Boards using a weighted apportioning of costs.

This mechanism, known as the Cross-Boundary Flow [XBF] exercise, takes the full revenue costs of providing services on a three-year rolling basis and apportions costs by service and Board with a weighting for complexity. The data for this are provided and updated by ISD annually. Simplistically, the XBF methodology attempts to align resource utilisation with charging.

For example, NHS Ayrshire & Arran residents may account for 8% of the total number of patients admitted to General Surgery across all hospitals in NHSGGC, but NHS Ayrshire & Arran has its own comprehensive General Surgery programme delivered within its base hospitals, so the patients referred on to NHSGGC are likely to be more complex and have longer lengths of stay than the ‘average’ GGC resident treated within the same specialty. The ISD complexity weighting seeks to identify the share of resources expended on treatment,

rather than looking at base numbers of patients admitted. A 5% share of admitted patients therefore may result in a 7-8% share of inpatient costs to reflect this greater complexity.

This process is carried out for all specialties in all NHSGGC hospitals by NHS Board of residence. Changes in individual specialties are smoothed out over a period of three financial years, lessening the impact of changes in any one cost line.

While costs might increase in one area - additional Facilities & Estates costs for managing a greater footprint in an expanded new premises - there will also be offsetting reductions in other areas, for example if a Board refers fewer patients in a different specialty to NHSGGC because of an enhancement it has made locally in provision of services within its own base hospitals.

While it is undoubtedly true that the revenue costs of providing the services currently within the Institute of Neurological Sciences will rise under each of the identified options which NHS GGC wishes to explore further at OBC stage, it is impossible to state what specific difference this might make to the overall SLA contributions expected from individual Boards, given that there will be changes in every specialty in every NHSGGC hospital each year which may increase or decrease the value of any individual Board's SLA contribution.

6.4.3.1 Considerations

NHSGGC provides services for local, regional and national services, and has a responsibility to be open and transparent with the other NHS Boards and organisations who contribute to its base costs.

Without detailed designs for each of the options presented in this Initial Agreement, it is, as yet, not possible to derive detailed revenue costs for each of these options. Different revenue costs are driven by the potential adjacencies (and disconnects) which might arise from each of the options. The levels of decant required, the duration of the decant required, and the final layout of the proposed options will require different staffing scenarios. A 24-bedded ward drives a different workforce profile from two 12-bedded wards, for example. Similarly, open bays require different staffing profiles from single rooms, so the final level of single-bedded accommodation will impact on the revenue costs.

The following assumptions, however, should be noted.

6.4.3.1.1 Drug acquisition costs

Some costs are not dependent on any changes to existing services – for example, the drug costs associated with treating Multiple Sclerosis and other long-term Neurological conditions. The number of patients receiving treatments in the West of Scotland day treatment unit have risen by 7% on average in each of the last five financial years.

The costs associated with these treatments do not rise in a 1:1 proportion – individual treatment costs range from £4,000-£60,000 per patient per annum and are entirely dependent on the individual patient's presentation and clinical status. There are some higher cost medications in the planning horizon which, if approved by SMC, could have a significant impact on drug acquisition budgets and recharges to NHS Boards. This, however, is not influenced by any options included within the Initial Agreement and the increases will exist even in the Do Minimum scenario.

Drug acquisition costs fluctuate based on:

- new agreements negotiated on behalf of NHSScotland by NHS Procurement
- price reductions as a result of a new competitor entering the market
- drugs coming off patent and switching to generic formulations
- new treatments being approved by the Scottish Medicines Consortium [SMC] for routine use in NHSScotland

None of the proposals included in the Initial Agreement propose a change to the service model for delivering these medications – people who can receive home delivery of their medication or be treated in their local hospitals are already supported in this manner – therefore there are no additional drug acquisition costs driven by any of the proposed options.

6.4.3.1.2 Day treatment costs

Without the level of detailed modelling of individual floorplans which will take place at OBC, it is impossible as yet to ascertain what the staff costs of delivering these treatments would be. A single unit which is adjacent to inpatient Neurology services would drive a different cost base from a stand-alone unit on a more remote site somewhere else on the QEUH campus, where there would be a need to provide dedicated medical cover because of the lack of proximity to inpatient Neurology services.

6.4.3.1.3 Inpatient treatment wards

Modelling from moving from the older, now demolished GGC estate into the QEUH shows that the move from open bays to single-room accommodation drives an increase of over 30% in nurse staffing on the same bed base, based on a move to 24-bedded wards, which is the standard for most new healthcare builds. Wards with a lower bed base of under 18 beds drive a higher workforce profile. The final costs for inpatient services will therefore be driven by both the level of single-room accommodation and the size of the individual wards. As there are current wards within INS which have fewer than 24 beds, there may be some off-setting economies of scale, but within an overall expected increase.

6.4.3.1.4 General outpatients

These proposals do not include an increase in the total number of outpatient rooms, but each of the options, except Do Minimum, advocate for better aligned and closer integration of the current disparate provision of outpatients over several buildings. By creating a single outpatient department, there should be economies of scale which off-set increases in demand and throughput driven by activity.

6.4.3.1.5 Neurodiagnostics

Again, the location and composition of the Diagnostic services will drive the revenue costing. With a single Diagnostics unit to serve both inpatients and outpatients, there are no additional costs of providing the services outlined in these proposals, other than the usual pressures of increasing workload. This does not vary within each of the options.

There are specific service development proposals outlined above which will add additional costs to the Diagnostics budget, not least of which is the development of a regional Thrombectomy service, but these revenue costs are expected to be directly funded by either

SGHD (Thrombectomy and Sentinel Lymph Node Biopsy) or by the individual Board(s) involved (additional inpatient OMFS activity from NHS Lanarkshire).

6.4.4 Estimated revenue costs

As noted above, it is not possible at this stage to provide detailed revenue costings for each of the options. The two largest areas of additional revenue will be staff and estates. A single build with all services co-located will drive lower costs than a split-site option where there may have to be duplication of staffing and/or equipment.

These costs therefore represent only a high level estimate, in line with SGHD and NHSS Assure recommendations for this stage of the process.

	Revenue Impact		
	Low	**Medium**	**High**
Pay	£5.3m	£8.5m	£11.9m
Non-Pay	£1.5m	£2.5m	£3.4m
Estates	£4.3m	£7.0m	£9.7m
TOTAL	**£11.0m**	**£18.0m**	**£25.0m**

As GGC accounts for c.50% of activity in INS, it is expected that NSD and the other 13 territorial NHS Boards will cover the remaining 50% of additional costs through SLAs or cross-charging. 6.4.3 explains that these potential additional costs may be off-set by other changes in individual Boards' global SLAs with NHSGGC.

A full programme of workforce modelling has already been established, led by the Interim Chief Nurse of Regional Services. This process is using accepted GGC nurse staffing and workforce modelling tools. This will be complemented by a robust revenue costing which takes into account adjacencies, economies of scale and potential efficiencies once detailed design plans are available at OBC and FBC. Mitigations which could reduce these figures will also be explored in depth.

Table 33 below shows how the considerations discussed above and other cost factors will be built into that revenue cost modelling.

Table 33: Revenue costs to be explored further at OBC, once detailed designs are available

Description	Option 0: Do Minimum	Option 1: All services immediately co-located in a single facility on the QEUH site	Option 2: Split services across more than one location on the QEUH site	Option 3: Selected INS inpatient services integrated within QEUH with remaining services in INS being redeveloped	Option 4: Phased new INS 'Campus' on existing INS, Spinal and PDRU sites
Inpatient wards	No change	Modelling from QEUH shows that the move from open bays to single-room accommodation drives a 30% increase in nurse staffing	In addition to the higher nurse staffing required to deliver single-room accommodation, there will be additional costs involved in disaggregating services (splitting inpatients from outpatients and day treatments).		In addition to the higher nurse staffing required to deliver single-room accommodation, there will be additional costs of managing services across multiple locations during a prolonged period of decant
Theatres and Interventional Radiotherapy	No change – INS will still be reliant on external capacity (private sector)	Planned increases in theatre sessions are based on funded service developments, therefore there are no additional costs beyond these agreed increases in activity. Fully functioning theatres built with sufficient redundancy to allow downtime for maintenance will prevent the ongoing significant loss of sessions that have affected INS theatres for over 10 years.			
Outpatients	No change	It is expected that increases in activity will be accommodated by both service redesign which is already embedded within services (ACRT, virtual appointments, Patient Initiated Review, etc.), and through economies of scale and better productivity.	There may be additional costs for duplication of equipment and staff in the split-site options, if the ambulatory services are physically remote from inpatient services. For example, all diagnostic scanners can currently support both inpatients and outpatients because of their central location; if a split-site option were to be too distant for patients to access, machines and staffing would have to be replicated on both sites. Retaining multiple OPDs will not allow economies of scale or increased productivity, and staff escorts (clinical and support staff) will still be required to facilitate patient journeys.		

Description	Option 0: Do Minimum	Option 1: All services immediately co-located in a single facility on the QEUH site	Option 2: Split services across more than one location on the QEUH site	Option 3: Selected INS inpatient services integrated within QEUH with remaining services in INS being redeveloped	Option 4: Phased new INS 'Campus' on existing INS, Spinal and PDRU sites
Facilities & Estates	Backlog maintenance costs are £25m, expecting to rise to at least £60m over 10 years, with no changes to existing services	These will increase in line with the square meterage of the final layout and the extent to which services are co-located and interlinked. Again, split-site options may drive a larger footprint (duplication of clinical services, reception areas, etc) which affect these costs.			
Thrombectomy	Nationally funded development with approved first-stage business case. No additional revenue implications for GGC, individual NHS Boards, NHS NSS (NSD) or other stakeholders.				
Drug acquisition costs	No difference between options – these will rise in line with population and expected growth in patient numbers irrespective of changes to service delivery models. The Transformation Programme will, however, allow expansion of these services at lower additional supporting staffing costs by creating an appropriately-sized single unit. At present, the only identified options for creating additional chair space revolve around creating a second, remote unit with higher staffing costs (due to minimum safe staffing levels required).				
Digital Infrastructure	Upgrades required to all areas, but costs not yet identified	These will increase in line with the square meterage of the final layout and the extent to which services are co-located and interlinked.			

6.5 The Management Case

This section summarises the planned management approach setting out key personnel, the organisation structure and the tools and processes that will be adopted to deliver and monitor the project. In particular, it summarises the approach to the project to date, as well as looking forward to the management arrangements during the delivery and operation of the new facility.

6.5.1 Project Governance

The INS Redevelopment Capital Project Board is responsible to the Acute Strategic Management Group for the successful planning and delivery of the INS Transformation Programme. It represents the Regional Services Directorate's 'sponsoring group' layer in the capital process and is responsible for the review of change proposals and any associated options, considering these in the context of the whole system, prior to onward progression to the Acute Capital Forum and the Capital Planning Group.

Representatives have been selected to provide a range of specialist input, knowledge and understanding of the project requirements. Members are representative of the services, their functions, end user and management requirements as well as the NHSGGC estate, technical, project procurement and governance processes.

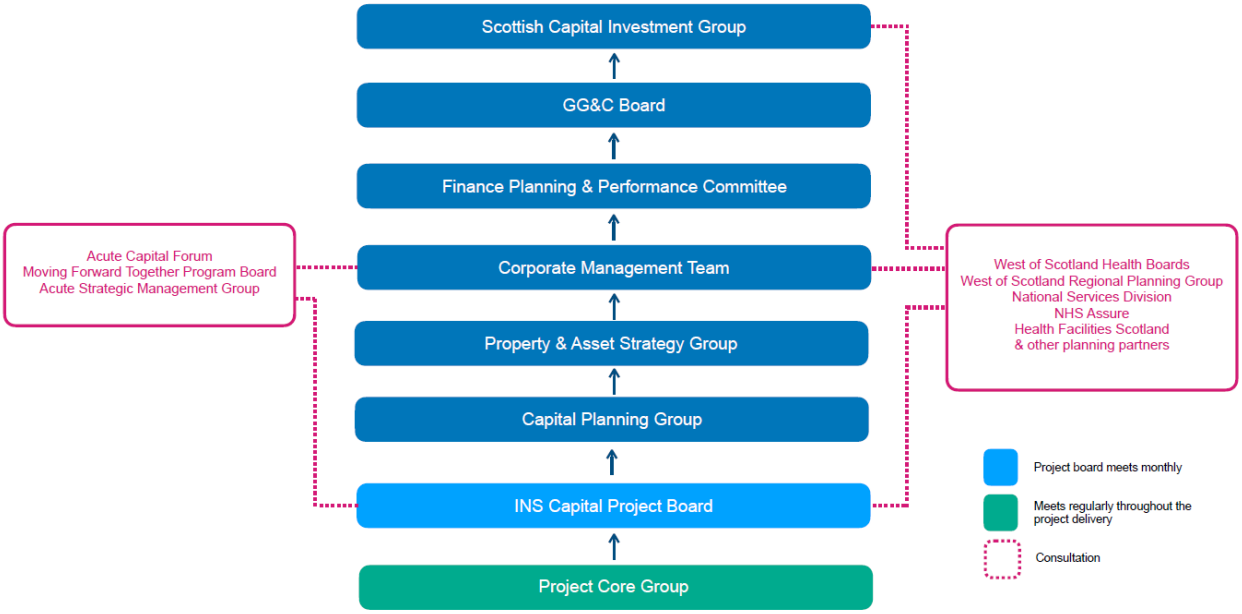
The key remits of the Project Board include but are not limited to:

- Developing and maintaining the INS Redevelopment capital project plan, meeting schedule and benefits realisation plan
- Facilitating change and championing the work of the INS Redevelopment capital plan with internal and external stakeholders
- Providing a comprehensive Project Management and Business Change Coordination approach to ensure an auditable governance process to coordinating projects across the Project, including appointment of SRO for each workstream
- Establishing Project Groups and Short Life Working Groups as required to support the Project including but not limited to the following:
    - Project Core Group
    - Stakeholder Board and a range of clinical sub groups
    - Sustainability Group
    - Legal Group
    - MEP & Infection Control Group
    - Voice and IT Group
    - Community Investment Group
    - Arts and Environment Group
    - Commissioning Group
    - Digital Estate & Asset Management Group
    - Finance Group
- Discussing and resolving any conflicts escalated from the project groups.
- Providing alignment with other key Projects across GGC.
- Approving the submission of Project Papers, New Project Requests and Business Cases to the Acute Strategic Management Group and the Capital Planning Group.

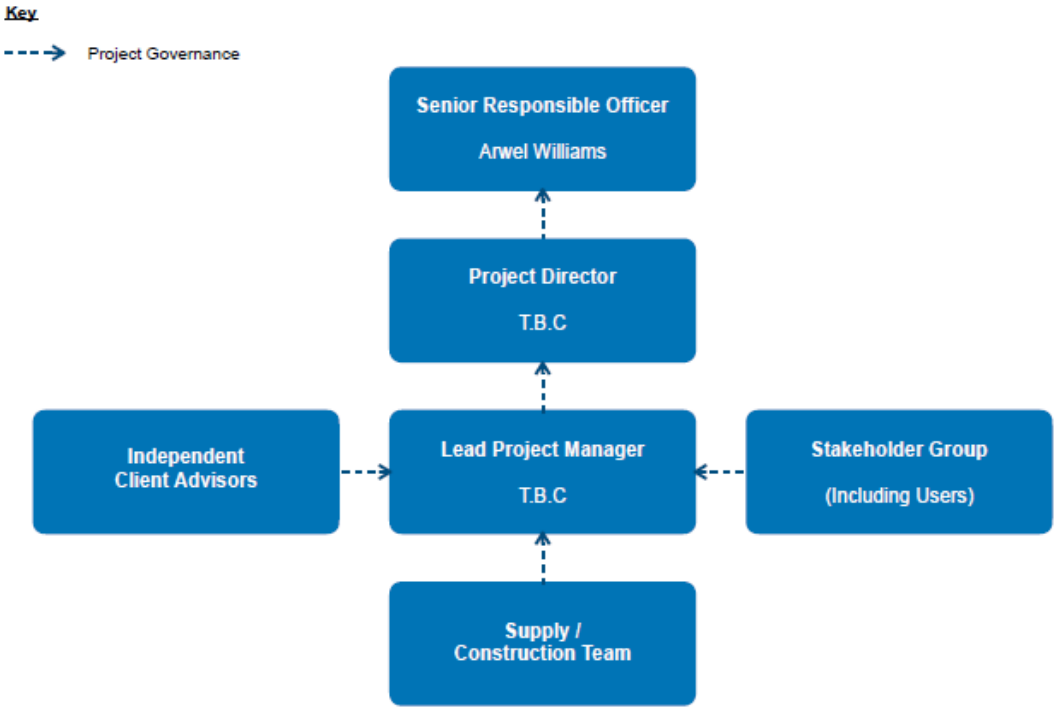
- Advising the Senior Responsible Officer (SRO) of related workstreams on interdependency issues which affect planned delivery and benefits realisation.
- Fully scoping projects in terms of the population who will be cared for in the investment area. Evaluate external EU/USA standards where none exist in the UK.
- Inviting topic specialists as required by the scope and specialism of project and seeking external expertise where specialist input is required e.g. ventilation or water.
- Providing the organisation with assurance that projects are being managed in line with Building Notes and Standards and that where derogations are required, they have proper visibility/scrutiny and decisions are transparent and well documented.
- Ensuring compliance with local/national governance requirements/guidance from relevant bodies including NHS Assure.
- Maintaining decision logs and derogation schedules and providing updates on all projects to ICBEG for review and scrutiny of decisions.
- Identifying project risks and maintaining a risk and issues register and working with service teams to establish mitigation.
- Fully exploring and documenting resource requirements in early Business Case stages.
- Appointing an independent Commissioning Engineer.
- Ongoing review of commissioning plans and resource requirements.

6.5.1.1 Reporting structure and governance arrangements

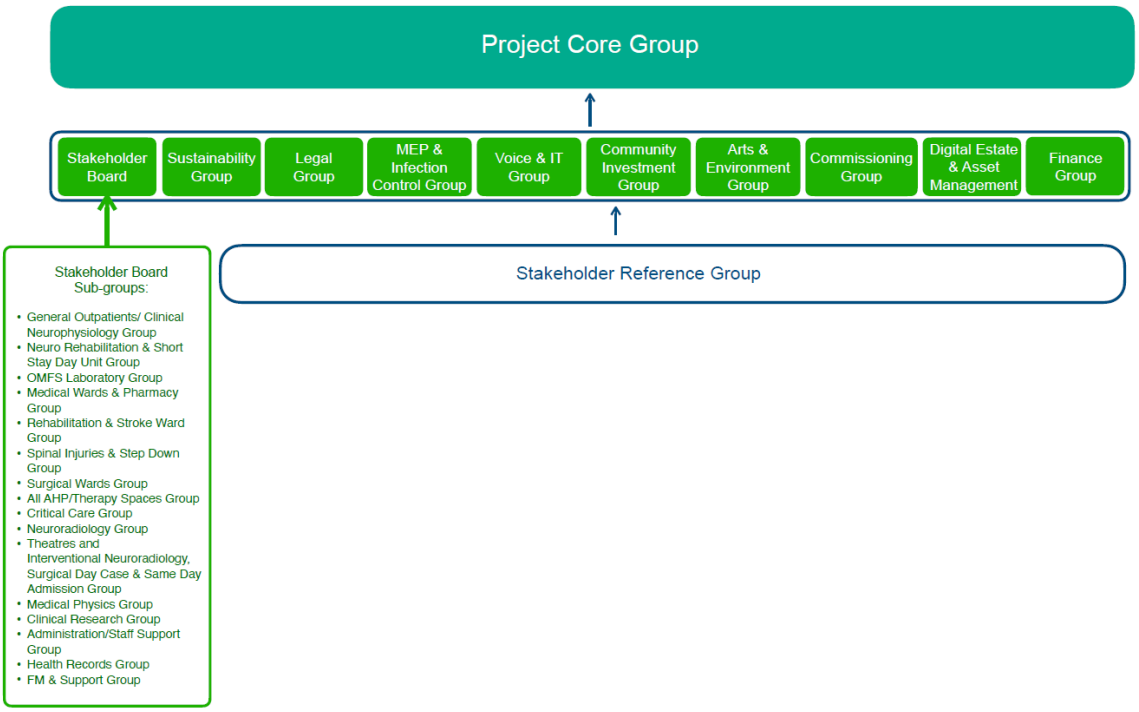
Governance Arrangements



Project Reporting Structure



Sub Group Reporting Structure



6.5.2 Summary of Governance support for the proposals

Governance Group:	Engagement that has taken place	Confirmed support for the proposal
Organisation:	NHSGGC are fully supportive of this proposal, with Director Arwel Williams taking the lead role in its development. The Director has chaired the Project Board meetings during the development of the project. This proposal is also incorporated into the Capital Board service plan, which has received NHSGGC Board approval.	This Initial Agreement was approved by the following standing NHSGGC committees: Capital Planning Group: 8 March 2022 Property & Asset Strategy Group: 15 March 2022 MFT Programme Board: 21 March 2022 Corporate Management Team: 1 April 2022 Finance, Planning & Performance Committee: 5 April 2022 NHSGGC Board meeting: 26 April 2022
Service or Department	The Service Lead involved in this project is Susan Walker. Their responsibility and involvement includes continuous engagement from the outset, attendance at all project workshops and IA input.	This Initial Agreement was approved by the INS Redevelopment Capital Project Board on 21 Feb 2022.
Health Improvement Scotland (*formerly Scottish Health Council)*	Health Improvement Scotland have been informed on 17 November 2021 of the impact of any proposed service change on patient care.	Health Improvement Scotland have confirmed via letter on 7 January 2022 that they are content with the kind and level of engagement carried out to date, and that it is in line with guidance. This letter is attached at Appendix J

6.5.3 Key roles and responsibilities

The **Senior Responsible Officer (SRO)** is Arwel Williams, Director of Diagnostic & Regional Services for NHS Greater Glasgow and Clyde.

The **Project Director** is not yet in post. This job is about to be advertised with the expectation that the post will be filled during Q3/Q4 2022.

The **Service Manager Lead** is Susan Walker, General Manager – Regional Services.

The **Service Planning Lead** is Marjorie Johns, Planning Manager – Regional Services.

The Interim **Clinical Lead** is Dr Bryan Dawson, who is also Lead Clinician for the Department of Neuroanaesthesia in the Institute of Neurological Sciences.

The **Capital Planning Lead** is Andrew Baillie, Assistant Head of Capital Planning.

The **Capital Planning Senior Project Manager** role is currently vacant, but will be appointed in summer 2022.

Table 34: Key Project Members

Moving Forward Together Program Board Members		
Name	**Role**	**Demonstrable expertise**
Jane Grant	Chief Executive	Jane Grant has been Chief Executive of NHS Greater Glasgow and Clyde since April 2017, having previously been the Chief Executive of NHS Forth Valley for almost four years. Jane has almost forty years' experience as an acute hospital manager in NHS Scotland and has overseen some of the largest and most challenging acute hospital redesign programmes in NHS Scotland's history. She has been involved in leading and developing capital programmes throughout her career, most notably in the development of business cases for three major hospitals, Hairmyres Hospital, the Queen Elizabeth University Hospital and the Royal Hospital for Children, Glasgow. As Chief Executive, she is responsible for a recurring annual capital budget of over £100m, and an annual spend of over £300m on PFI deliverables.
William Edwards	Chief Operating Officer	William Edwards was appointed to the position of Chief Operating Officer in January 2022 having previously held the role of Director of eHealth at NHSGGC since November 2016. He has held a number of senior national and local ICT roles since joining the NHS in June 1999. William was formerly the Head of eHealth at the Golden Jubilee National Hospital and General Manager – eHealth at NHS Fife before joining NHS Greater Glasgow and Clyde.

Moving Forward Together Program Board Members		
Name	**Role**	**Demonstrable expertise**
Dr Jennifer Armstrong	Medical Director	Dr Jennifer L. Armstrong was appointed Medical Director of Greater Glasgow and Clyde in April 2012. She is the Board's Executive Lead for the Moving Forward Together Programme, the clinical service strategy under which this transformation programme has been developed. Dr Armstrong qualified in Medicine in 1988 and also holds a Master's degree in Public Health and a Diploma in Management Studies. She is a Fellow of the Faculty of Public Health. Dr Armstrong has held both operational management and medical leadership positions across NHS Scotland, including five years at SGHD as a Senior Medical Officer advising the Chief Medical Officer and Scottish Ministers on acute NHS and screening services.
Professor Tom Steele	Director of Estates and Facilities	Professor Tom Steele was appointed Director of Estates and Facilities at NHSGGC in October 2018. Tom has a Master's Degree in Construction Management and holds professional registrations with the Royal Institute of Chartered Surveyors (FRICS) and the Chartered Institute of Building (MCIOB). He has spent over 35 years working in NHS Scotland, holding senior posts within NHS Ayrshire and Arran, NHS Forth Valley, NHS National Services Scotland. He is also currently involved with a number of national committees and service review groups.
Fiona McKay	Director of Planning	Fiona MacKay was appointed as the Director of Planning in February 2019. Fiona joined the NHS in 1991 as Finance Manager for the Care for the Elderly Unit. During her NHS career she has carried out a range of planning and finance jobs, including leading the Child Health Team at Greater Glasgow Health Board. She was appointed as Head of Planning & Health Improvement in Renfrewshire Community Health Partnership when it was formed in summer 2006 and worked closely with Council colleagues to plan and improve local services. Fiona is leading NHSGGC's development of an Infrastructure Strategy to support the Moving Forward Together Programme. This innovative programme seeks to take a system-wide approach to capital investment across health and social care to maximise the benefit for the residents of NHSGGC and the wider users of its services.

Project Board Members		
Name	**Role**	**Demonstrable expertise**
Arwel Williams	Director of Diagnostics & Regional Services **Senior Responsible Officer (SRO)**	Arwel Williams has 14 years' experience as a senior manager/director in the NHS in the UK, during which time he has been the responsible operational manager or Director for a number of capital projects ranging in value from under £1m to this current Transformation Programme. As Director of Diagnostics and Regional Services, Arwel is responsible for the Beatson West of Scotland Cancer Centre, and all oncology and haematology services; Bone Marrow Transplantation and CAR-T Therapy; Neurosciences, Neurorehabilitation, Specialist Disability and OMFS; national and regional Forensic Mental Health Services; Renal Services, including Transplantation; Plastic Surgery & Burns; Glasgow Dental Hospital; the Centre for Integrative Care; and all laboratory and imaging services across GGC and Argyll & Bute. The combined budget of the two Directorates is over £300m and they employ over 4,000 staff. In addition to this project, Arwel is currently the SRO for two other major capital projects in excess of £10m: 1. The replacement of NHSGGC's Radionuclide Dispensary 2. The ongoing INS capital refurbishment and upgrade programme, which has so far spent over £25m since 2015, and has more than £5m committed in the upcoming year for Thrombectomy, ward and HEI upgrades, CT replacement and general backlog works. Arwel also chairs separate Regional Services and Diagnostics Capital Boards which between them have an ongoing slate of 7-10 capital projects, ranging from £100k to over £5m at any given time.

Project Board Members		
Name	**Role**	**Demonstrable expertise**
Andrew Baillie*	Assistant Head of Capital Planning	Andrew Baillie is qualified in construction management, with over 20 years' experience delivering projects using various contract structures. Andrew holds professional registrations with the Chartered institutes of Architectural Technologies and the Chartered Institute of Building. Over the last few years, Andrew has led on the delivery of a number of healthcare projects in NHSGGC including both Maryhill and Woodside Health & Care centres, Inverclyde and Stobhill mental health wards, and the North East Hub at Parkhead. Andrew is experienced at managing projects through business case and governance processes, and in using the HUB procurement route using either the DBDA or DBFM contract. He has many years' experience in managing building contracts with complex design, technical, legal, and commercial workstreams as well as detailed technical reviews by key stakeholders and completed numerous projects using either JCT or NEC3/4 contracts. Prior to joining the health board, Andrew worked as the in-house technical advisor for the new Ayrshire College £60m Kilmarnock campus.
Craig Broadfoot	General Manager, Neurosciences, Oral and Maxillofacial Surgery, Neuro-rehabilitation and Spinal Injuries	Craig Broadfoot has held a number of Senior Management roles since 2010 and has experience in working in acute, primary care and corporate settings within NHS GGC and worked within INS since 2017, initially as the Clinical Service Manager for the surgical services then appointed to GM role on an interim basis in June 2019, and substantively in December 2020. His remit includes the following: Regional (West of Scotland) Clinical services: Neurology, Neuroanaesthesia, Neurosurgery, Clinical Neurophysiology, Interventional Neuroradiology, Neurorehabilitation Medicine, Oral & Maxillofacial Surgery (OMFS) and the West of Scotland Mobility and Rehabilitation Centre (WestMARC). He also manages national (Scotland-wide) services: Adult Cleft Lip and Cleft Palate Surgery service, the Queen Elizabeth National Spinal Injuries Unit, the Deep Brain Stimulation Service and the Specialist Prosthetics Service.

Project Board Members		
Name	**Role**	**Demonstrable expertise**
Dr Bryan Dawson*	Lead Clinician for the Department of Neuro-anaesthesia, INS	Dr Bryan Dawson has worked as a Consultant within the Department of Neuroanaesthesia for 11 years and, since 2020, has been its Lead Clinician. His clinical commitments include: theatres, neuro-intensive care, interventional neuroradiology and spinal injuries. He has gained experience of other INS capital projects including the development of four new theatres in the ICE Building (a joint programme with University of Glasgow), as well as the ongoing INS Infrastructure Programme, and has participated in Healthcare Planner and other workshops to support the INS project. Dr Dawson was appointed as Interim Clinical Lead for the project in December 2021.
John Donnelly	Head of Capital Planning	John Donnelly is a Registered Architect, experienced within both the private and public sectors in designing, developing and delivering projects from inception through to completion. He has extensive experience of being a Project Lead and of directing design teams to develop masterplans on both individual commercial projects and large scale social housing utilising traditional and design & build contract processes. He joined the NHS in 2000. In his current role, John is responsible for managing the team delivering Property Management, Asset Management and Project Management of capital projects across the NHSGGC Board area. John is the Board technical lead for delivery of over £200m of projects through the hub programme utilising DBFM and DBDA contracts. He is also chair of the SPAG Building Design and Construction Group and author of its Quality Matters report.
Jill Flanagan	Head of Finance Regional Services & Diagnostics	Jill Flanagan is a Chartered Management Accountant (ACMA) with 14 years' experience in NHS Finance. She is responsible for the overall financial management and performance of the Regional Services and Diagnostics Directorates. The combined revenue budget of the two directorates is over £300m. Jill is also responsible for leading the implementation, maintenance and ongoing development of the Short, Medium and Long-Term Finance strategy and operational financial management arrangements.

Project Board Members		
Name	**Role**	**Demonstrable expertise**
Marjorie Johns*	Planning Manager, Regional Services	Marjorie Johns has an MSc in Healthcare Management and 25 years' experience in planning national and regional clinical services. During 12 years at National Services Division, she led on a range of national reviews of service provision, including major redesigns of cleft surgery and paediatric cardiac surgery services in NHS Scotland. More recently, at the request of the Chief Executive of the State Hospital, she jointly led a national process on developing future options for the provision of forensic care for women in Scotland. Marjorie has been supporting and developing major capital schemes for NHSGGC for over 10 years. She has worked on capital schemes including Medium Secure Forensic provision (c£15m), ambulatory care provision for West Glasgow Hospitals (c£55m), the ongoing INS capital programmes (over £25m to date) and the Scottish National Residential Pain Management Centre (c£5m). Marjorie was nominated for an NHSGGC Chairman's Award for leading on the creation of West Glasgow Ambulatory Care Hospital in 2017. She and her team also won a Sector award for Leadership.
Lorna Loudon	Interim Chief Nurse, Regional Services	Lorna Loudon qualified as a Registered General Nurse in 1991, completed BSc Health Studies in 1998 and subsequently studied at Masters level. Lorna has worked in acute nursing services in various roles / specialties throughout her career in both NHSAA and NHSGGC. Prior to her role as Interim Chief Nurse for Regional Services, she had been Deputy Chief Nurse in South Sector in NHSGGC.
Joe McBride	Head of Capital Finance	Joe McBride joined NHSGGC as Head of Capital Finance in November 2021. Prior to joining NHSGGC, Joe worked with Willliamsburgh Housing Association from 2002, first as the Finance & IT Manager and laterally as their Chief Executive Officer.
Michael McGrory	Capital Accountant	Michael McGrory is NHSGGC's Capital Accountant. He has been involved in multiple new hospital developments, including the PFI schemes for Rowanbank Clinic, New Victoria Hospital and New Stobhill Hospital, and the creation of the Queen Elizabeth University Hospital and the Royal Hospital for Children, the largest publicly-funded capital project in Scotland to date.
Lynn Pritchard	Lead Infection Control Nurse	Lynn Pritchard is a qualified Registered Nurse with a specialist qualification in Infection Prevention & Control (IPC). Qualified since 1988 she obtained her specialist practitioner qualification in 2005, but has worked within IPC since 2003. Before working in IPC Lorna gained experience in both general, orthopaedic and high dependency nursing. Within last 18 years in IPC she has gained extensive experience in both Acute, Mental Health and Community Sectors working closely with Estates and Capital planning on both small refurbishment projects and larger new build projects across all settings.

Project Board Members		
Name	**Role**	**Demonstrable expertise**
Euan Smith	Sector Estates Manager (South)	Euan Smith is a Chartered Engineer and Fellow of the Institution of Mechanical Engineers with extensive management and engineering experience within engineering consultancy, electronics, defence and pharmaceutical industries. He has now worked within NHSGGC for the last 8 years in a variety of Estates posts and now leads the Estates Department at QEUH.
Susan Smith*	Programme Support Manager	Susan Smith has been Programme Support Manager for the INS Transformation Project since summer 2021. Prior to working with the team, Susan had over twenty years' experience working for the Department of Work & Pensions in a variety of management roles and during that time was involved in multiple UK-wide programmes, including the Pensions Transformation Project, and in implementing new IT systems and service delivery models. Susan gained further programme and implementation experience working within the third sector, implementing policy and procedures and managing a Scottish Government pilot in partnership with NHS Lanarkshire. She also worked in NHS Test & Protect throughout the first waves of the Covid pandemic.
Susan Walker*	General Manager, Regional Services	Susan Walker is the General Manager Lead for the INS Transformation programme. She was previously General Manager for the Institute of Neurological Sciences for 10+ years to June 2019 with responsibility for regional (West of Scotland) services including Neurology, Neuroanaesthesia, Neurosurgery, Clinical Neurophysiology, Interventional Neuroradiology, Neurorehabilitation Medicine, Oral & Maxillofacial Surgery (OMFS), the West of Scotland Mobility and Rehabilitation Centre (WestMARC) and national services including the Queen Elizabeth National Spinal Injuries Unit, Deep Brain Stimulation Service, Adult Cleft Lip and Cleft Palate Surgery and the Specialist Prosthetics Service. Susan has over 30 years' NHS management experience in paediatric and adult regional and national services with significant experience of service redesign and development including establishment of national services, leading on the Board's Moving Forward Together programme in INS and delivery of a range of capital developments on live acute sites. She has well established links with third sector organisations including the Neurological Alliance of Scotland and established NHS GGC's Neurological Voices group for patient and carer representatives. Susan's current national roles include Deputy Co-Chair of the National Advisory Committee on Neurological Conditions, Chair of its Redesign sub group and member of the Neurology AHP workforce group.

Project Board Members		
Name	**Role**	**Demonstrable expertise**
Post currently vacant	Infection Control Doctor / Microbiologist	The appointed post holder will be: Fully registered with GMC A Consultant Microbiologist/Infection Control Doctor with dedicated sessions to support the INS Transformation Programme A key member of the Project Team working closely with the Infection Control Nurse, Clinical Lead and other colleagues Supported to develop/extend experience in the design, build and commissioning of built environment projects to ensure effective contribution to the project

***Dedicated Core Project team who developed the IA.**

Note: The following biographies describe people in post at end March 2022 when this IA was submitted to the NHSGGC Board for sign-off. Some postholders may have changed and will continue to change.

Other Key Project Members		
Name	**Role**	**Demonstrable expertise**
Paul Armstrong	Neuroradiology Consultant	Paul Armstrong is a Fellowship trained Neuroradiology consultant based within the INS in Glasgow. He is lead clinician for Neuroradiology. Paul provides tertiary Neuroradiology expertise to the West of Scotland, working closely with and supporting all of the tertiary specialties working out of the INS.
Marie Austin	Lead Nurse Neurology, Spinal Injuries and Rehab Medicine	Marie Austin has been a Neurosciences Nurse since 2000. She has held several roles within the INS including Staff Nurse, Charge Nurse, Night Nurse Practitioner and Senior Charge Nurse within the Neurology services, which previously included Hyper Acute Stroke. In January 2020 Marie became Lead Nurse for Neurology services, the National Spinal Injuries Unit and Neurorehabilitation Medicine service at the INS. Marie is an active member of the RCN Neuroscience Forum, National Neuroscience Benchmarking Group and the British Association of Neuroscience Nursing Committee Member. Marie has a special interest in Person Centred Care and Quality Improvement.

Other Key Project Members		
Name	**Role**	**Demonstrable expertise**
Donna Bisland	Interim AHP team Lead for Neuro-rehabilitation	Donna Bisland is a Physiotherapist with 18 years' experience. 15 of those years within GGC and 9 within the Neuro Rehabilitation Unit. She is responsible for co-ordinating the Physio and OT services for inpatients, day cases and clinics that are delivered by Neurorehabilitation Medicine. Donna works with patients who present with multiple impairments due to either a major trauma or a neurological condition and focus on maximising independence and improving quality of life once medically stable. She has special focus on rehabilitation and community integration allowing patients to lead fulfilling lives.
Alison Cassidy	AHP Team Lead, Institute of Neurological Sciences	Alison Cassidy is a Physiotherapist with an extensive background and experience in a variety of rehabilitation settings. She has 20 years' experience working as the Clinical Lead Physiotherapist in Neurosurgery and represents Physiotherapy and Occupational therapy in all areas of Neurosciences within the AHP Team Lead role.
Debbie Clark – To November 2020	Lead Radiographer, Neuro-Imaging	Debbie Clark works as a manager with clinical elements. She is a Radiographer competent in CT, MRI, Intervention, Plain Film X-Ray and Theatre Imaging Debbie is responsible for the day to day operation of the imaging service to include absence management, rotas, payroll, recruitment, stock control, health & safety, infection control, student placements, patient pathways and some HR issues. She has a good knowledge of budgets and tender processes and recently was involved in the procurement of 3 image intensifiers for theatre imaging and 2 MRI scanners. Debbie has an excellent knowledge of radiation protection and departmental requirements for the Imaging department (patient, equipment and department layout).
Lynsay Creighton	Lead Nurse - OMFS, Neurosurgery, Critical Care and Theatres, INS	Lynsay Creighton joined the Institute of Neurological Sciences in August 1995 and became Lead Nurse for Surgical Services in January 2020. She has worked within all the neurosurgical areas in various ward nursing roles from junior nurse to the SCN role. Lynsay has also spent 2 years supporting Neurosurgery, OMFS and Critical Care in the role of Clinical Educator. Lynsay is currently working in a promoted post as Interim Associate Chief Nurse for Regional Services

Other Key Project Members		
Name	**Role**	**Demonstrable expertise**
Lisa Dorrian	Clinical Service Manager, Surgical Specialties, INS	Lisa Dorrian is the Clinical Service Manager for Surgical Specialties within Neurosciences and Oral Maxillofacial Surgery (OMFS) based at The Institute of Neurological Sciences. She is responsible for the day to day running of Neurosurgery, OMFS, Neuroanaesthesia, INS Theatres, Interventional Neuroradiology and Adult Cleft Surgery services. Working closely with the clinical and nursing teams to promote safe patient centred working practices within our clinical areas
Dr Teng Cheng Khoo	Consultant in Rehabilitation Medicine Lead Clinician for Neuro-rehabilitation, INS	Dr Teng Cheng Khoo is a Rehabilitation Medicine Physician. His primary focus is on optimising the functioning of people living with long-term neurological conditions, including those brain injuries, progressive neurological disorders and cerebral palsy, through a holistic person-centred approach. In addition to his Lead Clinician role within Neurorehabilitation at INS, Teng also works for the Douglas Grant Rehabilitation Centre on the Crosshouse University Hospital campus in NHS Ayrshire & Arran.
Dr Veronica Leach	Consultant Clinical Neurophysiologist Clinical Lead for Clinical Neurophysiology, INS Specialty Adviser to the Chief Medical Officer	Dr Veronica Leach leads the largest neurophysiology department in Scotland. The department offers a wide range of inpatient and outpatient neurophysiological tests and contributes to several National Services in both adult and paediatric sectors. She is also the Clinical Governance lead for the Institute of Neurological Sciences. Dr Leach also provides neurophysiological expertise to The William Quarrier Scottish Epilepsy Centre, a third sector partner organisation, and she is the national specialty advisor for Clinical Neurophysiology to the Chief Medical Officer of NHS Scotland.
Cathy Muir	Superintendent Radiographer for South West Sector Diagnostic Imaging in NHSGGC - covering QEUH, INS, RHC, GGH, WGACH and VACH.	Cathy Muir has responsibility for provision of funded Imaging services to support patient pathways and clinical management. She is responsible for workforce planning and equipment risk management, working closely with staff to support professional development. Cathy has senior management experience and lead the multidisciplinary team to plan the resources required for expansion of existing services and contributed to business cases for new service developments with a statutory requirement to oversee and demonstrate compliance with Ionising Radiation Regulations and Ionising Radiation Medical Exposure Regulations by way of regular equipment quality assurance programmes, evidence of staff competency and ongoing learning from patient and multidisciplinary staff feedback.

Other Key Project Members		
Name	**Role**	**Demonstrable expertise**
Pam Philp	Peri-operative Coordinator, INS Interim Lead Nurse, Surgical Specialties, INS	Pam Philp is a Senior Nurse within Neurosurgical and Maxillo-facial Theatres and Recovery, and she has over 25 years' experience in peri-operative nursing. As well as her clinical role as a scrub assistant, Pam is the operational manager and clinical lead for the operating department and its practitioner team. Pam has a lead role in the development of clinical guidance on the management of patients with suspected variant CJD and a personal research interest in the management of surgical instrumentation in Neurosurgery. Pam was co-author to a published article on the outcome of clinical research and presented at National Health Facilities Scotland Decontamination Seminar. She has experience of project development, working towards the new build Operating Theatre Department, Imaging Centre of Excellence, Queen Elizabeth University Hospital. Pam is currently acting as Interim Lead Nurse for Surgical Services in INS.
Jacqueline Pursey	Site Superintendent Radiographer QEUH and Institute of Neurological Sciences (INS) Glasgow.	Jacqueline Pursey is an experienced Radiographer with significant breadth of experience across a range of imaging modalities; this includes extensive Radiographic experience and strong knowledge base across MRI, CT, Intervention and Plain Film modalities. She held leadership roles in both MRI and intervention, contributing invaluable knowledge on the patient pathways and equipment requirements for these areas. Jacqueline has also been involved in the procurement of imaging equipment and has an understanding of the processes required to ensure a successful installation of imaging equipment taking into account patient needs and service requirements.
Dr Saif Razvi	Consultant Neurologist in Glasgow and Lead Clinician for the West of Scotland Regional Neurology Service.	Dr Saif Razvi has worked within Neurology in Glasgow since 2002, specialising in epilepsy and also provides acute on call and general neurology clinical care. His areas of interest are treatment resistant epilepsy, non-epileptic attack disorders and telemedicine. Dr Razvi has significant experience of service redesign and he helped develop telemedicine as well as the Attend Anywhere/Near Me virtual clinic platform in the West of Scotland. He has also led the introduction of ACRT and Patient Initiated Review in the Neurology service.

Table 3: Key advisors

Independent Client Advisors	
Project role	**Organisation & Named lead**
Project Director	Greater Glasgow and Clyde Health Board – Role to be appointed.
Healthcare Planner	KD Health - Craig Dixon & Scott McCallum
Feasibility Study Consultant Lead	Austin Smith Lord Architects – Graham Ross
Feasibility Study Cost Consultant	Thomson Grey – Ross Lovatt
Technical advisor:	Procurement planned Q3 2022
Legal advisor:	To Be Appointed.
Medical equipment advisor:	To Be Appointed.
Commissioning advisor:	To Be Appointed.
Other advisors:	Project Architect - To Be Appointed. MEP and ICT Consultants - To Be Appointed. Structural & Civil Engineers - To Be Appointed. Fire Consultants - To Be Appointed. Cost Consultants - To Be Appointed. Landscape Designers - To Be Appointed.

6.5.4 Project recruitment needs

The replacement of some or all the Institute of Neurological Sciences is a significant capital scheme with a high level of complexity.

There is a small, dedicated team outlined in section 6.5.3 who have been developing the Initial Agreement. To move to the next stage of the process, it is proposed that a larger dedicated team is established which reflects the workload required to develop an Outline Business Case and recognises the complexity required in developing options which maintain vital clinical adjacencies with other parts of the QEUH estate.

To allow work on the Outline Business case to begin, following approval of IA, the Board has agreed to increase the dedicated resource to start the OBC process. This will supplement the existing team with the following additional roles:

- Project Director
- Clinical Lead
- Infection Control (medical/nursing)
- Senior Capital Planning Project Manager
- Capital Planning Project Manager

- Programme Support Manager

As the OBC phase progresses further resources will be required, this will include:

- Nursing/ AHP Lead(s),
- Estates and FM Lead,
- E-Health Lead,
- Additional Planning Support

6.5.5 Project Program and key milestones

An initial program review has been carried out by GGC Capital Planning. During this review discussion took place with NHS Grampian, Lothian and Lanarkshire along with the projects Initial Agreement Construction Consultants. The program below is broken into 2 sections, the pre financial close program would be the same for options and a construction program for both new single facility and New / Refurbishment of facilities over multiple locations option. Following the appointment of the project Technical Advisors a detailed program review will be carried out.

OBC / FBC Program for both options

RIBA Stage 2 Completion	September 2023
RIBA Stage 3 Completion	April 2024
OBC Consideration\Approval	December 2024
RIBA Stage 4 Completion	April 2026
RIBA Stage 5 Completion	June 2027
FBC Consideration\Approval	November 2027
Financial Close	February 2028

All services immediately co-located in a single facility on the QEUH campus.

Completion Date	Q1 2031
Technical Commissioning Validation	Q3 2031
Transition & Equipping	Q1 2032
Services Commencement	Q2 2032

Services delivered over multiple locations and facilities on the QEUH campus.

Phased Completion, assuming 3 phases	Q1 2030 – Q1 2036
Technical Commissioning Validation	Q3 2030 – Q3 2036
Transition & Equipping	Q1 2031 – Q1 2037
Services Commencement	Q2 2031 – Q1 2037

6.5.6 Risk Management

The main project risks and mitigation factors are identified at a high level at the IA stage. The risk register will take account of Financial, Service, Operational, Business, Design and Construction risks. As the project develops through the OBC stage a more detailed and quantified risk register will be prepared. The main risks at this stage are highlighted in Appendix E. The Risk Register will continually be reviewed and discussed at the Project Board on a monthly basis.

6.5.7 Commissioning

6.5.7.1 Technical Commissioning

NHSGGC will appoint Commissioning Engineers who will be responsible for overseeing the final stages of the project including all training needs for the new building and final commissioning certificates. They will liaise with the Project Manager, Main Contractor and other specialist contractors, along with the Commissioning Group to ensure a smooth transition to the New Facility.

6.5.7.2 Non-Technical Commissioning

A Transition and Commissioning Group will be established during the construction stage with membership from the various stakeholders in the project including, amongst others, Clinical User representation, Non-Clinical User representation, IT, Telecoms, Estates, Procurement, Facilities Management, Estates and input from Infection Control. The Group will be led by a specialist Commissioning Team.

The group will also be responsible for the development of a migration programme for the service move to the new facility and co-ordination of all the service teams to achieve the migration timescale, in line with the contract programme.

6.5.8 Post Project Evaluation

Post Project Evaluation will be undertaken in line with the SCIM guidelines to determine the project's success and identify lessons to be learnt.

In more detail there will be an evaluation during the Construction Phase in the form of monitoring the project with regards to time, cost, the procurement process contractor's performance, and any initial lessons learnt.

Six to twelve months after commissioning of the facility a more wide-ranging evaluation (Stage 3) will take place. This will assess, amongst other factors: how well the project objectives were achieved; was the project completed on time, within budget and according to specification; whether the project delivered value for money; how satisfied patients, staff and other stakeholders are with the project results and the lessons learnt about the way the project was developed, organised, and implemented. The Post Project Report will also provide information on key performance indicators.

A key focus will be sharing the information gathered so that the lessons to be learned is made available to others.

Longer term outcomes (Stage 4) will be evaluated 2 to 5 years post migration to the new facility as by this stage the full effects of the project will have materialised. The evaluation will be undertaken by the in-house Post Project Evaluation team and both quantitative and qualitative data will be collected during stages 3 and 4 evaluations through the use of questionnaires and workshops.

NHS GGC has been engaged with Scottish Futures Trust to review potential improvements to Project Evaluation. The Board's Capital Planning team have provided input alongside information on current practice and previous reports. Any new guidance or approaches that arise from this study can be easily applied to this project to help pilot its application.

6.5.9 Building Design and Construction Quality

There has been a considerable increased focus on quality in recent years following upon high-profile issues in publicly procured facilities across the country.

This project represents a significant public investment in specialist acute medical facilities. It is therefore critical that the investment is secured in a facility that truly represents best quality alongside value for money. As outlined in the earlier parts of this document, the proposal brings together services from five different facilities on the campus. It is therefore clear that a failure to deliver quality on this project would have significant effect on the population.

Considerable focus will be placed on quality throughout the development of the project and will be embedded in the project management plans, and more importantly, has been implemented in all activities to date. Quality is not achieved simply by improving site inspections. It needs to be embedded in a project from its inception. The key actions taken to date to ensure quality are:

- Appropriately experienced and resourced client team.
- Clear governance structure.
- High quality briefing documentation.
- Realistic budget and programme.
- Quality-led design team selection.
- Design Team appointment with enhanced independent reporting requirements.
- Quality-led Tier 1 contractor selection with clear requirements for independent design team reporting.
- Comprehensive stakeholder engagement through site selection and design development process.

- Open and honest culture about quality throughout the development process.

Scottish Futures Trust is currently running a Construction Quality initiative promoting the benefits and potential approaches to improving quality and NHS GGG were engaged in this process with the recent hub bundle at Stobhill/Greenock/Clydebank forming one of the case studies under review. The learning from this process will be carried forward into this project. Any further recommendations that arise from this will be implemented and detailed in the Outline Business Case.

6.5.10 Soft Landings

Soft Landings is a key element of the design and construction process maintaining the “golden thread” of the building purpose through to delivery and operation, with early engagement of the end users and inclusion of a Soft Landings champion on the project team, and commitment to aftercare post construction.

The project will follow the Soft Landings process set out the NHS Scotland Soft Landings Guidance document.

Key activities to be carried during the OBC stage will be:

- appointing a Soft Landings Champion (within 1 month of IA approval)
- adoption of an approach that addresses the outcomes required and how targets will be set, delivered and measured
- using BIM and associated digital simulation techniques to assess the early design
- agreeing key performance indicators and targets for the design and completed building to be measured against.
- undertaking detailed engineering assessment of previously completed buildings of this type to ensure systems and processes are optimised
- early engagement with NHS estates and compliance teams to ensure lessons from operational buildings are included
- embedding soft landings into the tender process
- creation of a Post Project Evaluation Plan which will be iteratively updated throughout the project
- establishing when SL Gateway Review meetings are required
- undertaking a soft landings kick-off meeting.

6.6 Readiness to proceed

Checklist	Response
Is the reason made clear why this proposal needs to be done now?	Sections: 3.1.9 Condition of current facilities 4.1 What is the need for change? 4.1.5 Summarising the Need for Change
Is there a good strategic fit between this proposal, NHSScotland's Strategic Priorities, national policies and the organisation's own strategies?	Sections: 3.1.1 National strategic context 3.1.2 Local context 3.1.3 Strategic Infrastructure Strategy
Have the main stakeholders been identified and are they supportive of the proposal?	Sections: 3.1.5 Service details 3.1.6 Populations Covered 5.2.2 Specific redesign to support the development of this Initial Agreement 5.3 Engagement with Stakeholders 6.5.1 Summary of Governance support for the proposal
Is it made clear what constitutes a successful outcome?	Sections: 4.2 What is the organisation seeking to achieve? 4.3.1 What benefits are to be gained from this proposal? 5.5.1 Benefits for scoring 5.6 Design Quality Objectives
Are realistic plans available for achieving and evaluating the desired outcomes and expected benefits to be gained, including how they are to be monitored?	Sections: 4.3 What are the benefits and risks to success? 6.5 The Management Case
Have the main project risks been identified, including appropriate actions taken for mitigating against them?	Sections: 4.3 What are the benefits and risks to success? 5.1 The Do Nothing / Minimum option
Does the project delivery team have the right skills, leadership and capability to achieve success?	Sections: 6.5 The Management Case
Are appropriate management controls explained?	Sections: 6.5 The Management Case
Has provision for the financial and other resources required been explained?	Sections: 6.1 The Commercial Case 6.2 The Financial Case 6.3 Indicative costs 6.4 Capital and Revenue Constraints 6.5 The Management Case

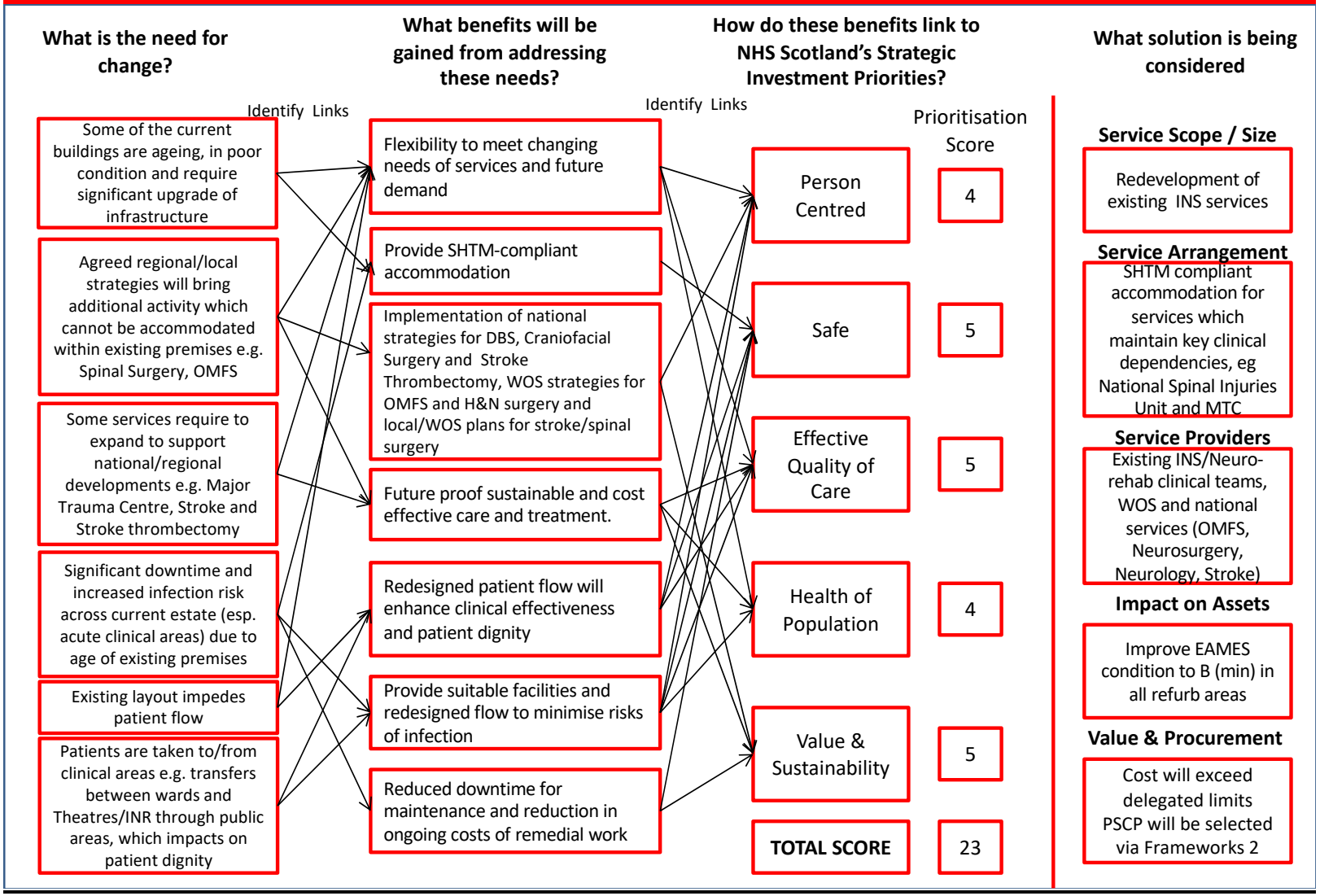
7. Is this proposal still a priority?

	Question	Response
Conclusion	Is this proposal still important?	Confirm: • Strategic Assessment template

This final section shall confirm or update the investment priority scores for the proposal, updated where necessary in light of the evidence base developed as part of this Initial Agreement. An updated Strategic Assessment should therefore be produced where changes are needed, accompanied with details of reasons behind any changes. This will confirm that the proposal remains a priority for the NHS Board and Scottish Government.

PROJECT: INS Transformation of Specialist WOS Services

What are the Current Arrangements: The Institute of Neurological Sciences provides elective and non-elective regional and national Neurosciences, OMFS, Spinal Injuries and Neurorehabilitation services.



Appendix A
Glossary of Terms and Abbreviations

Abbreviation	Description
A&A	NHS Ayrshire and Arran
A&B	Argyll and Bute Health & Social Care Partnership
A&DS	Architecture & Design Scotland
ACRT	Active Clinical Referral Triage
AEDET	Achieving Excellence Design Evaluation Toolkit
AGP	Aerosol Generating Procedure
BCIS	Building Cost Information Service
BMI	Body Mass Index
BMS	Building Management System
BREEAM	Building Research Established Environmental Assessment Method
CAR-T	Chimeric Antigen Receptor T-cell
CCU	Critical Care Unit
CT	Computerised Tomography
D&G	NHS Dumfries and Galloway
DBS	Deep Brain Stimulation Service
EAMS	Estate Asset Management System
ENT	Ear, Nose & Throat
EQIA	Equality Impact Assessment
FBC	Full Business Case
FV	NHS Forth Valley
GBS	Guillaine-Barre Syndrome
GGC	NHS Greater Glasgow and Clyde
GJNH	Golden Jubilee National Hospital
GRI	Glasgow Royal Infirmary
HAI	Healthcare Associated Infection
HDU	High Dependency Unit, also known as Level 2 Critical Care
HEI	Healthcare Environment Inspectorate
HFS	Health Facilities Scotland
HIS	Healthcare Improvement Scotland
ICE	Imaging Centre of Excellence
INR	Interventional Neuroradiology
INS	Institute of Neurological Sciences
ITU	Intensive Therapy Unit, also known as Level 3 Critical Care
KPI	Key Performance Indicator
Lan	NHS Lanarkshire
M&E	Mechanical & Electrical

Abbreviation	Description
MDT	Multidisciplinary Team
MFT	Moving Forward Together
MG	Myasthenia Gravis
MHRA	Medicines and Healthcare Products Regulatory Agency
MS	Multiple Sclerosis
MTC	Major Trauma Centre
NDAP	NHSScotland Design Assessment Process
NHSGGC	NHS Greater Glasgow and Clyde
OBC	Outline Business Case
OMFS	Oral and Maxillofacial Surgery
OOH	Out of Hours
OPD	Outpatient Department
PAMS	Property & Asset Management System
PDRU	Physically Disabled Rehabilitation Unit
PET	Positron Emission Tomography
PFI	Private Finance Initiative
PSCP	Principal Supply Chain Partner
QEUH	Queen Elizabeth University Hospital
RHC	Royal Hospital for Children
QENSIU	Queen Elizabeth National Spinal Injuries Unit
SAS	Scottish Ambulance Service
SCIM	Scottish Capital Investment Manual
SDAU	Same Day Admissions Unit
SEPA	Scottish Environment Protection Agency
SGHDCIG	Scottish Health Directorate Capital Investment Group
SHTM	Scottish Health Technical Memorandum
SIMD	Scottish Index of Multiple Deprivation
SLA	Service Level Agreement
SNBTS	Scottish National Blood Transfusion Service
WI	NHS Western Isles
WTE	Whole Time Equivalent(s)
XBF	Cross-boundary flow

Appendix B
National Guidance used by Healthcare Planners

Inpatient Facilities

- SHPN 04 Inpatient Accommodation: options for choice (May 2000)
- SHPN 04-01 Adult Inpatient Facilities (December 2009)
- SHPN 04 Supplement 1 - Inpatient Accommodation: Option for Choice Supplement 1 Isolation facilities in acute settings (2008)
- Single Room Provision Steering Group Report (October 2008)
- Scottish COVID-19 Infection and Control Addendum for Acute Settings
- Design Note: COVID 19 Ward for intubated patients (2020)
- SHPN 12 Outpatients department (1992)
- HBN 12 Outpatients Department (2004)
- HBN 14-01 Medicines management – Pharmacy and Radiopharmacy Facilities (2014) Status NHS Scotland - Best Practice Guidance
- SHPN 06 Part 1: Facilities for diagnostic imaging and interventional radiology (2004)
- HBN 06 Vol 2 Diagnostic imaging PACS and specialist imaging (2002)
- HBN 06 Vol 3 Extremity and open MRI, magnetic shielding and construction for radiation protection (2003)
- HBN 15 Facilities for Pathology Services (2005) Status NHS Scotland - Best Practice Guidance

Estates and FM Including Catering

- SHPN 34 Estates Maintenance and Works Operations (1992)
- HBN 10 Catering Department (1997)
- HBN 25 Laundry (1994)

Health Records Department

- SHPN 47 Health Records Department (1995)

Inpatient Therapy Services

- SHPN 8 Facilities for Rehabilitation Services (January 2002)
- Scottish COVID-19 Infection and Control Addendum for Acute Settings
- Design Note: COVID 19 Ward for intubated patients (2020)
- Review of Neurosurgical Services in Scotland (May 2000)

Main Entrance and Family Accommodation

- HBN 00-01 General design guidance of healthcare buildings (March 2014). Status in NHS Scotland – Best practice guidance.
- HBN 00-02 Sanatory spaces (October 2014). Status in NHS Scotland – Best practice guidance.

- HBN 00-04 circulation communication spaces (October 2014). Status in NHS Scotland – Best practice guidance.

Medical Physics

- HBN 34 “Estate maintenance and Works Operations” Section 5.
- The live testing area must comply with guidance notes set out by SCOTTISH HEALTH GUIDANCE NOTE: “Servicing and repair of medical electrical equipment safety during hazardous live testing” September 2004. See also HBN 34.
- Safety in electrical testing at work - General guidance Leaflet INDG354 HSE Books 2002 ISBN 0 7176 2296 7
- BS EN 50191:2001 Erection and operation of electrical test equipment
- BS 7671: Requirements for electrical installations. IEE Wiring Regulations,
- BS 921:1976 Specification. Rubber mats for electrical purposes.
- BS EN 61558-2-4:1998 Safety of power transformers, power supply units and similar. Particular requirements for isolating transformers for general use.
- BS EN 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory

Neurophysiology Department

- SHPN 12 Outpatients department (1992)
- SHPN 8 Facilities for Rehabilitation Services (January 2002)
- Scottish COVID-19 Infection and Control Addendum for Acute Settings
- NHS Quality Improvement Scotland – Clinical standards – October 2009 Neurological Health Services

Neuroradiology

- SHPN 06 Part 1: Facilities for diagnostic imaging and interventional radiology (2004)
- HBN 06 Vol 2 Diagnostic imaging PACS and specialist imaging (2002)
- HBN 06 Vol 3 Extremity and open MRI, magnetic shielding and construction for radiation protection (2003)
- Scottish COVID-19 Infection and Control Addendum for Acute Settings

Neurorehabilitation day facilities and Neurology Short Stay and Day unit

- SHPN 8 Facilities for Rehabilitation Services (January 2002)
- SHPN 52 Accommodation for day care Part 3 Medical Investigations and Treatment Unit (2002)
- SHPN 12 Outpatients department (1992)
- Scottish COVID-19 Infection and Control Addendum for Acute Settings

Oral Maxillofacial Laboratory and Prosthetic Service

- SHPN 12 Outpatients department (1992)
- HBN 12 Supplement 2 Oral Surgery, Orthodontics Restorative Dentistry (1992)
- SHPN 8 Facilities for Rehabilitation Services (January 2002)
- Scottish COVID-19 Infection and Control Addendum for Acute Settings

Outpatients

- SHPN 12 Outpatients department (1992)
- HBN 12 Outpatients Department (2004)
- HBN 12 Supplement 3 ENT and Audiology Clinics, Hearing Aid Centre (1994)
- HBN 12 Supplement 2 Oral Surgery, Orthodontics Restorative Dentistry (1992)
- HBN 12 Supplement 4 Ophthalmology (1996)
- SHPN 8 Facilities for Rehabilitation Services (January 2002)
- Scottish COVID-19 Infection and Control Addendum for Acute Settings

Pharmacy

- HBN 14-01 Medicines management – Pharmacy and Radiopharmacy Facilities (2014) Status NHS Scotland - Best Practice Guidance

Surgical Day Case and Same Day Admission Unit

- HBN 26 Volume 1 Facilities for Surgical procedures (2014) NHS Scotland Status -Best Practice Guidance
- SHPN 52 Accommodation for day care Part 1 Day surgery unit (2002)
- SHPN 06 Part 1: Facilities for diagnostic imaging and interventional radiology (2004)
- Scottish COVID-19 Infection and Control Addendum for Acute Settings

Theatres and Interventional Neuroradiology Department

- HBN 26 Volume 1 Facilities for Surgical procedures (2014) NHS Scotland Status -Best Practice Guidance
- SHPN 52 Accommodation for day care Part 1 Day surgery unit (2002)
- SHPN 06 Part 1: Facilities for diagnostic imaging and interventional radiology (2004)
- HBN 06 Vol 2 Diagnostic imaging PACS and specialist imaging (2002) NHS Scotland Status -Best Practice Guidance
- HBN 06 Vol 3 Extremity and open MRI, magnetic shielding and construction for radiation protection (2003)
- Scottish COVID-19 Infection and Control Addendum for Acute Settings

Education, Training and Meeting Central Administration and Offices Staff Change and Rest, On-call Accommodation

- HBN 00-03 Core elements: clinical and clinical support spaces (October 2014) Status in NHS Scotland Best Practice Guidance
- HBN 00-01 Core elements: General design guidance for healthcare buildings (October 2014) Status in NHS Scotland Best Practice Guidance
- HBN 42 Accommodation for Education and Training

Appendix C
Stakeholders involved in NDAP process

This is a full list of stakeholders who have been involved in one or more of the statutory workshops held to inform this Initial Agreement.

Patient, Third Sector and external representatives	
Named Person:	**Role:**
Laura Brock	Member of Neurology Voices, Patient/Carer Representative Group (Neurology and Neurosurgery)
David Mulligan	On behalf of the Neurological Alliance of Scotland
Karen Parker	Member of Neurology Voices, Patient/Carer Representative Group (Neurology, Neurosurgery and INR)
Dr Anke Roexe	Senior Programme Manager, NHS National Services Scotland
Caroline Sincock	Chair of Neurology Voices, Patient/Carer Representative Group (Neurology and Neurorehabilitation)

Clinical/Non Clinical Service representatives	
Named Person:	**Role:**
Marie Austin	Lead Nurse, Medical Specialties, INS (Neurology, Neurorehabilitation, Spinal Injuries and Outpatients)
Donna Bisland	Allied Health Professional Team Lead, Neurorehabilitation
Craig Broadfoot	General Manager, Neurosciences, Oral and Maxillofacial Surgery, Neurorehabilitation and Spinal Injuries
Sam Carmichael	Lead Pharmacist, Clinical Trials/R&D, R&D Pharmacy
Alison Cassidy	Allied Health Professional Team Lead, Neurosciences and OMFS
Graham Christie	Clinical Services Manager, Medical Specialties, INS (to June 2021)
Chloe Cowan	Senior Research & Innovation Manager, Research and Innovation
Lynsey Creighton	Lead Nurse, Surgical Specialties, INS (Neurosurgery, Oral Maxillofacial Surgery, Interventional Neuro Radiology, Theatres and Critical Care)
Alison Cronie	Clinical Neurophysiology Manager
Gordon Crossan	Deputy Health Records Manager, South Sector
Dr Bryan Dawson	Interim Clinical Lead/Lead Clinician, Neuroanaesthesia

Clinical/Non Clinical Service representatives	
Named Person:	**Role:**
Mr Mark Devlin	Clinical Director, Surgical Services, INS/Consultant Cleft/Maxillofacial Surgeon
Lisa Dorrian	Clinical Services Manager, Surgical Services, INS
Karen Duffy	Lead Nurse, Glasgow Clinical Research Facility
David Furniss	Chief AHP, Regional Services
Eilidh Gallagher	Interim Clinical Services Manager, Medical Services, INS (from July 2021)
Stuart Gaw	General Manager, Stroke, South Sector
Tracey Hopkins	Lead Research Radiographer, Research Imaging
Sharon Johnstone	Assistant Head of Facilities Management, South Sector
Elaine Kennedy	Senior Charge Nurse, Outpatient Department, INS
Dr Cheng Teng Khoo	Lead Clinician, Neurorehabilitation Medicine
Dr Veronica Leach	Lead Clinician, Neurophysiology
Miss Patricia Littlechild	Lead Clinician, Neurosurgery (to May 2021)
Jennifer Materne	Estates Manager, South Sector
Laura McConnell	Senior Charge Nurse, Neurosurgery
Dr Alan McLean	Lead Clinician, Spinal Injuries (to May 2021)
Cathy Muir	Sector Superintendent Radiographer, Diagnostics, South Sector
Professor Keith Muir	Clinical Director, Stroke, South Sector
Lesley Murray	Advanced Clinical Pharmacist, Neurosciences
Gerry O'Hara	Sector Manager, Medical Physics, Diagnostics
Dr Colin O'Leary	Clinical Director, Medical Specialties, INS/Consultant Neurologist
Michael O'Neil	Principal Maxillofacial Prosthetist (to September 2021)
Pam Philp	Perioperative Department Co-ordinator, INS Theatres
Dr Mariel Purcell	Lead Clinician, Spinal Injuries (from June 2021)
Jacqueline Pursey	Deputy Site Superintendent Radiographer, Diagnostics, South Sector

Clinical/Non Clinical Service representatives	
Named Person:	**Role:**
Dr Saif Razvi	Lead Clinician, Neurology
Mr Craig Wales	Lead Clinician, Oral and Maxillofacial Surgery

NHSGGC Project Stakeholders	
Named Person:	**Role:**
Andrew Baillie	Assistant Head of Capital Planning
David Daly	Infrastructure Development Consultant, Strategy & Programmes
Frank Deacon	Fire Officer, Facilities
John Donnelly	Head of Capital Planning
Nicholas Elliott	Asbestos Manager, Facilities
Alan Gallacher	Head of Corporate Estates, Compliance
John Green	Health & Safety Service Manager, H&S Service
Martin Johnston	Sustainability Manager, Property Procurement & Facilities
Allan Lamb	Energy Manager, Facilities
Lorna Loudon	Interim Chief Nurse, Regional Services
Gordon Love	Head of Property and Asset Management, Property & Capital Planning
Dennis Phillips	Telecoms & Network Specialist, Telecoms
Lynn Pritchard	Lead Infection Control Nurse, Infection Prevention & Control
Mark Riddell	Head of Estates Operations, Estates
Euan Smith	Sector Estates Manager, South Sector
Dr Pepi Valyraki	Infection Prevention & Control Doctor (to July 2021)

Appendix D
Achieving Excellence Through Evaluation Design – AEDET

Benchmark | **NHS GG&C - Institute of Neurological Sciences, QEUH**

Functionality

Use

		Weight	Score	Notes
A.01	The prime functional requirements of the brief are satisfied	2	2	YES
A.02	The design facilitates the care model	2	2	YES
A.03	Overall the design is capable of handling the projected throughput	1	1	YES
A.04	Work flows and logistics are arranged optimally	1	1	YES
A.05	The design is sufficiently flexible to respond to clinical /service change and to enable expansion	2	1	YES
A.06	Where possible spaces are standardised and flexible in use patterns	1	1	YES
A.07	The design facilitates both security and supervision	1	2	YES
A.08	The design facilitates health promotion and equality for staff, patients and local community	2	1	YES
A.09	The design is sufficiently adaptatable to external changes e.g. Climate, Technology	1	1	YES
A.10	The benchmarks in the Design Statement in relation to building USE are met	1	0	NO

Access

		Weight	Score	Notes
B.01	There is good access from available public transport including any on- site roads	1	1	YES
B.02	There is adequate parking for visitors/ staff cars/ disabled people	2	1	YES
B.03	The approach and access for ambulances is appropriately provided	1	1	YES
B.04	Service vehicle circulation is well considered and does not inappropriately impact on users and staff	1	2	YES
B.05	Pedestrian access is obvious, pleasant and suitable for wheelchair/ disabled/ impaired sight patients	2	1	YES
B.06	Outdoor spaces wherever appropriate are usable, with safe lighting indicating paths, ramps, steps etc.	2	1	YES
B.07	Active travel is encouraged and connections to local green routes and spaces enhanced	1	1	YES
B.08	Car parking and drop-off should not visually dominate entrances or green routes	1	1	YES
B.09	The benchmarks in the Design Statement in relation to building ACCESS are met	1	0	NO

Space

		Weight	Score	Notes
C.01	The design achieves appropriate space standards	2	1	YES
C.02	The ratio of usable space to total area is good	1	1	NO
C.03	The circulation distances travelled by staff, patients and visitors is minimised by the layout	2	1	YES
C.04	Any necessary isolation and segregation of spaces is achieved	2	1	YES
C.05	The design maximises opportunities for space to encourage informal social interaction & wellbeing	2	1	YES
C.06	There is adequate storage space	1	1	YES
C.07	The grounds provided spaces for informal/ formal therapeutic health activities	1	1	YES
C.08	The relationships between internal spaces and the outdoor environment work well	1	1	YES
C.09	The benchmarks in the Design Statement in relation to building SPACE are met	1		

Build Quality

Performance

		Weight	Score	Notes	
D.01	The building and grounds are easy to operate	1	1	YES	G.01
D.02	The building and grounds are easy to clean and maintain	2	2	YES	G.02
D.03	The building and grounds have appropriately durable finishes and components	1	1	YES	G.03
D.04	The building and grounds will weather and age well	2	1	YES	G.04
D.05	Access to daylight, views of nature and outdoor space are robustly detailed	1	1	YES	G.05
D.06	The design maximises the opportunities for sustainability e.g. waste reduction and biodiversity	1	1	YES	G.06
D.07	The design minimises maintenance and simplifies this where it will be required	2	1	YES	G.07
D.08	The benchmarks in the Design Statement in relation to PERFORMANCE are met	1		NO	G.08

Engineering

		Weight	Score	Notes	
E.01	The engineering systems are well designed, flexible and efficient in use	2	1	YES	H.01
E.02	The engineering systems exploit any benefits from standardisation and prefabrication where relevant	1	1	YES	H.02
E.03	The engineering systems are energy efficient	2	1	YES	H.03
E.04	There are emergency backup systems that are designed to minimise disruption	2	1	YES	H.04
E.05	During construction disruption to essential services is minimised	1	1	YES	H.05
E.06	During maintenance disruption to essential healthcare services is minimised	1	1	YES	H.06
E.07	The design layout contributes to efficient zoning and energy use reduction	1	1	YES	H.07

Construction

		Weight	Score	Notes	
F.01	If phased planning and construction are necessary the various stages are well organised	1	3	YES	I.01
F.02	Temporary construction work is minimised	1	2	YES	I.02
F.03	The impact of the building process on continuing healthcare provision is minimised	2	1	YES	I.03
F.04	The building and grounds can be readily maintained	1	1	YES	I.04
F.05	The construction is robust	2	1	YES	I.05
F.06	Construction allows easy access to engineering systems for maintenance, replacement & expansion	2	1	YES	I.06
F.07	The construction exploits opportunities from standardisation and prefabrication where relevant	1	1	YES	I.07
F.08	The construction maximises the opportunities for sustainability e.g. waste and traffic reduction	1	1	YES	I.08
F.09	The construction contributes to being a good neighbour	1	2	YES	I.09
F.10	Infection control risks for options, design and construction recorded/ minimised using HAI Scribe	1	5	YES	I.10

Character and Innovation	Weight	Score	Notes
There are clear ideas behind the design of the building and grounds	2	1	YES
The building and grounds are interesting to look at and move around in	1	1	YES
The building, grounds and arts design contribute to the local setting	1	1	YES
The design appropriately expresses the values of the NHS	1	1	YES
The project is likely to influence future designs	1	2	YES
The design provides a clear strategy for future adaptation and expansion	2	1	YES
The building, grounds and arts design contribute to well being and a sustainable therapeutic strategy	2	1	YES
The benchmarks in the Design Statement in relation to CHARACTER & INNOVATION are met	1		NO

Form and Materials	Weight	Score	Notes
The design has a human scale and feels welcoming	2	1	YES
The design contributes to local microclimate, maximising sunlight and shelter from prevailing winds	1	1	YES
Entrances are obvious and logical in relation to likely points of arrival on site	2	1	YES
The external materials and detailing appear to be of high quality and are maintainable	2	1	YES
The external colours and textures seem appropriate and attractive for the local setting	1	1	YES
The design maximises the site opportunities and enhances a sense of place	2	1	YES
The benchmarks in the Design Statement in relation to FORM & MATERIALS are met	1		NO

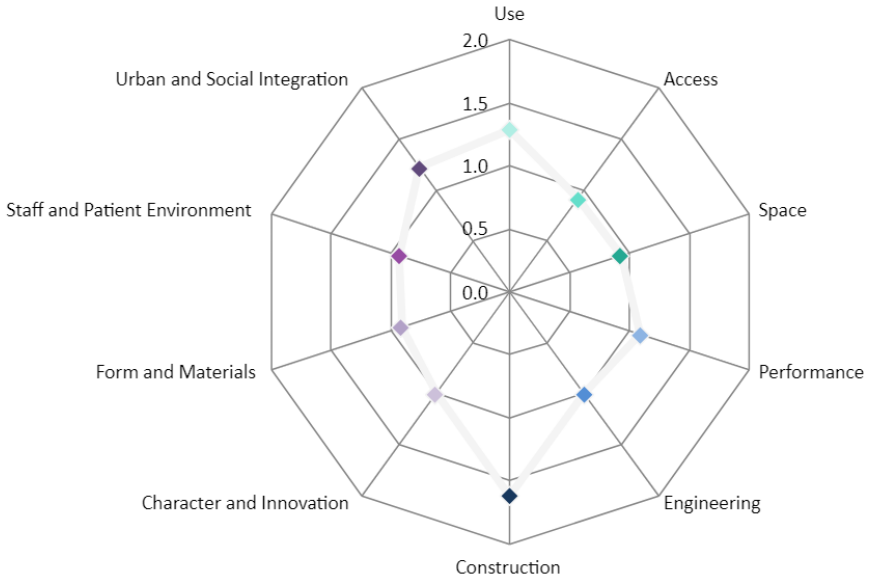
Staff and Patient Environment	Weight	Score	Notes
The design reflects the dignity of patients and allows for appropriate levels of privacy	2	1	YES
The design maximises the opportunities for daylight/ views of green natural landscape or elements	1	1	YES
The design maximises the opportunities for access to usable outdoor space	1	1	YES
There are high levels of both comfort and control of comfort	1	1	YES
The design is clearly understandable and wayfinding is intuitive	2	1	YES
The interior of the building is attractive in appearance	1	1	YES
There are good bath/ toilet and other facilities for patients	2	1	YES
There are good facilities for staff with convenient places to work and relax without being on demand	2	1	YES
There are good opportunities for staff, patients, visitors to use outdoors to recuperate/ relax	1	1	YES
The benchmarks in the Design Statement in relation to STAFF & PATIENT ENVIRONMENTare met	1	0	NO

Urban and Social Integration	Weight	Score	Notes
The height, volume and skyline of the building relate well to the surrounding environment	2	2	YES
The facility contributes positively to its locality	1	2	YES
The hard and soft landscape contribute positively to the locality	2	1	YES
The overall design contributes positively to neighbourhood and is sensitive to passers-by	1	1	YES
There is a clear vision behind the design, its setting and outdoor spaces	2	1	YES
The benchmarks in the Design Statement in relation to INTEGRATION are met	1		NO

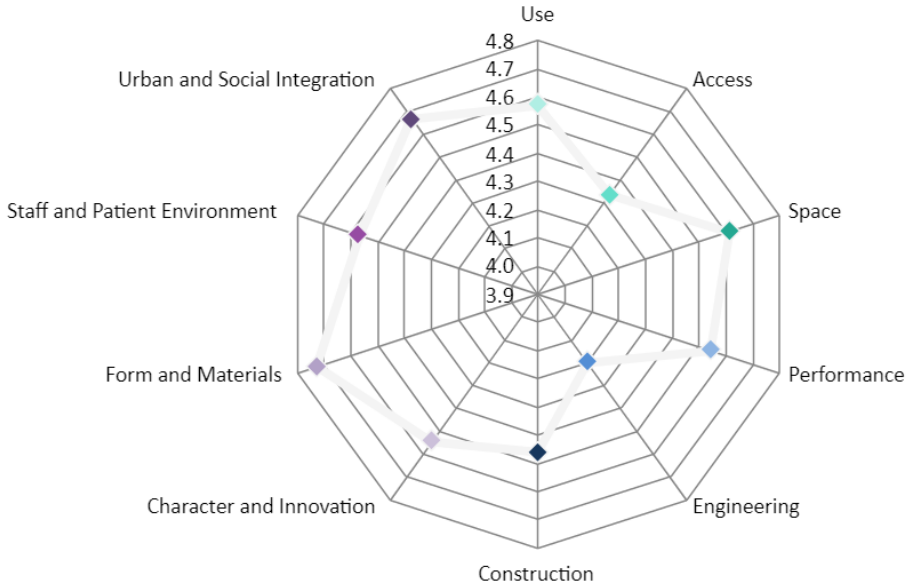
Ref	Note
A.01	Building age impact causes service failures e.g. drainage. Rolling programme of ward updates to meet min requirements causes disruption/service reduction.
A.02	Significant distance between/in buildings for disabled/neuro compromised patients.Flow illogical,building works against staff/patient care models.
A.03	Limited space for managing patients & equipment. Services have outgrown the building which limits new services. Building restricts capacity & service growth
A.04	Gowned patients transferred through public corridors. Distances for patients transferring for tests. Departments/services are split between floors/buildings.
A.05	Spaces are managed with difficulty. No room for flex. Services restricted due to lack of space. Limited space eliminates ability to to adapt existing services.
A.06	Spaces are standard where possible, critical adjacencies are difficult to manage due to space restrictions. Very limited flexibility.
A.07	Too many entrances/exits causes confusion & security risks. Entrances not defined. Need defined emergency and public access. Directions complex within site.
A.08	Limited green spaces. Limited support facilties for patients/visitors. Lack of break areas/changing facilities/toilets for staff.
A.09	Heating & ventilation @ end of life. Services added adhoc over time, building limits technology/future proofing. Limitations on equipment weight/loading issues.
A.10	Not relevant
B.01	Insufficient parking near INS, poor access for disabled parking. Buses and public transport too far away from building, particularly for disabled patients.
B.02	Patient/visitor parking insufficient, access to building poor in particular the surgical building. Area becomes wind tunnel, difficult for reduced mobility patients.
B.03	Ambulance access can be restricted due to parked cars.
B.04	Service vehicles are loud and distracting at rear of INS building. PDRU has no separate service access and service vehicles park across entrance.
B.05	No dropped kerbs, cluttered walkways. Routes from car park like wind tunnel. Too many entrances, confusing inside and outside of building.
B.06	Poor signage and lighting. Difficult to navigate at night and from one service to another internally and if leaving the building to change department externally.
B.07	Active travel is difficult, kerbs, wind tunnel etc. No trees or shrubbery on any route. No green space across INS with exception of Spinal Unit.
B.08	There is inadequate disabled parking and this can cause issues at drop off points. Cars parked or stopping at entrances as allocated parking distances too great.
B.09	Not relevant
C.01	Newer builds of ICE Theatres/Neurophysiology meet space standards. All other areas below SHTM standards.
C.02	
C.03	Patients have to travel excessive distances/between floors to attend clinical services. Staff have vast distances to cover between services throughout the building.
C.04	Limited isolation/single room facililty. No flexibility to create these spaces due to limitations of existing building.
C.05	Limited provision of social space, e.g. small waiting rooms in outpatients. No capaacity within current structure to improve/create more suitable accommodation.
C.06	All available storage space is utilised, no capacity to create more. Supplies stored in patient areas. Doesn't meet SHTM standards.
C.07	PDRU currenlty developing small garden for patient therapy. Spinal has small garden. There are no other theraputic green spaces.
C.08	There is poor or no access to outside space from clinical areas. Confusing lay out in general difficult to navigate.
C.09	Not relevant
D.01	Service delivery managed in building at end of life causing maintenance & operational issues. Areas being refurbished but material upgrade required.
D.02	Cleaning is managed to required standard, age of building requires enhanced cleaning in all areas. During refurb programme additional cleaning required.
D.03	Materials are no longer durable due to age of building, ongoing drainage issues cause cleaning and service disruption.
D.04	Mix of buildings, INS reclad, not aging well. Mismatching exterior fabrics. Facias and soffits need attention in PDRU. Can't access junctions and draining easily.
D.05	Some areas have restricted daylight due to other buildings. Some areas receive too much daylight, Limited access to outdoor areas across 6 buildings.
D.06	Ageing systems, lack of local control.
D.07	No auto buttons for doorways. Patients/Staff have to manually open causing damage from trolleys/chairs. Equip difficult to maneouver also causing damage.
D.08	Not relelvant
E.01	Equipment obsolete, bolt on solutions to make compliant. Temperature control issues. Number of essential functions no longer meet minimum standard.
E.02	Systems require patch work maintenance to keep them working and are becoming/are obsolete with difficulty procuring fixes and updates.
E.03	Working with old kit. Sensors no longer compliant with new systems requiring workaround and bolt on solutions. Additional expense and short term resolutions.
E.04	Systems e.g. Nurse call systems no longer compatible requiring patch work repair. High incidence of failure. Repair downtime impacts patient access/wait times.
E.05	Req. for multiple refurbs cause disruption to patients, services, day admissions. Capacity becomes more limited. Increased workloads & confusing pathways.
E.06	Staff work with Facilities continuously to allow work to be carried out but does cause disruption and affect capacity and efficiency.
E.07	Only system that works on a zoning system is fire alarms.
F.01	Ward upgrades and some services planned, reacting to HEI reports and funding. These upgrades are well managed and planned.
F.02	Some works more complex due to age of building and requirement to phase upgrades increases overall programme duration.
F.03	Staff work with Facilities/Planning continuously to allow work to be carried out but does cause disruption and affect capacity and efficiency.
F.04	Age of building makes it more difficult to maintain, managing/procuring materials and operating with aging systems.
F.05	Building is solid but it is not robust or fit for purpose as demonstrated in other comments.
F.06	There is no ability to expand. Systems and infrastructure are often obsolete making difficult to maintain.
F.07	There is no flexibility or capacity to create additional space within confines of building. Aging/Obsolete materials. Layout makes standardisation difficult.
F.08	Building at end of life no longer sustainable, does not offer opportunity to maximise waste segregation.
F.09	Can cause parking issues for other areas on site and outwith site. Service vehicles use up spaces adjacent to main hospital.
F.10	HAI process in place and robust.
G.01	No clear design due to additions throughout life span of building.
G.02	Building is not interesting and is confusing internally, previous comments confirm.
G.03	No design considerations.
G.04	Newly clad to update in keeping with QEUH not in keeping with other INS buildings or NHS Values

	G.05	Does not support modern ways of working, not innovative, 70's design build however adjacencies created are good examples.
	G.06	There is no ability to expand and design opportunities are limited due to footprint of current buildings.
	G.07	Building does not contribute to well being or theraputic strategies.
	G.08	Not relevant
	H.01	Recently refurbished atrium meets criteria, no other parts of the buildings do.
	H.02	Wind tunnel walking to the building due to adjacent buildings. Only a few pleasant views from wards, not welcoming and confusing layout.
	H.03	Too many entrances and exits, confusing and not always obvious.
	H.04	New cladding already failing, Difficult to maintain due to age of building and infrastructure
	H.05	Grey screen cladding added to compliment the QEUH. Doesn't serve or promote INS. Difficuly to maintain outside of building and clean windows.
	H.06	Building is at end of life and doesn't offer opportunities for expansion to meet modern services.
	H.07	Not relelvant
	I.01	Poor segregation of patient and public routes. Pre and Post procedure gowned patients transferred in direct view of staff/visitors in public corridors.
	I.02	Natural/green landscape views are very limited as there are only a few green spaces, restricted daylight due to surrounding buildings.
	I.03	Limited access to outdoor space, access can be difficult and confusing, not well sign posted.
	I.04	Inability to control temperature at local level, air treatment systems dated and at end of life.
	I.05	Flows are confusing and complicated.
	I.06	Ward refurbs underway to bring up to minimum standard. Remainder aging and showing wear and tear even with regular maintenance.
	I.07	Bathroom facilities are aging, difficult to clean, easily damaged and facilities are limited in public areas.
	I.08	Lack of changing, break/rest areas for staff.
	I.09	There is limited access to outdoor space. No scope to increase these due to building design and footprint.
	I.10	Not relevant
	J.01	Spinal and PDRU are good for the houses behind them as they are low, blends in to environment.
	J.02	It does not add to the current estate positively. External facia only adds a modern look to one building.
	J.03	There is limited landscaping within grounds of buildings.
	J.04	Building does not enhance local residents views or sensitive to passers by.
	J.05	Due to additions throughout the years there is no cohesive design across the buildings or its outside spaces.
	J.06	Not relelvant

AEDET Benchmark Summary



AEDET IA Target



	Benchmark
Use	1.3
Access	0.9
Space	0.9
Performance	1.1
Engineering	1.0
Construction	1.6
Character and Innovation	1.0
Form and Materials	0.9
Staff and Patient Environment	0.9
Urban and Social Integration	1.2

Weighting	=	Target
2	=>	5 - 6
1	>	3 - 4
0	<	3

	Target
Use	4.6
Access	4.3
Space	4.6
Performance	4.5
Engineering	4.2
Construction	4.5
Character and Innovation	4.5
Form and Materials	4.7
Staff and Patient Environment	4.6
Urban and Social Integration	4.7

Appendix E
Project Risk Register

GG&C- Initial Agreement Project Risk Register	
Project Title	19CPO26 INS Redevelopment
Date Created	29.04.21
Version / Upd	v4 18.11.21

Ref No:	Risk Type (Business, Service, External)	Risk Description	Risk Effect/Impact	Prior to Mitigation			Mitigation	Post Mitigation			Risk Owner
				Probability (1-5)	Impact (1-5)	Risk Rating (1-25)		Probability (1-5)	Impact (1-5)	Risk Rating (1-25)	
1	Business	Monitoring of Regulatory/Legislative changes duration the project results in additional cost, re-design and or programme delays.	Delay to programme, increased costs.	3	3	9	Maintain dialogue with all appropriate stakeholders including NHSASSure, HFS etc.	3	3	9	Arwel Williams, Project Director, Director of Regional Services &
2	Business	Elongated GG&C internal governance process resulting in a delay to the submission of the IA to Scottish Government	Programme is not delivered within acceaptable timescales, resulting in delays in overall programme.	3	4	12	GG&C Project Board in place. Project currently progressing through internal governance process. Development of a robust business case.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &
3	Business	Lack of internal GG&C resource to manage the project due to other commitments resulting in programme delay.	Delay to programme, additional costs.	3	3	9	GG&C Capital Project Board in place. Clinical/service Reps identified. Awaiting resource to be confirmed for dedicated core team members.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &
4	Business	Requirement for project to undergo additional Gateway or Assurance Reviews resulting in programme delay.	Failure to deliver IA within agreed timescales.	3	3	9	Allowances made within the programme to undertake additional assurance reviews.	3	3	9	Arwel Williams, Project Director, Director of Regional Services &
5	Business	Retention of Key Project Team Members	Delay to programme, inconsistent approach.	3	3	9	Robust governance and recording of programme, where possible retain key personnel. Effective handover to any new personnel.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &

6	Business	Changes in Government policy.	Delay to programme, increased costs.	4	3	12	Open dialogue with Gov, GG&C Board and appropriate stakeholders.	3	3	9	Arwel Williams, Project Director, Director of Regional Services &
7	Business	Organisational Changes	Delay to programme, increased costs.	3	3	9	HCP Involvement with clinical/non clinical groups has included discussion on future clinical models, this will inform and mitigate future change.	2	3	6	Jennifer Armstrong, Director of Medicine
8	Business	Failure to deliver adequate stakeholder engagement.	Delay to programme, increased costs.	3	3	9	Develop and Agree consultation programme with appropriate stakeholders.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &
9	Business	Scope of work/clinical service changing - expansion/reduction of proposed services.	Redesign, delay to programme, increased costs.	4	4	16	Early involvement of stakeholders, clear governance and change control processes.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &
10	Business	Contradictory aspirations of different stakeholders.	Redesign, ,delay to programme, increased costs.	3	4	12	Early involvement of stakeholders, clear governance and change control processes.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &
11	Business	Failure to pass Gateway review.	Redesign, delay to programme, increased costs.	3	3	9	Early consultation with all relevant stakeholders, aspirations and requirements.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &
12	Business	Delay in statutory approvals.	Redesign, delay to programme, increased costs.	3	3	9	Early consultation with all relevant bodies required.	3	3	9	Arwel Williams, Project Director, Director of Regional Services &

13	Business	Communication strategy does not consider public perception /consultation/ feedback/media interest/parliamentary interest & organisational reputation.	Adverse, public and media interest. Damage to organisational reputation.	3	4	12	Implement and manage robust communication strategy targeting all relevant stakeholders and update regularly.	2	4	8	Arwel Williams, Project Director, Director of Regional Services &
14	Business	Impact on design due to unknown defects (refurbishment)	Impact on the programme and costs.	4	4	16	Intensive surveys to be carried out, access to be arranged as some may be intrusive.	3	3	9	Arwel Williams, Project Director, Director of Regional Services &
15	Business	The projects objectives are not clearly defined.	Essential outcomes not clearly identified or delivered.	3	4	12	Set out clear objectives for the project as part of the IA, linking them to clearly defined and measurable outcomes.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &
16	Business	Failure to manage/react to changes within the overall programme	Delay in programme, additional costs.	3	4	12	A rigorous review and monitoring process is on-going for all planned and future changes to services.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &
17	Business	Failure to secure an appropriate funding stream	Redevelopment does not go ahead, assets continue to end of life.	3	5	15	Define and cost scope of works. Acceptance of IA. Robust OBC/FBC.	2	5	10	Jennifer Armstrong, Director of Medicine
18	Financial	Project unable to obtain IA approval resulting in abortive costs.	IA supported by GG&C through internal governance process and submitted to Scottish Government for approval.	3	4	12	IA progress robustly managed, evidenced to reduce risk of INS development being rejected.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &
19	Financial	The Project becomes unaffordable resulting in the project being cancelled or requiring significant financial assessment.	Project does not go ahead due to costs. Continuation of end of life building and impact to services.	3	5	15	Establishment of appropriate preliminary budget and implementation of a change control governance process. Cost planners will be introduced during IA and OBC	2	3	6	Jennifer Armstrong, Director of Medicine
20	Operational	Impact of COVID-19 on overall programme delivery and resource availability.	Essential programme elements such as workshops/reviews cannot be conducted due to reduced staffing/distancing etc.	3	3	9	All aspects of the project currently following Scottish Government guidance, HFS guidance regarding contractual implications and Construction Leadership Forum guidance.	3	3	9	Arwel Williams, Project Director, Director of Regional Services &

21	Service	Failure of existing INS facility resulting in halting of current service.	Due to age of buildings, significant risk of elements of infrastructure.	4	4	16	Contingency plans to be developed for failure of key infrastructure.	3	4	12	Arwel Williams, Project Director, Director of Regional Services &
22	Service	Failure of existing INS facility resulting in requirement to accelerate design and build process for new facility.	Project currently progressing through IA business case approval. Acceleration would require dispensation from Scottish Government.	4	4	16	Capital programme of refurbishment continues and is robustly monitored through out IA/OBC/FBC programme.	3	4	12	Arwel Williams, Project Director, Director of Regional Services &
23	Service	Failure to develop an appropriate clinical model	Delay to programme, increased costs.	3	4	12	Clinical/Non Clinical stakeholders involved early in process to build clinical/non clinical model for all services impacted.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &
24	Service	Failure to meet technical guidance	Non compliant installation	3	4	12	Guidance sought from HFS with early engagement.	2	3	6	Arwel Williams, Project Director, Director of Regional Services &
25	Service	Failure to comply with HEI guidance (new build, same site)	Delay to programme	3	3	9	Continual monitoring of HAI processes and guidance .	1	3	3	Arwel Williams, Project Director, Director of Regional Services &
26	Service	Failure to comply with HEI Guidance (refurb)	Delay to programme	3	3	9	Continual monitoring of HAI processes and guidance .	1	3	3	Arwel Williams, Project Director, Director of Regional Services &
27	Service	Interruptions to business continuity during construction (new build/refurb)	Delay to programme, increased costs, reputational damage.	4	4	16	Appropropriate engagement with site teams, early planning and ongoing dialogue/communication with all stakeholders. Controls to be put in place and migration planto be created.	3	3	9	Arwel Williams, Project Director, Director of Regional Services &

28	Service	Continuity and provision of Estates/Facilities and Technical support.	Delays and disruption to patient services.	4	4	16	Engagement with Facilities Teams.	3	3	9	Arwel Williams, Project Director, Director of Regional Services &	
29	Service	Regional/National discussion may impact on programme.	Programme delay	4	3	12	Early engagement and agreement via Regional/National Planning Group.	3	3	9	Arwel Williams, Project Director, Director of Regional Services &	
30	Service	Potential requirement for significant decant space during refurb/rebuild with risk of service reduction and impact on other services	Programme delay, delays to patient services, increased costs.	4	4	16	Early engagement with CMT/MFT programme board, communication and strategy plan with other sectors.	3	4	12	Arwel Williams, Project Director, Director of Regional Services &	
31	Service	Demand for service does not match the levels planned, projected or presumed.	Unnecessary costs, ineffective use of estate.	3	4	12	A rigorous review and monitoring of throughput, KPI's and future changes to services as they become known.	2	4	8	Arwel Williams, Project Director, Director of Regional Services &	
31	Service	Failure to adequately engage with equality and staff governance.	Delay in programme, additional costs.	2	4	8	Engage effectively with equality team, complete EQIA assessments	1	4	4	Arwel Williams, Project Director, Director of Regional Services &	

Appendix F
NDAP Design Statement

Institute of Neurological Sciences: SCIM DESIGN STATEMENT

This Design Statement has been compiled to support the redevelopment of the Institute of Neurological Sciences and will act as a key briefing document. It will be used to enhance the design process and ensure project objectives are achieved.

The business objectives are:

- Improving person-centred services and patient care
- Improving clinical effectiveness and enhancing patient experience and clinical outcomes
- Improving the quality of the physical environment
- Providing flexible and adaptable facilities

The key design principles underpinning the project are:

- Provide services that will be easily and safely accessible and ensure that the new facilities reflects service user needs
- Improve clinical effectiveness by providing an environment that supports the service models, clinical effectiveness and service provision
- Provide a clinical environment which promotes the health and wellbeing of the buildings users
- To provide facilities that are efficient, sustainable and flexible to support service provision in the future

Therefore, in order to achieve these objectives, the completed development must have the attributes described below.

NB: where experiences are described below, these are expected for all people irrespective of physical, sensory or cognitive impairments.

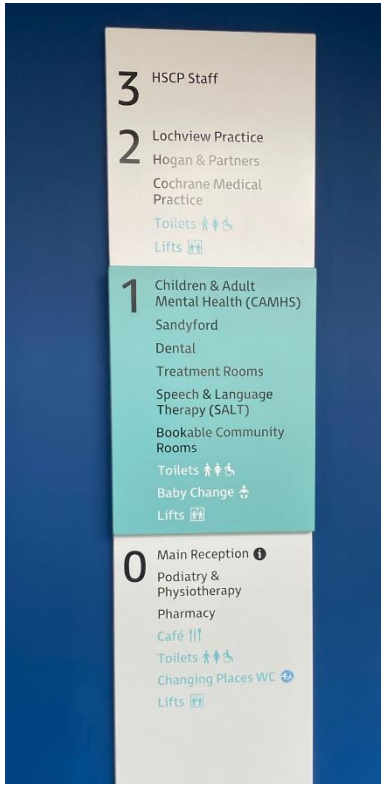
1. AGREED NON-NEGOTIABLES FOR PATIENTS/ALL SERVICE USERS

Non-Negotiable Performance Objectives *What the design of the facility must enable (what it needs to do)*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each (what you expect there to be)*
1.1 SITE LAYOUT Due to the time sensitive nature of the acute care work, the facility must be well located in terms of essential adjacencies to other critical facilities / departments. It is key that specialties are co-located and/or in close proximity to allow patients' complex issues and/or unplanned emergencies to be dealt with expeditiously.	• Minimise travel distances from other critical facilities and between interdependent departments. • Level thresholds to enable smooth patient journeys. • Minimal lift transfers.

1.2 BUILDING APPROACH The routes to and from the facility must be clear, safe and intuitive to reduce stress and support patient dignity.	• Appropriate directional signage to the facility at both ends of the site and throughout the site. • There should be a defined, clear and safe pedestrian route to the main entrance from all parking areas. • There must be protection for patients & visitors from emergency vehicles with clear separation between ambulance drop off points and those for cars/taxis. • Clear, identifiable and generous designated drop off points suitable for all patients. • Drop off points should be suitable for all weathers and therefore provide shelter and protection from wind and rain. • Campus car parking should be provided in close proximity to the facility particularly for those with reduced mobility. • Routes to be well lit and observed and use landscape features to provide shelter and a soft/natural feel. • Routes to be wide enough to allow wheelchair users to pass and for families/friends to walk together and chat rather than in single file. • There should be spaces to stop and take a breather on the entrance route (seating) with shelter for protection from inclement weather. • Planting/Landscaping should be utilised to assist in wayfinding and to provide a calming environment. • External lighting should be used to provide comfort, reassurance and assist with wayfinding.   

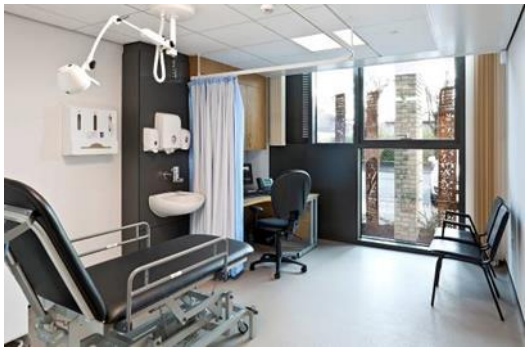
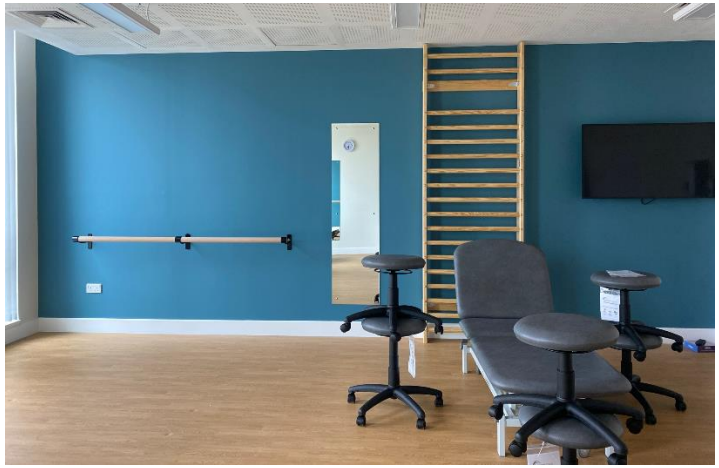
Non-Negotiable Performance Objectives *What the design of the facility must enable (what it needs to do)*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each (what you expect there to be)*
1.3 INITIAL IMPRESSION The facility must be identifiable so people know they are going to the right place. It needs to convey healthcare but must not look prisonlike. Instead, the initial appearance/impression must be welcoming, warm and inviting.	• Distinct visual identity on the campus. • Signage with consistent branding and colour should be clear. • Main Entrance should be clearly identifiable and visible upon approach. • Security should be a consideration but the building should not look prisonlike and should be “human” in scale and should not intimidate or impose. • Natural building materials to be utilised to soften the overall impression (timber, stone, etc). • Use of colour to assist in wayfinding which could also carry on into the building.   

1.4 ARRIVAL The arrival experience must be welcoming, comforting and accessible to help minimise anxiety. It must offer a 'place where people are prepared to stay'.	• Wayfinding should be clear and apparent as soon as you enter the facility. • Comfortable waiting area upon entering the facility with Café facility which could be used by patients, staff and visitors. Patients can be in the facility for a long time and therefore should have the option to go and get refreshments themselves. This would give a place for longer stay residents to get away from a ward situation and have peer support conversations. From a therapy perspective destination spaces are really important and this could serve this function. It would also provide a waiting space for carers/visitors/family members to congregate and could be a central hub for building which assists with navigation and provides a clear meeting point. • Non-clinical feel with views and access to natural daylight. • Natural building materials to be utilised such as wood. • Colour schemes should enliven the spaces and feel energised. • Useable external space(s) for quiet respite and for relief should be provided immediately adjacent to enable use. • There should be covered/sheltered outside space to deal with inclement weather.    

1.5 RECEPTION From arrival it must be clear and easy for patients to let staff know they are there and to be supported with their onward journey. Human interaction must be available to help reduce anxiety.	• Reception facilities must be immediately visible on entering the building, with options for electronic check in and face to face contact. Avoid physical barriers e.g. screening at reception area as the patient can feel isolated. Wheelchair accessible reception desk design / low level and induction loop system to be provided. • Walk to reception from entrance doors should be within 10 metres. • Reception area should have good interconnectivity with other admin support areas. • Information point must be provided which can signpost to Third Sector organisations and peer support. • Accessible toilets should be closely located to Reception area but not in full view of seating areas. • Signage and wayfinding to be consistent and easy to understand, accommodating visually impaired/ dementia friendly design. • Routes to onward journeys should be clear and intuitive.    

Non-Negotiable Performance Objectives *What the design of the facility must enable (what it needs to do)*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each (what you expect there to be)*
1.6 WAITING AREAS The waiting experience must help patients cope with the issues they have that day, to minimise any additional stress and promote calm.	• Waiting areas must support people with a wide range of personal/emotional needs and those with reduced mobility. • Furniture layout and seating options should be comfortable and offer a variety of sizes and groupings e.g. providing patient choices for privacy or opportunities to meet other patients/carers to offer/ receive support and kindle friendships. Some patients may wish to be alone in a busy public area so provide isolated or quieter waiting spaces. • Waiting areas should be bright with access to external views and natural daylight. • Positive visual distractions and stimulus should be provided. • 'No generic televisions in the corner of the waiting areas' • Toilets should be close by but not directly onto waiting areas for privacy and discretion. • Each sub-waiting area should have a different feel to it to provide variety and also to help with wayfinding. • Opportunities to engage with Local artists/community/patients to provide a programme of changing artwork and exhibitions. Not only would this enhance these spaces but it would offer a sense of ownership of these spaces and the facility by the patient community. • Non-clinical feel with the use of natural building materials. • Waiting areas should be digitally enabled to allow for personal choices, for users to connect to reliable WiFi and to charge any electronic devices/phones as necessary.   

Non-Negotiable Performance Objectives *What the design of the facility must enable (what it needs to do)*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each (what you expect there to be)*
1.7 CIRCULATION Patient dignity should be a priority when moving/being moved around the facility. The circulation routes should provide views of the surrounding area and allow for the natural passing of the day to be experienced as patients move around the facility. The patient journey and transition should be reflected in the design and allow a change in mindset.	• Consideration must be given to patient flow throughout the facility and avoid the movement of patients in beds and trolleys through busy public areas. • Patient circulation routes should afford privacy and dignity. • Circulation routes should be bright with access to external views and natural daylight. • Separate inpatient lift (in particular for theatre patients) so they are not having to share with the public at vulnerable moments. • Patients should be allowed to walk to theatre if they choose to. • Temperature needs to be suitable for patients in gowns – warm and comfortable. • Wall bars should be provided to help assist with mobility and flow around the facility – not just bump rails. • Space for rest points to be provided without implications on corridor widths/circulation routes. These should be distinct spaces and not just chairs in corridors.  

Non-Negotiable Performance Objectives *What the design of the facility must enable (what it needs to do)*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each (what you expect there to be)*
1.8 CLINICAL & TREATMENT ROOMS Must appear professional, but not intimidating. They must be designed to respect the privacy and dignity of patients. They must be flexible so that the nature of the space and equipment can be adapted to suit the patient's needs and improve patient flow.	• Spaces to be bright with access to natural daylight without compromising patient privacy. • Flexible and adaptable spaces. • Space to secure personal belongings.    

1.9 INPATIENT AREAS must support personal control over the environment and encourage activity, movement and enablement. They must provide positive distractions and reduce negative effects of isolation associated with single rooms, to encourage patients to be engaging socially with friends/family and other patients**.** Some patients might be in hospital for long periods of time so it is important that their environment is as bright and comfortable as possible.	• Where single rooms accommodation is provided socialisation spaces are important and should be integral to the design and layout of inpatient areas, not just a converted typical bay room or the end of a corridor. There should be 'somewhere to stop and have a conversation' and spaces for patients to come together socially if that is their preference. • Activity spaces must be provided to enable patients to maintain independence and have a cup of tea, lunch etc. • Daylight, natural ventilation and external views from lying in bed and seated without compromising visual/audio privacy. • Lighting, ventilation, temperature, IT/TV and privacy all controllable by patient. • Visual connection from room to external space and allowing unobtrusive observation from staff bases and corridors. • Bathroom designs must ensure that not all areas get wet and there is adequate provision for clothing storage whilst patients are showering. Showering facilities must be accessible for all patients with level access and suitable fittings for use standing/seated. • There should be space for people to securely store their personal belongings. • All bedroom fixtures and fittings to be anti-ligature design. • Rooms to be digitally enabled for patient control and comfort – patients to have access to WiFi, phone charging points etc. • Links to outdoor space(s) for patients as highlighted in 1.11 below.  

Non-Negotiable Performance Objectives *What the design of the facility must enable (what it needs to do)*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each (what you expect there to be)*
	 

1.10 OUTPATIENT AND AMBULATORY AREAS must be distinct from inpatient areas and ambulatory services must provide a homely and less clinical environment for patients.	• Separate entrance from inpatient areas. Outpatients and ambulatory services may have different access hours to inpatient areas therefore a separate entrance and entrance route should be considered. • Circulation & wayfinding should be designed to minimise walking distances and avoid routes through inpatient areas. • Open spaces for day patients to congregate and to do group activities. • Homely environment in day case/ambulatory facilities, waiting areas to be comfortable, making good use of art and colour on walls and furniture. Corridors and treatment rooms where possible to be inviting and not clinical. • Outpatient and ambulatory areas should be bright with access to external views and natural daylight. • Spaces should be flexible and adaptable to future proof in anticipation of any future change in demand/service.   
1.11 SUPPORT SPACES	• Provide areas people can use to aid mobility and walking.

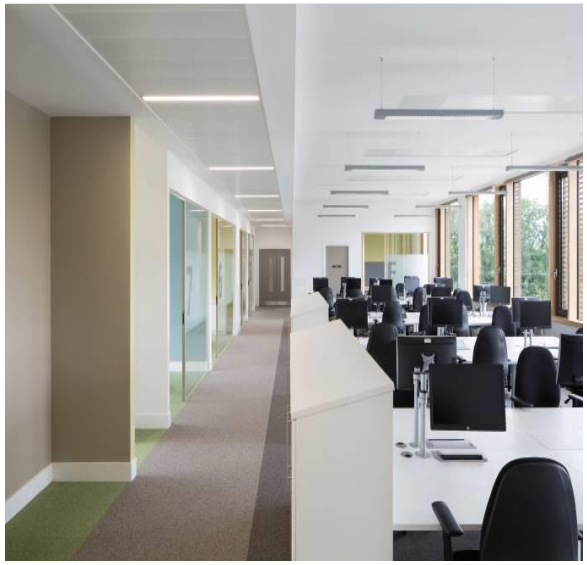
Non-Negotiable Performance Objectives *What the design of the facility must enable (what it needs to do)*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each (what you expect there to be)*
The facility must provide spaces for patient activities, both internally and externally, which can be used for therapeutic purposes, 'incidental rehabilitation' and respite.	• Circulation spaces to be used creatively for activities and rehabilitation without adverse implications on patient flow and wayfinding. • Garden spaces to be provided for respite and to be accessible to all including patients in beds. There must be spaces for tables and wheelchairs. • There must be sheltered external spaces that people can use in inclement weather. • Utilise outdoor spaces for therapeutic activities – such as gardening etc. • Outdoor spaces should replicate range of outdoor obstacles to practice mobility – slopes, hills, ramps etc. • Horatio's Garden for Spinal Injuries is a 'paradise for patients' and should be used as a precedent. • There must be comfortable spaces for quiet reflection.    

2. AGREED NON-NEGOTIABLES FOR STAFF

Non-Negotiable Performance Objectives *What the design of the facility must enable*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each*
2.1 ACCESSIBILITY Staff must be able to access the facility in a safe and convenient manner during daylight and darkness. They must also be encouraged to use green travel options.	• Pedestrian and cycle access routes from local roads, public transport and parking areas to be safe, accessible, clear and well lit. • Safe crossing points at vehicular routes. • Reliable vehicular parking for staff working late at night/early morning within reasonable distance of facility entrance. • Staff vehicular parking should have direct access/short routes to facility and be well lit. • 100 Electric vehicle charging points available across the Queen Elizabeth Campus. • Secure cycle store with charging point for electric cycles. Associated washing/changing area and facilities to be provided *(refer also to 2.2 below).* • Staff only entrance which should be located away from Main (public) Entrance to avoid confusion.    

2.2 WELLBEING The facility must provide for the human needs of staff, both in terms of immediate needs for sustenance and in promoting personal health and wellbeing.	• A mix of dedicated Staff spaces for personal downtime and social gatherings. Comfortable spaces away from patients and relatives where staff can discuss their day in confidence and privacy without being overheard. Spaces for impromptu conversations and informal communications. They must be attractive to encourage use, with good daylight, interesting views and a range of seating areas, some more social and some to allow quiet time. • Theatre staff are unable to leave the facility whilst on shift therefore Rest & Relaxation Hubs should be co-located to Theatre spaces. It is important these have access to natural daylight and external views given the amount of time staff spend in spaces without this. • Kitchen area(s) required with places to store and prep food to allow staff to prepare meals on site and come together socially. • Flexible changing facilities that allow for personal privacy and are designed to respect gender sensitivities. • Shower facilities and space for staff to dry clothing to encourage green travel options. • Space for staff to store personal belongings (access to lockers for staff members). • Easy to access outside space (not at entrance area) for staff get a breath of fresh air away from public spaces which provides contrast to working environment. Could be Rooftop terrace to ensure Staff privacy. • Overnight accommodation must be provided for on call staff groups.  

Non-Negotiable Performance Objectives *What the design of the facility must enable*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each*
	
2.3 WORKING RELATIONSHIPS The layout of the facility must be designed to aid interdisciplinary working, encourage staff interactions and communication, and to support learning.	• There must be suitable dedicated flexible training spaces which are large enough for team training and simulation which should be readily accessible by staff. • There must be a large lecture theatre with smaller associated seminar/meeting rooms. • Opportunities for staff from all disciplines/departments to meet informally during the course of the working day. • Flexible 'Break Out' spaces to facilitate impromptu 1:1's or small groups to have conversations in privacy without being overheard.  

Non-Negotiable Performance Objectives *What the design of the facility must enable*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each*
2.4 NON-CLINICAL WORKING AREAS must not feel segregated and must offer a range of environments to suit different tasks.	• Office environments to have access to natural daylight & external views. • Flexible and agile workspaces to allow for personal preference in working environment such as spaces for quiet working, spaces away from the main working area for 1 on 1 chats/meetings and space for sensitive calls. • Should feel attractive and inviting - not clinical and sterile. • Office spaces for some clinical environments e.g. Theatres must be “close by & at hand” to allow easy access.  

Non-Negotiable Performance Objectives *What the design of the facility must enable*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each*
2.5 FACILITIES MANAGEMENT The management and transfer of materials and waste, and the maintenance of the facility must not impact the nature of patient areas or staff rest areas.	• Consideration must be given to all internal finishes from a cleaning and maintenance perspective. • Facility to be easy to clean and service without impacting on patient areas, or staff rest areas, visually or with noise. • Material flows should be separated from public flows. • Sufficient goods distributed storage (Corridors should not be used for storage). • Secure waste holds to be located in close proximity to each ward area. • Goods delivery areas including storage facilities for clinical departments to be accessible without implications on Patients. • Plant areas should be accessible without impacting on function of facility. • Vehicle service routes to be placed away from public and clinical areas to minimise noise impact and disruption. (Deliveries can arrive during the night so this needs to be taken into consideration). • Secure Service Yard sufficiently sized with no unauthorised access.  

3. AGREED NON-NEGOTIABLES FOR VISITORS (FAMILY/FRIENDS/CARERS)

Non-Negotiable Performance Objectives *What the design of the facility must enable*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each*
3.1 ACCESSIBILITY The routes to and from the facility must be clear, safe and intuitive for visitor access as well as helping to reduce stress when visiting family/friends etc.	Benchmarks for Visitors should be indistinguishable from those for Patients identified in in 1.2 & 1.3 above. In addition, the facility must also provide: • Information about what other facilities are available on the Hospital site for use of visitors (Shops, Catering Facilities, etc.)
3.2 AVAILABILITY The facility must provide support for visitors who are travelling far and those who need to be with patients out of hours.	• Single patient bedrooms should be designed to allow relatives to stay overnight within them, but some separate overnight accommodation should be provided away from patient areas. • These relatives rooms must be of a specification 'like a small hotel room' with access to daylight, external views, en-suite facilities and tea & coffee making facilities. • Breakout and Rest Spaces must be available for visitors coming to see long term patients. These should feel 'homely' and non-clinical. • Consideration should be given to routes visitors will take to wards out of hours. Avoid going through services/areas that close down out of hours.  

Non-Negotiable Performance Objectives *What the design of the facility must enable*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each*
	 
3.3 WELFARE & WELLBEING The facility must be welcoming, comforting and accessible for visitors. It must provide for the human needs of the visitor and support their wellbeing.	Benchmarks for Visitors should be indistinguishable from those for Patients identified in in 1.4, 1.5 & 1.6 above. In addition, the facility must also provide; • Flexible space for use by 3rd Sector organisations to provide information and offer support for family, friends and carers. Preferably located near Reception so it is visible and accessible upon arrival. • Suitable toilet facilities for use by visitors near ward areas. It is not acceptable for visitors to have to go back to the entrance/reception area in order to go to the toilet. • Baby change facilities. • Visitors should have access to WiFi, phone charging points etc. • Access to green spaces for walks and to allow visitors 'a breath of fresh air'.

Non-Negotiable Performance Objectives *What the design of the facility must enable*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each*
	 

4. ALIGNMENT OF INVESTMENT WITH POLICY

Non-Negotiable Performance Objectives *What the design of the facility must enable*	**Benchmarks** *The physical characteristics expected and/or some views of what success might look like for each*
4.1 The design of the facility must contribute to the wider regeneration of the area in terms of townscape.	• The facility/facilities should be sympathetic to the urban townscape surrounding campus and enhance the local area/campus. • The facilities should well located to be easily accessible by all modes of public and private travel.
4.2 The facility should be designed to be sustainable in its development, use, adaptation and decommissioning.	• If the preferred option is identified as the new build option, the target will be BREEAM 2018 NC 'Excellent' rating. If the preferred option is identified as the refurbishment option, BREEAM 2018 refurb 'Very Good' rating will be the target. Sustainable design should be of a 'Fabric First' approach rather than 'bolt on' environmental features. Investment should be targeted towards evidencing sustainable service, quality and resilience, whilst reducing running costs. • Early NDAP reviews will allow a pragmatic approach to ensure sustainable principles are applied holistically. • This will include identifying BREEAM specific target and total energy kW/m2 target. • Compliance with HFS NZC Requirements (further discussions required with HFS). • Utilisation of new Sustainable Design and Construction guide along with / in place of BREEAM (further discussions required with HFS). • Compliance and guidance from NHSGGC Pathway to zero carbon policy.
4.3 Something about future service change/expansion…	• The Site is to be large enough to meet the HCP future model design in addition to planning for future changes to services and technology. • The Building design and construction must enable adaptation & flexibility, e.g. 'repeatable rooms & standard components'; 'loose fit'; modular grid; 'soft spaces'; climate change; all electric energy source. • Safety, Accessibility & Equality will be at the foundation of our design and operations. • The facility/facilities must be located and designed that they may be realigned to meet changes in service. • The design adopted will maximise the ease of maintenance and alteration and minimise disruption to clinical services. • The facility/facilities, should be adaptable for modern and future technologies to allow services to advance throughout their lifetime.

This statement was developed through the engagement of the following stakeholders:

Patient reps:
Caroline Sincock, Neurology Voices, Chair
Laura Brock, Neurology Voices, Representative

Service reps:
Craig Broadfoot, General Manager, Neurosciences, OMFS* and Spinal Injuries
Lisa Dorrian, Clinical Services Manager, Surgical Services
Marie Austin, Lead Nurse, Medical Services
Laura McConnell, Senior Charge Nurse, Neurosurgery (representing Lead Nurse, Surgical Services)
Jacquie Pursey, Site Superintendent Radiographer, Diagnostics
Debbie Clark, Lead Radiographer, Neuroradiology
Donna Bisland, AHP** Team Lead, Neurorehabilitation
Alison Cassidy, AHP Team Lead, INS
Bryan Dawson, Lead Clinician, Neuroanaesthesia
Saif Razvi, Lead Clinician, Neurology
Teng Cheng Khoo, Consultant in Rehabilitation Medicine
Elaine Kennedy, Senior Charge Nurse, Outpatient Department
Sharon Johnston, Deputy Site Facilities Manager, Facilities
Pam Philp, Peri-operative Department Co-ordinator, INS Theatres

Planning Reps:
Daniel Kieran, Corporate Planning Officer, Corporate Planning Team
Jill Cram, Corporate Planning Officer, Corporate Planning Team
Jordan Livingstone, Corporate Planning Officer, Corporate Planning Team

Project Team:
Susan Walker, General Manager, Regional Services
Craig Dunn, Project Manager, Capital Planning
Marjorie Johns, Planning Manager, Regional Services
Thomas Mills, Project Manager, Capital Planning
Susan Smith, Project Support, Regional Services

5. SELF ASSESSMENT PROCESS

Decision Point	Authority of decision	Additional skills or otherperspectives	How the above criteria will be considered at this stage and/or valued in the decision	Information needed to allow evaluation
Site selection	Decision by Capital Project Board	Comment to be sought from NDAP to inform and support Capital Project Board's decision.	Determine if this fits with the objectives of the design statement, evaluating and then utilising AEDET. Risk/benefit analysis considering the capability of sites to deliver a developmentwhich meets the above stated criteria	Site feasibility. Local Authority plan.
Completion of brief	Decision of Capital Project Board withadvice from the Project Team	Patients/Patient representatives, clinical and non-clinical service/building users, staff and Project Team.	The above design statement will be included within the brief	Benchmark against best practice statement and completed brief
Selection of Delivery/Design Team	Project Team	Design Advisor externalto Project Team, Architecture and Design Scotland (A&DS)	Design statement will be added to the project brief and assessed against AEDET.	Design statement is a key document in the development of the project.

Decision Point	Authority of decision	Additional skills or otherperspectives	How the above criteria will be considered at this stage and/or valued in the decision	Information needed to allow evaluation
Selection of early design concept from options developed	Decision of Capital Project Board withadvice from Project Team	External technical advisor. NDAP	Assessment of early options, utilising AEDET or methodology, to assess the likelihood of options delivering a facility which demonstrates the objectives of the design statement.	Sketch proposals developed to with sufficient detail distinguish main use types – circulation, outpatient areas, ward areas, theatres, ICU, offices, staff facilities, etc.
Approval of design proposals to be submitted for planning authority approval	Decision of Capital Project Board with advice from Project Team	Internal and external stakeholder engagement process. Technical advisor. NDAP	Formal option appraisal to assess the likelihood of options delivering a facility which demonstrates compliance with the above criteria	Review against design statement and approved service models.
Approval of detailed design proposals to allow construction	Decision of Capital Project Board with advice from Project Team	Design Advisor NDAP	Assessment of early options using AEDET to evaluate and review with reference to agreed Design Statement objectives	Review against design statement and approved service models.
Post Project Evaluation	Decision of Capital Project Board withadvice from Project Team	Independent analysis by technical advisers/service providers.	Assessment of completed development against the objectives set out in the design statement and final AEDET review.	Review against design statement and HCP service models. Conduct patient/relative and staff satisfaction survey within 2 years of occupancy.

Appendix G
Risks by Category & Action

Category	Risk	Action
Business	The projects objectives are not clearly defined.	Set out clear objectives for the project as part of the IA, linking them to clearly defined and measurable outcomes.
Business	GG&C internal governance processes add delay to the submission of the IA to Scottish Government	GG&C Programme Board in place. Project reviewed at regular intervals via MFT Programme Board and currently progressing through internal governance process. Development of a robust business case.
Business	Monitoring of Regulatory/Legislative changes duration the project results in additional cost, re-design and or programme delays.	Maintain dialogue with all appropriate stakeholders including NHS Assure, HFS etc.
Business	Lack of internal GG&C resource to manage the project due to other commitments resulting in programme delay.	GG&C Capital Programme Board in place. Clinical/service reps identified. Resource requirements reviewed at Capital and MFT Programme Boards.
Business	Requirement for project to undergo additional Gateway or Assurance Reviews resulting in programme delay.	Allowances made within the programme to undertake additional assurance reviews. Early contact made with NHS Assure.
Business	Retention of Key Project Team Members	Robust governance and recording of programme decisions. Core Team identified. Where possible retain key personnel. Effective handover to any new personnel.
Business	Changes in Government policy.	Open dialogue with SG, GG&C Board and appropriate stakeholders.
Business	Organisational Changes	Healthcare Planning work with clinical/non clinical groups has included discussion on future clinical models to inform and mitigate future change.
Business	Failure to deliver adequate stakeholder engagement.	Develop and agree consultation programme with appropriate stakeholders in conjunction with Board's PEPI lead

Category	Risk	Action
Business	Scope of work/clinical service changing - expansion/reduction of proposed services.	Early involvement of stakeholders, clear governance and change control processes.
Business	Contradictory aspirations of different stakeholders.	Early involvement of stakeholders, clear governance and change control processes.
Business	Failure to pass NHS Assure review.	Early engagement with all relevant stakeholders including NHS Assure to ensure clear understanding of requirements/process.
Business	Delay in statutory approvals.	Early engagement with all relevant bodies required.
Business	Communication strategy does not consider public perception /consultation/ feedback/media interest/parliamentary interest & organisational reputation.	Implement and manage robust communication strategy targeting all relevant stakeholders and update regularly.
Business	Impact on design due to unknown defects (refurbishment)	Intensive surveys to be carried out, access to be arranged as some may be intrusive.
Business	Failure to manage/react to changes within the overall programme	A rigorous review and monitoring process is on-going for all planned and future changes to services.
Business	Failure to secure an appropriate funding stream	Define and cost scope of works. Acceptance of IA. Robust OBC/FBC.
Service	Failure of existing INS facility resulting in halting of current service.	Contingency plans to be developed for failure of key infrastructure.
Service	Failure of existing INS facility resulting in requirement to accelerate design and build process for new facility.	Capital programme of refurbishment continues and is robustly monitored throughout IA/OBC/FBC programme.
Service	Failure to develop an appropriate clinical model	Clinical/Non Clinical stakeholders involved early in process to build clinical/non clinical model for all services impacted.
Service	Failure to meet technical guidance	Guidance sought from HFS with early engagement.

Category	Risk	Action
Service	Failure to comply with HAI guidance (new build, same site)	Continual monitoring of HAI processes and guidance
Service	Failure to comply with HAI Guidance (refurb)	Continual monitoring of HAI processes and guidance
Service	Interruptions to business continuity during construction (new build/refurb)	Appropriate engagement with site teams, early planning and ongoing dialogue/communication with all stakeholders. Controls to be put in place and migration plan to be created.
Service	Continuity and provision of Estates/Facilities and Technical support.	Engagement with Facilities Teams and Technical support.
Service	Regional/National discussion may impact on programme.	Early engagement and agreement via Regional/National Planning Group.
Service	Potential requirement for significant decant space during refurb/rebuild with risk of service reduction and impact on other services	Early engagement with CMT/MFT Programme Board, communication and strategy plan with other sectors.
Service	Demand for service does not match the levels planned, projected or presumed.	A rigorous review and monitoring of throughput, KPI's and future changes to services as they become known.
Service	Failure to adequately engage with equality and staff governance.	Engage effectively with equality team and Communications lead. Complete EQIA assessments and stakeholder gap analysis
Financial	Project unable to obtain IA approval resulting in abortive costs.	IA progress robustly managed, evidenced to reduce risk of INS development being rejected.
Financial	The Project becomes unaffordable resulting in the project being cancelled or requiring significant financial assessment.	Establishment of appropriate preliminary budget and implementation of a change control governance process. Cost planners will be introduced during IA and OBC
Operational	Impact of COVID-19 on overall programme delivery and resource availability.	All aspects of the project currently following Scottish Government guidance, HFS guidance regarding contractual implications and Construction Leadership Forum guidance.

Appendix H
Benefits Register

Benefits Register								
1. Identification								2. Prioritisation (RAG)
Ref No.	Concern	Benefit	Category	Assessment	Measured by:	Baseline Value	Target Value (indicative)	Relative Importance
1	Provides appropriate clinical adjacencies	Reduction in service delays between assessment and care.	Effective Quality of Care	Quantative	Patient safety indicators Morbidity and mortality indicators	3	5	5
2	Minimises clinical risk	Improved ability for services to meet demands	Effective Quality of Care	Quantative	HEI/HIS & Infection Control Data/KPI's	3	5	5
3	Maintains or improves clinical outcomes	Improved access to services, functionality and patient experience	Effective Quality of Care	Qualitative	KPI	2	5	5
4	Provide an envrionment suitable for the delivery of care and one which improves the experience of patients, staff and visitors	Modern safe, efficient accommodation. Improved wayfinding. Improved equipment storage and use. Improved/inclusion of social spaces	Person Centred	Qualiative	PAMS & EAMS assessments	3	5	5
5	Provides good physical access to services	Improved wayfinding, access to estate and tailored to service user needs	Person Centred	Qualiative	Satisfaction Survey	2	5	4
6	Able to meet the current demands in activity	Reduces need for decants and ward closure for rolling upgrades	Effective Quality of Care	Quantative	KPI's	3	5	5
7	Able to meet future activity demands	Flexible accommodations allow change to be implemented	Effective Quality of Care	Qualitative	KPI's	2	4	5

6	Able to meet the current demands in activity	Reduces need for decants and ward closure for rolling upgrades	Effective Quality of Care	Quantative	KPI's	3	5	5
7	Able to meet future activity demands	Flexible accommodations allow change to be implemented	Effective Quality of Care	Qualitative	KPI's	2	4	5
8	Able to respond to local, regional and national service changes	Flexible accommodations able to support service change	Health of Population	Unquantifiable	NHSGGC Strategy NHS Scotland Strategies	2	4	4
9	Opportunity to reduce the carbon footprint	Improved building environment and use of modern sustainable materials	Health of Population	Qualitative	PAMS & EAMS assessments	2	4	4
10	Optomise the use of energy, water and waste management	Provision of effective, efficient and modern water and energy systems	Safety	Quantative	PAMS & EAMS assessments	2	5	4
11	Provides for the delivery of appropriate quality standards	Complaint accommodation improves ability to provide healthcare excellence and patient experience	Safety	Quantative	SHTM/HEI reports	3	5	4
12	SME opportunities	Employment opportunities	Value & Sustainability	Qualitative	PAMS & EAMS assessments	2	4	3
13	Community benefits	Improved estate, ability to recruit and retain workforce within local community. Geenrate employment	Value & Sustainability	Qualitative	HR	3	4	3
14	Reduction in backlog maintenance	New/Redeveloped estate substantially reduces ongoing programme of works required on aging infrastucture	Value & Sustainability	Quantative	PAMS & EAMS assessments	2	4	4

15	Inability to meet current service demand due to rolling ward refurbishment.	Modern, compliant facilities which meet st	Effective Quality of Care	Quantative	KPI	3	5	4
16	Ability to implement known service developments	Inability to accommodate known service developments	Value & Sustainability	Quantative	NHSGGC Straegies	2	5	5
17	Improved flow of services and wayfinding for service users	Dispersed service locations	Person Centredness	Qualitative	PAMS/EAMS	2	5	5
18	Improve clinical pathways	Reduction in delays between assessment and care.	Effective Quality of Care	Quantative	Patient safety indicators Morbidity and mortality indicators	3	4	5
19	Meet future demand and introduction of new services.	Higher patient/carer satisfaction with assessment and treatment	Health of Population	Qualitative	Activity & Performance measures	2	4	4
20	Flexible/Adaptable facilites, adherence to current accommodation standards	Ability to change the use of space to meet current future needs	Safety	Quantative	PAMS & EAMS assessments	2	5	4
21	Reduction in disruption to clinical activity caused by accommodation and/or environmental factors	A modern facility that is SHTM compliant.	Effective Quality of Care	Quantative	Activity & Performance measures	2	4	4
22	Quality of physical environment	Improved functional suitability and improved space utilisation.Reduce risk of infection.	Safety	Quantative	PAMS & EAMS assessments	2	5	4
23	Potential for improved space utilisation and optomised running costs	Sustainable modern estate using sustainable technologies	Value & Sustainability	Qualitative	PAMS & EAMS assessments Revenue costs	3	4	4
24	Compromised functional suitability of estate/	Current services can run to optimum efficiency and capacity.	Effective Quality of Care	Quantative	PAMS & EAMS	3	5	4

25	Gowned patients transferred through public walkways.	Remove requirement for patients dignity to be compromised.	Person Centredness	Qualitative	Patient Satisfcation surveys	2	5	5
26	Heating and ventilation at end of life	Full replacement of system would not only improve environment but be sustainable.	Safety	Quantative	HEI	2	4	5
27	Lack of dropped kerbs/drop off points to assist disabled patients and visitors.	Make it easier for mobility compromised patients/service users to reach buildings.	Person Centredness	Qualitative	Patient Satisfcation surveys	2	5	3
28	Ambulance areas restrcted due to parked cars	Well designed ambulance area and appropriate parking/drop off area for patients.	Safety	Quantative	Survey	3	4	3
29	Lack of storage	Remove need for storage to be kept in patient areas and corridors. Improve H&S.	Safety	Qualitative	Estates/Facilities/Procurement/H&S	2	5	3
30	Limited provision of social spaces, no capacity to remedy.	Improve stay for long and short term patients, reduce isolation and improve facility for visitors	Person Centredness	Qualitative	Patient Satisfcation surveys	3	4	4
31	With exception of 2 areas no outside space for patients or visitors.	Additional outside space, improve well being, assist with rehabilitiation.	Effective Quality of Care	Qualitative	Patient Satisfcation surveys	3	4	3
32	Ongoing issues with drainage	Resove drainage, reduce/eliminate risk of continued disruption of services due to leaks etc.	Safety	Quantative	EAMS/Estates/Facilities Reports/Backlog Maintenace	2	4	5
33	Ongoing maintenance causing disruption/limiting of services.	Greatly reduced backlog maintenance would limit/eliminate need for ward decants and service	Effective Quality of Care	Quantative	EAMS/KPI's	2	4	4
34	Obsolete infrasturcture such as ventilation difficult to repair and no longer compliant.	Ventilation fully replaced, allowing for individual temperature controlled rooms and set as required per	Safety	Quantative	HEI	3	5	5

35	Confusing building layout for patients and additional transfers for clinical staff.	Alow for more agile staff working as transfers could be completed by one staff member	Effective Quality of Care	Qualitative	Patient Satisfcation surveys	2	4	5
36	No cohesive design of buildings, delivered over 7 vuildings at the moment	Cohesive care with appropriately linked services in one or appropriately sited additional	Person Centredness	Qualitative	Unquantifiable	3	5	4
37	No INS identity across estate.	Raise identity of INS on site and across WoS as well as making building distinctive landmark for	Person Centredness	Qualitative	Patient Satisfcation surveys	3	5	4
38	Does not allow for innovative technology or care plans	Flexible estate allowing for new and improved technologies in years to come	Effective Quality of Care	Quantative	HFS/HEI/KPI	2	4	4
39	Building does not contribute to patient well being or lend to theraputic services.	Ability to inroduce indoor/outdoor rehabilitation and activity spaces and allow for social interaction	Effective Quality of Care	Qualitative	KPI	2	4	5
40	Challenginfg distances from parking, public transport hubs and pathways to INS services	Improved parking, drop off and pathways	Safety	Qualitative	Unquantifiable	2	4	4
41	Inability to control temperature on site or for indiviual patient areas. End of life and obsolete air treatment	Introduction of innovative and sustainable heating and ventilation systems, improve patient	Effctive Quality of Care	Quantative	HEI/HFS/Patient Satisfaction	2	4	5
42	Bathroom facilities aging, difficult to clean and maintain.	Reduction in risk of infection	Safety	Quantative	HEI/Facilities/ICO	3	5	5
43	Lack of changing/rest areas for staff.	Improved health and well being of staff, reduce risk of infection, improved security.	Effective Quality of Care	Qualitative	Staff Satisfaction Survey	3	4	5
44	Ability to increase/improve services offering one stop to patients and service users	Modern facility with modern technology not constrained by current buildings.	Health of Population	Quantative	Staff Satisfaction Survey/Patient Satisfaction Survey, KPI's	3	5	4

45	Buildings within INS Estate reached or nearing end of life.	Reduces the age of the healthcare estate	Safety	Quantative	Facilities, Estates, EAMS	2	5	4
46	Aging nfrastructure requiring multipl refurbishments and replacement such as wards, heating and	Reduction in backlog maintenance	Safety	Quantative	EAMS, Faciklities/IPC reports	2	5	4
47	Services dispersed over 7 buildings, increased travel time for staff and patients between services.	Co-location and coordination of services improving the patient pathway and efficient agile working	Effective Quality of Care	Qualitative	KPI's, Staff and Patient Survey, KPI's	3	5	5

Scale/ Rag	Realtive Importance
1	Fairly Insignificant
2	Fairly Insignificant
3	Moderately Important
4	Moderately Important
5	Vital

Appendix I
Capital Costing Model

Models costed:

1. Do Minimum
2. All services immediately co-located in a single facility on the QEUH campus
3. Split services across more than one location on the QEUH site
4. Relocation of selected hub services into the QEUH with redevelopment and redesign of retained services
5. INS Campus approach - a staged approach to transformation and redesign on or immediately adjacent to the existing INS campus

4.0 COST ESTIMATE (Option 1)

	Element	Quantity	Unit	Rate	Total (£)
A	Backlog Maintenance (EAMS report 29 June 2021)		item		13886,890
B	Category B items but due for replacement within 3 years		item		683,670
C	Category B items but due for replacement within 5 years		item		2958,785
D	Category B items but due for replacement within 10 years		item		5365,817
E	Ward refurbishments for HAI		item		5100,000
	Abnormals				
F	Additional works associated with roof repairs - lifting mechanical plant and reinstatement	6,000	m2	200.00	1200,000
G	Additional works associated with ceiling replacement - removal of light fittings, fire alarm fittings etc and reinstatement	46,000	m2	22.00	1012,000
H	Additional works associated with electrical rewiring - repairs to existing walls and redecoration	46,000	m2	25.00	1150,000
I	NZC uplift; requirement for increase in U values etc of building fabric				4167,000
J	Decant Requirements - modular theatres (allow 10 nr for 3 years)	360	per month	40,000	14400,000
K	Clinical decant - floor at a time	6,000	m2	3,000.00	18000,000
L	Phasing / disruption allowance	45%			15985,873
	Sub-Total				**83910,036**
	Add On Costs				
	Professional and NHS Project Team Fees	10%	item		8391,004
	Other costs - surveys / IT / domestics / estates	2%	item		1846,021
	Equipment - Group 2+3 client direct	15%	item		12586,505
	Inflation [2Q21 base date (331) to 3Q2028 (468)]	41.39%	item		44176,733
	Optimism Bias	56.80%	item		85717,049
	SUB TOTAL				**236627,348**
	VAT	20.00%	item		47325,470
	CAPEX				**283952,817**
	SAY				**284000,000**

GIFA	46,000 m^2	
Construction Rate /m2		£ 1,824 /m^2
Development Rate /m2		£ 6,174 /m^2

5.0 COST ESTIMATE (Option 2)

Element	Quantity	Unit	Rate	Total (£)
Acute hospital accommodation	60,000	m2	4,600.00	276000,000
Demolition of existing carpark		m2	50.00	excl
Reprovision of carparking		nr	15,000.00	excl
Internal refurbishment and connections (LINK BRIDGE)	1,000	m2	2,500.00	2500,000
Demolition of existing INS facility on completion of new build option	46,000	m2	75.00	3450,000
Design fees including pre construction	7%	item		19736,500
OH&P	5.0%	item		15084,325
Sub-Total				**316770,825**
Add On Costs				
Professional and NHS Project Team Fees	8%	item		25341,666
Other costs - surveys / IT / domestics / estates	2%	item		6842,250
Equipment - Group 2+3 client direct	15%	item		47515,624
Inflation [4Q21 base date (350) to 3Q2027 (448)]	28.00%	item		111011,702
Optimism Bias	28.70%	item		145647,353
SUB TOTAL				**653129,420**
VAT	20.00%	item		130625,884
CAPEX				**783755,304**
SAY				**784000,000**

GIFA	60,000	m^2	
Construction Rate /m2	£	5,280	$/m^2$
Development Rate /m2	£	13,067	$/m^2$

6.0 COST ESTIMATE (Option 3)

Element	Quantity	Unit	Rate	Total (£)
Acute hospital accommodation (on site adjacent to CMB)	20,000	m2	4,600.00	92000,000
Internal refurbishment of existing INS building	40,000	m2	3,500.00	140000,000
Phasing of works	5%	item		7000,000
Design fees including pre construction	7%	item		16730,000
OH&P	5.0%	item		12786,500
Sub-Total				**268516,500**
Add On Costs				
Professional and NHS Project Team Fees	10%	item		26851,650
Other costs - surveys / IT / domestics / estates	2%	item		5907,363
Equipment - Group 2+3 client direct	15%	item		40277,475
Inflation [4Q21 base date (350) to 3Q2028 (468)]	33.71%	item		115152,150
Optimism Bias	42.10%	item		192272,863
SUB TOTAL				**648978,001**
VAT	20.00%	item		129795,600
CAPEX				**778773,602**
SAY				**779000,000**

GIFA	60,000	m^2	
Construction Rate /m2		£ 4,475	$/m^2$
Development Rate /m2		£ 12,983	$/m^2$

7.0 COST ESTIMATE (Option 4)

Element	Quantity	Unit	Rate	Total (£)
Internal refurbishment of existing QEUH building and existing INS facility	60,000	m2	3,500.00	210000,000
Displacement of existing QUEH services (refurbishment of existing)	20,000	m2	3,200.00	64000,000
Phasing of works	7%	item		14700,000
Design fees including pre construction	7%	item		20209,000
OH&P	5.0%	item		15445,450
Sub-Total				**324354,450**
Add On Costs				
Professional and NHS Project Team Fees	10%	item		32435,445
Other costs - surveys / IT / domestics / estates	2%	item		7135,798
Equipment - Group 2+3 client direct	15%	item		48653,168
Inflation [4Q21 base date (350) to 3Q2028 (468)]	33.71%	item		139098,016
Optimism Bias	47.20%	item		260391,486
SUB TOTAL				**812068,362**
VAT	20.00%	item		162413,672
CAPEX				**974482,034**
SAY				**975000,000**

GIFA	80,000	m^2	
Construction Rate /m2	£	4,054	/m^2
Development Rate /m2	£	12,188	/m^2

8.0 COST ESTIMATE (Option 5)

Element	Quantity	Unit	Rate	Total (£)
Acute hospital accommodation across various sites	60,000	m2	4,600.00	276000,000
Demolition of existing buildings (spinal and INS)	46,000	m2	45.00	2070,000
Phasing of works	5%	item		13800,000
Replacement office building for non-clinical support accommodation	10,200	m2	3,200.00	32640,000
Internal refurbishment and connections (LINK BRIDGE	1,000	m2	2,500.00	2500,000
Design fees including pre construction	10%	item		32701,000
OH&P	5.0%	item		17985,550
Sub-Total				**377696,550**
Add On Costs				
Professional and NHS Project Team Fees	10%	item		37769,655
Other costs - surveys / IT / domestics / estates	2%	item		8309,324
Equipment - Group 2+3 client direct	15%	item		56654,483
Inflation [4Q21 base date (350) to 4Q2028 (473)]	35.14%	item		168836,833
Optimism Bias	39.60%	item		257109,670
SUB TOTAL				**906376,515**
VAT	20.00%	item		181275,303
CAPEX				**1087651,817**
SAY				**1000000,000**

GIFA	60,000	m^2	
Construction Rate /m2	£	6,295	$/m^2$
Development Rate /m2	£	16,667	$/m^2$

Appendix J
Healthcare Improvement Scotland

Delta House
50 West Nile Street
Glasgow
G1 2NP

Contact: Derek Blues
Mobile: 07918 194957
Email:
derek.blues2@nhs.scot

Sent by email to: Daniel Connelly, Depute Director Public Engagement,
NHS Greater Glasgow and Clyde

7 January 2022

Dear Daniel

Institute of Neurological Sciences

Hope you are well and thank you for sending us the additional information requested.

Based on the material shared, the engagement activity to date appears to us proportionate given the scope and aim of the project – to increase capacity to support waiting times targets, and improve service users' access and patient experience.

We support the work that's been done to receive input and feedback from patient representatives in the early stages of the project (the Achieving Excellence Design Evaluation Toolkit workshop and the Design Statement workshop). We also welcome the approach taken to use Neurological Alliance to help make people aware of the project and invite them to be involved in the process.

We agree with your suggestions, given that not all patient and third sector representatives were able to attend the option development session on 24th November, to disaggregate the scores to see how they align with other groupings as part of the sensitivity analysis and to use service users' and carers' feedback to inform the next scoring exercise.

Building on the planned activity you have already outlined, our advice for next steps include:

- Involving service users and third sector representatives in the development of the equality impact assessment (the engagement process and the build) to capture any

issues (e.g. travel and access) – given this is a regional and national service consider how to capture this wider perspective.

- Ensure service user and third sector involvement in planning your engagement – for example, recruiting patient, third sector and public representatives to the engagement planning team to help inform the process, review draft communication materials, support evaluation of the process.
- Prepare information for people and communities about the reasons for change, potential benefits and identify constraints.
- Prepare wider public communication about the project and next steps to support openness, transparency: increase awareness of how people may be involved e.g. website, social media and via networks.
- Plan how you will evaluate the engagement to inform the process moving forward.

To help support us in providing you with relevant advice or support moving could you also share with us, when available: the communications and engagement plan, draft equality impact assessment and option appraisal reports?

In the meantime, we will check if there are any groups that we feel should be included in the fuller stakeholder mapping exercise you are doing.

I hope this feedback is helpful and please get in touch if there's anything you'd like to discuss.

Best wishes

Derek C Blues
Engagement Programmes Manager
(Grampian, Fife, Tayside and Service Change)
Healthcare Improvement Scotland – Community Engagement

Appendix K High Level EQIA Assessment

Protected Characteristic **Could the service design or policy content have a disproportionate impact on people due to one or more of the following protected characteristics?**	**Option1** **Do Minimum**	**Option 2** **Full single build on QEUH Site with link to QEUH building**	**Option 3** **Part rebuild on QEUH site and refurb of retained INS**	**Option 4** **Selected INS services integrated within QEUH with refurbishment of INS for remaining services**	**Option 5** **Phased new INS 'Campus' with link to QEUH Building**
Age?	An ageing population is one which has higher levels of cognitive impairment and physical disability. The Do Minimum option will see more services provided in accommodation which will not be suitable for these groups.	These plans describe a clinical transformation programme which is centred around the idea of creating hubs of services. Alongside material improvements in the physical infrastructure which will come from refurbishing or replacing the existing non-SHTM compliant facilities, the clinical strategy has been designed to make services easier to navigate for people with complex cognitive and physical challenges. As many older people also have cognitive and physical impairments, it is expected that these plans will improve their patient experience and support them better in managing their own well-being.			
Disability?	Current accommodation presents challenges for people with cognitive impairment and physical disabilities. The ability to retrofit DDA compliance into 1970s accommodation is severely limited. Adding additional activity into the existing buildings will further disadvantage people with disabilities.	These plans describe a clinical transformation programme which is centred around the idea of creating hubs of services. Alongside material improvements in the physical infrastructure which will come from refurbishing or replacing the existing non-SHTM compliant facilities, the clinical strategy has been designed to make services easier to navigate for people with complex cognitive and physical challenges.			
Gender identity?	No anticipated increased risk of disadvantaging people due to this protected characteristic or being part of this group.				
Marriage and Civil Partnership?	No anticipated increased risk of disadvantaging people due to this protected characteristic or being part of this group.				
Pregnancy and Maternity?	No anticipated increased risk of disadvantaging people due to this protected characteristic or being part of this group.				
Race?	No anticipated increased risk of disadvantaging people due to this protected characteristic or being part of this group.				
Religion and Belief?	No anticipated increased risk of disadvantaging people due to this protected characteristic or being part of this group.				

Protected Characteristic **Could the service design or policy content have a disproportionate impact on people due to one or more of the following protected characteristics?**	**Option1** **Do Minimum**	**Option 2** **Full single build on QEUH Site with link to QEUH building**	**Option 3** **Part rebuild on QEUH site and refurb of retained INS**	**Option 4** **Selected INS services integrated within QEUH with refurbishment of INS for remaining services**	**Option 5** **Phased new INS 'Campus' with link to QEUH Building**
Sex?	No change over present – all services have mixed-sex wards; as services operate at high levels of occupancy, it is not always possible to admit people to either a single room or single-sex bay.	The move to having greater levels of single-room accommodation will prevent instances of people being put into mixed sex accommodation during their treatment stay.			
Sexual Orientation?	No anticipated increased risk of disadvantaging people due to this protected characteristic or being part of this group.				
Have you considered the specific impact on other groups including homeless people, prisoners and ex-offenders, ex-service personnel, people with addictions, people involved in prostitution, asylum seekers & refugees and travellers?	Due to the nature of the services offered, the current base services already have a great deal of experience in working with people within these groups. As a national and supraregional specialist centre, it will always be difficult to balance the needs of marginalised groups against a 'once for Scotland' approach to healthcare. The plans, however, do not add additional increased risks of disadvantaging people due to being part of one of these groups.				
Does the service change or policy development include an element of cost savings? How have you managed this in a way that will not disproportionately impact on protected characteristic groups?	All options have additional revenue costs. The clinical redesign programme is not driven by cost saving, but by a genuine desire to invest in and improve the services provided at INS to meet the needs of all our service users and patients going forward.				