



DORSET
Local Enterprise Partnership

**Histopathology
Diagnostic Hub for
Dorset**

End of Project Report

March 2021

PROJECT SUMMARY

The comprehensive Dorset Clinical Services Review (CSR) led by clinicians across the county resulted in plans to radically transform local health and social care services. As part of these plans, the three NHS acute hospital Trusts in Dorset have formed a pathology partnership ("One Dorset Pathology") to improve the efficiency and sustainability of the service on behalf of all its users. These include GPs and the community Trust as well as the hospitals themselves, serving the entire Dorset population and beyond.

Diagnostic testing has an ever-increasing role in healthcare, with Pathology used in over 80% of patient pathways to inform diagnoses and ongoing treatment plans. Every person in Dorset will use the service at some point in their life. Pathology covers a wide range of diagnostic investigations from a simple blood test to tissue analysis and advanced genetic screening.

Pathology in Dorset employs around 300 people across all disciplines, with a budget of approximately £20.4m per annum. The service is in need of modernisation and, in accordance with national good practice, is forming a 'hub & spoke' delivery model across the county.

National reviews of pathology have concluded that the 'hub and spoke' arrangement for delivery of pathology services allows for better, more efficient testing of samples for our patients. This model centralises testing in a 'hub' for samples which have less clinic urgency. This frees up time in the 'spoke' laboratories to allow them to focus on the urgent tests. Evidence shows that centralising care in this way leads to better outcomes for patients and more efficient working. The outcome of CSR was to centralise urgent care at the Royal Bournemouth Hospital and planned care at Poole Hospital. This informed the assessment of the pathology services and led to the conclusion that the 'hub' laboratory should be sited at the Royal Bournemouth Hospital.

Local Growth Deal funding of £2.74m from Dorset Local Enterprise Partnership was used to deliver the first steps toward the pathology hub build on the Royal Bournemouth Hospital site as planned. The aims of the project were to support the initial phases of the overall project, enabling the formation of a hub pathology laboratory on the Bournemouth site including histopathology (the diagnosis and study of diseases of the tissues which help clinicians manage a patient's care) and the digitisation of this service.

Highlights from the project included:

- the production of fully loaded 1:50 designs ready to tender for the building contractors,
- purchase of materials which could be safely purchased in advance of the building work including steel,
- purchase of highly specialised equipment relating the digital histopathology

The successful completion of this initial stage, to progress the hub designs and purchase enabling material in readiness for the build to commence, was achieved by the agreed timescale of 31 March 2021.

The pathology hub fits within wider, high level plans to develop an academic science park adjacent to the Royal Bournemouth Hospital site. Dorset is also collaborating with other Trusts in the wider Wessex region (Hampshire, the Isle of Wight and Wiltshire) to support investment and productivity improvements through working at scale.

OUTPUTS AND OUTCOMES:

Outputs

With the financial support provided, materials, professional design services and advice in sequence with planning advisory services and transport planning have been supported. The combination of these services has enabled the development of Wessex Fields with full planning permission in place for future developments or services.

Detailed below is more information on the fully operational histopathology diagnostic hub for Dorset:

- *500 m² of floor space of high-quality histopathology laboratory, and associated support space created.*
- *Total build – 2000 m² floor space created this offers a brand-new Pathology building providing the necessary laboratory service and research in line with the wider Clinical Services Review (CSR) requirement for the region.*
- *High throughput digital slide scanner installed in the Bournemouth Histology laboratory (specialist equipment)*
- *Digital slide scanner fully integrated with new pathology LIMS (WinPath) and specimen tracking system (Vantage)*

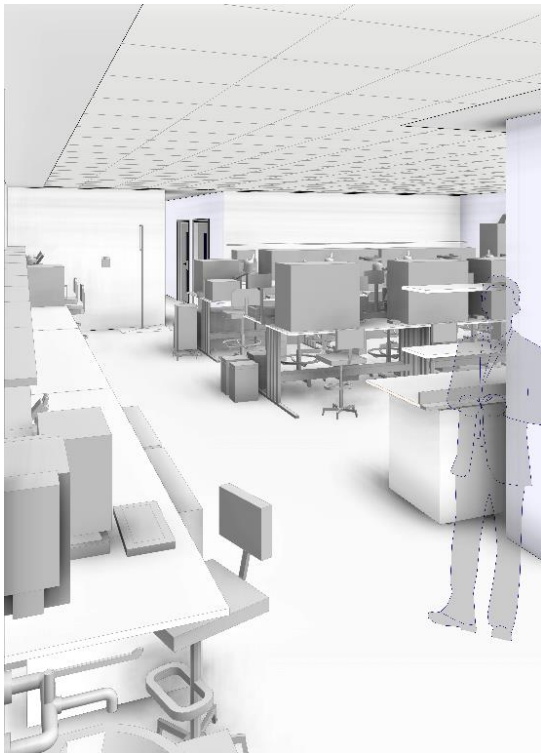


Figure 1: Rendering of the Histopathology Hub laboratory being built at Bournemouth



Figure 2: Rendering of the hub laboratory being built at Bournemouth

Outcomes:

The intended outcomes of the project are as follows:

INDICATORS	OUTCOMES FORECAST							
	ORIGINAL AGREED OUTCOMES	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	TOTAL	VARIANCE
Safeguarded Jobs	120	108	2	10	0	0	120	0
Floor space created	500m2	0	500	0	0	0	500m2	0
Total Floor Space created	2000m2	0	0	2000	0	0	2000m2	0
Land unlocked	0.6 HA	0.6HA	0	0	0	0	0.6HA	0
GVA from salaries to local economy	£4,425,000	£885k	£885k	£885k	£885k	£885k	£4,425,000	0
Non-LGF (matched) funding	£20.1m	£7,498,910	£7,620,343	£4,680,747	£300,000	£0.00	£20.1m	0
Reduction in the use of outsourcing service providers/locum pathologists to provide cancer diagnostic services (Histology)	£410,000	0	0	0	£120,000	£290,000	£410,000	0
Improvement in cancer diagnostic turnaround times (histology)	90%	75%	80%	85%	90%	90%	90%	0
Specialist Equipment	No.	1	0	0	0	0	1	0

The outcomes, as described in the table above for 2020/21, were delivered on track and future outcomes are on track for delivery. Photographic evidence of build progress will be provided as part of main contractor's monthly reports.

BENEFITS REALISED TO DATE



Figure 3 - High Throughput Digital Histopathology Scanner in use at Bournemouth

Historically, biopsies taken from patients are processed to provide glass slides which are reviewed by histopathologists under a microscope - this is a time-consuming logistical process. Previously, scanning slides to produce a digital image has not been possible or practical due to the extremely high resolution required.

It is now possible to scan these slides using a sophisticated digital slide scanner such as the one purchased through this project. This enables clinicians to report on cases using the scanned images rather than looking through a microscope, leading to a more efficient service and enabling the development of Artificial Intelligence to help the clinicians to make a diagnosis in the future.

Further benefits will be realised once the new facility is operational, including more efficient processing of samples, better sharing of expertise and less duplication and waste. The future benefits include:

- delivery of 500 m² of high-quality histopathology laboratory, and associated support space.
- integration of histopathology services to enable a digital platform for sharing sample images which will in turn lead to more rapid and better diagnosis of suspected cancer cases.
- securing over 120 jobs on the Wessex Fields site, and with better automation and design, to have a higher ratio of high-quality jobs.
- expanding the research activities to grow economic activity and patient benefits.
- supporting savings (and reinvestment in the NHS) from the wider programme of MES / LIMS changes from the other Pathology specialties that could be centralised without Histopathology.
- delivering wider societal benefits from quicker access to diagnosis, and more personalised treatment, based upon having modern, cutting edge Pathology services

- acting as 'a critical enabler' for integration and interoperability for the reporting of histopathology
- securing pathology support for major frontline changes from Dorset's Clinical Services Review
- ensuring continuity for pathology services across Dorset by replacing current end-of-life systems and creating an attractive place to work, supporting recruitment and retention
- a solid foundation for future service enhancements, overcoming current service limitations that stop AI and other innovations.
- enabling the implementation of state-of-the-art computer aided diagnosis and case sharing
- allowing consultant medical staff to operate more efficiently and seamlessly gain multiple opinions on difficult cases
- enabling participation in national and international research project, especially relating to the implementation of AI / deep learning in areas such as cancer diagnostics
- co-location of pathology specialisms ensuring benefits of emergent technologies are readily accessible across disciplines including emergent molecular diagnostics and genetics in the pursuit of 'patient tailored medicine'.

FINANCES

The £2.74m Dorset LEP funding has been used for the early procurement for key elements of the construction, including doors, windows, steel, and laboratory benching. These are currently in safe storage. In addition, £7.4m match funding has been spent to date with the total project costing £20.1m

LESSONS LEARNT

Decisions made early in the project meant that the teams were working on 'best advice' rather than under close direction. This caused duplication of work as the subsequent teams came on-board and required additional information which could have been shared during the initial phase. Improvements have enabled closer working between project management and the design/implementation teams to ensure news and information is shared as it happens e.g., planning and procurements updates and market changes.

In addition, there were risks associated with project deadlines not aligning with the local authority planning approval process. This matter was mitigated through early engagement with the relevant organisations and continual project management of the challenges.

SUCCESS STORY

The project is cementing collaborative working within pathology across Dorset bringing clinical teams together who would have previously worked in isolation. This is a huge benefit for the patient and services and will continue as the programme develops. In addition, digital scanning is leading to a more efficient service and enabling the development of Artificial Intelligence to help the clinicians to make a diagnosis in the future.

Closer links have been forged with Bournemouth University, shaping their course, providing internship opportunities for their students and helping gain accreditation for their courses.

The project is still on-going with the full benefit not being realised until the new pathology facility is completed and commissioned in summer 2023.

CONCLUDING SUMMARY

The funding received from Dorset LEP has played a vital part in enabling the significant transformation of pathology services within Dorset. With this support, University Hospitals Dorset has been able to take the first step toward digitising the histopathology service and finalise the plans to bring the team into the new hub building at Royal Bournemouth Hospital securing the future of this highly specialised service within the region.

Covid-19 has demonstrated the importance of modern, flexible testing capacity. This new purpose-designed laboratory hub for Dorset provides for a major investment in Information Technology (IT), to digitise laboratory samples, reducing transport requirements. Moreover, this facility will help attract more research opportunities and staff, by being in a modern, purpose-built accommodation.

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