

Meeting:	NHS Grampian Board Meeting
Meeting date:	1 December 2022
Item Number:	10.1
Title:	Infrastructure Essential Equipment Replacement Programme - Upgrade of Hutchison Magnetic Resonance Imaging (MRI) scanner, Woodend Hospital
Responsible Executive/Non-Executive:	Paul Bachoo – Portfolio Executive Lead/ Medical Director Acute Sector Paul Allen – Director of Infrastructure and Sustainability
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1 Purpose

This is presented to the Board for: Decision

- Approval – approve the upgrading of the Hutchison, MRI scanner situated at Woodend Hospital including an upgraded magnet, a replacement Faraday cage, enabling/turnkey installation works and the other necessary improvements to plant and room layout in order to meet the required Scottish Health Technical Memorandum (SHTM), Infection Prevention and Control and General Data Protection Regulation (GDPR) requirements.
- Approval - Delegate authority to the Board’s Director of Infrastructure and Sustainability to authorise the necessary procurement and to allocate funding to the project as appropriate from the Board’s formula capital allocation in the 2022/23 and 2023/24 financial years, not to exceed £1.85 million.

This report relates to:

- Other - Essential Infrastructure Replacement
- Service Transformation – Through Digital Strategy

This aligns to the following NHS Scotland quality ambition(s):

- Safe
- Effective
- Person Centred

2 Report summary

2.1 Situation

Equipment Replacement Risk assessment and Prioritisation

The Board's Equipment and Medical Devices group, accountable to the asset Management group, is tasked with ensuring the risk assessment, peer review and prioritisation of replacement equipment requirements in line with simple risk criteria:

- Reduced risk of harm and improved statutory compliance e.g. fire/HAI (**safe**)
- Improved access, quality and efficiency of key diagnostic processes (**effective**)
- Impact on patient experience and environment (**person centred**)

This approach to risk assessment also supports the key strategic commitment as described under Pathways within "Plan for the Future" through alignment with Access.

Following this approach, the Board's Equipment and medical Devices group, have identified the ageing Hutchison MRI scanner at Woodend Hospital as a significant assets at high risk of failure and therefore a priority for immediate replacement.

1.2 Background

1.2.1 Description of the service

MRI is a medical imaging technique that uses a magnetic field and computer-generated radio waves.

The clinical benefit of using MRI is that it excels in imaging organs, soft tissues, ligaments and other parts of the body, which are difficult to see. MRI also does not use radiation, which is potentially harmful to patients.

The care and management of patients often involves MRI as a crucial part of the diagnostic process, complementing patient history, examination and other clinical

investigations. Diagnosis is critical in improving patient outcomes, and MRI is a key enabler in delivering personalised care where patients often have multiple and complex needs.

The Hutchison MRI service, based at Woodend Hospital is of significant importance to the resilience and continued availability of an effective MRI service within NHS Grampian. It is the main scanner used to support cancer diagnosis and operates typically for 57hrs per week delivering on average, 2400 scans per annum to the following clinical cohort:

- Liver
- Gynaecology
- Prostate
- Sarcoma
- Small Bowel
- Renal
- Musculo-Skeletal
- Inpatients from Woodend and Dr Gray's Hospitals

1.2.2 Condition of current equipment and supporting infrastructure

The existing scanner is a Siemens Avanto 1.5 Tesla magnet strength. The operating reliability and the technology specification of the current scanner is now sub-optimal. It is 15 years old, installed in 2007, at high risk of failure and although historically has been a very reliable machine with limited downtime, recently, due to its age, there have been an increasing number of technical issues, which if not addressed will potentially lead to failure of the equipment and a consequential significant disruption to service.

The building infrastructure is also ageing and in need of some improvement. The existing air conditioning plant is prone to failure with resulting high temperatures and a failure to meet the required air change standard on a consistent basis and improvements to the departmental layout are required to meet Infection Prevention and Control standards and to comply with General Data Protection Regulations (GDPR).

- Altering the clinical layout and environment will improve compliance with Infection, Prevention and Control guidelines and create more space and privacy for the MRI team, enhancing the patient facing experience, (privacy when discussing medical history for everyone coming into the MRI environment, privacy around cannulation and bowel prep prior to scanning).

- Upgrading the plant room will benefit patients as the scanner room will have better controlled air temperature, and this will improve the patient experience while they are on the scanner, which is an enclosed environment.

An added benefit from progressing the replacement of this aged scanner is that the improved technology now available as standard with a modern MRI scanner will deliver a significant improvement in the efficiency and effectiveness of the service. Higher quality images and faster imaging time with fewer artefacts will facilitate increased throughput and productivity.

All of the planned changes have a direct and positive impact on the service experienced by patients, improving the flow of patients through the facility and enhancing confidentiality and clinical surroundings.

1.2.3 Proposed procurement and project management arrangements

Following agreement by the Equipment and Medical Devices group to prioritise replacement, the Radiology team initiated a procurement process using the existing National framework contract for the supply of MRI imaging technology. On conclusion of this process, Siemens, the manufacturer of the existing scanner, was selected as the preferred supplier of a new scanner. Subsequent dialogue with Siemens has identified that the existing magnet is in a very good condition and capable of upgrade at a saving of £0.3m compared to replacement of the whole scanner and that this can be achieved with no difference to clinical functionality, expected 10 year useful life span, turnkey installation or maintenance requirements.

The overall project will be overseen by the Radiography Service Manager supported by a technical project manager from the estates team and also with service planning support from the Planning, Innovation and Programme's Directorate. The installation works associated with the equipment, including replacement of the Faraday cage also significantly beyond its recommended life span, will be sub-contracted out by Siemens to a specialist provider. All other infrastructure works will be procured directly by the estates team using the Board's measured term contractor framework.

The projected programme is a 4-month lead-time following approval, to allow manufacture of the equipment and a subsequent 3 month installation period with a target completion date of 30 June 2023.

2.3 Assessment

The Hutchison MRI department provides the high acuity imaging for cancer patients and due to the age of the scanner and plant, there is a risk of further faults will develop and possible complete failure of either the scanner or the air conditioning.

This would impact severely on an already challenged NHS Grampian MRI service, which currently has significant waiting times for patients.

An upgrade to the existing system will retain the original hardware of the magnet. This is advantageous as the magnetic field is very homogenous and produces good image quality. An upgrade is significantly cheaper than purchasing a new replacement scanner and retains all of the benefits. Siemens MRI scanners have demonstrated good image quality in NHS Grampian to date. This option will also minimise additional training requirements of radiography and radiology staff due to familiarity within the equipment and allow a smooth transition to the new system.

2.3.1 Quality/ Patient Care

Improving the quality of patient care throughout their patient pathway is an integral aspect of this project. The investment in the upgrade of the MRI magnet will enable both a more resilient clinical service as unscheduled downtime is no longer a service risk, and the patient will be managed in more optimum surroundings, enhancing patient confidentiality. Patient throughput and therefore activity levels will also increase as a result of the faster imaging time and this should reduce waiting times. The minimal changes to physical environment and plant are designed to optimise patient experience.

2.3.2 Workforce

There are known workforce challenges across NHS Scotland, and the planning to upgrade the facility plant, to improve air cooling, will demonstrate the Health Board's commitment to improving services for both staff and patient

2.3.3 Financial

The capital cost of the project is estimated at £1.85m inclusive of VAT. This is analysed as follows:

	£million
MRI Scanner Upgrade/Turnkey Installation	1.10
Additional infrastructure improvements including ventilation	0.45
Mobile MRI Hire for Project Duration	0.15
Risk Contingency	0.15
Total Project Cost	1.85

The upgrade of the current MRI system represents a saving of circa £300k compared to the price of a fully new system, as confirmed by the NSS National Procurement Team.

Revenue operating costs e.g. staffing, consumables, utility and maintenance (after warranty period) costs will be the same as existing.

Capital funding of £1.85 million to cover the required investment in the project has been prioritised as part of the Board's formula capital allocation split across 2022/23 and 2023/24 financial years. The formula capital allocation totals £13.7m annually and is made available to the Board specifically to address backlog maintenance and essential equipment replacement.

2.3.4 Risk Assessment/Management

Approval of the recommendations as outlined will assist in mitigating the Board's strategic risk number 3127 Aging estate "leading to denial of facilities".

The risk associated with physical condition and statutory compliance of the current facility will also be addressed as a result of the upgrade to physical space and as mentioned in 2.3 above, progressing the project will mitigate the risk of service disruption through breakdown or failure of the scanner and/or the ventilation plant.

Risk management procedures are an integral feature of the project with a comprehensive risk register maintained monthly by all parties, and regular reporting of key risks to the Asset Management Group.

2.3.5 Equality and Diversity, including health inequalities

Key principles articulated in the “Plan for the Future” around demonstrating joined up, connected links with, and around people are embedded within the Project.

Stakeholder engagement with public and staff has supported the design work. Delivery of the project will result in a positive impact on patient experience and will bring added benefits to patients and staff through a significant improvement in the clinical environment as a result of enhanced patient confidentiality, better supporting patient privacy and dignity.

2.3.6 Other impacts

There are no adjacent clinical services to the construction site however to ensure no / minimal impact on other services across the Woodend Hospital site, there will be full engagement with staff and patients as part of the advanced mobilisation and logistics work stream.

In terms of the delivery of MRI service throughout the upgrade and construction time period, a plan is in place to ensure continuation of the service through provision of temporary mobile capacity for the duration of the works. The cost of renting, installing and removing a mobile MRI scanner is included in the budgetary estimate for the project.

2.3.7 Communication, involvement, engagement and consultation

As part of a wider infrastructure investment programme, a communication work stream has been put in place to engage with patients and staff around the changes and enhancements to the physical space and equipment. A suite of communication documents will be developed and maintained throughout the project, to ensure ongoing active wider stakeholder engagement.

The adjustments and improvements to the floorplan for the Hutchison MRI upgrade are directly resultant from patient and staff feedback around lack of dignity and privacy in the current department.

2.3.8 Route to the Meeting

- Recommendation from the Equipment and Medical Devices group to prioritise replacement.
- Asset Management Group have agreed to prioritise the budget for replacement from the Board's formula capital allocation.

2.4 Recommendation

The Board is asked to:

- Approve the upgrading of the Hutchison, MRI scanner situated at Woodend Hospital including an upgraded magnet, a replacement Faraday cage, enabling/turnkey installation works and the other necessary improvements to plant and room layout in order to meet the required SHTM, Infection Prevention and GDPR requirements.
- Approval - Delegate authority to the Board's Director of Infrastructure and Sustainability to authorise the necessary procurement and to allocate funding to the project as appropriate from the Board's formula capital allocation during 2022/23 and 2023/24 financial years, not to exceed £1.85 million.

18 November 2022