

23 April 2021

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Dear David

Power Hall, Science and Industry Museum: Listed Building Consent for alterations to the Grade II Listed Power Hall for the creation of openings and installation of plant plus the introduction of a services trench within the curtilage.

Please find enclosed an application for Listed Building Consent for alterations to the Grade II Listed Power Hall for the creation of openings and installation of plant plus the introduction of a services trench within the curtilage. The Science and Industry Museum is located to the north west of central Manchester, to the east of the River Irwell and is within the Castlefield Conservation Area. The Applicant is the Science and Industry Museum.

1 Project Background and Context

In December 2020, £4.3 million from the Government's Public Sector Decarbonisation Scheme was awarded to the Power Hall and the wider Science and Industry Museum (SIM) site to substantially improve energy efficiency and lower carbon emissions across this globally significant site. This grant will ensure the museum's environmental sustainability and support Greater Manchester's goal to become carbon neutral by 2038 – 12 years ahead of the national target.

This environmental sustainability will utilise some of its unique site specific opportunities. For example, in 1830 a well was built on the site to harness the power of the ground water. This natural resource will once again be utilised by the installation of new water source heat pumps and boreholes along with the latest green technologies. This is a visionary, sector-leading project where the original and modern combine to create a sustainable museum of the future. Additional funding from the Department for Culture, Media and Sport will help to place carbon literacy and zero carbon technology at the heart of the museum's story and visitor experience, as well as assisting in undertaking urgent and major repairs to the Power Hall. Overall, the project will transform the Power Hall into a landmark symbol of the past, present and future of engineering, inspiring future scientists, entrepreneurs and innovators in developing careers and skills to help achieve a green economy and the next (green) industrial revolution.

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The Power Hall and Decarbonisation project is to be delivered as one project. However, the required Planning and Listed Building Consent applications must be split into several separate applications due to the different Listings of the buildings and the deadlines for the Government's Public Sector Decarbonisation Scheme which needs to be completed this year. Splitting the consent packages will also allow construction work to start on site earlier and ensure the Applicant can meet the Government deadlines.

The proposed applications are as follows:

Works Package	Package Description	Planning and Listed Building Consent Applications	Submission Date
1A	Water Source Heat Pump Network (External) Water Source Heat Pump and other associated plant in the Power Hall	- Application for Listed Building Consent for alterations to the Grade II Listed Power Hall for the creation of openings and the installation of plant plus the introduction of a services trench within its curtilage. - Application for Listed Building Consent for installation of a new services trench within the curtilage of the Grade II New Warehouse.	April 2021
1B	Boiler House External Modifications (to facilitate installation of a new sub-station) Pipework in the 1830 Warehouse (to facilitate installation of a new water source heat pump)	- Application for Planning Permission external works to the Boiler Room including removal of an external staircase and making good in addition to the installation of a new balustrade and new doors. - Application for Listed Building Consent for alterations to the Grade I Listed 1830 Warehouse for the creation of openings and the installation of pipework plus the introduction of a services trench and borehole cover within its curtilage.	
2	Power Hall Roof and 1980s Platform Removal (to allow early investigative work)	Planning Permission & Listed Building Consent	May 2021
3	Power Hall New Roof, Windows & Doors	Planning Permission & Listed Building Consent	May 2021
4	Power Hall Gallery Refurbishment	Planning Permission & Listed Building Consent	Autumn 2021

This application relates to 1A of the works package. This involves the installation of new plant in the Power Hall including a new water source heat pump and an electric steam boiler which will be used to power the

historic working machines (HWMs). The application also proposes to install the water source heat pump network – the ‘heat network’, within the curtilage of the listed building. These are highlighted in bold text in the above table.

The Power Hall is a Grade II Listed building within the Science and Industry Museum complex. The Science and Industry Museum is located to the north-west of central Manchester, to the east of the River Irwell and within the Castlefield Conservation Area.

The Power Hall was erected as a shipping shed in 1855 for the LNWR to provide space for immediate unloading and transportation of goods on to carts, trucks and overnight garaging for locomotives. Offices were built at its western end in the early 1860s to serve the administrative functions of the shipping shed.

In 1881, a substantial electrical travelling gantry train was installed by the LNWR, adjoining the northern elevation of the building to support its expanded use. The building remained in use as a goods transfer shed until the mid 1970s.

In the late 1970s – mid 1980s, a series of considerable repairs and alterations were carried out and an extension was added to the north west of the Site to convert the building into a gallery for the Science and Industry Museum. The shipping shed was subsequently renamed the ‘Power Hall’ and has housed the Museum’s collection of locomotives since 1983.

In 2018 the Power Hall was closed to members of the public due to health and safety concerns in relation to the poor condition of the roof. In the same year, a £6 million grant from the Department of Digital, Culture, Media and Sport and additional funding from the Science Museum Group was committed to the Power Hall to facilitate urgent and major repairs to the roof and a redisplay of the gallery content to show how Manchester changed the world. To date, the building has remained scaffold and initial surveys have been undertaken alongside design feasibility works.

The below red line plan identifies the Power Hall is within the Science Museum estate as well as the location of the trenching works.

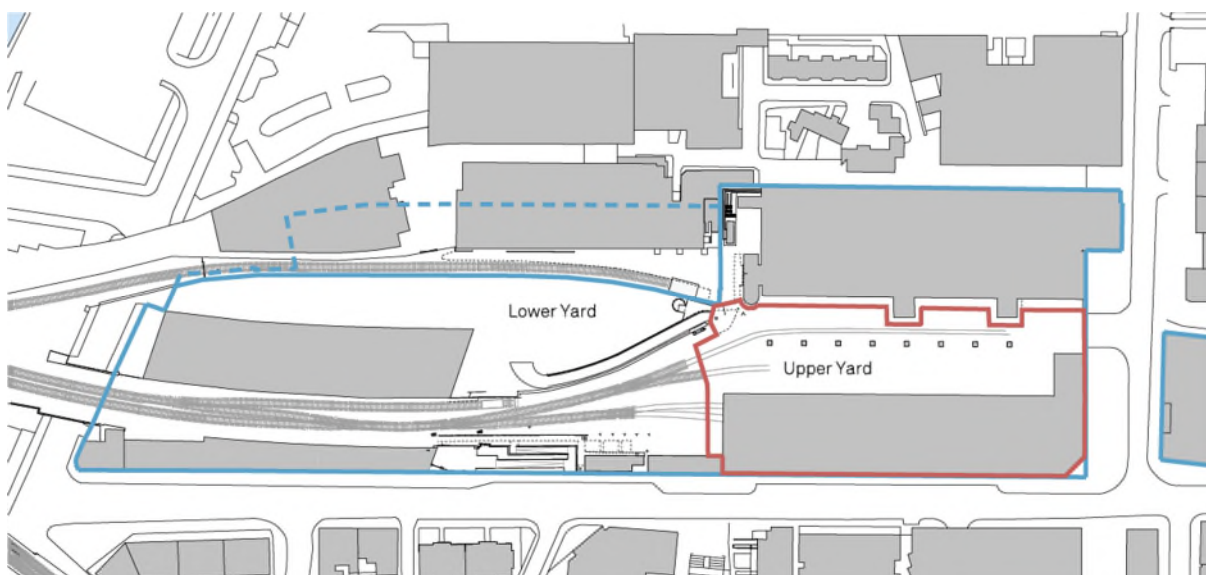


Figure 1 – Site Location Plan

2 The Power Hall's Significance

The Power Hall is of high historic value for its role as one of Manchester's key hubs for goods transfer and it represents the success of the Liverpool Road Station as part of a wider network of goods distribution across the country and throughout the world. It is also representative of the site's historic development – as the first major building to be erected following the station's transfer to a goods only station in 1844.

The building is also significant as the first building to be converted and used by the Museum to celebrate the station's 150th anniversary.

The site and the building are of high evidential value for the continued development of the site for goods and shipping sheds.

It is of high aesthetic value as a rare survivor of an early urban goods transfer shed and is representative of development of the railway good sheds as a building type.

Some of the building's features exemplify LNWR's architectural standards – including the roof lights and the blind arcading to its street-facing elevations, which contributes to its significance.

The former Goods Offices contribute to the building's significance and are representative of the mid-Victorian development of the good station and are a typical example of their type.

The late-19th century travelling crane, located along the north elevation is of high significance as an increasingly rare survivor of its type.

The mid-20th century WC block has little or no architectural value and does not contribute.

The early-1980s Visitor Entrance Block was designed to reflect the architecture and detailing of the Power Hall, however it fails to contribute as its details are not well-handled and it features large expanses of smoked brown glazing, which detracts. Overall, this building is of neutral significance.

The Power Hall's extremely long and imposing Liverpool Road elevation forms the frontage of the Museum's site and represents the Victorian phase of its development as a good station. It therefore makes significant contribution to the character and appearance of the conservation area.

For further information please see the accompanying Heritage Impact Assessment prepared by Donald Insall.

3 Pre-application Engagement

The scope of this application has been discussed and agreed with Manchester City Council as the Local Planning Authority on 04 March 2021. A Planning Officer and Conservation Officer from Manchester City Council were also taken on a tour of the site on 24 March 2021 where the proposals were explained in more detail.

Andrew Davidson from Historic England was also invited to the site visit ,however they advised that Historic England would not need to be consulted further due there being no significant demolition of a Grade II Listed building being proposed and therefore the statutory responsibility for dealing with the proposals would rest with Manchester City Council. Historic England also noted that the proposals are an

opportunity to inform and educate the public about climate change and its interaction with historic buildings.

4 Proposals and Methodology

4.1 Context

The Power Hall building is currently closed to the public and is undergoing a major fabric renovation, mainly driven by the roof damages that cause water leaks and damp. The building is not currently heated and a new energy strategy is presented within the accompanying M&E Strategy Report produced by Max Fordham.

When the Power Hall was in operation, heating was provided by a dedicated Air Handling Unit (AHU) installed within the building itself. The AHU distributed warm air at a high level to warm the space. The AHU was powered by 2 heating coils: one connected to a gas fired hot water boiler and one supplied by the live steam produced for operating the historic steam engines. As a part of the Museum interpretation strategy, a series of historic steam engines were powered by a gas fire steam boiler. This boiler had enough capacity to operate the historic engines and supplied excess heating to the AHU.

Neither the steam and hot water boilers serving the Power Hall are in operation currently and the building is not air conditioned.

The Power Hall refurbishment will include the restoration of the historic working machines. The new interpretation will see these machines as artefacts which provide a contrast between historic methods of steam production and the current sustainability approach being proposed.

Steam production relies on extremely high temperatures which cannot be reached with modern heat pump technologies. An electric boiler will therefore be installed which has several key advantages:

- No combustion is required in that the boiler will not need flues or a gas supply.
- There are no requirements for special ventilation or gas leak detection.
- The electric boiler is silent and does not require acoustic mitigation.
- The electric boiler is compact and takes up less space than an equivalent gas boiler would within the asset.
- The carbon footprint of the operation can be offset by selling electricity produced to a Green utility company.
- The electric boiler can be displayed visibly to the public and provide an educational element on modern energy production technologies.

The historic steam engines on display will demand steam to operate based on their display operation time. This will not be continuous; however the display operations require a significant warm-up period to bring the units and the system into temperature.

The new system will use a water source heat pump, taking hot water from a new borehole located nearby.

Overall, the major renovation at the Power Hall aims to connect the historic working machines - which have a high energy demand and were powered by high pollution coal fired steam - with a modern and sustainable system able to offset the carbon footprint and enhance the overall efficiency of the site.

Efficiency is achieved by saving energy for future use. The re-interpretation of the Power Hall intends to celebrate this synthesis between the past and present.

The most effective way of interacting and creating awareness with the public is to make it visible. The proposal is to build the new plantroom within the Power Hall in a way which is visible to the public so that it can be appreciated how the system works in “circular” (from ground to ground), rather than “linear” (from ground to atmosphere).

Further information on how this system will connect to the full M&E system proposed for the Power Hall is provided in the accompanying M&E Strategy Report. Listed building consent will be applied for the full refurbishment, including additional services later in the year.

4.2 Detailed Proposals

Listed Building Consent is sought for:

“Alterations to the Grade I Listed Power Hall for the creation of openings and installation of plant plus the introduction of a services trench within its curtilage.”

The proposed works can be summarised as follows:

New Plant

Proposed plant to be installed on an existing 1980s concrete slab in the north east corner of the Power Hall includes:

- A buffer vessel
- Temporary painted plasterboard stud wall enclosures for switchroom and transformer
- A buffer water tank
- 4 x Water Source Heat Pumps
- Steam boiler and ancillaries

Heating from the steam system will be recovered with a special steam-to-water plate heat exchanger, designed to transfer the steam latent heat to the ground water and so it will be available as a heating source for the Power Hall and other buildings on site. All pipework and plant will be clad with a metal polished finish.

Pipework and valves will be used to highlight the energy transfer across the systems.

The element finishes will be in metal polish cladding, with custom-made insulated boxes to protect the main equipment. The finishes will be visually appealing and in line with the examples in the accompanying M&E Strategy Report produced by Max Fordham.

New Openings

Main equipment will be freestanding, with limited interference with the brick walls. The main distribution will be at a high level and concentrated to the plantroom areas. All other services will run concealed beneath raised platforms.

However, the new main services are required to enter the buildings. The services entrance will be limited at one point only - below the ground to limit the impact on the historic building. The new opening will be on the south east wall, close to the VE block connection where services can enter in proximity to the new plant room area.

The physical impact of these proposals would be limited to the formation of one opening in the external north wall for pipework, which would result in the loss of a minor amount of original wall fabric which was once below ground level. Given its location and limited contribution to the significance of the building, its removal would not cause harm.

Services Trench

A new services trench is proposed across the site to accommodate the new water source heat pump network and the new electricity supply from Electricity North West. In order to future proof additional service requirements additional plastic ductwork will be laid within the trench to accommodate potential future data and Building Management Service connections. Plans within the accompanying Design & Access Statement prepared by Carmody Groarke show the areas of new trenching required.

Where trenching is required in cobbled areas, the cobbles will be set aside and reinstalled once the pipework has been laid. A detailed site survey was carried out during the preparation work stage which recorded cobble types and the overall visual appearance of cobbling on site.

In order for cobbles to be reinstated to match the existing following the trenching works, the confirmed route will be photographically recorded and spacing patterns and dimensions will be noted.

The cobbles will be carefully lifted using hand tools if possible. Where not possible, small hand-held breakers will be used to break out mortar and loosen cobbles. When removing, each cobble will be marked with a reference number, photographed and stored in a safe location in close proximity to the area it has been removed from, ready for reinstatement.

After the trenching works are complete, cobbles are to be gently cleaned and re-laid in lime mortar in a layout which matches the cobbles adjacent.

The trenching works will therefore be carried out according to a careful, sequential methodology for removal and like-for-like reinstatement which would ensure the special interest of this area is not adversely affected. Given the proposals for like-for-like reinstatement, the Castlefield Conservation Area and other nearby listed buildings would not be affected.

A full description of the proposed scope of works to the Power Hall is provided in the accompanying Design & Access Statement.

5 Accordance with Planning Policy

The sole material planning consideration for this application is the impact on the designated Grade II listed Power Hall and therefore adherence to planning policy regarding the historic environment.

Paragraph 192 of the NPPF (2019) states that *“in determining applications, local planning authorities should take account of:*

- *the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;*
- *the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and*
- *the desirability of new development making a positive contribution to local character and distinctiveness.”*

Paragraphs 193-196 place great weight on the conservation of designated heritage assets, emphasising the need to avoid “substantial harm” in terms of demolition, significant alteration, or compromise the setting unless that harm is clearly justified (via four specific tests) or there are substantial public benefits that outweigh that harm. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits.

A Heritage Assessment has been prepared by Donald Insall Associates to assess the impact the proposals will have on the Grade II Power Hall. The Assessment concludes that the proposals would result in no harm to the significance of heritage assets overall. They also offer an array of public benefits including enhance the environmental performance of the building and contribution towards the Museum’s sustainability positioning statement, MCC’s zero carbon target and the objectives of its Climate Change Action Plan.

Further to this, the creation of this functional new exhibit provides the opportunity for the Museum to enhance public understanding about climate change and the role historic buildings can play in a more sustainable future.

Taking this into account, the proposals are in accordance with Paragraph 192-196 of the NPPF.

This approach is in line with Policy CC9 Design and Heritage within the adopted Manchester Core Strategy (2012). This policy sets out that development in Manchester City Centre should protect or enhance the heritage assets that have been identified, including listed buildings, conservation areas and scheduled ancient monuments. The Policy also supports the need to ensure buildings are of the highest standard in terms of appearance and function, and all reinstatement works will repair the listed fabric to match the original like-for-like.

Saved UDP Policy DC18.1 states that the Council give particularly careful consideration to development within Conservation Areas and will seek to preserve and enhance the character of these designated areas, while saved UDP Policy DC19.1 states that applications for listed building consent involving or having an impact on buildings of Special Architectural or Historic Interest will have regard to securing the retention, restoration, maintenance and continued use of such buildings and to protecting their general setting.

The proposals have been sensitively designed and concluded to not cause harm to the significance of the listed building or the curtilage listed Upper Yard. Given the location of the proposals, the setting of the Power Hall and that of other nearby listed buildings (particularly the New Warehouse), the character and appearance of the Castlefield Conservation Area would be maintained.

The proposals can therefore be considered to be in accordance with Policy CC9 Design and Heritage of the Manchester Core Strategy (2012) as well saved UDP Policies DC18.1 and DC19.1.

Overall, the proposed works are required to facilitate the museum's aims in reusing the Power Hall. The proposals are the first phase in the decarbonisation of this listed building and the sustainable operation of the historic working machines. Furthermore, the Power Hall will form a key part of the Museum's exhibition to improve visitor's carbon literacy – which would result in a considerable public benefit.

It is considered that the proposed development meets the requirements of the tests outlined by the National Planning Policy Framework as well as Manchester's local policies and so the Heritage Assessment concludes that the proposals should be recommended for approval.

6 Application Documents To be updated once final docs received

The following information is provided in support of this application:

- Covering Letter prepared by Deloitte Real Estate;
- Application Drawings (see Appendix A), prepared by Carmody Groarke;
- Design & Access Statement (Section 2 and Section 3), prepared by Carmody Groarke;
- Schedule of Works – Package 1A Power Hall, prepared by H.H Smith;
- Power Hall & Decarbonisation Vision document, prepared by Science & Industry Museum;
- Concise Heritage Impact Assessment for Power Hall Plant and Trenching within the Curtilage Part of the Power Hall + Decarbonisation Project, prepared by Donald Insall Associates;
- M&E Strategy Report Power Hall and Site Salix Works, prepared by Max Fordham; and
- Risk Assessment and Method Statement (Upper Yard Trial Holes & Trenches: Historic Surfaces); prepared by H.H Smith
- Risk Assessment and Method Statement (Builders work associated with Power Hall Plant installation); prepared by H.H Smith

The Planning Portal Reference is PP-09676888.

We look forward to receiving your confirmation that the application has been formally registered. In the meantime, if you have any queries or require any further information, please do not hesitate to contact me or my colleague, Katie Wray (0161 455 6350 / kawray@deloitte.co.uk).

Yours sincerely

A handwritten signature in blue ink, appearing to read 'J Cooper', with a stylized flourish at the end.

John Cooper

For Deloitte LLP

Appendix A – Power Hall Plant & Trenching - Drawing Schedule

Drawing Description	Reference
00 Location Plan	
Site Location Plan	321_X_00_00
10 Site Plan	
Existing Site Plan	321_X_10_00
Proposed Site Plan	321_P_10_00
20 Plan	
Existing Ground Floor Plan	321_1A_X_20_00
Proposed Ground Floor Plan	321_1A_P_20_00
21 Demolition Plan	
Proposed Demolition Site Plan	321_1A_P_11_00
Proposed GF Demolition Plan	321_1A_P_21_00
30 Section/Internal Elevation	
Existing Section & Internal Elevations	321_1A_X_30_00
Proposed Section & Internal Elevations	321_1A_P_30_00
31 Demolition Section/Internal Elevation	
Proposed Demolition Elevation	321_1A_P_31_00
100 Detailed Drawings	
Proposed wall penetration details	321_1A_P_100_00