
Post Project Review Guidelines

PM&T A001

Version 1.5

2nd August 2018

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	Owner: Mobilisation and Transition Team	Version 1.5
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Department Documentation Standards
Version Control

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Note: it is policy to convert all procedural documentation in PDF format once complete and signed off. This document is to remain Microsoft Office Work format to allow for copying and pasting where required.

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Annexes – Word templates

- Annex A A002 – PIR questionnaire: design/construction team feedback form**
- Annex B A003 – PIR/POE questionnaire: UCL staff feedback form**
- Annex C A004 – PIR workshop agenda**
- Annex D A005 – PIR lessons learnt report template**

Annexes – Additional

- Annex E A006 – PIR workshop slides (PowerPoint format)**
- Annex F A006 – POE utilities data collection spreadsheet (Excel format)**

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1.0 Introduction

UCL is committed to undertaking a **Post Project Review (PPR)** on all registered projects. The aim of the PPR is to ensure that buildings are performing as intended and to ensure that the lessons learnt throughout the project lifecycle are documented so that this learning can be applied to future UCL projects.

The scope of the PPR will vary based on project value, scope, scale and criticality.

For all projects, the PPR will include a **Project Implementation Review (PIR)** to evaluate how effectively the process of conceptualising and delivering the project was carried out. This exercise shall be managed by the University Project Officer (UPO) and will consist of capturing feedback from the design/construction team and relevant UCL staff, as well as undertaking structured lessons learnt workshop(s) when agreed it is important.

For building projects that are large or business critical, the PPR may also subject to a full **Post Occupancy Evaluation (POE)** in addition to the PIR requirements. The POE should be led by an independent POE consultant and will consist of a functional evaluation of the building in the form of user surveys, as well as technical evaluation of the building in-use (e.g. energy performance evaluation, site audits etc).

The table below shows where PIR and POE are typically applicable:

		PPR	
		PIR	POE
Minor Works	Up to £50K (including low risk, low complexity & <25 construction days)	✓	-
Small Project	£50K - £250K	✓	-
Medium Project	£250K to £2m	✓	-
Large Project	>£2m	✓	✓
BREEAM Project		✓	✓

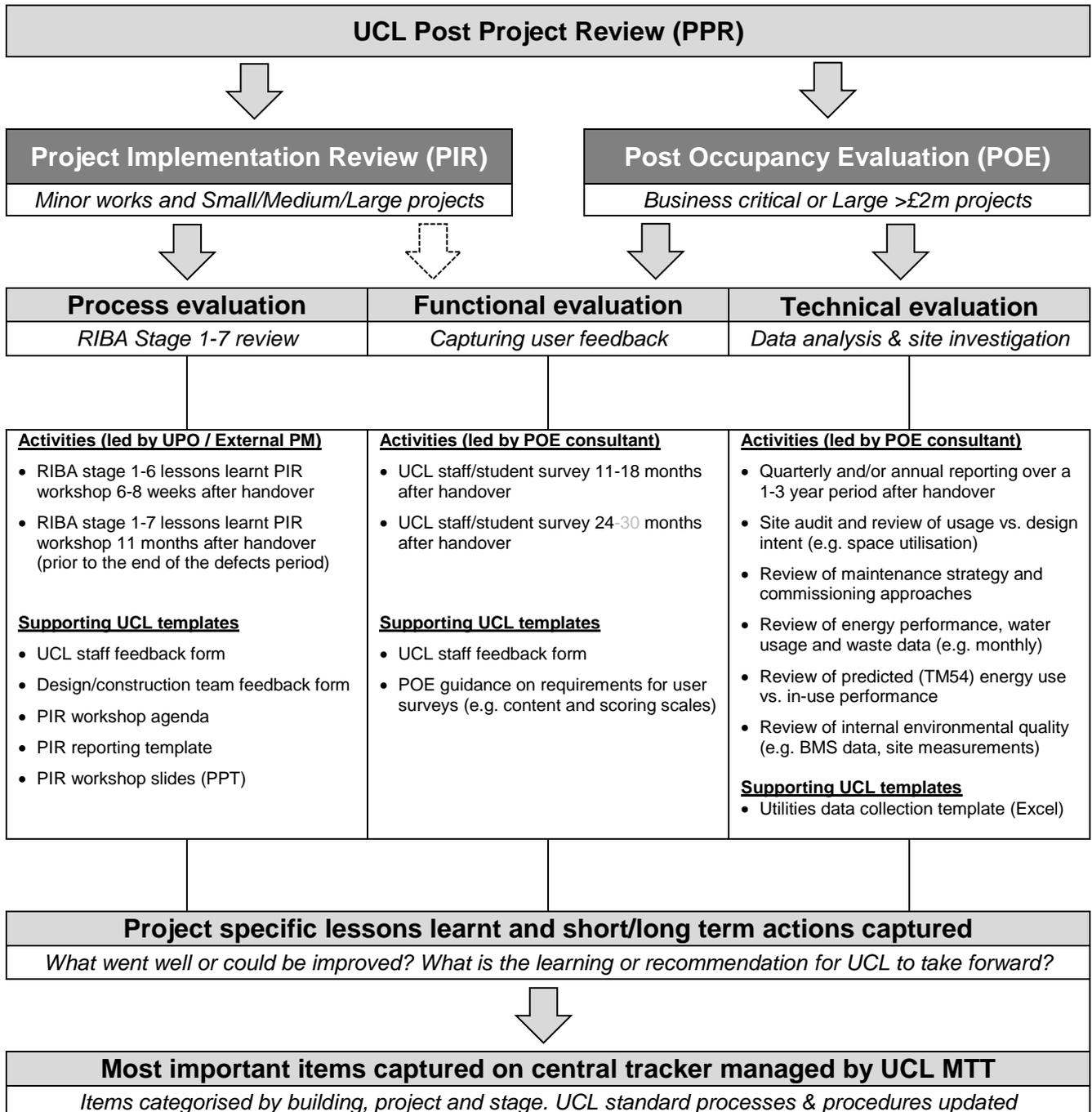
Overseeing PIR and POE studies shall be the remit of the UCL Mobilisation and Transition Team (MTT). The Mobilisation and Transition team will be the custodians of the completed PIR and POE reports and lessons learned. They will ensure that recommendations are cycled into future projects and a culture of continuous improvement ensues.

The Mobilisation and Transition Team will maintain a tracker of all projects and PPR status. Lessons learned will be collated by building, project and RIBA stage. Quarterly reviews of the Lessons Learned and Recommendations will be carried out by Estates Development and Major Projects senior leaders.

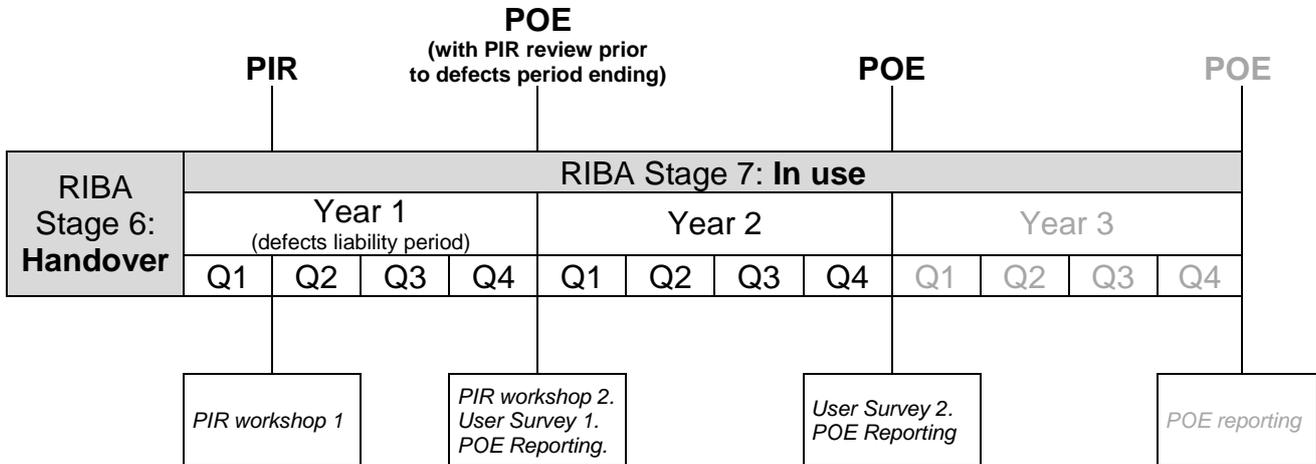
The process for PIRs and POEs will be initiated and project managed by the relevant UCL Estates UPO, but the templates and guidance for both kinds of study will be owned by the Mobilisation and Transition Team. The UPO shall ensure that any identified defects / incomplete works shall be added to relevant defects / latent defects lists / trackers. Overall lessons learnt and critical action points for future UCL projects shall be fed forward onto a central tracker managed by MTT.

The diagram below provides a summary of the key components of the PPR, PIR and POE, together with a summary of activities and supporting templates.

For each activity guidance has been set out in this report. All supporting Word templates have been appended and are also available as separate documents.



The diagram below gives a high level summary of when key activities in the PIR and POE should be carried out.



The PIR should take place within the first year after handover.

The first PIR workshop should take place 1-3 months after handover to capture immediate feedback from the design/construction team and relevant UCL staff involved in the project across RIBA Stages 1-6.

The second PIR workshop should take place within 11 months of occupation and prior to the issue of 'Certificate of Making Good'. This session shall cover RIBA Stages 1-7. The rationale for having the second workshop is that it allows a natural shift in emphasis towards 'in-use' feedback, as well as greater reflection on the initial brief and budget. The timing also enables any outstanding snags and defects to be identified and escalated.

The POE activities will be structured over a 1-2 / 3 year period following handover. As part of this exercise, user surveys should take place 12-18 months and 24-30 months after handover to capture feedback about the building in use. Annual reporting on technical items (e.g. energy use) should take place together with reporting on lessons learnt.

The POE shall be carried out by an external individual(s)/organisation(s) able to demonstrate independence from the design process. Overall responsibility for POE lies with the UPO, with oversight by estates Mobilisation & Transition team. Note that BREEAM projects are likely to require reporting at a more granular level and the specific requirements of the relevant version of BREEAM must be followed.

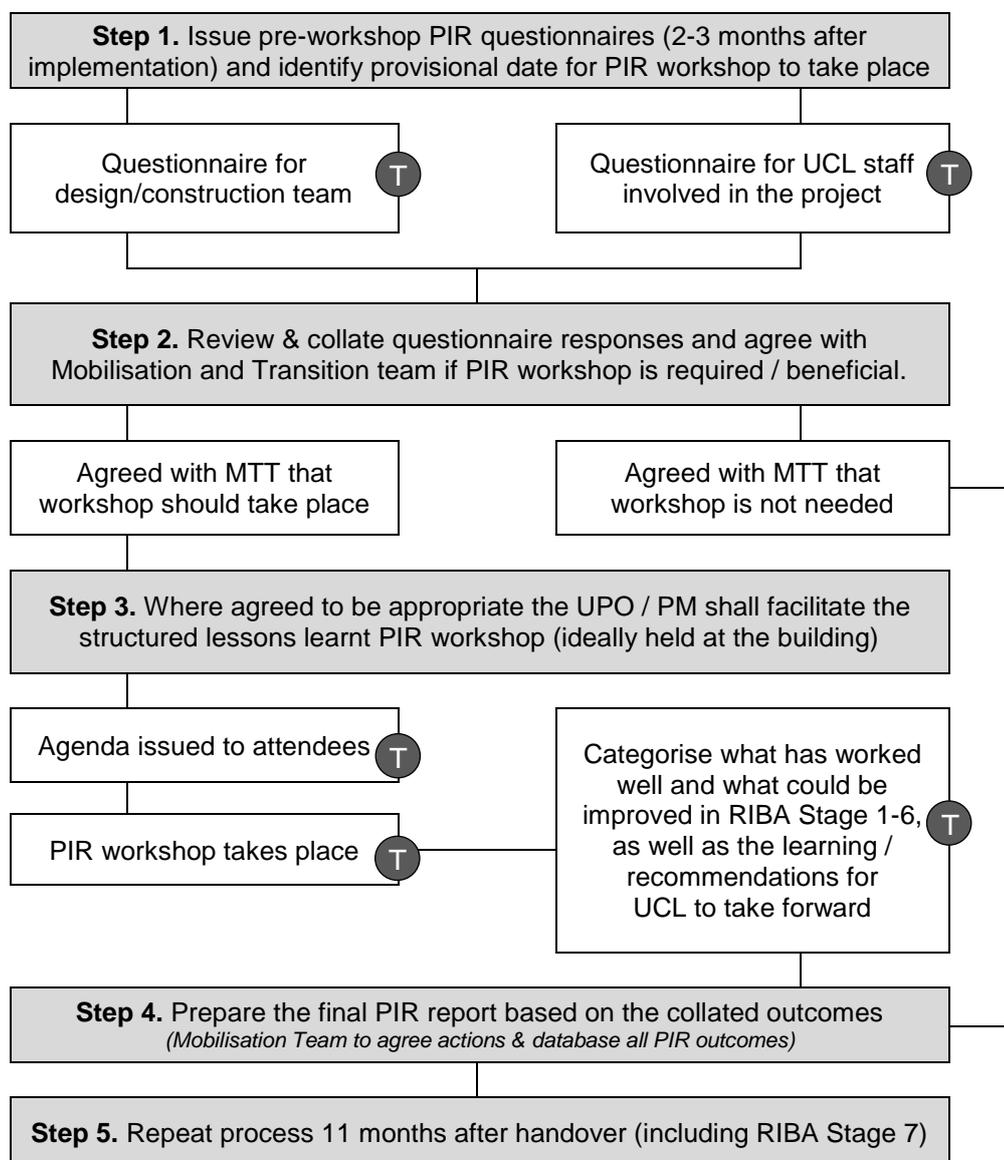
Note, it is UCL's preference that the POE should be completed over 2 years, however this may be extended to 3 years upon agreement.

2.0 Project Implementation Review (PIR) guidance

This section provides guidance for the PIR reporting process in the form of “what to do”, “when to do it”, “who to involve” and “how to implement and report”.

2.1 What to do

The key steps for undertaking a PIR are illustrated in the diagram below. As shown, there are 5 steps revolving around capturing feedback and documenting outcomes with a number of templates to support the process. It is intended that the PIR will be organised and managed by the UPO, or an external project manager on their behalf who has a credible level of independence.



T = Template available

2.2 When to do it

The typical timescales for undertaking the initial PIR are as follows:

Week 0	Week 8	Week 9	Week 10	Week 12
Occupation of building by end user	Questionnaire issued (with placeholder workshop invite)	Questionnaire responses received back and reviewed	Lessons learnt PIR workshop takes place (if required)	UPO completes the final PIR report

As shown, PIR questionnaires should be issued 1-2 months after handover, with the workshop scheduled to take place 2-3 months after handover. This is to capture immediate feedback from the design/construction team and relevant UCL staff involved in the project. A second PIR workshop should be planned to take place 11 months after handover, with similar pre-planning allowances as above.

2.3 Who to involve

The participants in the PIR process will vary depending on the scope and scale of the project. As a minimum requirement, the collective group must be able to provide feedback across the lifecycle of a project from its initial inception to handover.

For a typical project the attendees may include:

- A scribe to support the UPO
- UCL Project Board Members
- Project Manager
- Project Architect
- Cost Consultant
- Principal Contractor
- Contractor Design Team
- Building Services Engineer
- Sustainability Consultant
- Structural Engineer
- Civil Engineer
- BIM Leader
- UCL Estates consultees (e.g. Mobilisation, Maintenance Management, Maintenance Operations, Fabric Management, Security, Fire, Safety Services, Soft Services, Logistics, Sustainability, Area Facilities Manager, PSO)
- UCL Building Users (including student representatives)
- ISD Project Manager
- Specialist consultants (e.g. Acoustics, Fire, AV, Security, Access, etc)
- Specialist sub-contractors (e.g. BMS, Commissioning advisor, Laboratory designer, Workshop specialist etc).

2.4 How to implement and report

To support the PIR, a number of appendices have been prepared, including:

- PIR questionnaire for design/construction team
- PIR questionnaire for UCL staff
- PIR workshop agenda
- PIR workshop slides (in PowerPoint)
- PIR reporting template

Two PIR questionnaires have been developed. One is for the external design/construction team. The other is for UCL staff. The questionnaire for the design/construction team asks for feedback across the RIBA 2013 Plan of Work (which coordinates with UCL Stage Gates). Prompting questions are included and respondents are asked to comment on the main things that went well, as well as the main things that could have been done better.

The UCL staff questionnaire is structured in a different way and asks:

- Were you involved in the project? If yes, what was your role?
- Were you able to make any suggestions during the consultation stages and were they used? If not involved, what would you have suggested?
- What is best about the building? (and why)
- What is worst about the building? (and why)
- How can the current operations of the building be improved?

On both questionnaires at the end of the form respondents are asked if they would like to discuss any items further. If required by sponsors or senior stakeholders, additional questions may be added, however please note that excessive questions may distract from the questionnaires being completed. SurveyMonkey (or similar) maybe used as an alternative, however not all building users such as cleaners or external contractors may have ready access to UCL Wi-Fi or internet devices.

Where it is agreed between the UPO and Mobilisation Team that the PIR workshop is required or beneficial, the PIR workshop agenda sets out the overall structure for the session with timescales included. The workshop expected to last between 2 to 4 hours depending on project complexity, so a half day should be allowed for.

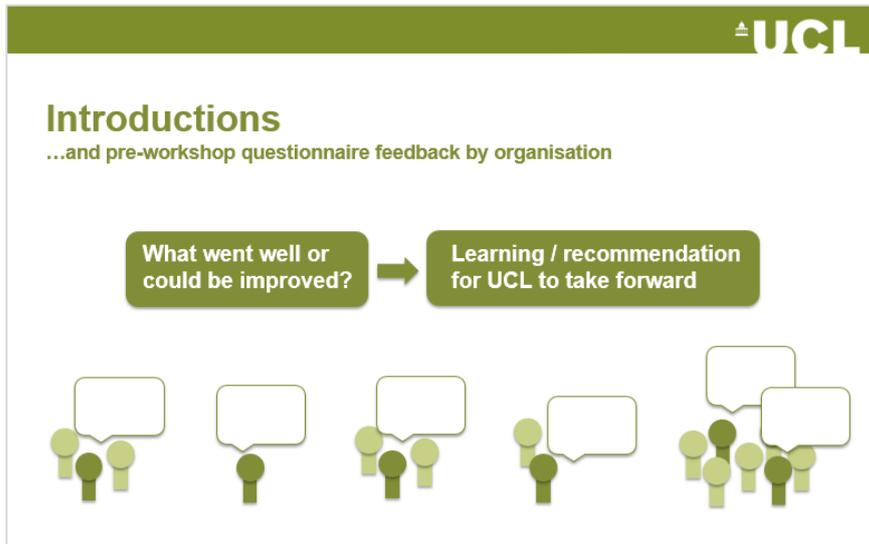
For the PIR workshop, a set of PIR workshop slides in PowerPoint are available together with the PIR reporting template in Word. The UPO may use (and adapt) the slides to facilitate the workshop session, whilst using the PIR report template to take notes on the day, which can be written up fully once the session is complete.

The slides and report contain prompting questions across all RIBA Stages. Note RIBA stages 2-4 have been grouped for ease in the workshop. However, these can be reviewed individually if more detail is required. The report should be written by individual stage.

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The structure of the workshop shall be as follows:

1. The workshop should begin with the lead party from each organisation giving a brief introduction to their team, plus a summary of their collective thoughts on “what went well?” and “what could have been done better?”. The UPO shall aim to ensure this exercise takes no more than 15-30 minutes.



This initial feedback shall be summarised in Section 4.0 of the PIR Template Report, as per the table below.

Organisation	Primary responses for “what went well”	Primary responses for “what could have been done better”

2. Following this session the UPO shall facilitate the main workshop activity. The slides include prompting questions besides each RIBA Stage for guidance (whereby RIBA stages can be grouped together if deemed appropriate). For each item the group should also consider what the learning/recommendation UCL should take forward is so this can be documented by the UPO.

UCL

RIBA Stage 0 – Strategic Definition

What went well or could be improved?

→

Learning / recommendation for UCL to take forward

1. What is your understanding of why was this project carried out? Was it the right strategy for UCL?
2. What is your understanding of how the project fits into the overall UCL estate strategy?
3. What is your understanding of the initial budget for the project?
4. Were the main user groups that would be impacted by the scheme identified from the outset?
5. What were the main aspirations or KPIs for the project?
6. What sustainability targets were required? Were they ambitious enough?
7. What degree of flexibility and adaptability was required?
8. Was the strategic brief well considered in relation to wider impacts on University operations?

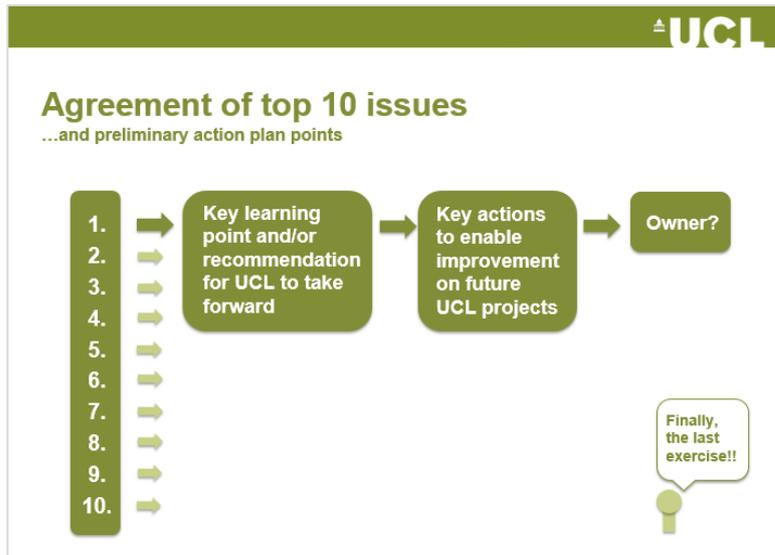
In terms of facilitation, the UPO shall ensure that all *relevant* questions are covered and adequately documented. The questions act as a guide only and the UPO shall ensure that any pertinent issues not included in the templates are covered.

It should be noted that the discussion points may be the same as those issued in pre-workshop questionnaires, so it may not be necessary to spend as much time explaining certain (non-critical) issues again in the workshop. It is also recommended that the UPO re-issues the PIR questionnaires at the end of the workshop to capture any additional feedback.

The feedback gathered throughout the process shall be summarised in the Section 5.0 of the PIR Template Report, as per the table below. Any pressing issues captured that were not specifically listed in the PIR Template shall be included at the end of each RIBA Stage section. The comments should be developed and written up fully by the UPO after the workshop.

No.	Item	What went well or could be improved upon	Learning / recommendation for UCL to take forward
RIBA STAGE 0 – STRATEGIC DEFINITION			
3.1	Project inception		

3. In the closing session the group shall reflect upon the key talking points from the workshop and collectively agree on the key issues they feel most strongly about.



Initial findings can be scribed in Section 5.0 of the PIR Template Report, as per the table on the next page. These should be developed and written up fully by the UPO after the workshop.

	Key learning and/or recommendations for UCL to take forward	Key actions to enable improvement on future UCL projects	Owner
1			
2			

Once the PIR report has been drafted, a handover meeting shall then be arranged between the UPO and Mobilisation and Transition team to discuss and agree critical outcomes, next steps and ownership of actions.

3.0 Post Occupancy Evaluation (POE) guidance

This next section provides guidance for the POE reporting process applicable to Large (generally >£2m) and business critical projects, plus those targeting BREEAM certification. Guidance covers roles and responsibilities, timescales, learning objectives, structure, a checklist of activities and additional guidance including energy reporting and user surveys.

3.1 Roles and responsibilities

At the appropriate time, the UPO shall be responsible for identifying the requirement for POE and for making arrangements to appoint an external POE consultant.

The individual(s)/organisation(s) carrying out the POE must be able to demonstrate independence from the design process. Where the independent party's organisation

was involved with the design of the building, then the consultant must robustly demonstrate objectiveness and no conflicts of interest.

Overall responsibility for the completing the POE lies with the UPO, however governance lies with the Estates Mobilisation & Transition Team.

3.2 Timescales

For the POE the timing shall take place after the building is substantially occupied, e.g. when approximately 80% of each building function area is occupied.

As a minimum requirement, the POE appointment shall begin within 11 months of occupation and prior to the issue of 'Certificate of Making Good'. This is to ensure that any early issues identified that may hinder the POE (e.g. access to metering data) can be raised to the relevant party during the defects period.

The length of the POE appointment should be for at least one year to allow the building usage across all seasons and a full annual cycle of activities to be assessed.

Where agreed beneficial (and/or required for BREEAM¹ or other compliance purposes), the POE shall extend to 2 or 3 year as required.

Where applicable (e.g. refurbishment projects), a "pre" occupancy evaluation shall also be carried out to gather user feedback and benchmark data for comparison in the "post" occupancy evaluation. This exercise would be programmed in as appropriate for the project (e.g. RIBA Stages 1-2).

3.3 Learning objectives

The POE shall be guided by the following overarching questions:

- What did the client and building users want?
- How did this project fit into the overall estate strategy?
- How well did the design team translate these aspirations?
- Does the constructed building meet these aspirations? Is it fit for purpose?
- On reflection, has the completed project met UCL's strategic objectives?
- Does the building provide the optimal environment for users and activities?
- Have the in-use sustainability targets been achieved?
- Is any additional or remedial work required?

Key outcomes that must be achieved are an understanding of:

- What to do better next time

¹ In addition to the specific BREEAM credit for POE, the process should also be planned to support and/ or link with separate credits for aftercare support and seasonal commissioning. These three separate credits fall under 'Man 05 – Aftercare' in the BREEAM 2014 schemes.

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- How to improve the current building and project delivery processes
- Specific lessons or opportunities directly applicable to similar UCL buildings
- Measures that maintain or improve end users' comfort and productivity
- Re-commissioning activities, health and safety issues, etc.

3.4 Structure of the POE

The overall structure of the POE should include the following:

- Review of design intent, design strategy, procurement, construction and handover processes. This should be partially informed by a review of outcomes from the PIR workshop(s).
- Gathering in-use feedback from building users, including facilities staff. This should account for technical operation and maintenance issues, as well as health and wellbeing factors.
- Measurement, profiling and benchmarking of in-use performance data, including comparison against design models/predictions and similar UCL buildings.
- Review of the maintainability of systems and recommendations for re-commissioning.
- Documented lessons learnt and transferable knowledge gathered over the entire POE process referring to the learning objectives above.

3.5 Dissemination of information

UCL Estates commits to carrying out appropriate dissemination of information on the building's post occupancy performance. This will be done to share good practice and lessons learned and inform changes in user behaviour, building operational processes and procedures, and system controls.

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3.6 Checklist of POE activities

Activity	Approach	Supporting material	Year		
			1	2	3
Review of design intent	<p>Document the following:</p> <ul style="list-style-type: none"> Why was this project carried out? What was the initial budget for the project? Who were the main user groups that would use the building? What were the main aspirations or KPIs for the project? What sustainability targets were required? What degree of flexibility and adaptability was required? 	<ul style="list-style-type: none"> PIR workshop outcomes RIBA Stage 0-1 reports Briefing documents Business plan Interviews with UCL project board members 	✓	-	-
Review of design strategy	<p>Determine if the initial design intent has been met, as well as the requirements in relation to:</p> <ul style="list-style-type: none"> Internal conditions (temperature, light, noise, ventilation) Controls, operation and maintenance Facilities and amenities Access and layout Energy and carbon performance Other sustainability features (e.g. water, waste, materials) Specialist facilities/ uses <p>Where possible, identify reasons for any departure from the original design intent (e.g. technical, financial, changing stakeholder requirements).</p>	<ul style="list-style-type: none"> PIR workshop outcomes RIBA Stage 2-4 reports BREEAM / SKA tracker Design stage modelling results (e.g. Part L / BRUKL, TM54, comfort, daylight). UCL design standards Interviews with design team members 	✓	-	-
Review of procurement & construction	<p>Provide a summary construction information to determine:</p> <ul style="list-style-type: none"> The as-constructed cost for the project, identifying any significant discrepancies from the initial budget The extent of any value engineering impacting on building performance, operation and/or function The quality of construction detailing (e.g. through thermal imaging and/or air tightness inspection reports, or similar) The extent of the quality review process to check the procurement process meets design intent Any ambiguity or lack of clarity relating to building performance 	<ul style="list-style-type: none"> PIR workshop outcomes Tender proposals Construction information Cost plan and VE schedule Site inspection records Thermal imaging reports Air tightness reports Acoustic testing reports VOC testing reports 	✓	-	-

Activity	Approach	Supporting material	Year		
			1	2	3
	<ul style="list-style-type: none"> Departures from UCL standards and procedures 	- Interviews with construction team members			
Review of handover processes	Review the project handover processes, to determine: <ul style="list-style-type: none"> Has the Soft Landings process been adequate through the life of the project and upon handover? Have all relevant facilities staff been adequately trained on all systems including the BMS? Have all building services systems, including the metering and BMS, been adequately commissioned? Have fully operational connections to UCL Estates monitoring systems (e.g. EMON) been established? Is the building user guide 'jargon' free and 'user friendly' and does it adequately describe how to operate the building? (NB – UCL standard template available.) Was there an appropriate training and communication strategy for non-technical users to ensure familiarity with new systems/procedures? 	- PIR workshop outcomes - Soft Landings (or similar) meeting minutes / tracker - Training records - Building user guide - Commissioning pack - Seasonal commissioning plan and records - Interviews with facilities staff and UCL staff in the building	✓	-	-
In-use evaluation of the building	Complete a walk-through audit of the building with the UPO, FM, design team member and/or EM&I representative to determine: <ul style="list-style-type: none"> If spaces are being used as intended (e.g. utilisation, function) The quality of the works and internal finishes The set-points of controls and their usability The building fabric wear and tear The overall cleanliness and safety within the building 	- Site audit - Utilisation studies - Set-point schedules - Interviews with facilities staff and UCL staff in the building	✓	✓	✓
Analysis of energy, water and waste data	Complete an analysis of utility data (available from the UCL Energy Manager), to determine: <ul style="list-style-type: none"> How the building is performing in terms of energy, carbon, water, waste and running costs? Is the building achieving its sustainability targets, e.g. minimum requirements set out in the UCL Sustainable Building Standard? 	- Utility bills - Sub-metering data - UCL POE template for energy, water and waste data recording	✓	✓	✓

Activity	Approach	Supporting material	Year		
			1	2	3
	<ul style="list-style-type: none"> What is the predicted (TM54) vs. in-use energy performance? What are the contributing factors to any energy performance gaps? How can the current performance be improved? 	<ul style="list-style-type: none"> Operational energy and water calculations Waste sizing figures DEC certificate 			
Internal environmental monitoring	<p>Where deemed useful to the project, review BMS data, install monitoring equipment and/or engage with academics, or similar, to determine:</p> <ul style="list-style-type: none"> Is the internal temperature, daylighting, relative humidity, air quality (CO₂), noise, within acceptable limits all year round? What are the contributing factors and potential consequences associated with any deviations in performance? 	<ul style="list-style-type: none"> BMS data Engagement with UCL researchers Interviews with facilities staff and building users 	✓	✓	✓
In-use feedback from building users	<p>Undertake a building user survey to capture holistic feedback across a range of issues (e.g. thermal comfort, light, noise, air quality, controls, space, needs, design, lighting, health, productivity, safety, maintenance etc). For expert uses (e.g. facilities staff & academics) the PIR staff feedback form can also be used to capture additional feedback on:</p> <ul style="list-style-type: none"> Were you involved in the project? If yes, what was your role? Were you able to make any suggestions during the consultation stages and were they used? If not involved, what would you have suggested? What is best about the building? (and why) What is worst about the building? (and why) How can the current operations of the building be improved? 	<ul style="list-style-type: none"> User survey templates (pre-agreed with UCL MTT) PIR staff survey template Interviews / focus groups with building users 	✓	✓ (Second user survey 24-30 months after occupation)	
Maintenance & ongoing commissioning	<p>Review the maintainability and commissioning approaches to determine:</p> <ul style="list-style-type: none"> What are the most frequent maintenance issues and complaints? Is the building easy to maintain? Could any spatial restrictions have been avoided? Is there a preventative maintenance strategy in place? What re-commissioning activities should take place? Identify any business critical maintenance or replacement requirements 	<ul style="list-style-type: none"> PIR outcomes Site audit Asset register Maintenance logs Seasonal commissioning reports and actions Interviews with FM staff 	✓	✓	✓

Activity	Approach	Supporting material	Year		
			1	2	3
Lessons learnt & transferrable knowledge	Provide a lessons learnt report in relation to the stages above. Feed forward critical learning and/or recommendations for UCL to take forward into the UCL MTT central tracker for capturing lessons learnt. Refer back to the overall POE learning objectives from Section 3.3.	- UCL MTT central tracker	✓	✓	✓

3.7 Additional guidance

POE techniques

Recognised POE techniques to support the aforementioned processes include (but are not limited to) undertaking Higher Education Design Quality Framework (HEDQF) workshops, undertaking user surveys via the [Building Use Studies](#) (BUS) methodology and undertaking energy auditing activities (e.g. following guidance in CIBSE TM22, CIBSE Guide F).

Further guidance on post occupancy evaluation techniques is available from the following sources:

- The BCO guide to Post Occupancy Evaluation, British Council for Offices, 2007
- BRE Digest 478, Building performance feedback: getting started, BRE, 2003
- BSRIA Building Performance Evaluation in Non-Domestic Buildings (BG63/2015)
- Guide to Post Occupancy Evaluation Report and Toolkit, HEFCE, AUDE & University of Westminster, 2006

BREEAM and SKA

Where applicable, the POE processes should support compliance towards BREEAM credit (Man 05 in the 2014 version) and SKA HE (D71), or equivalent. Where BREEAM requires reporting to the BRE as part of ongoing monitoring over a 2/3 year period, all externally issued information should be approved by UCL MTT prior to release.

Energy reporting

The consultant shall make a clear distinction between ‘compliance’ models and ‘operational prediction’ models when comparing to actual performance in-use. Whole building energy modelling compliant with CIBSE TM54, or equivalent, is a requirement of the UCL Sustainable Building Standard. Comparing TM54 predictions vs. actual performance is the preferred approach.

The collection and monitoring of energy, water and waste consumption data may be coordinated or carried out by the UCL Engineering, Maintenance & Infrastructure; sustainability or area facilities management team – if requested sufficiently far enough in advance and sufficient resource is available, or preferably, by a dedicated aftercare team.

Where building does not have a valid Display Energy Certificate (DEC), this should be raised to the UCL Energy Team for corrective action.

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A UCL POE template for collecting energy performance data has been created and is available from UCL MTT. The spreadsheet allows monthly energy use by fuel type and end-use to be entered. Annual figures can also be entered where monthly data is not available.

The interface of the POE data collection tool is shown below. In addition to collecting energy data, the tool also includes data entry fields for water and waste. It also includes a series of tick-boxes to provide an indication of data accuracy and highlight the wider POE studies that have been conducted.

Building:
123 example building

- POE - Year 1
- POE - Year 2
- POE - Year 3
- Compare

Year 1: post occupancy evaluation

This spreadsheet has been created to capture post occupancy evaluation data on projects. Enter in the utility data for the first year of operation, ensuring that all sources of energy use are captured. Provide energy data by end use, as well as water and waste data where available. Indicate what wider POE studies such as Internal Environmental Quality (IEQ) analysis have also been completed.

DATA SUMMARY

Floor area (NA) m²: 500
 Reporting year (e.g. 2018): 2017
 Utility data available?
 Is utility data within 95% accuracy?
 Sub-metering data available?
 Is metered data within 95% accuracy?

IEQ STUDIES

Temperature analysis:
 Humidity analysis:
 Light level analysis:
 Noise level analysis:
 Air quality (CO2) analysis:
 Air quality (Other) analysis:

OTHER STUDIES

User satisfaction survey:
 Staff short survey:
 Air tightness (e.g. Fan-G 50Pa): 16.8
 Thermal imaging study:
 Other research:

BETA

Next

GRAPH OF ENERGY USE

MONTHLY ENERGY CONSUMPTION - kWh

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Electricity	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	54,000
Natural gas	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	37,800
District heating	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	7,650	91,800											

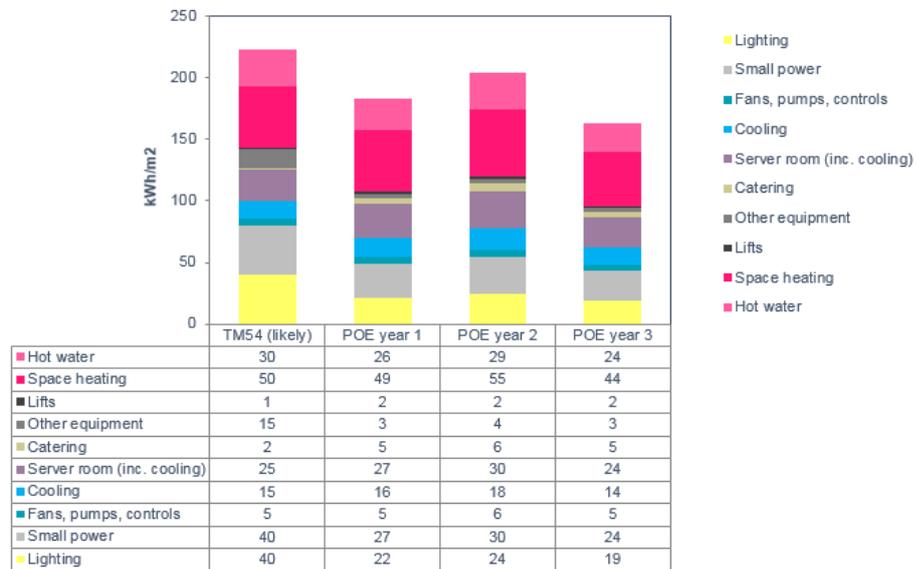
MONTHLY ENERGY CONSUMPTION BY END USE - kWh

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Lighting	900	900	900	900	900	900	900	900	900	900	900	900	10,800
Small power	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	13,500
Fans, pumps, controls	225	225	225	225	225	225	225	225	225	225	225	225	2,700
Cooling	675	675	675	675	675	675	675	675	675	675	675	675	8,100
Server room (inc. cool)	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	13,500
Catering	225	225	225	225	225	225	225	225	225	225	225	225	2,700
Other equipment	105	105	105	105	105	105	105	105	105	105	105	105	1,260
Lifts	90	90	90	90	90	90	90	90	90	90	90	90	1,080
Heating (gas)	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	24,576
Hot water (gas)	1,103	1,103	1,103	1,103	1,103	1,103	1,103	1,103	1,103	1,103	1,103	1,103	13,236
Heating (DH)	0	0	0	0	0	0	0	0	0	0	0	0	0
Hot water (DH)	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating (electricity)	0	0	0	0	0	0	0	0	0	0	0	0	0
Hot water (electricity)	0	0	0	0	0	0	0	0	0	0	0	0	0
Renewable (thermal)	0	0	0	0	0	0	0	0	0	0	0	0	0
Renewable (elec)	0	0	0	0	0	0	0	0	0	0	0	0	0
Total (thermal)	3,150	37,800											
Total (electricity)	4,500	54,000											

GRAPH OF ENERGY BY END USE

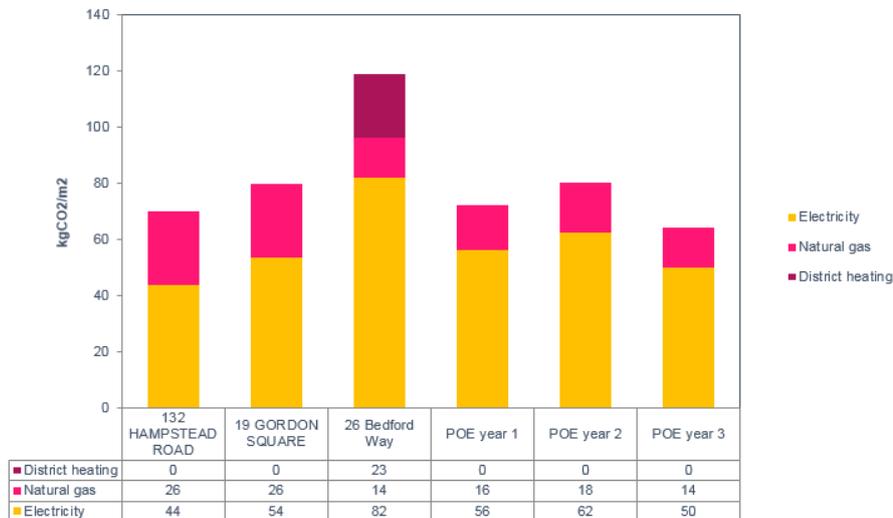
The spreadsheet includes functionality to compare the POE energy data to design stage TM54 predictions, as illustrated below.

TM54 PREDICTION VS. POE RESULTS



The spreadsheet also includes functionality to compare CO₂ emissions arising from the POE energy data to that of three (user selected) similar UCL buildings.

CARBON EMISSIONS VS. SIMILAR UCL BUILDINGS



User surveys

In relation to gathering user feedback, the consultant shall capture feedback at an appropriate level of detail in an anonymous and 'no blame' manner. The approach should aim to allow identification of specific problem areas (e.g. areas of thermal discomfort) and result in actionable insights.

When undertaking the holistic building user survey, a 7-point scale is preferred to allow UCL to have a consistent approach to comparing survey results. The survey should use non-emotive language (e.g. phrases such as ‘satisfied / dissatisfied’, rather than ‘happy / unhappy’).

As a minimum, the following elements must be included in the user survey:

- Thermal comfort (summer and winter)
- Lighting (daylighting and electric lighting)
- Air quality
- Acoustics
- Space
- Needs
- Productivity
- Health
- Safety
- Overall design & image
- Operation & maintenance

Additional information that is beneficial to capture includes (but is not limited to):

- Space utilisation
- Flexibility and adaptability
- Collaboration
- Social value
- Public realm
- Transport
- Waste management

The survey should include entry questions such as ‘what floor are you typically based on?’ and ‘what department are you in?’, in order to allow survey results to be diagnosed at a greater level of detail if required.

In addition to presenting the quantitative survey data, written comments should also be captured as part of the building user survey. The comments should be reviewed by the POE consultant and presented by theme in terms of what works well and what could be improved, as per the table below:

Air quality comments

+	<ul style="list-style-type: none"> • <i>I like that I can open the windows</i> • <i>The ventilation in the basement is surprisingly good</i>
-	<ul style="list-style-type: none"> • <i>It's too stuffy in the summertime!</i> • <i>The ventilation system in my office is broken</i>

The POE consultant shall aim to achieve a statistically valid sample size, e.g. achieving a 90% or 95% confidence level following Yamane’s formula, or similar:

Yamane's formula

$$(n = N / (1 + Ne^2))$$

Where:

n = sample size

N = population size

e = margin of error (0.1 for 90% confidence interval,
0.05 for 95% confidence interval)

The POE consultant shall comply with all data protection regulations and not capture or disclose any personal data without written consent.

Any health & safety issues and/or snagging items identified through the user survey shall be raised immediately to UCL MTT.

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Appendices

Space for any additional comments on what you think UCL should learn from this project *(Please note this section is not mandatory).*

Would you like to discuss any of these issues further? *(please underline)* **YES** **NO**

Thank you for your time! The UCL Project Mobilisation and Transition team will be the custodians of the lessons learnt. They will ensure that recommendations are cycled into future projects and a culture of continuous improvement ensues.

Page 2 of 2	PIR questionnaire - design/construction team feedback form	Annex A to PPR Guidelines
	Owner: Projects Mobilisation and Transition Team	Version 1.5
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INSERT PROJECT NAME
POST PROJECT REVIEW QUESTIONNAIRE

Name	
Role	
Email	

Q1.	Were you involved in the project? If yes, what was your role?
Q2.	Were you able to make any suggestions during the consultation stages and were they used? If not involved, what single thing would you have suggested?
Q3.	What is best about the building? (and why)
Q4.	What is worst about the building? (and why)
Q5.	How can the current operations of the building be improved?

Space for any additional comments on what you think UCL should learn from this project
(Please note this section is not mandatory).

Would you like to discuss any of these issues further? (please underline) YES NO

Thank you for your time! UCL is committed to undertaking a post project review on all projects. The aim is to understand what has worked well and what could have been done better to identify any learning and recommendations for UCL to act upon. The UCL Project Mobilisation and Transition team will be the custodians of the lessons learnt reports and resultant action trackers. They will ensure that recommendations are cycled into future projects and a culture of continuous improvement ensues.

Page 2 of 2	PIR/POE questionnaire – UCL staff feedback form	Annex B to PPR Guidelines
	Owner: Projects Mobilisation and Transition Team	Version 1.5
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Meeting Name	Insert Project Name Project Implementation Review
Meeting Place	
Date	
Attendees	
Apologies	

Item	Description	Lead
1	Welcome, introductions and context Summary of the PIR process given by UPO. Organisations are asked to introduce themselves and say the single thing that they felt went well & could have been improved. Expected timing between 15-30 minutes	UPO
2	Facilitated discussion to establish what went well and what could have been improved. RIBA Stage 0-1: The business case & brief Expected timing 15-30 minutes RIBA Stage 2-4: Concept, developed and detailed design Expected timing 30-60 minutes RIBA Stage 5: Procurement and construction Expected timing 15-30 minutes RIBA Stage 6: Handover Expected timing 15-30 minutes	UPO
3	In-use feedback Expected timing between 15-30 minutes	UPO
4	Summary and action plan Agreement on most important lessons learnt and recommendations for UCL to take forward. Expected timing between 15-30 minutes.	UPO

Expected workshop length 2-4 hours depending on complexity.

Project Implementation Review – Lessons Learnt Report

Insert Project Name

PM&T A005

Version 1.5

2nd August 2018

Department Documentation Standards
Annex D

Version Control

Version	Date	Nature of Revision	Author	Approved By	Signed
V1.0	20/03/2018	PIR Report Template	Mark Dowson		
V1.1	10/05/2018	Formal issue	Mark Dowson		
V1.2	14/06/2018	Formal issue with PPR	Mark Dowson		
V1.4	27/07/2018	Rev number alignment	Mark Dowson		
V1.5	02/08/2018	UCL Estates Changes	David Stevens		

Note: it is policy to convert all procedural documentation in PDF format once complete and signed off. This document is to remain Microsoft Office Work format to allow for copying and pasting where required.

Contents Page

Section	Page
1.0 Project details	<u>4</u>
2.0 Project programme	<u>4</u>
3.0 Contributors	<u>5</u>
4.0 Outcomes from Pre Workshop Questionnaire	<u>6</u>
5.0 Outcomes from Lessons Learnt Workshop	<u>7</u>
6.0 Summary and Action Plan	<u>14</u>

Annexes

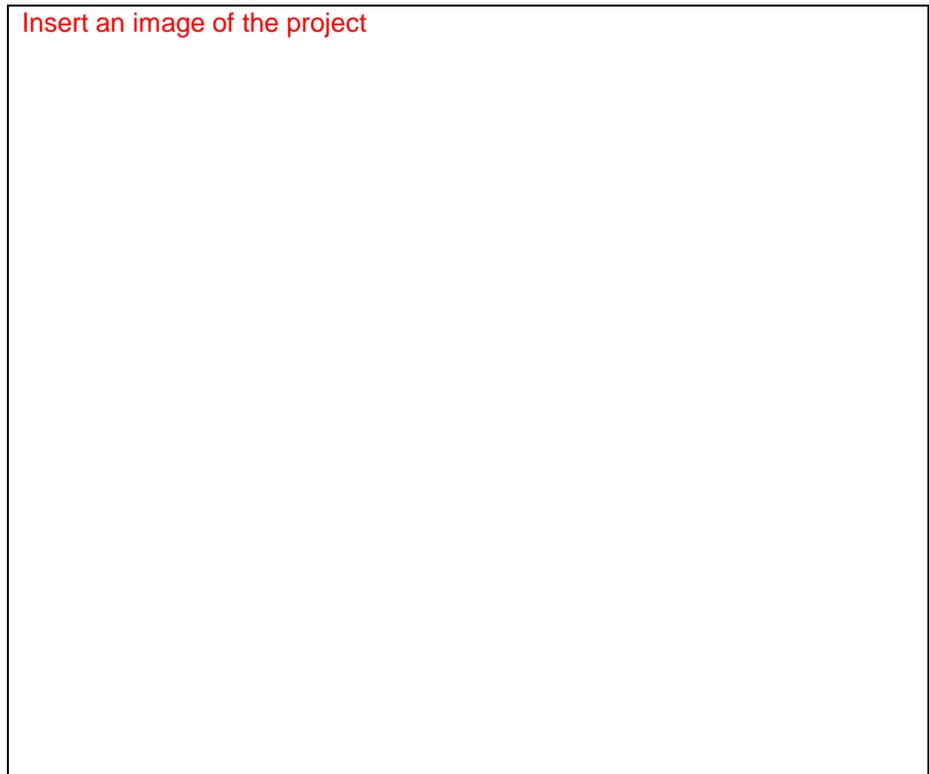
Pre Workshop Questionnaire Responses

Page 3 of 14	PIR Lessons Learnt Report	Annex D to PPR Guidelines
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1.0 Project Details

Project name	
Floor area	m ² GFA
Date of meeting	dd/mm/yyyy
Procurement route	
Practical completion	dd/mm/yyyy
Project type	e.g. refurbishment, new-build
Key uses	e.g. offices, workshop, laboratories, student accommodation

Insert an image of the project



2.0 Project Programme

	Start date	End date
RIBA Stage 0	dd/mm/yyyy	
RIBA Stage 1		
RIBA Stage 2		
RIBA Stage 3		
RIBA Stage 4		
RIBA Stage 5		
RIBA Stage 6		

4.0 Outcomes from Pre Workshop Questionnaire

Organisation	Primary responses for “what went well”	Primary responses for “what could have been done better”
	Provide a brief summary of the overall feedback raised by each organisation. Note that all questionnaire responses shall be appended to this report for further detail.	

5.0 Outcomes from Lessons Learnt Workshop

No.	Item	What went well or could be improved upon	Learning / recommendation for UCL to take forward
RIBA STAGE 0 – STRATEGIC DEFINITION			
0.1	Project inception	<p>The items in this table and on the supporting PIR workshop slides are provided as a guide only. Discuss the relevant items write up a summary of the feedback. Aim to spend approximately 15-20 minutes discussing each RIBA Stage, covering all items including discussion on the learning/recommendation for UCL to take forward.</p> <p>Note that RIBA stage 0-1 can be combined into a single 'briefing' section and 2-4 can be combined into a single 'design' section.</p>	
0.2	Alignment to UCL estate strategy		
0.3	Initial budget		
0.4	Identification of user groups		
0.5	Aspirations and KPIs		
0.6	Sustainability ambitions		
0.7	Flexibility & adaptability considerations		
0.8	Impacts on wider University operations		
RIBA STAGE 1 – PREPARATION AND BRIEF			

No.	Item	What went well or could be improved upon	Learning / recommendation for UCL to take forward
1.1	Translation of strategic brief into project brief		
1.2	Clarity of project brief		
1.3	High level leadership		
1.4	Adequacy of budget and programme		
1.5	Project Execution Plan		
1.6	Clarity over roles and responsibilities		
1.7	Identification of risks, opportunities and user needs		
1.8	Timing and adequacy of surveys		
1.9	Overall project organisation and management		
1.10	Impact of initial feasibility studies		
1.11	Use of Soft Landings at the start of the project		
1.12	<i>Other</i>		
RIBA STAGE 2 – CONCEPT DESIGN			
2.1	Changes to the brief		

No.	Item	What went well or could be improved upon	Learning / recommendation for UCL to take forward
2.2	Design response to the brief		
2.3	Stakeholder consultation with users, experts and 3 rd parties		
2.4	Timing of input from stakeholders		
2.5	Layout, usability and controllability		
2.6	Planning and Building Control issues		
2.7	Embedding of sustainability into the designs		
2.8	Security, accessibility maintenance and AV		
2.9	Team spirit		
2.10	Client approval process		
2.11	Alignment of emerging design to cost plan		
2.12	<i>Other</i>		
RIBA STAGE 3 – DEVELOPED DESIGN			
3.1	Co-ordination between consultants		

No.	Item	What went well or could be improved upon	Learning / recommendation for UCL to take forward
3.2	Consideration for fabric and service replacement and maintenance		
3.3	Adequacy of specialist input during the project		
3.4	Design changes impacting on time/cost		
3.5	Procurement strategy and tender timetable		
3.6	Unresolved design issues impacting on tender process		
3.7	Adequacy of Employers Requirements to generate accurate costs		
3.8	Mechanisms for stakeholder feedback		
3.9	BIM implementation and execution plan		
3.10	Client and project manager engagement / understanding of BIM		
3.11	<i>Other</i>		
RIBA STAGE 4 – TECHNICAL DESIGN			

No.	Item	What went well or could be improved upon	Learning / recommendation for UCL to take forward
4.1	Robustness of specifications and design information		
4.2	Deadlines and impact on quality		
4.3	Pre-construction programme and cost plan		
4.4	Appropriateness of the selected form of contract		
4.5	Contractor selection process		
4.6	Post tender review and negotiation		
4.7	Change management process		
4.8	Impact of value engineering on building performance/function		
4.9	Client approvals prior to construction		
4.10	<i>Other</i>		
RIBA STAGE 5 – CONSTRUCTION			

No.	Item	What went well or could be improved upon	Learning / recommendation for UCL to take forward
5.1	Understanding of construction complexity and logistics		
5.2	Monitoring of construction progress & management of issues		
5.3	Supply chain experience		
5.4	Extent of changes and management of change		
5.5	Quality of the final product and alignment to specs/standards		
5.6	Construction team resources		
5.7	Health & safety		
5.8	Delays to construction programme		
5.9	Does the constructed building meet the original brief?		
5.10	<i>Other</i>		
RIBA STAGE 6 – HANDOVER AND CLOSE OUT			
6.1	Implementation of Handover Strategy/Plan		

No.	Item	What went well or could be improved upon	Learning / recommendation for UCL to take forward
6.2	Use of formal Soft Landings process		
6.3	Commissioning process and witnessing		
6.4	Functional BMS, display screens and metering		
6.5	Training of personnel to right level of detail		
6.6	Snagging issues and corrective action		
6.7	Design team involvement in handover and document approvals		
6.8	Document production of quality issues		
6.9	Ease of achieving Practical Completion		
6.10	Clarity over client acceptance criteria		
6.11	Understanding and planning of servicing and maintenance		
6.12	<i>Other</i>		

6.0 Summary and Action Plan

	Key learning and/or recommendations for UCL to take forward	Key actions to enable improvement on future UCL projects	Owner
1	Reflect on the feedback received in the questionnaire and from the workshop and detail the top 10 learning and/or recommendation points for UCL to take forward.	For each item identify any action(s) needed to enable improvement on future UCL projects.	
2			
3			
4			
5			
6			
7			
8			
9			
10			

Annexes to PIR report:

Questionnaire Responses

Append the questionnaire responses (consisting of design/construction team feedback forms, as well as the UCL staff feedback forms). The UPO may wish to issue the questionnaires before and after the workshop to get the maximum number of responses.

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