



Source: Mott MacDonald

Services delivered under the PPP agreement included a full package of hard and soft FM services including: Building and Grounds Maintenance; Cleaning, Potting, Catering; Hospital Information Management System (HIMS) and Linen and Laundry; and some clinical support services (such as rehabilitation, disinfection and sterilisation, imaging and laboratory services).

The Project is part of the Administration of Health of the Republic of Turkey's Health Transformation Programme, supported by the World Bank, which aims to:

- Renovate the insufficient healthcare infrastructure that will not meet increasing healthcare demands;

- Bring together smaller hospitals under one campus; and
- Increase service quality and efficiency.

The Mersin IHC – PPP has a total capacity of 1,259 beds, consisting of: 25-bed Core Hospital; 458-bed General & Oncology Hospital (Tower 1); 396-bed General, Cardiovascular & Psychiatric Hospital (Tower 2); and 380-bed Women's & Children's Hospital (Tower 3). In total there are 264 polyclinics, 138 Intensive Care Units (ICU) and 59 new-born ICU units.

## BUILT ENVIRONMENT CASE STUDY: TURKEY

# Mersin Integrated Health Campus

### Location

Mersin, Turkey

### Owner

Ministry of Health (MoH), Turkey

### Private Partner

CCN Health (Construction and Concession Nexus)

### PPP Model

Design-build-finance-operate (DBFO)

### Operating Term

25 Years

### Contract Value

EUR 270 million/USD 303 million<sup>1</sup>

### Asset Class

Built Environment (Healthcare)

### Awards

- Best PPP Project award in the Middle East and Eastern Europe region at the EMEA Finance awards 2014

Opened on February 3, 2017, Mersin Integrated Health Campus (IHC) Project was the first and largest project within the Turkish Ministry of Health PPP program to reach financial close and become operational. Project financing amounting to EUR70 million was provided by three local and foreign banks.

The hospital was assessed by the international non-profit organisation HIMS (Healthcare Information and Management System) for digital hospital qualifications and rated as an EMRAM (Electronic Medical Record Adoption Model) Stage 6 or Digital Hospital.

### Output Specifications Development Approach Used

The detailed output specifications used for the Mersin IHC project are in standard form and consistent with those used across the Turkish Ministry of Health PPP program, including design and construction (specific to each site), general facilities management (FM) services and clinical support services. The design and construction specifications list the design requirements for the building supported by a Schedule

of Accommodation, which is an indicative size guide, a proposed number of beds and additional comments regarding expectations for the operation of the area, along with a list of permits to be obtained by the Private Partner. The output specifications also refer to the Turkey Healthcare Buildings Minimum Standard Guidelines, which provide a measurable standard from which to develop the Mersin IHC project.

<sup>1</sup> Assumed conversion rate of EUR/USD = 0.89 as at May 15, 2019.

Alignment to QI Focus Areas	Mechanisms used to achieve QI alignment	Market Comparison Analysis
<p>Sustainability and longevity of an infrastructure asset</p> <p>Ability of the asset to address the needs and meet the expectations of end users</p> <p>Longevity of the asset is assessed and sanctioned towards the end of the operating term through the assessment of compliance of the facility with handback requirements. The handback requirements are tied to three criteria:</p> <ul style="list-style-type: none"> <li>• The facility has been maintained throughout the operating term in compliance with the "Maintenance Repair Services and Method Statement";</li> <li>• The facility complies with the "design life requirements set forth in the Technical Specifications"; and</li> <li>• With respect to commercial areas (as opposed to health facilities), the facility complies with the Turkish Commercial Code Prudent Tradesman Provisions in relation to similar facilities' condition, except for the wear and tear caused by usage.</li> </ul> <p><b>Scope of services transferred:</b> The clinical support services have been transferred to the Private Partner to minimise the interface risk. In fact, given the large scale of hospitals in Turkey more generally, the transfer of clinical support services reduces the contract management risk for the public sector.</p> <p><b>End user needs and expectations:</b> End user needs and expectations were taken into account at all stages of the project's development – in the initial business case, which led to the development of project-specific output specifications, through the ongoing assessment of end users' satisfaction during the 25-year operating term – by aligning requirement with performance measures, and through the ability to make changes to the facility and/or the services provided by the Private Partner with a formal Variation Procedure:</p> <ul style="list-style-type: none"> <li>• The scope of works was developed as part of the initial business case based on the needs of the local population and anticipated growth statistics, enabling the amalgamation of several smaller health facilities into one larger campus. The merger of multiple small facilities into large campuses was the aim across the PPP Health program in Turkey.</li> <li>• User satisfaction surveys are given prominence by the inclusion as a monitoring method, with an additional requirement to undertake a quarterly survey for some services.</li> <li>• There is a formal Variation Procedure which enables changes to be made to the buildings or services, subject to agreement by the Owner and the Private Partner. More details on the Variation Procedure under the QI Focus Area: Ability of the asset to respond to changes in resource availability, population levels, demographics and disruptive technology.</li> <li>• Each service requirement applicable during the operating term has a corresponding performance parameter that describes the criteria used to determine whether the Private Partner has provided the service to the required standard.</li> </ul>	<p><b>Independent building survey:</b> A component of the handback process is an independent building survey. Prior to handback an independent building survey is to be undertaken to assess the outstanding works required to meet the handback standards. This typically takes place up to three years prior to the expiry date and involves the Owner and the Private Partner appointing a third party to undertake a condition survey of the facilities.</p> <p>If it is found that any component of the facility is not consistent with the handback requirements, the Private Partner shall provide the following within 10 business days, which is subject to review by the Owner:</p> <ul style="list-style-type: none"> <li>• <i>The works required to meet the handback requirements (the "Handback Works");</i></li> <li>• <i>The method and schedule for carrying out the Handback Works (the "Handback Programme"); and</i></li> <li>• <i>The cost estimate for carrying out the Handback Works (the "Handback Costs").</i></li> </ul> <p>The Private Partner is required to provide a bond to the value of the Handback Works which is released on acceptance of the Handback condition.</p> <p><b>User satisfaction surveys:</b> User satisfaction is one of the listed monitoring methods in the output specifications, with user surveys of Owner staff, company personnel, visitors and patients to be undertaken four times a year. The surveys are managed electronically through the Private Partner help desk and are provided to patients in hardcopy. Where satisfaction falls below 85%, the Private Partner must develop and implement an action plan.</p> <p>In addition, a range of meetings (including weekly, monthly, bimonthly, quarterly and annually depending on the attendees) are held with all project stakeholders to assess satisfaction with the level of service delivery and any additional needs.</p> <p><b>KPIs and mechanisms to address poor performance:</b> Each performance parameter (or KPI) has a specified service response time in which to respond to a service failure or service request, and a service correction time in which to take the necessary corrective actions to rectify the service failure or complete the service request. The response and service correction times are measured once the event is registered in the Private Partner's helpdesk system. Each performance parameter has also been allocated a monitoring method<sup>2</sup> that describes how the parameter can be measured. If, in any given month, the Private Partner is given "more than the number of Service Failure Points listed for the relevant Service", as defined in the Project Agreement, then "the Administration shall give a written notice to the [Private Partner]". If the Private Partner receives three or more written notices in any three-month period in relation to any service, the Owner may increase the monitoring level of the Private Partner's performance.</p>	<p>The output specifications and performance indicators for the Mersin IHC project, and more generally in Turkish P3 and Latin American PPP projects, are more prescriptive than on many other European or Canadian PPP projects. This is primarily associated with the politics, culture and perspectives of the country. One public sector perspective, found in Europe and Canada, is that each party will act with professional integrity and "act reasonably" in the delivery of works and the approach to partnering, resulting in more performance-based requirements. The alternative public sector perspective, found in Turkey and Latin America, is that unless a requirement is written down exactly it won't be done leading to more prescriptive requirements.</p> <p>The service scope is consistent with other Health PPP projects in Turkey/Middle East and Southern Europe; however, in other mature PPP markets, including Northern Europe and Canada, it is not so common to flow down this scale of services, with many countries limited to just hard FM-type services.</p>

<sup>2</sup> The monitoring methods include the submission of reports, comparison with agreed method statements, comparison against agreed criteria (benchmarks), self-monitoring, user satisfaction surveys (administration staff, visitors and patients), review and reports by statutory bodies, and audits by the Owner (analysis of complaints, random visits, validation checks of the Private Partner's data, deliberate testing, etc.).

Alignment to QI Focus Areas	Mechanisms used to achieve QI alignment	Market Comparison Analysis
<p>Health and safety considerations during both construction and operation of the asset</p> <p>The output specifications for the Mersin IHC project address health and safety considerations at both the construction and operational phases of the project.</p> <ul style="list-style-type: none"> <li>• <b>Legislative requirements:</b> Generally, the Private Partner must “<i>comply with the provisions of the Labour Law and the legislation on the worker’s health and safety in effect for all works performed by it during the Construction Period and the Operation Term</i>”. As such, the project’s design and construction must comply with the Turkey Healthcare Buildings Minimum Design Standard Guidelines.</li> <li>• <b>Health and Safety Manual:</b> As it relates to the operating term, the Private Partner must develop and maintain a “Health and Safety Manual” and must ensure that service delivery complies with the policies and procedures therein. Some key health and safety requirements include the provision of personal protective equipment (PPE), frequent (at least annual or as required) risk assessments, and training for all staff.</li> </ul>	<p><b>Performance indicators:</b> The payment mechanism includes deductions from the Private Partner’s payments should the Private Partner fail to comply with Occupational Health and Safety and Emergency Planning performance indicators (with reference to health and safety standards and practices of the Owner).</p> <p>KPIs include:</p> <ul style="list-style-type: none"> <li>• “A comprehensive and up to date health and safety manual is available; used by all Project Company Staff and Administration Staff, and service provision is delivered in accordance with the current health and safety manual”</li> <li>• “Operate and adhere to reporting procedures for accidents and/or breaches of statutory health and safety obligations are available, known and understood by all staff and adhered to as agreed with the Administration”;</li> <li>• “Staff are provided with suitable, appropriate and Turkish Standard or EU equivalent compliant personal protective equipment (PPE) and clothing including but not limited to:             <ol style="list-style-type: none"> <li>a. Uniforms</li> <li>b. Gloves</li> <li>c. Safety Glasses</li> <li>d. Plastic Aprons</li> <li>e. Shoes”</li> </ol> </li> </ul>	<p>Specifying compliance with legislation is consistent with other global projects and is typically the minimum requirement. Some projects specify specific health and safety requirements, particularly if there are access or operational constraints (i.e. an extension to an existing asset).</p> <p>In addition, the requirement to work alongside the Owner to produce plans consistent with policies is also included in many projects (health and other sectors).</p>
<p>Ability of the asset to withstand natural and other disasters, including climate change</p> <p><b>Designing for seismic risk</b></p> <p>In the event of an emergency, the facility would be of critical importance to respond to the increased healthcare requirements of the community. This was a key factor that was considered when developing the output specification to ensure that the structure can support clinical service delivery in the event of an earthquake.</p> <p>There has been significant investigation into the seismic risk for the site. The ground conditions encountered across the site are categorised as a lower-risk zone under the Turkish Earthquake Code (2007). The seismic design requirements follow the standard applicable requirements of the Turkish Earthquake Code.</p> <p>Seismic isolators<sup>3</sup> were initially included as a requirement in the output specifications issued to the bidders. However, the Private Partner carried out a study and concluded that because the site is located in a low-risk seismic zone, the required performance level can also be achieved without seismic isolators. The Owner ultimately approved the Private Partner’s approach and removed the requirement for seismic isolators.</p> <p><b>Disaster Recovery and Emergency Action Plans</b></p> <p>In the Owner’s Disaster Recovery Plan and Emergency Action Plan, some key duties have been transferred to the Project Company.</p> <p>The Private Partner’s responsibilities are as follows:</p> <ul style="list-style-type: none"> <li>• “The [Project] Company shall fulfil its duties and responsibilities in the “Hospital Disaster Plan” prepared by the Administration and shall provide all kinds of support in the preparation stage. It shall update the tasks assigned to it in the Hospital Disaster Plan in each year or in the context of the changing situations in order to comply with the changes in the Administration Practices, technological developments and changes in legislation, when necessary:             <ol style="list-style-type: none"> <li>a. The [Project] Company shall provide the fire exercises and evacuations containing the fire prevention procedures and the [Project] Company shall provide the Services in compliance with this contingency plan, including staff training and awareness, and fire drills/evacuations;</li> </ol> </li> </ul>	<p><b>Detailed surveys and geotechnical site investigations:</b> Detailed surveys of the whole area were executed jointly with the geotechnical site investigations (boreholes, surface water and groundwater studies, in situ tests, geophysical tests, laboratory tests, seismicity and assessment of earthquake hazard, etc.) in preparation for the commencement of the detailed design. The Private Partner is required to design and deliver a facility that complies with the output specification to receive the service payment.</p>	<p>It is typical that a PPP project would include a Force Majeure clause that includes earthquakes. In Canadian projects, the Force Majeure clause typically only applies if the damage caused exceeds a defined threshold (depends on the project but is linked to insurance values). This approach can also incentivise the Private Partner to design for and mitigate the risk.</p> <p>Refer to the John Hart Generating Station Case Study in the Energy Case Study section for an example of an output specification that adopts a performance-based requirement for seismic design.</p>

<sup>3</sup> Seismic isolators, also called base isolation system, are one of the most popular means of protecting a structure against earthquake forces.

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<p>b. "Emergency Action Plan" defining how [the Project] Company will manage each risk specified in the Hospital Disaster Plan and identifying any required remedial actions to be taken. This shall include communication protocols with the local emergency services for the development of the Disaster Plan;</p> <p>c. Service Specific Risk Assessments.</p> <p>"Each plan shall be developed in co-operation with the individuals listed below:</p> <ol style="list-style-type: none"> <li>1. Administration's fire safety officer</li> <li>2. Local authority fire department manager</li> <li>3. Emergency services units"</li> </ol>			
<p><b>Earthquake risk allocation</b></p> <p>Despite the above Private Partner responsibilities, the Project Agreement includes provisions for relief as it relates to Force Majeure. Force Majeure includes events that "occur (directly or indirectly) due to a natural cause or a human act or a negligence beyond the Project Company's control and which do not arise as a result of any act of negligence or fault by the Project Company or the occurrence of which the Parties could not avoid or timely prevent or mitigate using their best efforts and diligence, and which prevent the Project Company from fulfilling any or all of its obligations hereunder partially or fully:</p> <ol style="list-style-type: none"> <li>a. natural disasters</li> <li>b. legal strikes, or civil rebellion that may affect the country</li> <li>c. epidemics</li> <li>d. declaration of partial or general mobilisation and war.</li> </ol>			
<p>Job creation, capacity building and transfer of knowledge</p>	<p><b>Transferring knowledge to the Owner in preparation for handback</b></p> <p>Knowledge transfer is a core element of the handback requirements at the end of the 25-year operating term when the site will transfer back to the Owner. The Handover Plan is required to include detail on employee retention and training. Similarly, the Handover Plan shall ensure that all asset documentation (for example as built drawings, operational manuals, warranties still valid) would be handed over to the Owner to ensure asset knowledge is not lost.</p> <p>It is worth noting that at contract expiry, the Private Partner operational staff may also transfer to the Owner to ensure continuity.</p>	<p><b>Handover Plan:</b> The details of the Handover Plan are not laid-out in the contractual requirements, but will be developed by the Private Partner in collaboration with the Owner towards the end of the operating term.</p>	<p>The requirement for a Handover Plan is typically included on most PPP projects, with asset documentation a key part of this. Increasingly, there are requirements for building information models (BIM) to be maintained throughout the operating term to improve asset management and the transfer of knowledge at handback.</p>
<p>Social impacts and inclusiveness</p>	<p><b>Accessibility provisions in the output specifications</b></p> <p>The facility is intended to be inclusive, with accessibility provisions incorporated in the output specifications. As such, the facility must comply with the Turkish disability legislation, and the Private Partner is required to "ensure access routes comply with disability legislation". More specifically, the output specifications highlight that the facility must "include access provisions for cars or minibuses to set down disabled or elderly people at entrances, safely and without hindrance".</p>	<p><b>Review procedure:</b> During construction, the MoH's internal technical team monitors construction progress against the program, key milestones and the quality elements of the output specification (using Schedule of Accommodation, Room Data Sheets and the Design and Construction requirements). This allows inconsistencies, defects, failures or derogations to be highlighted throughout the construction phase, with the technical team visiting the site typically on a monthly basis.</p>	<p>Accessibility provisions are standard practice in healthcare PPP projects, and local standards and regulations form the minimum requirements.</p>
<p>Environmental impacts</p>	<p>During the operating term, the Private Partner is responsible for the performance of Environmental Management services with responsibilities as follows:</p> <ol style="list-style-type: none"> <li>a. "Environmental policy;</li> <li>b. inspections of regular intervals of organization's environmental aspects;</li> <li>c. setting objectives and targets to improve environmental impacts;</li> <li>d. operational control procedures;</li> <li>e. monitoring and recording;</li> <li>f. role allocation and training;</li> <li>g. non-conformity and corrective action processes;</li> <li>h. review of system audit and management."</li> </ol>	<p><b>Performance indicators:</b> Alignment with environmental requirements is assessed and sanctioned during the Operating Term through the performance indicators, which are an integral part of the Payment Mechanism. The performance indicators address compliance with ISO 14001 accreditation, as well as the integrity and functionality of energy supply.</p> <p>Energy monitoring is only required for specific volume related services and therefore there are no energy consumption targets, and there is no general pain/gain share mechanism associated with energy consumption. However, there are performance indicators associated with the optimisation of the supply of energy to the assets, whereby failure to rectify the loss of energy supply within one hour is subject to hefty penalties.</p>	<p>Globally ISO 14001 accreditation is a commonly used standard for environmental management. It is worth noting that in some jurisdictions the full accreditation is required, whereas in other jurisdictions (including Ontario, Canada), the requirement is for the Project Companies to comply with ISO 14001, but they are not contractually required to obtain the formal accreditation.</p>

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<p>The output specification adopts an international standard to define the level of performance.</p> <ul style="list-style-type: none"> <li>• <b>ISO 14001 [Environmental Management]:</b> The output specifications for the project require the Private Partner to obtain and maintain accreditation to ISO 14001 [Environmental Management]<sup>4</sup>. Compliance with ISO 14001 at all times helps control environmental aspects, reduce impacts and ensure legal compliance.</li> </ul>	<p>The following are examples:</p> <ul style="list-style-type: none"> <li>• <i>“The integrity of electrical supply to essential circuits and distribution networks is maintained at all times”.</i></li> <li>• <i>“The integrity of water supply is maintained at all times”;</i></li> <li>• <i>“The integrity and functionality of the sewage and effluent disposal system are maintained at all times”.</i></li> </ul>	
<p>Ability of the asset to respond to changes in resource availability, population levels, demographics and disruptive technology</p>	<p>The design objectives indicate provision of a total capacity of 1,259 beds within the campus. The expectation was that the facility would not operate at full capacity in the earlier years but would allow for population growth. Volume-related services were provided under the payment mechanism with a guaranteed minimum capacity (70%), with occupancy above that level managed through a monthly adjustment and an annual reconciliation of actual occupancy. Expansion is to be managed through the Variation Procedure process.</p> <p>Hospital occupancy is based on local population statistics examined during the scoping phase for the project with a view to some future proofing to allow for expanding population if applicable. The project combined several smaller local facilities into one campus meaning that local hospital occupancy statistics were available.</p> <p>Managing volume-related services, such as catering, linen, and clinical support services, at 70% guaranteed minimum occupancy means the Owner pays only for the required services in the early years but incentivises the inclusion of future proofing into the facilities.</p>	<p><b>Variation procedure:</b> The Owner and the Private Partner are required to comply with the Variation Procedure. As such <i>“in case of a Qualifying Variation [...], in the event that the Administration and the Project Company agree to adjust in relation to the Availability Payment, the Administration shall compensate the Project Company for the relevant capital expenditure by adjusting the Availability Payment”</i>. As such, the Owner and the Private Partner shall come to an agreement on the following matters:</p> <ul style="list-style-type: none"> <li>• <i>“Monthly payment schedule reflecting the amount and timing of the costs to be incurred by the Project Company in carrying out the Qualifying Variation [...]”;</i></li> <li>• <i>“The evidences that confirm the due performance of the portion that corresponds to each situation where the maturity date of a payment is due, within the framework of the Qualifying Variation payment schedule”.</i></li> </ul> <p>Although occasionally ‘soft’ FM services are transferred to the Private Partner, the typical approach is to transfer only the ‘hard’ FM services. The demand for soft FM services is driven by occupancy, which is out of the Private Partner’s control. Where ‘soft’ FM services are included in the PPP contract, it is typical to have a regime that guarantees a minimum payment but also allows services to be ramped up, as required, to meet occupancy.</p>

<sup>4</sup> ISO 14001 [Environmental Management] is a globally-recognised standard, and the principal management system standard which specifies the requirements for the formulation and maintenance of an Environmental Management System.