National Railway Museum
Central Hall Project
Design and Access Statement

08.03.2022
Revision B

FEILDEN FOWLES

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REVISION HISTORY

20.12.2021	A - Issue to Planning
08.03.2022	B - Re-issue to capture changes to landscape

PROJECT INFORMATION

Project	Central Hall and Architectural Improvement Works
Reference No.	116/CHY
Address	National Railway Museum Leeman Rd, York YO26 4XJ

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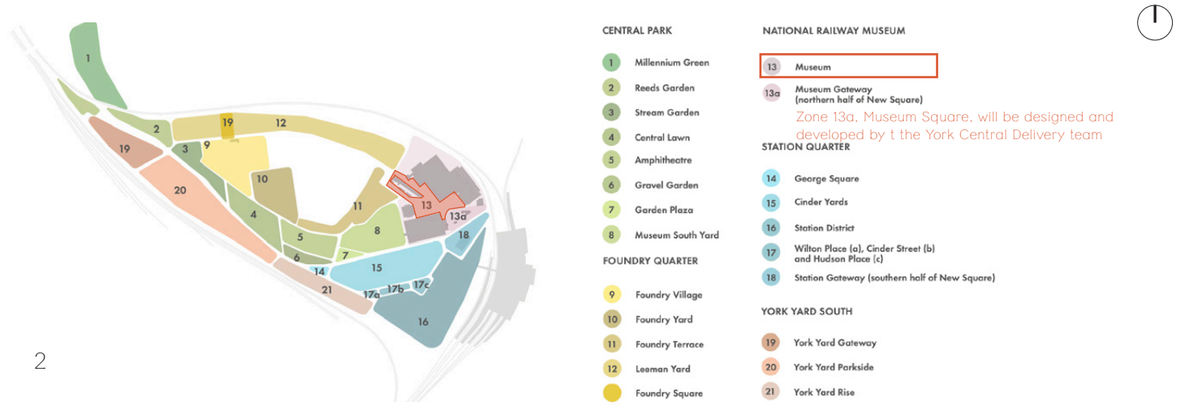

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INTRODUCTION

0.1 Purpose and scope of report

This report has been prepared by Feilden Fowles Architects (FFA) on behalf of the Science Museum Group (SMG) and the National Railway Museum (NRM) in York, in support of the museum's reserved matters application for :

- Demolition of existing entrance building, mess room, underpass between these buildings and Great Hall, and associated service buildings
- Construction of a new entrance building with associated visitor facilities, new gallery, shop and cafe. New building to provide level access to the museum's two main galleries : Station Hall and Great Hall
- Associated landscape improvements to the North of the site to accommodate a new service road, parking and pedestrian route complying with Condition 45 of the outline planning application. Landscape to the south of the proposal, Museum Square, will be designed by the York Central Delivery team representing Homes England and Network Rail

Outline Planning approval was granted for the York Central Development on 24 December 2019 (Application Ref: 18/01884/OUTM). This report focusses on Development Zone "G : National Railway Museum" and more specifically on the character zone "13 : Museum".

Character zone "13a : Museum Gateway" will be designed and developed by the York Central Delivery team representing Homes England and Network Rail

0.2 Structure of report

This report is structured into four sections :

1. Background and Brief

This section summarises our understanding of the background and brief for the proposal.

2. Site Analysis & Context

This section provides a summary of the context and analysis for application site.

3. Design Statement

This section summarises the design proposal : from the concept to the design development and presenting the current design in terms of urban scale, Central Hall, Futures Gallery and Commercial wing. This also covers the design approach related to the York Central approved Parameter Plans and Design Guide.

4. Access Statement

This section covers the access arrangements including pedestrians, cycles, public transport and servicing during and outside museum opening times.

0.3 Supplementary documents

This document is submitted alongside the following supporting documentation :

- Statement from the National Railway Museum
- Architectural drawings by Feilden Fowles
- Landscape drawings by Barton Howe
- Lighting report by Max Fordham
- Heritage Statement by Montagu Evans,
- Archaeology Remains Plan
- Ecology Report by Wold Ecology
- Transport Statement by SCP
- Travel Plan by SCP
- Foul and Surface Water Drainage by Price and Myers
- Sustainability Statement by Max Fordham
- BREEAM Pre-Assessment by GWP
- Statement of Community Involvement by Royal Pilgrim
- Planning Statement by O'Neill Associates

1. Aerial view of the site, not to scale - *Source : Google Maps*
   National Railway Museum's current ownership boundary
   Application boundary

2. York Central Character Areas and Development Zones Diagram - *Source : York Central Design Guide YCL-ALM-ZZ-XX-RP-AX-0003, January 2019 - Revision A*

0.4 Overview of proposal

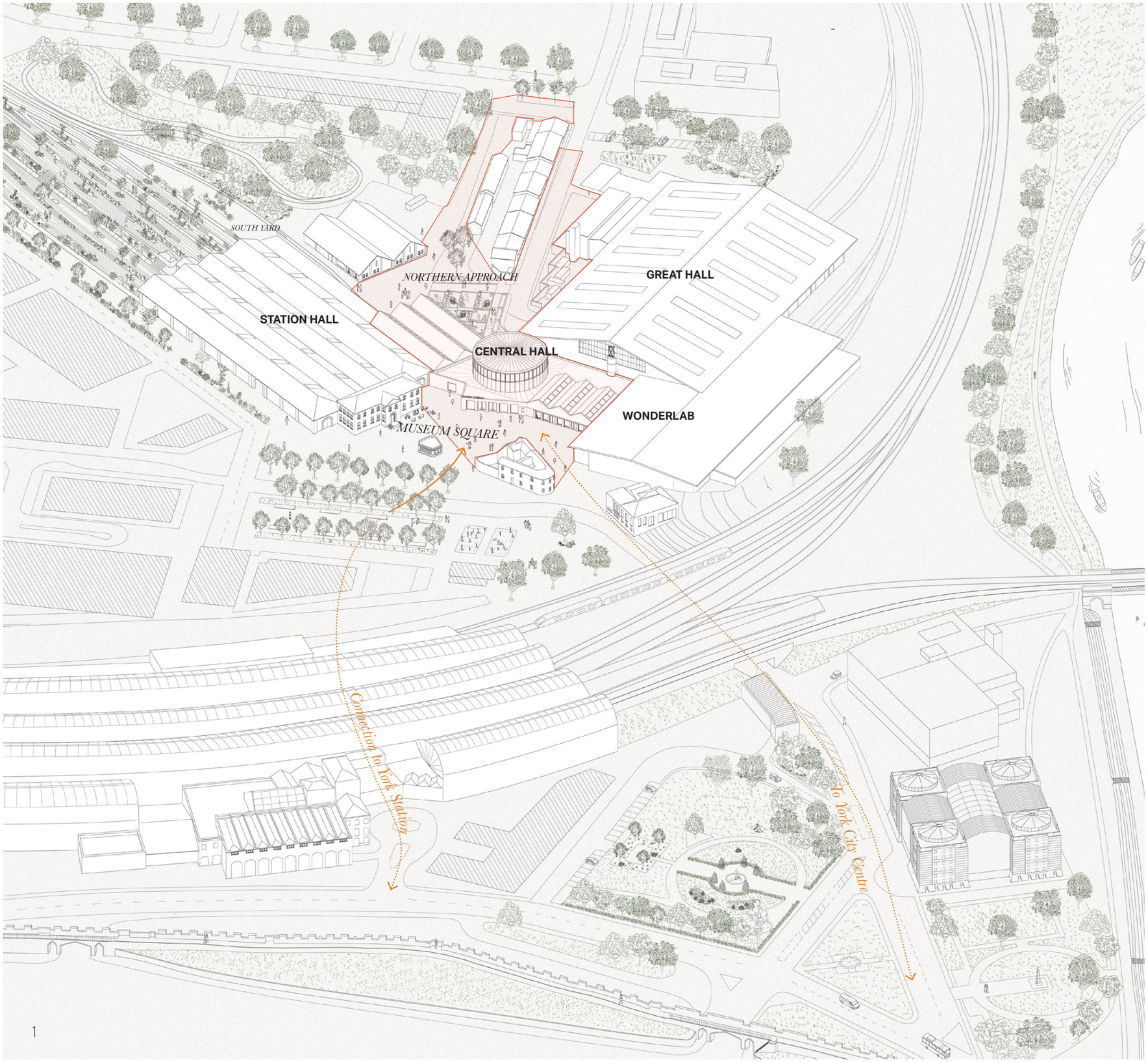
Central Hall aims to provide a compelling welcome and arrival space that connects, rationalises, and integrates the museum estate for the first time in its history. As an integral part of the Vision 2025 programme, the building will form the critical connection between the existing museum halls and enhance the connectivity of the spaces.

This pioneering project aims to put sustainability at its forefront, through the design, construction, and operation of the new building. The building will incorporate a spectacular 800 sqm exhibition gallery, the museum's main shop and café and improved visitor facilities.

The integration of the museum estate and its physical position within the York Central development will enable NRM to grow future sustainable income and offset maintenance costs and liabilities of an ageing estate.

Included with the proposal are designs for the northern landscape including pedestrian route, service access and parking. The landscape to the south, called Museum Square, will be designed by the York Central Delivery team representing Homes England and Network Rail .

1. Axonometric showing the proposal in its context
2. Concept diagram for Central Hall



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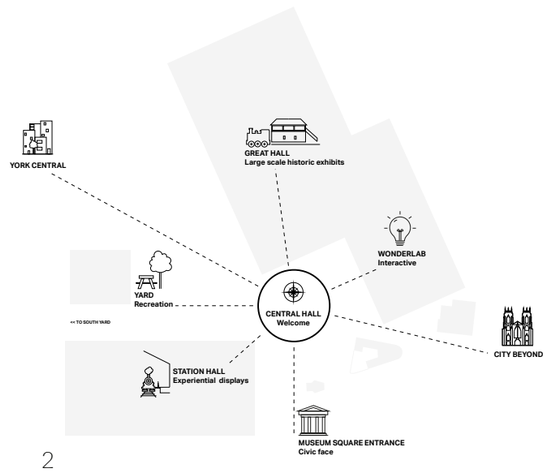

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Background and Brief

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SCIENCE MUSEUM GROUP

RAILWAY MUSEUM

CENTRAL HALL NATIONAL RAILWAY MUSEUM

A The cultural benefits of the NRM to: York Central, York residents, the UK, globally. Its aims, components, visitor numbers, recent history.

1. The Vision for York Central that was set out in the outline planning application for the scheme envisaged that the National Railway Museum would be the cultural heart of York Central. It is explained:

   The National Railway Museum will be the cultural heart of York Central. It has an exciting and ambitious emerging masterplan to tell the epic stories of the impact of railways on the world. The Museum will contribute to York's tourist industry with significant growth in visitor numbers discovering its world-class collection with a new Central Gallery showcasing the latest innovations from the modern railway industry.

2. The NRM occupies a substantial area of land within the York Central site. This amounts to approximately 6.38 hectares or around 14.2 % of the York Central site. The NRM is therefore an integral part of the York Central Development, and the cultural hub of the scheme.

3. At the heart of the redesigned National Railway Museum site, Central Hall will become the gateway to our transformed museum, providing level access throughout the site, and unifying the site like never before. The new gallery space within Central Hall will highlight innovative technologies and the impact of the railways on our lives.

4. Central Hall is not just about a better arrival and visitor experience for the museum. It has a fundamental role as the cultural heart of the York Central development. Whilst much is made of the role of the museum as a visitor attraction, this often understates its role as one of the major cultural attractions for the local City of York community. Of the c. 750,000 visitors a year, some 127,500 are local people, many of whom return year on year and use the museum and its cafes and communal spaces as a place to meet friends and family and to entertain their families.

Part of the Science Museum Group, which also includes Science Museum, London; National Science and Media Museum, Bradford; Museum of Science and Industry, Manchester; Locomotion, Shildon

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1.1 THE CLIENT

SCIENCE MUSEUM GROUP

The Science Museum Group is the world's most significant museum group for science, technology, medicine, industry and media. The Science Museum Group is a collection of national museums in the UK that includes the Science Museum (London), the Science and Industry Museum (Manchester), Locomotion (Shildon, County Durham), the National Science and Media Museum (Bradford) and the National Collections Centre (Wroughton, Swindon).

NATIONAL RAILWAY MUSEUM

The National Railway Museum (NRM) in York is a member of the Science Museum Group and has the potential to be the greatest railway museum in the world.

Since opening in 1975, the museum has welcomed more than 33 million visitors, free of charge. The museum also has a sister site, Locomotion, which celebrates Shildon in County Durham as the cradle of the railways where the Stockton and Darlington line was the first public railway to run steam-powered locomotives. Their museums boast the most extensive railway collection in the world and tell the stories of nearly two centuries of railway history. Over 60,000 objects from rolling stock, to medals and uniforms, reveal unexpected stories from the past, present and future of the railways.

Through their comprehensive programme of learning activities, exhibitions and events, the museum is dedicated to ensuring everyone can access their treasured collection and discover the inspiring stories of their objects. They are passionate about inspiring the next generation to engage with Science, Technology, Engineering and Maths (STEM) subjects, encouraging them to be the pioneers of the future, regardless of background. They aspire to the highest international museum standards in the care and preservation of collections, scholarship, programming, learning and advocacy for their subject areas. As custodians of the national collection, they preserve objects for future generations to explore.

STEERING GROUP

The development of the project is closely supported by several client groups :

- A Working Group formed by Judith McNicol, Director of the National Railway Museum, Anna Dejean, Director of Masterplan and Estates, Edel Millar, Project Director and Sarah Dennison, Client Project Manager. This group is also supported when necessary by key stakeholders : Vision 2025 Programme Director, Estate team, Curatorial team, etc...
- A Masterplan Review Group (MRG)
- A Masterplan and Estate Committee (MEC)

When necessary, the project is also reviewed by the Science Museum Group Board of Trustees (BoT).

STATEMENT OF NEED

Please refer to the statement from the National Railway Museum appended to this application for more details on the background to the museum, Vision 2025 Programme and the benefits of the project to York residents and visitors.

1. Statement from the National Railway Museum appended to this application

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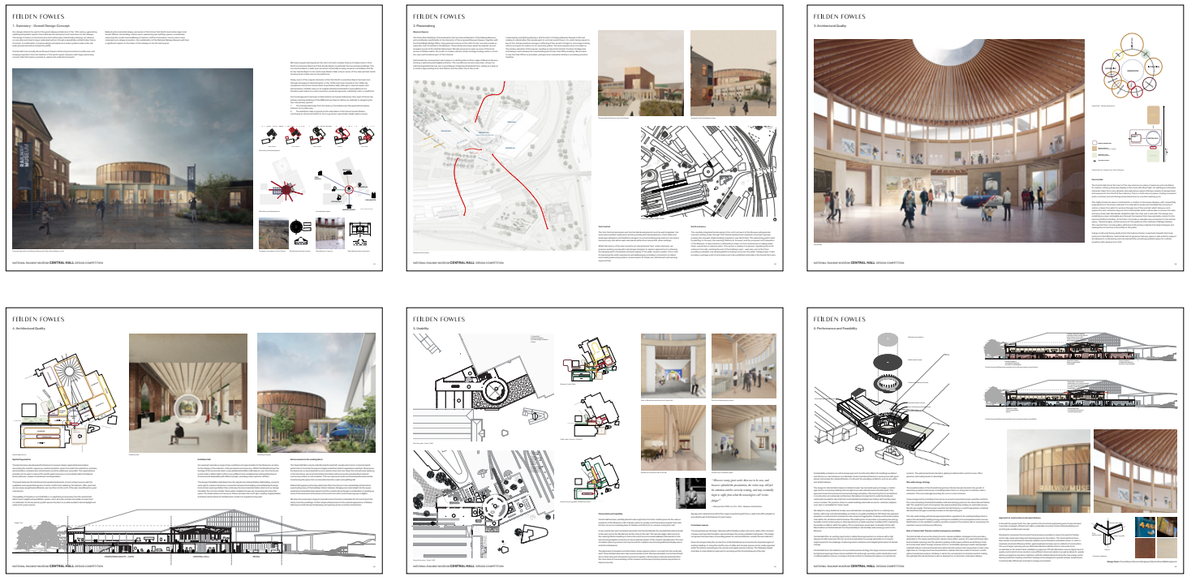

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1.2
DESIGN TEAM

As described in the York Central Design Guide, the quality of the design and delivery of new space at the National Railway Museum is of paramount importance to the museum and its parent Science Museum Group.

As such, a two stage design competition was organised to find the right team to create the optimum proposals for the brief, setting and York context. From the seventy-six teams which expressed their interest for the project, five were shortlisted In November 2019 to create design concept designs for the project.

Following this process, the following team was appointed in February 2020.

FEILDEN FOWLES, ARCHITECTS

Feilden Fowles is a leading, London-based architecture practice specialising in Arts & Culture, Education, Workplace, Heritage and Strategic commissions. The practice was established by Fergus Feilden and Edmund Fowles in 2009 and was named BD's 'Young Architect of the Year' in 2016.

The practice has won numerous awards including RIBA, and Civic Trust Awards among others. The Weston, a new gallery and visitor centre at Yorkshire Sculpture Park, was shortlisted for the 2019 RIBA Stirling Prize. Our work has been widely published and we have grown a reputation for delivering exemplary projects in highly sensitive and challenging historic settings.

MAX FORDHAM, MEP ENGINEERS

For over 50 years, Max Fordham has worked with some of the world's leading architects on some of the world's greatest buildings. From their offices in London, Cambridge, Edinburgh, Manchester and Bristol, their engineers have worked on projects across the country and around the globe. Their portfolio of projects includes the Stirling Prize-winning Newport Street Gallery and Maxxi Museum, and Stirling Prize-nominated Photography Studio for Juergen Teller, Tate St Ives and Neville Holt opera.

Sustainability was a founding principle of Max Fordham and has remained a hallmark ever since. The practice was pioneering environmental design long before its importance was fully understood. As winners of the Ashden Gold award 2015, the Ashden Award for Sustainable buildings 2015 and the ACE sustainability Champion 2016, they continue to undertake innovative, energy efficient design today.

Additionally, Max Fordham has been instrumental in developing and promoting the principles of soft landings and post occupancy evaluation which has been recognised through their winning the BSRIA Soft Landings Practitioner of the Year 2019. They are also an active member of the UKGBC Net Zero Carbon Building Group who have defined what net zero carbon is for buildings in the UK.

PRICE & MYERS, STRUCTURAL ENGINEERS

Price & Myers is a consulting civil and structural engineering practice established in London in 1978, with the aim of working with good imaginative architects, to make excellent buildings. In their first 41 years, they have completed over 28,000 projects, and won over 780 design awards. They have offices in London, Nottingham, and Oxford, and currently employ about 185 people.

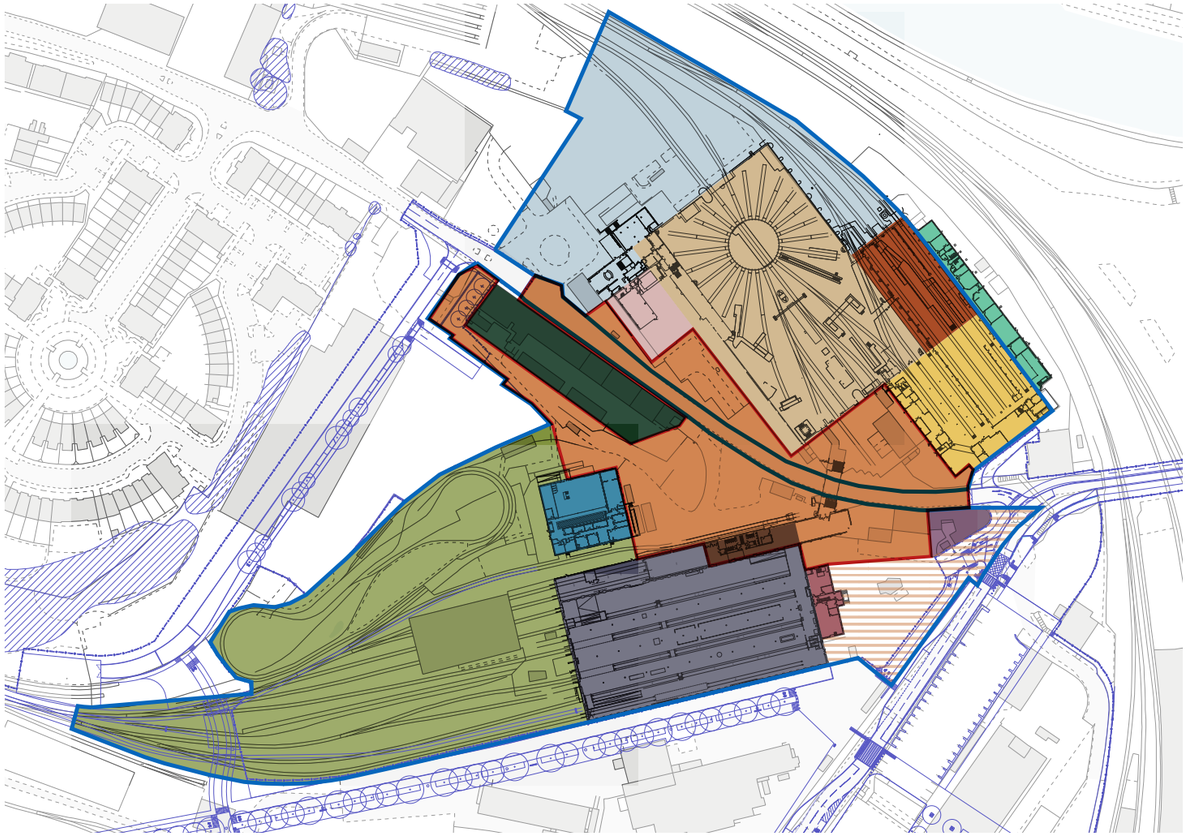
Their work covers an unusually wide range, both in size and type. Projects vary from minor alterations and extensions, to major new buildings and refurbishment projects, using the most recent developments in materials and construction techniques. They have advised on the repair and restoration of many historic buildings, and they have worked with some of the country's leading architects on the design of many outstanding modern buildings. Their diverse project portfolio allows us to find the right solution for every job.

WIDER CONSULTANT GROUP

The wider team is composed of the following consultants:

- Project Manager : Faithful + Gould
- Quantity Surveyor : Arcadis
- Planning Consultant : O'Neill Associates
- Landscape Design: Barton Howe Associates
- Principal Designer (H&S) : Faithful + Gould
- Heritage Consultant : Montagu Evans
- Acoustic Consultant : Max Fordham
- Traffic / Highway Consultant : SCP Leeds
- Archaeologist : John Oxley
- Access Consultant : Mima
- Fire Engineering Consultant : OFR
- Lighting Consultant : Max Fordham
- Security Advisor : Wilson James
- Building Control Officer : York City Council

1. Design Team meeting at the museum during the competition stage in December 2019
2. Boards submitted at competition stage



Museum ownership boundary

Application site boundary
Central Hall and associated landscape

York Central Infrastructure Proposals

Museum Square - Area to be designed and developed by the York Central Delivery team representing Homes England and Network Rail

Wonderlab

Great Hall

Open Store

South Yard

Karen Harrison Building

Learning Platform

Station Hall

Peter Allen Building

Bullnose

Conference Centre

The Stables

Diagram illustrating the NRM site

1.3
VISION

Central Hall is part of Vision 2025, an ambitious plan to transform the museum – to become the cultural anchor of its changing neighbourhood, as well as a world-class visitor attraction. Vision 2025 is made up of a number of connected projects, including revitalised green spaces, a re-imagining of our Great and Station Halls and a new interactive gallery, 'Wonderlab'.

Vision 2025 goes way beyond creating new buildings. It will safeguard the collection, diversify the volunteer team, create new jobs, reinvigorate the museum's heritage buildings, provide impressive open green spaces and embed the museum at the heart of its community. The museum already welcomes 750,000 people every year, serving the people of York, as well as many visitors from all over the UK and around the world. Central Hall is part of a vision that will help the museum to better engage with the community as well as attracting 1.2 million visitors every year, bringing in new audiences and aiming to inspire the next generation.

Short summaries have been provided below for some of the key Vision 2025 projects - to be read in conjunction with the adjacent diagram.

WONDERLAB

Wonderlab is a new interactive gallery to inspire audiences with the wonder of engineering and science, in the context of railways. Targeted at young people aged 7-14 years old and located in the National Railway Museum's existing engineering workshop, Wonderlab will encourage visitors to think like engineers through experience, interactivity and play.

CENTRAL HALL

This project is the subject of this report and will be detailed in the following sections.

SOUTH YARD

Melding commercial offers within a revamped landscape, the South Yard project forms the green spine of the museum's development and gives a valuable point of open permeability with York Central. Abutting the proposed York Central Park, South Yard will incorporate a play area, catering offer and train rides to visitors whilst providing the museum with outdoor space for events, markets and pop-ups.

BEYOND 2025

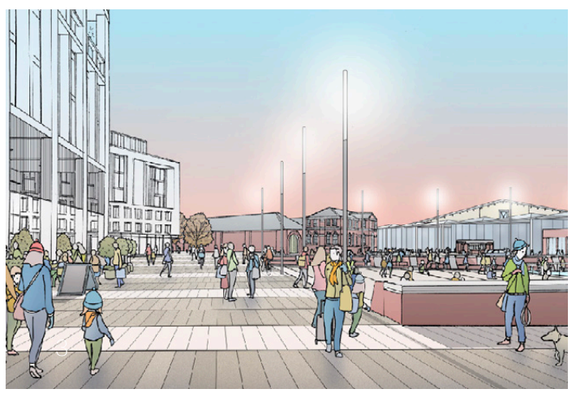
The following projects are parts of the Vision 2025 programme that will be delivered after 2025.

- Great Hall

The Great Hall is the National Railway Museum's flagship gallery and one of the site's key heritage assets. This project will redisplay collections with a new thematic narrative to convey the epic impact the railways have had on our lives. Large locomotives and rail vehicles will be brought to life, with focussed areas of interpretive content and collections. Exhibition and spatial design will ensure greater access for all, and clear, intuitive navigation.

- Open Store

The flagship participatory project of Vision 2025, Open Store will be developed and delivered with community partners. The project seeks to interpret and rationalise the railway collections displayed in the 1,300 sqm Warehouse and will enhance the visitor experience, improve visitor flow and wayfinding, increase dwell time and improve collections care.



1.4
YORK CENTRAL DEVELOPMENT

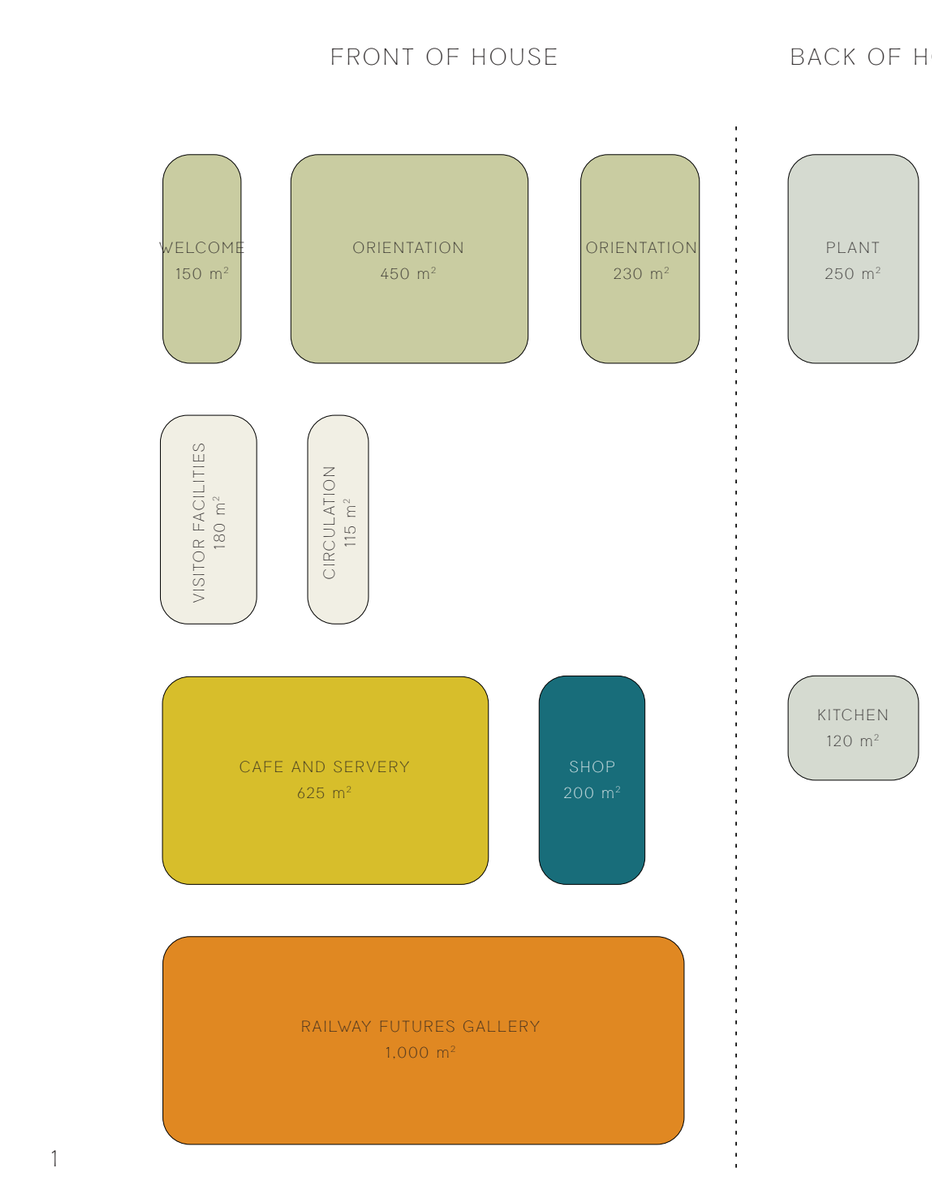
As well as being part of the museum's Vision 2025, Central Hall is also the key cultural anchor – the heartbeat – of a larger development called York Central. One of the largest city centre brownfield regeneration projects in Europe, York Central is a 45-hectare development created in partnership with Network Rail, Homes England, City of York Council and the museum. It promises to transform this corner of the city, redeveloping former railway land to create up to 2,500 homes. The National Railway Museum already employs around 225 people, as well as being home to 250 volunteers; York Central's commercial quarter will create up to 6,500 additional jobs.

The transformed National Railway Museum which sits at the heart of the masterplan, will be the physical gateway to the regenerated district. The museum will be complemented by the creation of Museum Square, a York Central Delivery team designed and delivered project which will create a new civic forecourt providing a fitting pedestrian arrival to the museum from York Station and beyond.

Outline planning approval was granted in December 2019 for the York Central development. The permission included a Design Guide which establishes a series of parameters to comply to for each development zone. A compliance statement for Central Hall explaining how the proposal accords with the approved Design Guide and Parameter Plans is included under Section 3 - Design Statement.

In addition, the proposal was also reviewed by the first York Central Design Review Panel in November 2021 and received positive feedback, as detailed in the appended Statement of Community Involvement prepared by Royal Pilgrim.

1 York Central Masterplan showing the footprint for Central Hall included in the approved outline planning application
2 Sketch view of South Yard (Source : York Central Partnership website)
3 Sketch view of Museum Square (Source : York Central Partnership website)



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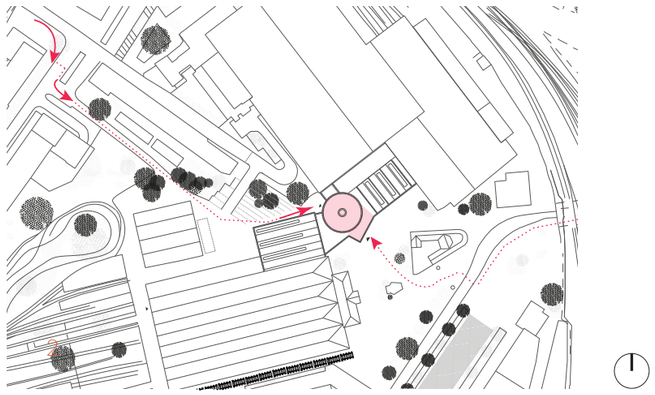

1.5 BRIEF

OBJECTIVES

The brief for Central Hall calls for a circa 3,500 sqm building which will sit at the junction of the museum estate, between Station Hall and Great Hall.

Key to an improved visitor experience at the museum, the new building will:

- Create a building of outstanding architectural quality - the centrepiece of the museum's wider strategic investment, Vision 2025 - and give the museum a revitalised physical presence worthy of a national cultural institution.
- Present a compelling and appealing new welcome and arrival space for the National Railway Museum to position the museum as the cultural anchor for the wider York Central regeneration project.
- Be the catalyst that connects, rationalises and integrates the existing museum estate.
- Contain core visitor amenities and facilities, including retail and food & beverage outlets, toilets including Changing Place.
- Provide clarity to the museum's internal circulation and transform the legibility of the visitor experience, guiding visitors to explore the primary gallery spaces in Station Hall and Great Hall.
- Present a spectacular new exhibition gallery with the aim of increasing visitor numbers and encouraging return visits.
- Embody a national museum aesthetic using warm, natural materials to reference the existing site and historic buildings and showing a sense of scale that is appropriate to agreed development parameters.
- Help form the placemaking of York Central and bring cultural benefits of having a National Museum forging the heart of a new neighbourhood.
- Be the museum's legacy for the internationally important 200th anniversary of the founding of the commercial railways in 2025
- Serve the needs of existing and new communities - offer a safe space to gather, learn, play and relax; practically, integrate passer-by and local pedestrian access through the site during opening hours.

ACCOMMODATION SCHEDULE

The adjacent accommodation schedule was carefully developed in collaboration with the museum over the RIBA Stage 1 - Preparation & Brief stage.

A crucial driver in the development of the schedule was to maximise the amount of public areas and minimise back of house / services areas in the new build, looking at locating these in existing museum's spaces. This led to a significant reduction of built area from the footprint included in the York Central outline planning permission and from the competition brief.

This reduction and prioritisation of visitor spaces will ensure that Central Hall is future-proofed and offers sufficient flexibility to adapt and evolve as visitor numbers increase or spaces are refreshed.

The agreed brief includes a welcome area, orientation spaces, visitor facilities (including a changing place), a new cafe and associated kitchen and servery space, a new shop and gallery.

PEDESTRIAN ROUTE

In addition to the objectives listed, a key aim for the project is also to provide an accessible and convenient route for pedestrians travelling to and from the Leeman Road area during museum opening times. Indeed, due to Leeman Road's closure as part of the York Central plans, a public pedestrian route through the Central Hall building will come into effect when the building is complete.

Condition 45 of the outline planning permission requires that 'prior to the closure of Leeman Road for pedestrians and cyclists a scheme for a new alternative route for pedestrians and cyclists and details of a pedestrian access through the National Railway Museum extension shall be submitted to and approved in writing by the Local Planning Authority'. This RMA includes details of the section of path leading from Leeman Road to the western entrance of Central Hall and Appendix 2 of the Planning Statement explains how it complies with the design requirements of the Walkway Agreement. The eastern section connecting the main reception with the highway across Museum Square is to be designed and delivered by the York Central Delivery Team but as owners of the Square, NRM will ensure that the design developed by the delivery team includes a route that fully complies with the Walkway Agreement. A submission under outline condition 45 will be made as part of a future AOD application.

1. Accommodation schedule diagram
2. Diagram highlighting pedestrian route to go through Central Hall (Not to scale)

1.6
PRE-PLANNING APPLICATION ADVICE AND CONSULTATIONS

PRE-PLANNING DISCUSSIONS

In the lead up to the submission of the application, extensive discussions were held with planning and design officers at the Council along with their technical advisors as part of a formal pre-application process. The request for pre-application advice was issued in June 2021 and the exercise included:

- A series of pre-application meetings with planning and conservation officers, to discuss the design of the scheme, heritage issues and to agree the scope of the application in the context of the outline planning permission
- Liaison with the Council's Archaeologist to review the Archaeological Remains Plan and the steps involved in the forthcoming archaeological evaluation
- Dialogue with the Council's Highways Officers on the Transport Statement and compliance with the highways conditions of the outline planning permission

Throughout the pre-application process, officers have been generally supportive of the proposals for Central Hall which have been brought forward in line with the principles expressed within the York Central Design Guide, the approved parameter plans and the outline conditions.

YORK CENTRAL DESIGN REVIEW PANEL

In addition to the above, the proposal was presented to the first York Central Design Review Panel on the 10th November 2021. A Panel report was received on 14th December 2021 summarising the key points from the discussion. The panel was generally supportive of the proposal and felt that the strategy successfully integrated the complex and divided site while creating a front door worthy of a national museum.

The following feedback has been taken in account and amended within this application :

- Position of stairs, entrance and exit to give sufficient breathing room
- Position and scale of openings onto Museum Square
- Work on brick pattern to stay subtle and contemporary

The remaining feedback points below, mainly about the internal appearance of the spaces are being worked on :

- Size of internal drum columns and relationship between ground floor walls, columns and roof structure
- Articulation of north entrance internally, testing a potential direct view from the drum to the northern approach landscape
- Enhancements to Great Hall and North Shed elevations which will form part of a subsequent application

CONSULTATIONS

A thorough pre-application public consultation process, both online and in person, has taken place on the draft plans for Central Hall. A detailed stakeholder engagement programme has accompanied the public consultation, ensuring that a range of city stakeholders and community groups were able to speak directly with the project team at individual meetings or at the exhibition events.

An information leaflet was sent to residents which included several ways of providing feedback which increased accessibility for the consultation to those who may not have access to the internet.

The in-person exhibition events helped raise the profile of the project and ensure people were able to submit feedback. The exhibition was regularly staffed which helped residents and visitors understand more about the scheme and ask questions.

This dialogue and consultation will continue throughout the planning and development process and will also encompass further elements of the Vision 2025 programme.

Refer to the Community Involvement report appended to this application and compiled by Royal Pilgrim to read about the consultation strategy and process in more detail.

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Site Analysis & Context

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2.1
CONTEXT

YORK CONTEXT

York is one of the UK's oldest and most significant cities. The city was established as 'Eboracum' by the Romans in 71 AD, although archaeological evidence dates settlement in the area back to the Mesolithic period. York is situated in close proximity to where the River Foss joins the River Ouse, and benefits from a strategic location which made it attractive to settlers as people and supplies could be easily transported from the North Sea.

The Romans lived and ruled in York for three centuries, during which time it became one of the most important global cities of the Empire. The city was fortified by a stone wall running along the perimeter, which is amongst the Roman ruins that can still be seen in the city today.

Medieval York was a flourishing port, with industry centred around wine imports and textile manufacturing. Building in the city increased during this period and this architecture is still evident today in the inner city, with its 13th century walls, overhanging timber-framed houses and narrow streets. A fine example of this is The Shambles which, with its traditional shopfronts, is one of the UK's most historic and picturesque streets. The city is also home to York Minster, a cathedral constructed over 250 years between 1220 and 1472, which is one of the finest examples of Gothic architecture in the UK. Trading significantly decreased for York in the 16th and 17th centuries due to the increase in trade with North America and the West Indies, which moved the focus of the UK's trade to the other side of the country. The city greatly benefited from the industrial revolution in the 18th and 19th centuries, and in particular from the advent of the railways, and the population continued to grow rapidly in the 20th century.

Today, York is a thriving city with a population of over 210,000 people and flourishing tourism, retail and restaurant sectors. Other key industries include the railways, financial and professional services, and creative and technology businesses. The city is a substantial base for companies such as Hiscox, Nestlé and Aviva.

The York economy is worth approximately £5.2 billion to the UK economy— supporting roughly 9,000 businesses and 110,000 jobs. York continues its strong links with the rail industry and is home to major offices and headquarters for Network Rail, Northern Rail and LNER.

York is home to the University of York, a member of the Russell Group universities, which has an architecturally significant campus, and York St John University, which achieved university status in 2006. With its charming medieval street patterns, York is a popular filming location and has featured in films and TV shows such as Downton Abbey.

THE RAILWAY CITY

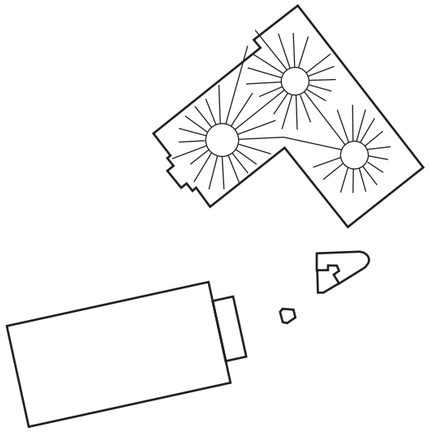
The city of York reinvented itself through the railway. As this new technology took off in the UK, George Hudson, a draper from York, invested in the North Midland Railway and persuaded George Stephenson to build his railway line from Newcastle to London through York, rather than bypassing it and going straight to Leeds.

The first railway arrived in York in 1839. At just 15 miles long, it was in its infancy and, at first, a makeshift wooden station was built to accommodate it. Just a year later, York had a direct rail link to London and the wooden building was soon replaced by a permanent station designed in 1841 by George Townsend Andrews and built inside the city walls on Toft Green. An archway was opened in the city walls to allow trains to travel in and out. The railway station was moved to its current location in 1877. Designed by Thomas Prosser, it took three years to construct and, with 13 platforms, was the largest in the UK at the time. Built on a curve to match the line of the railway tracks, the station was architecturally remarkable and was known as a 'monument to extravagance'.

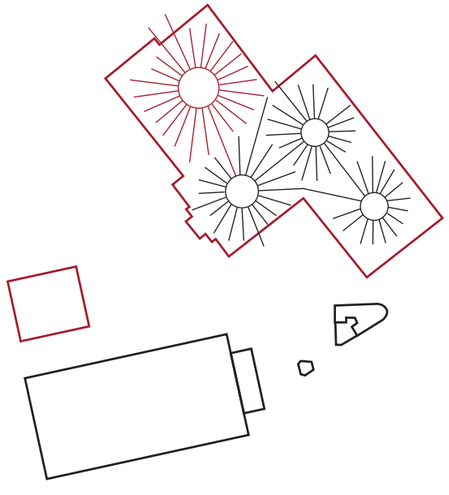
The introduction of the railways to York saved the city from stagnation, as there had been very little economic growth in the preceding years and the city was still a relatively small market town. The railway brought heavy industry to the city for the first time, allowing easy transportation of trade and goods and opened up the city to new markets, as well as tourism from Manchester, Nottingham and London.

Today, the National Railway Museum stands as testimony to York's involvement in the railway revolution — both internationally and in the UK.

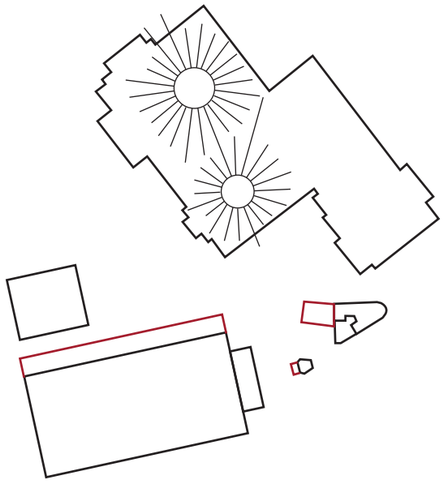
1. Aerial view of the museum
   - National Railway Museum's current ownership boundary
   - Application boundary
2. York Minster
3. York Railway Station



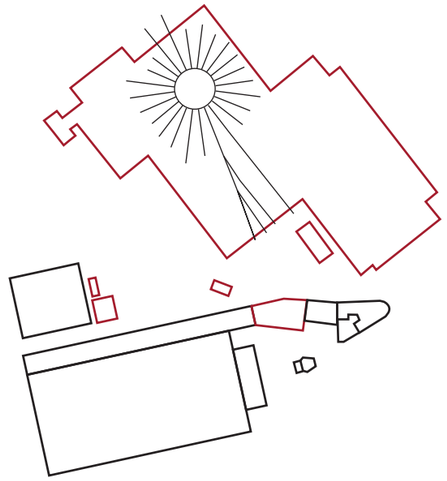
1880 ONWARDS



1915 ONWARDS



1957 ONWARDS



PRESENT

2.2
SITE HISTORY

EARLY HISTORY OF THE SITE

The NRM is located within the part of York that has produced the highest concentration of pre-Roman archaeological finds.

The Roman settlement of Eboracum was one of the most important in the country; the construction of the new Station and associated works in the 1870s revealed that this area west of the walled city was the site of Eboracum's largest cemetery.

MEDIEVAL AND POST-MEDIEVAL PERIODS

From the time the Romans withdrew until the arrival of the railways in the nineteenth century, the future site of the NRM and its context outside the city walls was cultivated fields and meadows. Leeman Road first appears — as Thief Lane — in the eighteenth century.

Following the withdrawal of Roman authority, Eboracum remained abandoned for three centuries until it flourished again as the Anglo- Scandinavian settlement known as Jorvik.

RECENT HISTORY

The buildings on the NRM site were created by the North Eastern Railway (NER) in the 1870s as part of a major expansion of their operations on a largely greenfield site in York. The centrepiece of this project was York Station, built in 1872–77 and still in use today. West of the Station, the NER also built a whole host of new facilities for receiving goods, maintaining engines and building carriages and wagons.

Part of this service area is now the site of the NRM.

The division of the site around Leeman Road reflects the historical patterns of use. On the north side of the road, locomotives were maintained in the York North Engine Shed, which later evolved into today's Great Hall.

On the south side of the Road, a large goods complex receiving coal, timber and other freight developed around the main goods station, which survives today as Station Hall. This operated quite separately from the York North Engine Shed on the other side of Leeman Road.

Leeman Road itself became a key route between the railway company headquarters in the city centre and the workers' housing to the west.

The whole district west of the station thrived up until the 1960s, since when most of the railway facilities have closed, leaving the area much less intensively used. Its fortunes changed in the 1990s when the newly founded NRM acquired the former Goods Station (Station Hall) and the York North Engine Shed (Great Hall).

Extracts from NRM Conservation Plan prepared by Alan Baxter in December 2016

Adjacent diagrams illustrate the development of the site from 1880 to today

2.3
MUSEUM TODAY

Part of the Science Museum Group, the National Railway Museum was the first English national museum outside of London. Its origins can be traced back to the success of the Railway Centenary Exhibition held in Darlington in 1925, which inspired the London and North Eastern Railway (LNER) to open the first Railway Museum in York in 1927 (located on Queen Street).

The current National Railway Museum opened in 1975. Its collection dates from the nationalisation of the railways in 1948, when the newly created British Transport Commission inherited the collections of several previous independent railway companies.

The museum is made up, essentially, of two separate main buildings, Great Hall and Station Hall, as well as a mixture of poorly integrated, somewhat piecemeal, support spaces. Visitors currently have to use an underpass that is hard to find and navigate to cross a major road, Leeman Road, which bisects the site, and they often miss out on the full museum experience.

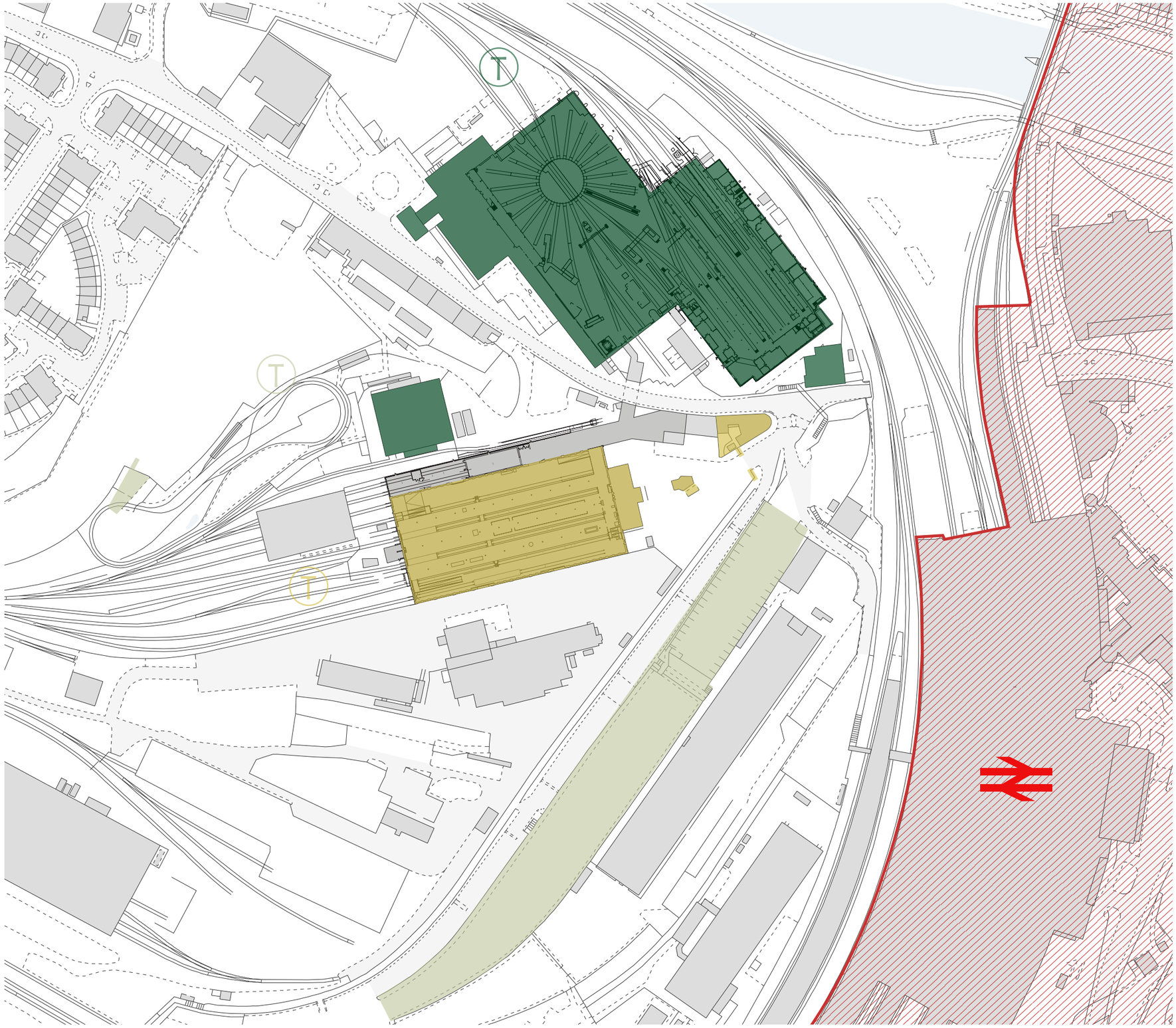
From a curatorial perspective, the site fails to communicate a coherent story or idea and does not deliver on the Science Museum Group's values of 'thinking big, revealing wonder, sharing authentic stories, igniting curiosity and being open for all'

KEY CHALLENGE

The most significant challenge facing the NRM is the division of the site, a relic of its former railway uses. Bisected by Leeman Road, the museum facilities are split into two distinct zones. The museum's layout suffers from this separation; the two halves are connected only via an underpass, creating challenges for anyone with mobility constraints. The quality of this space and the visual connections through and across the underpass are inferior. The lack of clear visual connections between the two halves of the site compromises the visitor's ability to orientate themselves. In some instances, visitors are unaware that the exhibition facilities are split across the two sides of the site and fail to discover the whole museum.

The re-routing of the road, as part of the proposed York Central development, will liberate the land between the two main museum halls, offering NRM the opportunity to unify the site.

1 Leeman Road on the right divides the site with Great Hall / North shed on the right and Peter Allen Building / Station Hall on the left



Listed Building & national interest

Building / tracks of local interest

Building / tracks of minor interest

Conservation Area

Site plan
Scale 1.2000

2.4
PLANNING CONTEXT

The NRM site is historically significant as part of a broader railway landscape of outstanding national interest. Most museum buildings are unlisted with the exception of Station Hall, Weigh Bridge , Bullnose, Gate Piers and the Peter Allen Building.

FEASIBILITY STUDY

In October 2016, architects Wilkinson Eyre were commissioned by the Science Museum Group to conduct a feasibility study for a new central gallery linking the National Railway Museum's existing buildings and to address integration with the York Central Masterplan.

Although the study illustrated an architectural concept, this was specifically intended to inform the widest opportunity. The work enabled the museum to develop the brief for Central Hall; test the practicalities of building on the proposed site; engage in the broader masterplan development with its partners on York Central; and refine its business plan.

OUTLINE PLANNING APPLICATION

The proposed construction of Central Hall received outline planning permission on 24th Dec 2019 as part of the York Central development. This was on the basis of a rough massing aligning with the feasibility study developed by Wilkinson Eyre.

PRE-PLANNING APPLICATION PROCESS

Pre-planning application conversations with City of York Council have taken place in 2021 and are summarised in the planning statement appended to this application.

Refer to the Planning report appended to this application, compiled by O'Neill Associates to read about the planning context and relevant policies.

1 Map showing the museum in relation to listed buildings and Conservation Area

2.5
THE SITE

The site is situated in the centre of York, adjacent to York Railway Station. The National Railway Museum estate is made up of numerous buildings, primarily the Great Hall & North Shed/Workshop (14,000 sqm total), Station Hall & the Peter Allen Building (7,600 sqm total), alongside various other ancillary buildings. The museum estate encompasses an amalgamated area of circa 6.6 hectares.

- 1a. Station Hall
- 1b. Intermediary space
- 1c. Temporary Exhibitions Gallery (conditioned space)
- 2a. Great Hall
- 2b. Search Engine
- 3a. North Shed - Warehouse
- 3b. North Shed - Workshop
- 4. Karen Harrison Building (formerly known as YRA building)
- 5. Peter Allen Building (PAB)
- 6. Learning Platform Building (LP)
- 7. Conference Centre
- 8. Cottage & Stables
- 9. Depot
- 10. Weighbridge
- 11. Bullnose Building

- Museum's ownership boundary
- Application site

ADJACENT BUILDINGS

Directly adjacent to the museum estate is the Former Hydraulic Power House (12), which is owned by Network Rail.

BUILDINGS & STRUCTURES TO BE DEMOLISHED

Site plan
Scale 1.2000

1

2

3

2.5
THE SITE

PROPOSED LEEMAN ROAD DIVERSION

The proposed diversion of Leeman Road will enable the existing museum buildings to be linked above ground, with significantly enhanced legibility and accessibility for visitors - including a new pedestrian route through the museum for local residents.

Station Hall and Great Hall, the museum's two main attractions, are currently linked via an underpass making access and site legibility difficult. Central Hall will achieve a step free access between building responding to one of the Science Museum Group's values to be Open for All.

THE MUSEUM IDENTITY

The current dispersal of buildings and disparate architectural styles do little to present the consistent identity of a national visitor attraction. The character of historic buildings, which are pivotal to the railway story, are diminished by site clutter and ad hoc building services.

Central Hall will promote the legibility of routes between buildings and create a central wayfinding space which also serves to consolidate the museum's identity. Central Hall will be highly distinguishable from York Central and the railway station, creating a landmark visitor experience for residents and tourists alike.

1 The site viewed from footbridge
2 Great Hall and North Shed junction
3 Current museum entrance

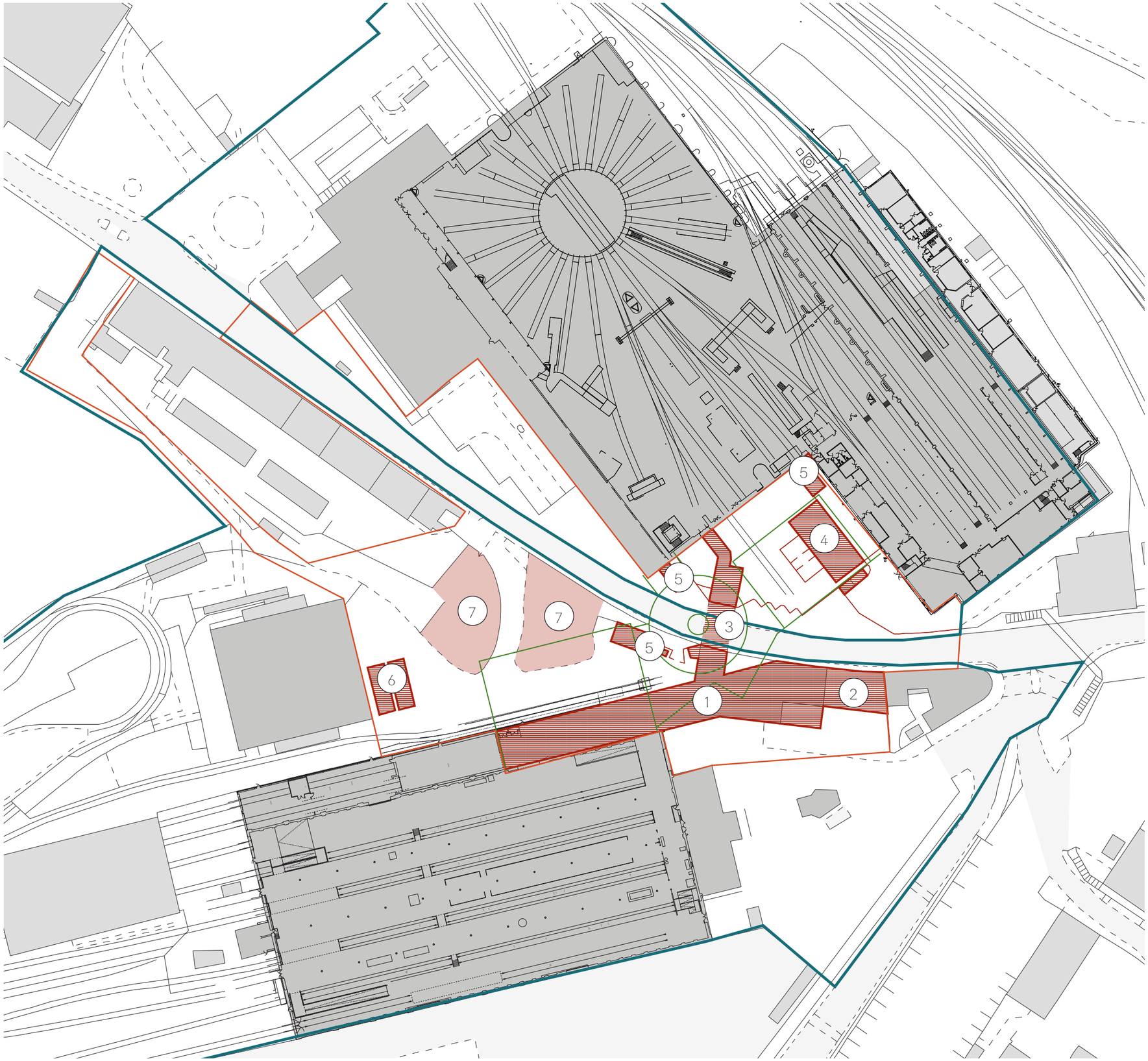
2.6
PROPOSED DEMOLITIONS

PROPOSED DEMOLITIONS & ALTERATIONS

The buildings proposed for demolition or alterations and key landscape interventions are marked in a red hatch on the adjacent plan.

This includes the following:

1. Demolition of the current entrance and lean-to building up to the conditioned gallery space
2. Demolition of the mess room - a later extension to the Bullnose building - and making good of the Bullnose building gable end
3. Demolition of the existing underpass connecting Station Hall with Great Hall
4. Relocation of the Countess of York
5. Demolition of various plant buildings and various temporary buildings adjacent to Great Hall. Services diversions such as gas and electricity will be planned as part of this project
6. Removal of existing portacabins near the Learning Platform Building
7. Remodelling of the existing landforms and gate 36 to allow for the pedestrian route and retain a service access to the north of the site.

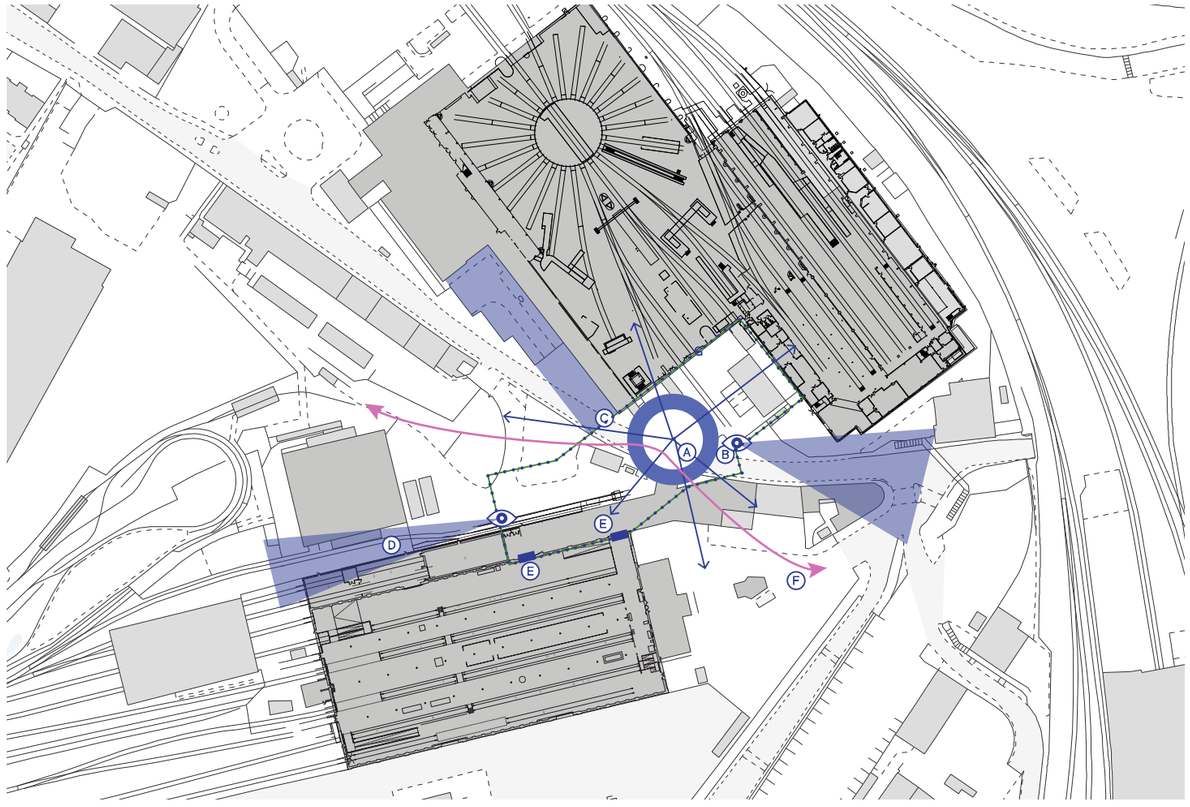


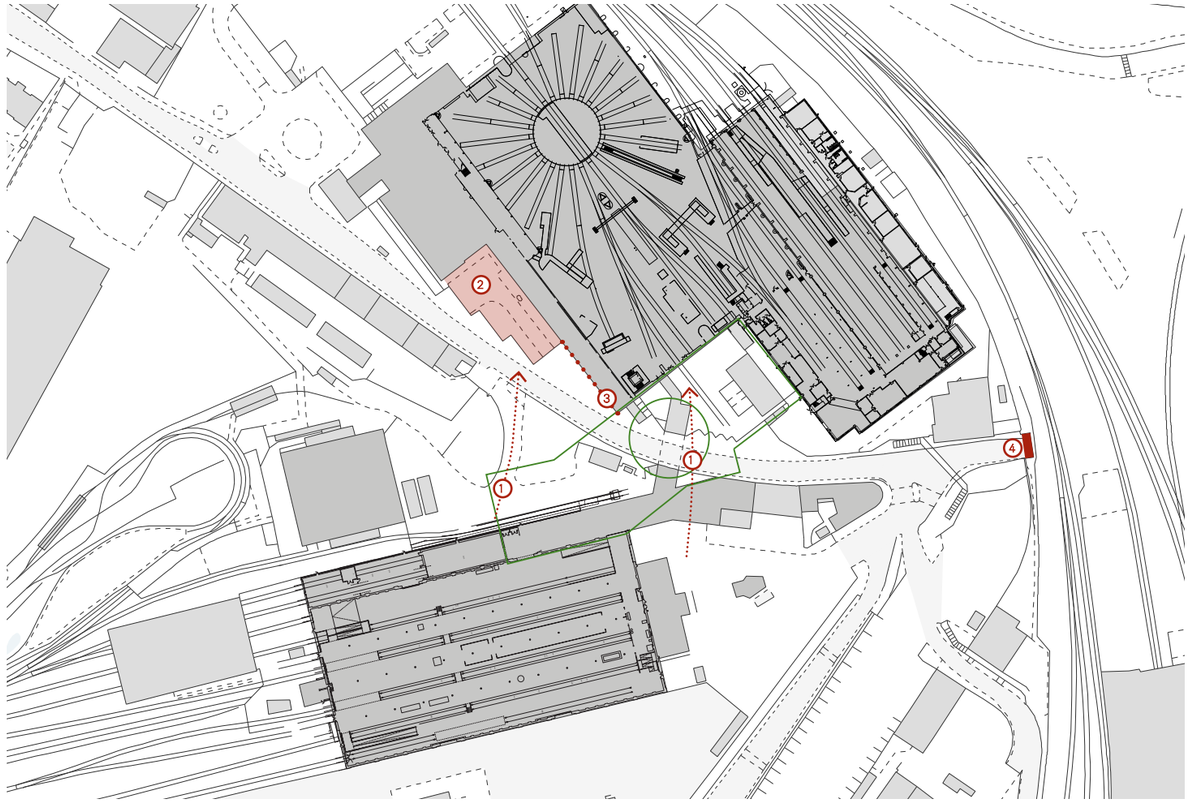
Proposed demolitions diagram

- Proposed demolitions & alterations
- Proposed demolitions underground
- Potential landscape alterations
- Central Hall outline
- Application site
- Museum's ownership boundary
- Scale 1.1000

Design Statement

3





3.1
RESPONSE TO THE CONTEXT & BRIEF

There are a number of opportunities and constraints around the site which have informed the proposals. These are illustrated in the adjacent diagrams and summarised below.

OPPORTUNITIES (IN BLUE)

A A circular geometry helps respond to the challenge set in the museum's brief of creating clear links to the new cafe and South Yard, Station Hall, Great Hall and Wonderlab.

B Adding a mezzanine level to the circular volume creates a higher central volume, forming a focal point onto Museum Square and potentially opening up views across the new square, city and the railway landscape. This new vantage point aids the visitors interpretation of the site and its history.

C Opportunities to locate the majority of back-of-house operations and deliveries to the north. This area can be easily screened using landscaping strategies, keeping the visitor experience free of clutter.

D Opportunity to create views along the Learning Platform tracks which will create a dynamic new exterior exhibit area.

E With the partial demolition of the lean-to, the internal Station Hall archways will connect straight into the new exhibition space and the listed brick wall will be revealed. The location of these archways must be carefully considered within the proposal.

F Pedestrian route through Central Hall – creates an accessible through route & encourages locals to explore the museum.

CONSTRAINTS (IN RED)

1 The level change across the site is a key challenge. Step free access between buildings and within the wider landscape is a design priority - this will ensure that the site is accessible for all.

2 The current service yard will be visible to some pedestrians who use the area during opening hours. Careful landscaping strategies will need to be considered to help improve the back-of-house.

3 Great Hall's steel exoskeleton presents a number of issues, including the junction with Central Hall and with the landscape proposals.

4 The low bridge may limit the size of elements, such as structural members, that can be brought to site by road.

Top : Site opportunities diagram
Bottom : Site constraints diagram

Both diagrams are scaled at 1.2000

1

2

3.2
RESPONSE TO THE HERITAGE

York's built heritage is incredibly rich and complex, and has always been a distinctive part of the city's character, both as a place to live and visit. The proposed designs for Central Hall respond to this context and to the heritage of the railway buildings amongst which it will be built.

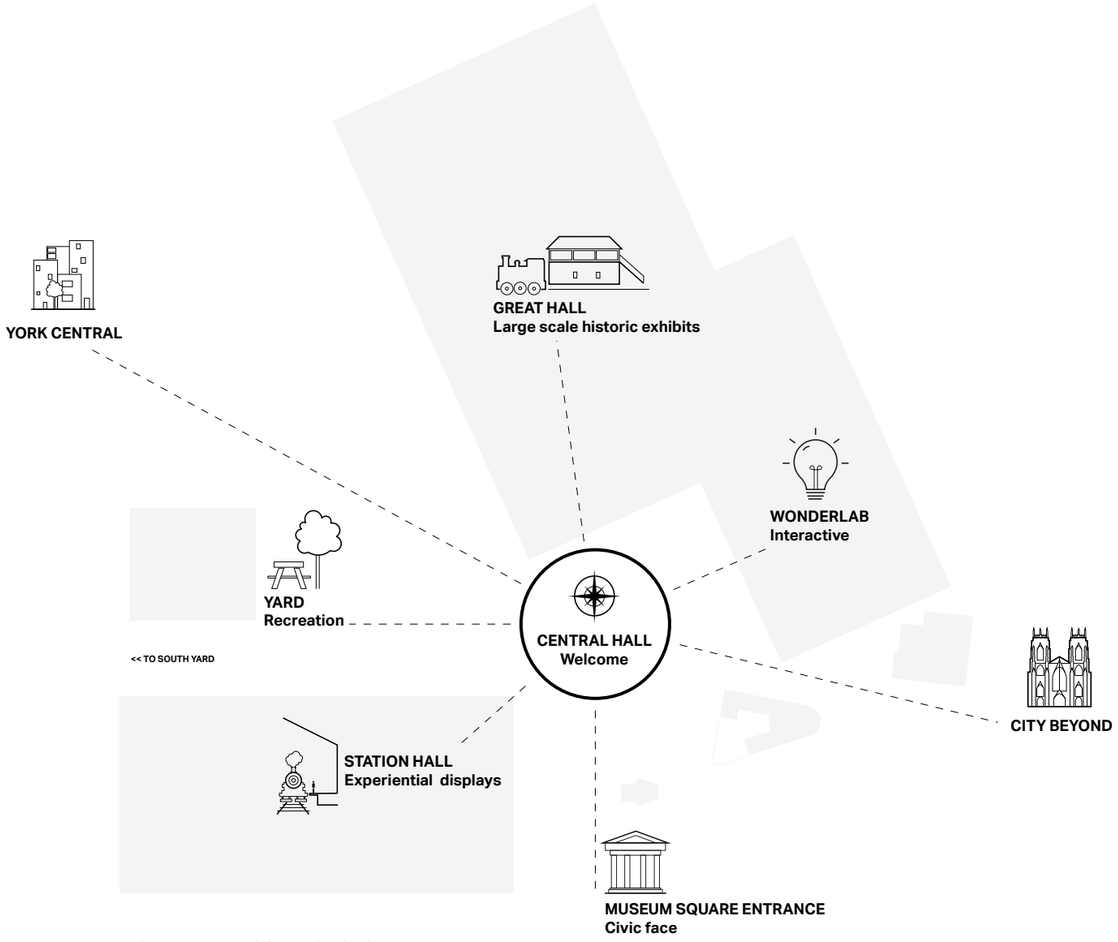
We are working with Montagu Evans, a consultancy specialising in historic built environment, to help ensure developing designs remain sensitive to the unique historical character of this site and to the neighbourhood, so that old and new can come together in a way that feels natural.

Designs for Central Hall take inspiration from traditional railway architecture – its forms, lines and materials and the following approaches have been developed to ensure that proposals would embed well with its surroundings:

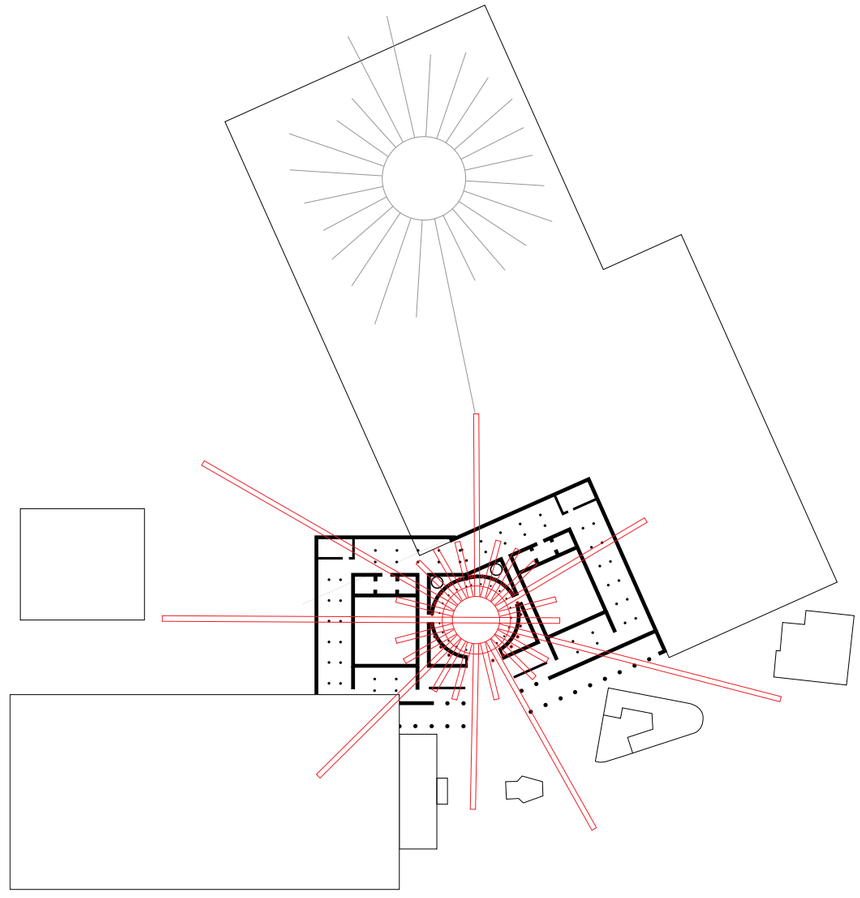
- The location of the proposed building has been carefully considered in relation to the setting of the Peter Allen Building, Station Hall, Weighbridge and Bullnose buildings.
- The height of the proposed building has been carefully set especially in relation to Station Hall to ensure that the high level brick detailing would not be compromised
- Similarly, the height of the proposed building has been considered to ensure that no detrimental impact would be made on any key townscape views
- Analysis of the brickwork colours, bonds and detailing found on site has influenced the proposed brickwork detailing for the building. Elements found on site have been reinterpreted to ensure that whilst being decidedly new, the proposed building would sit well in its context
- The proposals include a viewing platform onto the site helping to interpret the site, which has radically changed over time

Please refer to the Heritage Statement prepared by Montagu Evans for more information about the heritage and the impact of the proposals on the site.

1. Station Hall : Handsome Victorian brick detailing
2. Historic photograph of the site showing the previous setting of the Bullnose Building and Weighbridge



LEGIBILITY AND CONNECTIONS



THE TURNTABLE MEETS CLASSICAL MUSEUM ORGANISATIONAL PRINCIPLES

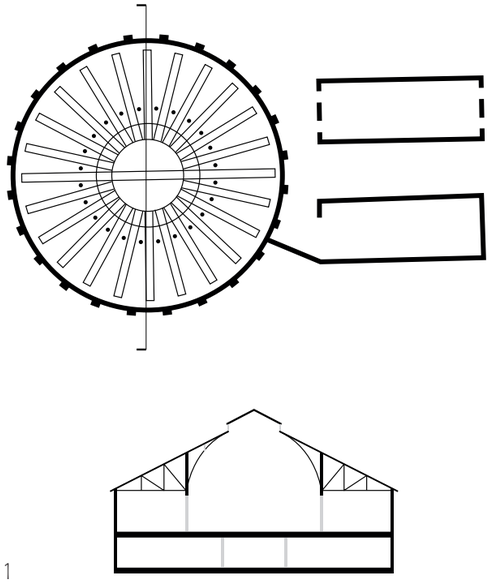
ROUNDHOUSE / NATIONAL MUSEUM

The Central Hall draws from the history of turntables and the geometrical beauty inherent to roundhouses. The internal generosity and wayfinding opportunities presented by this theatrical form, celebrates connections to the existing museum buildings by way of 'portals', also prevalent in classical museum architecture.

The plan has been developed with reference to museum design organisational principles, advocating the need for a generous central orientation space from which the collections, activities, administration, recreation and refreshments can all be visible and accessible. This organisational principle can be seen in many of the world's great museums, such as Berlin's Altes Museum. It becomes a place of excitement and expectation.

The layout balances the functional and operational demands of such a large museum with the qualitative and experiential aspects of visitor comfort and well-being. The kitchens, WCs, plant and service areas are gathered efficiently to the north of the plan, benefiting from good road access.

The legibility of the plan is such that little or no way-finding is necessary from the new Central Hall to reach neighbouring exhibition spaces, since all routes and axis are visible. An important consideration for all new primary public spaces has been to provide excellent natural daylight and views out to green spaces.



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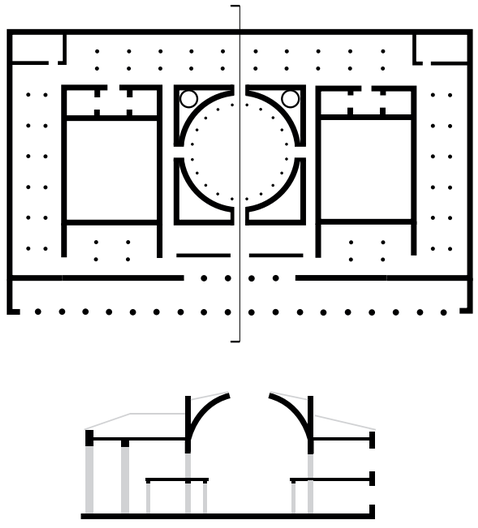

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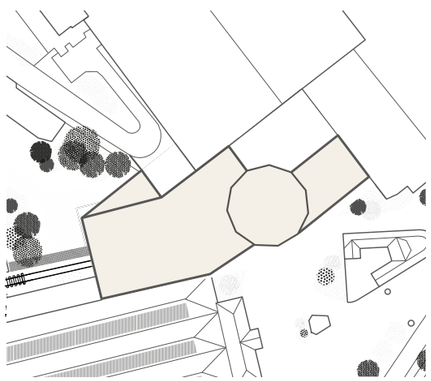
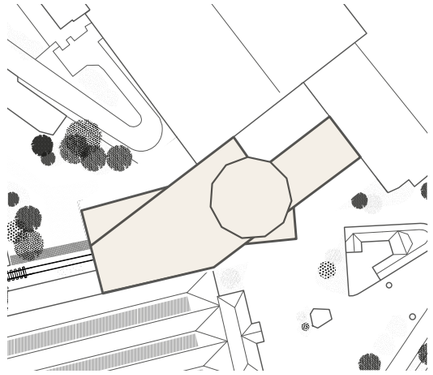
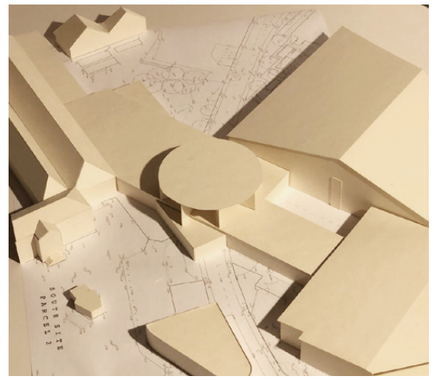
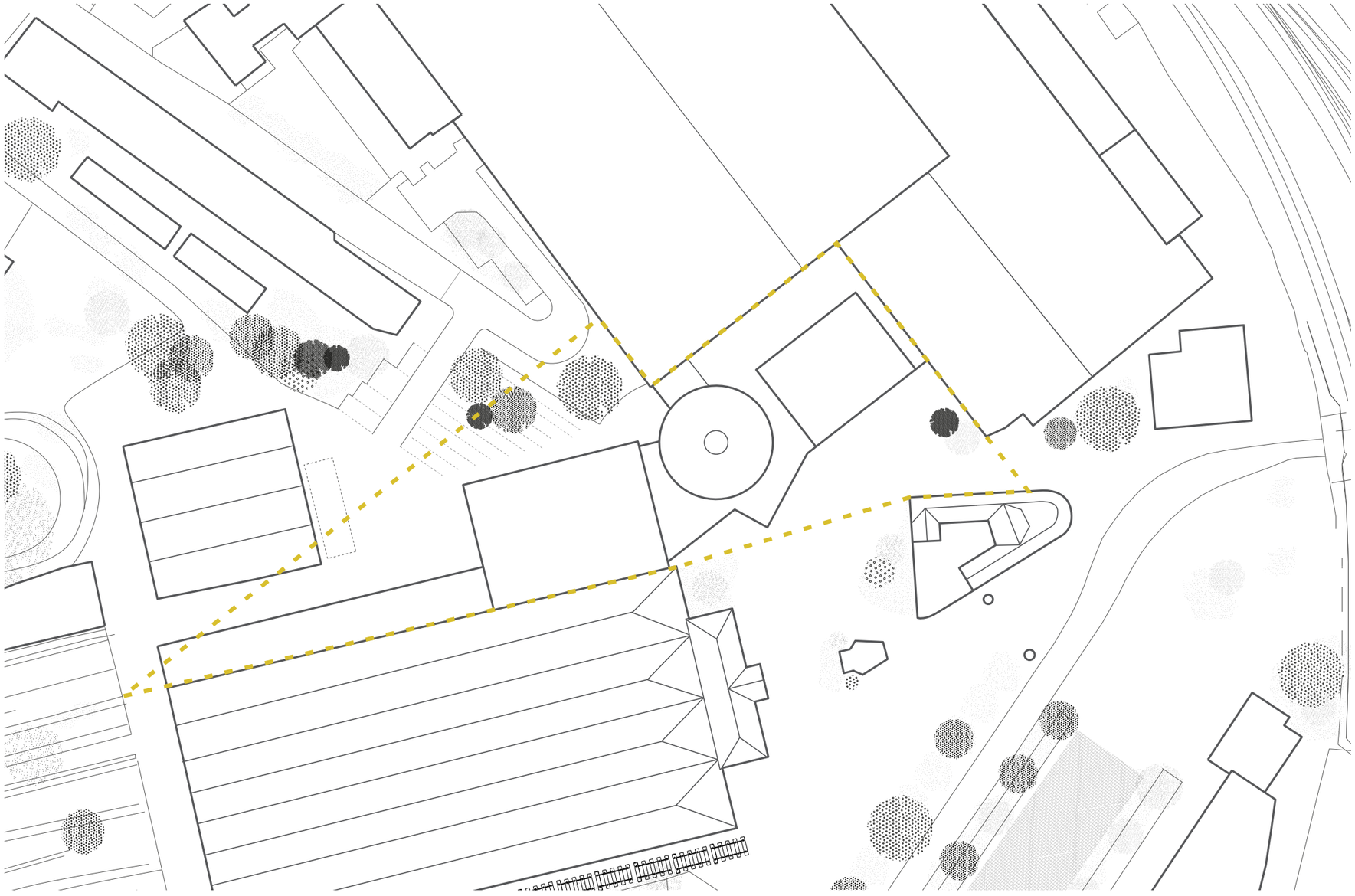
1 Typical roundhouse plan and section
2 Turntable excavations at York Central
3 Altes Museum, plan and section
4 Altes Museum atrium









3.4
DESIGN DEVELOPMENT

FOOTPRINT & MASSING

The proposed footprint and massing for the building was tested iteratively in diagrams and with physical models to assess the right scale for the proposed building and investigate the impact of this in the context of the surrounding buildings.

Additionally, 3D modelling and shadow studies were undertaken to assess the viability of a potential courtyard between Central Hall and Great Hall. It was concluded that the courtyard did not benefit from good daylighting and that pushing the built form against Great Hall would create a more successful outdoor seating space onto Museum Square.

The adjacent drawing illustrates the proposed footprint, with the outline planning permission footprint shown in yellow, showing significant reduction in massing, complexity of the form and impact on existing structures.

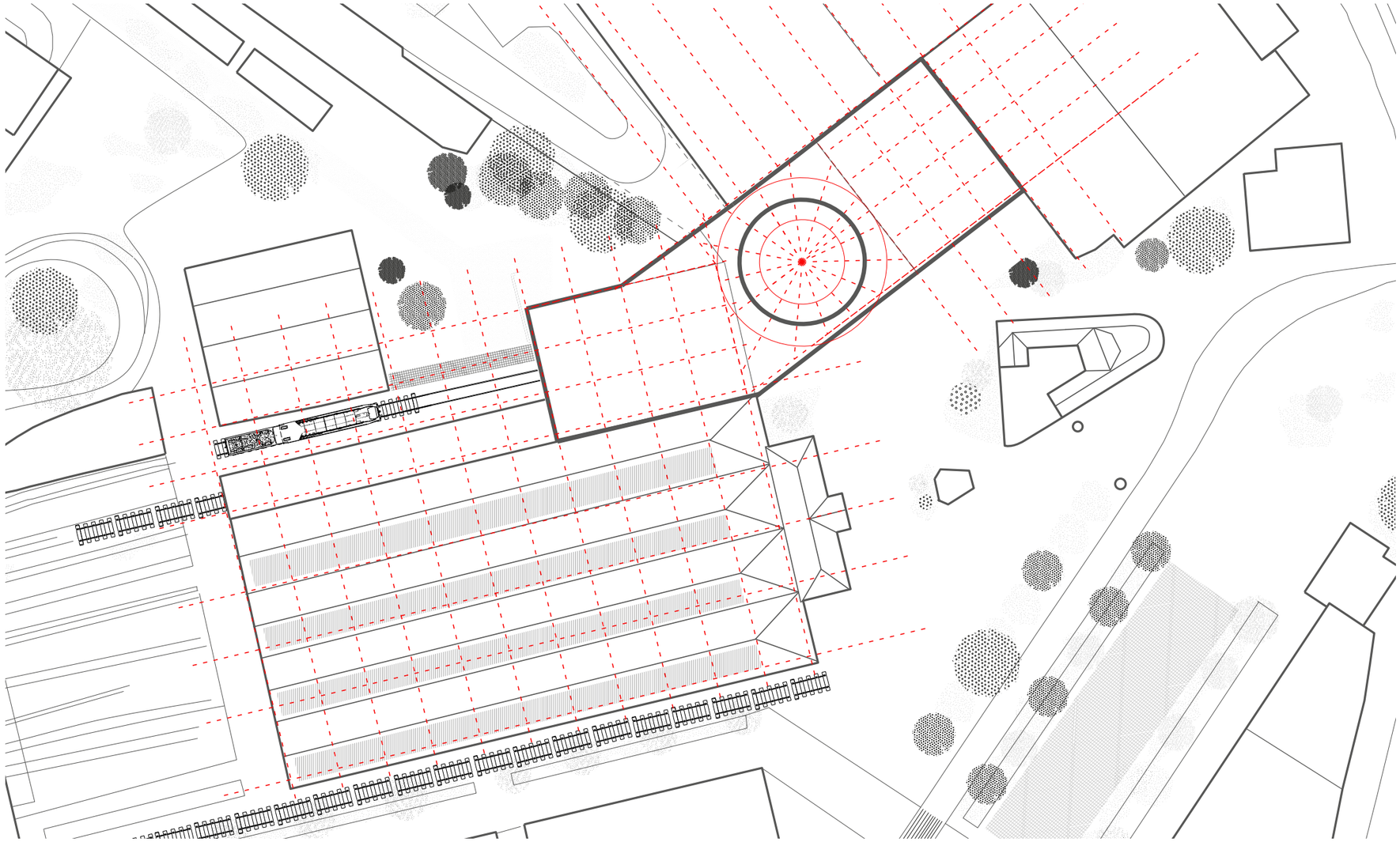
This was achieved through multiple discussions with the museum in regards to the use and amount of space to be created (as described in section 1.5). The reduction in brief will ensure that the building sits well in the existing context.

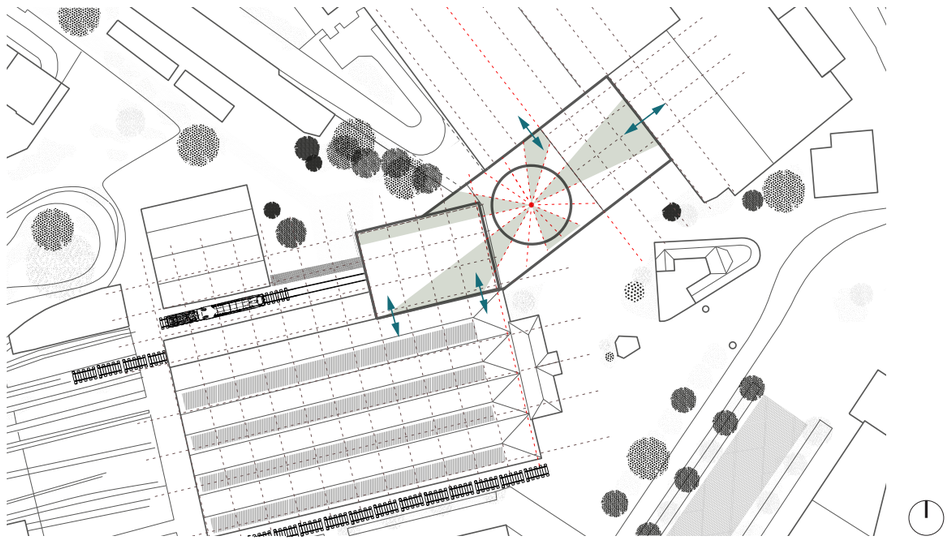
The proposed footprint articulates two clear volumes on each side of the drum relating to the existing Station Hall and Great Hall. The angle in the elevation line on Museum Square provides a generous set back between the proposed building and the existing historic buildings: Bullnose, Peter Allen Building and the corner of Station Hall. On the other hand, the projection of the entrance portico serves to articulate the outdoor cafe seating space, whilst bringing some interest to the key desire line from the city centre approach, clearly demarcating the museum entrance.

As the York Central Delivery team representing Homes England and Network Rail, develops the design for Museum Square landscape, we will collaborate with their team to ensure that the proposed public realm helps to link historic and proposed buildings.

Top : Series of diagrams and physical models produced to develop the building's proposed footprint

Bottom : Proposed footprint with in yellow the outline of the outline planning proposal's footprint - Scale 1.1000





3.4
DESIGN DEVELOPMENT

STRUCTURAL GRIDS

The proposed footprint was carefully set in collaboration with Price and Myers to respond to the existing structural layouts of Great Hall, North Shed and Station Hall.

The proposed grids provide columns every 8 to 9 m., which is comparable to what is found in Station Hall. This frequency was deemed acceptable by the museum, and responds not only to our approach to efficiency in material use but also to the desire to reduce embodied carbon in the building.

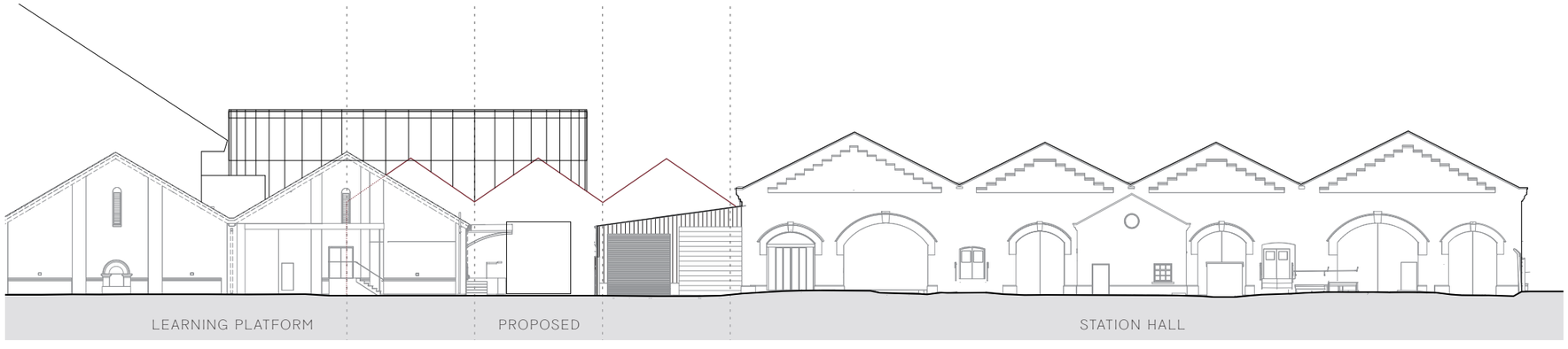
Indeed, larger spans generally increase the embodied carbon in construction and also increases the amount of cement in the ground due to a higher demand on the foundation design.

PORTALS

The location of the drum was also carefully assessed to ensure that clear views, or “portals”, would be provided to the key museum’s spaces (as required by the brief) : Station Hall, Great Hall, entrance / exit, Wonderlab and the secondary entrance to the north.

Top : Structural grids diagram - Scale 1.2000

Bottom : Diagram illustrating placement of the drum and key portals / visual connections created - Scale 1. 4000



3.4
DESIGN DEVELOPMENT

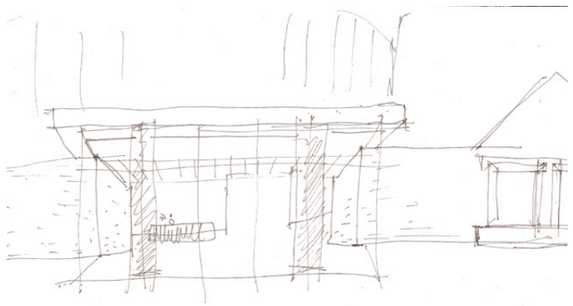
FORM & HEIGHT

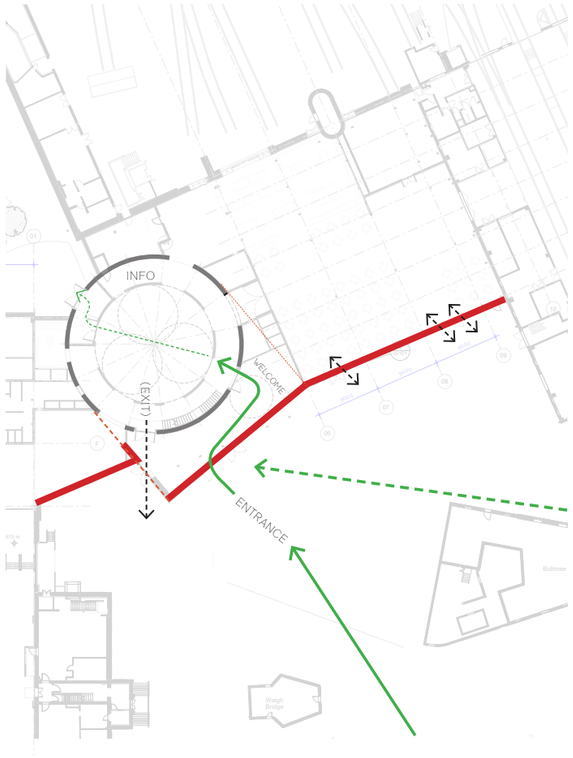
Significant testing was carried out to find the right expression for the proposed roofscape,to ensure that the proposal would tie in and complement the forms already present on site. This was done through physical models and discussed closely with Max Fordham to ensure that the right daylight levels would be achieved within the internal spaces.

The proposed roofscape for the east and west wings articulates a series of symmetrical trusses relating to the Station Hall and Learning Platform roof forms (see elevation at the bottom of the page). This allows the building to embed itself in the site and brings interesting daylight characteristics to each space : north rooflights for the gallery (west) to bring diffuse lighting in the space contrasting with east rooflights in the cafe (east wing) bringing more dramatic daylight within this space.

The geometry of the trusses is expressed on both gable walls. On Museum Square, this helps to articulate and break down the otherwise long elevation onto the Square.

Top row : Roofscape tests in physical model
Middle : Proposed massing
Bottom : Elevational study showing proposed with existing (not to scale)





3.4
DESIGN DEVELOPMENT

ENTRANCE ARTICULATION

A close understanding of the operational needs for the entrance and welcome sequence was gained through numerous workshops with museum's internal teams.

The museum's requirements revolve around a clear and contained entrance route where visitors can be stopped (when necessary) for bag checks, and then welcomed at a main desk. This led to designing a threshold space to the drum to allow for this journey prior to entering the orientation space.

Several options were tested for the entrance design, starting with options looking at a rectangular shape abutting the elevation line. Various languages were tested, from solid masonry options to more glazed options inspired by the language of the drum.

On all of these options, it was felt that the portico appeared as an add-on to the rest of proposal, adding complexity to an otherwise simple form. In addition, whilst providing generous space, the rectangular shape for the welcome space provided difficulties to segregate the entrance flows from the exit flows.

By treating the portico as a continuation of the main masonry elevation, it allows the welcome space to be integrated with the rest of the proposal and helps define the café outdoor space. The slight angle to the elevation also addresses more successfully the approach from the main desire lines : Bullnose building and listed gate posts / Station. In addition, the angle helps to conceal the exit doors and encourages two separate flows for entry and exit. Lastly, large glazed bays on this elevation allows the drum to feel rooted in the ground, and visible from Museum Square.

Top : Early testing
Bottom : Proposed work in progress with diagram illustrating the proposed flows and views

UPDATED - REV. B

3.5
LAYOUT AND ACCESS

Throughout the design development, the requirement to allow for a pedestrian route to cross the site was considered. This route is one of the key elements which will facilitate the integration between the York Central masterplan and Central Hall developments.

As such, carefully integrated landscaping to the north and west of the museum have been designed to generate new and inviting routes (refer to Landscape section).

The southern section, Museum Square, will be designed at a later date by the York Central Delivery team representing Homes England and Network Rail.

All internal and external levels have been worked out to guarantee a step-free, level access between outdoor and indoor spaces.

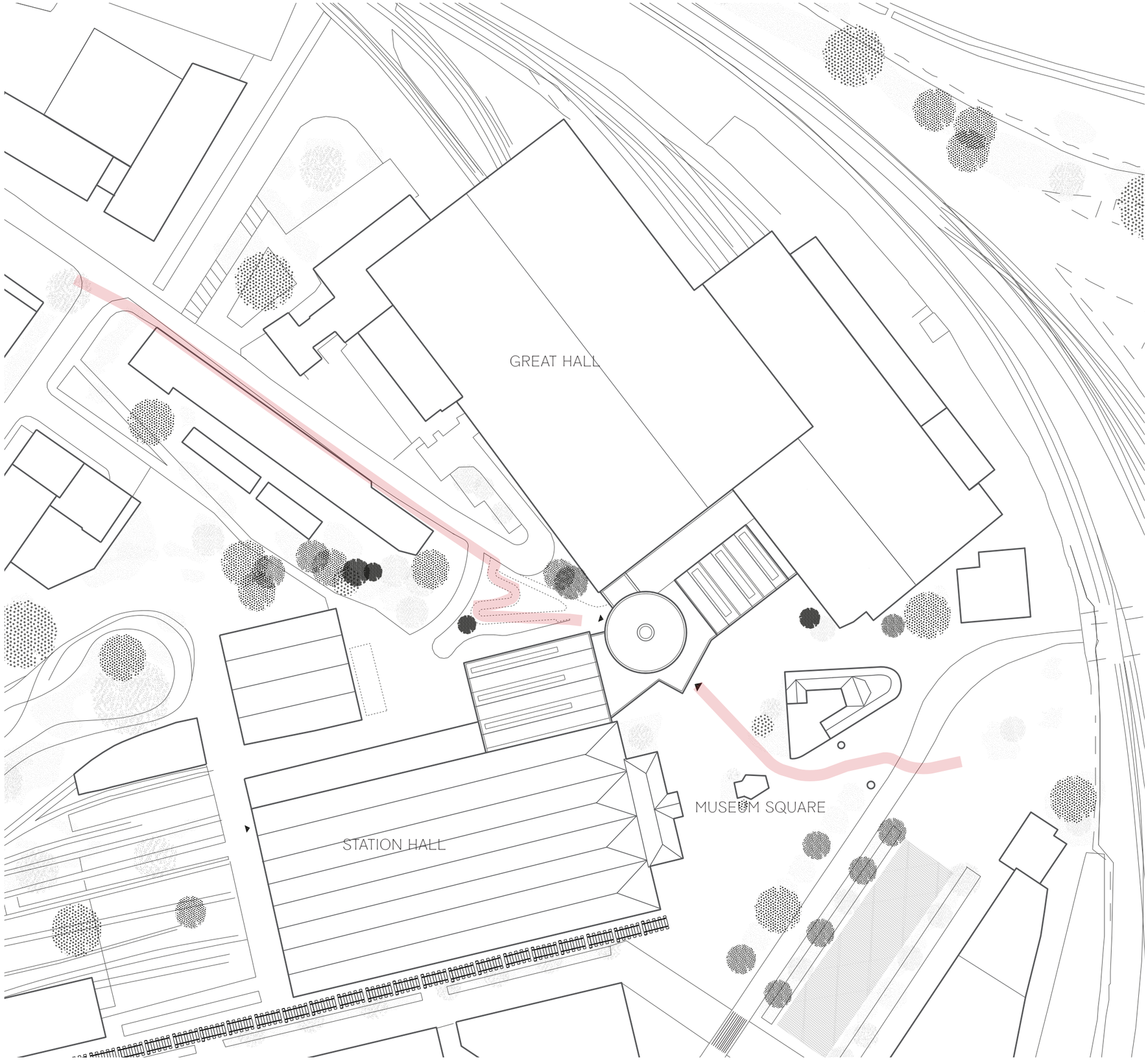
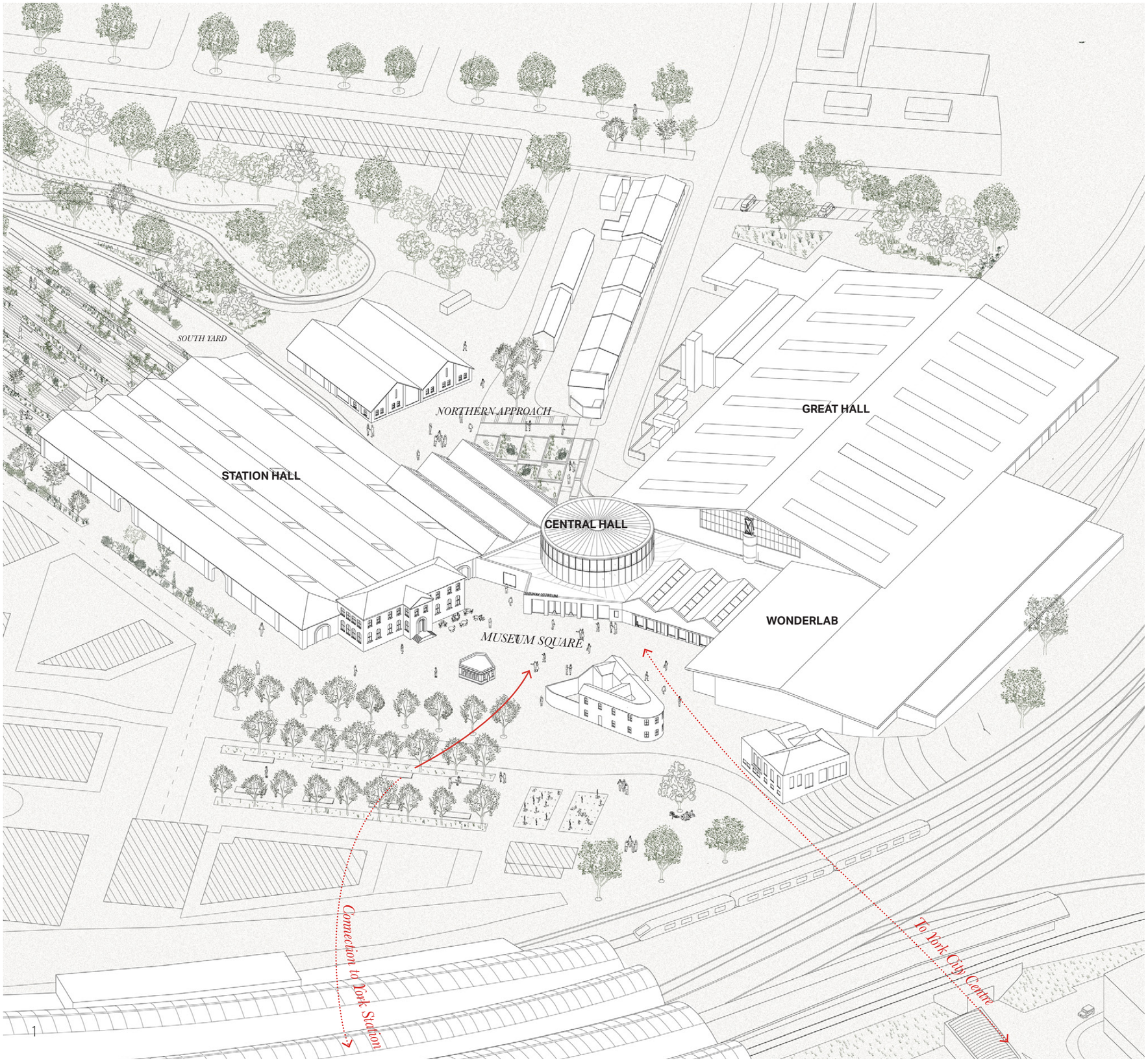


Diagram illustrating the proposed footprint in the context of the future York Central development and highlighting the pedestrian route covered in the Walkway Agreement linking Museum Square to old Leeman Road through Central Hall (pink line) - Not to scale



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3.6
COMPLIANCE TO YORK CENTRAL DESIGN

Throughout the design development, reference was made to the York Central Design Guide, YCL-ALM-ZZ-XX-RP-AX-0003, January 2019 - Rev. A, to ensure that the proposals would comply with the approved Guide and Parameter plans.

The following section demonstrates the compliance of the proposed designs (Development Zone G, Character Area 13) according to the following topics, as requested in the Design Guide :

- The vision for the site
- Site context
- Quantum of development
- Aspects of the development relating to the public realm
- Aspects of the development relating to the Character Areas
- Sustainability

VISION FOR THE SITE

With Central Hall and Vision 2025, the National Railway Museum will become the cultural heart of York Central. The masterplan will provide an opportunity to tell the epic stories of the impact of railways on the world.

As a result, the museum will contribute to the region's tourist economy with significant growth in visitor numbers discovering its world-class collection with a new Railway Futures Gallery showcasing the latest innovations from the modern railway industry.

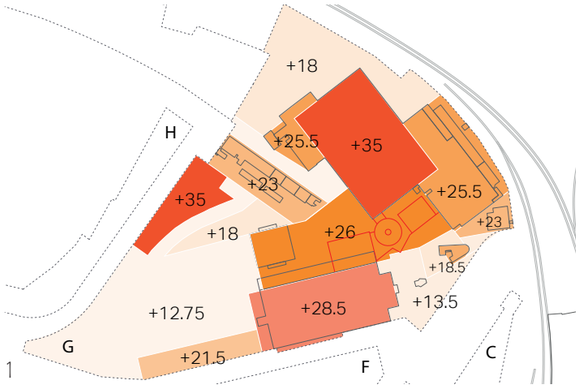
SITE CONTEXT

Development Zone G within the York Central Design Guide comprises of the full museum site whilst the Character zones diagram split this site in two, with 13 : Museum and 13 a : Museum Gateway. This application focusses on 13, whilst 13a, the future Museum Square will be designed at a later date by the York Central Delivery team representing Homes England and Network Rail.

QUANTUM OF DEVELOPMENT

- Proposed footprint

As described in section 3.4, the proposed footprint for the building has been significantly reduced from the outline approved under the Outline Planning Application for York Central.



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3.6
COMPLIANCE TO YORK CENTRAL DESIGN

ASPECTS OF THE DEVELOPMENT RELATING TO THE PUBLIC REALM

- Access and Circulation

As set in YC PP 006 Access and Circulation Routes drawing, a pedestrian access route through the museum site has been allowed for as described in section 3.5 - Layout and access.

- Landscape

The landscape design of the northern approach and open space to the frontage of Central Hall has embraced the principles set out in the York Central Design Guide (YCL-ALM-ZZ-XX-RP-AX-003), in respect of Public Open Space:

- Promote a pedestrian and cycle friendly public realm;
- Provide a safe, accessible and inclusive environment for all visitors; and,
- Utilise a design language that reflects the site's railway heritage.

The Design of Museum Square will be designed and delivered by the York Central Delivery team representing Homes England and Network Rail and does not form part of this application.

ASPECTS OF THE DEVELOPMENT RELATING TO THE CHARACTER AREAS

- Limits of Deviation

The landscape proposals and building ground levels have been carefully set to not only meet the criterion set in the YC PP 011 Proposed Site Levels drawings but also to guarantee level access between external areas and all museum's ground floor spaces.

- Maximum building heights

The maximum building heights in Development Zone G are driven in large part by the existing structures on the site - the National Railway Museum and heritage buildings in the vicinity.

A blanket height of + 26 AOD has been set across the project site in the York Central Design Guide.

With the proposed massing, we are proposing to reach this height only locally with the drum which is set to be the key focal plan of the development.

The eastern wing is much lower (below North shed and Great Hall levels) to create a transition towards Bullnose.

The western wing responds to the height of Station Hall with its height set according to the brick detailing along the parapet of Station Hall. By lowering the proposal from the height of Station Hall, it indicates its secondary nature and create a transition towards the scale of the Learning Platform Building.

- Townscape and visual permeability

As described in the heritage statement, we have considered the particular sensitivities that relate to Townscape Views and gave careful consideration to views to and from the Minster, City Walls and Railway Station.

With the revised proposed building heights, we have managed to mitigate any harmful impact on the views from Holgate Windmill and Windmill Rise to York Minster and from Bouthwaite Drive to York Minster.

- Appearance :

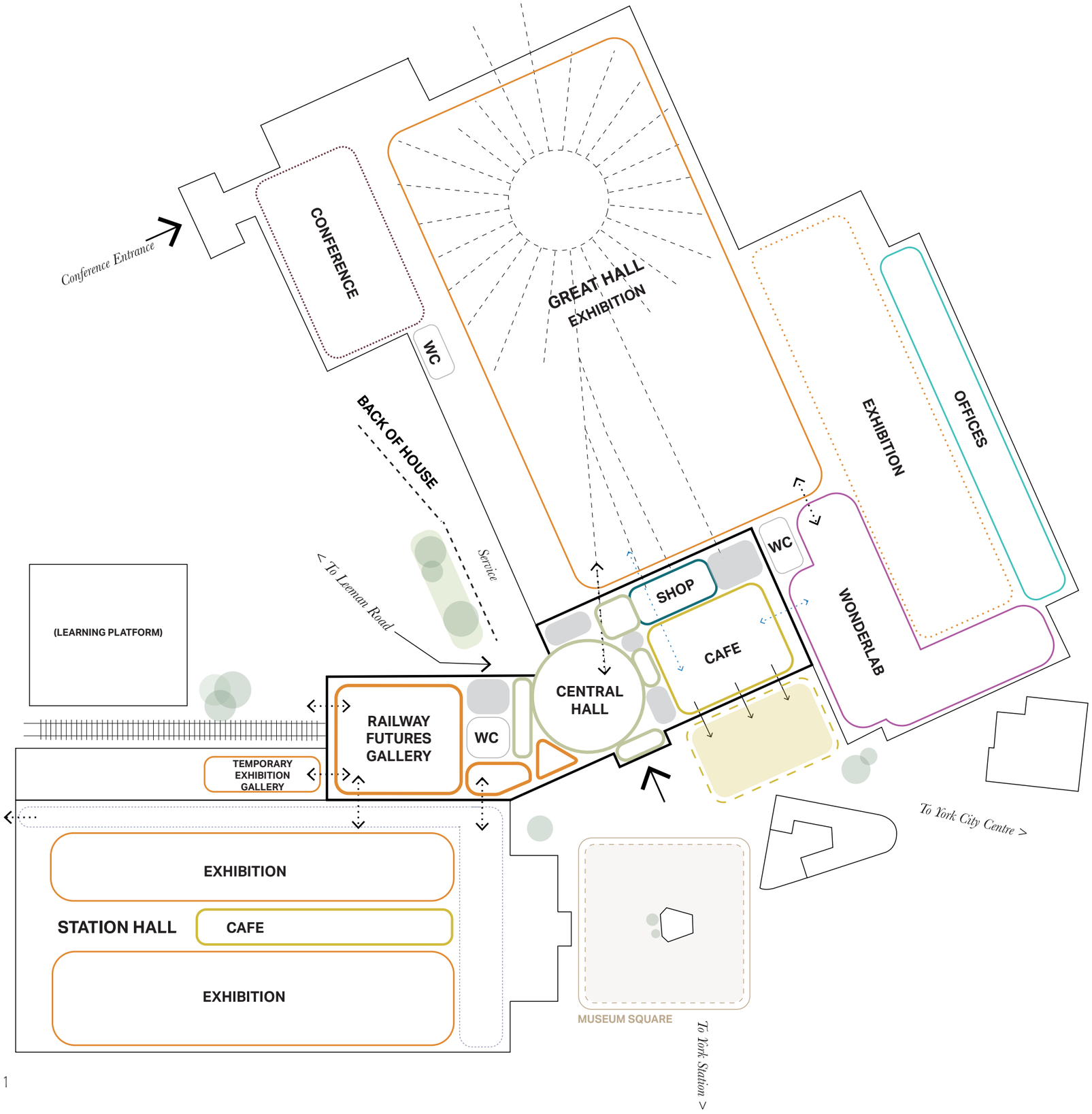
The appearance of the proposals have been developed referencing the York Central Design Guide as detailed in Section 3.18 - Materials and Detailing.

SUSTAINABILITY

As shown in the appended Sustainability report prepared by Max Fordham and with the aim to achieve BREEAM Excellent for the proposal, the National Railway Museum has worked hard to put forward climate change resilient, and low-carbon designs.

Health and well being of museum visitors, volunteers and residents using the museum's buildings and outdoor areas have also been carefully considered with maximisation of views out and natural daylight in the indoor spaces.

1 York Central Development Zone G height plan showing maximum development height of Central Hall
2 Proposed heights for Central Hall



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3.7
LAYOUT

SITE STRATEGY

Central Hall will serve to integrate the existing museum buildings, improve accessibility and create a cohesive museum identity. The rotunda will serve as a visual beacon, drawing visitors from York Central, the railway station and the city centre beyond.

CONNECTIVITY AND LEGIBILITY

Central Hall has been carefully placed to allow sight lines from this central space into the various quadrants of the museum's offer. It allows visitors to quickly orient themselves and plan their visit, but also serves as a meeting place for families and friends to re-convene during their visit.

Futures Gallery will be located to the west of the drum with direct connections to Station Hall and Temporary Exhibition Gallery whilst the commercial activities (cafe and retail) will be located to the East to benefit from direct connections with Museum Square.

The visitor facilities and services will be located around the central drum and along the existing buildings.

1 Organisational diagram

1

2

3

3.8
MUSEUM SQUARE

DESIGN INTENT

The Museum Square elevation is the primary facade of Central Hall, and will become the main entrance of the National Railway Museum. It thus becomes the public face of the museum, and responds to the numerous complex junctions with the existing estate buildings, namely Station Hall. The facade establishes a clear hierarchy with regards to openings and composition, with the entrance clearly defined while also creating an open and attractive cafe frontage.

INTEGRATION WITH THE EXISTING BUILDINGS

As the bridge to the fragmented site, Central Hall must engage physically with the fabric of the museum's principal buildings to varying degrees.

Upgrades to the existing elevations of Great Hall and North Shed (in order to unify the site) will be proposed and will form part of a subsequent planning application.

MUSEUM SQUARE

Whilst Museum Square will be developed by the York Central Delivery team representing Homes England and Network Rail, we are keen to contribute to the parameters and requirements for the brief. This will ensure that the museum's needs are understood from the outset.

1 Museum Square view with existing Great Hall cladding
2 Museum Square view with proposed Great Hall cladding
3 Existing view

3.8
MUSEUM SQUARE

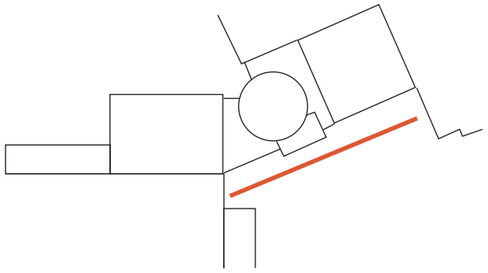
The Museum Square elevation is structured around the drum and entrance elevation which form the focal point onto Museum Square.

To the east, the cafe elevation brings the scale of the building down and presents a regular window arrangement with some variations whilst respecting the elevation bays. Doors provide connections between the cafe and outdoor space / Museum Square.

An entrance portico in the middle of the elevation is directly aligned with the drum, and serves to demarcate the entrance. Its design references the railway architecture of Thomas Prosser (the first company architect of the North Eastern Railway Company), who designed signficant stations, including York & Newcastle, which both feature grand entrance porticos attached on to their main facades.

To the west, the elevation is simplified recognising its adjacency with listed buildings, Station Hall and the Peter Allen Building. One key picture window is articulated within this section of the elevation providing a “shop window” into the museum from the square and natural daylight into the threshold space.

Refer to Section 3.18 - Materials and Detailing for further detail on the drum articulation and brickwork detailing.



Museum Square elevation - Scale 1.200

UPDATED - REV. B

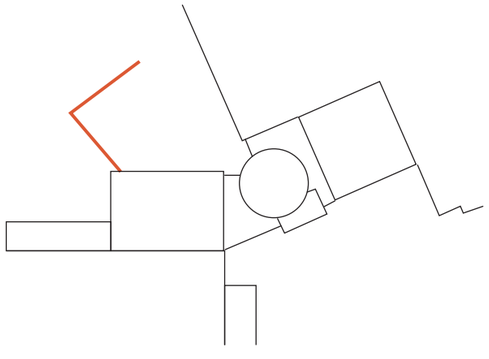
3.9
NORTHERN APPROACH

DESIGN INTENT

The northern approach elevation is a decidedly secondary facade, thus brickwork detailing is to be less intricate than the Museum Square facade. The elevation features within the drum the York Central entrance point that accommodates the pedestrian route.

Elsewhere in the facade, glazing is kept to a minimum due to the requirements of the Futures Gallery behind, with one feature window providing a glimpse into the gallery. This relates back to Station Hall, the former Goods Station, which is essentially a large shed-type building constructed of red brick and without any windows.

View approaching Central Hall from the pedestrian route



3.9
NORTHERN APPROACH

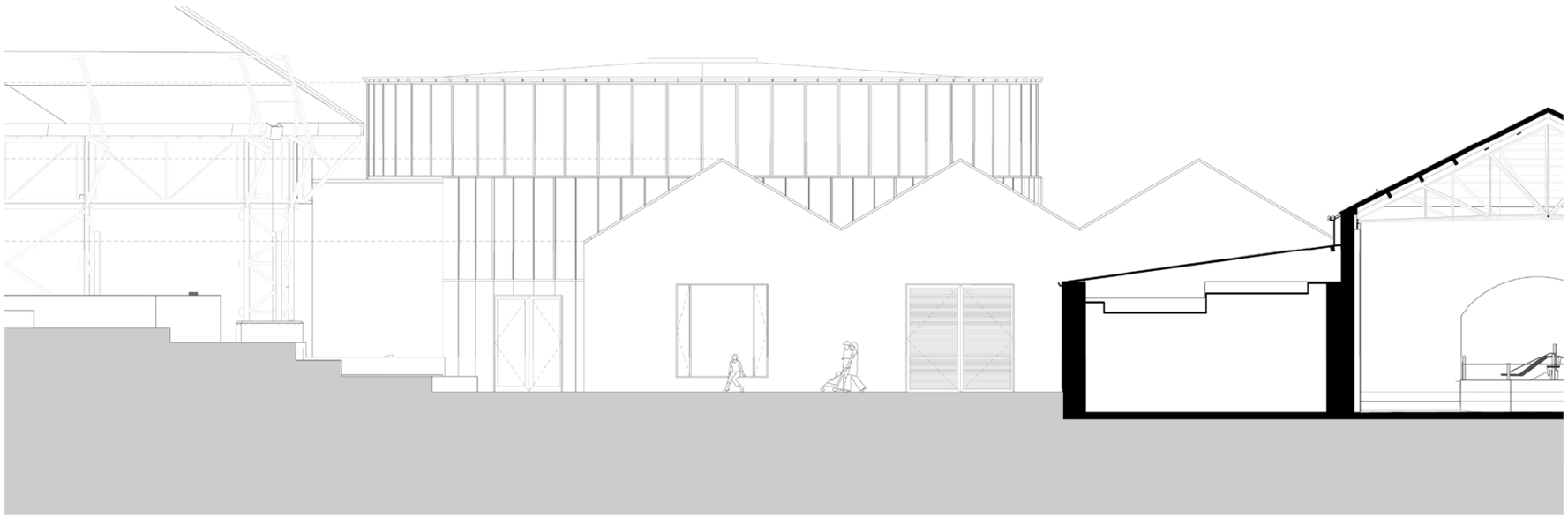
As illustrated in the previous page, a limited number of key openings activates this elevation, maximising wall display space internally. The openings are concentrated to the north west corner of the gallery allowing additional natural daylight in this corner for teaching & learning activities.

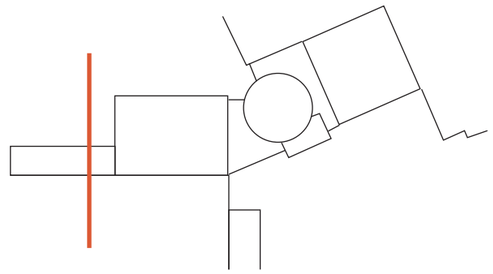
In addition, the proposed openings provide a connection to northern approach allowing a fire escape route from Station Hall and Futures Gallery and a loading bay for objects.

Lastly, the key window frames a view of the Learning Platform building and South Yard landscape beyond and highlights the relationship between the building forms.

Refer to Section 3.18 - Materials and Detailing for further detail on the drum articulation and brickwork detailing.

Northern approach Futures Gallery elevation - Scale 1.200





UPDATED - REV. B

3.10
LANDSCAPE PROPOSALS

DESIGN INTENT

The landscape design provides a series of linked hard and soft public spaces, each with a different character contributing to the setting of the museum, whilst accommodating a range of different access requirements along the northern approach to the museum.

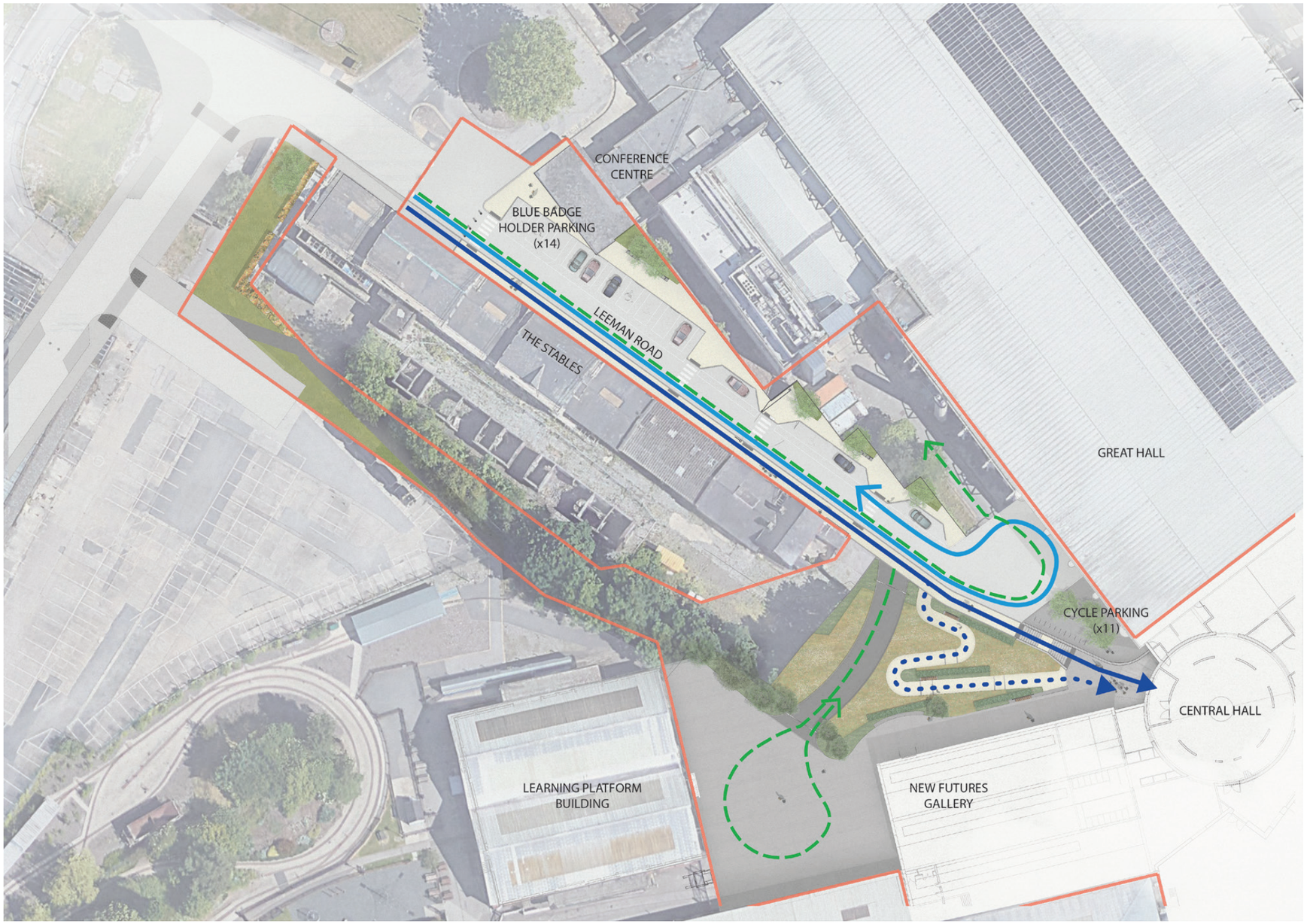
ACCESS

Leeman Road has been stopped up to general traffic with provision made for Blue Badge holder access and parking along its length.

Direct access for pedestrians including visitors to the museum and those passing through during opening hours is provided via a footpath and set of steps along the southern edge of Leeman Road into Central Hall. An alternative accessible route is also provided via an accessibility compliant ramp with integrated seating.

Provision for occasional delivery vehicle access to the back of the new Futures Gallery has been allowed for via a gate secured (vehicle only) ramp and separate turning area which can be used as a flexible public space outside these hours.

An area of cycle parking is provided at the end of Leeman Road within proximity to the entrance to Central Hall.



Main pedestrian route

Accessible pedestrian route

Vehicle access and parking for Blue Badge holders

Vehicle access and turning area for occasional deliveries to the Futures Gallery

UPDATED - REV. B

3.10
LANDSCAPE PROPOSALS

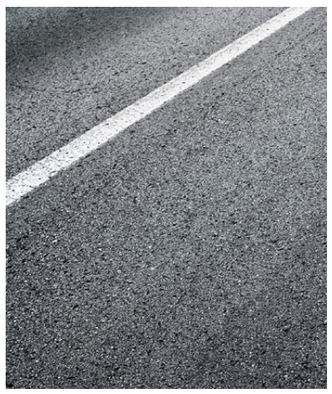
MATERIALS - HARD LANDSCAPE

Hard landscape materials have been selected to complement those used within the Museum as well as drawing upon the materials and linear geometries of rail lines.

In the spaces closest to the museum, concrete has been selected as the main paving material providing a continuation of the material used for the internal floor finishes of Central Hall. Radial large format concrete pavers are used in the immediate entrance area to Central Hall to create a sense of arrival and reflect the geometry of the building.

The remainder of the pedestrian paths and delivery vehicle turning area uses permeable concrete block paving with a linear form. This ties into the wider drainage strategy whilst providing an opportunity to mirror the linear language of rail lines found within the wider site.

Along Leeman Road a simple pallet of asphalt carriageway and coloured asphalt footpath is used. This is continued for the accessible ramp (coloured asphalt) and delivery vehicle ramp (standard asphalt) access routes into the museum area.

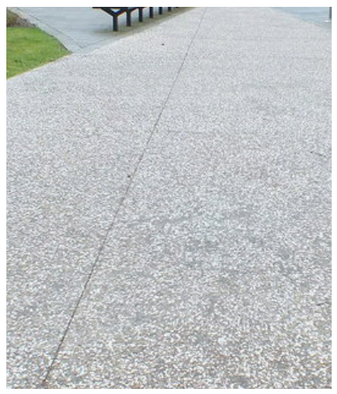


P1. Asphalt carriageways

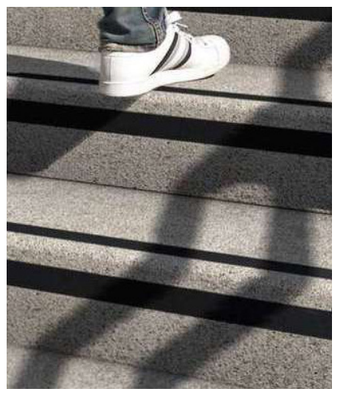
P2. Coloured asphalt

P3. Concrete permeable block paving

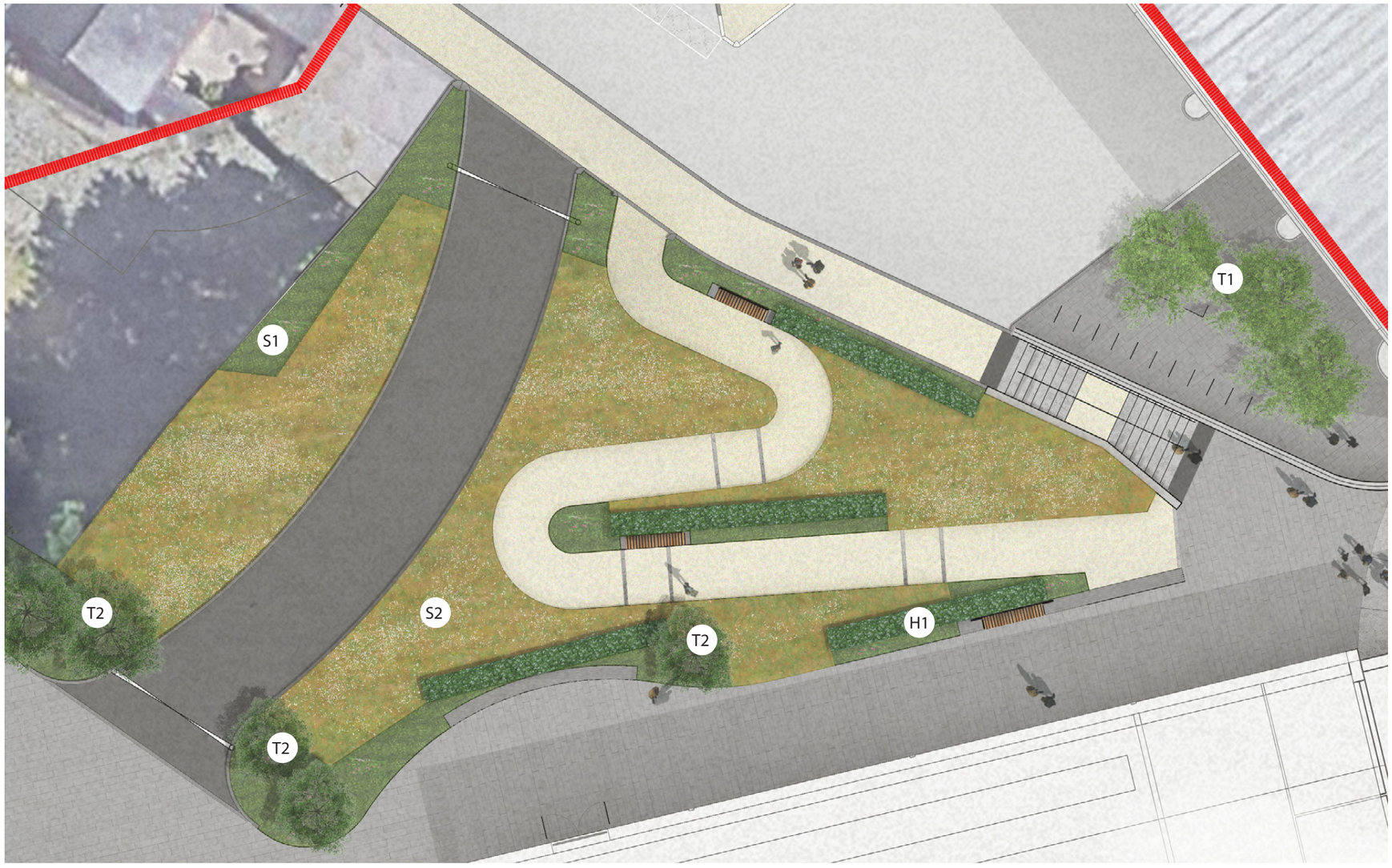
P4. Concrete corduroy paving



P5. Large format concrete pavers



S1. Pre cast concrete steps



UPDATED - REV. B

3.10
LANDSCAPE PROPOSALS

MATERIALS - SOFT LANDSCAPE

The soft landscaping proposals include a diverse mix of species providing evergreen ground cover as well as successional flowering throughout the year supporting pollinators in all seasons.

Within the planting mix, seed heads are included as winter food for birds and structural interest when grasses die back. Trees have been selected to provide fruit and flowers for birds as well as autumn colour.

The planting colour palette has been selected to represent the bold primary colours frequently associated with heritage trains, and a succession of white flowering plants represents lines of movement juxtaposed against linear evergreen hedges invoking the linear forms of rail track.

H1. Sarcococca hookeriana 'Winter Gem' hedge

T1. Prunus serrula

T2: Sorbus 'Jospeh Rock'

S1: EVERGREEN GROUNCOVER WITH BULBS

Bergina silberlicht
Asarum europaeum
Saxifraga x urbium

S2: MOLINIA MATRIX
Predominantly Molina grass with white flowers interspersed.

Molinia caerulea 'Heidebraut',
Veronicastrum virginicum 'Album'
Anemone x hybrida 'Honorine Jobert'
Camassia leichtlinii 'Alba'.

UPDATED - REV. B

3.10
LANDSCAPE PROPOSALS

MATERIALS - FURNITURE, GATES AND WALLS

The material pallet for gates, walls and fences through the site is simple and reflects the industrial heritage of the museum buildings. Walls are in heritage red brick to match the New Futures Gallery building. Fences, handrails and and balustrades are powder coated steel in grey to match the door and window trims of Central Hall.

Seating is to include back rests and arm rest and comprises pre cast concrete bases with simple chunky wooded slatted tops reminiscent of railway sleepers.

F1. Stainless steel cycle stand

F2. precast concrete bench with timber top

F4: Demountable bollards

W1. Heritage red brick wall

W2: Vertical flat bar railings

W4: Rising boom barrier

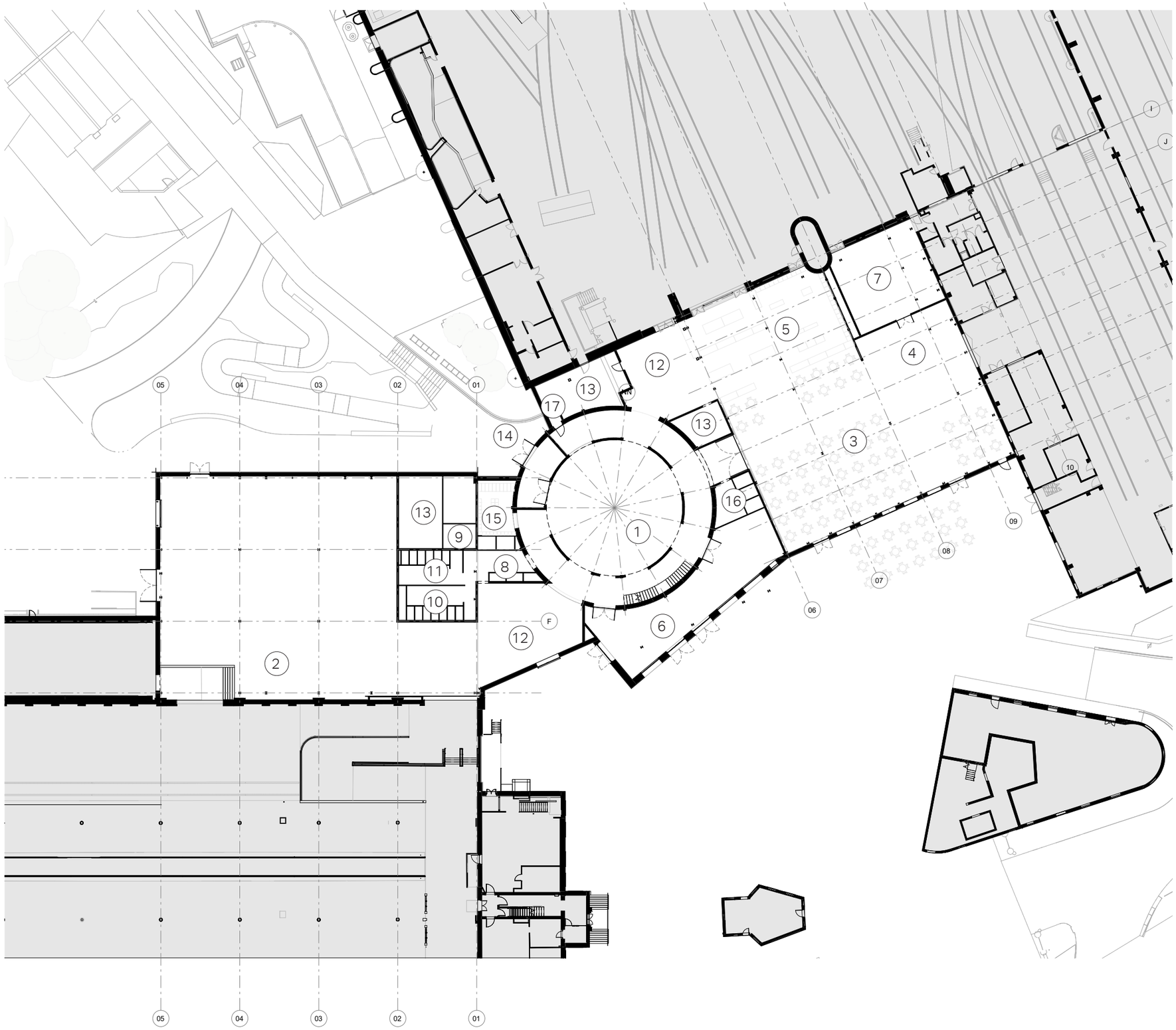
W5: Powder coated steel security fence and gate

UPDATED - REV. B

3.11
GENERAL ARRANGEMENT

GROUND FLOOR PLAN

1. Drum
2. Futures Gallery
3. Cafe
4. Servery
5. Shop
6. Visitor welcome
7. Kitchen
8. WC Lobby
9. Changing Place
10. Female WC
11. Male WC
12. Drum threshold
13. Plant
14. North Entrance Lobby
15. Lockers
16. Accessible WC
17. Lift to balcony

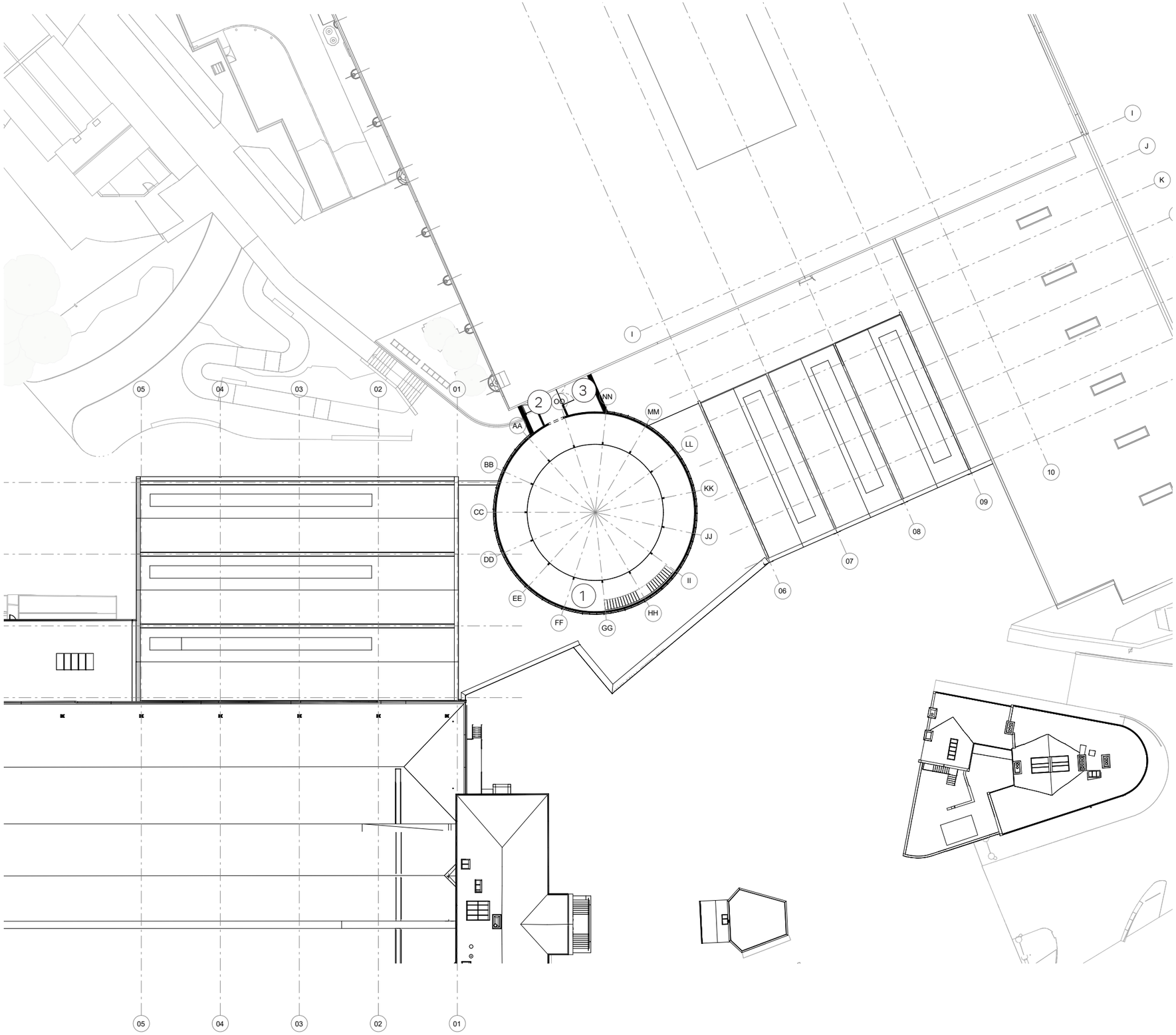


UPDATED - REV. B

3.11
GENERAL ARRANGEMENT

FIRST FLOOR

1. Drum Mezzanine
2. Search Engine Threshold with lift
3. Lobby for service access



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3.12
INTERNAL VIEWS

CENTRAL HALL

Central Hall sits at the heart of the new scheme as a place of welcome and orientation for visitors, offering showcase display in the round with direct light; its uplifting and dramatic character make this a very dynamic and exploratory space offering a variety of perspectives and view points from the first floor balcony. This is a multi-sensory space, inviting movement, action-oriented and prioritising social interaction as a central meeting point.

The highly theatrical space is intended for further display of collection where possible, with a beautifully engineered roof structure overhead. It is hoped it will excite and stimulate the curiosity of visitors, a base from which to venture through one of five 'portals' to explore the vast collection beyond. From Central Hall visitors will be able to access the main entrance/exit, Great Hall, Futures Gallery, the shop and a new café. At first floor it provides a valuable new connection to the archive space – Search Engine, a vital resource for the public and the Institute of Railway Studies.

1 Central Hall (displayed objects are indicative only)

3.12
INTERNAL VIEWS

BALCONY

The balcony over the central orientation hall serves as a decompression space and as a new link to the museum's Search Engine gallery on the first floor of Great Hall.

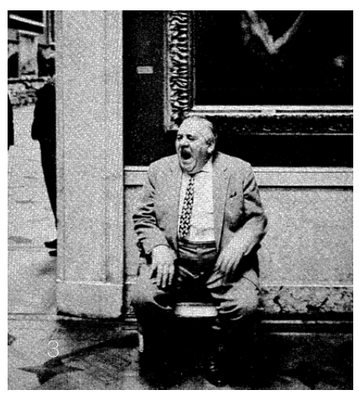
A window from the balcony frames views back towards York city centre in the distance, whilst also opening up views of the museum site itself and offering further legibility links. These high level views, paired with suitable interpretation, will enable the visitor to gain an overview of the historic railway landscape for the first time, allowing for a a better understanding of the site and its history.

1. Early view of the balcony space
2. Historic image of the site showing the previous setting of the buildings
3. Quote and visuals extracted from Museum Architecture highlighting the importance of providing decompression spaces in museums.

"However many great works there are to be seen, and however splendid the presentation, the visitor may still feel his attention and his curiosity waning, and may eventually begin to suffer from what the museologists call 'visitor fatigue"

— MUSEUM VOL. XXVI, NO. 314, 1974 - MUSEUM ARCHITECTURE


2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3.12
INTERNAL VIEWS

The look and feel of all internal spaces have been developed in collaboration with Price & Myers with the aim to express as much as possible of the structure, bringing the warmth of the timber into the atmosphere of the spaces.

CAFE

Whilst structural systems for the cafe and Railway Futures Gallery are comparable, the full extent of the structure is shown in the cafe whilst only primary members are visible in the Railway Futures Gallery, creating a calm space that allows the emphasis to be on the displayed objects.

The cafe openings create connections with the proposed outdoor seating space in Museum Square and with the Bullnose building in the background. This newly created relationship will support the potential future change of the use of the Bullnose building into a Food & Beverage outlet. This will form part of a future application once funding is in place.

RAILWAY FUTURES GALLERY

The vision for a new Railway Futures Gallery within Central Hall is to showcase to visitors the science behind the technology and explain the key issues that need to be addressed for rail to ensure its essential role in shaping all our futures.

The proposed setting echoes the heritage of the former goods station, Station Hall, using the same grid to create a harmonious connection between the buildings and celebrating the large brick arched openings.

Through a mix of fixed and changing displays, an immersive media-led experience and on-gallery programming, it will showcase the most exciting engineering projects in development and highlight the role that innovation has always played in engineering the railways.

Railway Futures will not only highlight the technologies and the people engaged in shaping our future; it will also explore topical issues of globalisation, sustainability and ecology, design, urban development and freedom of movement. This gallery won't shy away from difficult questions – instead, it will use these questions to encourage visitors to think big for themselves.

Bright, diverse and dynamic, Railway Futures will reveal the ways in which the UK and the world are positively engaged in shaping a better transport future for all.

1. Cafe internal view
2. Railway Futures Gallery internal view (display of Maglev is indicative only)
3. Portal from Central Hall to the cafe with view towards Wonderlab

3.13
SITE SECTIONS

Internal and external levels have been carefully set to allow step-free level access between Museum Square, the central drum and Great Hall, replacing the current arrangement with the underpass.

Levels on Museum Square will gently slope from the museum's entrance towards Cinder Lane.

Section through Great Hall, Central Hall and Museum Square.

GREAT HALL

CENTRAL HALL

MUSEUM SQUARE

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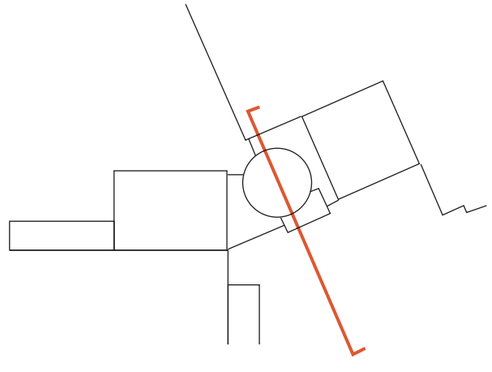
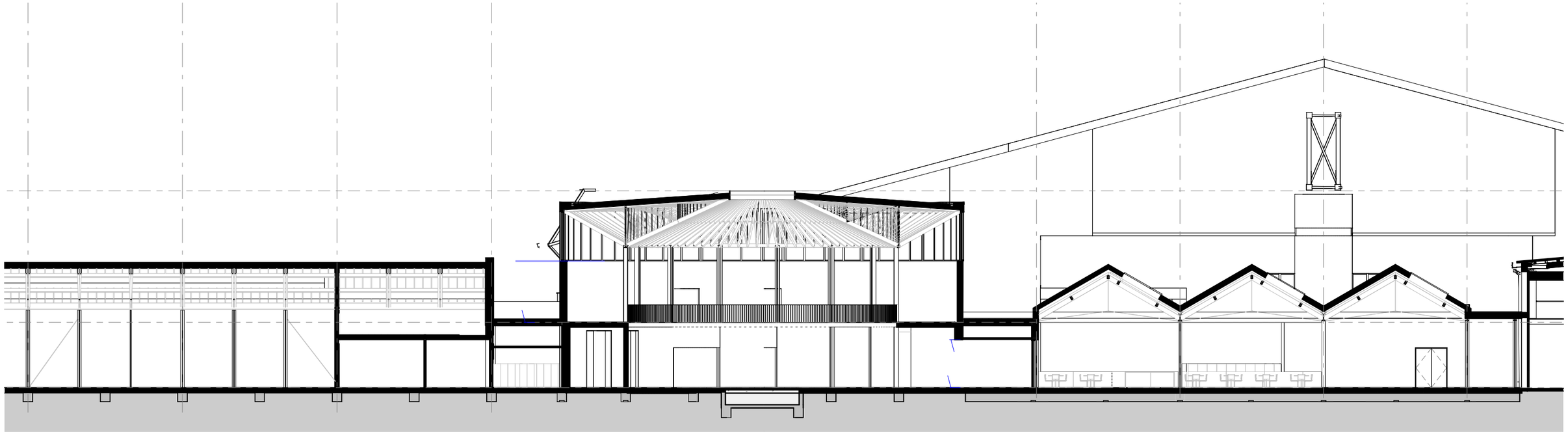


3.13
SITE SECTIONS

The height of the cafe offers a transition between the scale of the existing North Shed and the proposed drum, bringing the emphasis on the drum as a focal point to Museum Square.

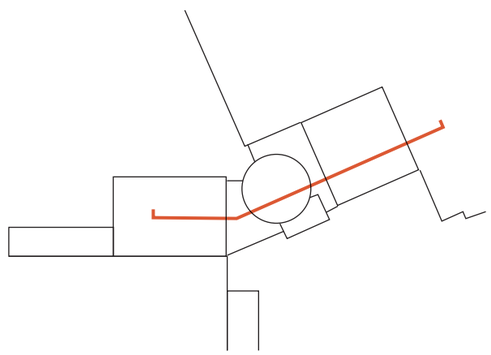
Futures Gallery's height is similar to the cafe and has been carefully modelled considering Station Hall (see next section).

Section through Futures Gallery, the drum and the cafe



FUTURES GALLERY VISITOR FACILITIES CENTRAL HALL CAFE

0 1 2 5m



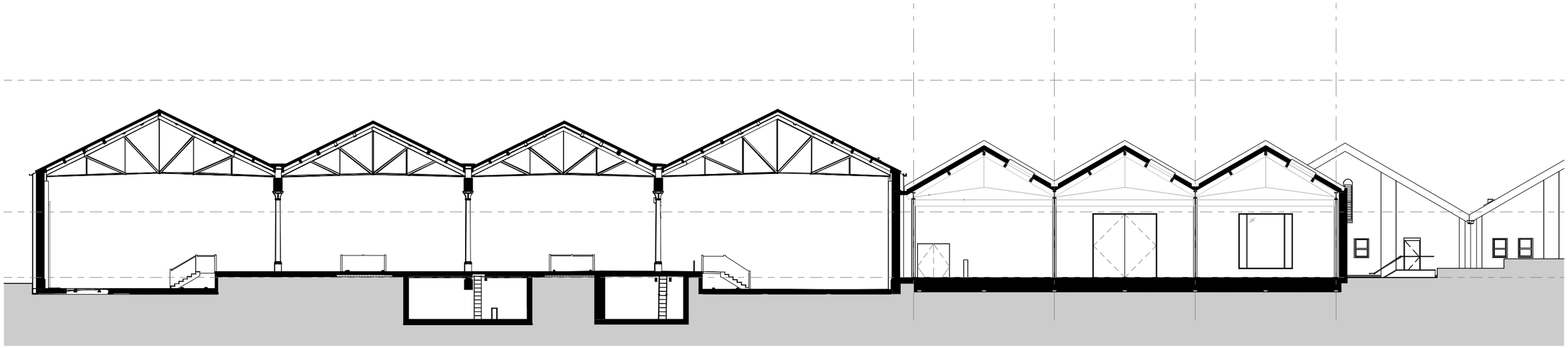
3.13
SITE SECTIONS

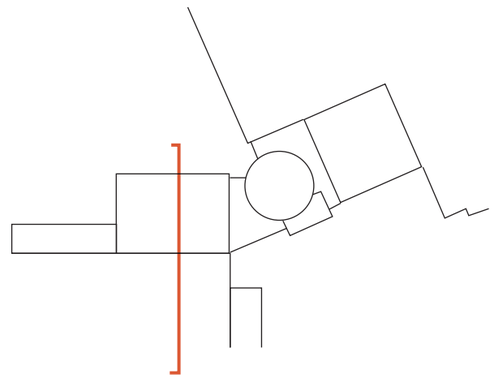
The cross section from the proposed York Central boulevard to the northern approach through Station Hall and the proposed Futures Gallery illustrates how the scale of the proposed building is secondary to both Station Hall and the Learning Platform Building.

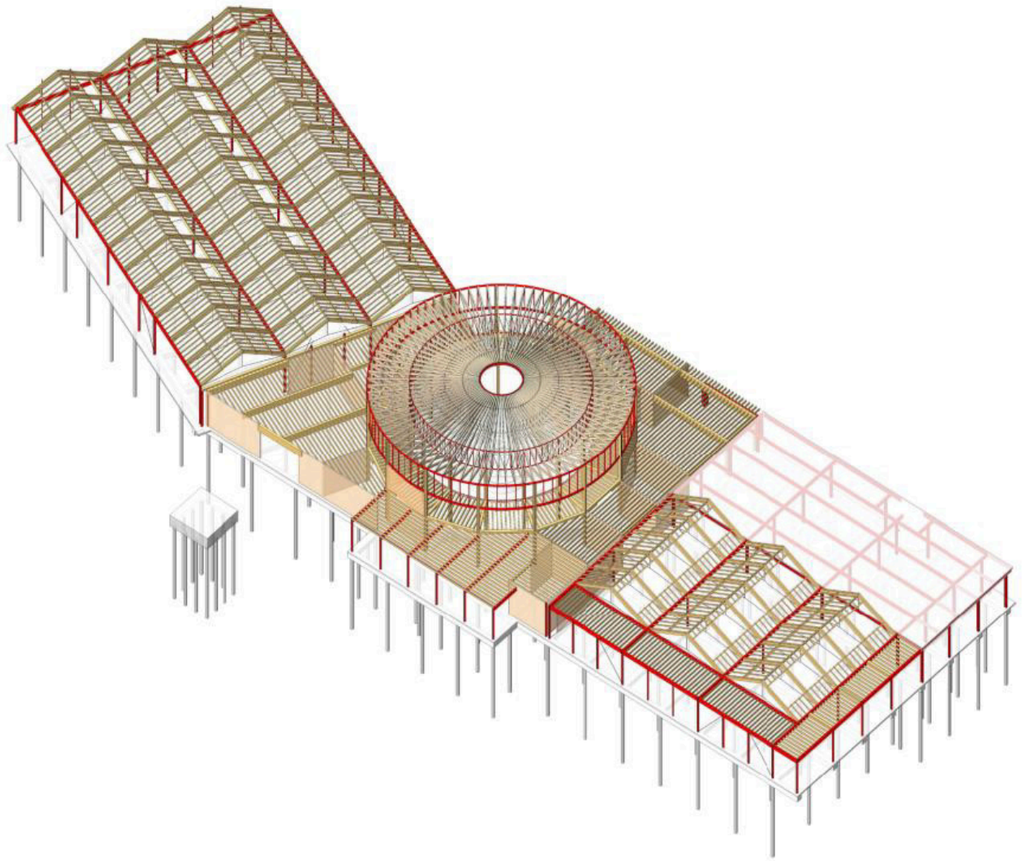
The height of the proposed building at the abutment with Station Hall has been carefully set to avoid impact on the high level brick detailing and therefore does minimal harm to the listed fabric.

Movement joints between new and old will be carefully detailed to allow both structures to be independent from each other.

Section through Futures Gallery and Station Hall. Scale 1.250







3.14
STRUCTURAL STRATEGY

The new Central Hall building has been designed to infill a critical node in the site plan that is freed up by the removal of Leeman Road. The building provides a central drum to allow for intuitive arrival and orientation space, and an easy link between the main access points on the Station Hall, Great Hall and Workshop buildings, along with new retail, café and gallery spaces.

Largely single storey, the building is intended to have a very low embodied carbon content. This means using carbon intensive materials - notably concrete and steel - in a very limited and careful way throughout the structure of the building. Our primary task is to be as efficient as possible in our designs to make sure every structural element is working optimally. This process is aided by using simple regular grids, not imposing onerous loading requirements, avoiding complexity and misalignment of the structure, and using the geometry of the structure to assist in creating efficient forms.

Generally, the structure will be exposed to view as much as possible, which not only lends the building legibility and clarity, but also reduces the embodied carbon by eliminating the requirement for finishing materials.

The structural scheme is primarily in load bearing timber framing and steelwork with non-load bearing masonry external walls. The geotechnical investigation findings indicate that the superstructure will be supported on piled foundations, and the ground floor formed in concrete to have the appropriate robustness, load capacity and flexibility of use.

Central Hall can be split into three primary areas: Futures Gallery to the west, Central Hall in the middle and the Café to the east.

A structural grid of approximately 9mx9m has been adopted for the Futures Gallery and Café to align with the existing structural grid of Station Hall whilst also serving to reduce the number of columns and maximise the flexibility of the space. The roofs will consist of timber rafters spanning on to purlins which in turn will be supported on symmetrical timber roof trusses spaced at circa 3m centres, which in turn are supported on steel transfer beams and cruciform columns.

The Central Hall drum has an expressed radial timber truss structure with fine steel wires and struts where needed to optimise the timber. The trusses will be prefabricated where possible and delivered to site in tapering elements approximately 6.5m long by 3m high at their highest point. Initial enquires with a timber specialist has indicated that this element can be delivered through the Leeman Road tunnel on super low loaders - given the tunnel height restriction of 3.7m.

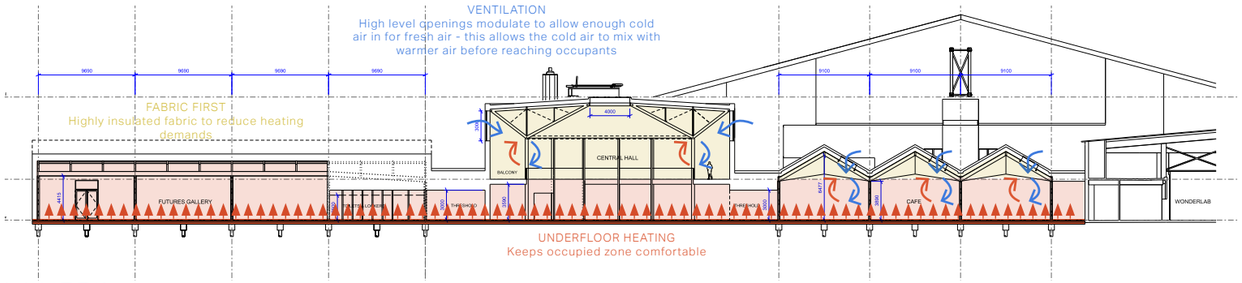
Building stability will be provided by the ply diaphragm to the roof and a combination of vertical steel braced bays and ply timber stud shear walls.

Structural movement joints will be required through the superstructure either side of Central Hall, separating the Futures Gallery and the Café. This movement joint will need to be accommodated by the finishes and any services that cross this joint.

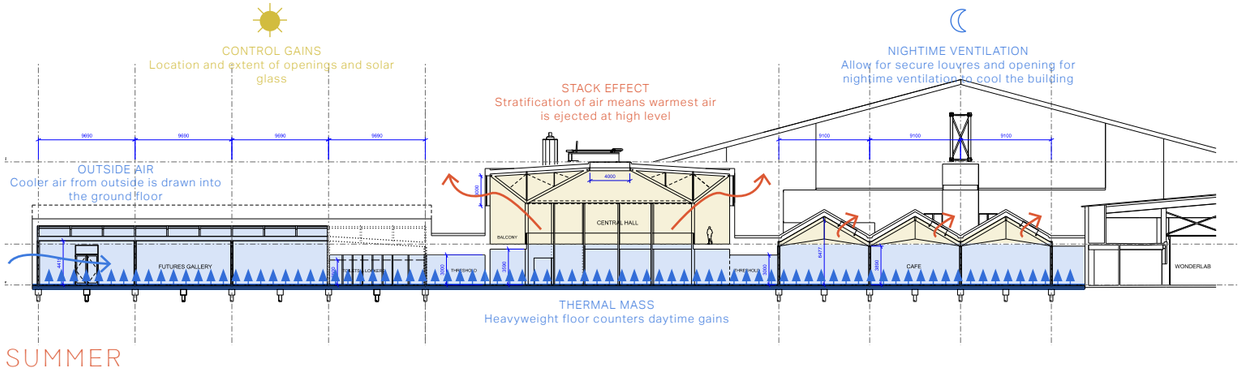
A moisture content control plan is to be put in place as per the NSTS for use during fabrication, delivery to site and in the erection phase to ensure the maximum targeted moisture content at handover is not exceeded.

Summary prepared by Price & Myers

1. Structural frame overview



WINTER



SUMMER

The servicing strategy for Central Hall at the National Railway Museum (NRM) responds to the original client brief. “The project should innovatively embrace sustainable design, conservation, construction and practices with a commitment to low energy, low or non-mechanical systems and alternative energy strategies”

“The Science Museum Group is committed to finding long-term, sustainable solutions to developing the estate. The new building at the National Railway Museum should seek to be an exemplar for sustainable development, and integration into the museum estate. Considering the lifespan of the built environment involves anticipating what will be regarded as good practice in the future and exceeding current minimum design standards.”

The Central Hall proposals respond with modern passive design principles. Heating loads are reduced to allow the electrification of heat on the pathway to Net Zero Carbon as the electricity grid decarbonises. The proposals allow summer conditions to be managed with no recourse to mechanical cooling or air conditioning.

PASSIVE APPROACH

The high performing thermal envelope for Central Hall sits alongside thermal improvements to neighbouring buildings as part of the wider NRM Vision 2025

Glazing and internal heavyweight materials have been balanced for daylight, legibility and the ability of natural ventilation to moderate internal temperatures in summer. Extensive TM52 thermal modelling and consultation has been undertaken to establish that the building will be thermally comfortable with the combination of daytime and night time (secure) ventilation paths, as the NRM intend to operate it.

ACTIVE SYSTEMS

- Mixed-mode ventilation

Natural ventilation is effective at relieving overheating as well as maintaining air quality in summer. In the heating season mechanical ventilation with heat recovery (MVHR) is used to reduce the heating demand and allow viable electrification of heat. Operation can change between fully natural ventilated and fully mechanical ventilated according to the ambient conditions for optimum energy savings. The MVHR is controlled by measuring the air quality (CO_2) to ensure good air quality.

- Electrification of heat

Air source heat pumps (ASHPs) are proposed for space heating, and for provision of hot water for catering and sanitary uses. Dedicated ASHP are proposed for each use to benefit from the different thermal demands.

Space heating will use emitters designed for low temperatures to increase the efficiency of the heat pump process.

Hot water for washing requires cold mains water to be lifted to higher temperatures than used for heating. Dedicated heat pumps using CO_2 as a refrigerant suit this task. They will generate this hot water local to the main demand in the kitchen.

- Exhibitions

Any sensitive objects will be kept in cases. So all occupied spaces will be maintained to provide comfort for visitors and staff, minimising mechanical intervention. There is no comfort cooling nor humidity controls in the building.

Passive approach illustration

3.16
ACOUSTIC DESIGN SUMMARY

NOISE BREAK-IN FROM EXTERNAL SOURCES

External noise ingress will be dominated by noise from traffic on the re-routed Leeman Road/Cinder Lane, and trains running through York Station. For much of the year, achieving suitable internal noise levels will be straightforward as ventilation is to be provided by a mechanical ventilation and heat recovery (MVHR) system, with glazing specified as necessary. During hotter periods, the main Central Hall spaces will be cooled via passive facade openings. This means noise levels will be higher. The location and size of these openings has been coordinated with the MEP engineer to ensure that noise level increases will be within acceptable design ranges to maintain comfortable acoustic conditions.

INTERNAL SOUND INSULATION

The main spaces in the Central Hall building will be open to each other and therefore inherently acoustically connected. Sound-spill is therefore unavoidable. In order to mitigate this, threshold spaces between the Central Hall, Futures Gallery and Cafe will be provided with acoustic absorption to partially attenuate sound as it travels between these spaces. The effect of sound-spill, and of the measures to mitigate it, have been demonstrated to the client via audio demonstrations. Other, more enclosed areas, such as WCs and kitchen/servery spaces will be provided with acoustically rated walls and doors as appropriate. The Wonderlab and the Central Hall Cafe are to be acoustically separate, with acoustic ratings to be specified to glazing and doors between these areas.

REVERBERATION CONTROL

Reverberation can have an impact on

- speech intelligibility and disturbance in large open spaces;
- control of reverberant noise build-up of noise ingress from external sources (roads and trains) and high internal activity noise levels during peak periods;
- control of sound-spill between spaces;
- some anticipated sensitive space usage (e.g. AV exhibits in the Futures Gallery, or event hire in the Central Hall).

In order to control this impact, acoustically absorptive finishes will be provided to all occupied spaces.

NOISE FROM BUILDING SERVICES

External plant noise emissions will be controlled to meet the requirements of planning condition 64. In addition, external plant noise emissions will also be controlled to meet upper limits at sensitive external locations within the proposed development, such as public external amenity space and museum building façades (e.g. those with openable windows). More information is provided in the "Reserved Matters Planning Application: Noise Statement" included with this Reserved Matters Application.

Internally, plant noise emissions are to be controlled to meet upper limits suitable for each space.

3.17
SUSTAINABILITY SUMMARY

SUSTAINABILITY STRATEGY

The sustainability vision for Central Hall was developed in collaboration with the client and design team and was informed by current industry standards, such as the UK Green Building Council (UKGBC) Net Zero Carbon framework, RIBA 2030 Climate Challenge Targets and BREEAM requirements as well as design team experience, knowledge of site, Science Museum Group and National Railway Museum aspirations and planning policies.

The overall sustainability strategy is split into seven areas or themes which are as follows:

- Energy & Carbon
- Water
- Health & Wellbeing
- Circular Economy
- Ecology & Biodiversity
- Pollution
- Social Value

To effectively achieve the considerable sustainability aspirations with the benefit of 3rd party rigour; Central Hall is being assessed using three complimentary methodologies shall be followed to address the targets:

- Designing to Net Zero Carbon performance levels
- BREEAM assessment
- Additional bespoke targets to address wider sustainability issues relating to broader aspects not well addressed by BREEAM, such as the energy performance gap and social value

CENTRAL HALL SUSTAINABILITY SUMMARY

In the first instance, operational energy demand is being reduced as far as possible through high performing fabric efficiencies and passive design measures. Mixed mode ventilation that allows natural ventilation in the summer months and MVHR with heat recovery aligns with the museum's aspirations and reduce the energy demand. Extensive overheating analysis has taken place to ensure the building will be thermally comfortable with the combination of daytime and night-time (secure) ventilation paths.

Separate air source heat pumps are proposed for heating and hot water to allow the electrification of heat on the pathway to Net Zero Carbon as the electricity grid decarbonises, which utilise very low GWP refrigerants. The project is targeting RIBA 2030 performance levels for energy usage.

Soft landings principles shall be followed to ensure the building performs as per the design intention. The FM team are engaged in the design process to ensure usability and functional requirements are integrated into the design early on. An internal soft landings champion has been appointed within NRM to oversee the soft landings process, which shall include commissioning, delivery of a building user guide, handover processes and post occupancy evaluation.

- Daylighting

Internal daylighting analysis of the Central Hall and existing surrounding buildings has informed glazing ratios in wall fenestration and roof design, including rooflight layout, in order to optimise natural daylight within the spaces for improved health and wellbeing, utilise solar gains in winter months, avoid overheating in the summer months and meet conservation requirements.

- Material choice

The timber and steel frame is inherently low carbon and the choice to expose the structure as much as possible eliminates the requirement for finishing materials, which also helps to reduce the embodied carbon further. Embodied carbon is also considered in the use of natural materials and those with reused and recycled content, as well as specifying materials (and elements) that are reusable at the end of life of the building. Material choices, especially on the external surfaces, will be selected for durability and resilience to the changing climate, which will provide an embodied carbon benefit in the long term. The project is targeting RIBA 2030 performance levels for embodied carbon.

- Water

Water consumption reductions will go beyond the BREEAM excellent requirement and will be met through water efficient fittings, water meters and leak detection systems. Surface water shall be restricted to provide a 30%betterment of the previously developed surface water runoff rate, before discharging to the public sewer. This will be achieved through the installation of below ground attenuation tank and, where feasible, permeable paving.

- Health and Wellbeing

Health and wellbeing has been considered throughout the design in order to provide an enjoyable experience for visitors and avoid museum fatigue, and to provide an environment that will support productivity and mental health of the museum staff and colleagues, who will be occupying the building for longer periods of time. The central hall design provides a connection to outdoors with views of nature or actives scenes; the drum naturally creates a 'north star' that helps visitors intuitively orientate themselves through the building; the choice of natural, healthy and low VOC materials and optimised daylighting provide a healthy indoor environment; acoustic design provides an appropriate acoustic environment to provide comfort for building users; the natural ventilation strategy is effective at relieving overheating to provide a comfortable thermal environment in summer months as well as maintaining air quality; the car free proposal promotes healthy sustainable travel options.

- Waste management

Sustainable waste management will be promoted by encouraging waste prevention, reuse, recycling and energy recovery to divert as much from landfill as possible. Dedicated space will be provided for the segregation and storage of operational recyclable waste. Where feasible demolition waste shall be reused on site. The main contractor will be required to produce and follow a Resource Management Plan. They will also be required to prepare a Construction Environmental Management Plan (CEMP) to comply with ISO14001 and register the project with the Considerate Constructors Scheme and achieve a score of >35. All timber and timber-based products used during the construction process of the project are legal and sustainable timber.

- Biodiversity and ecology

Although opportunities are limited for Central Hall, biodiversity and ecology enhancement proposals include the installation of bat and bird boxes / swift bricks within proposed trees or as part of the building fabric and the specification of appropriate tree and shrub planting as part of the proposed landscaping scheme for the northern approach and along the permissive path. In the context of York Central, the greater opportunity for biodiversity enhancement within the NRM landholding lies in the proposals for South Yard, which will form part of a future reserved matters application.

- Pollution

Central Hall will be provided with heat and hot water using air source heat pumps to prevent any on-site emissions associated with combustion plant. In addition, very low GWP refrigerants have been selected for the ASHPs and leak detection will be provided. The proposed development will reduce the number of car parking spaces on-site, therefore a net decrease in vehicular movements on the local road network is expected, hence improving air quality. External lighting will be specified in line with BREEAM Pol 04 Reduction of night-time light pollution, to minimise nuisance to neighbouring properties or wildlife due to lighting whilst maintaining an adequate level of safety and security lighting on the site. A noise impact assessment of the proposed development on neighbouring properties has been undertaken. The location of external plant, including ASHPs and associated acoustic enclosures, and positioning of openable windows has been considered to limit noise breakout.

- Social value

The project intents to provide social value to the local community. The building has been designed with the community through detailed stakeholder engagement and consultation exercises, in line with BREEAM Man 01. In addition, a dedicated Social Value workshop has been held with the Design team and representatives from National Railway Museum to set specific targets for social value and social sustainability, which includes:

- Providing community engagement during construction – through setting social value requirements for the Contractor to adhere to (e.g. requirement for number of local apprentices, engagement with local schools etc.), requiring the contractor to achieve a minimum CCS score of 40 and through the use of local suppliers and materials.
- Providing community engagement in operation – by providing community engagement exercises for educational purposes when the building is in use and ensure the building is designed to facilitate these activities
- Sustainability engagement through the building – to share the sustainability credentials of the building with users though displaying the building's sustainability certificates or providing exhibitions on the sustainable future of transport & railway, for example.

Summary prepared by Max Fordham. Refer to the Sustainability Statement appended to this application to read about the strategy in more detail.

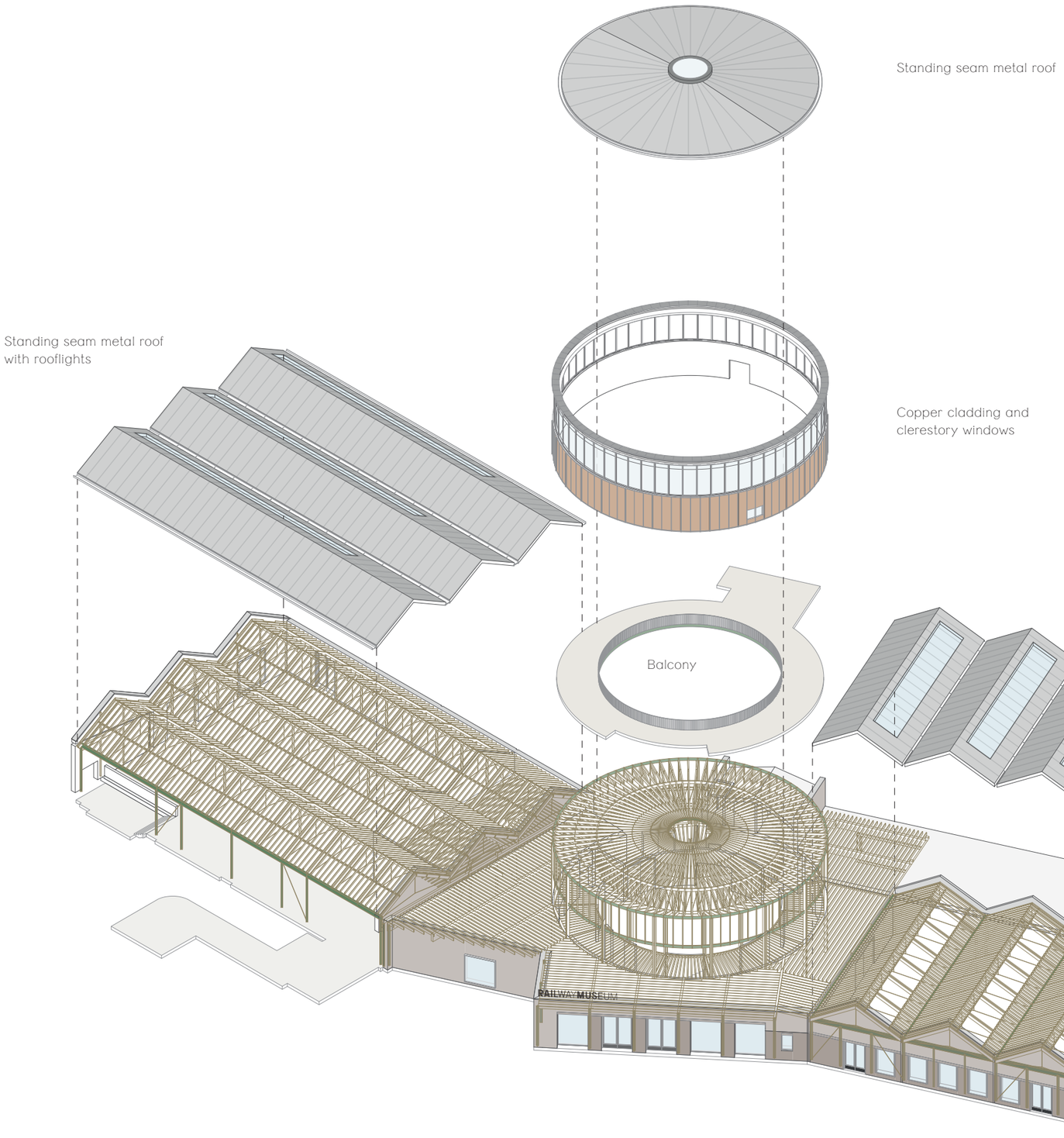
3.18
MATERIALS & DETAILING

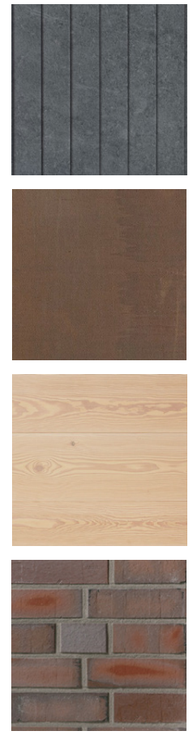
OVERALL STRATEGY

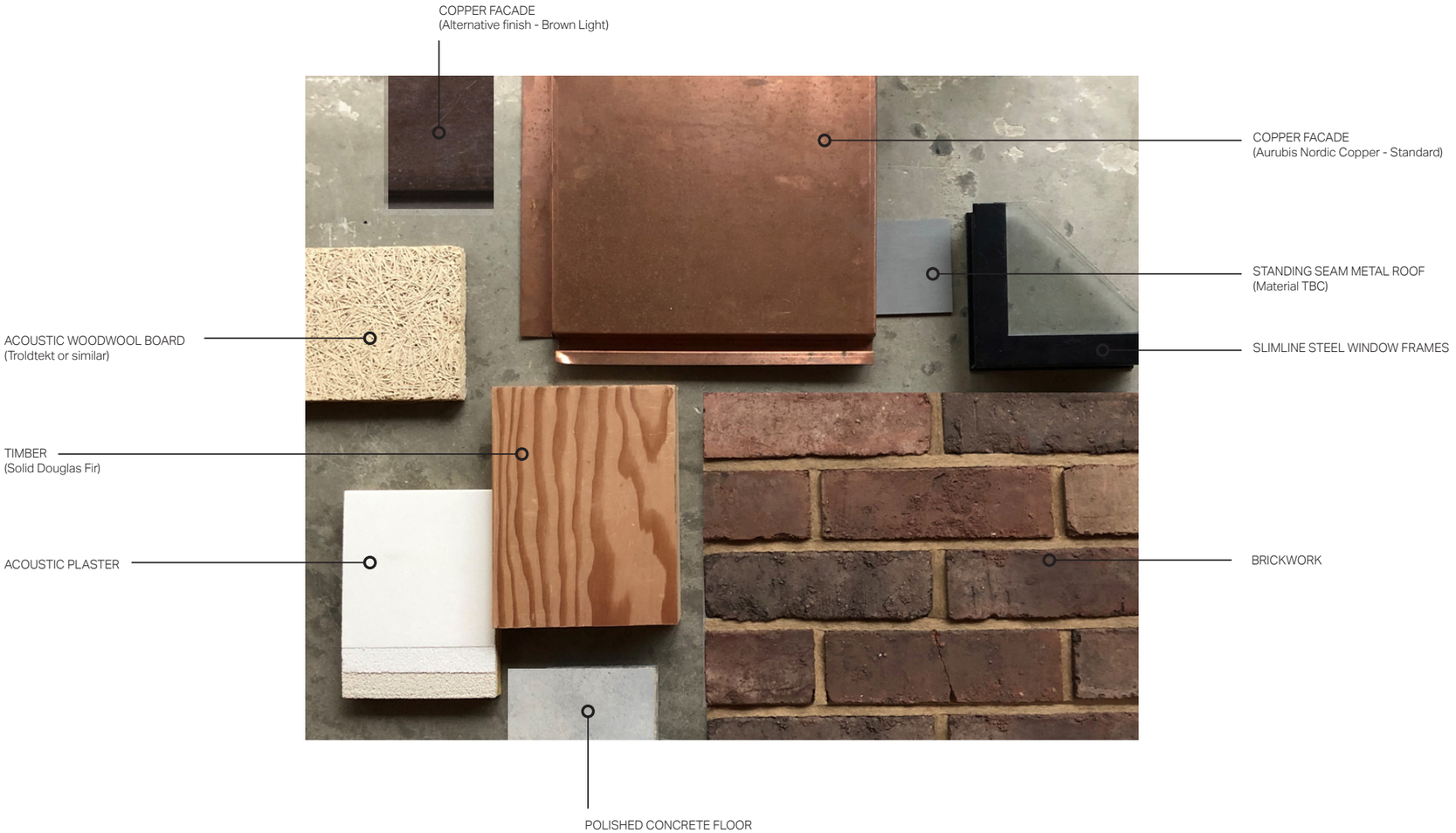
The material strategy for Central Hall combines a desire to be sympathetic to the listed load-bearing brick structures of Station Hall and other adjacent brick buildings, while being proud and distinctive as a new, heavily crafted building.

We have carefully established a framework to operate within when crafting the façades, with an economy to the range of materials used - the new building is constructed with a small number of carefully considered and robust external materials that compliment and blend into the historic railway landscape and beyond. These materials are arranged with clarity to express the conceptual form of the building and avoid messy and complicated material junctions.

There is also the ambition that the building, and the materials used, embody an aspirational sustainability agenda to ensure the project becomes a pioneering example of sustainability. The finished building will act as an education tool to illustrate how we can reduce carbon emissions and mitigate the impact of climate change in building design.







APPEARANCE / YORK CENTRAL DESIGN GUIDE

The overall proposed approach for the proposed materials and detailing follows the principles set in the York Central Design Guide :

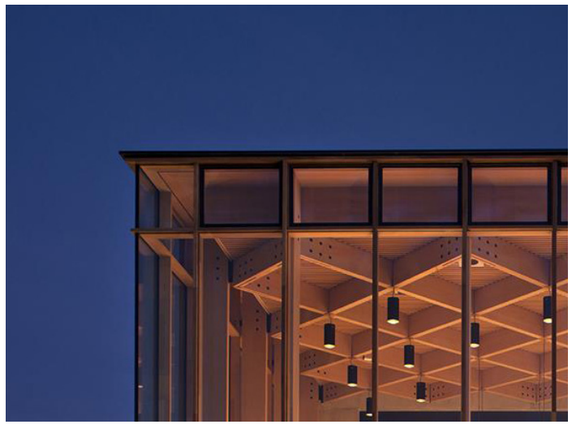
- "The unique character and history of the site shall inform the design response."
- "The railway heritage of the site is an essential ingredient of this new part of York."
- "York Central shall seem an extension of the existing city fabric as well as a new place"

The proposal is set to be a foreground building (as defined in section 6.4.2 of the guide) allowing it to depart from the rules for "appearance" which the background buildings must generally obey. However, many of the appearance criterion have been respected to ensure that the proposal is sympathetic to surroundings and contextual in its design.

- Roofs : A combination of flat and pitched roofs have been proposed with no roof top plant visible from low or high level views. Metal is proposed for the roof covering which is deemed appropriate due to the context of the surrounding buildings and the proposed copper cladding to the drum

- Roof edges : As shown in the following bay studies, care has been taken to design the roof eaves, gutters and downpipes. Gutters will be hidden behind parapets whilst downpipes will be recessed as illustrated in the guide.

- Façades : brick will be used predominantly, to tie in with the common architectural language found across the site, which will cotinue a sense of architectural cohesion. In contrast, the drum will be clad in copper or copper alloy, bringing it to the foreground to the Museum Square composition. Brick texture, quality, colour and detailing will follow elements of the guide as illustrated in the following bay studies with regular window arrangement respecting the elevation bays.



BRICK

The principal elevations at ground floor level are to be constructed from brick. Whilst the precise brick colour and type is only indicative at this stage and sample panels will be provided prior to start on site, the brick used will complement the existing heritage assets on the site (which are constructed from characteristic red brick) and references the widespread use of masonry within York.

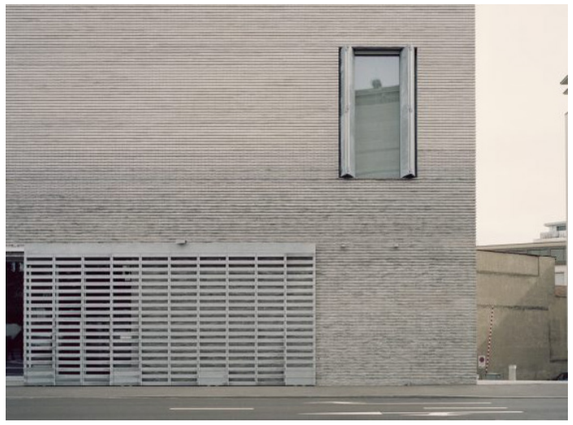
Despite the heritage assets on site being of an industrial use originally, the brick detailing is carefully considered and displaying a high level of craftsmanship - it is both decorative yet purposeful. Relief is found at high level predominately – we intend to bring this articulation to the low level of Central Hall's Museum Square façade, so that the visitor can properly appreciate it.

Due to the scale of the building and high-profile nature of the project, we anticipate that some degree of customisation would be economically viable, to ensure a tone that sits well with the existing context and allows a sense of variety to the exterior skin to prevent a monotonous appearance. We are also seeking to explore various brick bonds within the façade, playing with datums and brick specials to animate and articulate openings and entrances.

We are aware of the carbon impact that bricks can have and are currently researching the potential of using innovative recycled bricks on the project.

COPPER

We are proposing the use of Copper or copper alloy to the drum, found at first floor level of Central Hall. This is in part due to the aesthetic characteristics of this natural material, which will patinate over time according to its environment to help make the building rooted in its place. It will be treated to prevent the copper transitioning from a darker brown to the classic copper green. It is also a sustainable choice; a recycled material with unparalleled longevity, it gets naturally thicker over time and requires no maintenance, being both corrosion resistant and non-combustible.



3.18
MATERIALS & DETAILING

WINDOWS AND DOORS

External windows and doors will be in dark, slimline steel (or anodised aluminium) with clear solar control glazing for the southern elevation on Museum Square. Bespoke manifestation will be added to the full height windows in the portico & all glazed doors, to be compliant with the Building Regulations.

STANDING SEAM ROOF

A carefully detailed standing seam metal is proposed for the pitched roofs of the building, which will ensure longevity and durability. It will also help to assert the significance of the building, drawing parallels with York's other landmark buildings which also display standing seam metal roofing systems.

INTERNAL FINISHES

Internal finishes are intended to be simple and robust , employing natural materials with a neutral, calming colour palette. The internal spaces will be carefully detailed, with the ambition to develop some bespoke details for balustrades, floors, stairs & lighting fixtures, with the potential to incorporate collection pieces and exhibits where appropriate.

The superstructure will be formed out of Douglas Fir, with steel accents where spans require or for improved robustness in high-traffic areas.

CAFE BAY STUDY

This facade seeks to establish a clear hierarchy with regards to openings and composition, with the entrance clearly defined while also creating an open and attractive cafe frontage. This frontage breaks up the long facade with recessed downpipes and concealed movement joints, with a combination of English Garden Wall brick bond and a standard stretcher brick bond to introduce some hierarchy. At high level, the wall will terminate in a high-quality, slimline metal flashing (potentially in copper). Openings are deeply punched through the depth of the wall, with recessed slimline steel window frames.

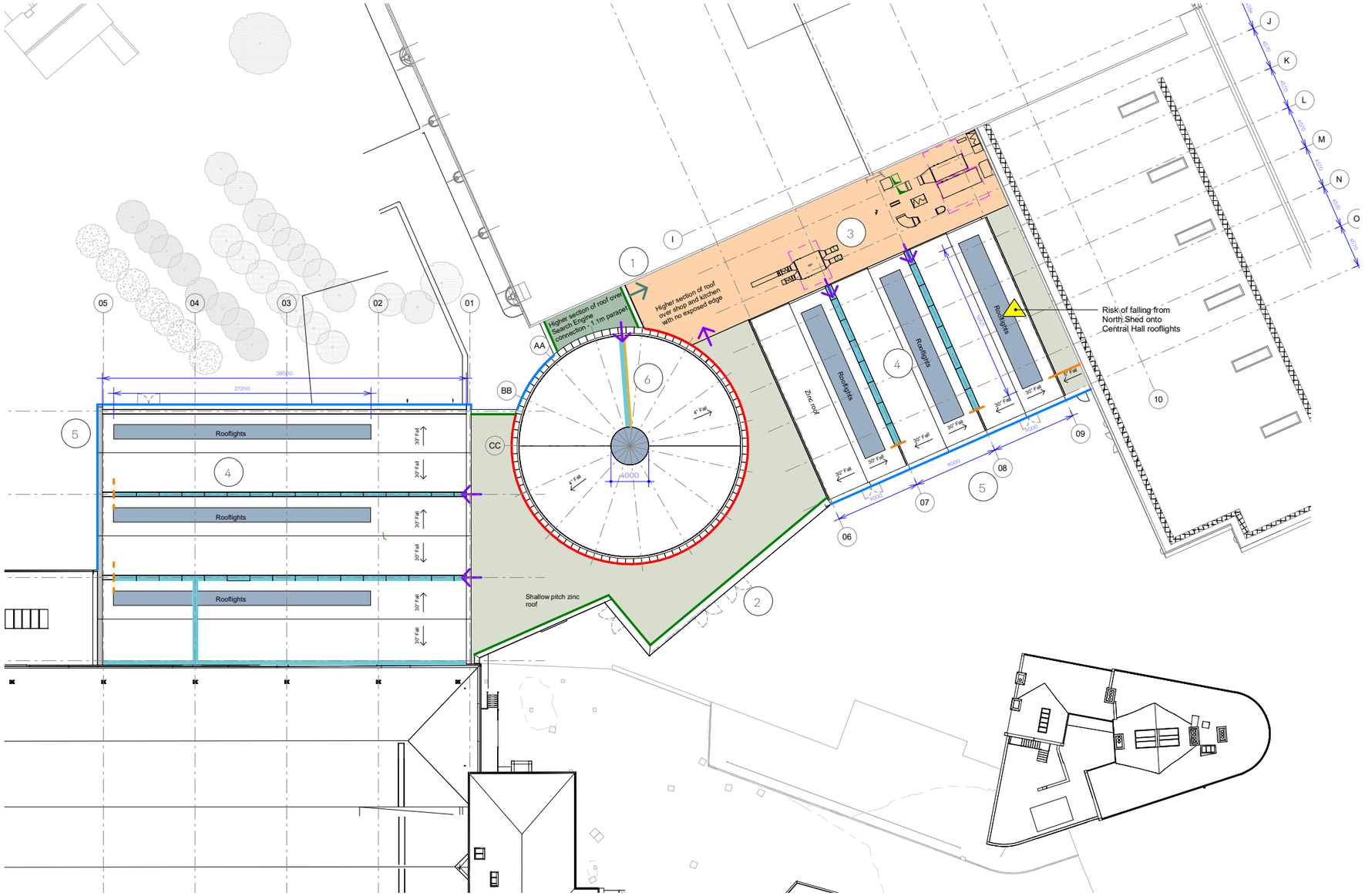
3.18
MATERIALS & DETAILING

DRUM BAY STUDY

The drum elevation is key to the identity of this legacy building, referencing railway roundhouses and with nods to the material language of water towers and metal tanks so familiar to railway yard landscapes. It will be clad externally in dark patinated copper or copper alloy, with expressed and projecting blackened steel fins and high level clerestory glazing exposing the expressive Douglas Fir roof structure within. A thin leading edge at the top, with slimline metal coping, will elegantly finish the drum at roof level.

FUTURES GALLERY BAY STUDY

This elevation seeks to simplify the Museum Square facade, utilising stretcher bond brickwork only. The long brick elevation is broken up with recessed downpipes and concealed movement joints, with a concealed gutter and pitched standing seam metal roof above. Openings are kept to a minimum, and are formed out of robust slimline steel window/door frames.



ROOF MAINTENANCE

- Higher section of roof with 1.1m parapet
- Higher section of roof with no exposed edge
- Lower section of roof with parapet
- Walk on access board
- Rooflights
- Tower scaffold access with anchor points
- Collapsible access platform
- 1.1m guardrail
- 1.1m collapsible guardrail
- Parapet
- Mansafe with anchor points
- Access from another portion of roof
- Access from building interior first floor
- Hazard

3.19
ROOF & MAINTENANCE

Achieving safe access to the proposed roof is a key priority for the museum to ensure that regular and emergency maintenance works can be performed without requiring specialist contractors or equipment.

The proposed maintenance strategy has been developed in close collaboration with the museum's estate team and CDM Principal Designers, Faithful + Gould, and is structured as detailed below.

MAIN ACCESS TO THE ROOF

Access to the roof is provided from the first floor of the proposed building avoiding the need for any external permanently fixed ladders (1). A service lobby is provided between the visitor facing spaces and the roof external area providing a space where tools and other equipment can be kept and ensuring the security of the area.

SHALLOW PITCHED ROOF AREAS (GREEN)

A full height (1.1m) parapet (2) gives protection across the majority of this roof area and proposed finishes are robust to ensure that routine access won't damage the roof surface.

Plant to serve the kitchen will be located at the back at the roof to avoid any visual impact from all ground floor and first floor balcony viewpoints (3).

PITCHED ROOF AREAS (WHITE)

A sealed walk-on gutter system is proposed for the Futures Gallery wing and the pitched cafe roof (4), with guard rails set back into the valleys to prevent roof level access to the edge (5). The roof perimeter beyond the guard rails and the northernmost pitch should be maintained from a MEWP (5).

DRUM MAINTENANCE

The drum roof is currently proposed as an occasional access zone, designed for 1 in 5 year access via a fixed collapsible ladder and a mansafe with anchor points (6).

Maintenance works to the clerestory windows, central rooflight and drum high-level gutters will be performed via temporary tower scaffolds erected from the shallow pitched roof areas. Loadings associated to this method of access have been considered in the structural calculations and roof build-ups and necessary anchors points have been designed within the drum cladding to secure the scaffold.

Proposed Central Hall roof maintenance strategy - Scale 1.500

Our Ref: 592-9-2021
Date: 30 November 2021

Graeme Holbeck
Lancaster House
James Nicolson Link
Clifton Moor
York

Dear Graeme,

Proposal **Proposed new Central Hall**

Location **National Railway Museum**

1. Thank you for giving North Yorkshire Police the opportunity to comment at the pre-planning application stage for this proposal.

2. Hopefully you are aware that the proposals for the new public realm to the front of the Museum will be deemed to be a 'Crowded Place' and will require hostile vehicle mitigation measures. The Museum commissioned Design Security Ltd to carry out a 'Security Needs Assessment' as part of the BREEAM process. I have not seen the final report; however, I have liaised with the Director of Design Security Ltd and we discussed the need for their report to cover the necessary counter terrorism requirements for this site. Again, I hope that this report has been shared with you.

3. From a designing out crime perspective, the footpath link to the rear of the proposed new central hall should be:

    - Overlooked where possible
    - Illuminated either directly or indirectly
    - Direct, wide and attractive to use

4. Lighting across the site needs to be sufficient to cater for lawful after dark activity. The lighting system must evenly distribute the light creating no dark shadows, provide good colour rendition, not cause glare or light pollution and support both formal and informal surveillance. Also, when designing the lighting scheme attention must be given to any landscape proposals to ensure that lamp columns are not sited near to trees, to avoid the situation of tree canopies eventually obscuring lighting or creating shadow.

5. At this point I have no other comments to make. However, if I can be of further assistance, do not hesitate to contact me.

Yours sincerely,

Mr Richard Ball, MPlan
Designing out Crime Officer
Richard.Ball@northyorkshire.police.uk
M: 07342 087677

3.20
SECURE BY DESIGN PRINCIPLES

The Designing Out Crime Officer was consulted prior to this application to ensure that the required general security measures would be understood.

The key comment related to the new public realm to the front of the museum. Museum Square, which will be deemed to be a "Crowded Place" and as such, will require hostile vehicle mitigation measures.

This space is excluded from this application as will be designed and developed by the York Central Delivery team representing Homes England and Network Rail. However, the museum has been working with Design Security Ltd who will confirm the necessary counter terrorism required measures to the York Central Partnership's team.

The Designing Out Crime Officer also commented on the pedestrian route to the north of Central Hall. We confirm the following :

- Overlooking : the route has been designed following the outline accepted in the York Central outline planning application. The route is overlooked by museum's spaces for most of its length.
- Lighting : Please refer to Max Fordham's lighting report which outlines the external lighting strategy ensuring that the path is well illuminated and feel secure.
- Design : Please refer to Barton Howe's landscape drawings. The route has been designed to be as direct as possible considering the site levels and wide to comply to the walkway's agreement condition.

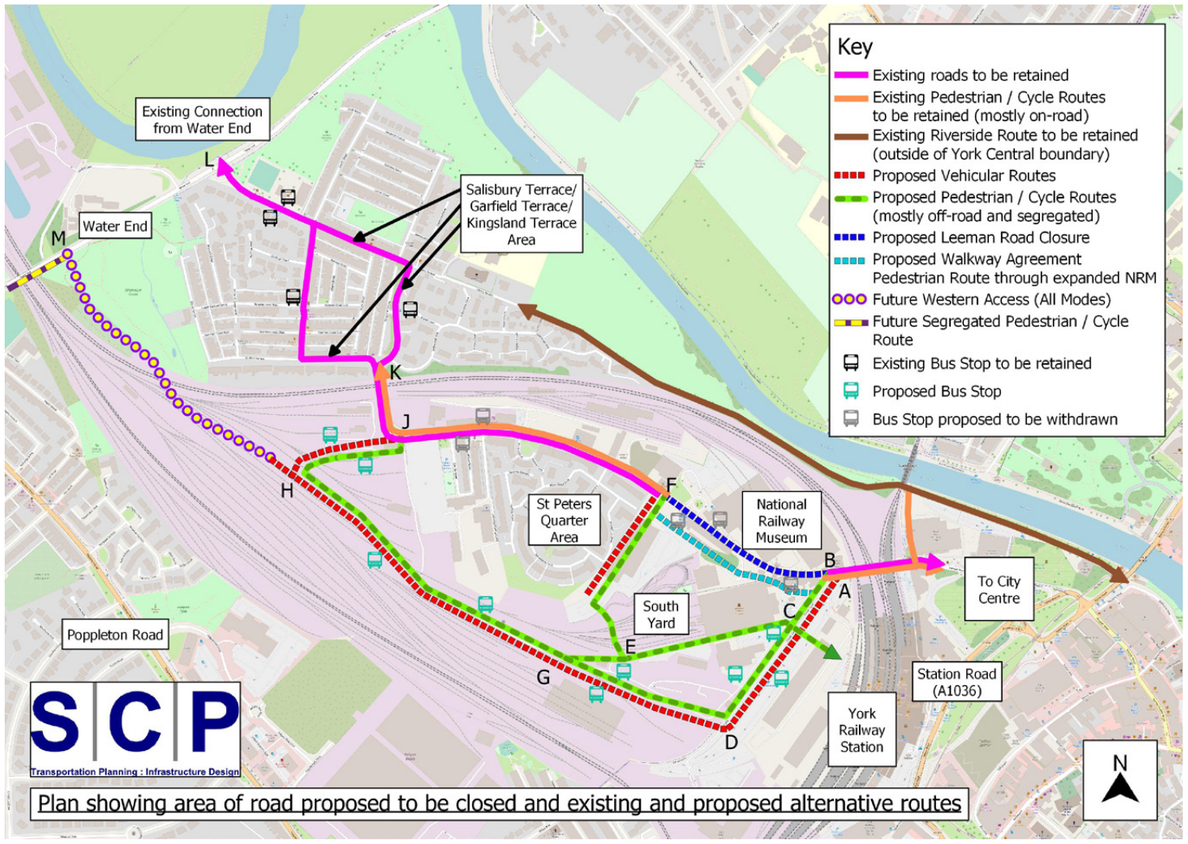
Other design measures outlined in Condition 19 of the outline planning application are understood but not all relevant to this phase given its non-residential use.

Location of CCTV cameras and security lighting have been advised by Design Security Ltd and will be submitted prior to the commencement of the phase.

Letter received from Richard Ball, Designing Out Crime Officer, November 2021

Access Statement

4



Plan showing area of road proposed to be closed and existing and proposed alternative routes

4.1 INTRODUCTION

The NRM forms part of the wider York Central development site. York Central has the benefit of Outline Planning consent (application number 18/01884/OUTM), and a number of Reserved Matters approvals, including that for the new roads, footpaths and cycle routes through the site, along with temporary car parking which will be expected to be provided up until the multi-storey car park opens.

These earlier applications contained several measures to minimise car use and improve facilities for those choosing to walk, cycle and access the area by public transport. The Outline Planning consent and the Reserved Matters consent for the new highways were both supported by detailed Transport Assessments and included a Framework Travel Plan.

The new roads, footpaths and cycle routes will largely be in place prior to the works on the NRM extensions, the possible exception being the new junction onto Water End. Once the majority of the new highway is open, the existing part of Leeman Road passing between the two halves of the NRM site, will be closed.

Of particular relevance to this application is that the York Central's Outline Planning consent granted approval in principle to the following infrastructure:

- Cycle Parking - the proposed cycle hub at the (new) western station entrance will also incorporate site wide public cycle parking, as well as shared short-stay cycle parking being provided as part of the new road plans.
- Car parking – The plans confirm that the intention is for York Central visitor parking to be provided within a new multi storey car park, this includes visitor to the NRM. Prior to the multi storey car parking being provided approved temporary car parking is proposed on future development sites and this parking is approved in detail. Additionally, fourteen blue-badge holder parking spaces are to be provided at the NRM, see the drawings accompanying this application.
- Station access – a new western access to York Station is planned, this will be fully accessible, with a direct link to Museum Square. Between the station and the museum a new signal controlled crossing will help those on foot and cyclists to cross the new road and access the station, cycle hub and multi-storey car park.

It is within the context of this changing road layout the new NRM Central Hall has been planned.

4.2 INCLUSIVE DESIGN PRINCIPLES

The proposed new highways through the York Central development provide modern standard roads, footpaths and cycle routes which are accessible by everyone, especially as the site is in the main flat. These include footways wide enough for two wheelchairs to pass, lighting, tactile paving and dropped kerbs at road crossing points. Signal controlled crossings of the main spine road through the site, these include the latest standard of detection and control facilities to help those with visual or mobility limitations.

Additionally within the NRM site there will be fourteen blue-badge parking spaces which provide parking in close proximity to the Central Hall entrance. Access from these spaces into Central Hall will be fully accessible, as can be seen from the plans accompanying the application.

During the design process, Mima has been working with Feilden Fowles on ensuring the Central Hall designs, plans and processes are accessible to all and provide an equitable, inclusive experience for visitors and colleagues alike, in line with the NRM's 'Open for All' strategy.

Discussions and decisions to date have been based on legislative documents including Approved Document Part M and the Equality Act (2010), as well as aspirational guidance listed in BS8300 parts 1 and 2 (2018) and the Department for Transport's 'Inclusive Mobility' document (2005).

Focus has been both on internal features and facilities within Central Hall, such as inclusive seating requirements, lighting and LRV levels, clear width and turning circle considerations, and also external elements relating to accessible parking spaces, ramp gradients and accessories, and equitable entrance ways.

Outside of London, the NRM visitors have the second lowest car use across the Science Museum Group museums' visitors. It also has the highest rail and walking modal share. However these plans will increase visitor numbers and the following paragraphs explains in summary how this increase has been planned for.

The details of access by each mode of transport are set out in more detail in the Transport Statement which accompanies this application. Also material is the Travel Plan which will actively manage how people travel to the museum and seek to encourage and incentivise travel by non-car modes, especially targeted at staff and volunteers.

PEDESTRIAN / WALKWAY AGREEMENT

29% of NRM visitors arrive on foot, possibly from hotels or as a consequence of making visits to multiple attractions in the city centre. However many more walk from the railway station, car parks and local bus stops.

The museum enjoys excellent pedestrian accessibility with the wider City Centre, Rail Station, local bus stops, York Central development, central hotels and local surrounding areas. All of these are within an easy walk distance for most people. Signal crossings provide safe easy access between the museum and local bus stops, the station, the proposed York Central Multi-storey car park.

For local people attractive, safe and accessible walk routes will be provided around the NRM, using the new highways planned. Most of these areas of new areas of highway have to be built and open to public use before work can start on the NRM's Central Hall. This is because this is a requirement of the recent approved Stopping Up Order, allowing closure of the part of Leeman Road passing between the two halves of the NRM.

Additionally the NRM will provide a route for people on foot passing through the new Central Hall, open when the museum is open, this route is provided under a Walkway Agreement which sets out the particulars of the route and its characteristics, such as width and gradient. It also specifies those entitled to use the route, for example pedestrians using wheelchairs, those with guide dogs and those with pushchairs. This route is shown in more detail on the plans accompanying this application.

CYCLES

Cycling represents a realistic and healthy way to travel for journeys up to 5km, or as part of a longer journey by public transport. A 5km cycle journey encompasses most of the built up area within York's outer ring road. It is a great way for staff and volunteers to commute, given York's largely flat topography.

Whilst the NRM is well placed for people to visit on bike, the evidence shows that this is not a significant travel mode for visitors.

York Central development will significantly improve cycle access through the area. This includes to Wilton Rise/ Holgate Road and destinations beyond. Within the York Central development itself is a planned network of high quality mainly segregated cycle routes and cycle parking including the proposed railway station cycle hub. These routes provide improved access to National Cycle Route 65 and connecting route 658 which pass close to the NRM.

Whilst strictly not public transport, the NRM will continue to operate its "Road Train". This has a 30 minute frequency and runs during museum opening times, connecting the museum and York Minister. This provides an alternative to walking, and is especially suitable for the young or elderly, those less able to walk the 1.0km distance. There is a charge for use of the train. As part of these plans the Vehicle Licence for the Road-train will require alteration to reflect the local route changes.

VEHICLES

The increase in visitor numbers will increase museum peak car park demand from 156 cars to 188 cars. Visitor parking will be in the proposed multi storey car park, and before that the consented temporary car parking.

Conversely staff and volunteers will no longer be provided with free on site car parking, and a survey of staff suggests that most will switch to public transport.

Due to the opening hours of the museum the increase in peak hour car traffic is only 17 cars in the am peak and 9 cars in the pm peak, taking into account of the removal of free staff car parking. The level of car use by staff will be monitored through the Travel Plan.

The museum is visited by large school parties, with typically up to 45,000 students visiting each year and an aim to double this figure. Many choose to visit by coach but can arrive on foot or by train too. Within the York Central Infrastructure works package, a two-coach layby is provided fronting onto Museum Square to support these visits. Group sizes are typically 40 large, and peak arrival time is between 10:00-11:00 on a weekday. The coach drop off and pick up will be managed.

PUBLIC TRANSPORT

The museums proximity to the railway station and City centre bus services means it is accessible by public transport. Most towns and Cities in Yorkshire and the Humber are within a one hour train journey.

A bus hub will be created at Museum Square comprising two bus stops in each direction. This will serve both York Railway Station and the museum. The bus stops will be provided with shelters, seating, timetable information and live service information.

A short walk into the city centre provides access to many more bus services offering a cumulative frequency of 25 buses per hour Monday to Friday, 23 buses per hour Saturday and 6 per hour on Sundays.

In addition, it is proposed that existing P&R service 59 (Poppleton Bar) and service 22 / 23 on the A59 will divert and stop to the west of York Railway Station via the new highway. These services will provide approximately 6-7 new services per hour both eastbound and westbound.

SERVICING

The enlargement of the NRM will not fundamentally change the servicing requirements, which are catering, exhibits, retail, office supplies and refuse collection. The current and proposed arrangements are as follows:

- Catering – the central kitchen is located in the Peter Allen Building fronting onto Museum Square, this is not proposed to change. Currently there are 6 catering deliveries a week. Normally these take place at the start of the day, with arrivals between 07:00-10:00hrs. The vehicles are parked up between 20-90 minutes. Deliveries come in a mixture of small to medium vans up to 18 Tonnes. These will continue to access the service areas via Museum Square, using the newly formed access provided for this purpose.
- Catering refuse collection – this takes place up to 3 times a week, the private contract refuse collection is undertake using the largest "Biffa" refuse vehicle and also a skip lorry for collection of used glass. The collection days are known, but the times of collection are unknown.
- Exhibits – the delivery/collection of exhibits is variable and can range from small vans to abnormal low loaders carrying engines or carriages. Where access by rail is possible this option will continue to be used, it is expected that up to 6 trains per annum will access South Yard via the new line, for road deliveries these will arrive via the new road access off Foundry Way, into South Yard, or into the North Yard and into Great Hall. For Central Hall, access for large exhibits will be via Stopped Up section of Leeman Road to the west of Central Hall and also using Gate 36 on the south side of Leeman Road.
- Retail and office deliveries – retail deliveries take place throughout the working week, typically in vehicles no larger than 7.5 Tonnes, commonly vans. Retail deliveries are via lorries or vans, accessing the site through Gate 36 on the south side of the Stopped Up section of Leeman Road , directly to the portacabins for stock deliveries and typically occur on a weekday between 08:00 – 16:00 hrs. Up to 8 deliveries take place per day, ranging from single boxes to up to 4 pallets per delivery. Royal Mail post /deliveries go to Control/Security in the North Yard car park area.
- Non-catering refuse collection – General waste for the site is collected from the north side of Leeman Road alongside Great Hall again using part of the Stopped Up section of Leeman Road, the typical waste collection is:
    - Refuse collection (general waste) - 2 times a week
    - Cardboard waste collection – small transit / flatbed – once a fortnight
    - Data shred and other – transit van approx. every 2 weeks

FIRE AND RESCUE SERVICES VEHICLE ACCESS

Access to the NRM will be from both sides of Leeman Road, the new York Central highways, including Hudson Boulevard and Foundry Way.

CONSTRUCTION ACCESS

The construction compound will be located on the site, this is likely to be in the northern approach.

EXPERIENCE TRAIN

The current visitor experience train will continue to operate, starting to the west of the new pedestrian and cycle link from Foundry Way. The experience train will not cross any roads when carry passengers, but will need to cross the Foundry Way footpath/cycle route at the start and end of each day to enable over-night stabling. This will take place shortly after the museum opens and closes, this means the access on foot will be available through Central Hall.

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