New Papworth Hospital

Lessons Learnt & Benefits Realisation

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Introduction

In May 2019 Royal Papworth Hospital achieved its move from Papworth Everard to the new hospital site on the Cambridge Biomedical Campus.

The new hospital move involved a major programme of activities by the Trust over a 15 year period, including: development of a business case, procurement of a PFI partner, design input to ensure clinical functionality of the building, development and implementation of a new clinical vision, procurement and installation of equipment, completion of an operational commissioning process and completion of the hospital move and decommissioning of the former hospital site.

The hospital was then officially opened by Her Majesty The Queen on 9 July 2019. HM The Queen met with staff and patients throughout the hospital and also visited some of the state of the art facilities before unveiling a plaque at the end of the tour which proudly stands in the main atrium of the hospital.

In a year of significant achievements, October 2019 also saw the hospital receive an 'Outstanding' inspection report and rating from the Care Quality Commission, becoming the first NHS Hospital to achieve an 'Outstanding' rating in all 5 CQC domains, Safe, Caring, Effective, Responsive and Well-Led, and the first NHS Hospital to achieve 'Outstanding' for the Safe domain.

Following the move to the new hospital, focus was placed on optimisation of the facility in order to ensure that as many patients as possible were able to benefit from the excellent treatment offered by the Hospital staff. The Trust also successfully managed a number of challenges as part of the mobilisation of the facilities management services.

A significant amount of clinical activity and service development work was achieved during this initial post move period, although a number of elements of work were, however, subsequently overtaken by the steps needed to respond to the global Covid-19 pandemic.

The challenges presented by the pandemic were unpredicted and unprecedented, but the Trust's recent experience of having moved a hospital, including having managed an ongoing incident control centre proved highly valuable in ensuring the readiness of staff to meet such a challenge.

The purpose-built nature of the hospital, with its single patient rooms, enhanced air ventilation system and flexible layout, furthermore, supported staff to achieve positive outcomes for many patients and to provide support to hospitals across the East of England region and beyond.

Section 1: The New Hospital Appointing Business Case

The Former Hospital Site - A Case for Change

The Trust's Case for Change arose from the need to realise the hospital's clinical vision and the increasing inadequacy and inappropriate location of the former hospital site in terms of achieving this. The need to: invest in new purpose-designed facilities, incorporating the latest developments in hospital design and infection control, to enhance patient care and allow the development of new services had also become increasingly evident. The Trust's Clinical Vision set out a number of key objectives as outlined below:

Clinical Vision – Key Objectives:
Continue to provide patient care with the best possible outcomes
Continue to introduce and develop specialist practices, techniques and therapies
Fully integrate research with clinical service provision, incorporating the highest academic standards using research knowledge to improve patient treatments
Provide a high quality environment for teaching, training and development for both specialist and non-specialist staff ensuring the workforce of the future has the skills and experience it will need
Become more efficient and effective to ensure targets for activity, waiting times and quality are met and exceeded
Retain, recruit and develop the staff that can help deliver the vision

The Trust identified that, without change, the former hospital site facilities and ways of working would present an ever increasing challenge in meeting these objectives, examples of this being outlined as the following challenges:

Key Challenges
Poor clinical adjacencies and the condition of some of the facilities on the current site would continue to mitigate against the provision of high quality patient care
Immediate access to the clinical specialties of a major acute hospital would continue to be unavailable to those Papworth patients who would benefit from colocation with Addenbrooke's Hospital
Improvements in education, training, and research and development would be restricted
It would be difficult for the Trust to achieve improvements in efficiency and performance

The New Hospital Development - Areas of Benefit

A number of areas of benefit were identified as likely to be realised by the development of the new Papworth Hospital on the Cambridge Biomedical Campus. These were:

	An improvement in the quality of patient services	An improvement in research and development and in learning and education	An improvement in the environmental quality of services
Benefit identified (Pre Move)	• The clinical services at Papworth Hospital were (and are) recognised nationally to be excellent, despite the limits and constraints of the former estate configurations, conditions and the inappropriate geographical location of the hospital. • It was anticipated that the model of care would lead to improved overall service quality with more streamlined and effective patient pathways, reducing delays in treatment and also facilitating the achievement of shorter lengths of stay	• Purpose built modern research and development facilities and modern learning and education facilities were to be provided as part of an associated Design and Build HLRI. • It was anticipated that the relocation of Papworth to the Cambridge Biomedical Campus would contribute significantly to the site developing into a world class centre for clinical and biomedical sciences. The relocation to the Cambridge Biomedical Campus will unlock additional capital and revenue resources from external bodies.	• The former hospital had many pre-war buildings and, overall, was not designed for the delivery of modern healthcare. The site grew incrementally over the years to meet the rising demand for cardiothoracic services. However this growth resulted in poor functional relationships between clinical departments, characterised by the need to transport patients between a number of buildings, as well as site congestion. • Although much was done to improve the quality of the patient care environment at Papworth the underlying fundamental problems of aging infrastructure, poor functional suitability and site layout were deemed only to be able to be addressed by the development of a new purpose built hospital
Post Move Position	• Following the move the move to the new hospital the Trust received a visit from the Care Quality Commission (CQC) and was rated 'outstanding' across all domains (safe, effective, caring, responsive to peoples needs and well led) – being the first hospital to achieve this rating. • Patient feedback has also improved following the move, with many describing the hospital as being bright, clean and to hotel standards. • There has, additionally been an reduction in terms of the patient length of stay within the hospital post move	• Construction of the Heart and Lung Research Institute (HLRI) commenced following the move to the hospital in 2019. • The Institute is on track for practical completion by December 2021, with occupation of the facility being scheduled to take place from April 2022. • The building will deliver a full range of research and development opportunities including a purpose built clinical research facility	• The nature of the new hospital building (e.g. having purpose built single rooms) has allowed the Trust to achieve the excellent outcomes that it did during the Covid-19 pandemic, including no nosocomial infections or outbreaks. • Each of the departments have been matched to the patient pathway throughout the journey ensuring that the patient is placed at the centre of all care being delivered within the hospital.
Benefit Achieved	 Benefit achieved	– Benefit in progress (The HLRI is on track for delivery)	 Benefit achieved

	Better access to services	An improvement in productivity, efficiency and economy
Benefit Identified (Pre Move)	Access to hospital services can be assessed in terms of the ease or difficulty in being treated by the hospital and the ease or difficulty in reaching the hospital or other facilities where diagnosis and treatment are provided • Papworth Hospital serves a core catchment of around 3 million people in Norfolk, Suffolk, Cambridgeshire, Mid and North Bedfordshire and surrounding areas and also receives a large number of referrals from across the UK. The former hospital was accessible by road but was almost inaccessible by public transport. • Cambridgeshire County Council has improved the transport infrastructure by providing a Guided Bus System with direct links to the Cambridge Biomedical Campus as well as building a new link road to the campus from the M11. These improvements to the transport infrastructure were anticipated to facilitate patient, public and staff access to Papworth Hospital and its services on the Cambridge Biomedical Campus.	It was deemed that the development would enable the continuing provision of high quality, efficient services to patients. The model of care underpinning the appointment business case bringing about better ways of working and greater productivity. It was felt that the provision of purpose built facilities, co-located with other related services would facilitate better organisation of care which would in turn support innovative practice, specifically: • Single room inpatient accommodation –as well as providing direct patient care benefits, this would enable reductions in length of stay and an increase in occupancy levels. • Co-location with Addenbrooke's - would facilitate the sharing of support services leading to an improvement in service provision and economies of scale • Investment in a new building - would reduce expenditure by resolving poor clinical adjacencies and will create a modern facility with better energy performance and costs and more efficient space utilisation.
Post Move Position	• The move to the new site has opened up multiple different methods for patients, staff and visitors to be able to gain access to the hospital (including via train and bus – options which either weren't previously available at the former hospital site/ or not to the frequency that they now are). • The improved public transport access to the hospital has additionally positively impacted on the ability to recruit to roles within the Trust due to the site now being accessible by those without their own transport.	• The majority of the new hospital now has single inpatient rooms, supporting reductions in length of stay • Co-location with Addenbrookes has also better facilitated transfer of patients between the 2 hospitals (transfers now largely taking place via the link corridor) as well as access to clinical expertise between the sites, without staff being required to travel a number of miles in either direction. • There has, additionally, been a significant reduction in Estates related expenditure since the move to the new hospital.
Benefit Achieved	 Benefit achieved	 Benefit achieved

Section 2: Design, Construction and Commissioning

8 years of design – 4 years of construction – 3 months of operational commissioning.

Design of the Hospital

The patient's journey was a key focus for the design of the new hospital. Every element of the build was designed by clinicians with patients in mind to ensure a caring, safe and relaxing environment for the more than 100,000 patients treated each year, as well as providing the best facilities for staff to continue to deliver world-class outcomes. Key highlights regarding the design process have been outlined below:

From a Clinical Vision

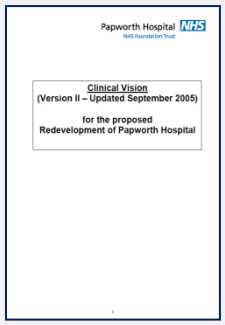
- Consolidate and unify all major clinical specialties on one site
- Increase capacity and capability to deliver new services
- Provide improved access to the full spectrum of specialist clinical services
- Enable speedier cross-referrals between specialties & earlier interventions
- Create a single centre for pulmonary and upper gastrointestinal cancers
- Relocated cardiothoracic surgery adjacent to the regional trauma centre

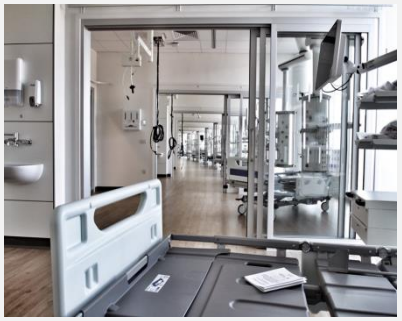
Through a collaborative design process

- Site visits and knowledge exchange
- Lessons learned from previous projects
- Design collaboration with partners
- Clinician-led work to improve patient pathways
- Independent clinical relocation review for Monitor
- Multi-disciplinary team approach
- Clinical user groups
- Clinical output based specifications
- Key adjacency matrix
- Logical stacking

To a patient centred hospital

- Ambulatory services co-location
- Single 'hot floor'
- Designated emergency route – access route and dedicated lifts
- Upper floor inpatient accommodation
- Single rooms unless by exception
- Fully ventilation controlled facility
- Dedicated routes for patients & visitors
- Maximization of clinical space
- Administration as soft space for expansion
- Rural touches in a campus setting





ALDER HEY

NHS Cambridge University Hospitals NHS Foundation Trust

CAMBRIDGE UNIVERSITY Health Partners

KAROLINSKA UNIVERSITY HOSPITAL

NHS University Hospitals Birmingham NHS Foundation Trust

NHS North Bristol NHS Trust

Construction of the Hospital

The Skanska construction team built the new hospital to include five operating theatres, five catheter laboratories (for non-surgical procedures) and two hybrid theatres. The hospital also has 310 bedrooms for patients (the majority of bedrooms being single rooms with ensuite facilities), including a 46-bed critical care unit. Key highlights regarding the construction process have been provided below

Controlled evolution

- Variation control but with recognition of developments in technology and clinical practice
- Enhancements to ventilation for Cystic Fibrosis areas
- Enhanced fire engineering – advance to latest HTM from design freeze
- Enhanced security measures
- Boosted mobile signal and increased Wi-Fi capacity
- Structural adaptation to accommodate clinician equipment choice
- Change of hospital name

Collaborative scrutiny

- Clinical scrutiny via reviewable design data
- Active and robust Liaison Committee
- All parties Design & Construction meetings
- Joint appointment of Independent Tester
- Shared inspections by Trust's Technical Adviser
- Trust's 'Clerk of Works' for advance snagging
- Shared access to Skanska's BIM
- Daily reporting of snag clearance
- Helpdesk logging of non-cleared snags

Challenges overcome along the way

- Ground conditions
- Design and casting of structural beam
- Structural change for major equipment
- Cladding insulation non-combustibility
- Water system commissioning
- Programme pressure
- Further programme pressure
- 6 month addition to programme
- Further 6 month addition to programme deliberately carried into post handover

The Commissioning Process

Essential to the smooth handover of the building was the commissioning process, this started at the point of construction and continued for the duration of the build all the way through to occupation, covering not only familiarisation but upskilling of Trust workforce to operate in a PFI environment. Key highlights from the commissioning process have been provided below:

Technical commissioning

- Over a year from first tests to handover
- Complex ventilation interactions and balancing
- Regular Independent Tester involvement
- Emphasis on witnessing testing
- Trust witnessing where relevant
- Super-user training of clinical education team
- Early estates team transfer to increase operational knowledge
- Operational system balancing as a first year challenge

Operational Commissioning (People)

- Joint tours during construction – Trust and Skanska project staff
- Open house policy for site visits during operational commissioning
- Standard 4-hour familiarisation for clinical staff delivered across a 7-week training period
- Non clinical staff training and tours
- Hands-on and e-learning digital training
- Staff familiarisation video available to all
- Guides to the hospital and its facilities
- Open days, including for staff friends and families
- Professional training for operating in a PFI contractual environment

Operational Commissioning (Environment)

- £40M enabling programme: £28m clinical and other equipment and £12m digital equipment
- Major Medical equipment: 2 x MRI, 2 x CT, Pharmacy robot, Gamma camera, nuclear medicine fit-out
- Equipment “brought-forward” to current site during delay to mitigate aging risk
- Transfer principles – value of transfer must outweigh cost of transfer
- Small Works Requests – the *Must Haves* not the *Nice to Have*
- Significant logistics and security planning for commissioning on a live campus

Section 3: The Hospital Move Period

Over 100,000 cubic feet of items moved including: 175 hospital beds, 302 metal cages of equipment and 2,426 crates.

The Hospital Move Period

On Tuesday 23 April 2019 Royal Papworth Hospital began its move to the new site on the Cambridge Biomedical Campus. Over a period of three weeks clinical services gradually began to close at the old site in Papworth Everard and then subsequently re-opened at the new hospital, with patient admissions commencing at the new hospital from Wednesday 1 May. Four operations were undertaken on the first day of activity (Wednesday 1 May) – two thoracic cases and two cardiac cases – as well as eight procedures in Cath Labs. One of the first cardiology patients to be treated was fitted with four stents after suffering from angina, and the patient was well enough to be sent home later the same day.

Moving a hospital 16 miles down the road was a complex task and involved the dismantling, packing and unpacking of theatres, cath labs, critical care, and multiple ward areas, with more than 150 of the approximately 300 beds in the new hospital transferring from the old site. The move was completed two days ahead of plan, on 7 May 2019.

Command and Control Process

Central to the management of the transfer to the new hospital was the development of the move control process and the establishment of the command centre. The Command Centre provided overall administration and communication control of all move activities on both the old and new hospital sites in the period leading up to, during and following the cutover period. It was staffed and run by a Director-led senior operational team and provided guidance for the move, overseeing the physical transfer process.

The Command Centre was based in the Rehabilitation Seminar Room in the new hospital but also operated via video connection to the Operations Centre at the original hospital site for the regular briefing meetings. Following the move to the new hospital, a review was undertaken regarding the transfer and operation of the command centre during the cutover period and key findings from this are summarised below:

What went well	What didn't go well	What could be done differently
• Training provided in advance of the move period for Command Centre members was excellent preparation. • The command centre facility included a live TV link to the Ops Centre on old site which was conducive to Command Centre working and was easily accessible to staff. • The Command Centre organisation was good. • The individual role action cards were very useful and the standard agenda was well received. The log and loggist worked well. • The added benefit of helping staff prepare for chairing of any future critical incident meetings. • The welfare officer role was valuable in supporting the Command Centre and wider team managing the move in the new hospital. • Having a patient representative as runner worked well and it was good to have a patient voice in the Command Centre. • The Command Centre responded well to the immediate needs of clinical services. • The checklist of patient environment readiness worked well. • There was a sense of positive, compassionate leadership. • Recognised the emotional response from staff as old hospital vacated and that staff had the need to say goodbye. • Moves were undertaken according to the agreed schedule, but there was sufficient flexibility in the plan to respond to clinical service needs. Workshops and scenarios with the ambulance service ensured the patient transfers were undertaken smoothly. • Recovery meetings were helpful with the transition from the cutover period into business as usual.	• There was a new team in the command centre each day of the move period which resulted in a lack of continuity. • The command centre may have stepped down too soon (closing prior to all move from the old site having been completed), possibly stalling progress in some areas as departments did not see the same urgency once issues became business as usual • There was a loss of activity resulting from problems with installation of monitoring equipment in sleep studies. There was no contract in place with the specialist provider and therefore the Trust was unable to leverage contractual pressure for them to resolve the issue swiftly. • Access to staff welfare was limited at the old site. • The focus on opening of the new hospital led to staff who were still working on the former site feeling overlooked. • Clarity of role responsibilities between Clinical Engineering (TSS) and Digital teams; not a smooth system to get things fixed as 'ownership' was unclear at times. • The former site Ops Centre should have been rostered to match the Command Centre (12 hour shifts). • Timing of Pickford's arrival on old site each morning clashed with the first Command Centre meeting of the day. • Some non-clinical services were not fully operational for day 1, which caused delays in the ramp up of clinical activity.	• Consideration to be given to whether the Command Centre should have remained open until all physical moves had been completed.

Hospital Move Timetable

Day 1

- The removals company arrived at 07:30 to load crates, furniture and equipment from: Ground floor and first floor admin (in new hospital), PALS, Day Ward (cardiac and thoracic)
- Dedicated 'move' press offices set up at both sites

Day 2

- Preparation took place for the following day's move
- Crates were unpacked and left in the dedicated areas for collection the following day
- The ground and first floor admin areas plus PALS were opened for use

Day 3

- The removals company arrived to load crates, furniture and beds for: plain film x-ray, theatres 1, 2 and 3, cath labs 1, 2 and 3, CT, MRI and main hospital reception

Day 4

- The commencement of double running
- The removals company arrived to load crates, furniture and beds for: Sleep labs, transplant beds, bronchoscopy, part of ultrasound and nuclear medicine. Staff set up: theatres 1, 2 and 3, hybrid theatres, cath labs 1, 2 and 3, hybrid cath lab.
- The following areas were open to patients: main reception, four surgical ward beds, plain film x-ray (part open), five Critical Care beds, CT department (part open), 1 x MRI, cashier, pharmacy, microbiology, histopathology and multi-faith rooms
- The first patients were admitted – 10 to RSSC, 4 cardiac patients (to 5 South Ward), 2 surgical cancer patients (also to 5 South Ward)
- Emergency surgery plus PPCI and ACS **only** took place at the old Papworth Hospital

Day 5

- The Removals company arrived to collect beds from critical care and inpatients
- At the new Papworth Hospital staff set up the remaining RSSC beds, bronchoscopy and Dexa (ultrasound)
- The following units were opened to patients in the new hospital: Day ward, theatres 1, 2 and 3, hybrid theatres, cath labs 1, 2 and 3, cardiology (3 South Ward) Surgical Ward (5 South Ward), HDU and some critical care beds
- Emergency services switched to the new hospital at 12 midday along with PPCI, ACS, ECMO and transplant patients. cardiac surgery patients switched to the new hospital via ambulance.

Day 6

- The Removals company arrived to move beds from inpatient wards and to move the research and development teams.
- Staff began cohorting patients on HDU and Mallard Ward as patients were discharged from the former hospital site.
- The following units opened to patients in the new hospital: 8 Critical Care beds, bronchoscopy (closed at the old site), Dexa (ultra sound), CMU and lung defence, the remaining RSSC beds
- Outpatient departments at the old hospital closed at the end of the day.

Day 7

- The removals company arrived to move: thoracic outpatients, RSSC outpatients, Varrier Jones ward, transplant outpatients, CTBI outpatients, respiratory physiology (part move), cardiac physiology (part move) and support services
- The following units were opened to patients in the new hospital: 8 Critical Care beds, Bronchoscopy (closed at old site), Dexa (ultra sound), CMU and lung defence, Remaining RSSC beds
- An assessment was undertaken of patients requiring hospital transfer

Days 8-11

Day 8	Day 9	Day 10	Day 11
• The patient moves took place (and were completed in a single day) • The removal company moved: the cardiac rehab gym, charity office, social workers, procurement. The therapy teams moved to the rehab centre (SALT, Dietitians, Occupational therapist) • The outpatient department unpacked and set up at the new hospital	• Double running ceased	• The removal company arrived to move remaining areas: theatres 4 and 5, any remaining theatre equipment along with perfusionists' equipment, Cath labs 4 and 5, remaining TSS, pharmacy, ICT, Critical Care beds and equipment, the remaining inpatient beds, gamma camera, plain film x-ray, CT, MRI, consultant microbiologists, ultrasound, Dexa, cardiac physiology. Blood transfusion moved to the modular building • The following areas opened to patients at the new hospital: Outpatients, Cardiac rehab gym, Remaining plain film x-ray, Therapy services, Respiratory physiology, Cardiac physiology, Support services	• The removals company arrived to move remaining supplies, project team and any forgotten items • Staff were asked to complete one final sweep of all areas • The mortuary and existing site as a whole closed • Staff set up theatres 4 and 5 and cath labs 4 and 5 in new hospital • Plain film x-ray, pharmacy, the remaining inpatient beds and primary critical care beds all opened up in new hospital

Old Hospital Now Closed

New Outpatients Department

New Hospital

Initial Staff Feedback Following the Move

Familiarisation and training

What went well	What didn't go well	What would be done differently
• The training & familiarisation sessions were well organised and informative. • Opportunities to visit the new site as a team were valuable. • Enabled staff to become familiar with the new hospital and to imagine themselves in their new environment and plan pathways and standard operating procedures.	• There was some conflicting information provided during Training & Familiarisation sessions and there was too much focus on the wards and theatres. • The digital familiarisation training sessions were of limited value – due to being unable to show much in terms of functionality (e.g. of phones) and some incorrect information given out (e.g. number of people that can log in to same number). • It was difficult for teams to find time to visit the new site together without affecting service delivery. Local inductions should also have been made mandatory as it was difficult to get people to complete them • There were a number of queries post move around FM services, IT, phones and general building queries and it was not clear how services were provided and who to contact.	• Some more in-depth local induction and IT training sessions would have been beneficial. • Releasing Relocation Leads from clinical time to attend meetings and the new hospital would have been helpful. • Agreement of desk allocations and locations earlier as these changed after teams had done their site visits. • Ensuring that the appropriate people were included in the meetings to make the right, informed, decisions.

Preparation of new department

What went well	What didn't go well	What would be done differently
• There was a smooth handover process due to good preparation. • All the information that was required to be able to move and set up in new department was provided.	• Information regarding stocking up of areas was not communicated / cascaded to all members of staff and information presented at relocation lead meetings was not always disseminated to the rest of the team. • There were ongoing issues post move regarding locker allocation, centralised stationery stores and storage generally. • There was no formal handover of shared admin office areas and there were missing keys for storage units in these areas.	• Locker allocation and issue of access cards took place very late on in the process and could have been done ahead of move. • Clearer communication could have taken place ahead of the move in terms of how centralised stationery stores were intended to work in new hospital.

Role of relocation lead

What went well	What didn't go well	What would be done differently
• The experience of being a relocation lead was enjoyable. • Enjoyed being part of a historic move and would do it again	• Performing the role took up more time than anticipated. • There were a lot of meetings to attend which was difficult to take on alongside the day job too. • During move, the Relocation Lead were asked to perform other tasks; roles delegated to others by the area lead. • Many of the relocation leads meetings took place on the same day of the week and so were difficult to attend for those who worked part time	• There was a lot of cross over between the role of the relocation lead and the department manager. • Query whether it was appropriate to delegate this role to anyone other than department manager.

Physical move

What went well	What didn't go well	What would be done differently
• The pre-move meetings were good and helped plan the detail of the move. • The Pickfords staff were friendly and efficient. • Project team were quick to provide additional labels when required. • The timings of moves worked well.	• The clinical areas in new hospital were not cleaned sufficiently and it was difficult to undertake clinical work at same time as moving. • Process for packing and setting up of IT equipment was not clear (the IT team set up equipment in some areas, but in other areas staff had to do this themselves) and there weren't many Digital staff around on the move days. • Communication between old and new sites (and across the old site) was difficult during the move period. • The wards at the new site were insufficiently staffed and did not always have the right people on the right site in the right role. • Packing became more haphazard as the move progressed and labels didn't stick particularly well to the crates. • Communication within the department regarding what needed packing /or not when the Relocation Leads or area lead were not on site to advise.	• Less planned activity around move period. • Small directorate pre-move meetings would have been helpful. • Easier communication with digital on the move day. • It would have been helpful to have had packing crates a bit earlier. • It would have been helpful to have had the names and photos of who to raise any issues with

Section 4: Operational Use of the Building

Mobilisation of facilities services, achievement of CQC ‘Outstanding’ status and responding to the COVID-19 pandemic

Hospital Optimisation

The hospital optimisation programme was established following the move to the new hospital to facilitate optimal use of the new facility. The programme was focused on improving patient flow through inpatient areas and on increasing activity and income with respect to the 2019/20 operating plan. A summary of the individual projects set up along with their objectives and outcomes is provided below:

Project	Project objectives	Outcomes delivered
Outpatient utilisation	• Meridian undertook a 13 week programme of work with the Trust with the aim of increasing the number of patients seen in the outpatients department. • Project objectives were to; ensure that the clinic templates were fit for purpose, identify any capacity for additional activity, ensure that clinics were fully booked to the templates and provide real time monitoring information to continuously improve the clinic productivity.	• Greater targeting of resources and constraints. • Significant improvement in thoracic and cardiology clinic bookings. • Refined process of tracking and recording rooms enabling staff to predict what space might be available.
Optimisation of flow through theatres and cath labs	• To meet agreed KPIs with respect to utilisation and efficiency, increasing activity through theatres and cath labs • To reduce cancellations.	• Achievement of a reduction in theatre cancellations remained challenging whilst critical care bed capacity remained an issue. • Further work was required to address flow through theatres.
Critical care staffing	To ensure consistent safe staffing of critical care beds to the commissioned bed base to serve the 6 theatres and other Trust needs, whilst focussing on the recruitment and retention of critical care staff.	• Tighter project monitoring and reporting allowed the impact of recruitment and retention initiatives to be tracked against trajectory. • Bed numbers (both predicted and actual) were reported upon daily and an escalation policy was developed.
Opening of 4 North West	To commence integration of cardiology services with CUH and to further develop and grow the Trust's private care service.	The project achieved its objective of opening 11 beds on 4NW and was closed.

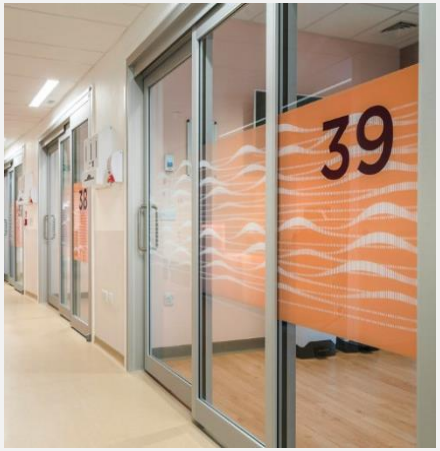
The work programme was, however, subsequently interrupted by the COVID-19 pandemic with any outstanding areas of work being taken forward through the Living with COVID Steering Group (and the individual workstreams feeding into this) established in May 2020.

Impact of COVID-19

The COVID-19 pandemic significantly impacted the way in which the hospital functioned, putting the new, clinically focused design to the test. The benefits of the purpose built hospital, however, soon became evident, with the single patient rooms, air ventilation system and flexible layout proving incredibly useful in dealing with the highly infectious, airborne virus, enabling the Trust to respond far more effectively than would have been possible at the former hospital site.

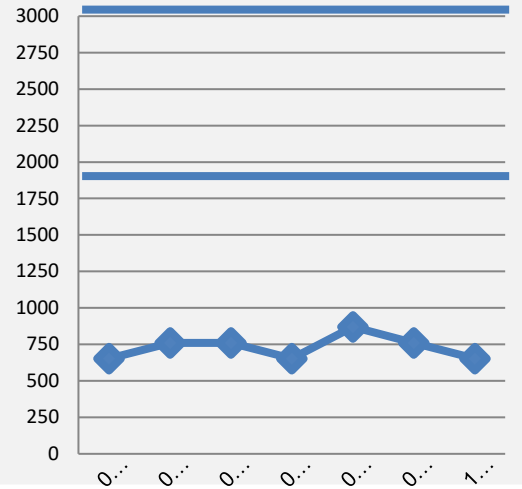
Single Inpatient Rooms

- The design of the building was based on infection control and the presence of single rooms proved to support the Trust's response to the pandemic.
- The number of nosocomial infections was additionally very low in comparison to other Trusts, the design of the building being deemed to be one of the factors contributing to this



Oxygen usage

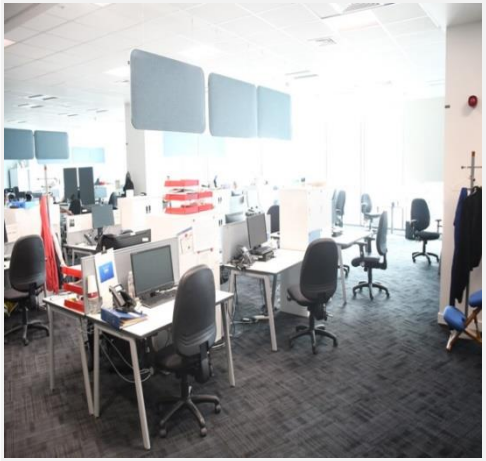
- Oxygen usage was monitored on a regular basis throughout the pandemic and remained significantly below capacity (1800lpm) and surge capacity (3000lpm) even at peak usage.
- A week snapshot of this is provided within the graph



Some challenges were, however, experienced in terms of office space and staff rest areas (due to the majority of the building having been utilised for clinical space). The requirement for social distancing further impacting on this, resulting in the need for further consideration to be given to these areas.

Office Space

- The need to socially distance as staff returned to the hospital following the first peak of the pandemic resulted in reduced desk space within office areas (desk were re-arranged to accommodate this)
- The basis for design of the building was to maximise clinical space. Office spaces were therefore designed for hot desking to facilitate this. This approach proved more difficult in the pandemic



Rest areas

- The need to socially distance resulted in there being reduced capacity within the staff rest areas.
- As a result a wall was build within the main atrium to allow extra staff rest space.
- A temporary extension was also added to the staff restaurant as well

Living with COVID-19 – The Built Environment

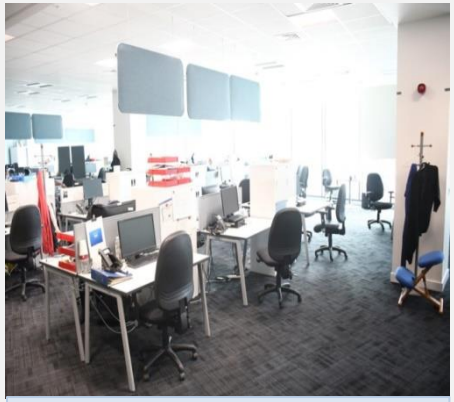
Following the initial pandemic response, the Living with Covid Steering Group was established in early May 2020 to oversee the Trust's transition from major incident response to business as usual. There were a number of different workstreams (covering all aspects of the hospital) reporting into the steering group, of which the built environment was one. The workstream focused on changes needing to be made to the building in order to respond to the ongoing challenges of the pandemic including: the installation of additional staff rest areas, perspex screens, wall mounted holders for antibacterial wipes and masks, social distancing floor guidance stickers, changes to office seating arrangements and the instigation of one way systems.

Social distancing floor guidance stickers

Mask holders and 'mask on' areas

Perspex screen installed at the main atrium reception desk

Anti-bacterial hand wash dispensers



Socially distanced office spaces

Establishment of one way systems

Additional staff rest areas

Staff Feedback Following Operational Use

Further feedback was sought from staff 2 years post move to understand their views/ points of learning, following both the passage of time and extended use of the building, regarding the move period (and preparation for the move) as well as the hospital design, equipment, patient and operational experience

Familiarisation activity prior to the move

What went well	What didn't go as well/ could have been better
• The Trust ran an extensive familiarisation programme for clinical staff from which really good feedback was received. • There were also a number of moulage events which allowed clinical teams to "practice" delivering care in the unfamiliar environment. The impact of these was seen within hours of opening the hospital to patients as both Cardiology and surgery swung into action with an unprecedented volume of emergency activity in the first 24 hours.	• The familiarisation training didn't make that much sense until staff were actually working on new site (although staff adapted quickly). • It would have been good to have had a greater amount of access to the department at an earlier stage (as this may have enabled issues to be picked up on/responded to).

How Command & Control worked

What went well	What didn't go as well/ could have been better
• Command and Control worked well and has continued to be a model that has served the organisation well during the COVID-19 pandemic. • There was a clear route for escalation and decision making. • Command and Control set a sustainable battle rhythm throughout the move.	• Command and control was good and a success, but a more flexible /accessible approach would have been appreciated as it felt a bit too military at times

The move process

What went well	What didn't go as well/ could have been better
• The move process went better than expected, with no clinical safety issues, although it relied on extra efforts from staff to ensure that this was the case. • The staged reduction in activity on the old site and gradual build up of activity at the new site was a success. • The move process was slick and was delivered ahead of schedule. There was absolute clarity at shop floor level regarding each individuals' roles and responsibilities. Care was safe and uncompromised throughout.	• It was difficult to communicate with staff within and across the 2 sites, due to radios not being available to all staff – resulting in the need to walk around site to locate people • As some elements of the move happened quicker than planned, resulting in an impact on some of the support services who had to do their best to respond once aware (although not easy over 2 sites). • It was clear during the move that key messages about moving of medicines and gas cylinders hadn't got through to everyone who needed them and it was frustrating to be dealing with issues such as these on the day of the move (when a plan had been put in place to avoid this).

Equipment within the building

Positive experiences	Challenges experienced
• Generally good quality and mostly new which is refreshing. • The facility is well equipped with a mix of new and old equipment..	• The doors are poor quality and heating has been difficult to control, generally the building is too cold for comfortable working. The phone and bleep system also remains poor with most now relying on mobile phones. • It should have been made clear that reliance would be placed on realisation of benefits with respect to the pharmacy robot • There are a number of items that have needed to be replaced which were purchased as part of commissioning (including office chairs and drug cabinets). These were either not specified correctly (due to limited engagement with the appropriate members of staff), or the items did not live up to requirements/stand the test of time, resulting in additional/unexpected cost for the Trust. Additionally, where there was engagement, the description and photos of the products shown and agreed were not the same as the final purchased products. • Not all items of equipment requested were received (e.g. frame holder which has made using the space tricky)

Insights into the new site from patient experience

Positive experiences	Challenges experienced
• Patients are generally happy and most have indicated that they like the bedrooms, although some have said that they are lonely and miss the chat experience. • The new site is excellent for patients • There is a significant and noticeable decrease in mixing of patient journeys through the building and passing each other in circulation spaces, making the hospital appear calm, managed and probably less daunting for patients visiting the hospital. • The overall experience is excellent, the ground floor is stunning and patients appreciate the dignity awarded by the single rooms. • Patient experience has generally been very positive.	• The temperature and air flow from the ceiling vents in individual rooms has been a source of complaint for some patients. • The lift buttons are not great. The choice of these doesn't appear to be a decision that was made with patients in mind. • The booking of portering services has affected patient experience, particularly on Day Ward, where patients often go for multiple tests in other departments during the course of the day. The nurses, therefore, often end up fulfilling this duty in order to ensure that patients don't miss their slots as a result of porters not turning up on time

The design of the building

Positive experiences	Challenges experienced
• The aesthetics are good, and the patient rooms on the third to fifth floors are nice, The approach and entrance to the hospital are also both excellent. • The restaurant and ground floor areas are nice and light. • All clinical spaces are generous and well designed. • The design of the hospital is amazing for patients	• Staff support and administrative spaces have been a continuous challenge both over the move period and beyond. There have also been problems with the room/desk booking system • The building design has been challenging for staff due to there not being enough space to work or take breaks in which has impacted on staff morale. • Decisions were made pre-move about fixtures and fittings in some departments without the specific knowledge or input of the department. This has caused some problems (e.g. not complying with the Medicines Act from a pharmacy perspective and other operational issues with things having been installed in the wrong places) • Movement between the floors is difficult when one of the lifts is not working and there is not an easy staircase system. The changing rooms are too small and not very well fitted out. There are also not enough lecture/larger meeting rooms for education.

Insights into the new site from operational experience

Positive experiences	Challenges experienced
• Operational experience has been good with open plan offices aiding communication across different teams, • Covid has helped from an operational perspective to forge better cross divisional working • The flow through the hospital is good	• The lack of self opening doors limits flow through the ground floor outpatients clinic area, disadvantaging independent wheelchair users or those using mobility scooters, bariatric chairs (which don't fit through the clinic room doors) and walking frames • There is an issue with visibility both at a high level operationally and clinically in some clinical environments which has been challenging due to the single room nature and design of critical care. This has driven a need for higher staffing levels than planned. • Parking is inadequate and a source of frustration for staff who need access to the hospital 24/7 • The effect of working across different floors was underestimated for teams that work across all floors (e.g. pharmacy) which has resulted in a complete re-think in terms of operational delivery of the service..

Patient Experience Feedback

Patient experience feedback has been gathered from patient comments within the friends and family questionnaires. A number of patients commenting on the pleasant, light and airy nature of the new hospital

"Generally very good experience. Pleasant environment"

"The staff are amazing and the facility is hotel standards"

"Easy to find good parking efficient friendly procedures"

"A calm, reassuring, clearly-designed environment"

"A beautiful spacious building"

"Excellent staff, clear explanations, very good environment"

"Amazing new hospital"

"Everything ran on time and the facilities are excellent"

"Friendly nurses and very beautiful hospital"

"Light - airy environment"

"Excellent Hospital"

"The hospital looks amazing"

"Airy waiting area, very nice staff"

"A lovely hospital"

"Hospital was so nice and modern and clean"

"The hospital was spacious, bright and clean"

"I love the new building, it is so clean, light and airy"

"Great room, comfortable bed"

"Great layout. Hospital runs well"

"Best hospital in the world"

Section 5: Benefits Realisation

Has our Hospital delivered the benefits anticipated?

Benefit Realisation

A suite of metrics were identified pre-hospital move which were agreed as appropriate measures to monitor the benefits and impact of the new hospital environment on patient flow and clinical care. These metrics were base lined in 2018 / 2019 and monitored pre, during and post move.

It should be noted that since the opening of Royal Papworth Hospital activity and operational models have been materially affected by the impact of COVID-19 and the changes in clinical interfaces bought in as a result of the pandemic, so the metrics agreed have proved inadequate to describe the benefits of the project. However, the opportunities that the new facilitates offered were invaluable in the Trusts response to the pandemic as part of the national ECMO response and also as part of the regional surge centre. Some notable examples of this are as follows:

Our purpose-built hospital, with its single patient rooms, air ventilation system and flexible layout, proved incredibly useful in dealing with a highly infectious, airborne disease. We would simply not have been able to respond to COVID19 as effectively had we still been at our old site. In addition our experience of having recently moved a hospital and managed an ongoing command and control centre was been invaluable.

However it is the way our staff worked together, and the extraordinary commitment, compassion and resilience they have demonstrated throughout the outbreak that has made the biggest difference in getting us through these most challenging times. The COVID19 pandemic has placed great pressure on all of our staff:

- Due to being one of the five national adult ECMO centres, the Trust has had some of the sickest COVID patients to treat. Many of these patients have needed treatment on critical care for many months. This meant that our COVID surge response extended well beyond the point where case numbers and hospital admissions in the region had fallen.
- Early in January 2021, as sustainability of oxygen supply became an acute issue for acute Trusts in Essex and Hertfordshire, Royal Papworth created an Acute Respiratory Care Unit (ARCU), and rapidly transferred patients out of affected Trusts. The creation of the unit, helped to decompress other organisations and prevented many patients from progressing to ventilation support on critical care.
- As the country came out of the first lockdown, organs for transplantation once again became available and the Trust undertook a record number of heart and lung transplants over July and August 2020. Although, offers reduced to more normal levels in September, there was no decline in offers through the second lockdown and we have maintained normal levels of transplantation throughout.
- The Trust also took a lead role in delivering staff support functions for health and social care workers across the system by creating a drive through staff testing hub in the car park early on and delivering a vaccination hub from its outpatient facilities which has vaccinated over 6000 staff across Cambridge and Peterborough.

Clinical Outcomes

1. During the first wave of the pandemic figures from ICNARC (Intensive Care National Audit and Research Centre)(2) showed that, from 93 patients in critical care, 77.4% were discharged here at Royal Papworth Hospital compared with a national average of 60.3%. That's despite 95% needing advanced respiratory support, which is 20% higher than the average.
2. Up to the end of September 2021, the Trust has treated 372 of the sickest COVID patients in the region of which 77.7% have survived.
3. Research undertaken and supported by clinicians at Royal Papworth has also significantly shaped the development of successful treatments for COVID across the country. In the year 2020-2021, despite the pandemic, the Trust's commitment to research and development has resulted in the organisation enrolling 3400 participants across a balanced portfolio of 49 clinical studies and the publication of 350 research papers authored by members of its staff.

Staff Wellbeing

1. Throughout the response the Trust leadership was acutely aware of the impact of the incident response on our staff and teams. Staff, both clinical and non-clinical, have all been working incredibly hard, often taking on new roles at short notice and having to quickly learn new skills. Those working on the frontline may have witnessed incredibly difficult things and many have also been dealing with caring responsibilities, school and nursery closures, financial worries and concerns for loved ones at the same time.
2. A raft of health and wellbeing measures have been put in place over the last 18 months including free, ready meals so that staff could have a hot meal during their shift even though break time were curtailed, psychological support, mindfulness events, keeping in touch team for those ill or self-isolating, a recognition scheme, acupuncture and many more.
3. It was recognised that the building contained excellent clinical facilities that could be used flexibly to keep staff, patients and visitors safe but that it was challenging to adequately facilitate social distancing for staff and to provide rest and well being spaces. I number of modifications to the building were made and the support space supplemented with the addition of temporary accommodation outside the building.

Summary / Conclusions

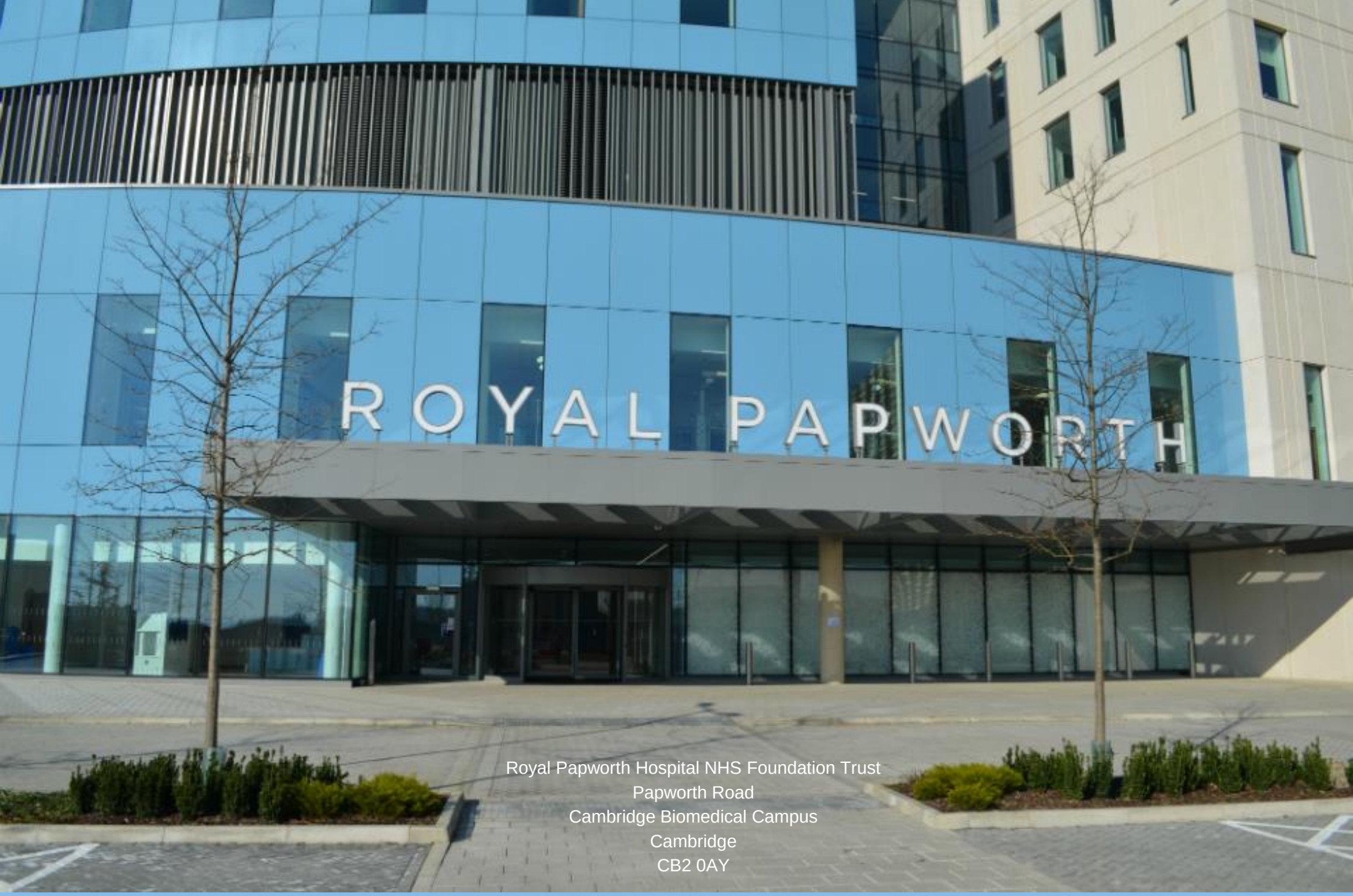
This document serves to record the process and initial impact of the most significant change in the long history of Royal Papworth Hospital, being the move to new premises during 2019. A number of lessons learned arise from that change and a purpose in recording them is to ensure that they can be used as a baseline in planning similar projects undertaken by either this organisation or by other NHS bodies.

Whilst some issues are specific to the circumstances and design of this hospital, the following are highlighted as the key lessons that could be applied to any future projects:

Key lessons learned	
1.	Operate a command and control structure for the move period, ensuring that it is resourced to operate for the full duration of the move and has a clear process for its transition into business as usual
2.	Establish an optimisation programme immediately upon occupation to ensure that planned new working practices are implemented, embedded and fully optimised
3.	Find innovative ways with the construction partner to ensure that staff are able to visit site during the building of new facilities
4.	Ensure the operational commissioning period is of sufficient duration to allow all staff to receive their familiarisation training in situ and to have the opportunity to visit their future department location prior to occupation
5.	Recognise the attachment that staff will have to former premises and provide opportunities for them to reflect on their past and to emotionally let go of any closing facilities
6.	Ensure decisions taken regarding the transfer of equipment and consumables and the initial cleaning and stocking of new locations are fully disseminated to all involved
7.	Recognise that almost all modern clinical equipment will have a digital interface requirement and coordinate the specification, procurement, installation and commissioning of such items as a joint approach between clinical engineering and digital teams
8.	Avoid short term cost-saving measures regarding furniture and fittings that could lead to dissatisfaction and earlier than planned replacement cost
9.	Designate relocation leads at department level proves invaluable but ensure that the role is clearly defined and that there is a release of time to allow the designated individuals to undertake it
10.	Recognise that building systems will take time to balance but that this should not preclude the investigation and rectification of potential defects.

The move to new premises represented a significant investment, designed to produce a range of benefits. An ongoing benefits realisation plan is in place and its progress is reported via the Trust's Integrated Performance Report and monitored via the established committee structure through to the Board of Directors.

To a certain degree, the ability to realise benefits to date has been affected by the COVID-19 pandemic, which struck within the first year of occupation of the new hospital. However, whilst clearly a significant challenge to the whole of the NHS, the pandemic has served to demonstrate a clear benefit and justification of the investment made: the Trust's pandemic response would have been significantly less robust if it had been required to take place at the former hospital site. That the new premises were able to continue to provide treatment with adaptations predominantly limited to peripheral items stand as testament to the clinical design and operational flexibility inherent to the new building. In addition, the process of undertaking the hospital move helped to test and embed the culture of command and control emergency response and served to expose a broader range of staff to such culture which came to be called upon in responding to the pandemic.



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