Appendix A1 – report from Senior Project Manager, Colston Hall

Introduction

The purpose of this appendix is to provide a more information on some example project issues that have had an impact on project programme and delivery.

Site issues/discoveries
There are several site issues and discoveries which have impacted overall project programme as described below.

Sub-station
The sub-station enclosure could not be built immediately as during soft strip it was found that the existing wall which was due to provide support to the enclosure, was in poor condition and resting upon rotten timbers. Remedial works had to therefore be specified and this wall demolished and rebuilt before the sub-station works could proceed. This knocked on the demolition of Az wall and further works in the get in yard.

Time: 5 weeks delay

Wing walls demolition- hall 1 stage end
This area has been more complex than originally envisaged as, on further investigation, the walls connected to the roof space. Subsequently, the works could not be undertaken during the enabling works phase as the roof space was still contaminated with asbestos. Overall, this impacted the demolition works to the back of stage area and the wing walls had to be removed by hand due to the constraints with the scaffolding installed as part of the main works. A conveyer was also required to remove this material through the main hall and to avoid the mobile crane outside. Arup have produced a design which has led to additional works required, which was updated and re-issued 26.06. Additional cost incurred on additional propping for this area.

Time: 2 weeks, critical path item.

Gable end
Extremely poor condition of the gable end has led to complexities in achieving a temporary works design to stabilise the structure after removal of the roof. The instability of the piers at the back of hall 1, which were due to support the temporary works frame, were found to be in poor condition and masonry was crumbling. A decision was therefore taken to redesign this system rather than wait until the remedial works could be undertaken for the piers.

This activity has been further delayed by Covid-19, with the fabricators firstly on furlough and then further impacted by the 2m distancing rules.

Time: Ongoing delay.

Main Hall roof - Wood wool panels
On removal of the main hall roof sheets and once works moved to the roof space it was discovered that additional wood wool panels were attached to the underside of the roof covering, which was not known of or recognised within the works information (this space could not be accessed). This slowed down removal of roof sheets which were due to simply be removed by crane, however a scaffold had to be erected to remove the wool panels from underneath as they contained traces of asbestos.

Time: Critical path activity, additional 4 weeks work.

Additional Asbestos discoveries

Further asbestos has been discovered in several areas to include:

- Hall 1 wing wall pipe lagging
  Time: 2 weeks, critical path- delay to demolition works whilst removed.
- Organ room slab
- Lantern entrance tiles
- Asbestos discovered within colonnade
- Cement soil pipe asbestos removal

Demolition of hall 1 parapets and ring beam

Due to the unusual site conditions, contractors have updated their works information. The ring beam has increased in size and steels have been discovered within the concrete beam which has increased complexity of the works.

Time: 5 weeks for additional demolition works and 2-3 weeks for formation of deeper ring beam.

Condition of walls- hall 1)

Following soft strip of hall 1, concerns have been raised regarding the condition of the walls in hall 1. Additional remedial works have been required to both the walls and padstones to facilitate the installation of the new steels and address loose and dangerous stonework. This has been a significant exercise scoped and undertaken by Structural Technicians who have been bought in to provide additional project support. Solutions include concrete jackets and general buildersworks.

Contractors have also revised their balcony fixing designs to suit site conditions. Recent additional concerns over whether the balconies can fix safely to the existing walls in addition to the acoustic brickwork. This item is currently under further investigation.

Time: Hall 1 in general critical path, however these issues are overtaken by the steelwork delays in addition to the temporary works installation delay (gable end).

Well 1

A well was discovered in the lower basement of Colston Hall and a solution is still being reviewed following the unsuccessful investigations to reach the bottom of the well, which is over 10m in depth. This needs to be resolved to complete the hall 1 steelwork and is currently an area in abeyance.

Time: may impact hall 1 steelwork programme if not resolved quickly. Programme will be better understood once investigations confirm the works required to solve the problem.

Lantern

There was a change in design intent in the lantern, whereby the steels were due to fix to the existing piers and structure, however contractor since discovered that the condition of the masonry piers was not sufficient to support this. The ground conditions were found to be rock and could also allow footings, therefore contractor changed the steelwork design which led to a late issuing of information.

The ability to excavate the existing lantern foundations revealed them to be stepped rather than on pads, meaning that design changes were required to remediate the footings.

Time: no time implication as there was sufficient float within the programme to cover the delay for these works in the lantern.

Hall 2

It was discovered that the columns in hall 2 were filled with loose rubble which led to concerns about the structural integrity and ability to support the new steels. Remedial works were specified which involved filling the columns with concrete where possible. Shuttering was also required due to discovery of voids and ducts in the lantern area which also had to be filled. Additional steel columns were added to the scheme where it was too dangerous to unzip the existing columns.

Time: Concurrent with delays to issue of hall 2 steelwork information, overtaken by hall 1 delays.

It has recently been discovered that the perimeter walls in hall 2, where the steel angles are to be fixed to, contain loose rubble and there is a risk that the strengths cannot be achieved. The area is now prepared for the steelwork to be installed, however the render must now be removed and pull out testing undertaken to check structural integrity. This has already been achieved at stage end, where contractors have specified remedials and angles. There is a risk that these further works may have further programme and cost implications depending on the nature of the remedial works involved.

Time: TBC following pull out test results, this has potential to impact the steelwork installation programme depending on the works involved.

Basement support wall

This has been a complicated area to coordinate with arch opening up works due to the condition of the wall. Works have been stopped and started as contractors have undertaken the works and required structural input from other firms. Sequencing has also been further impacted by Covid-19 due to the tight working space.
Time: TBC as Covid-19 impact is still unknown, awaiting latest programme.

Hauling Arch

The hauling arch coordination (area between the lantern and hall 1) has been ongoing for several months by the design team to accommodate discovered site conditions and the lift sizes. There is an arch, for example, which is not fully intact and requires complex remedial works to solve. Discussions have been ongoing regarding leaving the fill in the arch to reduce risk, however this is not acceptable to BCC Conservation.

Time: No programme impact currently but will need to be finalised for integration into contractor works. This is also dependent on the final works proposed.

Get in Yard

There are several interfaces in this area which experienced issues and challenges. These were as follows:

- Get in Yard lift: It was discovered during excavations in July that the get in yard wall was wider than expected and that this would impose on the proposed get in yard lift design. Following further investigations into whether this wall could be removed or integrated, this was ruled out as unfeasible. A redesign and space planning exercise is now being undertaken in this area to skew the lift and coordinate with the plant tower design which is due to conclude in July.

Time: works to the plant tower and lift have been re-sequenced to after the hall 1 steels are in, meaning that works in this area are not critical path.

- Well 2- A further well was discovered in the get in yard. This is being resolved through the amended substructure design to the plant tower, as this is where it has the most implications.
  Time: to be understood when plant tower solution provided.
- Crane base- Crane base had to be relocated due to get in yard discoveries, there was also a clash with drainage and a sleeve had to be created through the base to coordinate this within the space. This led to delays in installing the tower crane and a mobile crane was erected on Trenchard Street to enable the hall 1 steels to be removed. The plant tower steelwork has also had to be redesigned to accommodate this change.
  Time: mitigated delay through mobile crane
- Nesting gulls- demolition of wall Az was delayed and on pause for a period due to nesting gulls in the area.
  Time: 2 weeks,
- Plant tower- delay to plant tower steelwork fabrication and installation due to discovery of get in yard wall, movement of crane base
  Time: to be better understood when final works information issued and changes can be reviewed. Programme mitigated through re-sequence, design issue by July 24th to meet programme.

<u>Party wall (No.15)</u>
There have been protracted negotiations with the party wall surveyor due to the get in yard discoveries set out above. The agreement for the lift works and crane base was separated out to enable this item to progress and the crane to be erected. This has now been signed and discussions have been ongoing between BCC and neighbours regarding noise and vibration, to minimise disruption during the works. An addendum will be completed for the get in yard lift and work adjacent to the wall once the lift and plant tower redesign exercise is complete.

<u>Hall 2 roof</u>
On further investigation of the hall 2 roof space, it has been discovered that the scope of works may be greater than what was previously specified. Closer inspection of the roof timbers has revealed dry and wet rot, with further investigations currently being undertaken to identify the remedial works and requirements which will be presented to BCC for further consideration.

Time: TBC once works are further scoped.

<u>Other discoveries</u>
There have been other smaller discoveries such as repairs to cracking or additional façade repair works which are listed further on the appended discovery items list.

Impact of Covid-19

The biggest impact from COVID19 has been to the temporary works installation in hall 1 where it has been challenging for the workforce to maintain a 2m gap at all times. Following recent update of the Site operating procedures (version 3) by the Construction Leadership Council, these works have recommenced and activities are progressing at a much slower rate. This again is primarily down to only being able to have less people in works areas to ensure the 2m gap is maintained. Constrained areas like the sub-basement are also particularly affected.

Additional costs, although minimal, have also been received for additional hand washing stations, cleaning and sanitiser. It has also been agreed that contractors can use the foyer as additional space to maintain distancing when works become busier on site, reducing the need to pay for additional site cabins.

Many contractor team members have been furloughed, however these team members are now slowly returning. There are currently risks of redundancies at some firms.

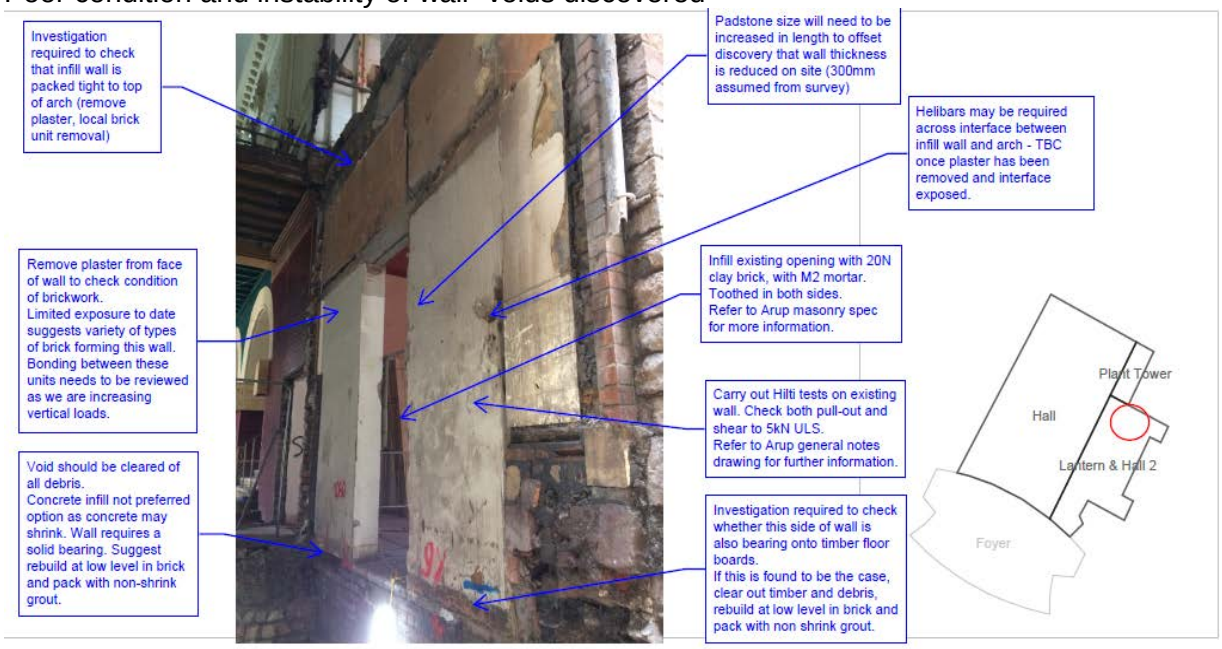
Contractors have implemented rigorous COVID19 controls that allow the majority of works to continue while maintaining a 2m gap between operatives. Version 3 of the Site Operating Procedures from the construction Leadership Council released on 15th April, has given guidance on working within a 2m gap. Contractors have submitted costs as compensation events to cover the additional cleaning regime required.

We are monitoring outputs with weekly progress summaries. This has shown that whilst at the beginning of Covid, productivity was down to around to around 65% this has now increased to 80%, however we are expecting to return to normal levels within the next few weeks

Sub-station

Suspected asbestos and area of structural concern.

Poor condition and instability of wall- voids discovered



Wing walls demolition

Get in Yard side

Hall 1 side

Hall 1 Gable end

Wood wool panels to underside of hall 1 roof

Condition of walls- hall 1

Well 1

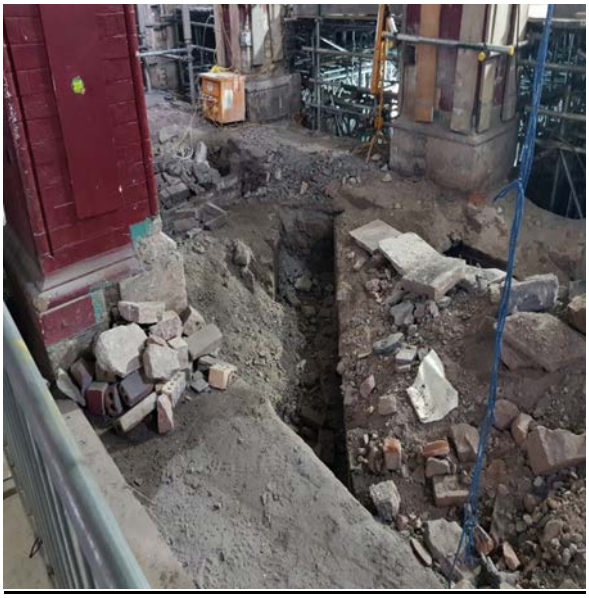
Vaccum excavation of well 1

<u>Hall 2</u>

Rubble filled columns

Top of hollow column

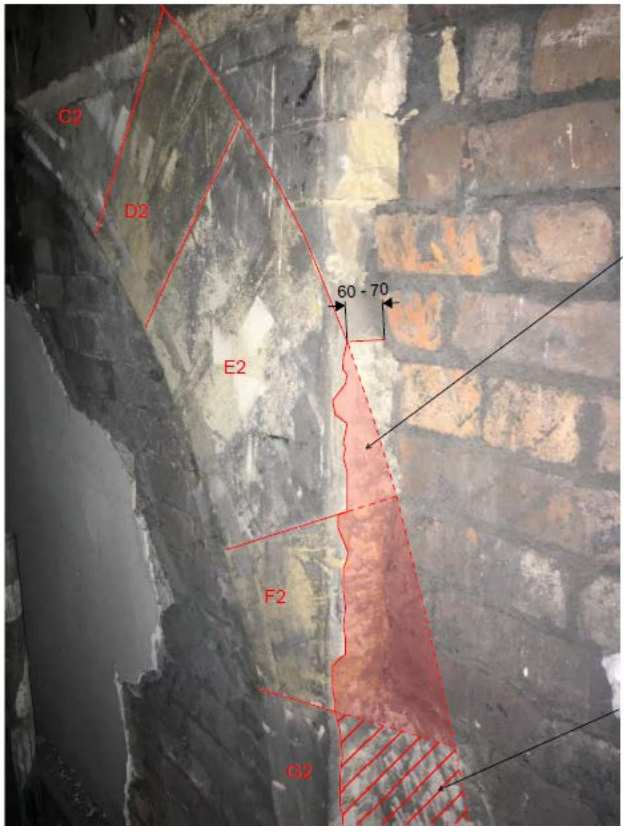
Discovered historic ventilation ducts

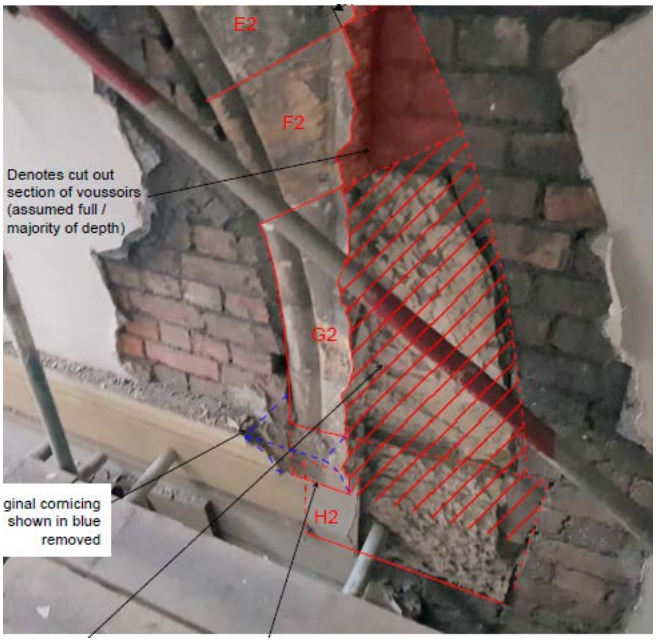


Basement Support Wall

Poor condition and loose masonry leading to complex sequencing.

Hauling Arch





Get in Yard

Lift- discovery of wall under No.15 where the lift was due to be located

Well 2

Hall 2 roof

‘Fruiting bodies’ and dry/wet rot discovered

Poor condition timbers

Poor condition of lead flashings and cracked tiles

Victorian stoves uncovered during soft strip works.