



## **POST OCCUPANCY REVIEW REPORT**

### **JUBILEE CAMPUS SPORTS CENTRE**



**JUNE 2009**



# Post Occupancy Evaluation of the Jubilee Campus Sports Centre for the University of Nottingham

## 1. Introduction

QTC Projects were appointed to complete the Post Occupancy Evaluation undertaken by the University of Nottingham Estate office.

## 2. Scope of the Review

### Evaluation Technique

The evaluation was carried out at Strategic Review Stage (2-4 years after handover).

### Analysis

Analysis consisted of reviewing all written information received concerning the building together with information collated from interviews and workshop.

### Interviews

Interviews were held with the following:

Tim Brooksbank	Development Director
Barry Chadwick	Director of Operations & Facilities
Nigel Mayglothling	Assistant Director of Physical Recreation & Sport
Stephen Farey	Sports Centre Supervisor

### Workshop

A one day workshop was held on 25 May 2006 (a list of attendees is shown in Appendix 1). The format for the workshop was a brief tour of the building followed by a series of forums covering the following:

- Context & Design
- Construction & Cost
- Management & Sustainability
- Space & Use

The information from the workshop provided important comment which has been incorporated into this report.

### 3. Building Data

Name	Jubilee Campus Sports Centre											
Size	2650m <sup>2</sup>											
No of storeys	2 Storey accommodation plus Sports Hall and Squash Courts											
Types of space	<ul style="list-style-type: none"><li>Entrance and Reception</li><li>Changing Rooms and Toilets</li><li>8 Court Sports Hall</li><li>2 Squash Courts</li><li>2 Practice Rooms</li><li>Office</li><li>Storage</li><li>Viewing Gallery</li></ul>											
Start on site	1 June 2004											
Completion	17 April 2005											
Cost	<ul style="list-style-type: none"><li>£2.2m</li><li>£1.86m Construction cost</li></ul>											
Funding	<a href="#">University</a>											
Design Team	<table><tr><td>Architects</td><td>Franklin Ellis, Nottingham</td></tr><tr><td>Project Manager</td><td>Wilson Large, Nottingham</td></tr><tr><td>QS</td><td>Wilson Large, Nottingham</td></tr><tr><td>Services Engineer</td><td>D H Squire, Nottingham</td></tr><tr><td>Structural Engineer</td><td><a href="#">Mowlem PLC (Main Contractor)</a></td></tr></table>		Architects	Franklin Ellis, Nottingham	Project Manager	Wilson Large, Nottingham	QS	Wilson Large, Nottingham	Services Engineer	D H Squire, Nottingham	Structural Engineer	<a href="#">Mowlem PLC (Main Contractor)</a>
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Structural Engineer	<a href="#">Mowlem PLC (Main Contractor)</a>											
Type of Contract	JCT Design & Construct (Single Stage)											

#### 4. Project Background and Description

As the Jubilee Campus was developed it became clear to the University that there were minimal recreational facilities for the 750 students on campus at the time and 1000 students in off campus accommodation nearby.

Two locations were identified as potential sites for a new Sports Centre. These were Site A, the former Raleigh works on Triumph Road and Site B, adjacent to the Sports Pitch by the NCSL Building.

Site A was preferred as the building would screen the adjacent gas holder which was still operational. However particular problems with the contamination of the site had to be dealt with. The ground investigation survey also confirmed the presence of an underground aquifer and this resulted in a piled foundation using bentonite plugs to seal the aquifer.

The location of the building on the site had to be given careful consideration due to the close proximity of the gas holder and its thermal radiation zone. Consequently the Sports Centre has no windows on the north side of the building and all ventilation outlets are sited well away from the gas holder.

The final siting of the building was altered significantly due to the overhang of the construction crane above the [railway](#) lines to the east of the site.

The initial brief was prepared by the Director of Recreation and Sport in conjunction with the Estate Office (Director of Estates and Development Director) and a representative from the Athletics Union. [A particular requirement of the brief was that the Sports Centre was not to be used for examinations in order to maximise sports use. This had been a criticism of the University Park Sports Centre](#)

The Design Team was appointed and the Project Management [Group](#) inaugurated in November 2003.

The estimated construction cost was below the threshold for the obligatory EU procurement rates and tendering process.

Five tenders were received and following a value engineering exercise and formal approval by the University, work started on site in June 2004 with completion on 17 April 2005. The building was occupied in June 2005 following final agreement of staffing budgets.

The building itself sits back from the main road fronted by a car park. The building is tight on the northern boundary but on the south side the opportunity has been taken to introduce some attractive landscaping.



The building stands 11.9m high [with a shallow pitched roof](#) and comprises Ibstock Westbrick red facing brickwork to the ground floor up to 3.3m. Exposed brick piers help to model the elevations at this height and allow flush walls internally to the Sports Hall. At first floor level and above the building is clad with grey Kingspan aluminium cladding panels with stained western red cedar boarding to the main entrance elevation. Two brick piers frame the recessed aluminium curtain walling to this elevation.

There are also two windows on this elevation giving natural light to the first floor office and one of the practice rooms.



## 5. Context and Design

Initial brief provided adequate information to enable the Architect to prepare an outline design brief based on producing a high quality, multi activity centre serving the Jubilee Campus and complimenting the existing sports facilities on the main campus.

Information was gathered on sport facilities that operated at other Russell Group Universities and a visit was made to the new sports facilities provided at Nottingham Trent University. There were also discussions with Sport England. As a result, the facility meets the criteria for county and national sports standards. The Estate Office 'Standard Design and Elemental Requirements' document was followed in developing the design brief.

A specific budget was set for the project which imposed some financial restrictions on the user client requirements. For instance, it was not possible to incorporate spectator seating and only a viewing gallery was included which has limited use.

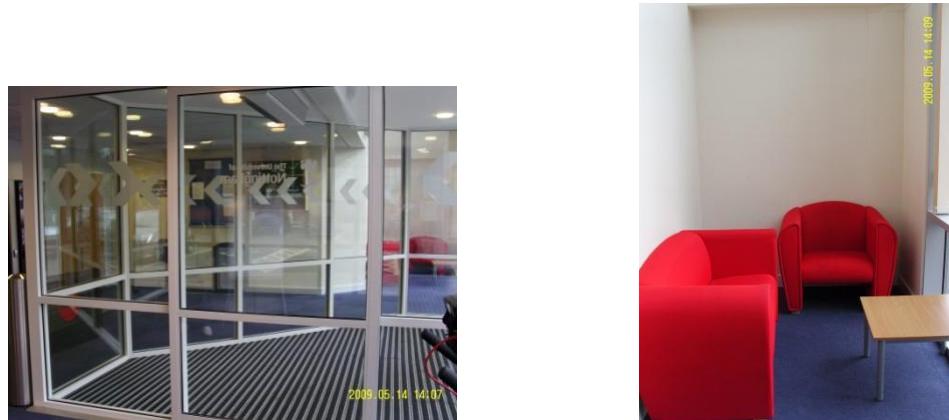
It was noted that the brief did not include a fitness suite. [This facility was to be sited elsewhere on the campus but has not yet been developed. However](#) a fitness room has now been provided by converting one of the practice rooms [within the Jubilee Sports Centre.](#)

Accessibility and compliance with DDA requirements is considered good with separate disabled toilets, changing and showers provided. Although the revised Part M of the Building Regulation came into force halfway through the project, the building is fully compliant.

A number of observations were made during the inspection of the building and discussion with the Sports Centre managers.

The layout of the building for sport, access route at entrance and reception and location of staircases leave some room for improvement.

The roof to the draught lobby as viewed from the first floor makes this element appear as an afterthought. The draught lobby provides ample manoeuvring space but has created cross circulation at the reception desk and areas of unusable space.



Although there is a staircase at the main entrance which is visible externally it is not the main staircase for users to access the first floor. This is via a second staircase approached by a circuitous route from the reception area.

A balcony at first floor level looks down through a narrow void onto the roof of the draught lobby. It is not clear why this balcony has been set back from the curtain wall glazing since there is no apparent benefit in doing so.



Modifications have had to be made to the low level reception counter for security reasons since it gave an easy access and view of the secure office area. A glass screen has now been fixed above the low level counter to prevent unauthorised access by potential opportunist thieves.

The viewing gallery onto the Sports Hall at first floor level is located along the short side of the hall which limits the view of the hall and is also in line with the trajectory of balls being used. **Although the gallery would have been better placed down the side of the hall, this would have created a wider hall and building, the increased costs of which could not be accommodated within the agreed budget.**

The storage areas for equipment are considered adequate and generally the changing facilities work well.

There is evidence of lack of attention to detail in the building design particularly at certain junctions of steelwork/wall panels and the misalignment of the horizontal steel beam with the entrance curtain wall glazing transome is unfortunate.



#### *Recommendations*

*The Estate Office's 'Standard Design & Elemental Requirements' document should continue to be used on all capital projects and regularly updated.*

*Fitness suites are a key part of indoor sport and recreation and should be included in future sports centres [where possible](#).*

*Circulation routes should be clearly defined and access routes to the reception point and beyond should be logical and avoid cross circulation.*

*Security at the reception should be considered early on in the design process.*

*Architects appointed should be mindful of the need for attention to detail during the design process and ensure there is adequate co-ordination of design and construction elements e.g. steelwork*

## **6. Construction and Cost**

The building contract was procured using a single stage JCT Design and Build contract with the architects novated to the contractor post tender (Stage H).

Tenders were received from five reputable building contractors with the lowest exceeding the construction budget by 6%.

A schedule of value engineering changes had therefore to be prepared to reduce cost but still maintaining county and national design criteria for sports activities. The major cost saving resulted in shortening the length of the building by 3m. This was achieved entirely within the support areas and not the sports hall.

Following this exercise and negotiation with the lowest tenderer, a construction tender figure was agreed in line with the approved budget.

Costs were managed reasonably well during the construction period. The critical variations incurring additional cost related to the extra car parking area and the client change from painted to hardwood veneered flush doors. There was also a cost variation due to the rising steel costs which were prevalent at the time.

The client fit out budget amounted to £35k which ~~was the Department~~ considered inadequate and had to be supplemented by departmental funds. A more realistic figure would have been £60 - £100k. The construction programme allowed a one month lead in following practical completion which was beneficial to the user client.

Generally the quality of the building construction and finishes is good and overall, the consensus view from the workshop participants was that the building represents excellent value for money for the University.

However there were a number of issues raised relating to the construction phase which are worthy of mention.

Problems with the squash courts occurred at an early stage resulting in the floor having to be completely renewed. No perimeter expansion joint had been allowed for and some of the strip boarding had ~~not~~ been securely fixed to the timber battens beneath. The flooring was laid by a specialist subcontractor and it is therefore surprising that such fundamental mistakes were made.

The blockwork side walls to the squash courts have a vertical expansion joint running the full height of the plastered wall. This results in cracks appearing in the plaster finish due to movement along the expansion joint which have required remedial work.



There was evidence of cracking due to some settlement/shrinkage shortly after handover of the building. Remedial work was carried out including redecoration. It was observed during a recent tour of the building that movement is still occurring with evidence of cracks in masonry and plaster in a number of areas.

Plastered walls have endured considerable wear and tear and in some areas damage has occurred. Fairface brickwork or blockwork may have been a better option.

In two of the stores the light switches have been located on the wall adjacent the hinged side instead of ~~the~~ leading edge of the door.

The syphonic drainage system for surface water installed on the roof has the advantage of requiring fewer downpipes of smaller diameter. Although concerns were expressed on how the drainage system might operate without problems no major issues have yet arisen.

The flooring contractor had difficulty in finishing the Desso flooring in the Sports Hall around the floor sockets for the tennis posts. The sockets for the posts became twisted and were set too low. This has now been resolved.

#### *Recommendations*

*Fit out budgets should be realistic and allowed for in early cost estimates.*

*Checking of on site construction should be improved by the main contractor to ensure specialist sub contractors are carefully monitored.*

*Consideration should be given to appointing an independent architect as a client retained service to check drawings and co-ordination of work on site.*

*The settlement/shrinkage cracks should be investigated further and regular monitoring carried out. Further remedial work is necessary.*

*The procedures and information issued at practical completion on this project by the contractor should be applied on future projects where appropriate.*

## **7. Mechanical and Electrical Services and Sustainability**

Heating to the building is provided by two systems. The large sports hall is heated by radiant heaters with ventilation provided by mechanical means. The practice rooms have some cooling provision and other areas are heated via a low pressure hot water radiator system.

Problems have occurred with the level of noise generated by the ventilation plant serving the Sports Hall which has caused some distraction to sports users. Also the design of ventilation fans down one side of the sports hall has caused some difficulties for county and national badminton standards.



The ventilation plant serving the Practice Rooms is located above the suspended ceiling which, for maintenance, is difficult to gain access and results in the closing of the practice room when maintenance is needed.

#### *Recommendations*

*Future projects should incorporate more energy saving initiatives where these are considered cost effective.*

*On future projects consideration needs to be given at the design stage to the maintenance of mechanical services and their impact on the building operations.*

## **8. Space and Use**

The use of the sports facilities are operated on a booking system managed by the Sports Department. There is no time limit per visit unless the facilities are very busy and not allowing use of the Sports Hall for University exams means there is no interruption in the sports provision.

Tennis is not operated after 5pm as it limits other bookings. The busiest time **during the academic term** is between 10am and 5pm when the facilities are fully booked and occupied during this period. This differs from the University Park Sports Centre which has more evening use.

The feedback from users is very positive as shown in the improved ratings and the Athletics clubs now have more time for training sessions. Overall general satisfaction has improved since the Centre opened in 2006.

The Sports Centre is not open to the public and the only non university use is by the National Governing Bodies for Sport who have access for certain classes.

Sports Centre management consider that current demand could fill another sports centre and that projected demand should have been assessed better at the design stage.

Halls on the Jubilee Campus are predominantly occupied by overseas students and so the sports centre hosts numerous events for this group of students.

Facilities and access for disabled use are considered to be very good with a number of special features incorporated for disabled users. The County Disability Sports Unit have been complimentary about the Sports Centre and a number of disability sports events have been held.

The space for spectators is very limited and design of future sports centres should **consider the extent of space required** for this use. It should be pointed out that on the Jubilee scheme, the budget was very tight and the reduction in the footprint of the two storey section by 3m (as part of the value engineering exercise) resulted in limited space being available for this purpose.

Two Practice Rooms were originally provided in the Sports Centre designated for “multi function” use. There was no specific use defined at the design stage and consequently **minor** modifications had to be made e.g. for Judo use.

The original brief did not incorporate a fitness suite **since-as this facility was to be provided elsewhere on the campus (which has not yet materialised)**. This has now been addressed by the Sports Centre management and one of the practice rooms has been converted for this purpose. This was done in September 2008 and incorporates over 30 items of training and fitness equipment.



Comfort levels in the first floor office are compromised due to inadequate heating from the LPHW system. Investigation has revealed that the pump serving the heating system and the pipe diameter to the radiator are too small.

Staff regularly experience tripping out of the mechanical ventilation system and complain that the building management system does not detect such faults through its automatic monitoring facility. Consequently staff have to deal with the problem themselves.

Externally the car parking provision is considered adequate for normal daily use but becomes a problem when major events are held at the Sports Centre.

The location of the Sports Centre on Triumph Road is not central to the campus at present creating a feeling of not being part of the campus. It is considered that this problem will disappear as the campus develops.

Initially the speed of traffic along Triumph Road was causing a hazard. This has been addressed by creating a bend in the road to slow traffic down.

#### *Recommendations*

*Consultation on disability issue is considered very good and a similar approach should continue to be used on other new facilities.*

*Future sports centre developments should carefully assess the need for spectator areas and incorporate these where appropriate and funding allows.*

*Practice rooms, where included, should, **where possible**, have a clearly defined use with specific activities listed rather than just multi function use.*

*Investigate and resolve the problem of lack of adequate heating to the first floor office. The Building Management System should be checked to ensure automatic monitoring is taking place and is detecting faults.*

## **9. Summary of Recommendations**

*The Estate Office's 'Standard Design & Elemental Requirements' document should continue to be used on all capital projects and regularly updated.*

*Fitness suites are a key part of indoor sport and recreation and should be included in future sports centres **where possible**.*

*Circulation routes should be clearly defined and access routes to the reception point and beyond should be logical and avoid cross circulation.*

*Security at the reception should be considered early on in the design process.*

*Architects appointed should be mindful of the need for attention to detail during the design process and ensure there is adequate co-ordination of design and construction elements e.g. steelwork*

*Fit out budgets should be realistic and allowed for in early cost estimates.*

*Checking of on site construction should be improved by the main contractor to ensure specialist sub contractors are carefully monitored.*

*Consideration should be given to appointing an independent architect as a client retained service to check drawings and co-ordination of work on site.*

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## APPENDIX 1

### Post Occupancy Review Workshop

**Held on 25 May 2006**

#### List of Attendees

##### Estate Office

Tim Brooksbank	Development Director
Barry Chadwick	Director of Operations & Facilities
Paul Cooper	Senior Engineer
Stuart Croy	Deputy Chief Security Officer
Chris Dickinson	Maintenance General Manager
Mark Dixon	Estate Office Accountant
Steve Gilbert	Senior Building Surveyor
Lisa Haynes	Space Resource Manager
Tim Rudge	Energy Management Engineer
Nina Stone	Domestic Services Manager
Phil Ward	Assistant Safety Officer

##### Client

Stephen Farey	Sports Centre Manager
Diane Chadwick	Deputy Directory of Sport and Physical Recreation
Nigel Mayglothling	Assistant Director of Sport and Physical Recreation
Vaughan Williams	Director of Sport and Physical Recreation

##### Users

Cyril Scoreels	Senior Tutor, Newark Hall
Student Union Representative	
Jubilee Campus Student users	

##### Design Team

Dick Eite  
Martin Hart

QS/Project Manager, Wilson Large  
Services Engineer, DH Squire

Contractor

Mark Alker  
Lindsey Hegarty  
Mike Payton

Mowlem  
Marketing and Aftercare Manager, Mowlem  
Mowlem