

Project Name Milton District Hospital Expansion, Canada



<p>Description</p>	<p>The project by Halton Healthcare / Infrastructure Ontario was to expand the Milton District Hospital to keep pace with the unprecedented growth of Milton, Ontario, one of the fastest growing municipalities in North America. The hospital opened to the public in the fall of 2017. Infrastructure Ontario is the provincial procurement agency in Ontario, and Halton Healthcare is a multi-site healthcare organisation that operates three community hospitals, with the Milton District Hospital Expansion being their second PPP (P3) facility procured with the design-build-finance-maintain (DBFM) model.</p> <ul style="list-style-type: none"> • The Milton District Hospital redevelopment project was intended to increase services most in demand including emergency, surgical, critical care, maternal newborn and diagnostic imaging. The project also includes increasing the overall capacity from 63 to 129 inpatient beds, with 80% single-patient rooms. • The construction took place on a brownfield site and fully functional hospital site without disruption to essential and lifesaving clinical services. • Substantial Completion was reached on time and Final Completion was achieved 7 months after Substantial Completion. • The Private Partner is responsible for the provision of Facilities Management and Lifecycle Replacement for the duration of the 30-year operating period. • The Project achieved the LEED New Construction (NC) Gold certification, a globally recognised sustainable accomplishment. The project has exceeded the contractual requirement of LEED NC Silver certification. 		
<p>Location</p>	<p>Milton, Ontario, Canada</p>		
<p>Owner</p>	<p>Halton Healthcare</p>	<p>Private Partner</p>	<p>Plenary Health Milton LP (Plenary Group (Canada) Ltd, PCL Constructors Canada Inc.)</p>
<p>PPP Model</p>	<p>Design-build-finance-maintenance (DBFM)</p>	<p>Operating Term</p>	<p>30 years</p>
<p>Contract Value</p>	<p>CAD 512 million / USD 380 millionⁱ</p>		

Project Name	Milton District Hospital Expansion, Canada
Asset Class	Built Environment (Healthcare Facility / Hospital)
Awards	2018 Silver Infrastructure Awarded by the Canadian Council for Public Private Partnerships for its value for money, design, technological innovation and the role the hospital is expected to play in empowering medical excellence

Output Specifications Development Approach Used

- The design and construction specifications are consistent with Infrastructure Ontario standard specifications, and tailored for the project by drawing on lessons learned from previous healthcare projects.
- The Private Partner is required to work collaboratively with the Owner – during both construction and operations - to ensure seamless integration of infrastructure and systems. The output specifications clarify the delineation of responsibility for maintenance and lifecycle of the existing systems and the interfaces to the new systems.
- The IT, access control and security systems for the new facility also require full integration and interoperability between all three of the Owner’s hospitals, which was translated into prescriptive requirements in the output specifications.
- **Lean design:** the project is intended to apply “lean” thinking and methods to maximise customer value while minimising waste. The overarching principle is to enhance clinical workflow, promote the efficient use of staff resources and improve the patient experience. As such, the design for the facility must demonstrate travel distance efficiency, separation of flows, line of sight, standardisation, and process mapping.
- **Evidence-Based design (EBD) parameters:** defined by the Centre for Health Design, EBD is the process of basing decisions about the built environment on credible research to achieve the best possible outcomes. The Private Partner must demonstrate the quality of their design for the facility through EBD parameters of natural light, view of nature and surroundings of the hospital (including requirements such *“generously proportioned exterior windows that allows the patient an obstructed view of the exterior landscape when viewed from a reclining position in the patient bed”*), patient control of indoor environment (including ability for occupants to make *“local temperature adjustment”* by adjusting *“room set point within limits set in temperature range field”*), patient and staff access to landscaped areas, intuitive wayfinding, quality of interior design, organisation and fit-out of patient and family accommodations.
- **OASIS standards:** the Ministry of Health and Long Term Care of Ontario is committed to its OASIS standards, which must be a founding principle of planning in all areas of the building and in all key operational processes in the province of Ontario. OASIS stands for: **O**perational efficiency, **A**ccessibility, **S**afety and security, **I**nfection prevention and control, **S**ustainability of the healthcare system.

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 meet the needs of end users</p>	<p>Sustainability and longevity of the asset is mandated through the development and implementation of a maintenance program during a 30-year operating period, whereby the Private Partner must maintain the site and the facility per the service standards identified in the output specifications, maximising reliance on industry-recognised standards. An independent inspector is also appointed by both parties to assess the condition of the facility prior to handback at the end of the term and to confirm compliance with the Expiry Transition Requirements.</p> <p>Key documents that the Private Partner must develop to ensure longevity of the infrastructure include the Preventive Maintenance Schedules (1 year and 5 year), the Five-Year Maintenance Plan, and the Lifecycle Replacement Schedule. The Private Partner must also report on the activities undertaken in relation to the stated plans.</p>	<p>Expiry Transition Procedure: in its Facility Condition Report, the Independent Inspector will estimate the costs that would be required to perform the Expiry Transition Works. If the costs estimated by the Independent Inspector are greater than the Private Partner’s costs allocated to lifecycle works pursuant to the financial model, the difference shall be apportioned equally over the Payment Periods from the date of the Facility Condition Report to the end of the operating term. The Owner may deduct these amounts from each Monthly Service Payment and pay into a</p>
		<p>Across asset classes in developed markets, it is common to have an independent party involved in the asset condition reviews leading up to handback. It is also common to commence these inspections years ahead of the end of term to allow the Private Partner to improve the asset condition if it does not meet the required standard.</p> <p>The Availability Failure regime is considered to be a relatively</p>

Expiry Transition Procedure: the Project Agreement includes an Expiry Transition Procedure for an Independent Inspector to carry out inspections of the facility. The Independent Inspector will perform an inspection of the facility and produce a Facility Condition Report not less than seven years prior to the end of the operating term and provide an update annually thereafter. A final Facility Condition Report will be delivered within 30 Business Days after the end of the operating term. The key aspects of the Facility Condition Report include:

- Assessing the Private Partner's business case related to capital replacement;
- Identifying “any works required to ensure the Facility will meet the Expiry Transition Requirements, which are defined as each element of the Facility being:
 - in good operating order (and capable of performing in accordance with the performance specifications; and
 - in a condition where such element of the Facility will have a reasonable likelihood of completing its operating order”.
- Specifying the Independent Inspector's estimate of the costs that would be required to perform the Expiry Transition Works.

Reliance on industry-recognised standards: for all disciplines, the output specifications include a section on Legislation, Codes, Standards and Authorities.

The design, construction, commissioning and maintenance must be compliant with industry standards, such as the CSA Group standards (Previously Canadian Standards Association). Some examples are provided below:

- CSA Standard Z32, Electrical Safety and Essential Electrical Systems in Healthcare Facilities.
- CSA Standard Z8000, Canadian Health Care Facilities.
- CSA Standard Z8001-13, Commissioning of Health Care Facilities.
- IEEE 519, Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems.
- IEEE Standard 1346, Recommended Practice for Evaluation Electric Power System Compatibility with Electronic Process Equipment.

The ability of the asset to continue to meet the end user expectations is measured throughout the operating period, through the availability mechanism that measures compliance with functional requirements, as well as satisfaction surveys and the Owner's ability to address significant or persistent non-performance of the Private Partner. Prescriptive requirements have been developed where required to ensure that key priorities of the end users, including the Owner, are met. Examples of this include:

separate escrow bank account (upon escrow terms acceptable to the parties). As an alternative, the Private Partner may provide a bond or letter of credit in favour of the Owner. If the final Facility Condition Report identifies any Expiry Transition Works, the Owner may withdraw from the escrow account or call upon the letter of credit an amount equivalent to the cost of the Expiry Transition Works, and return any remaining security to the Private Partner. Provided the funds in the Escrow Account and/or the Expiry Transition security are adequate to meet the Private Partner's obligations, the Private Partner will have no further liability.

Measurable performance requirement: Service Failures with associated failure points and deductions for the failure to comply with the Scheduled Maintenance Plan each month:

- *100% of all regulatory testing and maintenance completed in accordance with the Scheduled Maintenance Plan: 1 Minor Service Failure per month for non-compliance*
- *Minimum of 85% of all other Scheduled Maintenance completed within the planned month and any deferred Scheduled Maintenance completed within the following month along with associated CMMS records*

Customer satisfaction surveys: failure to meet baseline ratings or a decrease in ratings is linked to Performance Indicators (Quality Failures), with associated Failure Points and Deductions:

standard approach across social infrastructure projects. Although the terminology may be different, and there are nuances in the application, the principle that the Private Partner shall have a defined time period to respond and rectify a failure prior to incurring financial deductions is a typical approach. The response and rectification periods are classified based on the relative priority of the area.

Recent Infrastructure Ontario healthcare projects include a new type of availability failure called a ‘System Failure’. The System Failure responds to the increasing reliance on communication and information systems to effectively operate a hospital. It also reflects the impact of an outage, where multiple areas and rooms may be affected.

- Customer satisfaction surveys during the operating period to assess satisfaction with the services delivered by the Private Partner. The results of the Service Satisfaction Survey shall be provided to the Owner within 30 days following the completion of the Service Satisfaction Survey. The results shall include analysis of the results. The Private Partner must develop and implement an action plan if the ratings show poor or decreasing customer satisfaction.
- Performance Action Plan: the Owner can request the development of a Performance Action Plan if it observes a significant or consistent non-performance of any services by the Private Partner during the operating period.
- Use parameters: In the availability-based IO model, failure to achieve the use parameters may result in Availability Failures, whereby any of the following criteria is not compliant:
 - the “Accessibility Condition”,
 - the “Safety Condition”, or
 - the “Use Condition”.
- Intentional prescriptive requirements in the Output specifications:
 - Smart Hospital Technology: the Owner operates three healthcare facilities, and requires the integration of ICT and security systems between all facilities. Interoperability between all three of the Owner’s hospitals and homogeneity of ICAT systems such as nurse call, patient wandering, infant abduction, duress, CCTV/security, real-time location and bed management systems is a key feature of the Milton Hospital’s Smart Hospital technologyⁱⁱ. The technology allowing over 20 disparate systems to talk to each other intelligently is the Enterprise Service Bus (ESB), which captures all the alerts and alarms generated by these systems, and shuttles them to the right destinations as defined by staff.
 - Spaces designed for the unique prisoner population: the project includes spaces designed to care for the hospital’s unique prisoner population. The Town of Milton is home to two large correctional facilities, and prisoners from these facilities are frequent patients of the hospital. The facility’s design includes a separate and discrete entrance, as well as a secure holding area in the lower level for prisoners attending hospital for outpatient services such as diagnostic tests. Two secure treatment rooms located inside the Emergency Department are available for prisoners requiring emergency care. These spaces were planned with inputs from Correction Services staff so that care could be taken to meet their unique needs while respecting the dignity and confidentiality of the prisoners.

Below is an example of a performance indicator associated with customer satisfaction:

% satisfaction score on the customer satisfaction survey no more than 5% lower than previous customer satisfaction score of the Baseline Survey, whichever is higher (per service).

Performance Action Plan (PAP): the Private Partner may be penalised if it fails to submit a Performance Action Plan, or if it fails to implement the Performance Action Plan. The following penalties have been developed to incentivise the Private Partner’s behaviour:

- *Where a complete PAP is not submitted within 5 Business Days (“Initial PAP due date”), a PAP Deduction of \$1,000 applies as of the Initial PAP due date;*
- *For each subsequent week following the due date (“Subsequent PAP due date”), where the PAP is not submitted, a PAP Deduction of \$1,000 applies as of the Subsequent PAP due date; and*
- *Where the key activities listed in the PAP (8-9 activities per PAP) are not implemented according to the milestone dates included in the PAP, a PAP Deduction of \$500 per milestone date that is not achieved is applicable.*

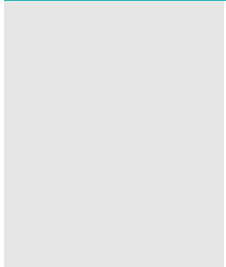
Availability Failures: The Private Partner may be subject to deductions from its monthly service payments if an event is not rectified within the relevant Rectification Time and which causes a Functional Part to be Unavailable – this is the definition of an Availability Failure, which is a key aspect of the Infrastructure Ontario model.

		<p>In addition to financial deductions, the Private Partner is subject to Failure Points, which may be awarded in respect of the Private Partner's Service. If the Private Partner accrues Failure Points in excess of pre-defined thresholds, then the following step-in rights are triggered:</p> <ul style="list-style-type: none"> • Warning Notices • Monitoring Notices • Owner Remedial Rights • Private Partner Events of Default <p>However, the Private Partner may be relieved from Failure Points and Deductions, if it can do any of the following:</p> <ul style="list-style-type: none"> • Temporary Repairs: “[...] if the Temporary Repair is effected within the specified Rectification Time and the Permanent Repair is effected by no later than the Permanent Repair Deadline, no Service Failure or Availability Failure will occur, and no Deduction may be made, in respect of the Event”. • Temporary Alternative Accommodation: “if Halton Healthcare accepts the Private Partner's offer of Temporary Alternative Accommodation, no further Deductions shall be made or Failure Points awarded in respect of a Functional Part vacated by Halton Healthcare while the Temporary Alternative Accommodation replacing that Functional Part is being used by Halton Healthcare” 	
<p>Ability of the asset to withstand natural and other disasters, including climate change</p>	<p>The output specifications require a building to be developed that can respond to extreme weather conditions. The output specifications detail the physical requirements to accommodate the Owner's response to a large-scale disaster.</p> <ul style="list-style-type: none"> • <u>Building testing and commissioning</u>: Through a comprehensive commissioning process, the Private Partner must demonstrate that the facility can withstand extreme weather conditions. These include wind 	<p>Condition precedent to Service Commencement</p> <p>Building testing and commissioning is condition-precedent to achieving Substantial Completion. An individual licensed and authorised by the Association of Professional Engineers of</p>	<p>Across asset classes in developed markets, it is common to have independent parties validating compliance with the output specifications, in particular during construction and</p>

	<p>uplift testing, flood testing, and thermographic surveys of the roof to ensure acceptable level of tightness after exterior envelope has been completed.</p> <ul style="list-style-type: none"> • <u>Accommodation for large scale disasters:</u> The Ontario Ministry of Health and Long-Term Care has implemented a program to equip all hospital sites that offer emergency/urgent care with a standardised package of chemical, biological and nuclear exposure supplies and equipment. In order to meet these requirements, the Private Partner is required to meet a number of criteria to satisfy accessibility criteria of the tent. For example, the Private Partner must provide 200 square feet of storage space for the Owner’s chemical, biological and nuclear exposure tent. The door shall be able to be connected to one of the doors of the ambulance garage. 	<p>the Province of Ontario shall undertake the role of “Commissioning Authority” as specified in the CSA standard Z320-11 [Building Commissioning Standard and Check Sheets]. This standard specifies commissioning requirements for newly installed building systems.</p>	<p>commissioning. Third parties such as the Commissioning Authority / Agent or the Independent Tester / Certifier (which is typically selected through a competitive process and jointly funded by the Owner and the Private Partner to provide independent oversight and monitoring of construction progress and quality) are safeguards to monitor compliance with the output specifications.</p>
<p>Health and safety considerations during both construction and operation of the asset</p>	<p>Patient safety is paramount in the output specifications for the Milton District Hospital. As such, the Private Partner must provide a complete security management system. In addition, all security systems have UPS and emergency generator power to support the operation of the system in the event of a power loss.</p> <p>Healthcare organisations are expected to provide safe and reliable services to their patients. Mechanical and electrical systems constitute the operational infrastructure that permits safe patient care. As such, planning appropriate response and recovery activities for a failure of the facility’s mechanical and electrical systems is essential to satisfy this expectation.</p> <ul style="list-style-type: none"> • <u>Reliable utilities with N+1ⁱⁱⁱ redundancy:</u> the output specifications include provisions for selected equipment, devices or systems to be provided in sufficient quantity and capacity such that should the largest unit fail, the design load of the system served will still be met. Some of the most important systems that require redundancy include heating and steam systems, cooling plant main equipment, exhaust high efficiency particulate air (HEPA) filters for air-borne precaution room exhaust ductwork, mechanical systems that support the medical gas systems (i.e. medical gas room ventilation fans). In addition, computer room air conditioning (CRAC) units must be provided in sufficient quantity to provide a redundancy level of 2*n units, where the number of CRAC units required to service the room cooling load is n. • <u>Elevators:</u> Similarly, the functionality and availability of elevators is a key to ensure health and safety of building occupants. The Private Partner is required to measure, record and report on elevators’ availability. Given the nature of the facility and potential poor health conditions of patients, in the event of a mechanical failure during the operating period, elevator occupants must be released from the elevator as soon as practicable and in any event within 45 minutes. 	<p>Key performance indicator (KPI) The provision of reliable utilities to the facility is a KPI of the Private Partner’s performance, and in the event that there is a disruption from the Utility Company, backup systems shall function as intended. In the event the Private Partner fails to comply with this key performance indicator, material financial penalties will be applied to its monthly service payments.</p> <p>Elevator Availability Failures: Should the Private Partner fail to rectify an elevator availability event within the applicable time period, and the event is impacting the Owner’s ability to use the elevator in question, the Private Partner will be subject to a deduction from its monthly service payment. The amount of the deduction is based on the number of elevators that remained operational. The output specifications also include a performance indicator whereby in no case will scheduled maintenance be allowed to take out of service more than one elevator at a time.</p>	<p>Redundancy requirements for key mechanical and electrical equipment are common for healthcare facilities in developed markets, and the Private Partner is often exposed to hefty penalties in the event of outages. Similarly, elevators are of critical importance in the healthcare sector, and elevator availability mechanisms are often incorporated in the contractual structure to incentivise a quick response to unavailability events.</p>

<p>Job creation, capacity building and transfer of knowledge and expertise</p>	<p>Knowledge transfer from the Private Partner to the Owner occurs at three stages during the project:</p> <ul style="list-style-type: none"> during commissioning and prior to operations; as part of the Services provided by the Private Partner; and prior to handback at the end of term. <p>The training and transfer of knowledge applies to both the general facility users, as well as the Owner's staff that will be operating the equipment and systems designed and constructed by the Private Partner.</p> <ul style="list-style-type: none"> General orientation and training support: As such, the Private Partner must develop and implement, in collaboration with the Owner, a service orientation program for relevant Owner staff which they will conduct initially and then when the Owner changes key staff at the facility. Similarly, the Help Desk Services also include ad-hoc training as may be required to ensure the Owner's occupants are aware of procedural updates. Specialised training: The Private Partner must provide specialised training to the Owner's staff to facilitate the appropriate operation of the facility. As it relates to the operation of security systems; the Private Partner provides a plan and procedures for training and subsequent re-training of Halton Healthcare staff on the security and surveillance system. The Private Partner will provide the Owner's employees with appropriate cleaning services training and guidance on the techniques and products to use in the care of all surfaces and fixtures. Operational Policies and Procedures: Prior to the start of the operating term, the Private Partner was required to develop policies and procedures including manuals intended to guide the on-going operations and maintenance activities of the Facility. The policies and procedures were developed in collaboration with the Owner. The output specifications set out the process to develop project-specific policies and procedures 18 months prior to the start of the operating term, with time for the parties to identify and develop specific interface requirements, and ensure that expectations of end users are taken into consideration in the day-to-day management of the facility. By starting their development so early in the project, the output specifications introduce an opportunity for proactive coordination between the facility owner and the Private Partner in the development of Policies and Procedures. The policies and procedures are to be updated annually during the operating term, giving an opportunity for the parties to assess whether the needs of end users are appropriately addressed, build on lessons learned, and make any changes where required. The policies and procedures address, for example, "communication procedures", "operational issues resolution", and the management of all services performed by the Private Partner. 	<p>Review procedure: Training, and orientation materials and Policies and Procedures are subject to Owner review.</p> <p>Performance Indicators: there are performance indicators associated with the provision of training and orientation to the Owner's staff. Failure to comply with the performance indicators is subject to deductions from the monthly service payments during the operating period. Similarly, failure of the Private Partner to comply with Policies and Procedures is subject to deductions from the monthly service payments.</p>	<p>Across asset classes in developed markets it is common practice for the Owner to be given the opportunity to review, provide comments, and request changes to the operational policies, procedures, training and orientation material, to ensure the interfaces between both parties are managed. Annual reviews of these documents are also standard to incorporate any lessons learned or updates.</p> <p>Additionally, it is common practice for the Private Partner to provide training to the Owner staff on the operation of equipment prior to Service Commencement, as part of the commissioning process.</p>
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<p>Environmental impacts</p>	<p>Environmental objectives are core priorities of the Infrastructure Ontario PPP model for healthcare facilities, and a robust incentivisation mechanism has been implemented to ensure the objectives are met.</p> <ul style="list-style-type: none"> • <u>Third party certification (Leadership in Energy and Environmental Design (LEED) New Construction (NC) certification^{iv})</u>: the output specifications require the Private Partner to achieve the LEED NC Silver rating certification, at a minimum. Targeting LEED certification addresses climate and site-specific design issues that help it to achieve a sustainable and resilient design while built-in adaptability allows for future flexibility. • <u>Energy target</u>: During competitive procurement in the Infrastructure Ontario model, all proponents have to demonstrate, by way of a Forecast Energy Model that their facility shall have an annual energy intensity of no greater than 2.0 GJ/m²/year (= the mandatory energy target), including End User Loads and Secondary Facility Loads. The Forecast Energy Model is used solely for comparisons of the proponents' predicted building energy performance. <ul style="list-style-type: none"> - In parallel, all proponents (at bid stage) are also required to submit an Aggregate Energy Model, which is used to measure the Annual Energy Target for the facility. The Annual Energy Target subsequently becomes the first year Annual Energy Target for the facility. Variations to the Aggregate Energy Target are calculated each year if changes are implemented that change facility load or energy usage, and changes to inputs of the energy model, such as weather data or equipment rations, are updated each year. • <u>Environmental Management System</u>: the Private Partner must develop an environmental management system manual for the operating period, with environmental objectives and targets. The environmental operating procedures must comply with ISO 14001:2004 guidelines^v. The Private Partner must also provide the Owner with environmental objectives and targets on an annual basis, which are reported on. 	<p>LEED NC certification: there is an onerous CAD 2 million penalty in the form of liquidated damages to the Owner if the Private Partner fails to achieve the LEED NC silver certification within 24 months after the Substantial Completion Date.</p> <p>Energy Painshare / Gainshare: in the Infrastructure Ontario model, the energy unit pricing is a risk borne by the Owner, however, the energy consumption risk is shared using a painshare / gainshare mechanism. On this basis, actual energy consumption is measured annually against the energy target for that year:</p> <ul style="list-style-type: none"> • Consumption between 95% and 105% of target = Private Partner risk (no painshare or gainshare) • Consumption between below 95% of target = gainshare, with a split of the savings between the Owner and the Private Partner; • Consumption exceeds 105% = the Owner will deduct all additional energy costs from Private Partner's monthly service payments <p>If the Private Partner is subject to an adjustment, then the Private Partner will submit a detailed remediation plan to the Owner to explain how it will reduce the energy consumption for the subsequent year.</p> <p>Environmental Management System (EMS): there are specific performance indicators associated with compliance with the Environmental Management System manual, and compliance with ISO 14001:2004 guidelines. As such, the Private Partner is subject to material penalties if it fails to:</p> <ul style="list-style-type: none"> • perform Services in accordance with the Environmental Management System on an ongoing basis in a careful and environmentally 	<p>Third party certification is a common approach to promote energy efficiency and building sustainability. The available certifications vary by location. A good practice approach is to define the credits that the Private Partner must achieve in the output specification, so the certification aligns with the Owner's objectives. ENVISION^{vi} is a newer certification process for civil infrastructure projects, and is increasingly being considered by Owners in North America. Alternatively, Owners (or governments) may have their own green building standard. For example, the Hong Kong Organic Recovery Centre was required to comply with the government's 'Green Building Performance Framework set out in the Development Bureau Technical Circular (Works) No 2/2015'.</p> <p>The use of energy targets and consumption painshare/gainshare is common across markets and sectors but is not standard (for example it is not used in Turkey, where the requirement is limited to monitoring consumption).</p>
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responsible fashion to minimise effects on health and the environment;

- maintain appropriate records and audit processes;
- develop and implement environmental operating procedures in the EMS manual that comply with ISO 14001:2004 guidelines.

Project Name Mersin Integrated Health Campus, Turkey



Description	<p>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.</p> <p>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.</p> <p>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).</p> <p>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:</p> <ul style="list-style-type: none"> • 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. <p>The Mersin IHC – PPP has a total capacity of 1,259 beds in total, consisting of: 25-bed Core Hospital; 458-bed General & Oncology Hospital (Tower 1); 396-bed General, Cardiovascular & Psychiatric Hospital (Tower 2); 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.</p>			
Location	Mersin, Turkey			
Owner	Ministry of Health (MoH), Turkey	<table border="0"> <tr> <td data-bbox="1131 1437 1344 1469">Private Partner</td> <td data-bbox="1355 1437 2076 1469">CCN Health (Construction and Concession Nexus)</td> </tr> </table>	Private Partner	CCN Health (Construction and Concession Nexus)
Private Partner	CCN Health (Construction and Concession Nexus)			

Project Name	Mersin Integrated Health Campus, Turkey		
PPP Model	Design-build-finance-operate (DBFO)	Operating Time	25 Years
Contract Value	EUR 270 million / USD 303 million ^{vii}		
Asset Class	Built Environment (Healthcare)		
Awards	Best PPP Project award in the Middle East and Eastern Europe region at the EMEA Finance awards 2014		
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.

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 meet the needs 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"> The facility has been maintained throughout the operating term in compliance with the “Maintenance Repair Services and Method Statement”; The facility complies with the “design life requirements set forth in the Technical Specifications”; 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. <p>Scope of services transferred: 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>End user needs and expectations: 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</p>	<p>Independent building survey: 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"> <i>The works required to meet the handback requirements (the “Handback Works”);</i> <i>The method and schedule for carrying out the Handback Works (the “Handback Programme”);</i> and <i>The cost estimate for carrying out the Handback Works (the “Handback Costs”).</i> 	<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>

Alignment to QI Focus Areas	Mechanisms used to achieve QI alignment	Market Comparison Analysis
<p>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"> • 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. • 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 • 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. • 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. 	<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>User satisfaction surveys: 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 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>KPIs and mechanisms to address poor performance: Each performance parameter (of 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^{viii} that describes how the parameter can be measured. If, in any given month, the Private Partner is</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>

Alignment to QI Focus Areas		Mechanisms used to achieve QI alignment	Market Comparison Analysis
		<p>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>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"> • Legislative requirements: Generally, the Private Partner must “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”. As such, the project’s design and construction must comply with the Turkey Healthcare Buildings Minimum Design Standard Guidelines. • Health and Safety Manual: 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. 	<p>Performance indicators: 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"> • “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.” • “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.” • “Staff are provided with suitable, appropriate and Turkish Standard or EU equivalent compliant personal protective equipment (PPE) and clothing including but not limited to: <ul style="list-style-type: none"> a) Uniforms b) Gloves 	<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). 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>

Alignment to QI Focus Areas		Mechanisms used to achieve QI alignment	Market Comparison Analysis
<p>Ability of the asset to withstand natural and other disasters, including climate change</p>	<p>Designing for seismic risk 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. 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. Seismic isolators^{ix} 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>Disaster Recovery and Emergency Action Plans In the Owner’s Disaster Recovery Plan and Emergency Action Plan, some key duties have been transferred to the Project Company. The Private Partner’s responsibilities are as follows:</p> <ul style="list-style-type: none"> • <i>“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:</i> <ol style="list-style-type: none"> a. <i>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;</i> b. <i>“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;</i> 	<p>c) Safety Glasses d) Plastic Aprons e) Shoes”</p> <p>Detailed surveys and geotechnical site investigations: 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>

Alignment to QI Focus Areas	Mechanisms used to achieve QI alignment	Market Comparison Analysis
	<p>c. <i>Service Specific Risk Assessments.</i> <i>Each plan shall be developed in co-operation with the individuals listed below:</i></p> <ol style="list-style-type: none"> 1. <i>Administration’s fire safety officer;</i> 2. <i>Local authority fire department manager</i> 3. <i>Emergency services units”</i> <p>Earthquake risk allocation Despite the above Private Partner responsibilities, the Project Agreement includes provisions for relief as it relates to Force Majeure. Force Majeure includes events that “<i>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,:</i></p> <ol style="list-style-type: none"> a. <i>natural disasters,</i> b. <i>legal strikes, or civil rebellion that may affect the country</i> c. <i>epidemics,</i> d. <i>declaration of partial or general mobilisation and war.</i> 	
<p>Job creation, capacity building and transfer of knowledge</p>	<p>Transferring knowledge to the Owner in preparation for handback 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. It is worth noting that at contract expiry, the Private Partner operational staff may also transfer to the Owner to ensure continuity.</p>	<p>Handover Plan: 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>Accessibility provisions in the output specifications 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 “<i>ensure access routes comply with disability legislation</i>”. More specifically, the output specifications highlight that the facility must “<i>include access provisions for cars or minibuses to set down disabled or elderly people at entrances, safely and without hindrance</i>”.</p>	<p>Review procedure: During construction, the MoH’s internal technical team monitors construction progress against 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</p> <p>Accessibility provisions are standard-practice in healthcare PPP projects, and local standards and regulations form the minimum requirements.</p>

Alignment to QI Focus Areas		Mechanisms used to achieve QI alignment	Market Comparison Analysis
Environmental impacts	<p>During the operating term, the Private Partner is responsible for the performance of Environmental Management services with responsibilities as follows:</p> <ul style="list-style-type: none"> a) <i>“Environmental policy;</i> b) <i>inspections of regular intervals of organization’s environmental aspects;</i> c) <i>setting objectives and targets to improve environmental impacts;</i> d) <i>operational control procedures;</i> e) <i>monitoring and recording;</i> f) <i>role allocation and training;</i> g) <i>non-conformity and corrective action processes;</i> h) <i>Review of system audit and management.”</i> <p>The output specification adopts an international standard to define the level of performance.</p> <ul style="list-style-type: none"> • <u>ISO 14001 [Environmental Management]</u>: The output specifications for the project require the Private Partner to obtain and maintain accreditation to ISO 14001 [Environmental Management]^x. Compliance with ISO 14001 at all times helps control environmental aspects, reduce impacts and ensure legal compliance. 	<p>derogations to be highlighted throughout the construction phase with the technical team visiting the site typically on a monthly basis.</p> <p>Performance indicators: 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. The following are examples:</p> <ul style="list-style-type: none"> • <i>“The integrity of electrical supply to essential circuits and distribution networks is maintained at all times,</i> • <i>“The integrity of water supply is maintained at all times”,</i> • <i>“The integrity and functionality of the sewage and effluent disposal system are maintained at all times”.</i> 	<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 other jurisdictions (including Ontario, Canada), the requirement is for the Project Companies to comply with ISO 14001, but it not contractually required to obtain the formal accreditation.</p>
Ability of the asset to respond to changes in resource availability, population levels, demographics and	<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>Variation procedure: 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</i></p>	<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</p>

Alignment to QI Focus Areas		Mechanisms used to achieve QI alignment	Market Comparison Analysis
disruptive technology	<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><i>Payment, the Administration shall compensate the Project Company for the relevant capital expenditure by adjusting the Availability Payment". As such, the Owner and the Private Partner shall come to an agreement on the following matters:</i></p> <ul style="list-style-type: none"> • <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> • <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> 	<p>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>

Project Name Pan Am Games Athletes' Village, Canada

Source: EllisDon

Description

The project was developed to serve the athletes of the 2015 Pan American and ParaPan American Games, and to advance Waterfront Toronto's award-winning plan for the West Don Lands area by providing a beautifully designed, sustainable mixed-use riverside community.

The Project scope included the design, build and financing of seven high-rise buildings which initially provided accommodation for 7,787 Pan American Athletes, 2,200 Parapan American Athletes and Team Officials. Following the Games, they were converted to long-term accommodation facilities as part of the region's social housing plan.

The project consisted of:

- site work (including all earthwork, excavation, grading, stockpiling and movement and removal/disposal of impacted fill/soil);
- design and construction of the residential and administrative facilities for the Games;
- design and construction of the associated Municipal Works in the area of the site; and
- design and construction of the temporary services to support the temporary facilities provided by Toronto 2015 (TO2015), the organising committee for the Games.

During the period when the facilities were turned over to TO2015 for the Games (also called the "Operational Term"), the Private Partner was responsible for operational services including the management and maintenance of buildings, and the maintenance of the site's roads and grounds.

Following the Games, the Project was to achieve legacy requirements for the residential property market and converted as follows:

- YMCA – Sports facility;
- George Brown College Student Housing – accommodation for 500 Students and 8 Dormitory Supervisors;
- Affordable Rentalxi units – 253 units; and
- Market residential condominium units – 787 units.

Project Name	Pan Am Games Athletes' Village, Canada		
Location	Toronto, Ontario, Canada		
Owner	Infrastructure Ontario	Private Partner	Dundee Kilmer Developments LP (Dundee Realty Corp., Kilmer Van Nostrand Co. Ltd, EllisDon Corp., Ledcor Design Build (Ontario) Inc.)
PPP Model	Design-build-finance	Operating Term	N/A
Contract Value	CAD 514 million / USD 694 million ^{xii}		
Asset Class	Built Environment (Housing)		
Awards	Ontario General Contractors Association ("OGCA"), 2017 Ontario Builder Award ^{xiii} . Brownie Awards, 2013 Best Overall Project ^{xiv} . National Association of Home Builders, 2013 Urban Gold Community of the Year Canadian Architect, 2012 Award of Excellence Outstanding Architectural Design ^{xv} . Canadian Urban Institute, 2012 Brownie Award, Public Realm: Flood Protection Landform		

Output Specifications Development Approach Used

Infrastructure Ontario is the procuring agency leading the procurement of PPP projects in the province of Ontario with standardised procedures and PPP contractual templates between the Owner and the Private Partner (also called Project Agreement). The project is a good example of how a standard, market-tested PPP model can be adapted to deliver the project objectives. The Output Specifications considered two end user groups with different needs:

- 1) the athletes, support staff and coaches of the 2015 Pan Am and Parapan Am Games who required temporary accommodation and facilities for the duration of the Games, and
- 2) the future residents of the Don Valley community with a mix of affordable and market housing and sustainable mixed-use spaces.

Access to information to complete a suitable market comparison was not available.

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 meet the expectations of end users</p>	<p>Reference to industry standards: There were numerous design requirements described in the output specifications including:</p> <ul style="list-style-type: none"> • LEED Gold: <i>"Project Co shall perform the Works so as to achieve the prerequisites and credits required to achieve the LEED Gold Rating [...]";</i> • Waterfront Toronto Green Building Requirements; • Standards and Guidelines for the Conservation of Historic Places in Canada. As such, <i>"the heritage conservation guidelines are to be</i> 	<p>The athlete's village for the Sydney Olympic Games was also delivered as a design, build, finance contract. The scope also included the reinstatement work to reconfigure the village following the Olympics and market and sell the properties. Proceeds were shared between the Owner and Private Partner^{xvii} and long-term project objectives were translated into the output specifications. The Olympic committee advocated for</p>
<p>The project delivered a sustainable, long-term solution through integration of Infrastructure Ontario's Design Excellence requirements, combined with other design requirements set out in the output specifications including sustainability and accessibility. The architectural and urban realm design requirements, the protection of heritage buildings and the requirement for Leadership in Energy and Environmental Design (LEED) New Construction (NC) Gold certification^{xvi} are examples of output specification requirements that aligned the project well with the QI agenda, as further set out below.</p> <p>Architectural and Urban Realm Design Requirements</p> <p>The design needed to effectively respond to sustainability to create a community that achieved improved architectural quality in Toronto. The output specifications provided both guidance and requirements for neighbourhood character, street character and interface, built form, courtyards, and building materials. Examples of these include:</p>		

Alignment to QI Focus Areas	Mechanisms used to achieve QI alignment	Market Comparison Analysis
<ul style="list-style-type: none"> • <i>“The neighborhoods shall express a diversity of character, within a cohesive identity for the West Don Lands Precinct. Specifically, each neighborhood shall express unique characteristics within the Precinct Plan Neighborhoods framework, outlined in the Block Plan”;</i> • <i>“Vehicular entrances for parking, servicing and loading access shall be minimized within the street wall of a block”;</i> • <i>“A cohesive overall effect shall be provided, but no two buildings shall appear identical. Repeated buildings are not permitted unless they are part of a row whose design relies on repetition to create a cohesive streetscape”;</i> • <i>“Ground floor spaces in all buildings, the local streets, shall be designed to accommodate a range of retail/commercial uses, future market flexibility and change of use”;</i> and • <i>“Rooftop gardens shall be used to achieve green roof performance criteria in a way that maximizes overlook opportunities from adjacent buildings”.</i> <p>Protection of heritage buildings</p> <p>The existing site included two heritage properties that needed to be incorporated into the development to preserve historic places in Canada:</p> <ul style="list-style-type: none"> • 409 Front Street, a former Palace Street School/Canary Restaurant and • 420 Front Street/425 Cherry Street, a former Canadian National Railway Office. <p>The Authority provided the Private Partner building condition assessments, Heritage Conservation guidelines and a heritage analysis and interpretation plan that provided guidelines and requirements for the design integration. The output specifications referenced the Standards and Guidelines for the Conservation of Historic Places in Canada, and provided specific integration and refurbishment requirements for the buildings such as:</p> <ul style="list-style-type: none"> • <i>“420 Front Street/425 Cherry Street shall be conserved and integrated in a meaningful way into the overall development of Block 1 & 14 and having function in the Legacy development as a part of the YMCA, retail or other program and shall be fully functional for the Games and accommodate a component of the Games functional program”.</i> <p>Prior to any work that could alter heritage attributes, the Private Partner was required to provide a Heritage Impact Assessment to the satisfaction of the Authority having jurisdiction based on the format outlined in the ORC Heritage Management Process Handbook document.</p> <p>Two types of end users</p> <p>The project was developed with two different types of end users in mind:</p>	<p><i>prepared by a qualified heritage conservation consultant”;</i> and</p> <ul style="list-style-type: none"> • Ontario Realty Corporation Heritage Management Process. <p>Conditions precedent to completion:</p> <p>Completion is linked to payments that are used to repay the project finance partners. The Private Partner is incentivised to deliver the project on time and to the required standard to receive payment. The payments to the Private Partner are linked to the completion of the works. For example, the “Substantial Completion Payment” is made upon the “Project Substantial Completion”, which requires the certification, by an Independent Certifier, that the following have been achieved:</p> <ul style="list-style-type: none"> • <i>“Occupancy Permit”;</i> • <i>“certificate of substantial performance”;</i> • <i>“all requirements for Project Substantial Completion described in the Project Substantial Completion Commissioning Program”.</i> <p>Review procedure: Although the Private Partner retains the risk of developing a compliant design, there are certain deliverables that are subject to the Authority’s review procedure set out in the Project Agreement. This provides the Authority an opportunity to review design development and compliance prior to completing the design and starting construction. This includes the following formal submissions:</p> <ul style="list-style-type: none"> • “50% design development stage”, including, for example “interior finishes colour and materials, selection boards for all Third Party 	<p>environmental sustainability, and features included solar panels and water recycling facilities which reduced potable water and energy use by 50% below industry standards. All major building materials and systems were required to undergo a lifecycle analysis to determine their resource use.^{xviii}</p> <p>Like Toronto with the Pan Am Games, London used the Olympics as an opportunity to promote urban renewal through the athlete’s village development. The post-Games community in London has 3,000 units and is a combination of both affordable and market housing^{xix}.</p>

Alignment to QI Focus Areas	Mechanisms used to achieve QI alignment	Market Comparison Analysis
<ul style="list-style-type: none"> • Pan Am and Parapan Am athletes, support staff and coaches; and • the West Don Valley community. <p><u>During the Games</u></p> <p>The project envisioned that the Athletes' Village create a 'home away from home' for the athletes, allowing them to relax in a convenient environment and optimally prepare for competition. As such, planning and operating was very athlete-focused and was translated into designs, policies and practices that respected the athletic and administrative requirements, traditions, cultures, abilities, languages and cuisines of all residents.</p> <p>The design requirements outlined in the Output Specifications were based on the 'International Olympic Committee Technical Manual on Olympic Village' and outlined the layout of the site and surrounding access ways for the Pan Am and Parapan Am Athletes Village. The output specifications provided guidance and requirements for residential supports, accommodations, service centres, polyclinic, fitness centres, various room types and a variety of other requirements for the development of each of the classified zones:</p> <ul style="list-style-type: none"> • Residential Zone - mixed use buildings to be completed by the Private Partner • Village Plaza Zone - retail and recreational areas • Operational Zone – Athlete/NOC Transport • Operational Zone – Facility Services • Operational Zone – Main Entry • Operational Zone – Welcome Centre <p><u>Long-Term Post Games</u></p> <p>The development was handed over to the Private Partner to complete development for the final end users, the residents of the Don Valley community. It was acknowledged that any damage to the permanent buildings, City Facilities and grounds arising as a result of the Pan Am and Parapan Am Games athletes beyond reasonable wear and tear would be compensated to the Private Partner. The output specifications outlined what constituted reasonable wear and tear for features of the development, such as walls, doors, flooring, finishes, external landscape and included:</p> <ul style="list-style-type: none"> • <i>“In the case of hard flooring, scuffs, shallow impressions and superficial scratching would constitute reasonable wear and tear”; and</i> • <i>“In the case of plaster board walls and doors, scuff marks and shallow dents would constitute reasonable wear and tear, whereas gouge marks in and penetrations through plasterboard and surface finishes would constitute damage. Damage to paintwork from the use of and/or removal of adhesive tape is not reasonable wear and tear”.</i> <p>As part of the project, a YMCA Community Centre and George Brown College Student Housing (GBSH) were developed. The output specifications provided a</p>	<p>Facilities, which includes 3 complete options for interior finishes for each of the Facilities”, and “preliminary door and hardware schedules”</p> <p>Design excellence review panel: The Private Partner was required to obtain support from the Panel comprised of leading Canadian design professionals that included experts in architecture, landscape architecture, urban planning, and sustainability.</p> <p>Reference to industry standard: The design requirements described in the output specifications were based on the <i>IOC Technical Manual for the Olympic Village</i>.</p> <p>Conditions precedent to completion: Completion is linked to payments that are used to repay the project finance partners. The Private Partner is incentivised to deliver the project on time and to the required standard to receive payment.</p> <p>Review procedure: Although the Private Partner retains the risk of developing a compliant design, there are certain deliverables that are subject to the Authority's review procedure set out in the Project Agreement. This provides the Authority an opportunity to review design development and compliance prior to completing the design and starting construction.</p>	

Alignment to QI Focus Areas		Mechanisms used to achieve QI alignment	Market Comparison Analysis
	<p>clear vision and objectives for the developments in order to meet the expectations of the end users. The GBHS functional program provided guidance and requirements on the mix of residential and administrative areas and detailed space requirements that were tailored to student housing.</p> <p>The YMCA functional program also provided guidance and requirements for space allocation, detailed space requirements and general requirements such as a minimum amount of at grade bicycle racks, emergency call buttons and CCTV cameras through the facility. Guidance based on previously built YMCA facilities was also provided for aspects of building design, including interior spaces for consistency between various facilities throughout the city and country.</p> <p>The project envisioned a mixed-use community in which residential uses were complemented by live/work and employment uses, retail, community services such as medical clinics and childcare centres and amenities that would help establish an environment that would support and attract a diversity of residents and family types.</p> <p>Project plans, reinforced by zoning provisions, required that ground floor building frontages be composed primarily of a range of street related retail and service services such as community services, retail, restaurants, cultural and other non-residential uses. The output specifications provided guidance and requirements for the design, programming and tenanting of retail and commercial spaces that were supported by a comprehensive Retail Strategy to address the following issues:</p> <ul style="list-style-type: none"> • <i>“Tenanting of retail and commercial space in line with the retail, commercial and Ground Floor Animation objectives of a vibrant, economically sustainable, mixed use community as set out in the West Don Lands Precinct Plan”;</i> • <i>“A sustainable mix of destination and neighborhood-focused retail and service uses, as well as commercial uses such as medical clinics, cultural, entertainment and community amenities, with minimal redundancy in focus and service provision”;</i> • <i>“Parking strategies that will support the proposed retail, commercial and other Ground Floor Animation uses”;</i> and • <i>“Methods for adapting the preferred strategies to respond to market conditions and challenges, without precluding long-term options for achieving the desired range and distribution of retail, commercial and Ground Floor Animation uses”.</i> 		
<p>Job creation, capacity building and transfer of knowledge and expertise</p>	<p>The project addressed job creation and social inclusiveness through cooperation with the Waterfront Toronto Employment Initiative (WTEI) and inclusion of Affordable Rental Housing units and Affordable Ownership Housing units.</p>	<p>Conditions precedent to completion: Defined prescriptive requirements and minimum requirements for achieving completion which typically include a wholesale requirement to deliver the</p>	<p>There are two main features of successful job creation requirements, one of which is demonstrated on the Pan Am Athletes' Village project where</p>

Alignment to QI Focus Areas	Mechanisms used to achieve QI alignment	Market Comparison Analysis
<p>Job creation was a successful part of the project as the Authority took a proactive approach and set out initiatives that the Private Partner could take advantage of. The project worked with WTEI, who was committed to connecting un/under-employed Torontonians with the employment and training opportunities that were generated through this revitalisation. WTEI partners played a leadership role in designing, managing and delivering employment and training initiatives. Their services included:</p> <ul style="list-style-type: none"> • <i>“Employment Strategy Design and Implementation;</i> • <i>Project Management and Co-ordination;</i> • <i>Engagement and Outreach;</i> • <i>Program Design;</i> • <i>Program Delivery;</i> • <i>Facilitating Access to Funding; and</i> • <i>Monitoring and Evaluation.”</i> <p>WTEI partners also assisted in engaging, pre-screening and supporting city residents from a diverse group of candidates including youth, aboriginals and newcomers. The Private Partner and its contractors collaborated with WTEI partners to provide apprenticeship and pre-apprenticeship placements, enabling residents to access training opportunities that led to skilled careers. The output specifications for the project did not specify any quantifiable requirements for the employment initiatives; instead they provided an open-ended requirement for the cooperation of the Private Partner and WTEI. These requirements included:</p> <ul style="list-style-type: none"> • <i>“Project Co will collaborate with Waterfront Toronto, Infrastructure Ontario and the WTEI partners to create and deliver an employment plan that meets the objectives of the WTEI. The goals and extent of the plan will be determined by Project Co’s needs and must ensure training and employment opportunities are made available for un/under-employed groups throughout Toronto”; and</i> • <i>“Project Co will be responsible for ongoing data collection and providing regular program status updates to WTEI”.</i> <p>Following the Games, part of the project was turned into Affordable Rental Housing, which means housing units rented at or below 80 percent of Canadian Mortgage Housing Corporations (CMHC) average market rent for the City of Toronto, for a minimum of 20 years. The owners of these units were selected by Infrastructure Ontario and are non-profit housing corporations. This requirement was successfully implemented in the output specifications by specifying quantifiable and prescriptive requirements for unit mix, size, location, durability, and requirements for internal areas and rooms. Examples are:</p>	<p>project in accordance with the specification and a list of required documents and plans to support the handover from construction to operations. Completion is linked to payments that are used to repay the project finance partners. The Private Partner is incentivised to deliver the project on time and to the required standard to receive payment.</p> <p>Review procedure: Although the Private Partner retains the risk of developing a compliant design, there are certain deliverables that are subject to the Authority’s review procedure set out in the Project Agreement. This provides the Authority an opportunity to review design development and compliance prior to completing the design and starting construction.</p>	<p>the Owner established training and skills development programs that can be utilised by the Private Partner. The other feature is measurable performance targets - refer to the Gaurain Rapid Rail Link and Central 70 project case studies in the transportation section for examples.</p>

Alignment to QI Focus Areas	Mechanisms used to achieve QI alignment	Market Comparison Analysis
<ul style="list-style-type: none"> • <i>“The amount of Affordable Rental Housing will be no less than 253 units and exceed the minimum requirement of 20% of the total residential units to be built”;</i> • <i>“The Affordable Rental Housing units shall not be confined to a single block, but provided in multiple buildings”;</i> and • <i>“Affordable Rental Housing units shall be provided in their own distinct building and shall not be mixed into buildings with other housing types”.</i> <p>The affordable ownership housing program was another strategy to implement social inclusiveness of lower income earners into the community. It was intended to assist low to moderate income households to purchase their principle residences in the project by providing down payment assistance in the form of a forgivable loan. The output specifications required:</p> <ul style="list-style-type: none"> • <i>“5%, up to a maximum of 100 units of all residential units built to be Affordable Ownership units”;</i> • <i>“The maximum purchase price of an Affordable Ownership unit could not exceed the average new home price in the Greater Toronto Area as determined by CHMC”;</i> • <i>“Affordable Ownership Housing units were to be distributed within the market condominium buildings across the Site in multiple buildings rather than confined to a single building or block”;</i> and • <i>“Affordable Homeownership Housing units were to be priced such that purchasers whose annual household income levels were at or below the 60th percentile level for the Greater Toronto Area or the Province of Ontario, whichever was lower can afford the units with the down payment assistance provided by the Ministry of Municipal Affairs and Housing (MMAH)”.</i> 		
<p>Social inclusiveness</p> <p>The Authority defined the project to be built on the principles of inclusiveness and envisioned Fully Integrated Accessibility so that accessible features became part of the overall functionality and a benefit to both the Pan Am and Parapan Am athletes and post-Games users. A high level of accessibility was also required to minimise future retrofits to accommodate an increase in accessibility needs that are projected for a changing/ageing demographic.</p> <p>The design for accessibility considered the needs of athletes, officials, guests and staff who were attending the Pan Am and Parapan Am Games. It considered the needs of persons with a wide variety of abilities, including people with mobility or physical disabilities who may use scooters, manual or motorised wheeled-mobility devices, crutches, walkers or canes; people who are blind, have low vision or are color blind; people who are deaf, deafened or hard of hearing; people with environmental sensitivities; people with cognitive or intellectual disabilities; people who use the assistance of service animals or personal attendants.</p>	<p>Reference to industry standard: All accessibility requirements listed in the International Paralympic Committee, Accessibility Guide July 2009 and the Ontario Building Code 2006 were required to be met. In the case of conflicting requirements, the most stringent applied.</p> <p>Conditions precedent to completion: Defined prescriptive requirements and minimum requirements for achieving completion. Completion is linked to payments that are used to repay the project finance partners. The Private Partner is incentivised to deliver the project on time and to the required standard to receive payment.</p>	<p>Typically output specifications adopt codes and standards to specify minimum accessibility requirements. In the case of the Pan Am Athletes Village Project, the Provincial standard formed the minimum requirements, which were supplemented by organisation specific and project specific requirements to raise the level of accessibility above minimum requirements.</p> <p>The London Olympic Delivery Authority developed the</p>

Alignment to QI Focus Areas	Mechanisms used to achieve QI alignment	Market Comparison Analysis
<p>Guidance was provided by the Authority through the use of principles of Universal Design. The seven principles of Universal Design include: equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort and size and space for approach and use. This ensured that if accessibility is considered early and often in the design process, with checkpoints along the way, the result will be a well-designed Facility with minimal need to add specialised design or features to accommodate specific people's needs.</p> <p>The output specifications provided specific requirements with regards to exterior accessible routes, wayfinding and signage, ramps, entrances and exits, doors, and elevators and lifts, accessible bathrooms, accessible seating, public washrooms, but also provided general requirements for the Private Partner to adhere to such as:</p> <ul style="list-style-type: none"> • <i>“Provide an inclusive approach that does not exclude anyone from using the Facility. The Site and buildings must be usable and by all people to the greatest extent possible, without the need for adaptation or specialized design”;</i> • <i>“The needs of all users shall be considered equitably. The design of access routes, entrances, exits, space layouts, functional spaces and amenities must consider all needs without discrimination”;</i> • <i>“Where only portions of some amenities are fully accessible (such as accessible seating or washrooms) they must be integrated into the overall design, dispersed throughout the building and not simply grouped together. Where only a portion of amenities are accessible (such as wheelchair seating areas), there must be a choice of locations”;</i> and • <i>“All amenities shall be usable by everyone as independently as possible. Facilities that require outside assistance (such as attendant controlled lifts) are not acceptable”.</i> <p>In addition to the broader facilities, Fully Integrated Accessibility measures were required to be incorporated into 10% (+/-1%) of the Affordable Rental Housing. The output specifications detailed requirements for doorways, unit hallways and entries, lighting, living spaces and kitchens, bathrooms and balconies. The output specifications also outlined adaptability requirements for the 90% Affordable Rental Housing units that were not Fully Accessible which would allow units to be easily modified in the future to meet peoples' changing needs over time allowing them to age in place or to accommodate different needs.</p>	<p>Review procedure: Although the Private Partner retains the risk of developing a compliant design, there are certain deliverables that are subject to the Authority's review procedure set out in the Project Agreement. This provides the Authority an opportunity to review design development and compliance prior to completing the design and starting construction.</p>	<p>Inclusive Design Standards. Refer to the GI Hub's <i>Inclusive Infrastructure and Social Equity</i> guidance document and the standard^{xx} for more information.</p>
<p>Environmental impacts</p>	<p>Liquidated damages: In the event that a LEED Gold Rating was not obtained for any or all of the LEED Facilities within 24 months after the Project Final Completion Date, liquidated damages would have</p>	<p>On Canadian social infrastructure projects, the typical requirement is for LEED Gold for 'New Construction' with liquidated damages if certification is not achieved.</p>

Alignment to QI Focus Areas		Mechanisms used to achieve QI alignment	Market Comparison Analysis
	<p>components of long-term flexibility, green roofs, and bicycle parking and storage. Output specification examples include:</p> <ul style="list-style-type: none"> • <i>“Project Co Facilities and Third Party Facilities are required to be designed for long-term flexibility. Specific height and structural loading capacity for various areas are required”;</i> • <i>“Green Roofs must be installed for all buildings (except townhouses) over 3 storeys in height and all above grade parking garage structures in the Village”;</i> and • <i>“For all buildings, provide bicycle parking or storage space for 15% of the off-street parking capacity provided for cars for those buildings”.</i> 	<p>been assessed against the Private Partner up to an aggregate amount.</p>	<p>The Authority may specify credits that must be achieved (this is considered the best practice approach). There are examples in Quebec where the Private Partner was required to obtain LEED certification in the ‘Existing Buildings: Operations and Maintenance’ category. This has presented challenges as it requires inputs from the Authority which has resulted in delays.</p>
<p>Ability of the asset to respond flexibly to the introduction of disruptive technology</p>	<p>The project was required to meet Waterfront Toronto’s initiative for an Intelligent Community that aimed to obtain a reliable and flexible Intelligent Community that was economical to build and maintain.</p> <p>Ultra-high-speed internet access was to be available to all residences and businesses through fibre optic cabling infrastructure and wireless networking. This open access network provided residents and businesses a variety of services from which to choose from and a variety of service providers for such things as high-definition TV programming, internet protocol television (IPTV), voice over internet protocol (VOIP), video and security systems and other internet-connected services in the future.</p> <p>A cash allowance for Intelligent Communities was identified in the Project Agreement to account for costs to the Private Partner in coordinating Beanfield, the exclusive Designated Provider, to perform various services pertaining to the Intelligent Community system, including:</p> <ul style="list-style-type: none"> • <i>“Beanfield acting as the technical consultants and providing feedback on the technical design”;</i> • <i>“Beanfield providing and installing all outside plant fibre and riser fibre”;</i> • <i>“Beanfield inspecting all telecommunications pathways and spaces”;</i> and • <i>“Beanfield testing and commissioning the Intelligent Community system”.</i> <p>The Private Partner was then to ensure each residential condominium corporation entered into a services agreement with Beanfield for a term of 10 years at a designated cost per unit per month.</p> <p>The specifications prescribed the Intelligent Community system, rather than focus on the system performance. The specifications clearly defined requirements for the system components: manufacturer, structured cabling, telecommunications pathways, telecommunication spaces, main telecommunications rooms, telecommunications entrance rooms, and outside plant pathways.</p>	<p>Conditions precedent to completion: Defined prescriptive requirements and minimum requirements for achieving completion. Completion is linked to payments that are used to repay the project finance partners. The Private Partner is incentivised to deliver the project on time and to the required standard to receive payment.</p> <p>Review procedure: As a technical consultant, Beanfield was responsible for the review of the Private Partner design development, in accordance with the Project Agreement, Schedule 10-Review Procedures and tested and commissioned the Intelligent Community system prior to Project Substantial Completion.</p>	<p>Refer to the ICT case study on a French Broadband project for further information on output specifications to deliver ICT projects.</p>

Project Name Lewisham Grouped Schools Project, the United Kingdom (UK)



Source: Mott MacDonald

Description	<p>In August 2006, the London Borough of Lewisham awarded a contract for the ‘Lewisham Grouped Schools Modernisation PFI project’ to modernise several schools for the Borough of Lewisham. This included the design, build and provision of hard and soft facilities management (FM) services for a period of 30 years for four schools: Greenvale Special Needs School, Prendergast Ladywell–Field College, City Learning Centre Facilities - Crofton campus and Forest Hill Secondary School. The project’s objective was to provide educational facilities for over 4,000 children located in the Lewisham area. Greenvale Special Education Needs School became operational in September 2007, while Crofton Secondary School, Phase 1, Forest Hill Secondary School, Phase 1, and the City Learning Centre became operational in January 2008.</p> <p>The key criteria for the project were:</p> <ul style="list-style-type: none"> • design and construction of schools within the London Borough of Lewisham; • building remodelling to ensure the facilities are fit for purpose; and • provision of hard and soft FM services to enable education staff to focus on delivery of the pedagogical services instead of building-related issues. 		
Location	London Borough of Lewisham, UK		
Owner	London Borough of Lewisham	Private Partner	BY Education (Lewisham) Ltd (Bouygues UK, Ecovert FM, HCBC Infrastructure)
PPP Model	Design-build-finance-operate (DBFO)	Operating Term	30 years
Contract Value	GBP 60.6 million / USD 76.7 million ^{xxi}		
Asset Class	Built Environment (Education)		
Output Specifications Development Approach Used			

Project Name Lewisham Grouped Schools Project, the United Kingdom (UK)

A detailed output specification for both design and construction and service delivery was used, based on a market-tested specification used in the United Kingdom. The design and construction specification listed the design requirements for the building supported by a Schedule of Accommodation and detailed Room Data Sheets. The service specification is consistent with the standard form of service requirements established as part of the 'Building Schools for the Future' program in the UK, which was used for most education PPP projects between 2004-2012, with some additional requirements in relation to cleaning and waste for the additional-needs school and limited ICT provision to maintenance and infrastructure.

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>Independent building survey: An independent building survey is to be undertaken to assess the outstanding works required to meet the handback standard. This typically takes place up to three years prior to the expiry date. Following this inspection, a schedule of works is produced which is required for the facility to achieve the handback standards. The Owner has the option to inspect the facility again or request that the independent surveyor visits once the works are complete.</p> <p>Asset Documentation: The handback plan ensures that all asset documentation is handed over to the Authority as part of the handback at expiry to ensure that asset knowledge is not lost.</p> <p>Right to audit: The Owner receives monthly performance reports and attends monthly meetings; however, they can attend site and review service performance, documentation or procedures/policies as they want.</p> <p>Performance measures: There are several performance indicators that promote long-term performance of the assets. Examples include:</p> <ul style="list-style-type: none"> • <i>“No occasion of failure to deliver PPM and life cycle replacement schedules in</i> 	<p>A 30-year concession period is consistent with other UK and European PPP projects. Twenty-five to 30 years is consistent with other mature markets, but this period can be shorter (15-20 years) in emerging markets.</p> <p>Handback standards and provisions are consistent with the UK market for this date of project. Earlier projects and projects in emerging markets typically have a lower standard at handback (in the early days, the focus was on delivering the projects with less thought as to what would happen at the end many years ahead). Handback requirements became more of a focus for later projects including this one, with the standards more clearly defined. This includes a higher standard for residual life provisions, meaning that the facility has to be capable of delivering to the standards required under the output specification with limited lifecycle spending for a given period following expiry.</p>

Alignment to QI Focus Areas		Mechanisms used to achieve QI alignment	Market Comparison Analysis
		<p><i>accordance with the Project Agreement</i>".</p> <ul style="list-style-type: none"> • <i>"No failure to replace materials and parts to the same, better or agreed standard or quality as the original part."</i> • <i>"No failure to achieve Acceptable Elemental Standards within stated rectification periods."</i> <p>Customer feedback: Customer feedback is sought quarterly via feedback questionnaires either in hard copy or electronic. Questions include the following: <i>"Where you have contacted the helpdesk to report an incident or make a service request, how satisfied were you with the response received?"</i> <i>"How satisfied are you with the quality of the environment within the school?"</i> <i>"How satisfied are you with the quality of the outdoor spaces at the School?"</i> Respondents are asked to respond based on categories 1-5, where 1 is not satisfied at all and 5 is very satisfied.</p>	
<p>Health and safety considerations during both construction and operation of the asset</p>	<p>The output specifications require compliance with applicable national health and safety legislations. The Private Partner shall <i>"Produce, maintain and implement fire and emergency management procedures in accordance with statutory and insurance requirements."</i></p> <p>The scope of the fire and emergency management system is heavily integrated with the Owner, including providing training to the Owner.</p> <ul style="list-style-type: none"> • <i>"Project Co shall provide personnel who are briefed and trained to act as emergency co-ordinators and who will manage the Fire Wardens' operations and liaise with the Fire Brigade and any relevant Statutory Authorities."</i> 	<p>Performance measures: The health and safety requirements are monitored by performance indicators.</p> <ul style="list-style-type: none"> • <i>"Project Co should produce the initial procedures within six months of the Commencement Date", failing which penalties apply immediately with no</i> 	<p>Compliance with national health and safety legislation is consistent with other education projects across Europe and other developed markets where such legislation is present.</p> <p>In addition, the requirement to work alongside the Owner to produce plans that are aligned with local policies is also</p>

Alignment to QI Focus Areas	Mechanisms used to achieve QI alignment	Market Comparison Analysis
<ul style="list-style-type: none"> <i>“The London Borough of Lewisham shall provide personnel who are to be briefed and trained as fire wardens by Project Co.”</i> <p>In addition, the Private Partner <i>“shall allow usage of the School Facilities in case of local or national emergency as and when requested by the London Borough of Lewisham or its representative or on request by the emergency services.”</i></p>	<p>applicable response and rectification periods.</p> <p>There are specific disaster management and fire and emergency management performance indicators that require compliance and support of the Owner policies, including the joint development of the fire safety plans and other emergency plans.</p> <p>Example performance indicators are as follows:</p> <p><i>“Once the agreed disaster management plan is in place, Project Co shall carry out those actions associated with their identified responsibilities within the procedures routinely and in the event of the occurrence of an emergency. The annual programme will be agreed with the London Borough of Lewisham and the Schools.”</i></p> <p><i>“Project Co will produce detailed fire procedures in conjunction with the London Borough of Lewisham. These procedures must be continually updated and reviewed as circumstances demand.”</i></p> <p><i>“Project Co must carry out training for all wardens, and other officers, who perform a function under the procedures.”</i></p> <p><i>“Project Co will produce detailed procedures for a variety of emergency situations in conjunction with the London Borough of Lewisham. These procedures must be continually updated and reviewed as circumstances demand.”</i></p> <p>Requirements also include provisions for testing of the plans in</p>	<p>included in many social infrastructure projects, where consistency of approach to procedures of this nature is seen as beneficial.</p>

Alignment to QI Focus Areas		Mechanisms used to achieve QI alignment	Market Comparison Analysis
<p>Social impacts and inclusiveness</p>	<p>The school facilities were built to support and benefit the education needs of the entire community at large. The Project Agreement allows for community use of the facilities outside of “core operating hours”, or non-school hours. Core hours are specifically detailed within the payment mechanism with times outside of this available for community use – this includes using the facility for community groups and meetings, sporting events and public events.</p> <p>Additionally, one of the schools includes a hydrotherapy pool, which can be effective at treating chronic illnesses. The pool is also available for use by disability groups, as part of an effort to support the needs of all community members.</p>	<p>accordance with legislation and regulations, with record keeping required to show adherence to legislation, plans and policies.</p> <p>Performance indicators: Requirements are managed through performance measures in the payment mechanism, which include examples such as:</p> <ul style="list-style-type: none"> • <i>“These tables set out the Core Sessions and Additional School Periods requirements for the Schools. In order to provide a simple but effective basis for calculating financial deductions Core Sessions during the school day have been split between morning and afternoon [...]”.</i> • <i>“[...] Core Sessions, each School may book Additional School Periods for the use of designated areas, during which the provisions of this Schedule 6 shall apply. This table will be reviewed annually, and adjustments made to the Service Payment if greater or less hours are required. [...]”.</i> <p>Availability Failures: The use of the hydrotherapy pool is managed through Availability Failures in the Payment Mechanism, for example:</p> <ul style="list-style-type: none"> • <i>“No occasion of light flickering effect on pool water surface to an extent which may prove a problem for those with epilepsy.”</i> 	<p>The concept of community use outside of core school hours is a typical provision on school PPP projects in the UK, Europe and in Australia and New Zealand.</p> <p>Some projects have attempted to incorporate public use during the school day (for example, as sports and leisure facilities) however this has proved difficult regarding safeguarding.</p>

Alignment to QI Focus Areas		Mechanisms used to achieve QI alignment	Market Comparison Analysis
		<ul style="list-style-type: none"> “No failure to maintain hoists and other lifting equipment in accordance with manufacturers’ recommendations.” “No occasion of pool water temperature exceeding or dropping +/- 2° Deg C from the required levels at set out in the Room Data Sheets.” 	
<p>Alignment of the project with economic and development strategies (SDGs, national policy etc)</p> <p>Ability of the asset to respond to changes in resource availability, population levels, demographics and disruptive technology</p>	<p>Interestingly, the way that the asset was determined to most effectively respond to changes in technology was by keeping ICT with the Owner for the duration of the PPP agreement. For the project, the Private Partner’s involvement with ICT is limited to provision and maintenance of the infrastructure, while the Owner retains control of hardware (initially provided by the Private Partner through the equipment schedule, but maintained and replaced by the Owner), software and internet provision.</p>	<p>ICT provisions retained by the Authority</p>	<p>Keeping ICT provisions with the Owner follows lessons learned from previous education projects in the UK, whereby long-term ICT provision was difficult to detail in specifications and pricing, leading to significant premiums being put onto the costing of the service due to the difficulty in predicting ICT needs in the future. The current approach is that ICT is either retained by the Owner or let as a short-term provision, often three to five years, during which the needs are more predictable.</p> <p>This approach to retain ICT responsibility has also been observed in other jurisdictions following similar lessons learned, including in Canada (some second wave of projects in the Infrastructure Ontario model).</p>

Built Environment: Summary of End Notes

Milton District Hospital Expansion

ⁱ Assumed conversion rate of CAD/USD = 1.35 as at May 15, 2019

ⁱⁱ Smart Hospital technology supports efficient work flows and creates a safer environment for care, by using and integrating state-of-the-art technologies.

ⁱⁱⁱ N+1 redundancy is a technical term that means there is one independent back-up to run the system.

^{iv} LEED, or Leadership in Energy and Environmental Design, is the most widely used green building rating system in the world. LEED provides a framework to create healthy, highly efficient and cost-saving green buildings. <https://www.cagbc.org/>

^v ISO 14001:2004 [Environmental Management Systems], by the International Organization for Standardization, specifies requirements for an environment management system to enable an organisation to implement policy and objectives which take into account legal requirements and other requirements to which the organisation subscribes, and information about significant environmental aspects. It does not state itself environmental performance criteria.

^{vi} ENVISION is a standard for sustainable infrastructure and incentives higher performance goals, beyond minimum requirements <https://sustainableinfrastructure.org/>

Mersin Integrated Health Campus

^{vii} Assumed conversion rate of EUR/USD = 0.89 as at May 15, 2019

^{viii} 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.).

^{ix} Seismic isolators, also called base isolation system, are one of the most popular means of protecting a structure against earthquake forces.

^x 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.

Pan Am Games Athletes' Village

^{xi} Affordable rental housing is defined in the Project Agreement as an "affordable rental condominium unit where the total monthly shelter costs, at initial occupancy, is at or below the average market rent in the City of Toronto as reported by [the Canada Mortgage and Housing Corporation for similar condominium units.

^{xii} Assumed conversion rate of CAD/USD = 1.35 as at May 15, 2019

^{xiii} Further information available at: <https://ogca.ca/builder-awards/>

^{xiv} Further information available at: <https://myemail.constantcontact.com/2013-CUI-Brownie-Award-Winners-Announced-.html?soid=1112321893260&aid=aEbTCalqiV8>

^{xv} Further information available at: <https://www.newswire.ca/news-releases/canary-district-garners-prestigious-canadian-architect-award-of-excellence-511980341.html>

^{xvi} LEED, or Leadership in Energy and Environmental Design, is the most widely used green building rating system in the world. LEED provides a framework to create healthy, highly efficient and cost-saving green buildings. <https://www.cagbc.org/>

^{xvii} Further information available at: <https://www.propertyobserver.com.au/finding/residential-investment/17667-newington-olympic-story.html>

^{xviii} Further information available at: <https://www.terrapinbrightgreen.com/blog/2008/06/sydney-2000-olympic-athletes-village/>

^{xix} Further information available at: <https://www.dailymail.co.uk/property/article-3725436/The-property-legacy-London-2012-Four-years-s-like-live-Olympic-village.html>

^{xx} Further information available at: https://github-webtools.s3.amazonaws.com/umbraco/media/2437/gih_inclusiveinfrastructure_full-document_web_art_hr.pdf

^{xxi} Assumed conversion rate of GBP/USD = 1.27 as at May 28, 2019