



**The 17th Meeting of the Department of Computer Science and Technology
Buildings and Environment Committee**

**Meeting to be held remotely (via Teams)
at 2 p.m. on Thursday, 21 January 2021**

Agenda

Committee Members:

Prof Simon Moore, Chair (SWM)
Dr Piete Brooks (PB)
Mr Thomas Bytheway (TB)
Ms Celia Burns, Secretary (CB)
Mr Ian Burton-Palmer (IBP)

Dr Matthew Danish (MRD)
Mr Martin McDonnell (MJM)
Mrs Caroline Stewart (CS)
Mr Malcolm Scott (MAS)

1. Apologies for Absence

2. Minutes

The Minutes of the meeting held on 22 October 2020 are attached.

3. Matters Arising

Asset Check: IBP was going to follow up on Estates Division's recent asset survey covering M&E assets. Although the survey had not specifically covered IT equipment, it had picked up on UPS systems and a few other asset types that crossed over slightly with IT systems. Committee members had felt strongly that stickers should not be placed on Department/IT equipment. IBP to report.

4. Committee Membership

Welcome to Thomas Bytheway, who is currently managing the Hardware Lab, and who is replacing Richard Mortier while he is on sabbatical during the 2021 Lent and Easter terms.

5. Coronavirus Situation

An update from CS and MJM on building-related issues.

6. PhD Representation on the Committee

CB has reminded the Postgraduate Student Forum (PSF) that the Committee is looking for a PhD representative. The PSF has reported that, despite having extensively promoted the opening for a rep within the PSF and the various cohorts, no interest has been shown.

7. Reducing Energy Consumption

Monitoring energy consumption: SWM and PB were following up on the problem with the feed from Trend for data on electricity supply/usage. SWM to report.

8. Building Matters

a) Lighting

i) Atrium lighting

The Committee agreed at the April 2020 meeting to defer the issue of whether to revert to fluorescent lamps in The Street until we are back in the building and can assess how the current lighting is working out.

ii) Lighting in the LTs

IBP was going to progress the works in LT1, which would need to be carried out during the Easter vacation. The lighting in LT2 is less of a priority since there are discussions about the repurposing of the room. IBP to report.

iii) Emergency lighting in the Atrium and LTs

IBP was going to follow up on this project as there had been no progress made. IBP to report.

iv) Lighting in SW01

The proposal to change the lighting over to LED was in progress. IBP to report.

b) Fire strategy for the William Gates building

i) Refurbishment of the doors to the courtyards

The works were being progressed by the main contractor, Eyre, including putting the fly-open doors to tender. The Verex updating would be handled by Chubb. IBP to report.

c) Office recycling

MJM, with advice from IBP on the customised signage, was going to put the recycling bins in place. MJM to report.

d) Verex security system

IBP was going to follow up with Chubb about the software updates for the Verex security system once normal building occupancy is resumed.

IBP was going to follow up with Graham Hatt about MAS's concern regarding the installation of updates by Chubb and the effect they would have on our own systems. Sys-admin have reported this needs further discussion amongst the team. MAS to update.

e) Microwaves

SWM was going to have a look for configurable options for the push-button timers and RMM was going to speak with Ian Lewis of CDBB for advice on controllable plugs. SWM to report.

f) Building management system (cooling and heating)

i) Heating failure on the north and south sides of the building

The heating in the north side of the building is up and running, but MJM was following up on the leaks to two of the four replacement pumps in the south side of the building. IBP to report.

g) Refit of the WGB Library

IBP was going to follow up on the request for a feasibility report for the proposal to divide the Library space into three teaching/meeting rooms. IBP to report.

h) Cleaning service

Arrangements were underway for the cleaning contract to be renewed to 31 August 2021, by which time IBP hoped to have organised for Estates Division to take over the contract. Responses were pending to the TUPE-transfer offers made to the cleaning staff. IBP to report.

9. AV Matters

a) Projector in FW26

IBP was going to progress the works to remove the front row of lights and install the projector. IBP to report.

10. Electricity Devolution Project

CS was going to report to the School the issue of the very low usage due to the low occupancy of the building during the pandemic and the concern that this figure might potentially be included as an average reading for a future target. CS to report.

IBP was going to explore whether the University would be willing to pay for solar installation. IBP to report.

11. William Gates Cycle Parking Options

MRD was going to feed back to Estates Division the Committee's response regarding the updated Cycle Park design. MRD to report.

12. Any Other Business

13. Date of Next Meeting

**The 16th Meeting of the Department of Computer Science and Technology
Buildings and Environment Committee**

**Meeting held remotely (via Teams)
at 2 p.m. on Thursday, 22 October 2020**

Minutes

Present:

Prof Simon Moore, Chair (SWM)
Dr Piete Brooks (PB)
Ms Celia Burns, Secretary (CB)
Mr Ian Burton-Palmer (IBP)
Dr Matthew Danish (MRD)

Mr Martin McDonnell (MJM)
Prof Richard Mortier (RMM)
Mrs Caroline Stewart (CS)
Mr Malcolm Scott (MAS)

1. Apologies for Absence

None.

2. Minutes

The Minutes of the meeting held on 28 May 2020 were approved.

3. Matters Arising

None.

4. Committee Membership

Malcolm Scott, IT Infrastructure Specialist, was welcomed to the Committee. Malcolm will be replacing Graham Titmus on the Committee.

5. Coronavirus Situation

CS reported that there was nothing of particular concern to report. Screens have been ordered to make the common room more useable as well as screens for some meeting rooms. MJM reported that the hand sanitizers were being well used and had been topped up twice. Since occupants were no longer required to log in with their entry card, it was hard to know accurate occupancy numbers. The occupancy level was still thought to be low so on a health and safety perspective, there was still no requirement for a first aider to be in the building full time.

MAS reported low usage of GN09, with usage being no more than one person per day so far. MAS suggested that if two people needed to use the room on one day, one person could use the room first thing in the morning and the second person could use it late in the afternoon.

6. PhD Representation on the Committee

The Graduate Student Forum has circulated a call for a PhD representative for this Committee, but no-one has put themselves forward yet. CB agreed to remind the Forum about this.

Action: CB

7. Reducing Energy Consumption

a) Monitoring energy consumption

Committee members discussed the problem with the feed from Trend for the data on electricity supply/usage. IBP noted that he used to be able to link to software showing this data but that he was no longer able to do so. SM and PB agreed to follow up on this issue.

Action: SWM and PB

b) Works to refine the GN09 system

This item is now complete. See item 8 (f) i), 'Building management system (cooling and heating), GN09 extra pumps' below.

8. Building Matters

a) Lighting

i) *Atrium lighting*

The Committee agreed at a previous meeting to wait until we are back in the building to decide on whether to revert to fluorescent lamps in The Street. Since there are currently so few people in the building, it is not yet known how the lighting is working out, so the Committee will revisit this at a later date.

ii) *Lighting in the LTs*

The Committee discussed the possibility of tying in these works with other lighting works in the building, but it was felt that the works to the lighting in LT1 was a priority and should go ahead independently due to the risk of the current lighting failing. The lighting in LT2 is less of a priority since there are discussions about the repurposing of the room.

Although the lecture theatres are not currently being used for UG lectures, master's students are using them and so works would need to be carried out during the vacation, with Easter being a more realistic timeframe than Christmas. IBP agreed to progress these works.

Action: IBP

iii) *Emergency lighting in the Atrium and LTs*

IBP reported that no progress had been made and that he will follow this up.

Action: IBP

iv) *Lighting in SW01*

IBP reported that the proposal to change the lighting over to LED is in progress, with the equipment on site. One more of three quotes is pending before a decision is made on the contractor. Amanda Prorok is aware of the proposal and has warned that the recently fitted sensors should not be removed.

Action: IBP

b) Fire strategy for the William Gates building

i) *Refurbishment of the doors to the courtyards*

IBP reported that these works are being progressed by the main contractor, Eyre, including putting the fly-open doors to tender. The Verex updating will be handled by Chubb.

c) Office recycling

IBP reported that the recycling bins are now on site and need to be deployed with customised signage. IBP agreed to advise MJM on the signage and position of the bins and they will be put in place.

Action: IBP and MJM

d) Verex security system

Graham Titmus was going to follow up with Chubb about the software updates for the Verex security system once normal building occupancy was resumed. Since Graham has now retired, IBP agreed to follow this up.

Action: IBP

MAS noted his concern about the installation of updates by Chubb and the effect they would have on our own systems. It was agreed that IBP would follow up this concern with Graham Hatt.

Action: IBP

e) Microwaves

IBP reported that an electrician had been in to fit tamper-proof push-button timers to the microwaves in the FC kitchen as a trial. Two units had both worked once and then failed. Committee members discussed the lack of commercial options, noting that timers do exist but with a minimum time of 15 minutes (too long for our fire prevention requirements).

SWM agreed to have a look for configurable options and RMM agreed to speak with Ian Lewis of CDBB for advice on controllable plugs.

Action: SWM and RMM

f) Building management system (cooling and heating)

i) GN09—extra pumps

IBP reported that the installation of the extra pumps in GN09 has been completed, and MS confirmed that the pumps are working much better.

ii) Heating failure on the north and south sides of the building

MJM reported that the heating in the north side of the building is up and running. However, two of the four pumps replaced in the south side had started to leak due to damaged seals. MJM is following this up and is on course for having the works completed shortly.

g) FW03 and FN16 kitchen refits

IBP reported that the refit works have been completed, with the final touch being to install the new recycling bins (see item 8c).

h) Refit of the WGB Library

The Committee's proposal to divide the Library space into three teaching/meeting rooms had been approved by Prof Beresford and Prof Copestake. A feasibility report had been requested in May. The Committee have heard nothing since. IBP agreed to follow up on the request for a feasibility report and to get the project moving.

Action: IBP

i) Cleaning service

IBP reported that he had started to arrange for the cleaning contract to be renewed to 31 August 2021, by which time he hoped to have organised for Estates Division to take over the contract. Offers had been made to the cleaning staff to be TUPE-transferred, and responses were pending.

9. AV Matters

a) Projection booth in LT2

The Committee discussed the proposed removal of the projection booth in LT2, including the possible repurposing of the room, the option to use the lecture theatre in the Roger Needham Building (and the possibility of Engineering moving in there), the possibility of lecturing space being available in the Shared Services Hub, and the potential changes to teaching format in the long term. Due to these uncertainties, the Committee agreed to keep this item on hold for the time being.

b) Projector in FW26

MJM confirmed that it was the whole front row of lights that Graham Titmus had wanted to be removed to allow room for the projector. IBP agreed to progress these works. The installation of the LED lighting in this room would be addressed separately later.

Action: IBP

10. Electricity Devolution Project

Information about the Electricity Devolution Project had been circulated to Committee members for information. SWM raised the issue of the very low usage due to low occupancy of the building during the pandemic and the concern that it might potentially be included as an average reading for a future target. Although this seemed to be a very obvious point, it was felt that it was a point that should be made. CS agreed to raise this issue with the School.

Action: CS

MAS noted that power usage in GN09 is going to increase, independent of the fact that many people are working from home.

SWM raised the possibility of solar panel installation, noting that the roof had been made solar-ready when it had been refurbished recently and the fact that the Department is paying a fair amount for electricity. The issue of whether it would make financial sense for the Department to pay for solar installation was discussed, including considering the long-term nature of such an investment and what the probability of the Department remaining in the building might be. It was agreed that IBP would explore whether the University would be willing to pay for solar installation.

Action: IBP

11. William Gates Cycle Parking Options

MRD had circulated an updated Cycle Park design, which he had received from Estates Division. Committee members discussed the updated plans and suggested moving most of the cargo cycle parking to the front of the café (where access might be easier), keeping just a few of the cargo cycle stands within the secure enclosure for those who want the added security for their cargo cycle. They did not feel the regular Sheffield stands should be placed

in front of the café. CS reported that the Head of Department also shared this view. It was suggested that as many regular Sheffield stands as possible should be accommodated under the tent, both inside and outside the secure enclosure. MRD agreed to feed this back to Estates Division.

Action: MRD

12. Any Other Business

Asset Check

MAS reported that over the last few weeks he had noticed contractors putting asset tags on various items and he asked if anyone knew what the tags referred to and whether they denoted responsibility or ownership, especially as some of the tags had been put on equipment belonging to the Department. MJM reported that Estates Division had arranged for an asset check to be carried out. He said he would forward the email he had received about the asset check to the Committee.

Action: MJM

Post-meeting note: MJM circulated the email from the company who carried out the asset survey. The survey had been undertaken for Estates Division, covering M&E assets. Although they were not specifically covering IT equipment, they had picked up on UPS systems and a few other asset types that crossed over slightly with IT systems. Committee members felt strongly that stickers should *not* be placed on Department/IT equipment and it was agreed that IBP would follow up this issue with Estates Division.

Action: IBP

13. Date of Next Meeting

Committee members agreed that the next meeting would take place at 2 p.m. on Thursday, 21 January 2021.

It was noted that Richard Mortier would be on sabbatical during the 2021 Lent and Easter terms, and it was agreed that Tom Bytheway, who had showed a willingness to serve on this Committee, might replace Richard while he is on sabbatical. It was agreed that CS would contact Tom.

Action: CS

EVALUATING TIMER SWITCHES FOR MICROWAVE OVENS

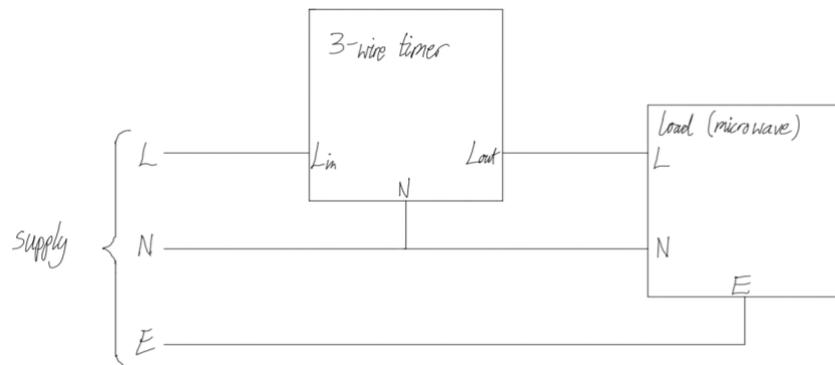
Prof Simon Moore
2nd November 2020

RECOMMENDATION

I recommend that we use the ABB – ELKAY 3875A-1 3-wire push-button timer switch available from Farnell (order code: 1623067). This switch has a permanent mains supply that ensures the microcontroller used to perform timing is always powered. As we will see in the later analysis (below), the 3-wire push-button timer does not require a rechargeable battery, which appears to be the source of failure of the 2-wire push-button timer switch.



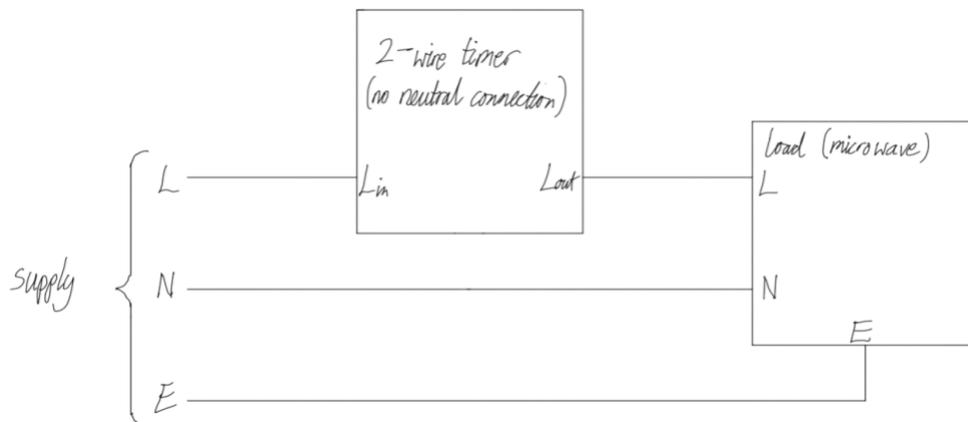
Aesthetics of the timer switch



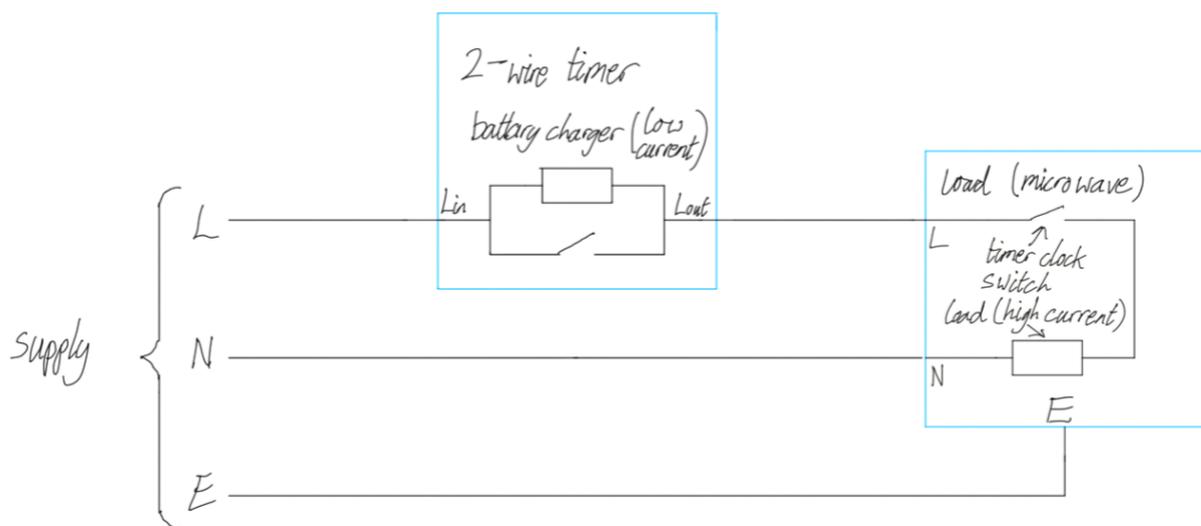
Circuit diagram sketch showing live and neutral provided to the switch to permanently power it up

ANALYSIS OF FAILED SWITCH

The original 2-wire timer switch tried was also from ABB – ELKAY, but part 350A-1. This switch has live-in (Lin) and live-out (Lout) connections, but no neutral connection, as shown in the circuit sketch below. As a consequence, there is no permanent mains power connection to the switch, so it is reliant on a battery keep the internal microcontroller (a low-power PIC chip) powered up when the timer is activated, i.e. the load (e.g. a microwave) is on.



An equivalent (i.e. simplified) circuit showing an outline of the operation of the 2-wire switch is below. The switch is designed to turn on a simple load like an incandescent light bulb where the load would always turn on when the 2-wire timer provides power to it. Note that the instructions discuss difficulties when switching low-current LED bulbs. When the 2-wire timer turns the load off, and the load is something simple like a light bulb, then Lout is connected to neutral via the load, and this allows the 2-wire timer's internal battery to charge at a low rate (e.g. just a few mA). This means that even when "off" the load still have a small current passing through it of a few mA, but this is so small that the light would appear to be off (e.g. if the battery charged a 1mA then the power going through the light bulb would be 0.24W, so it would not illuminate and would appear to be off).



If the load is a one of our simple microwave ovens with a mechanical timer, then it is high power when turned on (i.e. its mechanical timer is not at zero) but is completely off when the mechanical timer is at zero. This means that when the 2-wire timer and the microwave are both off, Lout is not connected to neutral via the load, so there is no way that the internal battery of the 2-wire timer can charge. As a consequence, the internal battery will end up discharging over time. Once the internal battery is flat, the 2-wire timer cannot charge itself again since it uses a normally closed relay as the switch, so a flat battery results in Lin and Lout being permanently connected so there is no potential difference between Lin and Lout so there is no way for the battery to charge.

To confirm the failure mode, I dismantled the failed 2-wire switch and the working 3-wire switch. Below are photographs that show that the 2-wire switch does in fact have a 3.6V rechargeable battery, which was measured to be 1.7V (i.e. flat). The battery in a new 2-wire switch was measured to confirm at the device ships with a charged battery (at 3.6V). The 3-wire switch does not have a battery.

