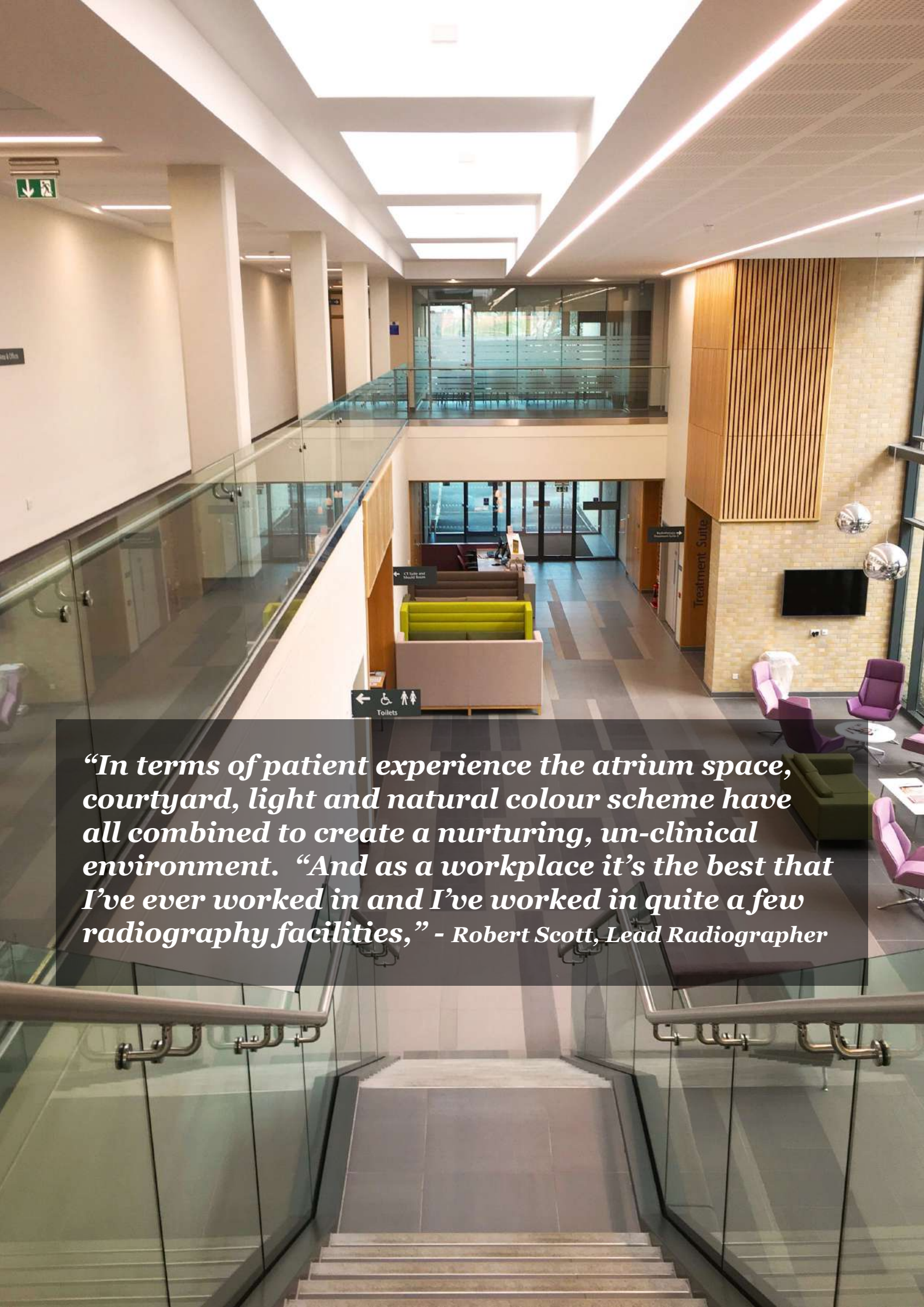


Architecture & Design Scotland

Ailtearachd is Dealbhadh na h-Alba

Lanarkshire Beatson A Case Study



A wide-angle photograph of a modern hospital atrium. The space is characterized by its bright, open-plan design, featuring a glass-enclosed staircase in the foreground and a mezzanine level with glass railings. The ground floor is furnished with a mix of green and purple armchairs and sofas, creating a comfortable and un-clinical environment. The walls are a combination of light-colored brick and vertical wood slats, and the ceiling is a complex, multi-level structure with recessed lighting. A sign for 'Toilets' is visible in the middle ground, and a 'Treatment Suite' sign is on the right wall. The overall atmosphere is clean, bright, and welcoming.

“In terms of patient experience the atrium space, courtyard, light and natural colour scheme have all combined to create a nurturing, un-clinical environment. “And as a workplace it’s the best that I’ve ever worked in and I’ve worked in quite a few radiography facilities,” - Robert Scott, Lead Radiographer

Introduction

The Lanarkshire Beatson at Monklands General District Hospital is something of “a one-off” in terms of Scots healthcare buildings, according to Colin Lauder, Head of Planning and Performance at Lanarkshire NHS. Indeed the facility, which is dedicated to the delivery of radiotherapy services in the West of Scotland, is the first “satellite building” in Scotland, operating as part of the Beatson West of Scotland Cancer Centre with clinical services delivered by NHS Greater Glasgow, while NHS Lanarkshire provides the building and associated support services.

“In 2010-11 Scotland went through something of a crisis with regard to access to radiotherapy,” explains Colin Lauder on the emergence of the project, born out of a need to cope with a high demand for patient radiotherapy, particularly in relation to the Beatson West of Scotland at Gartnavel Hospital, one of the busiest cancer treatment centres in Western Europe.

“There wasn’t a physical option to put any more radiotherapy treatment bunkers in the Beatson West of Scotland Unit - there just wasn’t the capacity. So we needed to come up with what was referred to as the Central Belt solution. The options appraisal looked at the demographic spread across Central Scotland as well as mapping tumour types, incidents, observations, and looking at transport and accessibility. Monklands Hospital in Airdrie scored heavily as a location.”

Another key factor in the selection process was the ability of the site at Monklands to meet the challenges of implementing HNS Scotland’s ‘Route Map to the 2020 Vision for Health and Social Care’, alongside progressing the ‘Detect Cancer Early’ programme, the ‘Better Cancer Care’ action plan and the ‘Health Care Quality Strategy’.

Brief

As the first development of this kind in Scotland, the project brief essentially sought a facility that would meet the needs of cancer patients within a receiving and caring environment. Specifically the unit is designed to plan and treat four main cancers types: breast, prostate, lung and colorectal, which covers around three quarters of cancers in Scotland. The aim is to reduce journey times for patients in Central Scotland, rather than travelling into Glasgow for each day of their treatment. Around 80 patient treatments are now carried out daily.

Procurement

Built on a vacant site on the Monklands hospital campus, the new £22 million facility, which hosts two state of the art linear accelerators (with provision for another) as well as a CT scanner and Simulator facility, plus a radiotherapy mould-making room and on-treatment review clinics, was funded by the Scottish Government Health and Social Care Directorate through the Frameworks Scotland procurement initiative.

Following submissions by five contractor-led design and build teams - all included under the auspices of Framework Scotland’s Primary Supply Chain Partners (PSCPs) - the chosen delivery team comprised Main Contractor Laing O’Rourke in conjunction with Keppie Design as Architect and Interiors Designer.

Design Challenge

The principal design challenge faced was to combine, within a single facility, radiation-proof bunkers made from thousands of tonnes of in-situ concrete, whilst at the same time also creating a calming and aesthetically pleasant environment to meet the needs of potentially highly anxious patients.

Logistically, the site also presented an additional challenge in that it is framed by existing hospital buildings on two sides, with



Natural Buff Brick Cladding provides an appealing aesthetic within a tight build schedule

the key accident and emergency route and a service road on the other two, none of which could be moved.

The design solution produced by Keppie Design, following consultation with a varied body of stakeholders across a number of NHS organisations and patient representative groups, was to create an 'inward-looking' two-storey building. This would feature a carefully designed reception and waiting area overlooking an attractive garden 'oasis' at its heart – primarily with the aim of putting patients at ease before they enter the radiotherapy area or other clinical facilities.

Site and Construction

"It's quite a small site," explains Peter Moran, Managing Director of Keppie Design. "Looking at the option appraisals

we decided very early on that there was no point in trying to create any space around the outside of the building, as there wasn't the best outlook, surrounded as it is by the hotch potch of existing hospital buildings and car parks. So we pushed the building to the absolute limit of the site as much as we could to create more space inside, hence the horseshoe plan of the building arranged around the garden courtyard."

Formally, the building by its nature - essentially as a bunker container - had to be guided by an unfussy functionality. "We knew that we were going to have large areas of blank wall just because of what goes on behind them," explains Moran. "However a big blank wall that's made of nice facing brick is always going to be considerably more appealing than a big blank rendered wall or a huge wall of cladding panels."

The decision to finish the structure in a natural buff brick cladding not only reinforces the public nature of the building,

but also provides a texture and colour variation and a tactility that helps reduce the perceived scale of the building that in turn can reduce anxiety.

“The actual finish is brick slips rather than a facing brick as this allowed for a more fast tracked construction,” continues Peter Moran. “We had a very, very tight programme to build and we couldn’t risk slipping because we had linear accelerators that needed to be delivered and installed, and they have a fairly long lead in time for commissioning before patients can be introduced to them.

“The brick slips allowed us to create a building with an appealing aesthetic within the tight build schedule.”

Interior Plan and Design – Patient Accommodation

Internally, the “light and inviting” final building features a central two-storey atrium space that accommodates the entrance,

reception and main public/ patient waiting area, and provides access to all patient facilities including the CT/ Simulator scanner suite, the on-treatment review clinic and the radiotherapy treatment areas. By concentrating all patient activity on the ground floor this ensures accessibility for patients with additional mobility needs.

“Radiotherapy-wise, everything on the south side is treatment, and everything on the north side is either some degree of pre-treatment planning or nurse review areas, so it’s all pretty central. Within 15 paces you can be at the extreme south or the extreme north end, so we’re really self-contained, which works very well,” explains Robert Scott, Lead Radiographer at the Lanarkshire Beatson.

“All the ground floor accommodation radiates out of the one central space - the main entrance hall and waiting area adjacent to the garden - so this, combined with minimal corridor lengths, means that patients can’t get lost anywhere within the building,” explains Lead Architect Peter Moran. Extensive glazing to the atrium space also ensures that all patient waiting and sub-waiting areas connect directly to the garden at the heart of the main hospital site, thereby offering a relaxed and restful environment pre and post treatment.

View towards the main entrance from the access road





Linear Accelerator Treatment Machine, with skyview to put patients at ease

In addition to the two new state-of-the-art linear accelerator treatment machines currently in use, accommodation for a third linear accelerator treatment room has also been included. This 'spare' treatment room has been designed to help facilitate a 'business as usual' service during machine replacement. Expansion space has also been integrated into the design of the central garden to allow the potential for the construction a fourth treatment bunker if required.

Interior Plan and Design – Staff Accommodation

Support and staff accommodation is located on the first floor with good vertical links, including a staircase and lift, introduced to give easy access for staff to all treatment areas. "We were keen to take all the staff up a level and have all their accommodation on a different floor. A lot of work has to be done in terms of treatment planning and reviewing and we wanted staff to be able to retreat to a nice quiet area that allowed them the ability to do that," explains Moran.

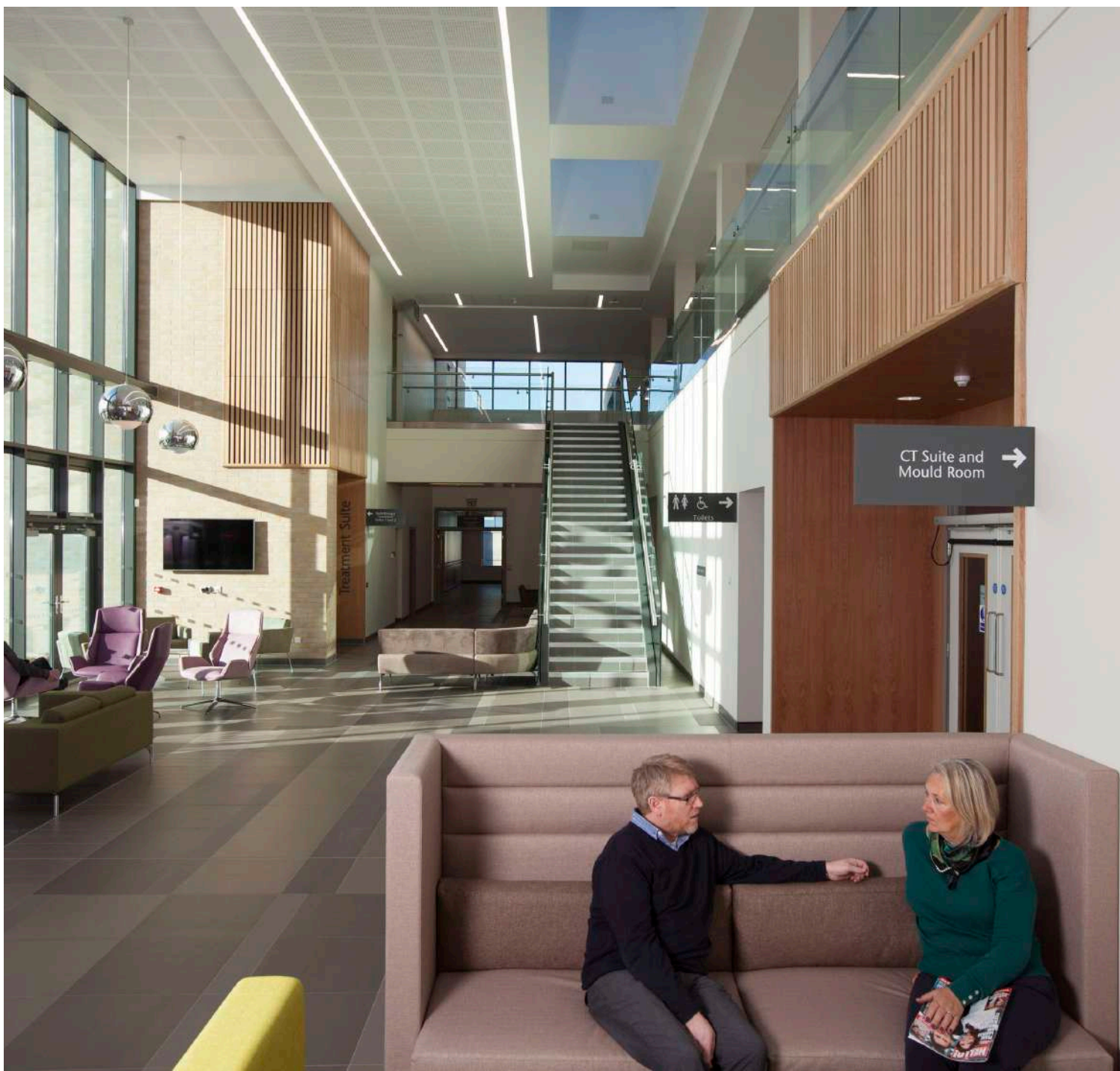
The clinical service delivery model used for the radiotherapy planning and treatment is 'paper-lite', which means that staff can work independent of geographical location, in Lanarkshire or Glasgow, to prepare the electronic treatment plans irrespective of the location of the patient's treatment.

"As we're a satellite, and not a standalone independent unit, all our protocols such as the IT systems and network are exactly the same as the main centre," explains Robert Scott. "So in reality if a patient was to come here, and our machines didn't work for whatever reason, we could send them to Glasgow as the machines are linked through a central system.

The minute that a patient is scanned, all the data goes into an in-house software programme database that can be accessed across the network. This connectivity has been a real success."

Another area of the new Lanarkshire Beatson that works particularly well for staff and patients alike, according to Robert Scott, is the overall quality of the interior finishes. In material terms, the main entrance hall features timber panelling that softens the walls, with porcelain floor

The entrance lobby resembles more of a hotel lobby than a hospital.



tiling, along with the high ceiling and clear glass balustrades on the staircase, creating a feeling of spaciousness. The furniture avoids traditional vinyl backed chairs and uses instead colourful, cafe style seats and coffee tables, to create a relaxed, un-clinical feeling to the waiting areas.

Experience and Evaluations

“The first impression coming into the building is that it looks more like a hotel lobby. It doesn’t look like a hospital at all, and this carries on all the way through the building,” explains Robert Scott. “The Beatson Cancer Charity raised £400,000 and put this into a pot to be used that for what they call ‘enhancements’. So all the bespoke furniture, floor tiles, lights and the courtyard has benefitted from this fund. We were always intending to have a courtyard, but it was never meant to be as lush as it is.”

The garden courtyard, featuring tree, shrub and hedge planting around the periphery,

serves to create a high quality setting within the wider Hospital estate, whilst providing the sense of intimacy and human scale for patients, visitors and staff. “As we move around the courtyard garden, there’s an area with canopy across it like a wind sail. This is used by patients taking part in classes such as Tai Chi. It’s a good therapeutic use of the garden space,” admits Scott.

Art Strategy

As part of the NHS art strategy, paintings by Glasgow-based artist Archie Forrest have been scanned and printed onto laminate panels displayed around the building. These images, based on foliage found in the Scottish landscape, complement the building’s subtle colour palette, itself referencing Scotland’s natural environment. Forrest’s images appear in the sub-waiting areas, the link corridor, on doors throughout the building and at the reception desk, and are used in the maze corridors to make the walk to the radiation therapy areas less intimidating for patients.

Artworks by Archie Forrest are interspersed throughout the facility





Patient courtyard



Bespoke Design features

Another feature that was deemed less intimidating to patients is the informal changing areas adjacent to the radiography treatment bunkers. “Through user group consultation and also some consultation with patients, we chose not to have changing rooms. One of the reasons behind this is that there’s an interaction between staff and patients when they are changing and prepping for their treatment, and this has a calming effect on the patient,” explains Robert Scott.

Following the opening of the new centre in 2015, one feature of the design has changed in terms of its functionality, admits Scott. “We have a therapies room now. Originally this was designed as a quiet room but we decided that we’ve probably got enough space in the building to meet this need. So we gave the room up to the Beatson Cancer Charity, and what they’ve done is run with it, and refurbish it inside to create a room running therapies like reflexology, massage, and podiatry on weekdays. It’s been a great success, it’s very popular with patients.”

Sustainability and Performance

Since opening, the building has been performing well on an environmental and sustainability level, according to the building's users. In order to lower its carbon footprint, the centre features photovoltaic cells, LED and low-energy lighting, solar-control glass on the curtain walls and roof lights, a heat recovery system in the extraction on system, and where possible, natural ventilation. The building was awarded a BREEAM Very Good rating at design stage.

"In terms of renewables we had to bear in mind that we are on an existing hospital site, so we are taking up power generation from that," explains Peter Moran. "We are pleased with our BREEAM Very Good rating."

Conclusion

Overall though, Peter Moran believes the building meets its key objectives. "Personally, as the architect, I think a great deal of the success of the building is the internal environment, the oasis we've managed to create in what is a very, very busy hospital site. We worked very hard, as did the Beatson Cancer Charity, who did a lot of fundraising to help with the enhancements to the quality of the finishes

that the NHS budget could not cover. It's really testament to them that they were prepared to stick with us and really push to gain a much higher quality."

"Although we had a very rigid design management protocol to follow we didn't have to reduce the aspirations at any point," concludes Moran. "We went through all the Office of Government Commerce Gateway Review checklists to make sure that we achieved everything that we set out to. And at the end of the day we got, I think, a very impressive building that was built without compromise."

Lanarkshire Beaton's Robert Scott largely agrees. Although he admits that there are some areas that could be improved, such as more beneficial areas for staff including a larger staff room and exercise areas, as well as allocated independent car parking for patients, the general consensus is that the building is an unmitigated success.

In terms of patient experience the atrium space, courtyard, light and natural colour scheme have all combined to create a nurturing, un-clinical environment. "And as a workplace it's the best that I've ever worked in and I've worked in quite a few radiography facilities," says Scott. "Everybody's really pleased with the building. Most of the staff with experience working in radiography have been used to been working in dark basements. So to come here, it's a win-win situation."

Patient lobby from reception





Comfortable relaxed seating providing a view to the landscaped courtyard helps put patients at ease

“The project involved a lot of hard work over a compressed period. But in all sincerity, I don’t have anything particularly negative I can report. In terms of outcome it’s something we’re very proud of.”

A&DS would like to thank the following for their time and candour:

Colin Lauder – Deputy Director of Strategic Planning
Garry Currie – Head of Radiotherapy Physics
Robert Scott – Lead Radiographer, Lanarkshire Beatson
Peter Moran – Managing Director, Keppie

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