

# Robotics-ready estates: why the NHS 10-year ambition depends on infrastructure, and how it can be delivered at pace



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## Why the NHS 10-year ambition depends on infrastructure, and how it can be delivered at pace

### Executive summary

The NHS has set a clear ambition for robotics within the 10-Year Health Plan. Robotic-assisted surgery is expected to expand significantly from 2026, with NHS England forecasting that up to 500,000 procedures a year could involve robotics by 2035.

This represents a fundamental shift in how care is delivered. It is not simply the adoption of new technology. It is a redesign of clinical pathways, workforce models and system productivity.

However, there is a critical constraint that is often underplayed.

Robotics does not scale on clinical intent alone. It depends on the physical environment in which care is delivered.

Theatres must accommodate larger, more complex equipment. Engineering systems must support increased electrical load, ventilation and digital connectivity. Clinical flows must adapt to new instrumentation, recovery pathways and throughput expectations.

Much of the NHS estate was not designed with these requirements in mind.

At the same time, the service faces a significant maintenance backlog and long-term capital constraints. Without a parallel focus on infrastructure, there is a risk that robotics adoption becomes uneven, concentrated in a small number of well-equipped centres, and slower to deliver system-wide benefits.

This paper argues that estate is not a secondary consideration in the robotics agenda. It is a central enabler.

It also explores how Modern Methods of Construction (MMC), when applied correctly, offer a practical route to delivering robotics-ready facilities at the pace required.



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### The NHS robotics ambition is now explicit

The NHS 10-Year Health Plan positions robotics as a core component of future care delivery.

The direction is clear:

- ◆ Expansion of robotic-assisted surgery across a wider range of procedures
- ◆ Alignment with NICE guidance from 2026
- ◆ Development of national data infrastructure and registries
- ◆ Integration with wider digital and AI-enabled pathways

NHS England has translated this into operational ambition, with projections suggesting that robotics could support hundreds of thousands of procedures annually within the next decade.

This is not incremental change. It is a shift towards robotics becoming part of mainstream clinical delivery.

### The limiting factor is not technology, it is infrastructure

There is no shortage of clinical interest in robotics. Adoption across the UK has already increased significantly over the past decade.

The challenge lies in scaling that adoption.

Robotic surgery introduces new requirements across the built environment:

- ◆ Larger and more flexible theatre footprints
- ◆ Increased service density within ceiling voids
- ◆ Enhanced ventilation and infection control systems
- ◆ Greater electrical resilience and capacity
- ◆ Expanded storage and instrument handling space
- ◆ Stronger digital infrastructure and connectivity

Guidance such as Health Building Note 26 already recognises that modern surgical technologies require more space and flexibility than legacy theatre designs.

In practice, many NHS facilities struggle to accommodate these requirements without significant adaptation.

This creates a structural constraint. Even where funding and clinical capability exist, the estate can limit what is deliverable.



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### A system starting from an uneven baseline

The current estate context is well documented.

Years of constrained capital investment have resulted in:

- ◆ A substantial maintenance backlog
- ◆ Ageing infrastructure across both acute and primary care settings
- ◆ Limited flexibility within existing clinical spaces

This matters because infrastructure does not evolve at the same pace as technology.

Where estate is modern and adaptable, robotics adoption can accelerate. Where it is constrained, adoption slows or becomes fragmented.

Without intervention, there is a risk that the benefits of robotics are not evenly distributed across the system.

### From technology adoption to service redesign

The most important shift is conceptual.

Robotics should not be treated as a procurement decision. It should be treated as a service transformation.

That requires alignment across:

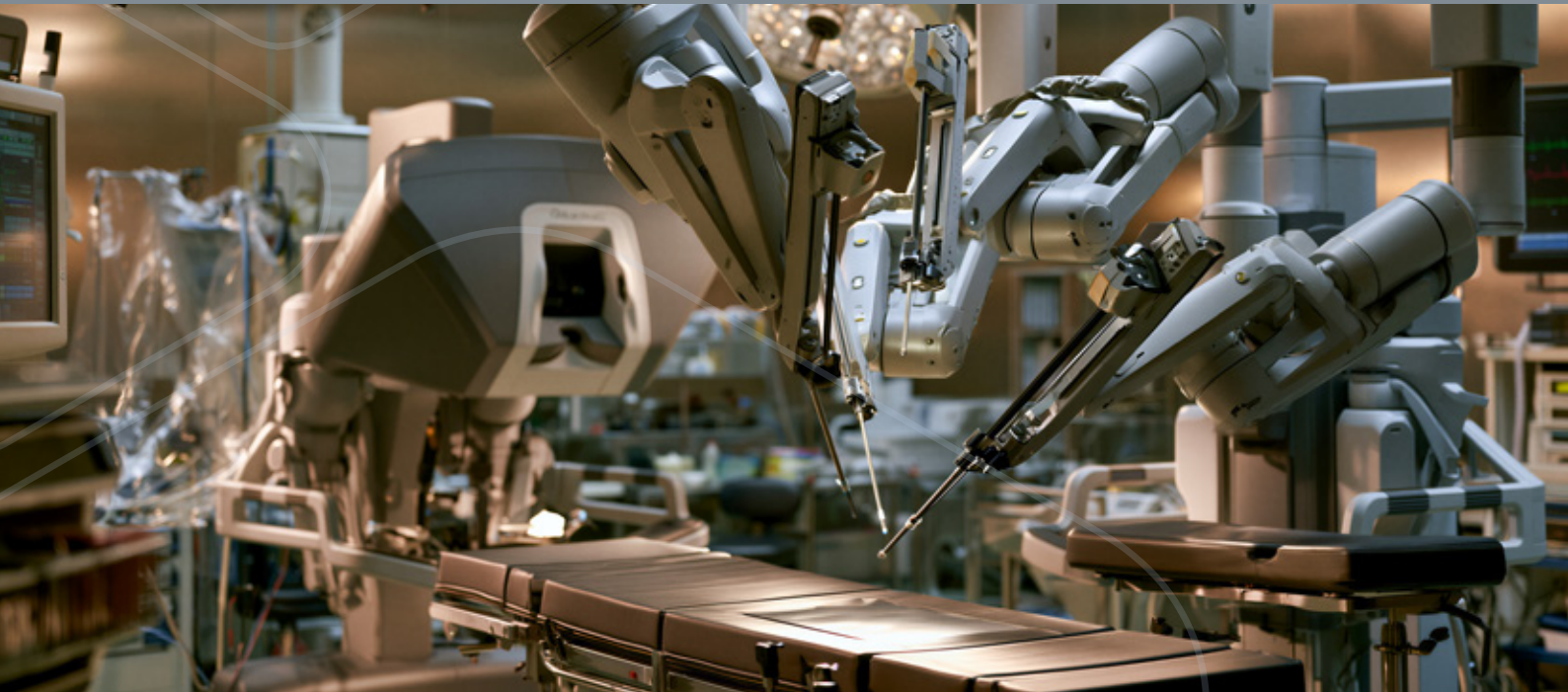
- ◆ Clinical pathways and case volumes
- ◆ Theatre scheduling and utilisation
- ◆ Workforce training and development
- ◆ Data collection and performance monitoring
- ◆ Estate design and engineering capability

Guidance from NHS England and GIRFT reinforces this point. Successful robotics programmes require structured governance, clear business cases, and system-wide planning.

Estate sits within that framework, not outside it.



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### What does a robotics-ready estate look like?

A robotics-ready environment is not defined by the presence of a robot. It is defined by its ability to support the service model around it.

Key characteristics include:

- ◆ **Flexible theatre design** that can accommodate evolving technologies
- ◆ **Compliant engineering systems**, including ventilation, electrical supply and medical gases
- ◆ **Efficient clinical flow**, from preparation through to recovery and discharge
- ◆ **Adequate storage and processing capacity** for instruments and equipment
- ◆ **Digital integration**, supporting data capture, connectivity and future innovation
- ◆ **Training-ready environments**, enabling workforce development alongside service delivery

These elements must work together. Weakness in any one area can limit overall performance.



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### A note of realism

MMC is not a universal solution.

Its effectiveness depends on:

- ◆ **Early definition of requirements**
- ◆ **Strong design discipline and standardisation**
- ◆ **Appropriate procurement and contracting models**
- ◆ **Early engagement with delivery partners**

Without these elements, the benefits can be reduced or lost.

The focus should therefore be on applying MMC appropriately, rather than universally.

### Aligning ambition with delivery

The NHS now has:

- ◆ **A clear robotics ambition**
- ◆ **Increasing clinical adoption**
- ◆ **More structured guidance and governance**
- ◆ **Greater emphasis on infrastructure and capital planning**

Where they are aligned, robotics can deliver:

- ◆ **Improved patient outcomes**
- ◆ **Increased productivity**
- ◆ **Reduced length of stay**
- ◆ **Greater system resilience**

Where they are not, progress will be slower and less consistent.



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## Conclusion

The NHS ambition for robotics is credible.

However, it is conditional.

It depends on the ability to create environments that support new models of care.

That places the estate at the centre of the conversation.

Modern Methods of Construction offer one of the most practical routes to delivering that estate at the pace required, but only if applied with the right level of planning, coordination and governance.

The next phase of the NHS transformation will not be defined by technology alone.

It will be defined by how effectively that technology is enabled.