Healthcare systems are under great strain and providers need to be able to rapidly ramp up the number of beds available. WSP can design precision engineered modular buildings that enable rapid additional healthcare and quarantine space wherever required.

**Rapid response: Inception to operationalisation in under 3 months**

<table>
<thead>
<tr>
<th>Month 1</th>
<th>Month 2</th>
<th>Month 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish brief and identify timeline</td>
<td>Form a strong team - integrated design development</td>
<td>Develop and agree concept design</td>
</tr>
<tr>
<td>Detailed design</td>
<td>Enabling works</td>
<td>Construction</td>
</tr>
<tr>
<td>Identify and assess local manufacturers</td>
<td>Expedite planning and approval</td>
<td>Assess and procure materials and equipment</td>
</tr>
</tbody>
</table>

We have the capability to help our clients engage suppliers, industry partners and ensure successful delivery.

**Scaling up healthcare capacity at speed**

**Rapid Modular Facilities**

Healthcare systems are under great strain and providers need to be able to rapidly ramp up the number of beds available. WSP can design precision engineered modular buildings that enable rapid additional healthcare and quarantine space wherever required.

**Type of facilities**
- Additional ICUs
- Isolation units
- Lower acuity beds
- Entire wards
- Temporary quarantine facilities

**Advantages**
- Overcomes space limitations in existing infrastructure
- Adjacent to existing services
- Speed of delivery
- Ability to ensure quality control
- Easily repurposed
- 24/7 buildability
- Temporary solution to accommodate demand

**Challenges**
- Manufacturers need to be able to change design quickly
- Establish local procurement and supply chain
- Manufacturers adapting to clinical best practice
- Mothballing
- Asset ownership
- Logistics
- Prohibitive contractual and bidding processes

**Key considerations**

**Project set up and governance**
- Establish your stakeholders early

**Design phase**
- Use BIM for seamless design
- Plan all spaces to reflect clinical best practice
- Prepare site advance works whilst modular in production
- Detailed design needs to be done before factory fabrication
- Compliance with building regulations

**Pre-construction phase and preparation**
- Maximise existing infrastructure and overcome constraints
- Customise installation method based on intended location
- Identify which components can be factory installed and which need to be done on site.
- Prepare foundations to support utility requirements, especially the drainage connection

**Our healthcare clients include**

**Healthcare providers**
- Australia, Department of Health
- Germany, Landesanstalt für Gesundheit (LGL)
- Canada: Provincial Healthcare Authorities
- Hong Kong Hospital Authority (HKHA)
- New Zealand Ministry of Health
- Singapore, Ministry of Health
- South Africa, National Department of Health
- Sweden: Vastra Goalands Regionen, Region Skane, Region Uppsala
- UK, National Health Service (NHS)

**Our expertise**

We offer rapid response project management and engineering services and can mobilise and deliver within weeks.

**Our**
- professionals provide facility assessments, site adaptation design, commissioning, quality assurance and project management
- experts provide rapid prototyping design solutions that ensure facilities protect workers and patients in a healthcare environment
- research ensures safe compliant solutions

**We are**
- Healthcare advisors
- Clinical planners
- Mechanical and electrical engineers
- Structural engineers
- Decontamination advisors
- Sustainability consultants
- Project and programme managers
- Security consultants
- Technical advisors
- Retired military officers experienced in contingency operations

Through our long-established healthcare network we have a wealth of global expertise we can apply to your local challenges.

**Contact us to find out where we can help**

Suzanne MacCormick
Global Healthcare Lead
T: +44 78 2337 4544  /  E: Suzanne.Maccormick@wsp.com

ABOUT WSP
Dedicated to serving communities locally, nationally and internationally, WSP provides a full spectrum of engineering consultancy services, leveraging a network of 50,000 professionals in more than 600 global offices to respond to challenges and crises wherever our clients need us to.

wsp.com/healthcare
Our experience:

Modular healthcare facilities

Confidential, Montreal Canada
Targeting a three-month completion, our multi-disciplinary team is working with our client and modular fabricators to design and construct a 33-bed isolation unit building extension. The structure will be adaptable, capable of accommodating future programme changes once the pandemic is resolved.

Modular Isolation Container Design, Hong Kong
We are proud of two of our experts in Hong Kong for donating their time to design a fully-compliant negative pressure isolation room in a 20ft container. Using this technology, it is estimated it would be possible to build a fully-functional isolation hospital in Hong Kong in approximately one and a half months.

Norfolk and Norwich University Hospital (NNUH), UK
ModuleCo are delivering a modular healthcare building consisting of eight isolation rooms, two ICU rooms and associated support rooms. The fast-track project is due for completion at the end of May 2020.

Our team are designing the MEP leadup services including medical gases, mains cold water, power, data, fire, security, and BMS; undertaking a peer review of ModuleCo’s MEP design proposals for the internal installations; designing the required services diversions; and the re-provision of existing services including, power, external lighting and a dry riser.

Temporary Quarantine Facilities (TQF)

Sai Kung Recreation Camp, Hong Kong
Number of blocks: 3
Number of units: 99 units
Size of units: 3m x 6m includes wash room facilities.
Purpose: Quarantine (14 days)
Future use: Disassembled to use for other purposes
Our services: Civil, structural and building services design consultant for the contractor including the utilities connection.
Duration: Mid of Feb – end of April 2020

Junior Police Pat Heung Centre, Hong Kong
Number of storeys: 2
Number of units: 126 units
Size of units: 3m x 6m includes wash room facilities.
Purpose: Quarantine (14 days)
Future use: Interim Housing.
Our services: Civil, structural and building services design consultant for the contractor including the utilities connection.
Duration: Mid of Feb – end of April 2020

Lei Yue Mun Park, Hong Kong
Number of storeys: 1-2
Number of units: 234
Purpose: Quarantine
Future use: Interim Housing with 4-storey tall capability.
Our services: Structural design consultant
Duration: Mid of Feb – mid of April 2020