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# Post-Occupation Evaluation Study Report

Project: The Barn, Sutton Bonington Campus

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Date: October 2017



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# INTRODUCTION

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In January 2017, Building Understanding submitted a proposal, to the University of Nottingham Estates Department, to conduct Post-Occupation Evaluations. The proposal was accepted.

This report aims to detail the strengths and the weaknesses of The Barn project, put forward recommendations and highlight best practice and excellence revealed that can be applied to future developments at the University of Nottingham.



# PROJECT BACKGROUND

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The construction of The Barn was part of the Masterplan for the Sutton Bonington Campus, the key objectives of which are to strengthen the campus's ability to operate as an autonomous unit and to further increase its popularity with students who are studying bioscience and veterinary science.

Prior to the construction of The Barn, there was a 1960's amenities building on the campus. The building was outdated and was in need of re-development to make room for the increasing campus population and to bring all the student services under one roof.

The Barn houses a dining hall, common room, graduate centre, faith rooms, student services and a range of other facilities over three floors. Its purpose is to unite the detached student and staff facilities and create a warm, welcoming environment for its users. The building is also used as an events space.

The building has also been designed to be physically and architecturally connected to its surroundings, encouraging student flow around the campus and making the most of the landscape.

Prior to the execution of the Masterplan, the materials palette at Sutton Bonington varied greatly from building to building, with no coherent theme across the site. The architects defined a new materials palette for the re-development which included: raw metal, brick, exposed timber and glass, the aim of which was to give a more coherent feel across campus.

The dining hall is the most dramatic space within the building and serves up to 500 campus residents at any one time. The top-lit, double-height space creates an open, airy environment with lots of natural light and a visual connection with the boulevard at one end.

The concourse functions as a primary circulation space within the building, connecting all areas and creating a continuation of the main boulevard through the campus.

The Barn achieved BREEAM 'excellent' status through the use of air-source heat pumps, solar hot water panels and low energy lighting with absence detection throughout.

The building has won two RIBA East Midlands Awards.

# OBJECTIVES AND METHODOLOGY

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## OBJECTIVES OF THIS POST-OCCUPATION EVALUATION

- To bring to light any key issues associated with the building procurement process and management of the development project
- To draw out stakeholder feedback concerning the design of the building and the experience of its end users
- To facilitate a half-day workshop, to discuss and debate the key issues revealed through the primary research
- To analyse all output from the face-to-face depth interviews, online questionnaires and the workshop to provide a summary report with recommendations

## SCOPE OF THE STUDY

Building Understanding sought feedback on the following aspects of The Barn project:

- Overall user satisfaction
- Satisfaction with specific room types and layout
- Design issues
- Construction issues
- Security
- Accessibility for disabled users
- Cleanliness
- Air quality
- Internal room temperature
- Distraction from noise
- Lighting conditions; natural and artificial
- Data connectivity
- AV equipment in the teaching/lecture rooms
- Heating and cooling
- Mechanical and electrical services
- Sustainability
- Operations and facilities issues

## STUDY PARTICIPANTS AND METHODOLOGIES

Building Understanding conducted face-to-face interviews and telephone interviews with a list of respondents, agreed with Gaynor Bradshaw-Willson. Discussion guides were prepared to gather feedback from respondents drawn from the following categories:

- Consultant team
- Contractors and specialist suppliers
- End users of the facility
- Estates office staff
- Internal client

## **Face-to-face depth interviews**

The study participants included depth face-to-face interviews of approximately one hour's duration with the following stakeholder organisations:

- The University's Estates Department
- The architect
- The main contractor
- The external project manager

## **Telephone interviews**

In addition, telephone interviews were conducted with the following stakeholders:

### **End users of the facility**

- Sutton Bonington Student Services Centre
- Chaplaincy
- Catering supplier
- Research, Enterprise and Graduate Services
- Student Guild

### **Estates Office staff**

- Fire safety
- Senior engineer
- Building surveyor
- Domestic services
- Environmental team

### **Consultant team**

- Electrical - M&E Consultant
- Mechanical sub-contractor

## **The workshop**

On Monday 16th October 2017, a workshop took place involving 15 attendees. The workshop objectives were to:

- Discuss and debate the findings of the primary research
- Identify quick wins and areas with the greatest potential for impact on future projects
- Generate recommendations to be applied to future projects commissioned by the University of Nottingham

The workshop commenced with a presentation, by Building Understanding, of findings of the primary research. Attendees were divided into breakout groups, with each group charged with assigning recommendations to specific points of feedback.

Due to the number of issues gathered in the feedback, there was a limit to the breadth of issues that could be debated in the workshop. The following issues were discussed:

- M&E issues
- Temperature
- Ventilation
- Commissioning
- Air source heat pump
- Value engineering

- M&E coordination
- Quality of workmanship
- Effect of design issues on use of the building
- End-user engagement
- Kitchen fitout
- Ease of cleaning
- Energy
- Handover
- Health and safety issues

## **A NOTE ON SAMPLE SIZES**

It is important to emphasise that the quantitative statistics in this report are based on very small samples. A total of 21 respondents were approached for feedback and, of these individuals, 18 responded.

# PROJECT DATA

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<b>Name of facility:</b>	<b>The Barn</b>
<b>Location:</b>	Sutton Bonington Campus, University of Nottingham
<b>Gross area:</b>	4,200m <sup>2</sup> /45,200ft <sup>2</sup>
<b>Number of storeys:</b>	3
<b>Users of the facility:</b>	The catering supplier The Student Guild Student Services Chaplaincy Centrally timetabled seminar room Graduate Centre Staff Club
<b>Room types:</b>	Dining hall, bar and social space, meeting rooms, prayer rooms, outside space on roof, staff club, Student Services office, Student Guild office, shop, kitchen
<b>Start on site:</b>	August 2013
<b>Date completed:</b>	8th October 2014
<b>Period on site:</b>	15 months
<b>Gross project cost:</b>	£8.9Million
<b>Funding:</b>	University of Nottingham
<b>Contract type:</b>	Design and Build



# DELIVERING THE VISION

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Set at the heart of the Sutton Bonington campus, the vision for The Barn was that it would form the social centre of the Campus, providing a gathering place for students and staff.

The exterior of the building is impressive and 'draws people towards it' but the layout and proportions of the interior have made the building less successful as a social hub for students. The building is at its most successful in its role as an events venue, rather than as a social space for students, its large spaces and lofty ceilings creating an excellent place in which to hold parties and conferences, these features are not conducive to creating a space where students go to relax. Many of the respondents interviewed in this post occupation study said that the bar area lacks 'cosiness'.

However, some of the negative feedback detailed within this report can be attributed to the building being used in different ways from the original brief, and by groups of users different to those that were expected to occupy the building.

Issues with heating, plumbing and quality have impacted user satisfaction with the building.

The multi-faith area has been a notable success, with learnings from The Barn being shared across other University facilities, and graduate services are located in what they feel is a flexible and usable space. However, other stakeholders, such as users of the office spaces, report issues with temperature, creating discomfort at work, lack of usable office and meeting space and noise distraction.

The Barn has no one clear function and no single user group has 'ownership' of the building.

# QUANTITATIVE FEEDBACK

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Quantitative satisfaction ratings were collected during the face-to-face and telephone interviews. Respondents were asked to rate their satisfaction with various aspects of the project on a scale of 'zero' to 'ten', where 'one' is very poor and 'ten' represents excellent.

Bar charts displaying the percentage split by rating, are shown in Appendix I. It is very important to emphasise that these quantitative results are drawn from very small samples and are therefore not statistically significant. However, what the figures do show is that there is a wide range of levels of satisfaction with elements of The Barn illustrating the different experiences of those consulted, based on how they use the space.

The aspects of the building generating the highest levels of satisfaction are provision for disabled users, environmental performance, and security.

The lowest levels of satisfaction were reported for the space in The Barn, temperature, the quality of the finish and how defects were handled, along with negative feedback about furniture in the facility. In many areas, the ratings range widely. In part, this is due to the subjective nature of quantitative ratings, but it is also influenced by the perspectives of the various respondent groups.

## **Provision for disabled users**

Of those who were asked about provision for disabled users, the ratings were high, with three out of four respondents rating a 'nine' and one a 'ten'.

## **Security**

Satisfaction ratings for security at The Barn were also high with all scores falling between 'seven' and 'nine'.

## **Satisfaction with the quality of finish**

Eight individuals were asked to rate their satisfaction with the quality of the finish. Ratings ranged from a 'four' through to a 'nine'; with three lower scores of one 'four', one 'five' and one 'six'. Four respondents, however, rated the quality of finish at 'seven' or 'eight' and one rated it as a 'nine', so while two respondents were either dissatisfied or neither satisfied or dissatisfied, most suggested they were satisfied with the quality of finish. However, these ratings should be received with caution as they are at odds with significant amount of negative feedback relating to the overall quality of finish detailed in this report.

## **Satisfaction with the overall quality of The Barn**

There was a similar mixed response to the question relating to the overall quality of The Barn. Again, scores ranged from 'five' to 'nine' with one respondent rating a 'five', three a 'six', two a 'seven', three an 'eight' and two a 'nine'. While there was a mixed response, seven of the ten who responded were satisfied to some degree with the overall quality.

## **Handover**

Satisfaction with the handover of the building varied between the respondents. Of the five respondents asked to give a rating, one was 'neither satisfied or dissatisfied', rating a 'five', one rated a 'seven' and three were 'mostly satisfied' rating either an 'eight' or a 'nine'.

## **Sub-contractors and suppliers**

Satisfaction with the quality of the work of sub-contractors varied between a 'five' and a 'nine', however most respondents were satisfied to some degree, with all but one rating a 'six' ('just satisfied') or above.

## **M&E services**

This question was addressed to only three respondents, and of those two rated their satisfaction with M&E services at a 'four' (slightly dissatisfied) and one a 'nine' (mostly satisfied). Dissatisfaction was largely due to on-going issues with heating and plumbing in the building.

## **Satisfaction with how defects were handled**

One of the nine respondents answering this question expressed frustration with unresolved defects, and the speed in which they were dealt with and gave a rating of 'one' (totally dissatisfied). The remaining eight respondents rated their satisfaction between 'six' (somewhat satisfied) and 'nine' (mostly satisfied).

## **Satisfaction with room types, their space and design**

There was a split in the levels of satisfaction with the different room types in The Barn. Of the eight respondents who were asked this question, three gave low satisfaction ratings. Two gave a rating of 'four' (slightly dissatisfied) and one a 'three' (mostly dissatisfied) and remaining five rated their satisfaction as an 'eight' or a 'nine' (mostly satisfied). It is interesting to note here that those who provided the lowest ratings were all regular users of the building. Once again, it is important to point out that some of this dissatisfaction stems from the fact that the building is now being used in different ways than was envisaged when it was designed and that some user groups were not the planned occupants of the building.

## **Satisfaction with the usability of the space**

This question was only addressed to regular users of The Barn and again, it reveals differing levels of satisfaction with usability of space. One respondent rated usability at 'two' (mostly dissatisfied), one rating a 'five' (neither satisfied or dissatisfied), one rated a 'seven' (just satisfied) and two were extremely satisfied, rating the usability as 'nine'.

## **Layout of the building**

As with the other questions concerning the space within the Barn, the responses to the question 'How satisfied are you with the layout of The Barn?' revealed mixed levels of satisfaction. There was one rating of 'three' (mostly dissatisfied), one of 'four', one of 'five', one of 'six', one of 'eight' and one of 'nine' (mostly satisfied), showing that there was no consensus among users as to the success of the layout of the building.

## **Operation and management of the building**

There was more agreement on levels of satisfaction with the operation and management of The Barn. Of the eight respondents asked this question, four rated their satisfaction as 'eight' (mostly satisfied), and one was totally satisfied, rating it as a 'ten'. One rated their satisfaction as a 'seven', one a 'six' and one a 'five', revealing that most respondents were satisfied to some degree with the management of the building.

## **Environmental performance**

Only one respondent felt equipped to provide a rating for environmental performance for The Barn, and awarded an 'eight' (mostly satisfied).

## **Temperature**

Temperature was a key issue with The Barn, raised by a number of respondents and, unsurprisingly, this was reflected in the ratings provided. Of the five people asked this question, two rated temperature at a 'two' (mostly dissatisfied), one a 'five', one a 'seven' and one a 'nine'. It is important to note that many of the issues with temperature were the result of a value engineering decision to remove the heating from the concourse.

## **Lighting**

There were higher levels of satisfaction with the lighting in The Barn. Of the five individuals asked to give a rating, two provided ratings of 'eight' (mostly satisfied), one gave a 'seven', one a 'six' and one a 'five'.

## **Noise levels**

There was, again, a split in the levels of satisfaction with noise levels in the Barn from users of the space. Three of the five respondents asked this question gave high ratings: one awarded a 'ten' and two a 'nine' while one gave a 'six' and one a 'five' (slightly dissatisfied).

## **Data connectivity**

Most users of The Barn who answered this question were satisfied to some degree with data connectivity. Two rated data connectivity as 'nine', one gave a 'seven' and one a 'five'.

## **Cleanliness**

Levels of satisfaction with the cleanliness of The Barn were varied. Of the seven interviewees who responded to this question, three provided high satisfaction ratings; one gave a 'nine' and two gave an 'eight', two were 'just satisfied' giving ratings of 'six' and 'seven', two gave ratings of 'five'.

## **Toilet facilities**

Toilet facilities were felt to be adequate by those who responded, and the ratings reflected this with one rating of 'nine', three of 'seven' and one respondent 'just satisfied' and rating a 'six'.

## **Furniture**

Of the five individuals who were asked this question, two rated their satisfaction with the furniture in The Barn at an 'eight' (mostly satisfied), one rated it a 'six', one a 'five' and one a 'three'. Lower levels of satisfaction were associated with the scarcity of the furniture, a limited choice of furniture available and also lack of practicality of some of the furniture for use in the student social areas.

## **Kitchen facilities**

Of the four people who responded to this question, it would appear that there is overall satisfaction with the kitchen facilities in The Barn, two rated this as 'eight' and two rated it as 'seven'. However, this is at odds with the level of negative feedback relating to the catering kitchen in particular which is detailed in this report.

## **Fire escape arrangements**

Most interviewees responded positively to this question. Of the five people who provided ratings, one rated this as a 'nine', two rated 'eight', and one 'seven'. The lower score was 'five' (neither satisfied or dissatisfied), and here the respondent felt that there was room to improve signage for fire escapes.

# THE DESIGN AND THE CONSTRUCTION PHASE

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## FEEDBACK RELATING TO VALUE ENGINEERING

When the costs came in higher than expected, it was necessary to conduct a value engineering exercise to bring the project costs within the required parameters. However, several interviewees feel that this was a cost-saving operation that failed to retain the required level of quality.

Several respondents feel that the value engineering exercise happened too quickly, without sufficient time for proper consideration of the impact of some of the decisions that were taken.

The value engineering spawned several different problems and the decisions that were taken had many implications, post-completion.

**“I believe the value engineering was the root cause of a lot of the issues. I think they had the right people in the room, I just think they made a decision on it that day instead of considering the secondary impact each one of those decisions would have.”**

The value engineering exercise was cited as the source of many of the issues raised throughout this evaluation. These are detailed below:

### Quality of finish

Dissatisfaction with the quality of the finish and poor durability of the materials used is one of the key themes emerging from this post-occupation evaluation. Examples include the quality of the finish of the kitchen area, quality of paint used throughout in finishing, and floors which are showing wear and tear too quickly.

### The exposed plant room on the roof

Several interviewees raised concerns regarding the location of the plant room on the roof of The Barn, due to life expectancy and maintenance. The plant was originally meant to be enclosed with a permanent roof, however, this was removed from the design during the VE exercise.

**“The plant is exposed so the life is just not going to be as long with pigeons and vermin getting amongst it.”**

### Natural lighting in the dining hall

A decision was made as part of the value engineering exercise to reduce the number of roof lights in the dining hall so that they did not run the whole length, reducing the amount of natural light in the dining hall.

### Issues with the kitchen fitout

Not only were there concerns about the reduced specification of the kitchen, from a number of respondents, there were issues with permeable wall surfaces, which lead to a prohibition notice from Environmental Health. Work to rectify this took place over the Christmas break and was at the University's cost.

### Catering kitchen

One of the areas affected by the value engineering exercise was the fitout of the catering kitchen and there is a large number of issues reported by a contributor to this study. There was negative feedback regarding the work of the contractor responsible for the kitchen fitout. The use of a separate contractor to provide and

fit this kitchen lead to a lack of coordination and communication, and ultimately a mismatch between the needs of the caterer and what was delivered in the end. One respondent reports that the contractor concerned proved to be difficult to get back on site.

- The wall surfaces in the food preparation area were not impermeable, which resulted in the Environmental Health Department issuing a prohibition notice. Urgent remedial action took place over the Christmas holidays to get the kitchen working again
- The kitchen walls are not easily cleanable and absorb grease
- The kitchen equipment was regularly breaking down
- There were no lever-arms or foot pedals for the hand wash basins.
- There is no floor drain in the dishwasher area, and there are drains where they are not needed
- Inconvenient location of sockets and their unreliable operation
- The kitchen has a domestic rather than a commercial feel
- The servery and cellar can get too hot which means that the catering units can cut out when the temperature goes above a certain level.
- The refrigeration units cut out when the temperature rises above 25 degrees in the first-floor servery,
- There is no ventilation in the pot-wash area which results in staff having to leave the door open
- The cellar door is not lockable (because it is a fire escape) putting stock at risk

## Recommendations

- Prioritise the potential areas where cost savings could be made while the project is out to tender, looking at the value and identify any implications of each cost saving. This will help to mitigate delays and quality issues
- Where possible, additional time to carry out VE should be built into the project timeline
- Carefully consider the impact of the decisions before the proposals are passed to the Project Management Group (PMG). Ensure all possible implications are documented. This would provide more time to assess the implications of each decision and would avoid snap decisions being made
- Look at the whole life implications of the cost savings that are proposed
- Identify the easy wins – the areas where savings can be made that will have the fewest implications going forward
- Communicate the process to the end users and stakeholders, with the appropriate amount of detail so that they understand the VE exercise and who has been involved in the consultation. They need to understand what decisions have been made and why.
- Make sure that there is sufficient time to incorporate the changes into the design

## FEEDBACK RELATING TO THE PROJECT TEAM

There were a number of factors that proved challenging to the effective operation of the project team during the delivery of The Barn.

### Changes in personnel

Respondents reported numerous changes in personnel during the project, from the members of the contractor team, the project manager and from the Estates Department. This lack of continuity was disruptive and the new people stepping into the roles were required to 'hit the ground running', without time to allow them to settle in to their roles.

## **The structural engineer**

One respondent mentioned that they felt that the decision to change the structural engineer on the project, pre-contract, cost time and knowledge was lost as a consequence.

## **M&E designer**

The M&E designer was based a considerable distance away from the site. Although this was not a universal view, several of the interviewees suggested that their fee had run out and this resulted in a lack of willingness to come to site, and when they did attend, their working days were truncated. The M&E designers were perceived to be driven by the architecture and it was felt by some that this was at the cost of consideration for the practicalities of M&E services and users, particularly with regard to the Air Source Heat Pump.

## **FEEDBACK RELATING TO THE CONTRACTOR AND TO SUB-CONTRACTORS**

### **The main contractor**

It is believed by some of the contributors to this study, that the main contractor was 'very keen' to deliver a project for the University of Nottingham, and in their efforts to win the tender, put in a bid that was too low. According to some of the interviewees, this meant that the contractor was continually under pressure to keep their costs at a minimum. It was felt that the need to drive down costs had an impact on the quality of fittings used and the quality of the workmanship.

Respondents did, however, report that the main contractor proved to be responsive and willing. The site manager, was praised by respondents for his genuine desire to deliver a good quality finish.

Some respondents commented that while the main contractor has been responsive there had been issues, such as the bad smells from the drains, that they have repeatedly tried to remedy but have not managed to resolve. The Contractor's Customer Service Manager also received praise for his willingness to address snagging issues and to engage in regular reviews.

It was reported by some of the study participants that there were tensions throughout the process between the main contractor and other members of the consultant team, such as the M&E designer and the architect.

### **Sub-contractors**

The bricklayers were singled out for particular praise. All respondents asked said that they felt that the quality of the brickwork was high.

### **"I think one area that's really good is the brickwork. I think the brick work detailing is fantastic"**

The quality of the joinery received particular criticism and it was felt that the contractor had not provided the necessary care and attention to provide good quality and hard-wearing doors and screens within the building.

Issues with plumbing, heating and drainage were raised repeatedly and the mechanical engineer responsible for these was criticised by contributors to this study.

However, the mechanical engineer reported that they were facing particular challenges in working with an unfamiliar air source heat pump supplier and made clear that they would not have gone down this route out of choice, it was the decision of the M&E designer. With a limited lead-in time, they lacked earlier interaction with the architect and structural engineer which would have improved buildability.

## The need for an M&E coordinator

Several respondents suggested that there should have been an M&E coordinator on the project throughout the operations phase so that issues could have been identified sooner. The main contractor did bring in a coordinator towards the end of the project, but this was thought to be too late because they could have picked up issues at first fix, before the build moved on.

## Recommendations

- Ensure that a M&E coordinator is appointed at the start of the project as this is a key role
- Encourage better communication with the M&E engineer in the University of Nottingham Estates Team
- Allow some flexibility of the design at the D&B stage based on the performance specification, whether this is in terms of performance or required outputs

## FEEDBACK RELATING TO MECHANICAL AND ENGINEERING

### Heating and cooling

Problems associated with heating in The Barn, made temperature one of the most commonly raised issues in this Post-Occupation Evaluation.

Originally, the concourse was designed to be a heated area, but during the VE exercise, the heating was removed. This had a knock-on effect on the temperature in the dining hall. During the first winter temperatures were down to 10 or 12 degrees in the dining hall, and four or five degrees in the main concourse. This also had a significant impact on the working conditions of those in the student services office located on the concourse.

However, there was confusion in trying to rectify this in the first few months when settings were being changed centrally on heating, fans and cooling without operators realising someone was on site also trying to sort it out. This led to one system fighting against the other and it took a long time to coordinate.

One regular user of the building commented:

**“There is little regulation and the ambient temperature is often too cold or too warm. There isn’t often a period of comfortable temperature in any of the rooms.”**

## Recommendations

- During the design stage, involve the end users to explore usage and how this impacts on temperature requirements
- Select the appropriate type of heating for each area of a building
- Guard against unheated areas adjacent to heated areas as this can be a false economy

### The air source heat pump (ASHP)

There were a number of issues connected with the ASHP, designed to both heat and cool the building, with much negative feedback from those consulted.

The air-sourced heat should have provided most of the heating and cooling supply for the building, but one respondent explained that the building has spent most of the time running from the Combined Heat and Power (CHP) units from the district power main because the air source heat pumps have not been working correctly.



According to one respondent, problems with the initial design lead to issues with the working of the system and, given the contractor was unfamiliar with this particular system, it took many meetings with experts to work out what the problem was. This has now been done.

At the workshop surprise was expressed that the installation of the ASHP was allowed to progress, given that there was such a lack of confidence in it from early in the project.

## Recommendations

- Review the design and specification of heat pumps for future projects, bearing in mind that heat pumps may not be the only or best option
- Select a supplier with a recommended installer, who also offers good aftercare services
- Take steps to ensure an extended warranty
- Monitor the installation of the ASHP
- Carry out diligent defects inspections

## Commissioning

Commissioning of the M&E elements of the project was extended from two weeks, as originally planned, to four weeks. It was suggested that this was as a result of the M&E consultant being located in London and therefore only being available for short days.

One respondent still felt that the commissioning was rushed and that this had caused the problems with the air source heat pumps. They also explained that some '3 port valves' had been fitted the wrong way around, which was a commissioning error. Another interviewee said that seasonal commissioning and commissioning of M&E was a "drawn out process to say the least" with snagging of aspects of the air source heat pumps still ongoing.

## Recommendations

- Allow a realistic period for commissioning
- Clearly set out a robust, staged commissioning programme i.e. with certain dates for certain floors
- Ensure that commissioning begins at the correct point in the programme

## FEEDBACK RELATING TO QUALITY AND WORKMANSHIP

### Joinery

Many respondents made negative comments about the quality of the joinery work. The doors, the wall panelling, and the stage area were all cited as examples of poor workmanship. It was felt that the timber work could have been a key feature of the building but instead it has let the building down. This issue has taken time to resolve and was ongoing at the time of this evaluation.

There is a great deal of negative feedback relating to doors and the plethora of issues concerning both the quality and design has impacted on satisfaction with the building. Here are the main points of feedback relating to the doors:

- There were gaps beneath and around the top of the fire doors, which would have restricted their ability to contain any fire that may break out in the building.
- The doors in the bar, kitchen and servery area do not work correctly. They are tall, heavy and difficult to operate causing, on occasion, users to trap their fingers

- Some doors are splitting at the top and base-plates are buckling
- Issues were reported with doors coming off their hinges
- The doors mark easily
- The automatic external doors stay open too long, letting in cold air
- One respondent mentioned that some of the door jambs are falling
- The bi-fold doors open the wrong way. There is nothing to help pull the doors together and they cannot be locked
- The doors from the hospitality area are swing doors and that can be hazardous to staff
- The quality of the woodwork in the staging area is considered to be poorly finished and has not proved to be durable

## Recommendations

- Look carefully at whether the mode of installation and chosen materials are suitable, or robust enough, for the intended user group and for intended uses
- If the building is likely to experience particularly heavy or 'unforgiving' usage, ensure that materials are easily replaceable
- Consider how items should be best installed, for instance with doors, ensure the use of correct type of runner
- Make sure the right cleaning regime is in place from the outset

## Flooring

As mentioned above, there was negative feedback relating to the quality of flooring in terms of both finish and durability. Some of the flooring in the servery had to be replaced and this proved to be time consuming and expensive.

There were also frequent mentions throughout this evaluation of the problems with cracking of the concrete floor in the main concourse. While remedial treatment and action has been taken this has never properly been rectified and no real understanding of why it happened has been established.

## FEEDBACK RELATING TO ENGAGEMENT WITH END USERS

A number of end users, including those involved in the ongoing management of the building, reported a lack of engagement, at the outset, to understand their needs. Two respondents said that they did not feel that the University had listened to them.

**Discussions during the workshop revealed that there had, in fact, been good degree of engagement although it is clear that there are now groups of users occupying The Barn, who are using the spaces in ways that differ from the original intention.**

## Being asked at the right time

One respondent explained that it can be difficult to get the right people engaged in a project from the very beginning because at that early stage the building and its operations might not yet be their responsibility and they may be involved in working on other projects. However, this has a knock-on effect later, when those individuals become responsible for the maintenance the building.

## Engagement with the Catering Supplier

Given the complicated nature of the procurement of the kitchen, there were opportunities to plan the works in the kitchen better. Drains were located in the wrong place for the units that were to be installed there, for example. Frustrations were expressed by the catering supplier who, when asked what they would change about the project if they could turn back the clock said that they would like to see the kitchen contractors working closely with the caterers when designing a kitchen.

### Recommendations

- Ensure that all potential end users are invited to contribute during the design process
- Keep end users informed of any changes made during value engineering, which may impact on their expectations
- Set up a user group as early as possible in the process, to facilitate effective communication

## FEEDBACK RELATING TO COMMUNICATION, COLLABORATION AND PROGRAMME MANAGEMENT

There were some good examples of collaborative working and successful consultation with the end user through this project. The successful multi-faith centre, which is now sharing best practice from this building across other University sites is a good example. However, there are many examples of where communication has been lacking, when some stakeholders either did not feel consulted or are engaged at the right time of the project. Examples include:

### Collaborative working and planning

One respondent from the group of contractors consulted felt that the kind of contract in place on this project did not encourage open and collaborative working and it was felt that at times there was a culture of 'you versus them'.

It was also suggested that a more collaborative approach in the design phase could have made a big difference, particularly in relation to the drainage.

### Engaging with students

While members of the student body were consulted in the development phase of the project there is a feeling that those views weren't listened to.

## FEEDBACK RELATING TO HANDOVER

Respondents were largely positive about the handover of the building. It was handed over on time and key personnel from both the University and the contractors were present. Running up to the handover there had been a week-long familiarisation, demonstrating how to use all the M&E installations. End users were shown how to use the building, including the lighting and how to open the windows.

The dissatisfaction that was gleaned from this post-occupation evaluation was about a lack of information regarding kitchen warranties. In addition, the lack of clarity over who had overall charge of the building led to confusion at handover time for some building users. The O&M Manuals were reportedly delivered late.

The architects visited the building some time following handover and highlighted some issues and aspects that had not been delivered in the way they had expected.

## Soft landing

There was no buffer between the project being complete and users moving in to the building which resulted in little time to ensure the heating was running properly.

**“We were only given five days to move everything and there was not as much help as we expected.”**

## Recommendations

- Improve early occupation coordination
- Coordinate all aspects of pre-handover including decantation, IT etc
- Create a readiness plan, so all information is on one plan and all aspects are covered.
- Consider a ‘soft landings’ workshop involving all users, in order to flush out all the issues

## FEEDBACK RELATING TO THE RESOLUTION OF DEFECTS

Overall, most respondents were satisfied with how defects have been handled and that the main contractor was responsive in dealing with defects. However, some key issues, such as problems with drainage smells, have yet to be resolved long term.

**“They have got on with them, it’s just taken a long time to do. I think there’s always been a keenness to get on with it, they’ve just not been able to do it.”**

The Estates Team is now dealing with the M&E issues. One respondent suggested that, an ongoing involvement from the relevant people within the Estates team earlier in the process would have helped mitigate problems. This would have familiarised them with the maintenance information throughout the project, so issues were not raised as defects right at the end of the project.

## FEEDBACK RELATING TO ENERGY

Few people canvased through this evaluation felt able to comment fully on the energy efficiency achieved at The Barn, however environmental performance was rated positively.

Although the air source heat pump is still not working properly, the CHP units are working effectively and are proving to be cheaper to run than the ASHP.

The Barn uses LED lights, which are energy efficient. Lighting is on sensors and the building is generating solar power. The Barn “ticks the boxes on energy usage” according to one respondent and has won the RIBA award for sustainability.

However, a large part of the building is unheated. This would have been a big cost saving during the value engineering exercise, but this comes with significant implications for energy usage.

At the workshop the availability of data on the building’s energy performance was raised. Attendees highlighted that there is a good deal of energy metering, but it is currently difficult to obtain information on The Barn alone, as the data comes as a whole ‘package’ rather than being broken down. Data is not used as well as it could be.

Looking back, the choice of the ASHP was probably not the best decision for this building. On future projects, it is important that all alternatives are considered.

## Recommendations

- Look at how data on energy usage could be made more transparently available, showing how the different energy systems perform

- Review the design and specification of heat pumps for future projects, as heat pumps may not be the only option or the best alternative
- Ensure there is a review of renewables in the early stages of any project
- Carefully consider the energy implications of having adjacent heated and unheated spaces

# POST-OCCUPATION ISSUES

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## FEEDBACK RELATING TO THE FACT THAT THERE IS NO SINGLE USER GROUP WITH OVERALL RESPONSIBILITY FOR THE BUILDING

With no single user group with overall responsibility for the building, feedback from respondents was that there were difficulties around who should take responsibility for 'ownership' of certain elements of the building, such as maintenance of water coolers. In addition, a single point of contact for the building would have aided the consultation process during all phases of the building process.

Feedback from the respondents at the workshop was that the appointment of a building manager for The Barn would be extremely helpful and help mitigate some of the issues that have arisen since The Barn has been in operation.

## FEEDBACK RELATING TO MOVE-IN

The Barn is unusual in that there is no one team or department that takes ultimate ownership of the space and the predominant user is a catering supplier. This has had a knock-on effect on moving people into The Barn.

### Equipment

Owing to the number of different people and areas of the university involved in The Barn, along with the lack of a single lead 'owner' there have been issues with the equipment being provided. One respondent noted how challenging it was to ensure all the IT was enabled prior to people moving in. There were only two photocopiers provided but there were three floors who wanted one, plus there was no 'owner' of the watercoolers around the building.

### Cleaning before occupation

The contractor cleaned The Barn ready for completion however, one respondent referred to issues with the budget resulting in little or no regular cleaning happening in the building running up to the opening event.

### End users

One respondent referred to the difficulties end-users found on moving into a completely different building in comparison to an upgrade of existing facilities. They believed that there was a mismatch in their expectations and the reality of the resulting building.

According to one respondent, the main issues experienced by end users when moving into the building were:

- The building was too cold
- Requests to move furniture from sites designated on the plans agreed prior to completion, along with associated cabling and plug sockets

The respondent questioned whether there had been true involvement of everyone within the building in relation to signing off plans. Given the lack of overall ownership of the building it was difficult to find one point of contact to coordinate this.

### Durability of the materials

Many respondents raised concerns about the durability of materials on the building's interior surfaces.

The Barn's main user group comprises students and with the heavy wear that The Barn is receiving from them, there are concerns that the building is already showing premature signs of wear and tear. The wooden floors have become stained, scratched and dented by stiletto heels and the surface of the flooring has become rough. The doors and the woodwork are also beginning to look 'tired'.

**“As an overall the brick work and the finish of it looked very nice at the start and there are certain parts of it that still look very nice. I am not trying to be negative, but it isn't lasting very well. It is starting to show its cracks and its age already. It was completed in 2014. It is showing its age on woodwork finish, if you look at the panels, it doesn't seem to be standing up very well to students.”**

One respondent raised questions about the choice of exposed brickwork for walls in a food preparation area because the bricks generate dust.

## **FEEDBACK RELATING TO THE DESIGN AND LAYOUT**

The Barn is considered to be a significant improvement on the buildings that it replaced, and it is important to emphasise that the design was the result of a specific brief from the University.

While there was some positive feedback from respondents about the overall look of The Barn, there were many issues raised by building users relating to design and layout. Some respondents feel that the layout and the proportions of the spaces are not ideal for all the intended uses.

### **Location and ambiance of the Bar area**

One of most widespread aspects of user dissatisfaction concerns the configuration of the ground floor bar area. This area is, in fact, a multifunctional space acting as bar, café, night club and events space.

The bar area was described as being like an 'aircraft hangar' or an 'airport lounge'. The ambiance is poor. Students do not find the space cosy or inviting, and the scarcity of furniture does nothing to 'soften' the area. One respondent commented that students tend to compare it to 'Mooch', on the main campus, which feels much more like a pub. Unfortunately, this has resulted in the bar closing three nights a week because of low levels of usage. One respondent reported that students prefer to socialise in their living accommodation, rather than at The Barn, which has a knock-on effect on those living on campus.

**“The bar is very big and open – it is losing its appeal because it's not very inviting, although it is good for functions.”**

**“It is incredibly difficult to bring people into the social spaces because they are uninviting.”**

The workshop discussed ways that the space could be made to feel more intimate, without disrupting heating and cooling systems. The resulting recommendations are listed at the end of this section.

While the ground floor space is more successful for large events the location of the bar itself within the space led to problems. Put simply, the bar is not large enough for the space and its location in the corner next to the dance floor made it 'cramped' during large events. Anyone wanting a drink on an events night has to 'fight their way across the dance floor'. For particularly popular and crowded events it has been necessary to open a second temporary bar at the back of the room to alleviate pressure on the main bar. This temporary bar experiences a number of limitations and managing stock-security can be a challenge.

Other feedback was received about details of the design of the bar and ground floor catering area:

- Plug sockets located underneath the area where drinks are served could be a safety issue
  - There are not enough sockets
  - There are power sockets, for student use, located on the pillars in the bar area
  - Some of the P.A. system is behind the bar, which is in the catering supplier's area, so when the catering supplier is operating, the system cannot be used
- The screens around the bar and the server area make the dining room into an exhibition and performance space. Those were welcomed as an excellent idea but in reality, they are less successful due to their poor quality and usability

## Storage

Storage is an issue for both significant occupiers of The Barn; the catering team and the Student Guild. Issues included:

- Lack of storage when catering for 500 people has led to the use of transport cages.
- Perceived lack of quality with under counter storage in catering area
- Meeting rooms now being used as storage spaces because they are not seen as large enough to be meeting rooms, and there is a perceived lack of space to store equipment for University societies and staff.
- The catering team reported that there was no secure, separate chemical storage available. The university has now provided them with secure lockable cabinets to mitigate this

## Furniture

During the workshop discussion, a comment was made concerning the booths. The booths were intended to create more intimate space, but one consequence of their design is that it is not possible to see that there are people sitting in them. This makes the Bar look emptier and less inviting.

The lighting in the space was described by one workshop attendee as being at 'supermarket level'. There is an opportunity to enhance the ambiance of the space by using the mood lighting, which has already been installed.

## Recommendations

- If the user groups can fund this, consider the possibility of installing 'open-ended' seating booths
- If this can be funded by the users, consider building power points into the booths, to prevent wires trailing to power points on the pillars
- Find out more about the lighting options that are already installed in the bar area and make better use of them
- Look at ways of re-configuring the back-of-house areas to suit how the catering supplier wants to use the space
- In future projects, try to allow for more appropriate levels of storage space
- Look at using the area under the stairs as a storage space
- Consider installing cladding, like that used in the kitchen, to the pot-wash and deli preparation areas.
- Look at the possibility of installing a screen, made of translucent glass, which can be positioned to break up the space without blocking natural light. The screen would have spaces at both ends, in order to meet air circulation requirements and should be 'top-hung' as there is no available 'track' in the floor (subject to user group funding)



## **The concourse**

While felt to be an impressive space, feedback from one respondent was that the space could have been used differently to benefit the student community, maybe by creating a communal area off the main walkway for students to gather in small groups and socialise.

## **The location of the staff room**

Staff from Student Services don't use the staff room located on the top floor because it is located too far away from where they work. Instead they share facilities with the Student Guild.

## **Proximity of the Student Guild to counselling services**

The Student Guild is located next to Counselling Services. There have been issues with noise travelling between the two areas and this has created concerns about confidentiality.

## **Graduate Services Centre**

Overall feedback was that the Graduate Services Centre works well and that the space is flexible and can easily be reconfigured.

The seminar room was originally planned to be adjacent to the Graduate Services Centre, but the staff room was moved there. It was felt that it would have been better if the two were co-located because, for example, when there is a meeting in the seminar room and everyone breaks for coffee they need to go to a different floor to make drinks.

## **Offices**

There was some negative feedback regarding the meeting rooms which are located off what is now the Student Guild area. These rooms do not have any windows so see little use because they are felt to be claustrophobic and can be 'stuffy'. According to one respondent, this has resulted in some of the services, such as counselling, asking for their meetings to be moved to other buildings. However, at the workshop, it was revealed that the rooms were designed without windows for reasons of privacy and that this requirement was raised during engagement with end users during the design phase.

## **The proportions of spaces within The Barn**

While there were positive comments regarding the impressive space in the dining hall, questions were raised as to whether this was the best use of space within the building, given that the dining hall is rarely full. One respondent suggested that it may have been better to have made the dining areas smaller and to instead increase the size of some of the offices.

Changes to the way that the dining room operates in practice have created additional issues. The space was originally designed to be a refectory with large, heavy dining tables. However, the room is now used for different purposes and this creates an issue with the lifting, handling and storage of the tables. While grand in scale, the room lacks sufficient flexibility in practice.

One respondent highlighted in their feedback that they feel that The Barn does not provide a space suitable for 50-100 people. While the large dining room and bar are good sizes for large functions, and the meeting rooms house small groups, medium sized areas are needed to accommodate groups such as the rugby team, the choir or orchestra.

## **Change from a concrete to a steel frame**

The frame of the building was changed from being a reinforced concrete frame to a steel frame. Choosing steel over concrete had some timing advantages and cost savings. This was not part of the value engineering exercise but was part of the main contractor's bid to win the tender.

Ultimately there were some design problems with changing to a steel frame that were not recognised at tender.

## **Deliveries**

One respondent reported that the building has no delivery bay and that this creates difficulties for suppliers delivering goods to The Barn. The route from the delivery area is fraught with difficulties. There is a 'lip' which makes it difficult to manoeuvre the goods cages. The walls are not protected with buffer strips against 'knocks' from the cages and consequently, there has been damage to the plasterboard. Further, there is no way of holding the doors open, making processing deliveries difficult.

## **Recommendations**

- If users can fund this, add buffer strips to the walls in the area where delivery cages are used in order to protect the walls

## **Fire escape routes**

The fire escape route is across the roof through the plant area. It was acknowledged that this arrangement is far from ideal, although the quantitative ratings for the question do not indicate dissatisfaction.

Further, one respondent raised a safety concern that when there is a large number of people attending a ceremony or a function on the first floor, there may not be enough width in the staircase to get them out of the building easily and quickly in the event of a fire. However, it is important to note that all fire safety procedures at The Barn have been approved by the University's Fire Safety Advisor.

Once again, it is important to emphasise the divergence here from the intended usage of The Barn and the way in which it is now being used.

## **Accessibility for disabled users**

Respondents feel that The Barn provides good accessibility with disabled parking spaces nearby, automatic doors, reliable lifts and wide corridors.

## **FEEDBACK RELATING TO THE QUALITY OF THE INTERNAL ENVIRONMENT**

### **Temperature**

As referred to earlier in this report, the temperature of The Barn is one of the most frequently raised issues throughout this evaluation. Issues with the air source heat pump mean that the heating did not work properly in those early months of occupation, unfortunately during winter months, making it a cold place to be. In summer some areas of the building are extremely hot.

One user of the building described the difficulties their team continue to experience with extremes of temperature in the building. The Student Services reception area is located near the main entrance and so the automatic doors open whenever anyone walks past. In winter the influx of air makes the area extremely cold. In the summer, the back office becomes very hot due to the large windows. Taking into account the differing temperature tolerances of individuals in the team, the range of temperatures can go from extremely cold to intolerably hot.

Another user of the building, located in a different area, however, noted that the temperature was usually acceptable due to the design of the overhangs, although they did need to use blinds on particularly sunny days.

## **Recommendations**

- During the design stage, involve the end users to explore usage and how this impacts on temperature requirements
- Take care to select the appropriate type of heating for each particular area of a building
- Guard against unheated areas adjacent to heated areas as this can be a false economy

## Lighting

While lighting was generally considered adequate within The Barn there was some negative feedback relating to:

- Some offices that are without natural light
- A number of respondents mentioned 'harsh' fluorescent lighting in some of the offices which could be inflexible. The graduate centre, where different events take place, could have benefitted from zoned lighting
- One student user explained that the timers, or sensors, that control the lights needed to be extended, especially in rooms where people revise or work late at night
- Bright lighting in the bar area impacts on the ambiance

## Ventilation

The architect's aim was to make The Barn as naturally ventilated as possible. Changes towards the end of the process however, made ventilation more difficult, according to one respondent. One service user explained that in their area of the building there were only two small openable windows and they felt that there is not enough ventilation considering the amount of glazing.

Ventilation is considered to be poor in the first-floor servery area.

## Smells from drains

Ongoing problems with the drains and associated smells in the building were mentioned by almost every respondent to this post occupation evaluation, highlighting what a significant issue this has been for those connected with the building. The Estates team noted that of 146 defects raised for the Barn, 88 were connected to plumbing and the drains. This is an ongoing problem from the building first being occupied in 2014 to this post occupation evaluation taking place in 2017.

Issues with drains were addressed both by the main contractor and the University team. However, these have been hampered by the building being in use and access to the drains being limited owing to internal source stacks having been bricked up and not having correct access to them.

**"... internal soil stacks with no access for rodding. Now we have had to chop out the brick work and expose them. We have found that they are not supported, they are not correctly connected to the drainage so we have had to alter all of that. This is only a few months ago, it has been ongoing that we have had smells in the building and in the end, we got to the point that we had no other choice but to break through brick work."**

A member of the contractor team however did explain that a drainage survey carried out just before contractors started on site did show a lot of problems downstream which "came to fruition".

The impact of the issue of the drains has been felt by many of the building users for the building, and in the case of students has affected the rooms they use because of the unpleasant smells.

## Noise levels

Overall, noise levels within the building were considered to be satisfactory, with two notable exceptions. In the ground floor Student Guild and Student Services areas, the ceilings are high, resulting in an 'echoe-y' space and voices carrying between the Student Guild offices and Student Services area, which respondents feel can be distracting and make telephone conversations difficult.

Interview rooms located off the main Student Guild space are deemed to be unsuccessful even with sound insulation, as they have not provided the required privacy that some of the meetings need, such as counselling sessions. This has resulted in meeting rooms being booked elsewhere on the campus.

The 'noise bleed' was also reported between the Muslim prayer room and the multi-faith prayer room due to the use of a microphone. Additional insulation has not solved the problem.

## **Data connectivity**

There were few issues raised with data connectivity in The Barn. However, two respondents did note problems.

The catering supplier has experienced issues with the router tripping. This is connected to their internal trading systems and without them they cannot use the tills, do wages or send emails. This has been raised as an issue and the University has suggested that the router may have to be moved to the ground floor. Another respondent reported issues with the WIFI dropping in and out along with issues with the signal on some mobile networks, only experienced in The Barn building itself.

## **AV equipment**

Of those who were asked about the AV equipment in The Barn, most respondents were satisfied with it. There was feedback from one respondent however, who explained that the AV equipment in the bar area broke quite quickly. Sound systems are generally adequate as external equipment is often brought in for large events.

## **HEALTH AND SAFETY ISSUES**

There were some comments around health and safety raised by individuals through this evaluation. None was raised by more than one respondent:

- Concerns over capacity of the main staircase in case of emergency evacuation of the dining room
- Fire escape route across the flat roof is not ideal
- Lack of power sockets on the staircases meaning that cleaning staff trail wires, with a risk of tripping
- One respondent felt there was insufficient signage informing what to do in case of fire
- One respondent referred to a University Open Day when an unsupervised child had climbed onto the ledge next to the staircase

## **Recommendations**

- Resurrect 'The Barn Users Group' and use this forum to obtain quick agreement on fire evacuation procedures and to improve engagement and training of all users in the building
- Consider appointing someone able to take responsibility for the key decisions that have to be made for the building. This may mean recruiting a building manager
- Reach quick agreement on the fire procedure and make provision for the engagement and training of all user groups
- Review the cleaning needs for the building in advance, such as the placement of the power sockets on the stairs. These are supposed to be no more than a certain distance apart and they are expensive to retrofit. Getting power to the stairs is not straightforward
- Consider appointing Fire Marshals, in which case the list must be regularly reviewed to ensure that this role is always filled

## **MAINTENANCE**

### **Kitchen equipment**

One respondent referred to problems with catering equipment. The catering supplier was provided with the operating and maintenance manuals and should have been instructed to maintain the warranty needed to carry out certain amounts of servicing work. Unfortunately, this was not made clear at handover. When the kitchen contractor came out to look at faulty equipment they explained about the warranties and that faults were due to not policing the maintenance packages. This left the catering supplier without functioning

equipment and the Estates Team had to resolve the issues. New maintenance packages have now been put in place.

### **Absence of some access panels**

Access panels were missing which were needed to access internal wall pipes. This was a particular issue for the team when trying to establish the source of the drainage smells and there was some speculation as to whether or not these had been included in the original design by the architect and subsequently removed as part of the VE exercise. These access panels are crucial to the ongoing maintenance of the building:

**“Things like access panels just weren’t thought about, which is something I cannot harp on about enough to enable us maintain the building thereafter. It’s about keeping that long-term maintenance at the heart of what you’re doing rather than making it look pretty.”**

### **Control settings**

One issue with getting the temperature of the building right, was that the Estates team was changing settings via the Building Management System (BMS) on heating, fans and cooling, without realising that a technician is on site also trying to sort it, which lead to “one system fighting against the other”. Coordination is now in place to confirm which team is managing what aspect.

## **FEEDBACK RELATING TO OPERATIONAL AND QUALITY ISSUES**

### **The general operation of the building**

Overall, operation and management of the building was largely rated positively by users and other respondents alike. However ongoing issues with heating and drainage smells did spoil users positive impression of the building, as does the lack of clarity as to who is responsible to the building overall.

At the workshop it emerged that the back-of-house areas associated with the bar and social space are not being used as effectively as they may be.

### **Recommendations**

- Re-instate ‘The Barn User Group so that there is a forum to discuss issues affecting all the key users of the building

### **Signage**

There was little feedback pertaining to signage through this study. However, there were comments that there was not enough signage to the dining hall, both inside the building and on the campus and that visitors, particularly at graduation it was felt that more signage to toilets would be welcome.

One respondent feels that there is insufficient emergency fire procedure signage. This was not flagged up as an issue by the fire safety advisor consulted in this evaluation.

### **Bookable rooms**

There was minor concern over some of the rooms which were centrally timetabled or bookable by users outside of the building. This had a particular impact on the Graduate Services team who had originally believed that they would have exclusive use of the seminar room.

### **Toilets in the prayer rooms**

A number of respondents commented on issues with the toilets in the prayer rooms. All mentioned that this is due, at least in part, to the way that they are being used. The toilets constantly need to be tightened up and fittings have been breaking off them.

## **Wear and tear**

A number of comments were received around the lack of perceived robustness of the finish of the building and that some of the paint and finishes would have benefitted from being more hard-wearing in order to cope with the footfall and wear-and-tear associated with a student facility.

**“It was impeccable before the building was occupied but the minute people moved in, it got scuffed very quickly. The painters came back for six or seven days and pretty much re-painted everything at the end of defects. Within a week it looked the same.”**

## **Ongoing maintenance**

One respondent from the Estates Team explained that in comparison to other buildings on the Sutton Bonington Campus, The Barn is “quite maintenance heavy”. They made the comparison here between The Barn and the School of Veterinary Medicine, which has laboratories, teaching, seminar rooms, and it is used constantly. The Barn requires much more maintenance input.

## **Maintaining the cleanliness of the building**

Comments concerning the cleanliness of the building were varied, with most respondents being satisfied overall with the level of cleanliness. The office spaces and the main areas of the building were relatively easy to keep clean. However, comments concerning the ease by which the non-slip floor in the servery area can be cleaned were less positive. The wooden floor looks ‘tired’ and the surface becomes rough through use. There are also carpets in the bar area which are not practical for student parties.

The anti-slip floor in the servery area is ‘grainy’ and difficult to clean. This causes mops to be ‘shredded’.

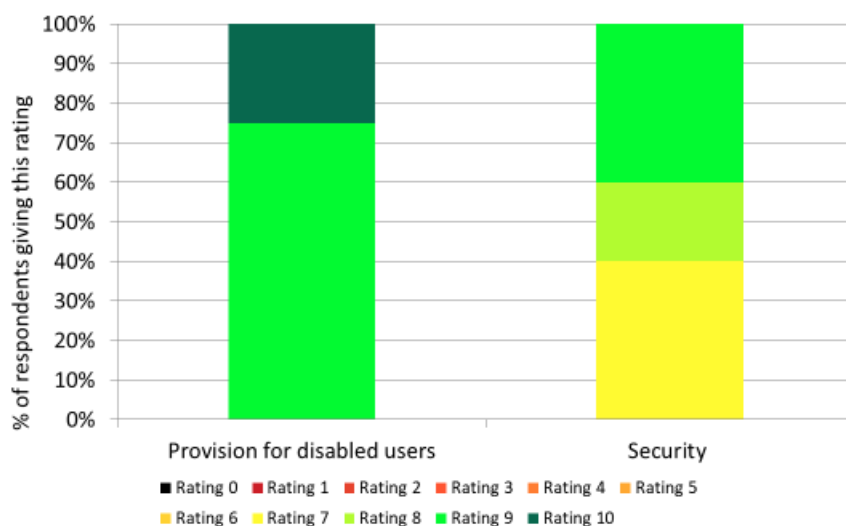
Timing of cleaning was also flagged up as an issue on occasion for the catering team, with cleaning of the bar coinciding with bar or café opening times.

## **Recommendations**

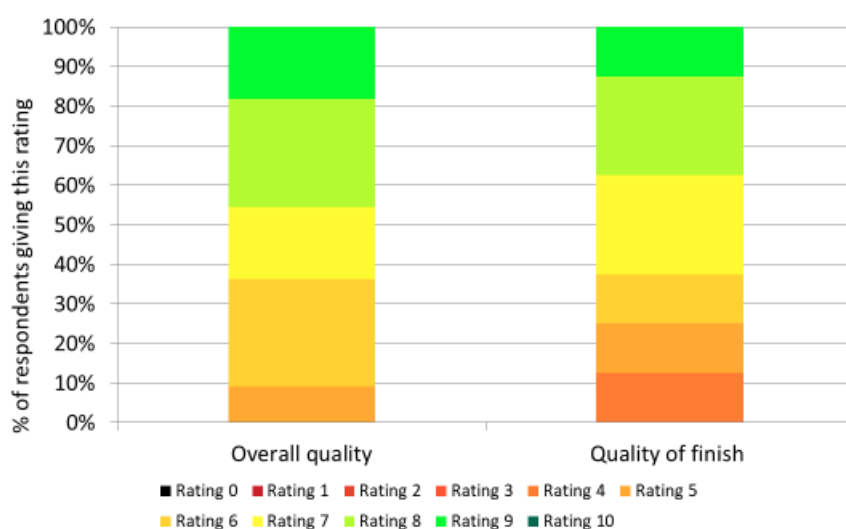
- Reissue the manufacturer’s advice on how to clean the anti-slip floor in the servery area
- Review the cleaning products used by the cleaning team
- The catering supplier to investigate whether their supplier of cleaning products, Diversey, can supply more efficacious products
- Consider whether it is possible to bring contract cleaners in to clean The Barn immediately following an event, before spills have time to dry out

# APPENDIX I: QUANTITATIVE RESULTS

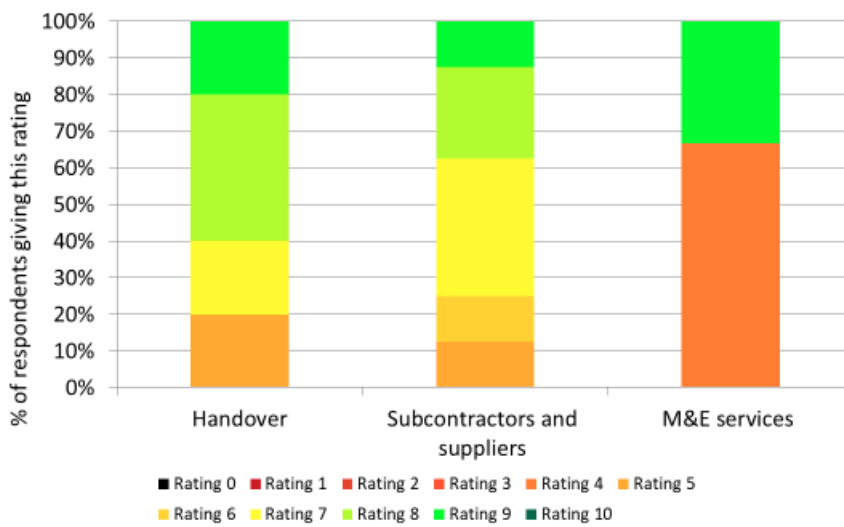
## 1.0 Satisfaction with The Barn's accessibility



## 2.0 Satisfaction with the quality of The Barn



### 3.0 Satisfaction with the handover of The Barn and the team involved in the programme



### 4.0 Satisfaction with the how defects were handled





## 5.0 Satisfaction with the space in The Barn



## 6.0 Satisfaction with the operation and environmental performance of The Barn



## 7.0 Satisfaction with The Barn's internal environment



# APPENDIX II: SUMMARY OF RECOMMENDATIONS

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## RECOMMENDATIONS FOR APPLICATION TO FUTURE PROJECTS

### Value Engineering

- Prioritise the potential areas where cost savings could be made while the project is out to tender, looking at the value and identify any implications of each cost saving. This will help to mitigate delays and quality issues
- Where possible, additional time to carry out VE should be built into the project timeline
- Carefully consider the impact of the decisions before the proposals are passed to the Project Management Group (PMG). Ensure all possible implications are documented. This would provide more time to assess the implications of each decision and would avoid snap decisions being made
- Look at the whole life implications of the cost savings that are proposed
- Identify the easy wins – the areas where savings can be made that will have the fewest implications going forward
- Communicate the process to the end users and stakeholders, with the appropriate amount of detail so that they understand the VE exercise and who has been involved in the consultation. They need to understand what decisions have been made and why.
- Make sure that there is sufficient time to incorporate the changes into the design

### Design and layout issues

In future projects, try to allow for more appropriate levels of storage space

### Coordination of mechanical and engineering

- Ensure an M&E coordinator is appointed at the start of the project as this is a key role
- Encourage better communication with the M&E engineer in the University of Nottingham Estates Team
- Allow some flexibility of the design at the D&B stage based on the performance specification whether this is in terms of performance or required outputs

### Quality and Workmanship

- Look carefully at whether the mode of installation and chosen materials are suitable, or robust enough, for the intended user group and for intended uses
- If the building is likely to experience particularly heavy or 'unforgiving' usage, ensure that materials are easily replaceable
- Consider how items should be best installed, for instance, in the case of doors, ensure the use of the correct type of runner
- Make sure the right cleaning regime is in place from the outset

### Heating and cooling

- During the design stage involve end users to explore usage and how this impacts on temperature requirements
- Take care to select the appropriate type of heating for each particular area of the building
- Guard against unheated areas adjacent to heated areas as this can be a false economy

## Energy

- Look at how data on energy usage could be made more transparently available, showing how different energy systems perform
- Review the design and specification of heat pumps for future projects, as heat pumps may not be the only option or the best alternative
- Ensure there is a review of renewables in the early stages of any project
- Carefully consider the energy implications of having adjacent heated and unheated spaces

## Air Source Heat Pumps

- Review the design and specification of heat pumps for future projects, bearing in mind that heat pumps may not be the only or best option
- Select a supplier with a recommended installer, who also offers good aftercare services
- Take steps to ensure an extended warranty
- Monitor the installation of the ASHP
- Carry out diligent defects inspections

## Handover

- Improve early occupation coordination
- Coordinate all aspects of pre-handover including decantation, IT etc
- Create a readiness plan so that all information is in one plan and all aspects are covered.
- Consider a 'soft landings' workshop involving all users, in order to flush out all the issues

## Commissioning

- Allow a realistic period for commissioning
- Clearly set out a robust, staged commissioning programme i.e. with certain dates for certain floors
- Ensure that commissioning begins at the correct point in the programme

## Engagement with End Users

- Ensure that all potential end users are invited to contribute during the design process
- Keep end users informed of any changes made during value engineering, which may impact on their expectations
- Set up a user group as early as possible in the process, to facilitate effective communication

## RECOMMENDATIONS FOR POST COMPLETION CHANGES, IF THE USER GROUPS ARE ABLE FUND AND ACTION THEM

### Effect of design issues on use of the building

- If the user groups can fund this, consider the possibility of installing 'open-ended' seating booths
- If this can be funded by the users, consider building power points into the booths, to prevent wires trailing to power points on the pillars
- Find out more about the lighting options that are already installed in the bar area, and make better use of them
- Look at ways of re-configuring the back-of-house areas to suit how the catering supplier wants to use the space
- Look at using the area under the stairs as a storage space
- Consider installing cladding, like that used in the kitchen, to the pot-wash and deli preparation areas.

- If the user groups can fund this, look at the possibility of installing a screen, made of translucent glass, which can be positioned to break up the space without blocking natural light. The screen would have spaces at both ends, in order to meet air circulation requirements and should be 'top-hung' as there is no available 'track' in the floor (subject to user group funding)
- If users can fund this, add buffer strips to the walls in the area where delivery cages are used in order to protect the walls

### **Maintaining the cleanliness of the building**

- Obtain the manufacturer's advice on how to clean the anti-slip floor in the server area
- Review the cleaning products used by the cleaning team
- The catering supplier to investigate whether their supplier of cleaning products, Diversey, can supply more efficacious products
- Consider whether it is possible to bring contract cleaners in to clean The Barn immediately following an event, before spills have time to dry out

### **Ownership of the building**

- Re-instate 'The Barn User Group' so that there is a forum to discuss issues affecting all the key users of the building

### **Health and safety issues**

- Resurrect 'The Barn Users Group' and use this forum to obtain quick agreement on fire evacuation procedures and to improve engagement and training of all users in the building.
- Consider appointing someone able to take responsibility for the key decisions that have to be made for the building. This may mean recruiting a building manager
- Reach quick agreement on the fire procedure and make provision for the engagement and training of all user groups
- Review the cleaning needs for the building in advance, such as the placement of power sockets on the stairs. These are supposed to be no more than a certain distance apart and they are expensive to retrofit. Getting power to the stairs is not straightforward
- Consider appointing Fire Marshals, in which case the list must be regularly reviewed to ensure that this role is always filled