Committee(s):	Date(s):
Finance and Risk Committee of the Barbican Centre Board Barbican Centre Board	16 January 2023 2 February 2023
Subject: Barbican Centre – Theatre electrical supplies	**Public**
Report of: CEO, The Barbican Centre	**For Information**
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Summary

This report is to inform members on the background, actions to date, current status and next steps in relation to the issues with the electrical supplies affecting the theatre fly equipment in particular.

There is a three-phase plan in operation. A short-term interim solution has been implemented which has removed the risk of an outage/failure that would stop a performance of Totoro.

The next phased works will follow the current show at the end of January.

Recommendation(s)

Members are asked to:

- Note the report.

Main Report

Background

1. In September 2022, during a public theatre performance, the controls equipment for the flying gear, detected an anomaly in the three-phase electric supply. The built-in safety features of the control equipment invoked a self-shut-down process to protect the sensitive components from potential damage.

   Trekwerk, the maintainers of the flying gear were called in to check their equipment and the reported diagnosis was the problematic electrical supply. The issue is likely to be either voltage levels that are too high for the components in the device and/or the difference between the voltage levels on each of the three electrical phases.

   UK Power Networks (UKPN) should supply voltages between 216 and 253 V. Supplies have been recorded as high as 267 V.

   There have been several incidents of high voltages but there is no regularity or pattern allowing us to predict low/high risk times or to easily identify the cause.

Current Position

2. Colleagues from several departments across the Barbican formed a working group to address the problem. A three-phase plan was established at the outset with short-, medium- and long-term measures.

   Short term
   Theatre colleagues were on hand during the remainder of the run to switch power to the emergency battery back-up system (UPS) in the event of an incident.

   The RSC/Totoro carries increased risk because the (UPS) does not have the capacity to lift the increased number and weight demand in this show. A generator with sufficient power has been hired and the flying gear for all Totoro performances are powered from this generator.

   Medium Term
   Trekwerk have undertaken some modifications to the flying gear to make it more resilient to the electrical supply. Whilst this reduces the likelihood of a shut-down it does not remove the risk entirely and so the issue has to be dealt with at source (electrical supply).

   The Centre is working with specialist contractors to undertake sophisticated monitoring of supplies over a number of electrical incomers to identify and diagnose the cause of the issue now that UKPN are supplying within their permitted range.

   The diagnosis will either identify a safe alternative incomer to supply the flying gear from (although UKPN have now confirmed that all incomers are supplied via

the same network of linked UKPN transformers) or the diagnosis will confirm remedial steps to improve the supply

The final step of this phase is to either swap the supply to a different incomer and/or to rectify the issues on the existing supply. The Centre expects to be able to undertake this work at the end of Totoro, most likely between late January and late March 2023 dependent on the theatre programme.

Long Term
The electrical infrastructure, including the UKPN infrastructure beyond our demise, is between 40 and 50 years old and so the Centre is experiencing increasing failures and redundancy. The infrastructure is end of life, so preparation should be made to replace it in its entirety. It is a significant undertaking in terms of capital cost, planning and logistics to replace all the busbars, wiring, distribution boards, isolators etc. A programme to replace some distribution boards is currently underway via a CWP project, however this covers a tiny percentage of the estate.

Electrical infrastructure will be a crucial element of the Barbican Renewal Project, to support the remainder of the plans/design to allow the Centre to flourish for the following generations. Discussions should also be held with UKPN about upgrading their infrastructure.

Options

3. Do nothing else
   The Centre is in a better position because of the work by UKPN and Trekwerk. It is possible to reinstate the electrical supply, without further work, and remove the hired generator. The monitoring undertaken to date shows that the system would be fault free most of the time. There is still some risk so an event during a show is likely to cause a lengthy disruption at best, but more likely the cancellation of a show once in progress.

   Continue with the three-phase plan
   The plan as outlined above was the only solution to minimise the risk in the short term as an interim solution. Complaints are increasing from neighbours due to the length of time the generator has been on site. There are also unsightly cables running up and across the podium. The next phase of the plan for more extensive monitoring, progressing to works will allow the Centre to move from this interim solution to something of much lower risk.

   Major capital investment
   The electrical infrastructure is at end of life-cycle as explained. This final option would be to replace/upgrade the entire electrical system as soon as possible.

Proposals

4. Realistically there is only one viable option.

   To do nothing would be to reintroduce the risk the Centre has been managing for the past few months. The likelihood is major disruption to one or more shows, high customer dissatisfaction, damage to relationship with business partners, loss of income and reputational damage.

   Major capital investment is unlikely in the current climate as there has just been a lengthy review of capital projects. A project like this would take significant investment, an extensive period of survey, design, planning and would result in a major disruption to programme. It would also mean continuing to manage the current risk with a generator for months or potentially years.

   The continuation of the phase plan is the most practicable option.

Corporate & Strategic Implications

5. The City's Corporate Plan aims to 'Shape outstanding environments' by ensuring 'our spaces are secure, resilient and well maintained'. This is key to the business of the Barbican. The phased plan must be completed to at least the end of the second stage to be in a position to state we are meeting this aim

Implications

6. The Centre continues to manage this active risk, which has implications on income/budget, staff resource, reputation, commercial and local relationships and potentially impact on the property/plant/infrastructure.

Conclusion

7. The poor, aged condition of elements of the Barbican infrastructure is well versed and is a key justification of the Barbican Renewal Project. This is just one of a number of examples where active risks required careful management over the last few years, some of which have lead to closure/loss of shows.

Appendices

8. None

Background Papers

9. None**.**

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