

## **A Case Study of a Strategic Facilities Management Planning and Implementation in a PFI Hospital Project**

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### **Abstract**

The rapid pace of changing in communication technology, demand for efficient use of energy and security performance and sustainability in workspace have an impact on the facilities management (FM) services. Such impact highlights the needs for better FM services linking to business strategies and early integration with organization core business.

The discussion in this paper focuses on a Private Finance Initiative (PFI) hospital project with the aim to explore FM services and its integration process during pre-construction, construction and the commencing of the FM services of a completed hospital project. The research is based on the data collection exercise during pre-construction stage, construction, FM operational period of a hospital project through semi-structured interviews with the Whole Life Cost manager and the FM personnel from the PFI project consortium.

The findings from the post-construction FM services annual review show that the strategic FM inputs during pre-construction stage have proved successful in the early stage of concession period. This including efficient use and effective energy management in the built-facilities; better and safer working environment for the hospital staff, patients and visitors; and better integration of clinical and non-clinical activities.

### **Keywords**

Facilities Management, Private Finance Initiative, Whole Life Cycle, Integration, Healthcare

### **1. Introduction**

The last few decades has witnessed significant development in facilities management (FM). FM has been regarded as one of the most important support services to core business (Shohet, 2006). The rapid pace of changing in building technology and the adoption of latest information technology communication, demand for efficient use of energy and security performance, and sustainability in workspace have an impact on the FM services. Such impact highlights the needs for better FM services linking to business strategies and developing approaches to overcome the changes.

In modern society, users and owners are expecting better building facilities performance and low maintenance costs on public services facilities. In the context of the PFI (Private Finance Initiative) and Private-Public Partnership (PPP) projects, FM has a similar rationale. The needs for efficient and effective FM services in any PFI/PPP project to support its core business are undoubtedly crucial, in particular, the provision and delivery of the FM services over 25 years of concession period in the UK PFI projects (Baldwin, 2002). The expansion of FM in UK has been seen as a major development. In public sector, its

expansion is triggered by the National Health Services (NHS) Trusts PFI/PPP healthcare projects (Gallagher, 1998). FM is therefore recognised as a critical profession in healthcare with the objective to provide effectively support services and to allow hospital to concentrate on developing clinical services.

The discussion on of this paper is based on the author's working experience related to a PFI hospital project. The findings explore and identify FM services during design, construction and maintenance of the built facilities of a completed hospital project, based on the data collection exercise from the author's company (hereafter cited Company A), and discussion with the Whole Life Cost manager and the FM personnel from the jointed-venture partner (hereafter cited Company B). For brevity and the objectives of this paper the discussion will focus on:

1. FM's role in healthcare services,
2. Strategic FM planning during pre-construction stage i.e. FM design and Whole Life Cycle costing,
3. Construction stage i.e. FM services to integrate with construction programme,
4. FM service in the operational stage, and
5. FM performance measures.

The analysis of the FM performance is based on the 3<sup>rd</sup> annual FM review findings after the practical completion of the project. Therefore it is still in the early stage to measure the true success of the FM performance over a 30 years of concession period. However, some FM services have been achieved anticipated objectives such as the provision of a better working environment for the hospital staff, premises users, improved health and well being environments for patients, and a better and safer place for visitors in the post-construction FM review.

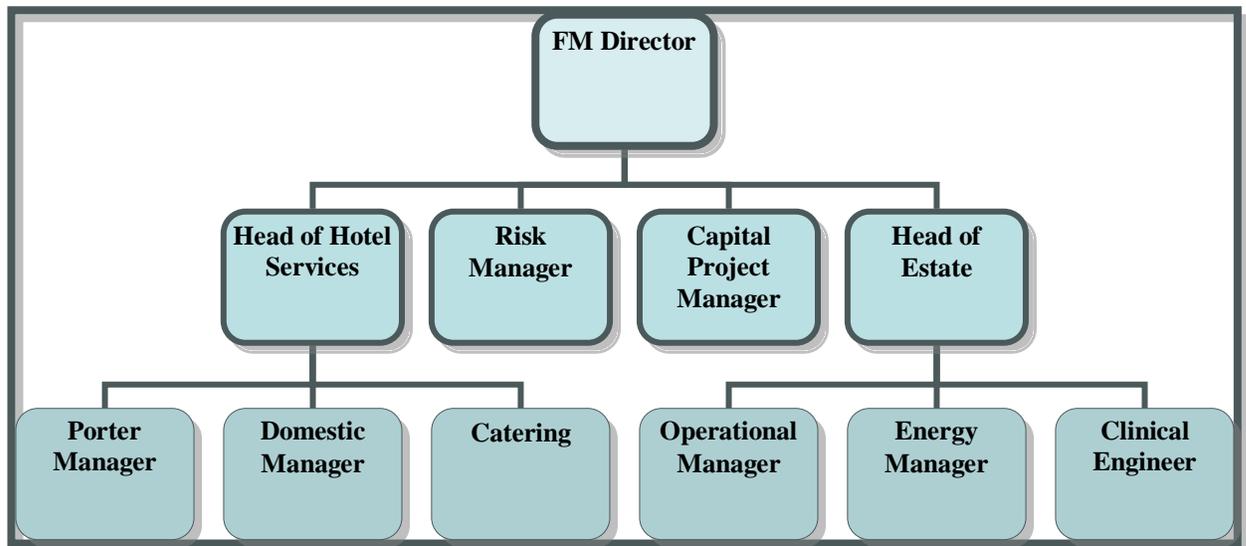
## **2. FM in Healthcare Services**

The provision of FM services of any facility is to ensure strategic planning and implementation of supportive services within an organisation core business. In healthcare sector, FM is considered among the most challenging and complicated services to maintenance and running healthcare facilities (Lavy and Shohet, 2004). Reform in the early 1990's has been a catalyst for the NHS's most radical change in the non-clinical support services whilst continuing to improve the healthcare services (Baldwin, 2003). Today, one of the most challenging tasks facing by the UK NHS is the inadequate funding to provide non-core activities of healthcare facilities. Owing to this, the NHS has placed FM under intensive service regimes to provide cost effective and efficient solutions for non-clinical services.

The NHS in the 1990's focused on a 'bottom up' approach healthcare services where the Regional Health Authorities able to meet the needs of the patients served. This resulted in increased demands for FM to improve existing health care facilities and services (Baldwin, 2003). In this case study, the NHS health facilities are directly under FM Directorates which brought together Estates and Hotel and other Services as shown in Figure 1. In this project, the FM Directorates make valuable inputs to the production of business cases and services strategy, and ultimately to provide strategic direction of the NHS for the management of healthcare facilities. This paper focuses on the NHS's FM from pre-construction to the operational stage of a hospital, in particular, the context of PFI healthcare facilities.

## **3. The FM Team within Healthcare Services**

In order to provide efficient and effective FM services during design, construction and maintenance of the hospital project a FM Team was established in this case study. Figure 1 shows the FM services structure within the NHS PFI hospital in this case study. The NHS Trusts believe that this will provide more proactive and responsive support services to the delivery of non-clinical support services. According to the NHS Trust FM team this structure has been seen as good management practice and is driven by the need to reduce costs and improve quality in the context of FM healthcare services.



**Figure 1: The NHS PFI Hospital FM Organisation**

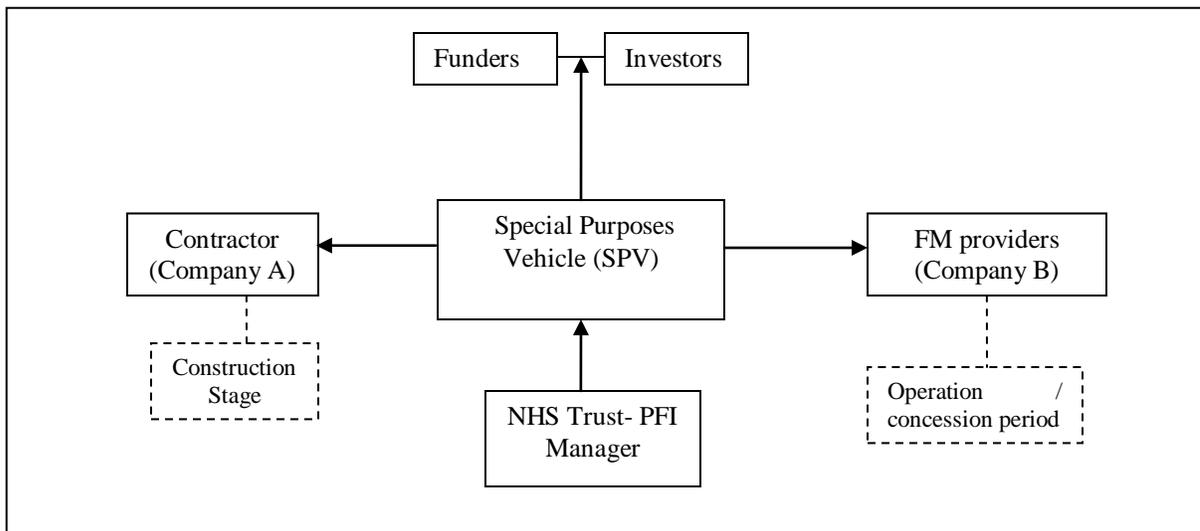
The role of each participant within the FM team as follow:

1. FM director – responsible for the overall FM and report directly to the NHS Trust Executive Team.
2. Head of Hotel Service- provides soft FM services such as fleet, portering, catering and domestic services.
3. Risk management- responsible for clinical and non-clinical health and safety management.
4. Capital project management- responsible for Estates Strategy across all Trust property and new developments.
5. Head of Estate- hard and soft FM services i.e. planned and reactive maintenance including statutory compliance minor new works, specialist service contracts for example lifts, sterilizers etc.

Figure 2 shows the FM providers’ relationship among the NHS Trust, funders, and consortium. In this study, the consortium is formed by the contractor, funders, and FM providers. They are the equity partners responsible to construct, funding, operate and maintain the facility. This brings the advantages of better communication, resources sharing, and reduced administrations for the whole life of the built facility.

#### **4. Implementation FM during Pre-construction Stage**

Prior to the construction stage, the FM team reports directly to the Trust and their role to ensure maximum value is provided in terms of both value and performance of the design that can delivery full support services during the construction and operational (concession) period. For instance, the Head of Estate will work closely and liaise with Head of Hotel Services to tackle the sustainability issues in all aspect of the FM services i.e. energy, space, clinical equipments, supply chains etc. They explore and identify every opportunity to addresses businesses’ needs and the effective FM services to support the health care core business. This includes: constructability, functionality, maintainability, marketability, profitability, flexibility of use, reusability, and sustainability of the facilities.



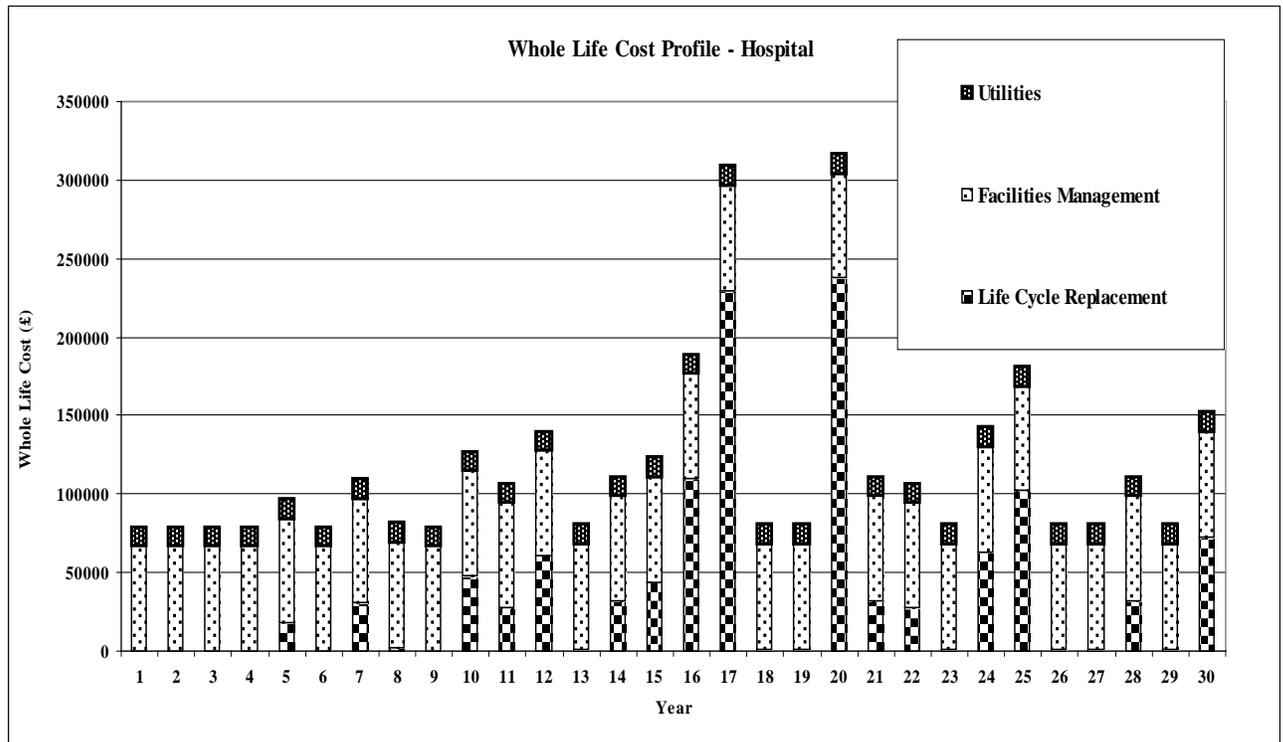
**Figure 2: The Consortium Organisational Structure within a NHS PFI Project**

During the pre-construction stage one of the most important issues is the analysis of Whole Life Costs (WLC) including FM costs over the concession period. The FM team firmly believed that the cost savings can be created at the design stage. By considering the WLC of the main components it is possible to improve value over the life of the asset through a sound and innovative design solution. The objective of having a WLC analysis is to ensure the proposed healthcare facilities are economic and affordable over a concession period. It includes the calculation of revenue and capitals that spent for the life term of the building as required during the concession period. The WLC analysis consists of Capital Expenditure (Capex) which linked to the design, construction, and demolition costs and the Operational Expenditure (Opex) that linked to service and maintenance, and asset replacement costs. Typical examples of the Opex are the daily cleaning, hygiene and redecorating the wall finishes every five years.

The benefits of engaging a WLC analysis in this case study is significant. It provides robust cost data as well as accountability for the NHS Trust and consortium (i.e. funders with the costs of maintenance, commissioning and decommission, service, and operational of the facility). From the NHS Trust perspective, it allows a benchmarking exercise to determine the best value by means of seeking comparable costs among the bidders during pre-construction stage of a PFI hospital project. From the PFI consortium (i.e. contractor, FM providers, supply chains and funders) point of view, it helps to produce a strategic and competitive bid through re-engineering their pricing; and allows funders to assess potential risks and opportunities associated with PFI investments. Figure 3 shows the projection of WLC expenditures (present value) over 30 year's period for one of the major buildings of the hospital in this case study. As can be seen, the expenditures for FM costs (i.e. cleaning, catering, security etc.) and utilities (i.e. power supply) are almost unchanged throughout the concession period; the assets replacement costs started at every 5 and 7 years intervals (i.e. redecorating of wall and floor, ICT and surgical equipments and the like).

Evidence and experience from previous NHS PFI projects have shown that limited involvement of FM during the procurement process of some early PFI schemes has led to inappropriate decisions and ill-defined solutions to the entire FM solutions of a PFI project. In this case study, the FM team played a vital role during design development process. For instance, the clinical engineer is required to produce clinical equipment lists and the necessary space that required to meet both 'fitness for purpose' and to achieve the required performance standards. This including defining the space for accommodating robotic surgery and bed spacing for good infection controls. Furthermore, under The Head of Estates, there was a project group set up to deal specific tasks along the PFI procurement route. For example one of the crucial

tasks of the project group is to ensure the schedule of accommodation (SoA) will be seized to provide an early indication of capital costs and overall affordability. In addition to this, during the design stage, with the combined expertise and contribution from all the FM team it is possible to deliver a robust solution that fits the purpose and maximises operational performance with minimal disturbance during the operation period. In this case study, one of the examples is the feasibility study of adopting modular partition, wall and door sets systems for operating theatres. A feasibility study has been carried out during the design stage to investigate potential savings of the modular units (e.g. walls, ceilings and doors) for the operating theatres, clinical and non-clinical suits. The decision was made based on the significant savings on reduced construction programme, site labour time, supervision time, site waste and no requirement for follow-on finishing trades, and most importantly to help the Trust lower asset replacement costs during the concession period. Figure 4 illustrates how potential WLC costs (i.e. FM and assets replacement costs) savings can be achieved graphically, from the design stage to the concession period.

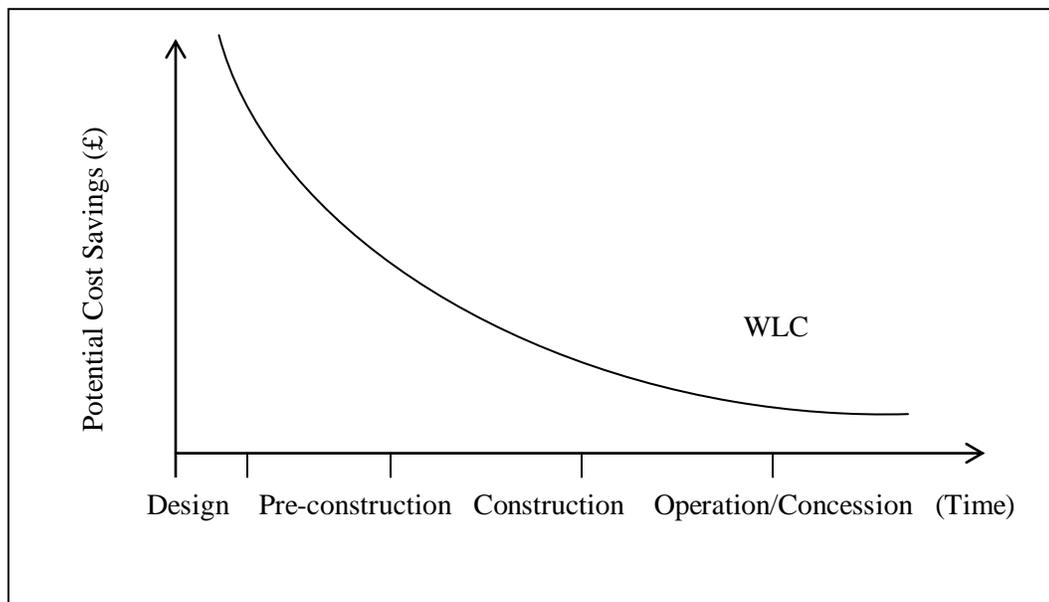


**Figure 3: Example of Hospital WLC Costs during the Concession Period**

## 5. Managing the FM during the Construction and TUPE Transfer Period

During the construction stage, there were key milestones established for hard and soft FM activities along side with the construction such as cooperating with contractor's programme on a number of FM issues. For instance, the delivery and assembly of modular partition and wall system, bathroom equipment, lighting and heating, fixtures and furniture, clinical equipment, generators etc. Staff training and testing for all the aforementioned equipments are vital therefore both hard and soft FM services can be integrated with construction programme and where the partial completion and early possession is possible. This allows early testing and making more efficient use of FM services when commissioning takes place. Weekly meeting was held to tackle more complicated FM issues during the construction period where the FM Director is responsible to monitor FM contract on behalf of NHS.

Prior to the completion (and sectional completions) of the hospital, the FM team was transferred under a TUPE (Transfer of Undertakings Protection of Employment Regulations 2006)<sup>1</sup> arrangement to the Special Purpose Vehicle's (SPV) Service Provider (i.e. Company B). It is a common practice in the current NHS PFI hospital projects where majority of the existing staff to provide on-going FM services will carry on working with the Trust under TUPE transfer. In this instance, the hard FM team will spend time on learning the new building and its systems where necessary to keep any services going that need to continue during construction. The soft FM team was also working alongside for temporary arrangements during the TUPE transfer. Following the completion of construction the FM services delivered both hard and soft FM services to the new-built facility.



**Figure 4: Potential Savings for WLC Costs**

## 6. Managing the FM during the Operational Period

During the operation period, there is a need to develop a FM strategy to manage built facility efficiently and effectively. The strategy used in this case study is similar to most NHS PFI projects. A typical NHS FM strategy was developed within the context of Healthcare business plan. This includes a business plan for the FM function through the following goals:

1. **To identify** the daily needs of the healthcare services- by differentiating between core and non-core business activities;
2. **To establish, design and implement** effective and manageable processes for the above activities;
3. **To identify and allocate** appropriate and adequate resource to support FM services;
4. **To fund and budget** the FM services, for short and long terms needs; and
5. **To implement and monitor** the performance of the whole FM service provision.

Once the above strategies agreed and accepted by the FM board there will be operational and implementation plans to take place. Within the implementation plan, there will be timetables, milestones and details of the each activity specified in relation with the entire FM services. Roles and responsibilities

<sup>1</sup> The regulations are designed to protect the rights of employees in a transfer situation enabling them to enjoy the same terms and conditions, with continuity of employment, as formerly.  
[<http://www.berr.gov.uk/files/file20761.pdf>]

are defined and assigned within the FM team. For instance, the Heads of Estate and senior management are committed to the successful implementation and responsible for the decision-making on outsourcing, procurement, resource planning, and communications of the FM activities. Assignment of each responsibility has its associated risk and therefore risk assessment exercise is necessary to resolve and mitigate potential risks and uncertainties. However these common types of risks and uncertainties occurred during the management of FM activities include:

1. Tight Schedule for commissioning of new operating theatres- where the delivery, installation, and testing of special equipments do not meet the anticipated date.
2. Change over FM services to newly appointed service providers and supplies i.e. procurement and transition problems.
3. Inadequate training to develop and enhance FM's skills for the smooth take over and operation of the particular new-built facilities.

The early identification of the above risks enables the FM team to adapt the change with the pre-allocated resources and contingency plan to allow more time to ready for the provision of efficient and effective FM services.

## **7. FM Performance Measure in Health Care Services**

In the NHS FPI hospital projects, under the Department of Health ([www.dh.gov.uk](http://www.dh.gov.uk)), a Estate and Facilities Management team was formed to provide strategic development to regulate and monitor the FM services for health and social care to deliver improved high quality health services. Further, a web-based Strategic Health Asset Planning and Evaluation (SHAPE) planning software application was adopted to support Strategic Health Authorities (SHAs) and Primary Care Trusts (PCTs) of the delivery of service reconfiguration within a whole health economy in NHS.

It is important that the hospital facilities are properly maintained and to deliver high quality services. Under the NHS's Estate and Facilities Management, there are three major issues highlighted in the provision of FM to fully support healthcare services and to achieve patients expected standards. This includes:

1. Estates quality- achieves the required health care and services and standards;
2. Performance Monitoring- evaluation through patient's first impressions of hospital services; and
3. Estates Return Information Collection (ERIC)- all NHS trusts and PCTs are required to submit an estates return via the ERIC. This information provides an indication of the status of estates and facilities services across the NHS.

In regard to the Performance Monitoring, questionnaire survey and feedback from patient's first impressions of hospital services such as cleanliness, food, linen, maintenance, environment, and communications can help to form an important part of FM performance monitoring. Some other performance measure methods also adopted for used in strategic planning and decision-making of FM services in relation to the healthcare provision. For example:

1. Measure of activity- number of inpatient discharges, day care and accident and emergency attendance;
2. Value for money measures- bed occupying rate, average length of stay and theatre utilisation;
3. Quality measures- waiting times for outpatient appointment and the number of cancelled outpatient sessions etc.

The adoption of the aforementioned audit and performance management systems also ensure continued improvements in the delivery of the hospital FM services. In this project, other performance management

methods also considered and integrated with organizational performance and cost effectiveness FM at the strategy planning level. This includes the use of Key Performance Indicators (KPI), Strategic Facility Plan (SFP), and Critical Success Factors (CSF). Literature findings indicate that there are others industry practices on performance measure and benchmarking tools for monitoring and continuous improvement process in FM performance monitoring (see Shiem-Shin Then, 1999; Langston and Lauge-Kristensen, 2002; Shohet (2003); Shohet et al, 2003; Lavy and Shohet, 2004).

In this case study, the FM services performance measure has been carried out in a post-construction review after the practical completion in an annual basis. It is still in the early stage to measure the true success of FM over the 30 years of concession period. However, the post-construction FM services 3<sup>rd</sup> annual reviews indicate that there have been true success in some FM services such as the provision of a better and safer working environment for the hospital staff and users of the premises; improved health and well being of the patients through innovative estates and facilities solutions; efficient energy management; and better integration of clinical and non-clinical workflows.

## 8. Conclusion

The radical transformation in NHS early 1990's has been a catalyst for change in the healthcare services, in particular, the demand for non-clinical services to support healthcare. This has been a significant increase in investment for maintenance and services for existing and new-built healthcare facilities. This case study focuses on the provision of FM services in a recent completed hospital NHS project in UK and to discuss how the concepts can be brought in during design, construct, operate and maintaining stages of the built facilities. Strategic and tactical planning of FM, implementation and performance monitoring measures are also discussed within the context. It was found that key processes for successful implementation of FM should include strategy planning and implementation, performance monitoring, supply chain management and risk management throughout the procurement of the built facilities. An early involvement in the pre-construction stage can satisfy the cost savings and expected functionality from the aspects of constructability, maintainability, reusability, removal and replacement costs over the assets' life span of 30 years. Therefore the concept of FM and WLC analysis are required during the design stage. In this instance, public clients from healthcare services shall allocate adequate resources for both FM and WLC to be involved from the design stage.

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