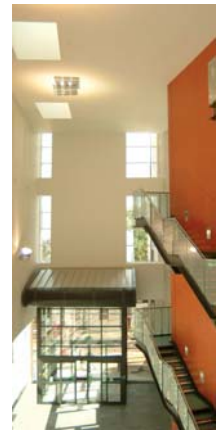


SAP

*Case study*

Presented by the Strategic Alliance Partnership

## Case Study 01 The Heart Centre Wolverhampton



# SAP Case Study No. 01

## Heart Centre, Wolverhampton

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# 1. Introduction



## Project Highlights

- SAP partner appointed on receipt of tender documents.
- VE proposals offered alongside compliant tender.
- Innovative partnering solutions to potential programme overruns
- Significant savings from integration of TWC and N.G. Bailey site organisation
- No claims between partners
- High level of customer satisfaction

To win a £30 million hospital project in competitive tender and, after meeting all the client's programmed operational dates, to have the project entered for a number of prestigious industry awards is a story which needs to be told, not least so that the lessons learned can be carried forward.

This Case Study analyses the role of the **Strategic Alliance Partnership** in the construction and commissioning of the Wolverhampton Heart and Lung Centre.

This was a relatively complex project, to be delivered to a challenging programme. It was recognised from the outset that successful completion was only likely to be achieved by all parties working together. Whilst this paper is primarily focussed on the SAP approach, tribute must be accorded to the Client, his Project Management team and to the consultants in successfully promoting a "whole project team" approach.

# 1. Scope of works

The 167 bed Wolverhampton Heart and Lung Centre is one of the first specialist heart and lung hospitals in the UK. It comprises a three storey concrete framed building plus lower ground floor, basement, roof level plant room and a two storey link corridor connecting the Heart and Lung Centre to the existing hospital accommodation.

## Layout

The internal design is focused on the practical: large rooms so there is space around the patient's bed for medical staff to work and use the equipment; wide corridors; separate patient and visitor lifts; easy links to radiology.

Ground Floor accommodation comprises, Out Patients, Clinical Measurements, Out Patients Rehabilitation, Administration. and Education and Main Plant room and Ambulance Admissions canopied entrance.

First Floor accommodation comprises Cardio Thoracic surgical ward (22 beds), Cardiac surgical ward (23 beds), Critical Care (30 beds) and Theatre suite (4)

Second Floor accommodation comprises Cardiology Ward (26 beds), Tertiary Cardiology Ward (26 beds), Secondary Cardiology Ward (24 beds), Day Care (16 beds) and Catheter Suite (3 labs) plus Elective Pace Room with ultra clean canopy.

Five lifts are provided throughout the building. There is single visitor escalator providing access between the Lower Ground floor and the Ground Floor.

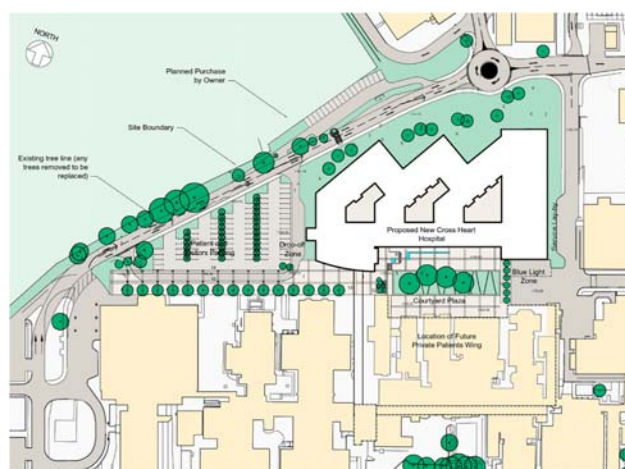
## Building Services

Plant room provision includes basement pump room, ground floor main plant room, roof top secondary plant room as well as a small satellite plant room situated on the second floor.

The ground floor plant room includes air-handling units, chilled water pumps, blended cold water tanks DHWS calorifier and buffer, LTHW pumps, emergency generator and LV switch.

A single storey steel frame roof top plant room clad in blockwork with louvres (active and dummy) is situated along the south part of the main roof and includes clean, dirty and smoke extract fans, air handling units and fresh air intake, high care clean air supply and Renal tank.

A single storey - Energy Centre and chiller compound sits at ground level to the east of the main building and houses both the Aquilla and Trust HV switchgear, Medical gas manifolds and gas bottles and two chillers.



### 3. Project Data

# 3

Employer	Royal Wolverhampton NHS Trust
Employer's Agent	Holbrow Brookes & Partners (Jim Caddick)
Architect	RTKL UK Ltd. (Rohan Howard)
Structural Engineer	Clarke Bond Ltd. (Stan Birch)
Building Services Engineer	Couch Perry Wilkes Partnership (Mark Morris)
Building Services Partner	N.G.Bailey
Quantity Surveyor	Edmond Shipway (Roger Pepper)
Project Value	£32.8 million
Building Services Value	£11.5 million
Form of Contract	JCT 98 Local Authorities with Quantities
Commencement Date	October 2002
Completion Date	December 2004

#### Comparisons with a Traditional Approach

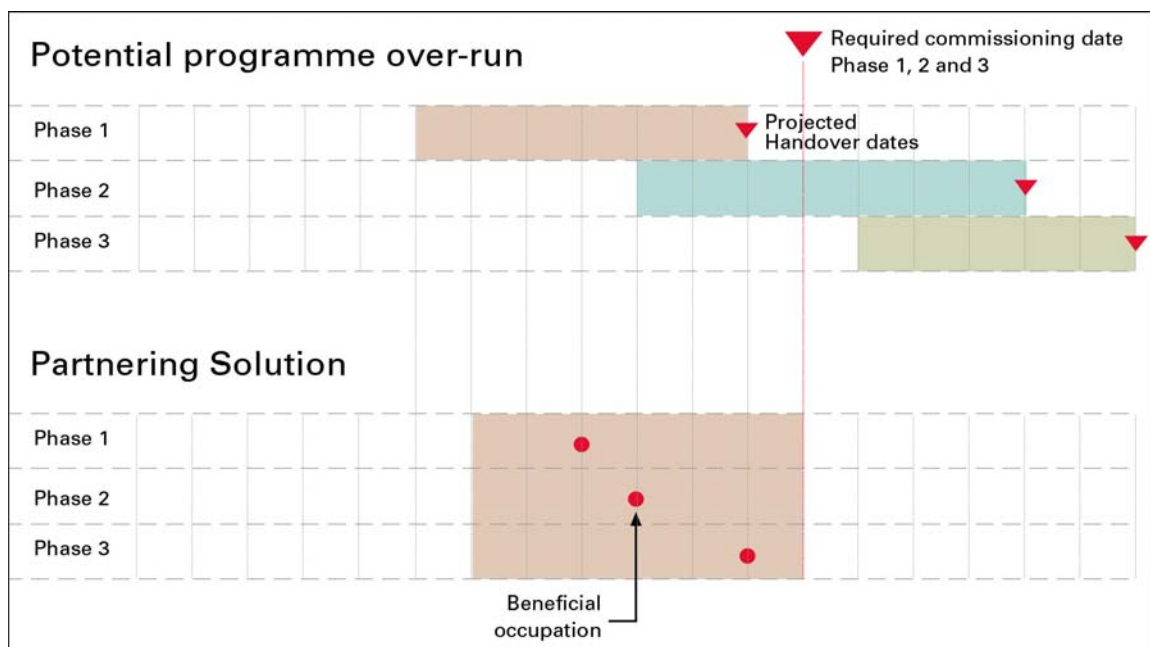
This project was conceived within the straightjacket of the traditional JCT 98 form of contract. That the project should never-the-less have been delivered to a satisfied client speaks volumes for the benefits of the SAP approach, as will be elaborated on in the following pages.



## 4. Programme

New hospitals are necessarily complex because of the unique, highly specialised services delivered in a modern facility. Complexity is reflected in the interdependent design, procurement and construction programmes. This project was no exception and it is in the programme, perhaps above all else, where the benefits of the SAP approach, compared with the traditional, can best be illustrated.

A 24-month programme with 4 phased hand-over dates was written into the contract. As the project proceeded it soon became apparent that delays to the programme and a large number of variations were going to have a significant knock-on effect to the achievement of the phase completion dates.



Phased hand-overs create additional challenges for the building services contractor, particularly with respect to commissioning of services e.g. fire alarms which are designed to integrate across the whole facility, rather than service individual sections. There was therefore already a compelling reason to re-consider the phasing requirement and, as the diagram illustrates, a revised strategy was developed between the Trust, Taylor Woodrow and N.G.Bailey which focused on what the Trust really needed, rather than what the contract specified.

The priority, which did not change, was that the Trust wanted to carry out the first operation in the new facility by 4<sup>th</sup> October, 2004 and to have the building fully operational by November. The solution was re-programming to ensure the October date was met, removing the original

requirement for phased completion and carefully co-ordinating beneficial occupation of the on-going works to allow the Trust to complete its own commissioning.

**The result was that the target date of 4<sup>th</sup> October, 2004 was successfully achieved** – an achievement that can be directly attributable to the partnering approach of focusing on the client's requirements good communications and the significant level of trust that had been built up between the parties concerned.

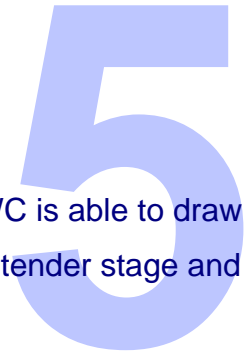
The whole building was ready for use by November with early access having been given to the client's contractors to install specialist lab equipment.

### Comparisons with a Traditional Approach

Phased completion dates in a complex facility, with the contractor having no design responsibility, was surely a recipe for the most fraught contractual outcome for all concerned. The Trust could have asked Taylor Woodrow to propose how the delays might be accommodated to hand over in phases. TWC would have involved N.G.Bailey in responding and N.G.Bailey would still have to plan their installation to suit an inefficient method of commissioning the services. Without doubt, the 4th October date would not have been met and both TWC and N.G.Bailey would have had to submit claims.

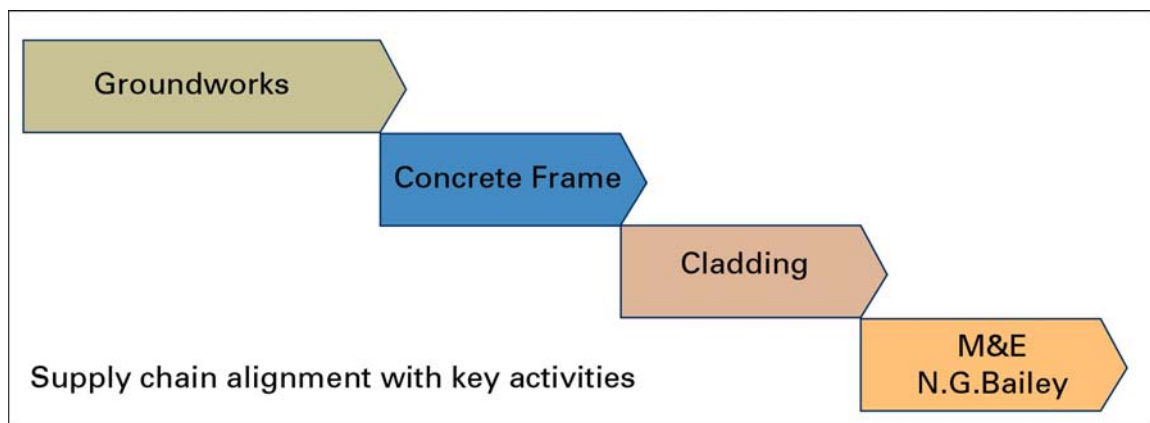


## 5. Building Services Procurement and Programme



By working with strategic partners and Preferred Suppliers, TWC is able to draw on the experience and resources of its supply chain during the tender stage and this was the approach adopted for the Heart Centre project.

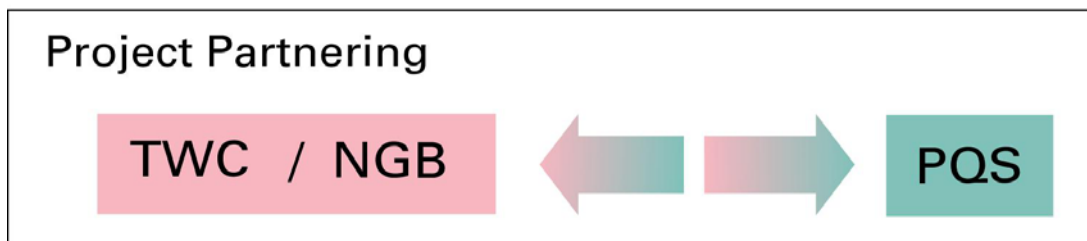
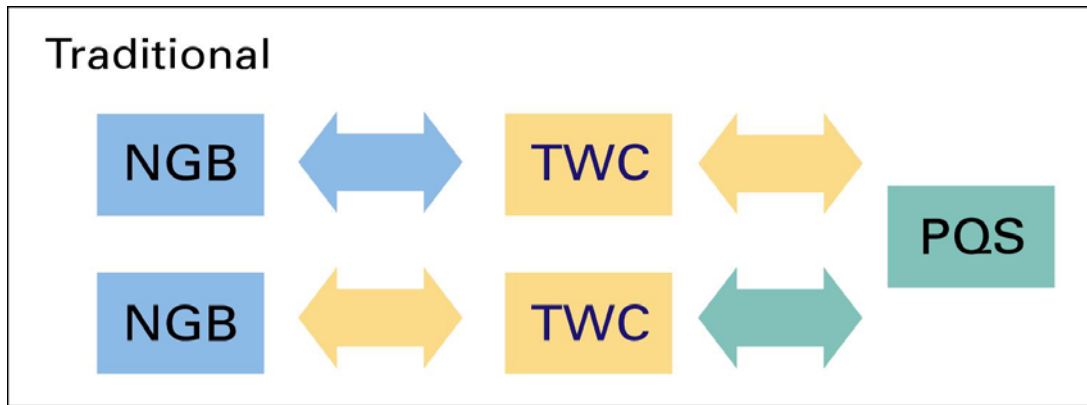
A project culture which would encourage collaborative working between specialist suppliers was considered essential, if a compliant bid was to be submitted, and the tight construction programme achieved. For principal activities lying on the critical path, including ground works, frame, cladding and building services, a single source strategy was adopted and supply chain partners were invited to join the bid team. Strategic Alliance Partner, N.G.Bailey, was thus involved from the tender stage onwards.



Single Source procurement is estimated to have saved 1 man week per trade (say £6000 total), or 5% of tender resource cost, as well as greater certainty, improved programme integration and input from the key trades in Value Engineering proposals.

The bid was successful, so N.G.Bailey was in a position to commence building services planning and procurement from Day 1. One of the most significant benefits for the project was that N.G.Bailey commenced work immediately on the preparation of Builders Work drawings.

The form of contract adopted, and the lack of any design responsibility, did not give N.G.Bailey too much opportunity to draw on supply chain expertise to propose how value could be added to the project. Never the less, by adopting an “open book” approach to the engagement of 2nd tier suppliers, the Alliance gave the client the opportunity to become directly involved in the process, and therefore satisfied that value for money was obtained.



#### Comparisons with a Traditional Approach

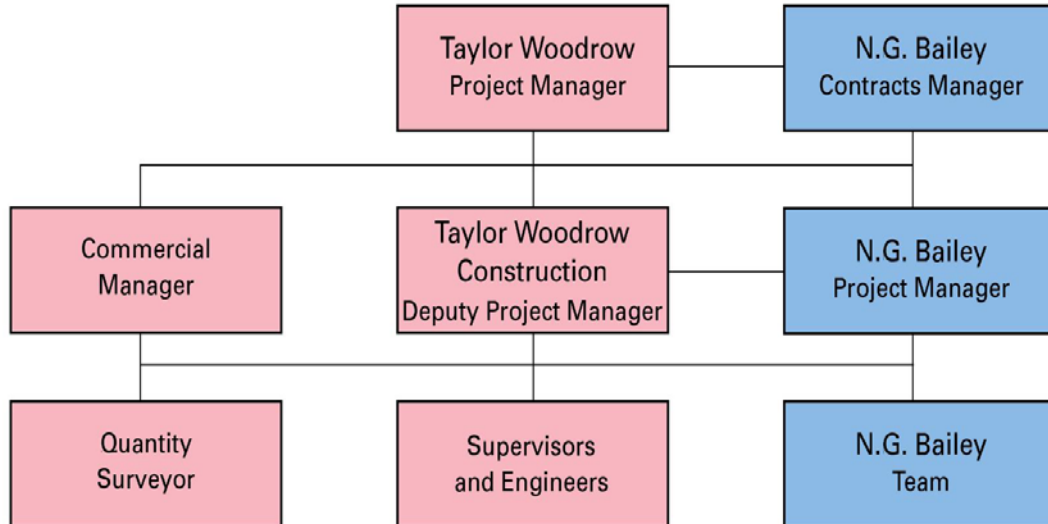
Because N.G.Bailey had no design responsibility, the benefits of early involvement were less than would have been the case with a Design & Build or 2-stage form of procurement. However, a number of Value Engineering opportunities had been identified in the tender stage, and accepted by the client once work commenced. Without having the key suppliers in place the VE proposals could not have been implemented in the same time frame, if at all. Without the “open book” approach adopted the client would certainly not have had the same opportunity to consider any spec changes offering better value for money.

N.G. Bailey were able to agree their variations directly with the PQS which demonstrated the high level of trust between the parties and elimination of the traditional adversarial approach to subcontractor commercial issues.

## 6. Organisation

From tender stage onwards, N.G.Bailey was fully integrated into the TWC project team, obviating the need for TWC to appoint an M & E Site Manager and, probably, two supervisors on site. The organisation is illustrated below.

### Integrated Project Team



On site, the Taylor Woodrow and N.G.Bailey Project Managers were co-located in adjacent offices and were thus in constant communication with each other. Even more to the point, they communicated directly and not by letter so that, by the end of the contract, *not a single contractual letter had been exchanged!*

N.G.Bailey had their own CAD team on site which was considered to be very beneficial.



*Stuart Cunliffe-Jones (right), TWC's Senior Project Manager, with Brian Whicker, Project Manager for N.G. Bailey.*

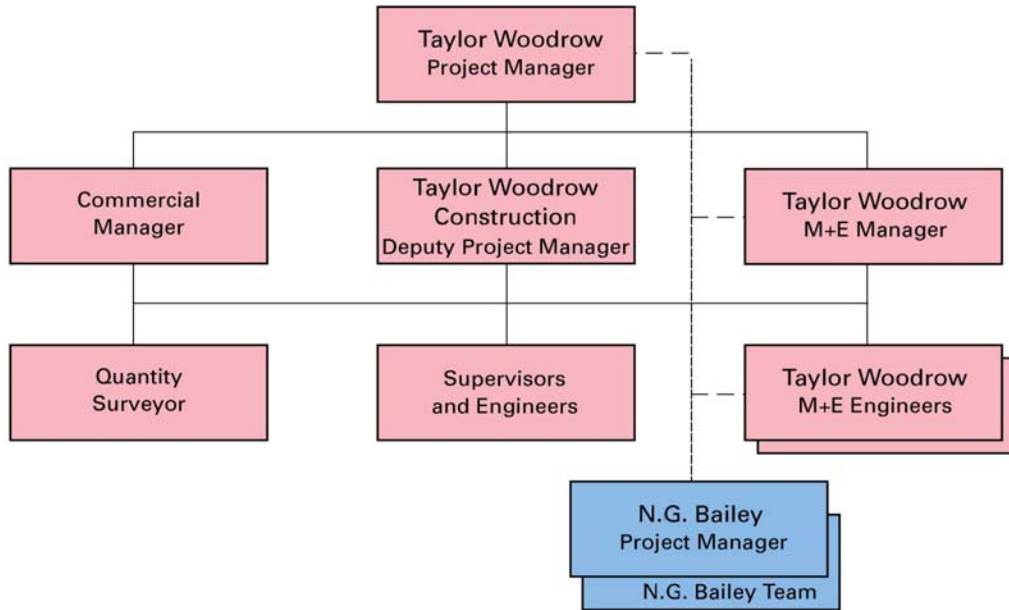
*"The partnering approach is exemplified by your relationship with N.G Bailey. We are impressed by the way you worked together..."*

**S.W. Lovak**  
Assistant Director  
Estate Management

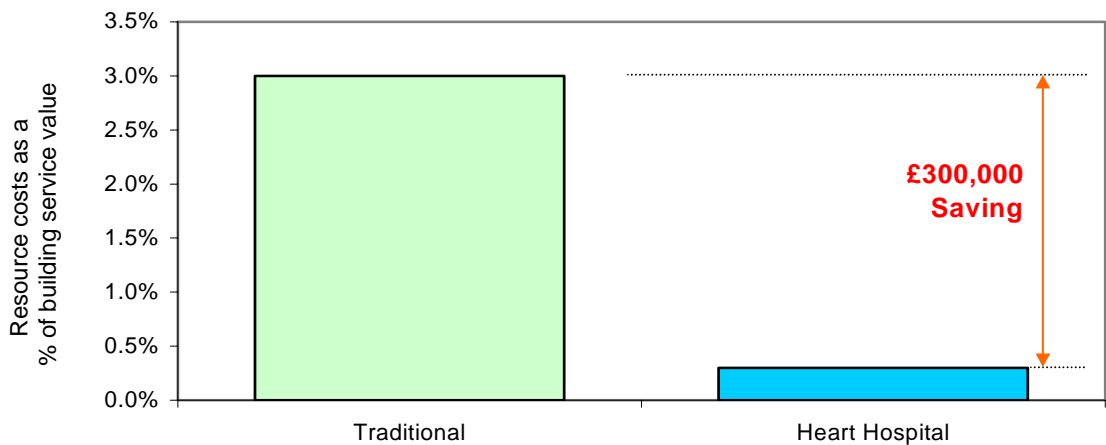
**Comparisons with a Traditional Approach**

The diagram below illustrates the traditional place of the M&E subcontractor in relation to the main contractor's organisation. The most obvious benefit to the project is the costs saved by removing TWC's building services supervision.

**Traditional Organisation**



Building services resource costs on a traditional contract are estimated at 3% of the building services value, whereas at the Heart Centre building services resource cost were 0.3% - a saving of £300,000.



Other benefits are referred to elsewhere in this document but not least of which is the improved communications and the removal of waste in letter writing, unnecessary contract documentation etc.



## 7. Performance

### Cost

The original project was budgeted at £30 million and one of the client's two principal objectives with respect to project delivery was to complete within budget.

Following the appointment of TWC, the client requested that the contract sum be value engineered down to £29 million and N.G.Bailey and the other key suppliers participated fully in this exercise.

During the course of the contract additional funds became available and additional works were instructed, taking the projected out-turn cost up to £32.8 million. Strict cost controls were maintained throughout and the project was handed over within the revised budget.

### Time

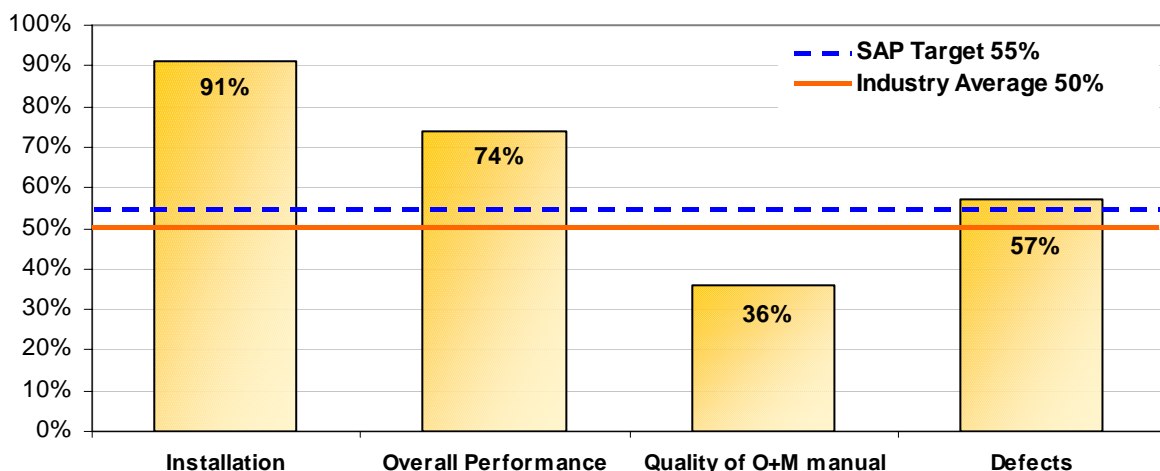
The contract started in October 2002 and the original completion date was 15th October 2004, but with phased hand-overs commencing from the end of April 2004. Within this programme the client set a further milestone of 23 August, 2004 to complete commissioning of Phases 1-3. This had to be achieved if the client's other principal objective was to be achieved – the first heart operation on 4<sup>th</sup> October, 2004.

That the client's objective was achieved in the face of serious delays, as described in Section 4 above, is testimony to the leadership and maturity demonstrated by the client's team as well as the TWC/NGB management on site.

The final completion date will be 14<sup>th</sup> December 2004 and reflects the extensions of time awarded with respect to the additional works instructed.

### Quality

The diagram illustrates Key Performances Indicators at the 90% complete stage. A full set of KPI's will be available for inclusion in this study on project completion.



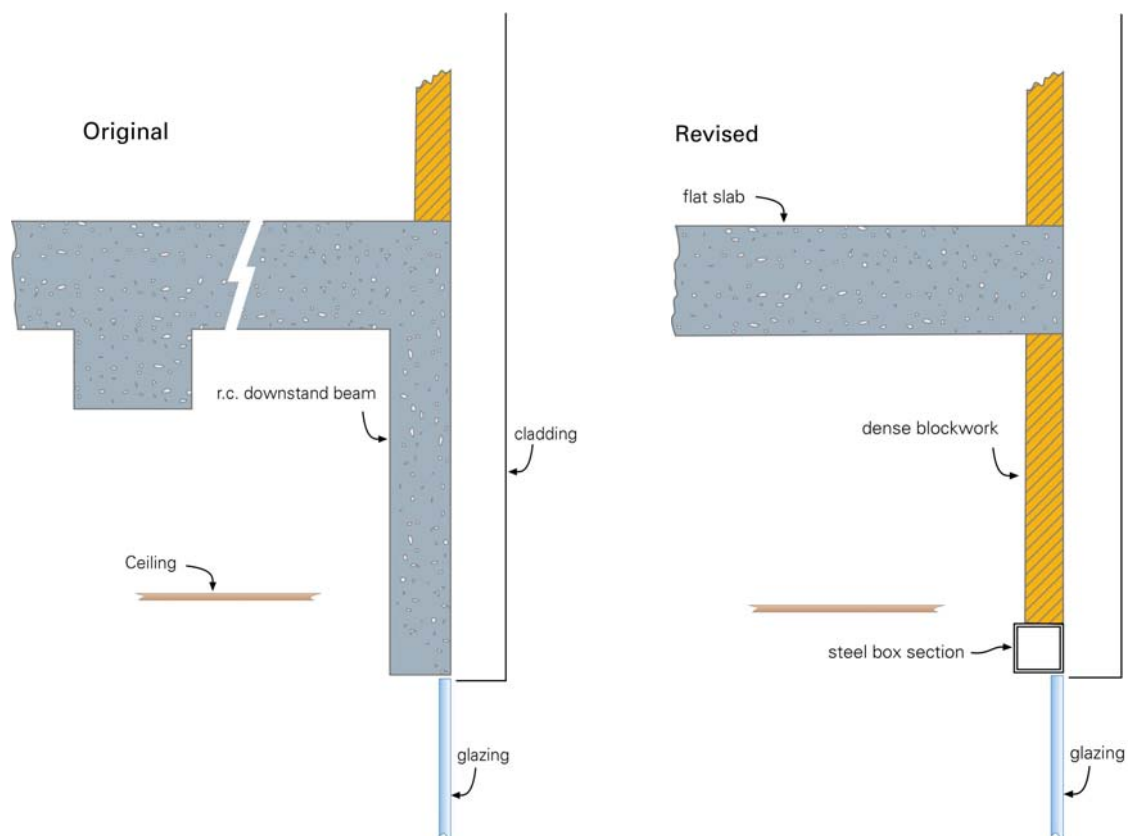
## 8. Culture

Recognising that this was a complex project, with a tight programme, TWC had invited key suppliers to collaborate on the tender as a first step towards reducing time and cost risk. During the tender process, the specialists became directly involved in the identification of a number of Value Engineering opportunities and these were advised to NHS Trust when the compliant tender was submitted.

This initiative may have been the first opportunity the client had to appraise the different cultures of the companies submitting competitive bids. Certainly, the client welcomed the initiative and, in awarding the contract to TWC, encouraged development of VE proposals.

### Collaboration

One such proposal was to replace the concrete beam and slab construction with a flat slab design. The decision to proceed with this was taken some months after contract commencement. Despite the manifest benefits for construction method, there were significant issues with respect to co-ordinating builders work and slab reinforcing details. Bearing in mind that this was a traditional form of contract, it is a credit to all concerned that the changes were implemented without serious contractual ramifications.



Throughout the project, the client continued to encourage the development of an open, trusting culture. This Case Study is as much a Project Partnering acclamation as a supply chain partnering success story.

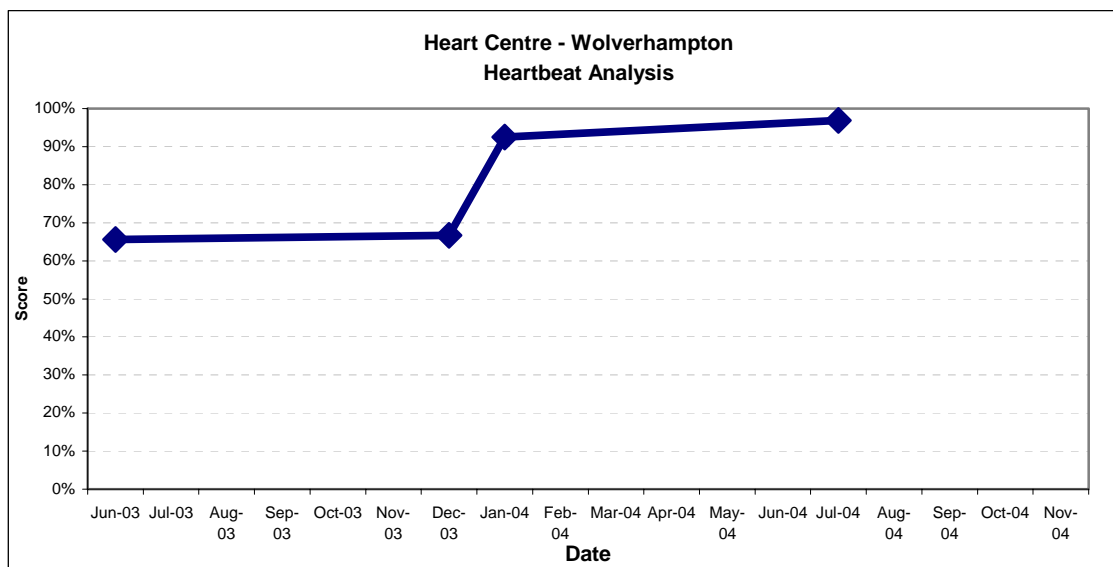
## Trust

As the project got under way, the Client, the Client's Agent and the design team began to appreciate the non-adversarial, "can do", approach which had been adopted by TWC/NGB from the outset. As other potentially serious contractual issues arose, e.g., design information delays affecting the first phase hand over date, a pragmatic approach to problem resolution prevailed over the traditional recourse to the contract/subcontracts. The solution to the phased hand-over issue has been described in Section 4 above. The one word which best describes why a challenge became a success is "TRUST".

Trust was also implicit in the "open book" approach to discussing contractual issues with the PQS and also, obviously, in the close working relationships established by the TWC and NGB project managers.

## Customer Satisfaction

"Heartbeat" surveys were conducted at regular intervals to monitor customer satisfaction and it is relevant to note the increase in the Heartbeat score as the project progressed.



### Comparisons with a Traditional Approach

Advocates of partnering will often caution against expecting so called "win-win" benefits from a single contract and will advise that the benefits can only be fully realised in "strategic" partnering, or "framework" arrangements. They may recommend a partnering friendly (i.e. non-adversarial) form of contract. Certainly the form of contract adopted for this project would traditionally have been the vehicle for a rough ride in contractual terms.

However, the success of the project totally refutes the notion that partnering cannot work on a single project. It is neither partnering theory nor bespoke forms of contract that make partnering work – it is a culture of trust, collaboration, teamwork and, above all, focus on customer satisfaction that counts. It is a culture that is central to the ethos of the Strategic Alliance Partnership.

## 9. Claims

TWC and N.G.Bailey have progressed a difficult contract without the need on either side to resort to contractual correspondence between each other.

The project managers have adjacent offices and, more importantly, they have the same approach to focussing on delivering the project to meet the Client's objectives. They prefer to communicate informally, and directly, rather than by correspondence.

*The result has been no inter-company claims!*

### Comparisons with a Traditional Approach

The project had the potential to become a claims nightmare for all parties. The Ashford Hospital in Middlesex, completed some years ago, ended with 6 months being required for claims settlement. The relationship between TWC and the M&E subcontractor on that contract was described as "them & us".

## 10. The Benefits of the SAP Approach

# 10

The SAP approach is a partnering approach and this project has demonstrated textbook partnering characteristics and benefits. The textbooks would no doubt refer to the outcome as “win-win”.

The benefits can be summarised as follows :-

**Integrated Project Team** : The key suppliers, including SAP partner N.G.Bailey, were members of the project team from the tender stage onwards. The client recognised the value of this when Value Engineering proposals were delivered with the compliant tender.

**Risk Sharing** : Having a share in solving problems meant having a share in delivering solutions. Collaboration facilitated placing risks where they were best managed. The decision to change the structural design to flat slab, post-contract, had obvious risks but was the right decision, taken by TWC in consultation with the project team.

**Open Book** : Inviting the client to participate in the procurement process had reciprocal benefits, but in particular satisfied the client’s representative that value for money was being obtained.

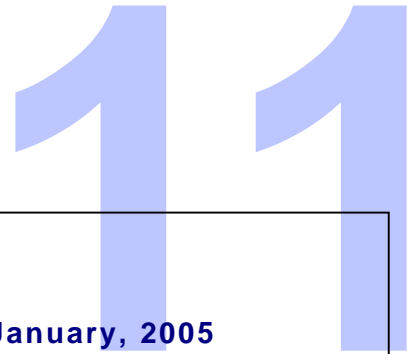
**Trust** : All the above helped to generate an environment of trust which was sustained throughout the contract and underpinned the excellent working relationships which developed.

**Culture** : A culture which put meeting client objectives without necessarily adopting defensive contractual positions differentiated the SAP approach from the traditional and contributed to increasing Customer Satisfaction as the project progressed. The most important benefit was the reprogramming exercise which was innovative, pragmatic, of benefit to all parties and could not have been achieved in a contractual environment typical of yesteryear.

**Change** : Being able to incorporate numerous variations and continue to work together to meet the Client’s objectives. Apart from the addition of a 3<sup>rd</sup> Cath. Lab., an additional “event” building and numerous other works required to meet the operational requirements of the Trust.

**Client Partnering** : Managing the works to allow the Client to have beneficial access at an early stage so that their specialist equipment was installed and training completed in time to meet their operational objectives.

## 11. The Benefits of the SAP Approach



### email

Appreciation received by e-mail on 28<sup>th</sup> January, 2005

#### **Stuart**

On behalf of Cardiothoracic Services I would just like to express my sincere thanks to you and your team for all your efforts in achieving your deadlines and enabling us to go live in the Heart & Lung Centre on the agreed dates. Several individuals from Taylor Woodrow stand out, Alan Whyte and Malcolm Harcombe in particular, however I appreciate this was a team effort.

The Heart & Lung Centre project has been a huge challenge for all concerned and has been achieved through everybody's total commitment to partnership working. To build and open a healthcare facility of this size in under 2 years is a major achievement, the level of which should not be underestimated; I believe we have a very strong case for a partnership award which I will be happy to assist with.

I hope our paths cross again on future schemes. In the meantime many thanks and good luck with whatever scheme you are assigned to in the future.

Yours sincerely

*David*

David Jones  
Commissioning Manager - Heart & Lung Centre  
New Cross Hospital  
Royal Wolverhampton Hospitals NHS Trust  
01902 307999 ext. 6615  
07900 054903

The Royal Wolverhampton Hospitals   
NHS Trust

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New Cross Hospital  
Wolverhampton  
West Midlands  
WV10 0QP

Our Ref: SWL/LJD/Heart&LungCentre

Tel: 01902 307999

7 January 2005

Taylor Woodrow Construction Limited  
41 Clarendon Road  
WATFORD  
Herts  
WD17 1TR

**For the attention of Mr S Cuncliffe-Jones**

Dear Stuart

**THE HEART & LUNG CENTRE, WOLVERHAMPTON**

With our new Heart and Lung Centre complete and now operational I would like to thank you and your team for the efforts over the last 2 years.

The project was always going to be a challenge for ourselves, our consultants and our appointed contractor once the decision was made to build this facility due to the programme and budget that we needed to achieve. The key component to the successful completion has been the way in which all those involved have worked together. I have mentioned before that I do not believe that we would have achieved any better relationship through a partnering agreement.

The partnering approach is exemplified by your relationship with N G Bailey. We are impressed by the way you worked together, and I am sure that this was a major factor in meeting our objectives.

The success of the project is not just related to the completion of the building, but when patients are admitted and using the facility. We again appreciate the support and assistance that you have provided in ensuring that our operational objectives have been met. Our staff are extremely happy to be using this high quality Heart Centre.

It has been refreshing that all the individuals on the project have worked so well together. This was as a result of the leadership and close cooperation between the Trust, external consultants and yourself.

Yours sincerely



**S W LOVACK**  
Assistant Director –  
Estate Management

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# SAP

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