

A Healing Bridge: King's Critical Care Centre, London



KCCC: 'The Healing Bridge' - Team



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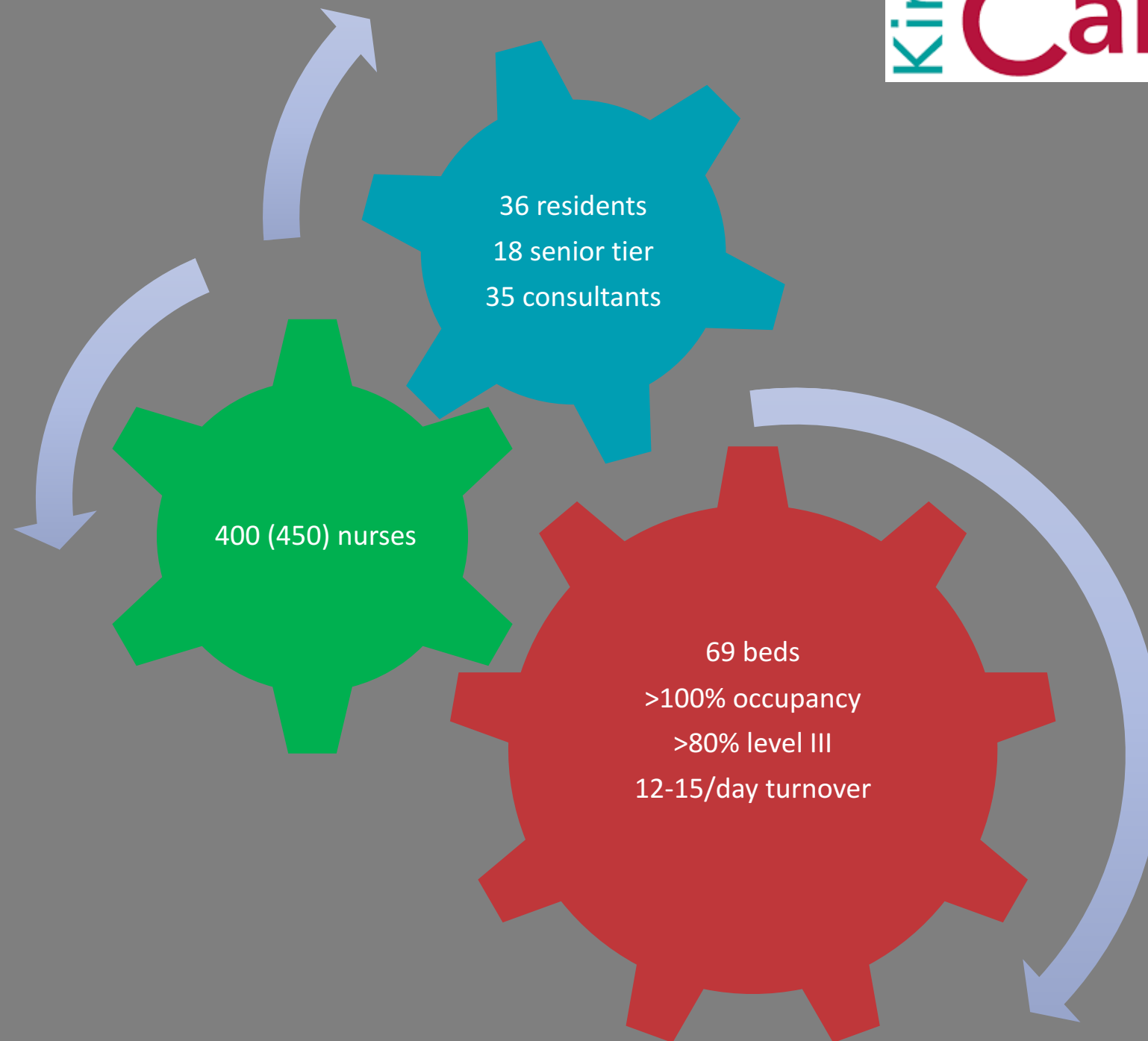
KCCC: 'The Healing Bridge' - Vision



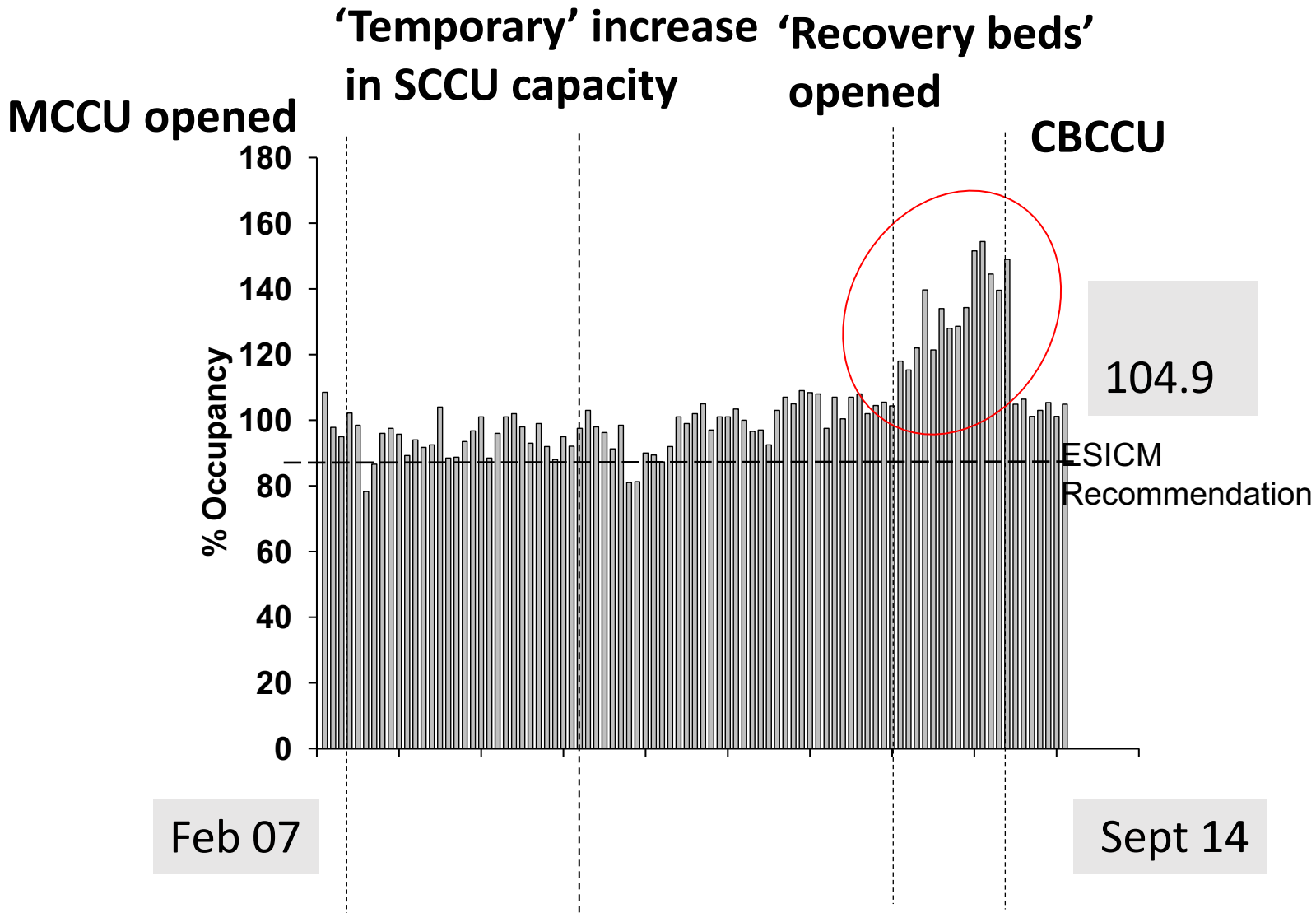
- First opened doors in 1840
- NHS Foundation Trust status 2006
- One of London's largest & busiest teaching Trusts
- Has an international reputation for pioneering medical research & excellence in the specialised treatment of many conditions
- Home to one of London's 3 Major Trauma Centres
- Serves a trauma population of 4.5 million people across South-east London & Kent
- King's Critical Care is the second largest and the best-performing service of its kind in the UK

King's College Hospital

KCCC: 'The Healing Bridge' - Vision



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KCCC: 'The Healing Bridge' - Vision

'KCH's vision is to become a fundamentally new kind of hospital, built around patient need, offering all KCH patients – local, national and international – the highest quality of care, delivered as part of a joined-up and well-managed healthcare system built in partnership with GPs and other healthcare providers.'

King's College Hospital's Vision

KCCC: 'The Healing Bridge' - Vision

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“quantity”

King's College Hospital's Vision

KCCC: 'The Healing Bridge' - Vision

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“quality”

King's College Hospital's Vision

KCCC: 'The Healing Bridge' - Vision

"I thought I was in a big factory. A big noisy factory that used my blood to run the noisy machines all around me. I know now the factory workers were the nurses and doctors who were trying to save my life, and the machines were my life support equipment.."

Penny, King's Critical Care patient

The hallucinations were like waking nightmares and they were really vivid."

John, King's Critical Care patient

"The actual immediate environment was so banal and lacking in any normalcy."

John, King's Critical Care patient

"When I came round from my coma, I was on very strong painkillers which gave me nightmares – I thought people were trying to attack me, and that spiders were coming down the walls."

Peter, King's Critical Care patient

"I become really paranoid. I wanted to be moved out of the hospital, I didn't trust anyone. I kept thinking we had all been moved to some weird hotel in Kent by the seaside."

John, King's Critical Care patient

"My memories of the current Critical Care Unit are quite disjointed. It was hard to distinguish between day and night ..."

Helen, King's Critical Care patient

"When he did come round, he thought he was in the basement, but we were actually on the first floor, there were just no windows."

Justine, relative of a King's Critical Care patient

KCH Critical Care Patient Experience

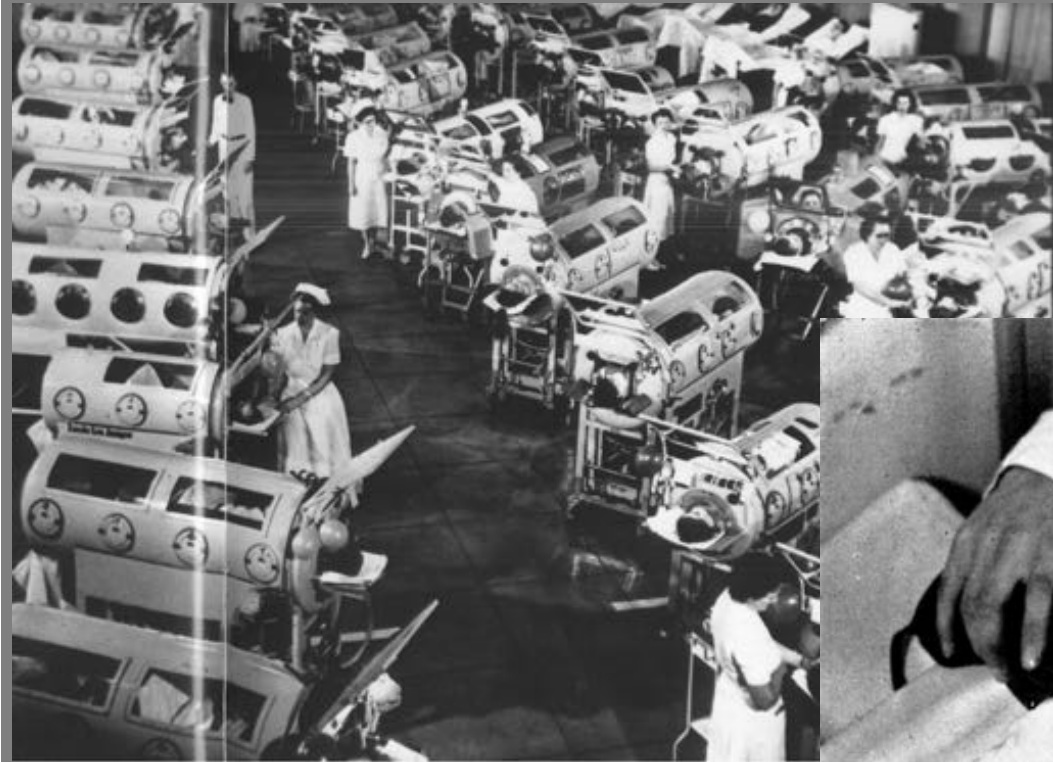
KCCC: *'The Healing Bridge'* - Vision



'80% of critical care patients experience delirium, post-traumatic stress disorder (PTSD), anxiety or depression'

Critical Care Patient Experience

KCCC: 'The Healing Bridge' - Vision



[Iron lung ward filled with polio patients, Rancho Los Amigos Hospital, California \(1953\)](#)

'Form follows function'



1952 Bulbar Polio epidemic

200 medical students delivering positive pressure ventilation reduced mortality from 90% to 25%.

Blegdam Hospital

Alexander Lassen (1900–1974), chief physician

Thirty years of critical care medicine

Jean-Louis Vincent Critical Care 2010, 14:311 – Conclusion:

NO MAGIC BULLET

[Mervyn Singer², John J Marini³, Rui Moreno⁴, Mitchell Levy⁵, Michael A Matthay⁶, Michael Pinsky⁷, Andrew Rhodes⁸, Niall D Ferguson⁹, Timothy Evans¹⁰, Djillali Annane¹¹ and Jesse B Hall¹²](#)

Capitalise on the **Opportunity and Location**

Explore and Maximize **Potential**

Interior more important than exterior

As **Therapeutically** important as drugs and
equipment – **Clinical Tool**

Designed by **Patients**, **Family** and **Staff**

Impact of a 'little bit more' – fundraising

Art not for Art's sake

Critical Care: Key Issues

KCCC: 'The Healing Bridge' - Vision

Delirium/Confusion/Agitation/Depression

Noise/Natural light/Day Night

Social isolation

Control the environment

Enhanced Communication

Improve mobility

Privacy and dignity

Individualise care

Nurture the community

Staff burnout and retention

Critical Care: Key Goals

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"little as we know about the way in which we are affected by form, by colour, and light,
we do know this,
they have an actual physical effect"

Florence Nightingale

KCH Vision for KCCC

KCCC: 'The Healing Bridge' - Vision

“there is more to life than death”

“more than a broken body”

KCH's principle vision for critical care focuses beyond survival and on the quality of the patient's recovery. Where conventional medical research may fail, focusing on improvements in the patient environment can enhance recovery.

KCH Vision for KCCC

“Time to Care”

“Space to Care”

“Time to Care”

Make Information Technology work for us

Improve informatics and automated data collection

Enhance the interface – hardware and software

Time to understand patients needs

“Space to Care”

The most technically advanced Unit possible

All beds suitable for all

Expand the therapeutic arsenal beyond expensive new drugs and technology

Technology can personalise the environment

Personalise technology (Colour?)

Personalised medical care (genomics, proteomics, metabolomics etc) and personalised environment

Interactive communication systems – combatting communication barriers and patient isolation

‘Positive simulation’

World’s first outdoor intensive care facility

Critical Care Patient Experience

KCCC: 'The Healing Bridge' - Design

'EBD (Evidence Based Design) is a process for creating health care buildings informed by the best available evidence concerning how the physical environment can interfere with or support activities by patients, families, and staff, and how the setting provides experiences that provide a caring, effective, safe, patient-centered environment.' **Ulrich, Zimring**

'Research is increasingly finding links between contact with nature and human physical and mental health.' **Fuller et al.**

'The built environment is a powerful force in patient care. If properly designed, it enables care providers to do their work more effectively and it has the potential to enhance patient safety.' **Jain Maikin**

'Artwork can be effective in soothing stress and providing distraction from pain, especially when it depicts nature or people with emotionally positive facial expressions.' **Ulrich**

'Research convincingly suggests patients experience less stress and pain if they can view nature and other pleasant distractions.' **Ulrich**

'There are a wide variety of environmental factors that affect patients on ICU. They all interact with each other and can have significant effects on the health, well-being, and outcome of critically ill patients.' **Wenham, Pittard**

Evidence Based Design

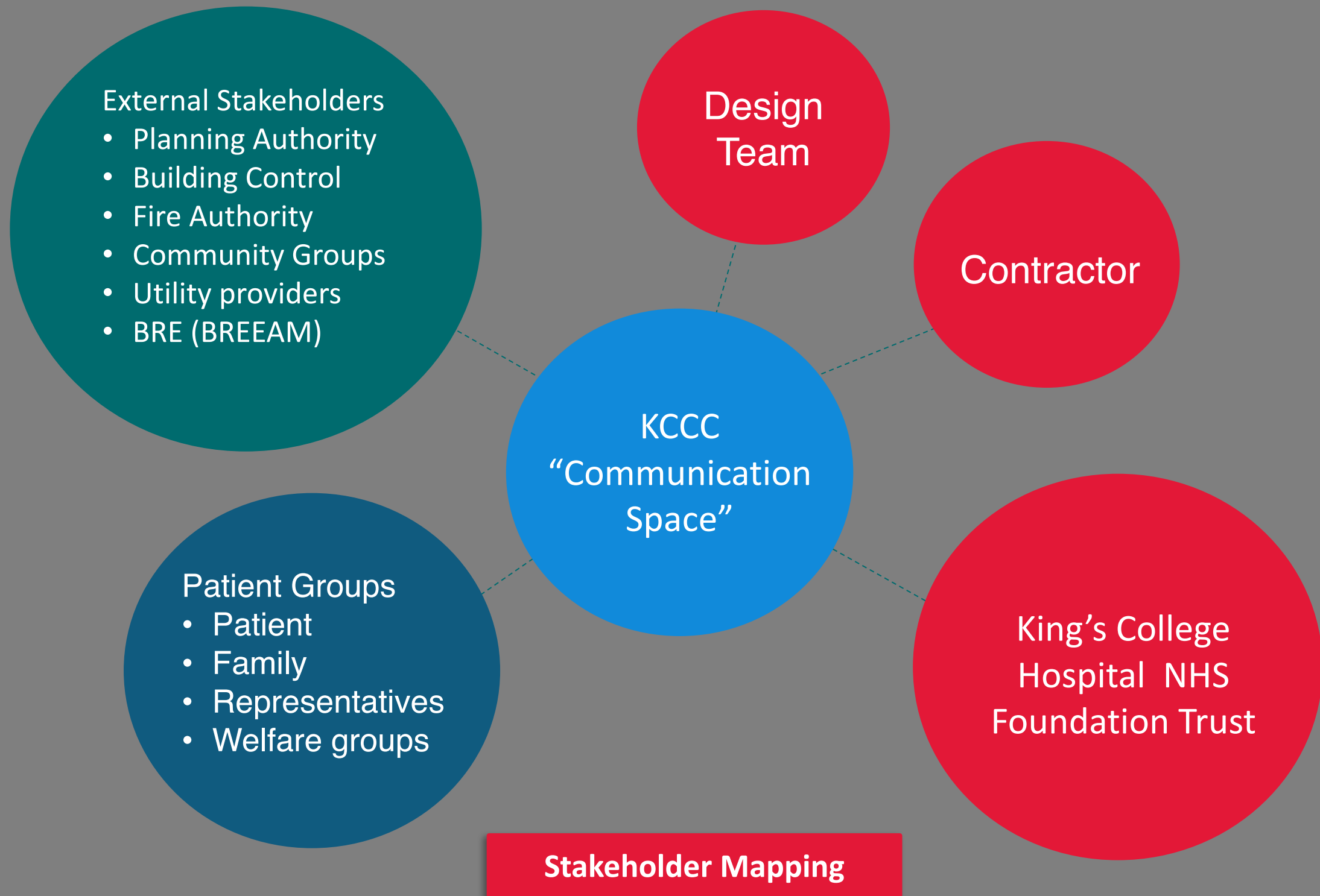
KCCC: 'The Healing Bridge' – Design Drivers

Suggestions for improvement informed key design drivers:

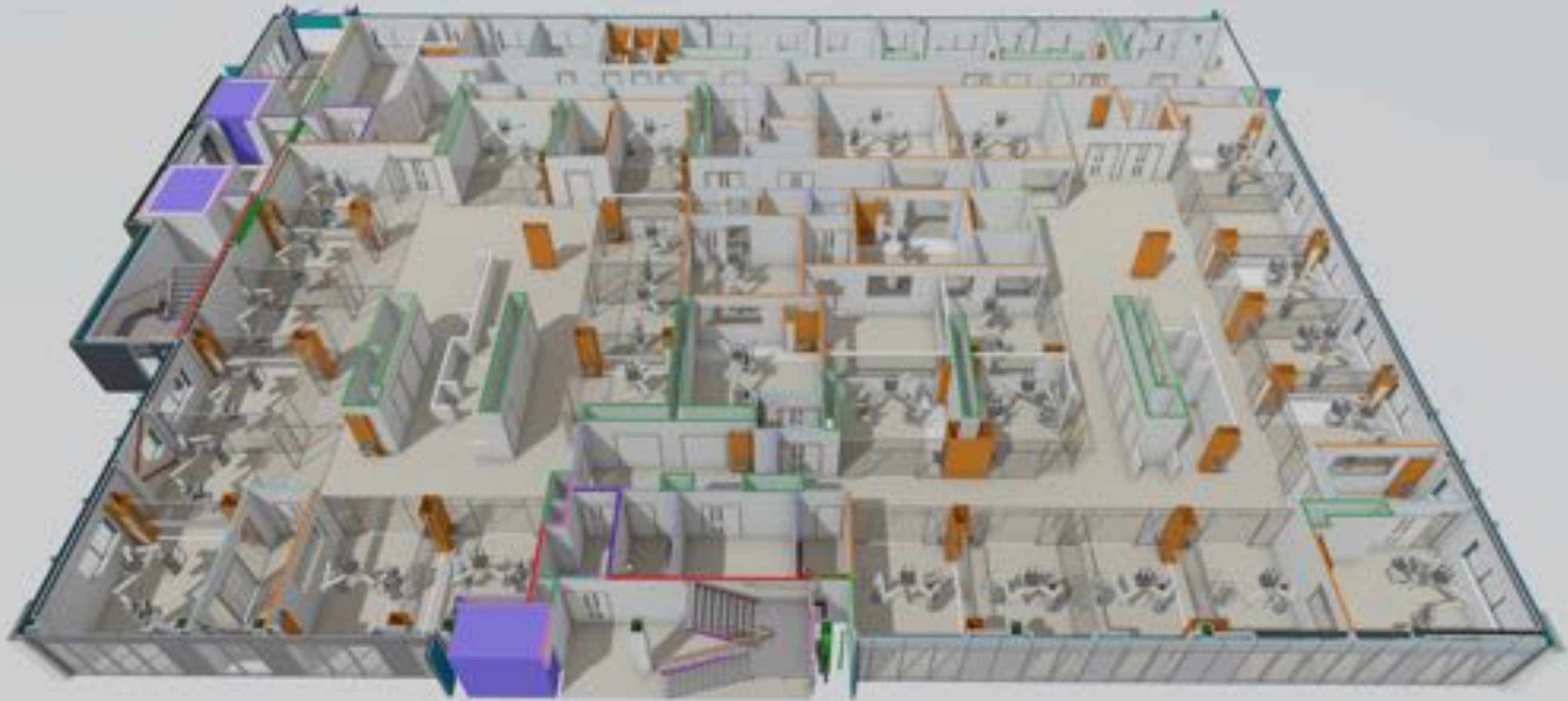
- A bed with a view;
- The ability to look around;
- More environmental control;
- Less isolation;
- More understanding of immediate surroundings;
- Keeping in touch using everyday technology;
- Access to nature – the ability to access the outside;
- Artwork;
- Less threatening & homely environment:
- Patient / staff interaction – patients want happy staff;
- Helping relatives help their loved ones;
- Supporting the relationship between staff, patients & relatives

Best Evidence – Former Patient & Staff Experience and Views

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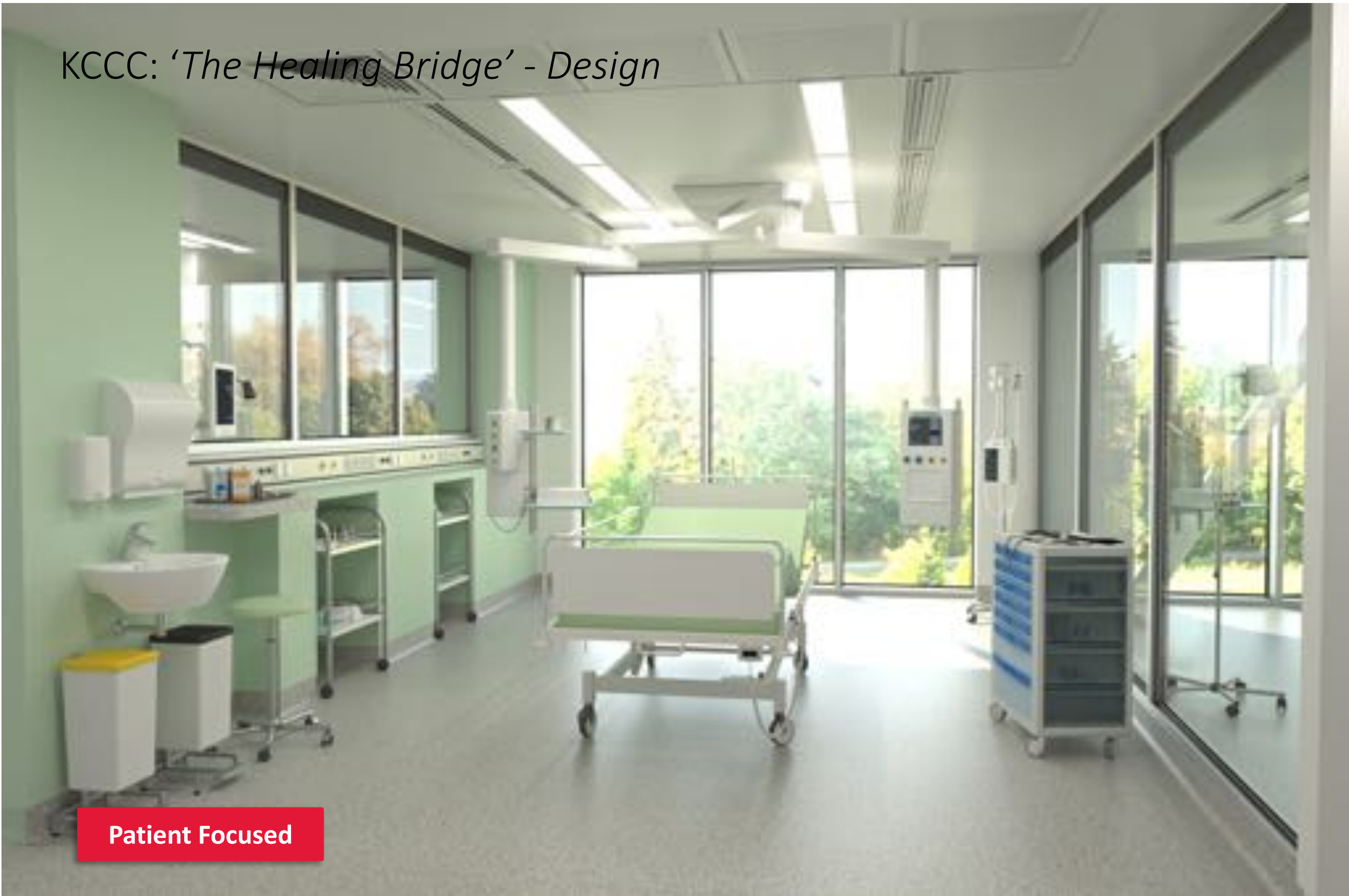
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Evidence coalesced into a brief for a facility that provides: **The most “time to care” in the best “space to care”.**

Logical Flows

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Patient Focused

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Natural Light

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Views to Natural Landscape



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Managed Space

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WINTER



SPRING



SUMMER



AUTUMN

4 x 'Seasons' Zones

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Integrating Art / Interior Design

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Access to Nature

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- Very restricted site
- Busy hospital campus
- Extensive enabling works
- Building over "live" building
- Bridge building technology
- Complex M&E services
- Access / delivery restrictions
- Multi-phased
- Links & interfaces
- Operational continuity 24/7



A Challenging Site: Issues

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A Challenging Site

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Railway Line

Ruskin

Helipad

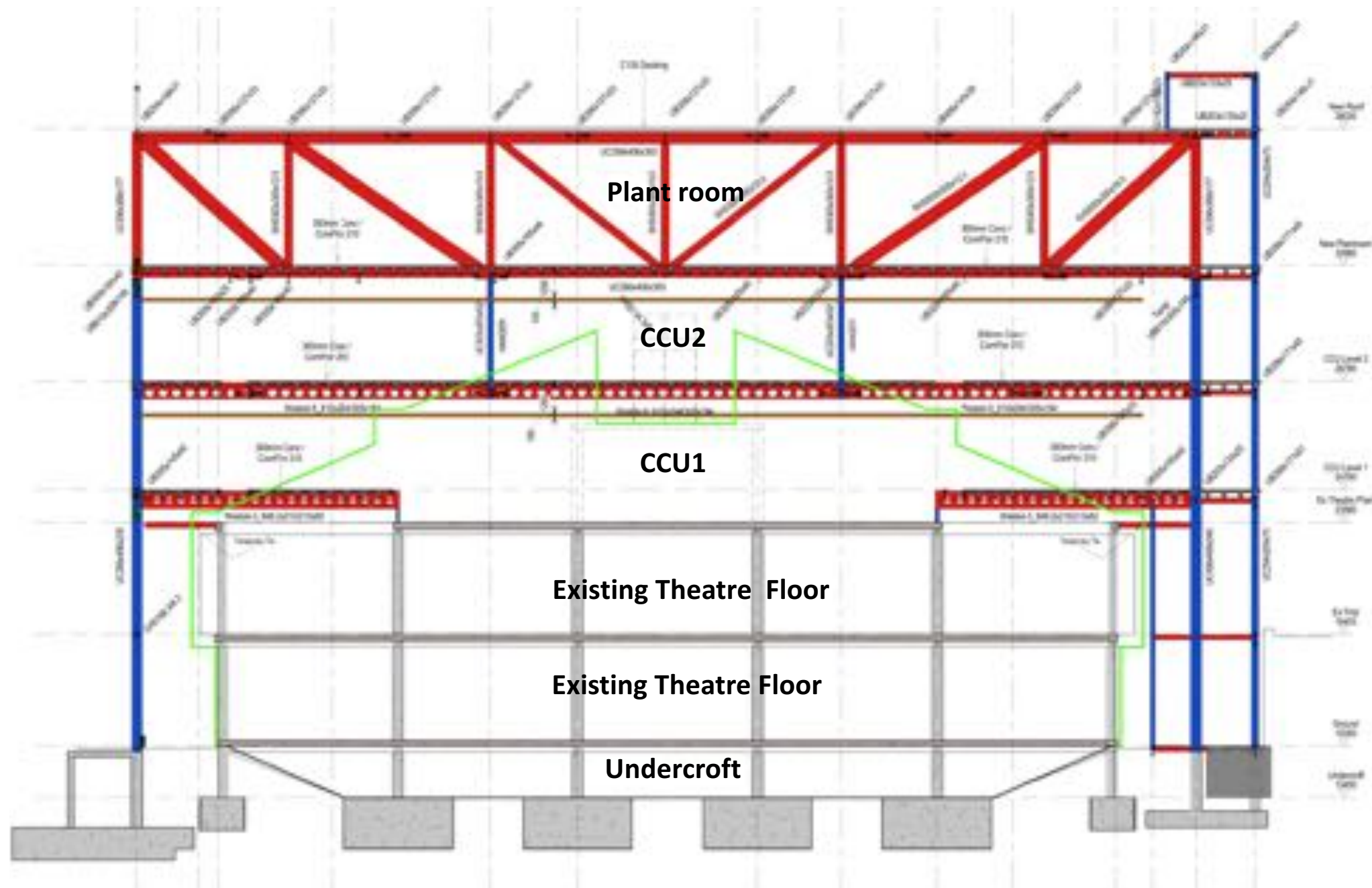
Theatre Block

Cheyne

A Challenging Site

Guthrie Wing

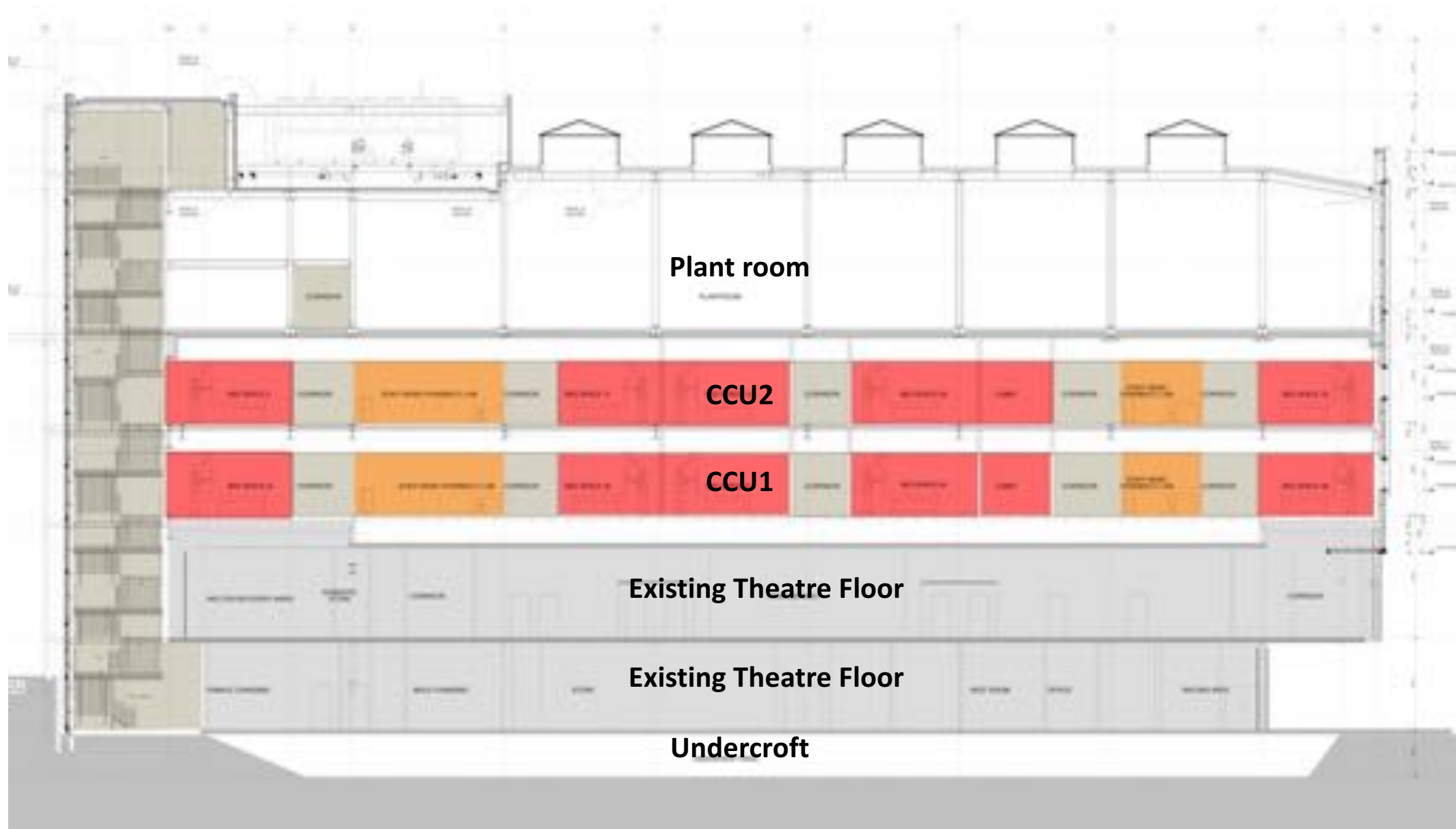
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Existing Building Line

The Physical Bridge

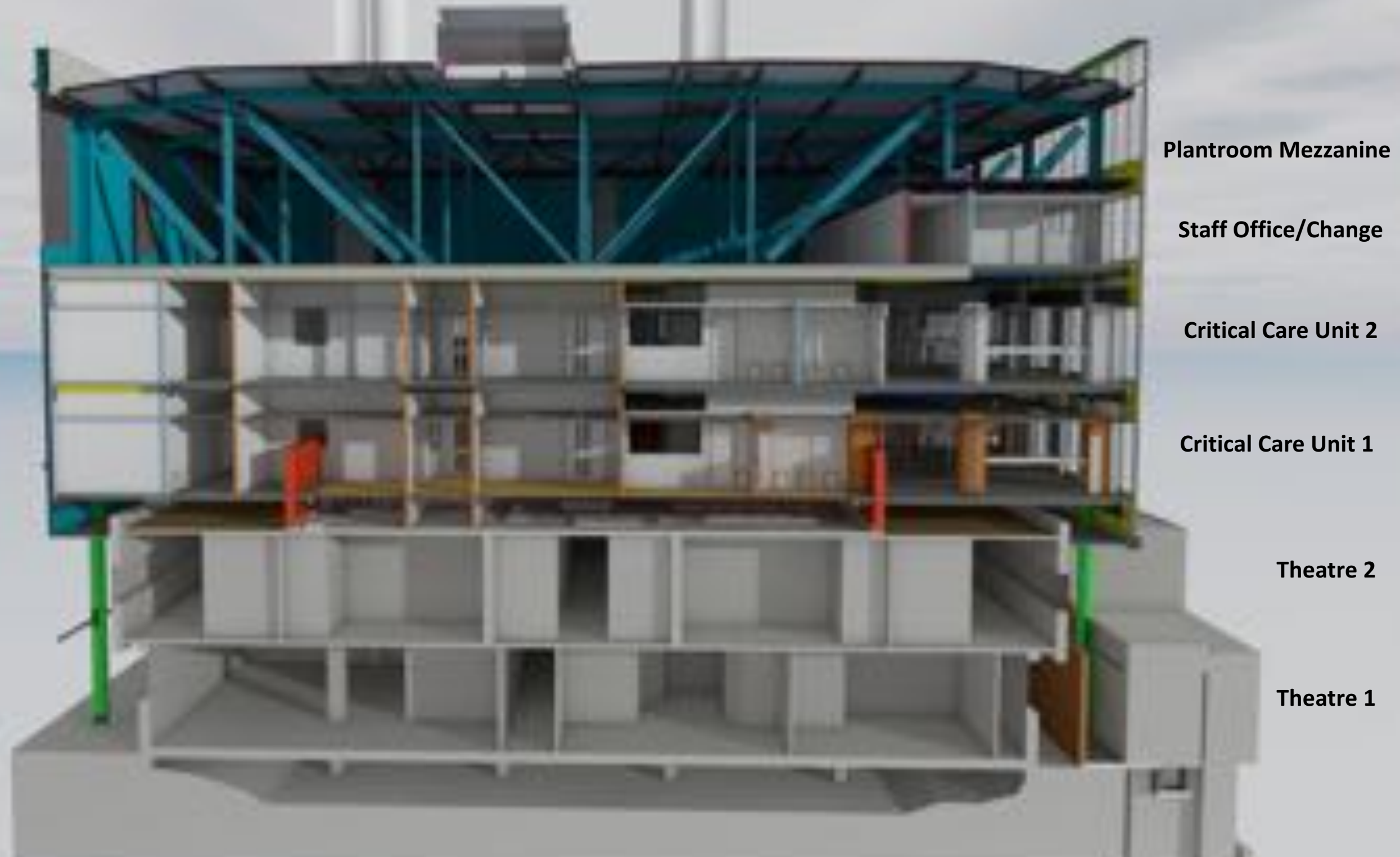
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New 6500 sqm + Existing 4500 sqm = Circa.11,000 sqm

Integrated Building

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KCCC: 'The Healing Bridge' - Planning

- 38 Pre-enabling projects
- Upgraded site infrastructure
- New MRI imaging block
- New interfaces with 4 different buildings
- Service continuity around live services
- Over 25 different adjoining user groups
- Formation of new tunnel and basement
- Noise and vibration impacts

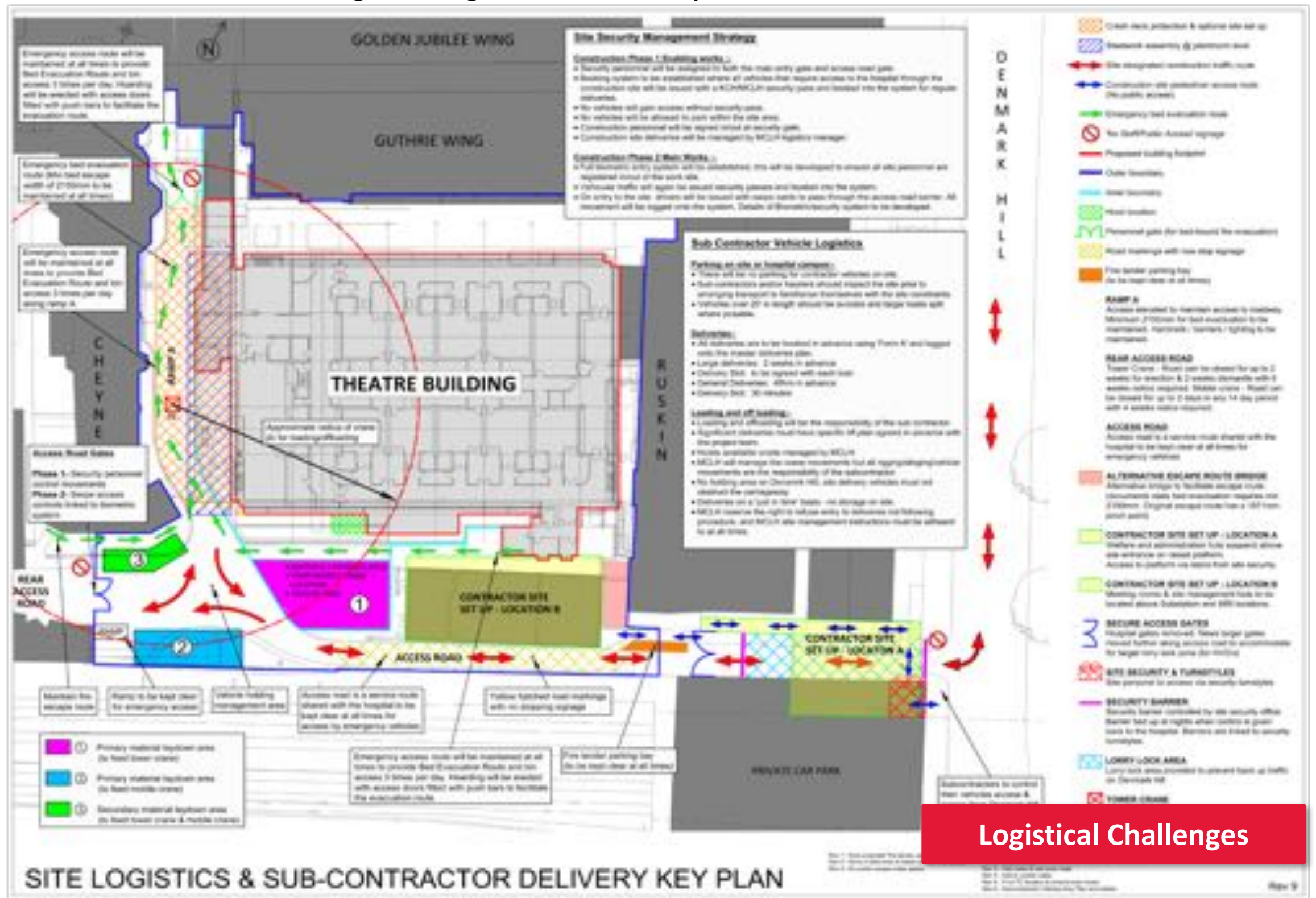
Technical Challenges

KCCC: 'The Healing Bridge' - Delivery

- Complex 10 phase project
- 7 sub phases to reconnect theatres on to new systems
- Detailed sectional completion handover
- Helipad co-ordination with tower crane
- Detailed construction planning
- Innovative specialist involvement

Technical Challenges

KCCC: 'The Healing Bridge' - Delivery



KCCC: 'The Healing Bridge' - Construction

- Specialist bridge building technology used
- 40m x 8m high trusses slid into position 20m above ground using hydraulic sliding
- Trusses jacked up and run on rails above 24/7 operational clinical accommodation
- Innovative piling solution
- 20m high columns threaded between gaps between buildings of less than 2m
- Access / delivery restrictions

Technical Challenges

KCCC: 'The Healing Bridge' - Delivery



Under Construction late 2017

KCCC: 'The Healing Bridge' – Construction



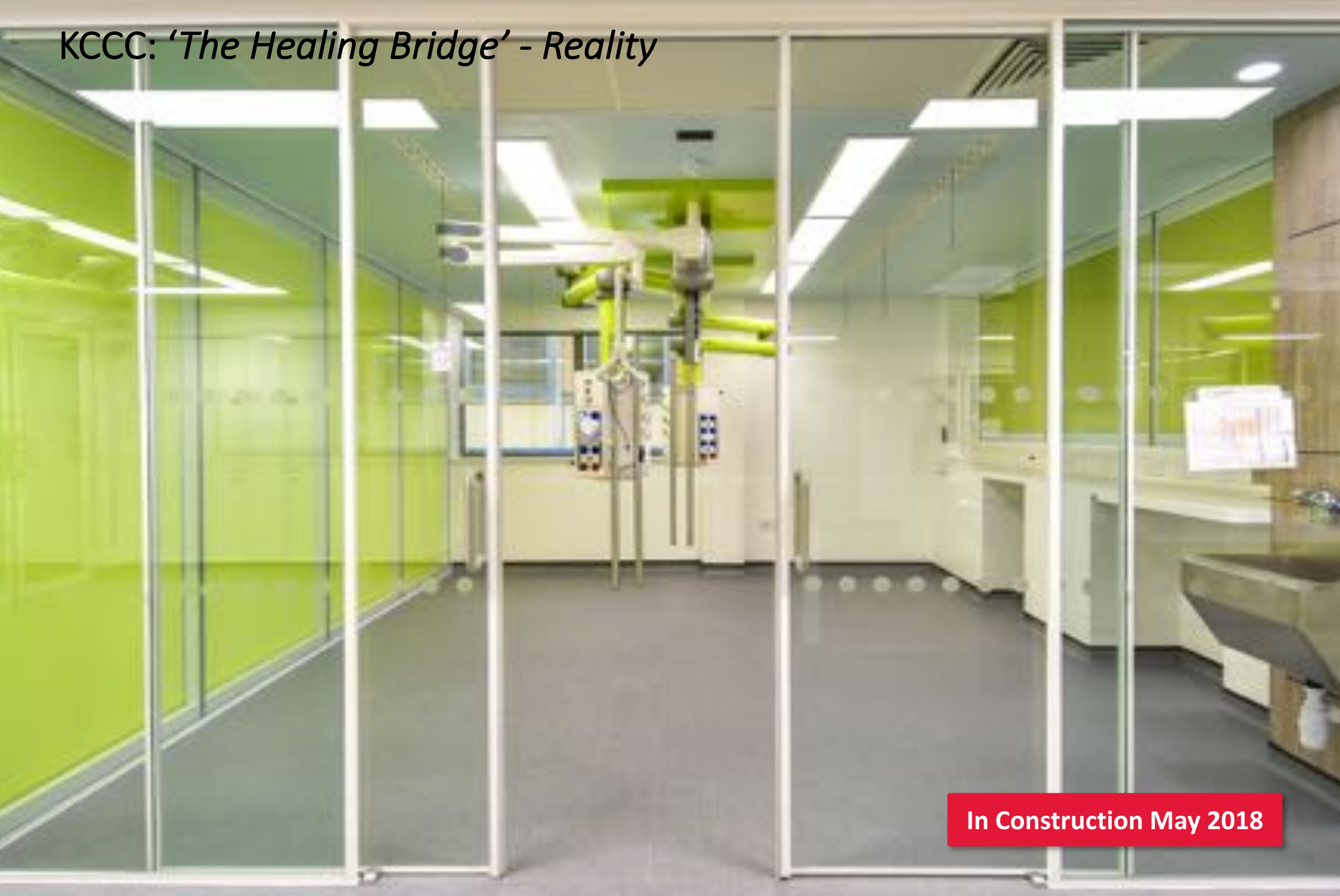
Progressive slide time-lapse video

KCCC: 'The Healing Bridge' - Reality



In Construction May 2018

KCCC: 'The Healing Bridge' - Reality



In Construction May 2018

KCCC: 'The Healing Bridge' - Reality



In Construction May 2018

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KCCC: *'The Healing Bridge'* - Reality



In Construction May 2018